ADVANCES IN TAXATION

ADVANCES IN TAXATION

Series Editor: John Hasseldine

Recent Volumes:

Volumes 1–3:	Edited by Sally M. Jones
Volumes 4 and 5:	Edited by Jerold J. Stern
Volumes 6–16:	Edited by Thomas M. Porcano
Volume 17 and 18:	Edited by Suzanne Luttman
Volumes 19–21:	Edited by Toby Stock
Volume 22:	Edited by John Hasseldine

ADVANCES IN TAXATION VOLUME 23

ADVANCES IN TAXATION

EDITED BY

JOHN HASSELDINE
Paul College of Business and Economics, Department of Accounting and Finance, University of New Hampshire, Durham, NH, USA

United Kingdom – North America – Japan
India – Malaysia – China

Emerald Group Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2017

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-78635-002-2
ISSN: 1058-7497 (Series)

LIST OF CONTRIBUTORS

Fadi Alasfour	Al-Ahliyya Amman University, Jordan
Roberta Bampton	Leeds Beckett University, UK
William D. Brink	Miami University, USA
John Hasseldine	University of New Hampshire, USA
Kimberly Key	Auburn University, USA
Yaron Lahav	Ben-Gurion University of the Negev, Israel
Teresa Lightner	University of North Texas, USA
Bing Luo	San Francisco State University, USA
Emer Mulligan	National University of Ireland Galway, Ireland
Lynne Oats	University of Exeter, UK
Diana Onu	University of Exeter, UK
Thomas M. Porcano	Miami University, USA
Galla Salganik-Shoshan	Ben-Gurion University of the Negev, Israel
Martin Samy	Leeds Beckett University, UK

EDITORIAL BOARD

INTRODUCTION: PUBLISHING QUALITY TAX RESEARCH

As signaled in Volume 22 one of my goals is for *Advances in Taxation* to have a greater international exposure. This means carrying more articles with international implications, authored from any country. However, it is critical that we continue the tradition of publishing high quality tax research. To this end, I reiterate that *Advances in Taxation* will continue to publish, quality North-American tax research and that from other jurisdictions providing it is of broad interest to our readers.

I wish to thank the editorial board for their continued support. They have been called upon to promote AIT and to engage in the reviewing process. Many have again provided wise counsel for this volume. Apart from the editorial board, I am also pleased to thank the ad hoc reviewers listed below for their valuable and timely reviewing activity during 2015–2016.

May Bao (University of New Hampshire)
Jonathan Farrar (Ryerson University)
Brian Huels (Rockford University)
Teresa Lang (Auburn University at Montgomery)
Nor Aziah Abd. Manaf (Universiti Utara Malaysia)
Mohd Rizal Palil (Universiti Kebangsaan Malaysia)
Jeff Pope (Curtin University)
Donna Bobek Schmitt (University of South Carolina)
Tanya Tang (Brock University)
Recep Yucedogru (University of Nottingham)

In this volume, there are six papers. In the lead paper, Kimberly Key, Teresa Lightner, and Bing Luo extend literature in the property tax area, especially in helping to define and operationalize Quality of Life measures that explain property values. Using composite rankings to measure the economy, education, health, and public safety, they provide evidence on how property taxes are capitalized into housing prices. Their study will help future researchers to more fully consider public service benefits in their tax capitalization models.

Shifting from the micro-aspect of tax capitalization models, the second paper in this volume provides macro evidence on the domestic effective tax rate (ETR) of US corporations over the time period 2003–2010. Yaron Lahav and Galla Salganik-Shoshan investigate how domestic ETRs are affected by factors representing business and financial structure along with macroeconomic conditions. While they acknowledge some of their findings might be anticipated, other results suggest the need for more research.

Adopting a different methodological approach, but still focused in part on ETRs, Emer Mulligan and Lynne Oats report on the findings of 26 semi-structured interviews conducted with tax executives from 15 Silicon Valley corporations. This study highlights the value of qualitative research as interviewing tax professionals allowed the authors to drill down and understand how performance measures are used in tax departments and how tax as a measure of organizational performance is presented to external stakeholders.

The next three papers in this volume are an integrated forum on tax morale and the measurement of compliance attitudes. In the first paper of this forum, William D. Brink and Thomas M. Porcano use structural equation modeling to develop a comprehensive international tax evasion framework by analyzing direct and indirect paths between country-level cultural and economic structural variables and tax morale and evasion.

In the second paper of the forum, Fadi Alasfour, Martin Samy, and Roberta Bampton review the literature on tax morale and issue a survey instrument to Jordanian tax auditors and financial managers. Apart from the specific empirical results, this Jordanian study is notable as there is little prior research on tax morale in non-Western countries and also for their development of a multi-item index comprising 17 questions to measure participants' "intrinsic motivations" to pay taxes.

Finally, in a related methodological paper, Diana Onu thoughtfully examines the way that prior literature has researched the link between tax attitude measures and actual compliance behavior. She suggests several avenues to improving the predictive value of attitude measures and offers a number of recommendations that will prove useful to behavioral tax researchers.

In future volumes, I wish to signal that apart from continuing its tradition of publishing original research-based manuscripts, *Advances in Taxation* will consider publishing papers on methodological issues (as several of the papers in this volume attest) and quality and topics papers on aspects of tax education, the tax profession, and also well-crafted replications co-authored by doctoral students and faculty.

John Hasseldine
Editor

THE EFFECTS OF PROPERTY TAXES AND PUBLIC SERVICE BENEFITS ON HOUSING VALUES: A COUNTY-LEVEL ANALYSIS

Kimberly Key, Teresa Lightner and Bing Luo

ABSTRACT

This study investigates the relation between residential property values and both property taxes and public services in Georgia's counties. Capitalization theory predicts that property values relate negatively to property taxes, and positively to public services. Palmon and Smith (1998) state that errors in public service measures create a capitalization coefficient bias that makes it difficult to isolate tax effects from public service effects. This paper is a first step in defining and quantifying public services and their marginal effect on housing values. It develops public service measures in four quality-of-life areas – economy, education, health, and public safety. The models suggest a strong negative relation between effective tax rates and property values, and a significant positive association between the public service measures and property values. Analyses indicate that property taxes are capitalized into housing

Advances in Taxation, Volume 23, 1–31

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023007

prices at greater than 100%, suggesting prior underestimations based on measurement errors in public service variables.

Keywords: Property taxes; public service benefits; quality of life; tax capitalization

INTRODUCTION

This study investigates the effects of local property taxes and public services on residential property. Property tax theory predicts that property values will be negatively related to the property taxes of a taxing jurisdiction, and positively related to its public services. This study is motivated by the lack of theoretically appropriate public service measures in prior property tax research. We examine four areas intended to capture broad quality-of-life (QOL) aspects of local jurisdictions – the economy, education, health, and public safety – and develop public service outcome measures for each. This study is also motivated by the ongoing debate over the extent to which property taxes are capitalized into property values. Tax capitalization issues are important because they pertain to the economic incidence of a tax, that is, who bears the burden of the tax. In full capitalization, the house value would include the expected tax liabilities, and the current owners would bear the entire burden of contemporary changes in expected tax liabilities. The economic significance of property taxes and public service delivery in local government decision-making is a third motivation for this work.

By using primarily public service output measures (i.e., the QOL measures) rather than input measures (i.e., spending), this study overcomes one of the most significant problems in prior property tax research – the inadequate modeling of local public services. Palmon and Smith (1998) explain that a downward bias exists in the tax capitalization coefficient, created by errors in the measurement of public services and by the inherent relation between public services and tax rates. This coefficient bias makes it difficult to isolate tax effects from public service effects in empirical property tax analyses, resulting in an underestimation of the degree of tax capitalization. Most prior research relies on the assumption that higher spending improves quality (Fischel, Oates, & Youngman, 2011); yet spending has long been recognized as a poor measure of quality (e.g., Oates, 1969; Rosen & Fullerton, 1997). Ross and Yinger (1999) note that the empirical research

in large part has not sufficiently explored models that could explain the connections between local determinations of public service distribution and the housing markets. They state that far more work needs to be done to obtain comprehensive measures of benefits and to estimate the implied marginal benefits. This study addresses both with the QOL measures. A final motivation for the study is to introduce tax considerations to social science QOL research. The social sciences literature includes some variables that represent QOL, but they do not incorporate taxes.

Sirmans, Gatzlaff, and Macpherson (2008) review the theory of property tax capitalization and empirical research, and state that most studies find a significant negative relation between property values and property taxes, but that the degree of capitalization in those studies has varied. The most typical empirical result, they note in their summary of prior research, has been the partial capitalization of property taxes; however, results range from no significant capitalization to full capitalization and, in one case, to what they describe as overcapitalization. Overall, this study provides additional evidence on tax capitalization and incidence questions, an important area of public finance research that is not well understood and that lacks consensus (Fischel et al., 2011; Zodrow, 2001).

This study also addresses an economically large and important tax. Property taxes account for approximately 75% of local government tax revenue, and residential property accounts for approximately 60% of taxable assessments, the largest component of the tax base by a significant margin (Lutz, Molloy, & Shan, 2011). Local officials levy these property taxes and in turn determine allocations for public services to residents. Ultimately, they make tax and spending decisions targeted toward the QOL outcomes they believe are desirable in their jurisdictions. This study provides evidence on whether local residents capitalize their taxes and QOL measures in the form of property values.

We test the effects of property taxes and public service benefits on housing values using data from 1999 to 2009 for 159 counties in Georgia. Property value measures are calculated using assessed values of property grossed up to the fair market value (FMV); local taxes include all local taxes paid on that property (county, school, and city taxes). The local taxes and property values are used to construct an effective tax rate (ETR) measure. Each of the four QOL measures comprises subcomponents that help produce a broad measure of the category; they are adopted from a U.S. county-level public policy analysis edited by Vocino (2011). Each county is ranked 1 to 159 on the 18 subcomponents that make up the four QOL measures; these subcomponent rankings are then

totaled to grade the county's overall ranking for each QOL measure. The ETR is predicted to be negatively related to property values, and the QOL variables are predicted to be positively related to property values.

We find a strong negative relation between county ETRs and residential property values. This result is consistent with capitalization of local residential property taxes into housing values. There is also a statistically significant and positive association between three of the four QOL rankings – economy, education, and public safety – and Georgia residential property values. However, the health of a county was not significantly related to housing values in Georgia counties. Several control variables are statistically significant as well. Accordingly, we find that residential property values reflect local property taxes, QOL measures, and socioeconomic factors. The statistically negative relation between property taxes and housing values indicates some level of capitalization exists. Given the statistically negative relation for property taxes, this study makes an important contribution in its estimation of the extent of tax capitalization. This result validates concerns about the underestimation of capitalization in prior research. Full capitalization is consistent with the theory that housing market participants rationally discount properties subject to higher taxes, implying that only unexpected tax changes can be passed on to new buyers of residential real estate (Palmon & Smith, 1998). A point estimate of our data indicates greater than full capitalization.

Prior tax capitalization research has not fully examined the marginal benefits of public services. While our regression results indicate that a better economic environment and higher overall rankings in education and public safety are associated with higher housing values, we want to better understand each factor's marginal effect on those values. We use t-tests of standardized coefficients to determine which QOL factors have the greatest impacts. As expected, the economy has the greatest influence on housing values on a statewide basis. Next we divide the state into 12 regions and find that the marginal effects of QOL factors differ by region. In most regions, economics affect housing prices more so than the other factors, but education is a close second. Surprisingly, health factors have a greater influence on housing values in more regions than does public safety. Overall, our results should encourage researchers in the property tax incidence area to fully consider public service benefits in their tax capitalization models. In addition, local government officials can also benefit from our evidence. Our findings have implications for the competitive environment that local policymakers face in attracting residents through wise tax and spending decisions on local public services.

The remainder of this paper is organized as follows. In the next section, we discuss the motivation for the research and the prior literature on property tax capitalization. We also state the research hypotheses. We proceed to review the QOL literature and explain the QOL measurements for this study. The Georgia property tax system is described next, including data sources. The research design, results, and conclusions follow.

MOTIVATION AND PRIOR RESEARCH

Oates (1969) developed and tested the seminal paper on property tax capitalization. He adopts the Tiebout (1956) view of the consumer "shopping" among communities that offer different tax-expenditure packages. Empirically, Oates regresses house prices on a vector of housing characteristics (the cost of taxes) and a public service measure (education expenditures per pupil). He finds a significant negative relation between property values and property tax rates, with about two-thirds capitalization. The relation between property values and expenditures is positive. Oates (1969) states that the results are consistent with the Tiebout (1956) model in which people appear to be willing to pay more to live in a community that provides higher levels of public services.[1]

Rosen and Fullerton (1977) agree with earlier arguments that property values should be lower in communities with higher tax rates and below-average public services. However, they argue that the Oates model is deficient because it proxies public service output with input expenditures. Instead of expenditures per pupil, they use a school achievement score. They employ the same 1960 data that Oates (1969) did, and add 1970 data. They find tax capitalization rates are higher when the achievement scores are used instead of expenditures, suggesting that better model specification affects inferences about property taxes. For 1970, the expenditure-per-pupil is statistically insignificant, which shows that the expenditures and performance measures are not capturing quite the same underlying construct.

We follow Oates (1969), Rosen and Fullerton (1977), and other prior research to investigate the following research questions (stated in research form):

> **H1.** There is a negative relation between residential property values and local property taxes.

H2. There is a positive relation between residential property values and local public services.

While studies subsequent to Oates (1969) and Rosen and Fullerton (1977) have included from one to a few public service variables, none has extensively examined the effects of local QOL indicators on residential property values. Since the earliest research, it has been recognized that public goods and services are difficult to measure, and that spending is a poor measure of quality (e.g., Lewis & McNutt, 1979; Ross & Fullerton, 1977; Ross & Yinger, 1999). Oates (1969) remarks that those who have worked in the area are familiar with the difficulties in obtaining operational measures of output in the public sector. Palmon and Smith (1998) state that an inability to control adequately for public services creates an under-identification problem in tax capitalization models, resulting in lower estimates of tax capitalization rates.

Despite widespread recognition of these measurement issues, empirical research to date has shown little improvement in overcoming them, and to the extent that there are improvements, nearly all the public service variables are education-related (e.g., student test scores). Oates (1969) uses current expenditures per pupil and municipal spending on all functions other than schools, and debt as his proxy for benefits; Hamilton (1976) employs per-household expenditure on local public services; McDougall (1976) includes more variables and controls for benefits with grade-12 median score on the Iowa Tests for Educational Development, and includes as well variables that measure crime rate, the number of subfunctions of the parks and recreation services, and a fire department variable. Ross and Yinger (1999) state that far more work is necessary in order to obtain comprehensive measures of benefits and to estimate the implied marginal benefits.

This study addresses that call for more research. It employs 18 indicators that measure different aspects of public services and community QOL. We refer to these as (QOL) variables, consistent with related social science research. As stated in Hypothesis 2, the four broad QOL measures are predicted to be positively related to residential property values. Prior QOL research and this study's measurement of the QOL variables are discussed in the next section.

This study improves the residential property valuation model and allows for better inferences regarding the extent of property tax capitalization if data are consistent with Hypothesis 1, that is, property value and property tax relation, is statistically negative. Sirmans et al. (2008) review 28 tax capitalization papers and find ten studies with partial capitalization, nine with

full capitalization, one with overcapitalization, and seven with no significant capitalization.[2] They conclude that the most typical empirical result has been partial capitalization. Nonetheless, results for the extent of capitalization in prior research are at all levels; no true consensus exists. Our study provides new evidence on this important public finance issue, using a model that is better specified.

QOL RESEARCH AND MEASURES

The provision of public services that maintain and improve the QOL for a jurisdiction's residents is one of the implicit mandates of modern government. Several prior studies have examined how various standard-of-living variables affect QOL. These measures range from fertility, health, and the environment to consumption, economics, migration, and individual rights, among others.[3] These studies range in scope from international to inter-county and inter-city. None of the studies has explicitly included a tax variable in its QOL models or indexes.

We construct QOL measures based on Vocino (2011), who uses various indicator variables to form QOL factors to assess the performance of all counties in Alabama. The indicators include growth, public safety, and well-being, along with poverty and income measures; but again there are no measures of taxation or residential property values. The variables capture aspects of county residents' lives that affect their QOL – and that local governments can alter through the provision of public services. This study uses 18 indicators to quantify four QOL factors within a county: economy, education, health, and public safety.[4]

Table 1 includes descriptions and data sources for all variables in the study, including the 18 indicators used to derive the four QOL variables. In order to standardize and combine the information into the QOL variables, we first rank each county from 1 to 159, worst to best, respectively, on the indicators that compose each QOL variable. Ranking the best county highest rather than number 1 improves the interpretation of regression results. Next we combine the individual indicator rankings to derive a composite score that is used to determine a county's ranking for each of the four QOL variables.

For example, on the education QOL factor for 1999, out of 159 counties, Appling County ranks 92nd on percentage of the population lacking basic literacy skills, 66th on high school dropout rate, 35th on teacher–student ratio, 10th best on education funding per student, and 136th best on

Table 1. Description and Data Sources for All Variables.

Variable	Definition	Data Source
Dependent Variable		
$RESVALUE_{ij}$	Log of the assessed value of residential property for each county for each year, 1999–2009, divided by 0.4	*Georgia County Guide*
Independent Variables		
ETR_{ij}	The effective property tax rate for each county, calculated as total local property taxes paid/(assessed value of property/0.4)	*Georgia County Guide*
$ECrnk_{ij}$	Income per capita	*Georgia County Guide*
An average of each county's annual ranking on the following economic factors for:	Annual unemployment rate	*Georgia County Guide*
	Poverty rate	*Georgia County Guide*
	Average weekly wage	*Georgia County Guide*
$EDrnk_{ij}$	Percentage of population lacking basic literacy skills	National Center for Education Statistics http://nces.ed.gov/naal/estimates/StateEstimates.aspx
An average of each county's annual ranking on the following education factors:	High school dropout rate	*Georgia County Guide*
	Teacher-student ratio	*Georgia County Guide*
	Education funding per student	*Georgia County Guide*
	Percentage of population with a bachelor's degree or higher	*Georgia County Guide*
$HCrnk_{ij}$	Life expectancy 2006	Partner Up! for Public Health http://www.togetherwecandobetter.com/allcountiesdb.html
An average of each county's annual ranking on the following health factors:	Infant mortality rate	*Georgia County Guide*
	Percentage of uninsured population	*Georgia County Guide*
	Low birth weight (total rate per 100 live births)	*Georgia County Guide*
	Percentage of obese adults 2007	Partner Up! for Public Health
$PSrnk_{ij}$	Violent crimes reported (murder, rape, robbery, and aggravated assaults)	*Georgia County Guide*

Table 1. (*Continued*)

Variable	Definition	Data Source
An average of each county's annual ranking on the following public safety factors:	Property crimes reported (burglary, larceny, motor vehicle thefts)	*Georgia County Guide*
	Juvenile arrests	*Georgia County Guide*
	Adult arrests	*Georgia County Guide*
$SALESTX_{ij}$	Sales tax rate for each county	*Georgia County Guide*
$lATL_j$	Log of the distance from the county seat to the Atlanta airport	MapQuest
$lPOP_{ij}$	Log of total population of each county	*Georgia County Guide*
$RURAL_j$	1 if a county is classified as rural and 0 if the county is classified as urban or suburban	"Georgia Facts: Georgia County Facts and Figures," University of Georgia, http://spock.fcs.uga.edu/hace/gafacts/
$AGE65_{ij}$	The percentage of the county population age 65 or older	*Georgia County Guide*
$AGE018_{ij}$	The percentage of the county population age birth to 18	*Georgia County Guide*
$INDDIST_j$	1 for the following counties: Fulton, Haralson, Gwinnett, Gordon, Carroll, Bartow, Walker, Jackson, Whitfield, Dekalb, Laurens, Hall, Cobb, Mitchell, Floyd, Walton, Thomas, Chattooga, Toombs, and Lowndes; and 0 otherwise	*Georgia County Guide*
CPI_i	Annual average consumer price index	U.S. Bureau of Labor Statistics
$BUSVALUE_{ij}$	The per capita assessed value of commercial property in a county	*Georgia County Guide*
$REGION_j$	A dummy variable for each region, 1–11	Georgia Association of Regional Commissions

i = year, j = county.

percentage of the population with a bachelor's degree or higher. The numbers sum to 339, which, when compared to the sums for other counties for the year, means that Appling County ranks 49th best in education. The methodology section of the paper explains the QOL variable construction in greater detail.

GEORGIA PROPERTY TAX SYSTEM

Georgia's property tax system is fairly typical. Property tax is assessed on the value of residential real property; commercial, business, and farm real property; and personal property, such as automobiles. The Board of Tax Assessors assesses property at the county level. All property – including land, structures permanently attached, and equipment, machinery, and fixtures – is assessed at 40% of its FMV. The sum of three property tax rates – school, county, and state – constitutes the state's total property tax rate.

In 2009, 61.49% of total property tax revenues were allocated to the school tax, 33.65% to the county tax, and 0.85% to state property tax (Georgia Department of Revenue Property Tax Administration Annual Report FY2010). The tax, or millage, rate in each county is set annually, after the Board of County Commissioners (or other governing authority of the taxing jurisdiction) and the Board of Education determine property assessment values.[5]

Alm, Buschman, and Sjoquist (2011) state that Georgia is broadly similar to other states in its local government practice and reliance on property taxes, which suggests that the results should be relevant to other states. There are, however, some distinctive features. In Georgia, county governments conduct property tax assessments annually to determine if they are at the appropriate levels. This feature is important, note Alm et al. (2011), because the research design can make use of all the years of available data. If property tax assessment occurred biannually or even less frequently, fewer years of data could be incorporated.

Georgia has very few limitations on property tax. It is not necessary, for example, to obtain taxpayer approval for rate changes, and there are no limits on general assessment, although in 2009, after our sample ended, a statewide temporary freeze on assessments was imposed.[6] Also, legislation that became effective January 1, 2000, established the "Taxpayer Bill of Rights." One of whose main thrusts was the prevention of "back-door tax increases," or indirect property tax hikes on properties that increased in value because of inflation. The state's Department of Revenue adopted

Revenue Rule 560−11−2−.58 to roll back the millage rate when the tax digest value increased because of reassessments.[7] The rule became effective on November 14, 2000.[8]

These features matter empirically because the assessed property values and property tax rates are subject to variation every year. That Georgia has 159 counties benefits this study because of the large sample size and thus power of tests; the disclosure environment provides an extensive amount of data. Finally, Georgia is not an outlier on such measures as population (9th) or square miles (23rd).[9]

Table 2 includes annual total assessed property values and residential property values, average county millage rates, and total property tax revenues for each year of our sample, 1999−2009. From 1999 to 2008, assessed property values increased between 6% and 9% annually, but had only a slight increase from 2008 to 2009 because of the housing recession.[10] In total, assessed property values increased from $187 billion in 1999 to $383.8 billion in 2009. Meanwhile, average property tax rates only increased from 24.35% in 1999 to 26.27% in 2009. The average millage rate actually decreased in three of those years, 2000, 2006, and 2007.

Table 2. Property Values and Property Taxes.

Fiscal Year End	Total Assessed Property Values[a]	Average County Millage Rate[b]	Total Property Tax Revenue	Total Assessed Values of Residential Property
1999	$187.0	24.35	$5.2	$89.0
2000	201.3	24.01	6.0	98.1
2001	220.1	24.19	6.5	110.6
2002	238.4	25.01	6.9	125.5
2003	257.1	25.88	7.1	138.4
2004	271.4	25.97	7.4	150.5
2005	297.5	26.68	8.8	165.1
2006	339.4	26.53	9.7	183.9
2007	373.3	25.94	10.5	205.1
2008	383.8	26.10	11.0	216.1
2009	389.3	26.27	$11.2	214.1

Data source: Georgia Property Tax Administration annual reports and *Georgia County Guide*. Property values, tax revenues, and tax paid in billions.

[a]The reports' values are assessed as FMV × 40% assessment ratio.

[b]Millage rates are tax per $1,000 of property value.

Residential and commercial property taxes provide the two largest sources of Georgia property tax revenues. In 2009, for example, tax revenues from assessed values of residential and commercial property totaled $2.05 billion and $1.04 billion, respectively. Industrial property tax collections added $220 million. Other types of property taxes, such as agriculture, public utilities, mobile homes, timber, and heavy-duty equipment taxes tend to be much lower in comparison to residential and commercial property taxes, while motor vehicle taxes are only slightly higher than industrial property taxes.

The Georgia data used in this study fit primarily in the aggregate category described by Guilfoyle and Rutherford (2000). They explain that capitalization studies can be divided into three broad categories – aggregate, micro, and natural experiments – that exploit a policy or other setting change. Aggregated house prices and tax figures (e.g., median house price and community tax rate) typify that category. Micro studies use individual houses as observations. A benefit of aggregated studies is that they contain a large number of communities and a large amount of sample variation in tax rates, but the aggregated house value is of lower quality than individual house measures. Micro studies have a higher-quality dependent variable, actual sales prices, but tend to involve fewer communities; thus, there is less tax rate variation. A point not made in their review article is that sale transactions include only a small fraction of the housing market because such a small percentage of houses sell each year.

The actual data in the current study overcome some of the historic shortcomings of aggregate studies. The gross assessed values reflect all residential property, similar to Wassmer (1993), as opposed to using a single amount (like the median) to represent all properties. Further, taxes are measured using all taxes paid, not just a mechanical calculation using statutory rates and assessment ratios.

SAMPLE, DATA, AND MODEL SPECIFICATION

Sample

We analyze Georgia county data from 1999 to 2009 in order to assess whether residential property values are associated with county effective property tax rates. Further, we examine the relations between residential property values and the four QOL variables for each county. We chose the period from 1999 to 2009 due to data availability and state restrictions.

Some of our variables are not available prior to this period, resulting in a 1999 start date. Alternatively, a statewide temporary freeze on assessments was imposed in 2009. However, it didn't become effective until school year 2010 after our sample ended. We collect data at the county level and analyze data for all 159 counties in Georgia.

Data

We hand-collected from *The Georgia County Guide* most of the data for the indicators used to derive the QOL factors and for many of the remaining independent variables.[11] *The Georgia County Guide* is published by the Center for Agribusiness and Economic Development at the University of Georgia. All the data are compiled from sources available publicly from various agencies, including the Georgia Department of Labor, Georgia Department of Revenue, Georgia Department of Education, and the U.S. Census Bureau, among others. Almost all data are compiled on a year-by-year, county-by-county basis. However, some variables, such as the U.S. Census data, are collected less frequently. We hand-collected data from the website Partner Up! for Public Health to measure the variables Life Expectancy and Percentage of Obese Adults in a county. We used MapQuest to measure the distance from the county seats to Atlanta and the U.S. Bureau of Labor Statistics to measure consumer price index (CPI). Finally, the Region variable is obtained from the Georgia Association of Regional Commissions. Table 1 includes a list of the variables and their descriptions and data sources.

The *Georgia County Guide* is missing a few years of data for the indicator variables in this study. We were able to collect some missing data from the original sources. For other data we made the following adjustments: year 2000 data are used in place of year 1999 and 2001 data for the factor used to measure the percentage of the population age birth to 18; year 2000 data are used for the year 2001 data for the factor used to measure the percentage of the population 65 or older; and year 2002 data is used for year 2003 data for the factor that measures average weekly wage.

Model Specification

We estimate the following regression model using OLS regression[12] to examine the relation between residential property values and county effective property tax rates and QOL factors:

$$\begin{aligned}\text{RESVALUE}_{ij} = {} & B_0 + B_1\text{ETR}_{ij} + B_2\text{ECrnk}_{ij} + B_3\text{EDrnk}_{ij} + B_4\text{HCrnk}_{ij} \\ & + B_5\text{PSrnk}_{ij} + B_6\text{SALESTX}_{ij} + B_7\text{lATL}_j + B_8\text{lPOP}_{ij} \\ & + B_9\text{RURAL}_j + B_{10}\text{AGE65}_{ij} + B_{11}\text{AGE018}_{ij} + B_{12}\text{INDDIST}_j \\ & + B_{13}\text{CPI} + B_{14}\text{BUSVALUE}_{ij} + \sum_{j=r1}^{r11} B_j\text{REGION}_j + e_{ij}\end{aligned} \tag{1}$$

where

RESVALUE_{ij} = the assessed value of property in a county, grossed up by the 0.4 statutory assessment ratio, to approximate FMV;
ETR_{ij} = the effective property tax rate for each county, calculated as total local property taxes paid/(assessed value of property/0.4);
ECrnk_{ij} = annual ranking of the strength of the economy in a county;
EDrnk_{ij} = annual ranking of education in a county;
HCrnk_{ij} = annual ranking of the health of a county;
PSrnk_{ij} = annual ranking of the public safety of a county;
SALESTX_{ij} = sales tax rate for each county;
lATL_j = log of the number of miles from the county seat to the Atlanta airport;
lPOP_{ij} = log of the population of each county;
RURAL_j = 1 if a county is classified as rural and 0 if the county is classified as urban or suburban;
AGE65_{ij} = percentage of the population 65 or older;
AGE018_{ij} = percentage of the population age birth to age 18;
INDDIST_j = 1 for the following counties: Fulton, Haralson, Gwinnett, Gordon, Carroll, Bartow, Walker, Jackson, Whitfield, Dekalb, Laurens, Hall, Cobb, Mitchell, Floyd, Walton, Thomas, Chattooga, Toombs, and Lowndes; and 0 otherwise;
CPI_i = annual average consumer price index;
BUSVALUE_{ij} = the per capita assessed value of commercial property in a county, calculated as the value of business property/population in the county;
REGION_j = a dummy variable for each region, 1 to 11.
The subscript i represents a year, while the subscript j represents a county.

Dependent Variable: RESVALUE

The dependent variable RESVALUE, or property value, is measured using gross digest assessed value, grossed up by the 0.4 statutory assessment ratio to approximate a FMV, similar to Wassmer (1993). The log transformation

is the most widely used functional form in the incidence literature (Atkinson & Crocker, 1992). There are trade-offs between using either actual home sale transaction data or assessed value to measure market value, the ultimate variable of interest. Both proxy for an unobservable market value and have been used in prior research (Sirmans, Diskin, & Friday, 1995). A weakness of sale price data is that in some jurisdictions there could be relatively few sale transactions or the sales that occur are not representative of the overall market.

For practical data collection, the sale price approach necessitates a restricted geographical area in order to produce a data set with home-specific details like square footage, age, etc. while still being able to assume "all else equal." Data availability and access are also issues since there is no electronic database containing all sale transactions. A benefit of using assessed value is that all property is included in the measure and tax exemptions are taken into consideration. On the other hand, valuation assessment is difficult and can result in non-uniformity in property tax administration (Cornia & Slade, 2006).

Effective Tax Rate: ETR

ETR, or the effective tax rate, is the most popular and theoretically appropriate measure (Sirmans et al., 2008) of tax rate, and is based on the amount of taxes paid.[13] Other studies have measured taxes as total taxes paid or the nominal tax rate. A true measure of ETR is tax paid divided by property value. Consistent with Wassmer (1993), our tax measurement is total taxes paid (which incorporates property tax exemptions) divided by assessed property grossed up to FMV, where the gross assessed amount is before property tax exemptions.

QOL Variables

There are four QOL variables in the model: ECrnk, EDrnk, HCrnk, and PSrnk. Each comprises multiple indicator variables that we rank individually; the sum of those rankings forms an overall composite score on each of the four measures, economy, education, health and public safety, of each county. Using the composite scores, we rank the counties again to determine the overall ranking on each of the QOL variables.[14] For the QOL variables, the county with the worst measurement is ranked 1 and the best is ranked 159. If two counties have the same value, they both receive the higher, or better, ranking; and the next-highest county is ranked two numbers below. Ranking the best county highest rather than No. 1 improves interpretability of regression results. We expect a positive association

between each of the four QOL variables and housing values. In addition, we ran a regression that included each of the individual variables that make up the four factors and footnote those results in the section that includes the multivariate results.

The indicators for the economy variable, ECrnk, include income per capita, annual unemployment rate, poverty rate, and average weekly wage.[15] All four of these indicators measure the health of a county's economy. As income per capita and average weekly wage increase, so does the county's QOL ranking. Thus, the county with the highest value on each of these two indicators is ranked best, or 159. However, lower values of annual unemployment rate and poverty rate are expected to increase a county's economic QOL ranking. Therefore, the county with the lowest value on each of these two indicators is ranked best, or 159.

The indicators for the education variable, EDrnk, include percentage of the population lacking basic literacy skills, high school dropout rate, teacher-student ratio, education funding per student, and percentage of the population with a bachelor's degree or higher. Education is by far the largest county expenditure and target for property tax dollars. Because higher values of teacher-student ratio, education funding per student, and percentage of the population with a bachelor's degree or higher are generally acknowledged to improve a county's education environment, the county with the highest value on each of these variables is ranked best, or 159. Alternatively, lower levels of percentage of the population lacking basic literacy skills and high school dropout rates improve the education environment of a county. Therefore, the county with the lowest level of each of these is ranked best, or 159.

The indicator variables for the health factor, HCrnk, include life expectancy, infant mortality rate, percentage of uninsured population, low birth weight (total rate per 100 live births), and percentage of obese adults. Two indicators, life expectancy and percentage of obese adults, are not collected on an annual basis because of data availability at the county level. We use the 2006 county-level value of life expectancy and the 2007 county-level value of percentage of obese adults for each year of the study for each county. The county ranking highest on life expectancy is ranked best, or 159, whereas counties with the lowest infant mortality rates, percentage of uninsured population, low birth weights, and percentage obese adults are ranked best, or 159.

The indicators for the public safety variable, PSrnk, include violent crimes reported per capita (we collect murder, rape, robbery, and aggravated assaults); property crimes reported per capita (burglary, larceny, and

motor vehicle thefts); juvenile arrests per capita; and adult arrests per capita. Public safety is the second-highest expenditure of property tax collections, including expenditures for police, county jails, and courthouses. The county with the lowest ranking on each of these four factors is ranked the best, or 159.

Control Variables

We include a sales tax rate variable, SALESTX, for each county as a control variable. Sales taxes are of interest to this study because they generate tax revenues that could affect the county's property tax environment. Prior research often finds that taxes suppress growth and economic development, which could affect housing values.[16] Jung (2001) shows that for the period 1984−1997, Georgia counties that added a local option sales tax experienced property tax relief. Thus, a predicted relation is not clear; if property taxes and sales taxes are substitutes, a negative relation is expected between SALETX and ETR. However, if a jurisdiction tends toward a high or low overall tax environment, a positive relation could result.[17]

This study also includes a number of variables to control for factors other than taxes that might be associated with the county housing values. Prior property tax research has employed the control variables we use. Some variables are included to capture basic demographics, while others are intended to capture the greater service needs and related expenditures of certain segments of the population. Consistent with Dye, McGuire, and Merriman (2001), we include lATL, the log of the number of miles from the county seat to the Atlanta airport, to control for the distance to the central business district. This variable is measured using MapQuest. We expect house values to be higher the closer a county is to Atlanta.

Two variables − lPOP, the log of the population of each county, and RURAL, coded 1 if the county is classified as rural or 0 if classified as urban or suburban − control for the effect of the size and dispersion of population on housing values.[18] The denser population and greater scarcity of land in urban or suburban areas could create a more inelastic housing supply and result in a greater capitalization of taxes and services into housing prices in urban/suburban areas. Alternatively, if new or changing housing options do not exist or if rural areas are landlocked due to large land ownership by residents this could produce a more inelastic housing supply in rural areas resulting in a greater capitalization of taxes and services. We do not predict directions for lPOP and RURAL.

We include AGE65, the percentage of the population age 65 or older, and AGE018, the percentage of the population age birth to age 18, to

control for possible differences in housing needs, locations, and public services and benefits that a county might emphasize if one age group or the other is highly represented. Georgia's school district structure consists of 159 county-based school districts and 22 municipal or "independent" school districts. We include a control variable, INDDIST that equals 1 if a county has one or more independent school districts within its borders. We also include the CPI and region (REGION)[19] dummy variables to control for any cost-of-living or geography-related systematic effects on residential property values.[20] Finally, we include BUSVALUE, the per capita assessed value of commercial property in a county, to control for the effects of business development on property valuation. Again, Table 1 lists the variables and their descriptions and data sources.

RESULTS

Descriptive Statistics

Table 3 provides descriptive statistics for each variable in our model. Mean logged residential property values, RESVALUE, are 20.22 and range from 16.63 to 25.07. The mean ETR for residential property is 0.011. The range for this measure is 0.003−0.02, indicating variance among the counties. The four QOL variables are the sums of the county rankings from 1 to 159, so the descriptive statistics are very similar. The slight variations are due to ties that occur in the rankings. If two counties have the same value, they both receive the higher, or better, ranking; the next-highest county is ranked two numbers below.

County sales tax rates vary little. The minimum county tax is 1.00% and the maximum is 3.00%, with an average of 2.82% and a median of 3.00%. The age variables have considerable variation as well. The percentage of the population age 65 or older, AGE65, ranges from 1.45% to 28.88%, with a mean of 12.26%. The variable AGE018, the percentage of the county population age birth up to 18, ranges from 15.87% to 38.29%, with a mean of 25.79%. The variable CPI ranges from 162.00 to 208.68, with a mean of 184.78. The per capita assessed value of commercial property in a county, BUSVALUE, varies from 300.38 to 21,738.48, with a mean of 3,721.

In Table 4 we report the Pearson correlation coefficients for all the variables in our model. The dependent variable, RESVALUE, has a statistically significant negative correlation with ETR and one of the QOL

Table 3. Descriptive Statistics.

Variable	*n*	Mean	Median	Std. Dev.	Minimum	Maximum
RESVALUE	1,749	20.22	20.14	1.57	16.63	25.07
ETR	1,749	0.011	0.011	0.002	0.003	0.02
ECrnk	1,749	80.16	80.00	45.90	1.00	159.00
EDrnk	1,749	80.17	80.00	45.90	1.00	159.00
HCrnk	1,749	80.22	80.00	45.92	1.00	159.00
PSrnk	1,749	80.22	81.00	45.91	1.00	159.00
SALESTX	1,749	2.82	3.00	0.41	1.00	3.00
lATL	1,749	4.71	4.82	0.66	2.20	5.78
lPOP	1,749	10.11	9.99	1.15	7.50	13.85
RURAL	1,749	0.44	0.00	0.50	0.00	1.00
AGE65	1,749	12.26	12.36	3.37	1.45	28.88
AGE018	1,749	25.79	26.06	2.67	15.87	38.29
INDDIST	1,749	0.11	0.00	0.32	0.00	1.00
CPI	1,749	184.78	181.80	15.58	162.00	208.68
BUSVALUE	1,749	3721	3173.24	2553.18	300.38	21738.48

Note: See Table 1 for variable descriptions.

variables, HCrnk (health). The variables ECrnk (economy), EDrnk (education), and PSrnk (public safety) have a significantly positive correlation with RESVALUE. lPOP also correlates positively and significantly with RESVALUE, while RURAL has a significantly negative relation with RESVALUE, leading to an initial conclusion that more populated and less rural counties have higher gross housing values. Our correlation results indicate that relatively high proportions of older (AGE65) residents tend to live in counties with lower gross housing values, while higher proportions of younger residents (AGE018) live in counties with higher gross housing values. RESVALUE is significantly correlated with all of the control variables in our model.

Multivariate Results

We present the results of our model in Table 5. Our variables of interest – ETR and three of the QOL variables, ECrnk, EDrnk, and PSrnk – have the predicted relationships with RESVALUE, the FMV of housing in a

Table 4. Correlation Coefficients.

Variable	1. RESVALUE	2. ETR	3. ECrnk	4. EDrnk	5. HCrnk	6. PSrnk	7. SALESTX
1. RESVALUE	**1.00000**						
2. ETR	**−0.38299**	**1.00000**					
3. ECrnk	**0.75925**	**−0.40180**	**1.00000**				
4. EDrnk	**0.52413**	**−0.29301**	**0.57451**	**1.00000**			
5. HCrnk	**−0.16100**	**−0.18260**	**0.09988**	**0.18211**	**1.00000**		
6. PSrnk	**0.46030**	0.03206	**0.21099**	**−0.08505**	**0.45056**	**1.00000**	
7. SALESTX	**−0.05500**	−0.04265	**−0.06245**	**−0.13033**	0.02480	0.02690	**1.00000**
8. lATL	**−0.56420**	**0.10538**	**−0.52851**	**−0.35363**	−0.02139	**0.11248**	**0.05788**
9. lPOP	**0.93419**	**−0.26412**	**0.66383**	**0.42648**	**−0.30968**	**−0.55169**	**−0.11962**
10. RURAL	**−0.47605**	**0.09654**	**−0.41054**	**−0.19730**	**0.15368**	**0.32651**	**0.10713**
11. AGE65	**−0.33448**	**−0.07761**	**−0.33076**	**−0.08917**	**0.17813**	**0.18970**	**0.11343**
12. AGE018	**0.09199**	**0.10725**	**0.09817**	**−0.12946**	**−0.19404**	**−0.21688**	**−0.12143**
13. INDDIST	**0.38347**	**−0.05362**	**0.26304**	**0.16402**	**−0.19635**	**−0.25408**	**−0.06783**
14. CPI	**0.17203**	**0.06698**	0.00067	−0.00025	0.00024	0.00097	**0.26922**
15. BUSVALUE	**0.76025**	**−0.20226**	**0.48925**	**0.43738**	**−0.18938**	**−0.43320**	**−0.09272**

Variable	8. lATL	9. lPOP	10. RURAL	11. AGE65	12. AGE018	13. INDDIST	14. CPI	15. BUSVALUE
8. lATL	**1.00000**							
9. lPOP	**−0.52826**	**1.00000**						
10. RURAL	**0.21592**	**−0.51624**	**1.00000**					
11. AGE65	**0.26654**	**−0.48869**	**0.49438**	**1.00000**				
12. AGE018	0.00717	**0.23344**	**−0.32666**	**−0.58187**	**1.00000**			
13. INDDIST	**−0.27088**	**0.44312**	**−0.23690**	**−0.15535**	**0.06146**	**1.00000**		
14. CPI	0.0000	0.03565	0.0000	**0.09263**	**−0.18939**	0.0000	**1.00000**	
15. BUSVALUE	**−0.44027**	**0.72374**	**−0.24995**	**−0.15152**	−0.02369	**0.35549**	**0.21130**	**1.00000**

Note: See Table 1 for variable descriptions. Bolded numbers are significant at the 0.05 level.

Table 5. Regression Results from Model 1.

$$\begin{aligned}\text{RESVALUE}_{ij} = {} & B_0 + B_1\text{ETR}_{ij} + B_2\text{ECrnk}_{ij} + B_3\text{EDrnk}_{ij} + B_4\text{HCrnk}_{ij} + B_5\text{PSrnk}_{ij} \\ & + B_6\text{SALESTX}_{ij} + B_7\text{lATL}_j + B_8\text{lPOP}_{ij} + B_9\text{RURAL}_j + B_{10}\text{AGE65}_{ij} \\ & + B_{11}\text{AGE018}_{ij} + B_{12}\text{INDDIST}_j + B_{13}\text{CPI}_i + B_{14}\text{BUSVALUE}_{ij} \\ & + \sum_{j=r1}^{r11} B_j\text{REGION}_j + e_{ij}\end{aligned}$$

Variable	Parameter Estimate	Std. Error	t-Statistics	*p*-Value
INTERCEPT	7.929	0.313	25.28	< 0.0001
ETR	−49.720	3.781	−13.15	< 0.0001
ECrnk	0.004	0.000	15.33	< 0.0001
EDrnk	0.0005	0.000	2.26	0.0240
HCrnk	0.0003	0.000	1.30	0.1946
PSrnk	0.0007	0.000	3.44	0.0006
SALESTX	0.0275	0.0194	1.42	0.1547
lATL	−0.1742	0.032	−5.47	< 0.0001
lPOP	1.053	0.016	65.94	< 0.0001
RURAL	−0.121	0.019	−6.31	< 0.0001
AGE65	0.056	0.003	16.34	< 0.0001
AGE018	−0.003	0.004	−0.91	0.3631
INDDIST	−0.093	0.026	−3.52	0.0004
CPI	0.012	0.000	24.40	< 0.0001
BUSVALUE	0.00003	0.000	6.54	< 0.0001
REGION DUMMIES	INCLUDED	INCLUDED	INCLUDED	INCLUDED

Adj. $R^2 = 0.9645$.
Model F-Statistics = 1901.78 (p-value < 0.0001).
Note: See Table 1 for variable descriptions.

county. ETR has a strong negative association with RESVALUE (p-value < 0.0001). Thus, higher effective property tax rates are associated with lower housing values, indicating that property taxes are capitalized into the price of housing in Georgia counties. (We estimate the rate of capitalization in the next section.) Three of the four QOL variables have a statistically significant and positive relation with housing values, ECrnk (p-value < 0.0001), EDrnk (p-value = 0.0240), and PSrnk (p-value = 0.0006), while the remaining QOL variable HCrnk is positive but not significant (p-value = 0.1946).

Therefore, higher county rankings on QOL factors are generally associated with higher gross county housing values.[21] This result is consistent with QOL public services and benefits capitalized into the price of homes.[22]

We do not find a significant relation between county sales tax rates and housing values in Georgia counties. This could be because the sales tax rates have little variation. They range from 1.00% to 3.00%, with a mean of 2.82% and a median of 3.00%, indicating that more than half of the counties have sales tax rates of 3.00%.

The remaining control variables help us better understand the relationship between county demographic variables and gross county housing values. As expected, lATL, the log of the number of miles from the county seat to the Atlanta airport, is negative and significant (p-value < 0.0001). This result suggests that counties farther away from Atlanta have lower housing values. The log of population, lPOP, is positive and highly significant (p-value < 0.0001). Hence, housing prices are higher in more heavily populated counties. The variable RURAL, coded 1 if the county is classified as rural or 0 if classified as urban or suburban, is negative and significant (p-value < 0.0001), indicating that rural counties have lower housing prices.

We include our next two variables, AGE65, the percentage of the county population age 65 or over, and AGE018, the percentage of the county population age birth to 18, in the model to control for possible differences in housing needs, locations, and public services and benefits that might be emphasized in a county if one age group or the other is highly represented. AGE65 is positive and significant (p-value < 0.0001), while AGE018 is negative but not significant (p-value $= 0.3631$). The Pearson correlation coefficient between AGE65 and RESVALUE is negative and significant, but after controlling for the economy of a county, healthcare, and other variables, we find that a larger proportion of residents aged 65 or older is associated with higher housing values. INDDIST has a significantly negative coefficient (p-value $= 0.0004$), suggesting that gross housing values are lower in counties with independent school districts. CPI has a significantly positive coefficient (p-value < 0.0001), thus confirming a positive relation between inflation and housing prices. We also include the variable BUSVALUE to control for business property values in a county. Its coefficient is positive and significant ($p < 0.0001$), indicating that housing values are higher in counties with higher values of business property. Lastly, we include region dummy variables to control for any location effects. There were several significant regions. We also ran our model deleting both Fulton and DeKalb counties to make sure that Atlanta is not driving the

results. All variables were in the same direction and significant at the same levels. In another sensitivity test, we tested a composite QOL ranking. We averaged each county's rankings on the four QOL areas to come up with one composite score for each county. The composite QOL variable is positive and highly significant (p-value < 0.0001). All other variables remain in the same direction and significant at the same levels as those in the original model.

Incidence of Tax: The Rate of Capitalization

Prior research on residential property tax capitalization and incidence tests the relation between property values and property taxes, and if there is a statistically negative relation, the extent of capitalization (i.e., the portion of the tax borne by property owners) can be estimated. Measuring tax capitalization depends on assumptions about discount rates and time horizon, and can have large effects on interpreting capitalization results (Guilfoyle & Rutherford, 2000; Sirmans et al., 2008). In addition, some studies calculate a point estimate, and some test a hypothesis that there is not full capitalization. Sirmans et al. (2008) review 28 studies and find varying results, from no capitalization to overcapitalization.

We follow Man's (1995) point estimate calculations to determine a rate of capitalization and find rates that range from 101% to 147%, depending on assumptions.[23] These results suggest that past results for capitalization rates could be underestimated because of measurement error in public service variables and the spurious correlations that are due to positive collinearity between tax rates and public service input measures (Palmon & Smith, 1998).

One reason for overcapitalization could be that property owners have expectations of additional assessments and/or increases in their nominal property tax rates. Thus, expected nominal tax rate increases may also be capitalized and indicate overcapitalization of the existing rate. It also could be a function of different expectations, meaning that homeowners with over-assessed property anticipate no future decreases or owners with under-assessed property anticipate future increases (Sirmans et al., 2008), and both will overcapitalize.

Finally, we determine the elasticity of housing prices with respect to the ETR by multiplying the coefficient on the effective property tax rate variable (ETR) by its mean value (Man, 1995). This calculation produces a

housing price elasticity of −0.547, which means that a 1.0% increase in the effective property tax rate reduces county housing values by 0.547%.

Marginal Benefits of QOL Factors

Prior tax capitalization research has not fully examined the marginal benefits of public services. While our regression results indicate that a better economic environment and more favorable rankings on education, public safety, and health are associated with higher housing values, we also examine each factor's marginal effects. We use t-tests of standardized coefficients to determine which QOL factors have the greatest impact on housing values.

As expected, on a statewide basis, the economy (ECrnk) has the greatest influence. However, none of the other three factors (education, health, and public safety) has a significant marginal benefit over the others. Next we divide the state into the 12 regions indicated by our REGION variable and find that the marginal effects of QOL factors differ significantly by region. While in most regions, the economy variable affects housing prices more than the other factors, education is a close second. In four regions, the economy (ECrnk) has a significant marginal benefit over education (EDrnk) in predicting housing values, while in three regions, education is a significantly better indicator of housing values. In the other five regions, neither the economy nor the education has a significant marginal benefit over the other in predicting housing values. Finally, both the health (HCrnk) and the public safety (PSrnk) factors have a greater influence on housing values than the economy factor in only one region each.

CONCLUSION

This study investigates the relation between residential property values and local property taxes and public services, both of which influence homeowner decisions about where to live and both of which are reflected in residential property values. Property tax capitalization theory predicts that property values will be negatively related to a taxing jurisdiction's property taxes and positively related to its public services. Our paper is a first step in broadly defining and quantifying public services and their marginal effects on housing values by modeling local public services using primarily output

measures in four areas – economy, education, health, and public safety – that are intended to capture broad QOL aspects of local jurisdictions.

We find a strong negative relation between county ETRs and residential property values. This result is consistent with some portion of the residential property taxes being borne by owners and capitalized into the price of the property. We also examine QOL rankings in all four areas and find that there is a significant positive association between three QOL measures and residential property values in Georgia counties. Thus, we find that QOL measures are capitalized into property values, and that property values are partially determined by a county's QOL and socioeconomic factors.

Because a significant negative relation exists between ETRs and housing values, we calculate the incidence of the property tax or level of capitalization, and find that Georgia property taxes are capitalized into housing prices at a rate greater than 100%, based on our OLS results. Therefore, property taxes in our sample are fully borne by owners of property, and market participants rationally discount properties subject to higher taxes. Accordingly, only unexpected tax changes can be passed on to new homebuyers while current owners are absorbing some portion of expected tax changes. Our finding of overcapitalization suggests that concerns of underestimation of tax capitalization in prior research, which primarily finds partial capitalization, could be due to measurement error in public service variables and spurious correlations between tax rates and public service input measures. Overall, our results should encourage researchers in the property tax incidence area to fully consider public service benefits in their tax capitalization models. In addition, local government officials can also benefit from our evidence. Our findings have implications for the competitive environment that local policymakers face in attracting residents through wise tax and spending decisions on local public services.

NOTES

1. The Oates model was criticized for being biased in that an increase in home value, because of increased public service, must be exactly offset by the increased tax cost. Oates (1973) corrects for the earlier model deficiencies and finds full capitalization of taxes.

2. The review includes 2 business property studies and 26 residential property studies.

3. See Easterly (1999); Kahn (2002); Becker, Philipson, and Soares (2003); Mattey, Wascher, and Gabriel (2003); Shapiro (2005); Veenhoven and Hagerty

(2006); Easterlin and Angelescu (2007); Nyman et al. (2007); Albouy (2008); Granger and Gregory (2008); and Rappaport (2009).

4. We recognize that QOL could be and has been measured in many ways. While most measures have significant similarities, arguments could be made for other measures of QOL. We attempt to identify measures that cover a broad range of factors that affect the lives of county residents and their property values, and that local government officials could influence. The Vocino study's variables are a more comprehensive and better measure of overall QOL for the purposes of this study than other prior research. An example of a study that we do not follow for our QOL variable construction is Alzate (2005), who examined single mothers on welfare in Georgia. We considered the focus of her study too narrow for our property tax capitalization model. It contains fewer factors and indicators; and a larger percentage of the factors measure low income and poverty within a county.

5. A tax rate of 1 mill represents a tax liability of one dollar per $1,000 of assessed value. For example, a house with a market value of $100,000 has an assessed value of $40,000. In a county where the millage rate is 25 mills, the property tax on that house would be $1,000 (i.e., $25 for every $1,000 of assessed value, or $25 multiplied by 40).

6. Alm et al. (2011) do not identify any other changes, but Senate Bill 55, passed in 2009, added foreclosure and distressed sales in the section of the Official Code of Georgia that lists criteria to be used in determining FMV. Dana Eaton, chief appraiser for Troup County, said this change primarily affected residential property. She did not identify any other important appraisal law changes during the period 1999–2009. Alm et al. (2011) address the fiscal positions of local governments, given that the recession had major effects on federal and state governments. They conclude that while there is state variation, local governments on average have not experienced similar large, negative budgetary effects. Their analyses include the national level (19 states) and Georgia as a case study, with the aim to explain factors that affect local source school revenues. Like the current study, their case study is feasible due to the rich set of data available for Georgia local property taxes.

7. The tax digest value is the dollar value of all assessments of real and tangible personal property subject to taxation.

8. This rule established the procedures for the computation of a rollback millage rate by levying and recommending authorities as a result of increases in the value of existing real property value due to inflation and the requirements of advertising notices of public hearings, press releases, and the authority's intent to increase property taxes when the proposed millage rate exceeds the computed rollback rate (Georgia Department of Revenue, Local Government Services Division).

9. Sources: U.S. Census Bureau for population (2010 data) and netstate.com for square miles.

10. All figures in this paragraph come from Georgia Department of Revenue Property Tax Administration Annual Report FY2010.

11. Current year data from *The Georgia County Guide* can be purchased at https://estore.uga.edu/C27063_ustores/web/product_detail.jsp?PRODUCTID=4858&SINGLESTORE=true. Interested parties can obtain prior years' data free of charge using this same web address.

12. We also examine the data using two-stage least squares regression. Out of all of the many variables we tried, millage rate is the best single instrument for the ETR variable, producing results that were close to the OLS results. The weak instruments test had an F-value considerably higher than 10 in several first-stage models, suggesting that the instrument(s) were not jointly weak. However, the Hausman test is insignificant in all specifications, indicating that 2SLS is not preferred to OLS for our data. Therefore, we report only OLS regressions.

13. Sirmans et al. (2008) define the effective tax rate as the nominal rate times the assessment ratio; however, this measure does not reflect property tax exemptions and so is not truly the effective rate. Also, with the assessed value macro data we use, we do not know the nominal rates within a county that apply to subsets of property. Sirmans et al. (2008) also state that total taxes paid have also been used to measure taxes, which Reinhard (1981) argues is the determinant of property values.

14. For example, on the Education QOL factor for 1999, out of 159 counties, Appling County ranked 92nd on percentage of the population lacking basic literacy skills, 66th on high school dropout rate, 35th on teacher–student ratio, 10th best on education funding per student, and 136th best on percentage of the population with a bachelor's degree or higher. The numbers sum to 339, which, compared to other counties' sums for the year, resulted in the 49th best education rank for Georgia counties for the year.

15. The results of our models are unchanged as we delete average weekly wage from ECrnk due to its high correlation with per capita income.

16. For example, Wasylenko and McGuire (1985), Klassen and Shackelford (1998), Lightner (1999), Goolsbee and Maydew (2000), Edmiston (2002), and Gupta and Hofmann (2003).

17. In Georgia, local governments are constrained in sales tax options by state law, and local voters must approve a sales tax increase. In some states, local governments choose sales tax rates, but property tax rate increases require voter approval, and the direction of causality would be the opposite.

18. Rural/urban classifications from "The Five Georgias," College of Family and Consumer Sciences, University of Georgia.

19. Because of the state's diverse landscape, the Georgia Association of Regional Commissions determined that Georgia consists of 12 distinct regions. We divided all 159 counties into these 12 distinct regions. Each region includes between 9 and 18 counties that are nearby and similar.

20. We are unable to include county dummy variables in our model. After running several tests, we determined that each of the four variables (lATL, DENS, RURAL, and INDDIST) separately and in combination are 100% explained by the county dummies, resulting in an R square equal to 1. Therefore, both the control variables and county dummies cannot be included in the model. We opted to keep the control variables and include a region dummy variable.

21. The results are qualitatively unchanged if we use county housing value per capita as a dependent variable instead of gross housing values.

22. We also ran a regression including all QOL variables in the model individually rather than by QOL factor. The results are very similar to the regression including the QOL factors. The variables that comprise ECrnk and EDrnk are all highly

significant at the <0.0001 level. Each of the variables that make up the PSrnk and HCrnk variables are highly significantly associated with housing values (RESVALUE) in a simple Pearson Correlation Coefficient analysis but some are not significant in a regression that includes the other variables. All healthcare variables (HCrnk) except infant mortality are significant while juvenile and adult arrests are the only public safety variables (PSrnk) that are significant. Property and violent crimes are not significant when included in a regression with the other public safety and income variables. Overall, the factors appear to be measuring the impact of the economy, education, public safety, and healthcare of the county on housing values.

23. Man (1995) uses a 5% discount rate and a 40-year period for the expected life of the building. She bases her discount rate on an average Treasury bill interest rate of 8% during her study. The average Treasury bill rate during our sample time period was 4.56%. We tested interest rates from 2% to 6% and time periods from 30 to 50 years for the life of the building, and the result was full capitalization to overcapitalization of property taxes in all instances.

REFERENCES

Albouy, D. (2008). *Big cities bad places to live? Estimating quality of life across metropolitan areas*. Working Paper Series: Vol. w14472. NBER.

Alm, J., Buschman, R. D., & Sjoquist, D. L. (2011). Rethinking local government reliance on the property tax. *Regional Science and Urban Economics*, *41*, 320–331.

Alzate, M. M. (2005). *The quality of life of single mothers on welfare in Georgia and the 1996 welfare reform*. Public Policy Research Series. Athens, GA: The Carl Vinson Institute of Government, University of Georgia.

Atkinson, S. E., & Crocker, T. D. (1992). The exchangeability of hedonic property price studies. *Journal of Regional Science*, *32*, 169–183.

Becker, G. S., Philipson, T. J., & Soares, R. R. (2003). *The quantity and quality of life and the evolution of world inequality*. Working Paper Series: Vol. w9765. NBER.

Cornia, G. C., & Slade, B. A. (2006). Horizontal inequity in the property taxation of apartment, industrial office, and retail properties. *National Tax Journal*, *59*(1), 33–55.

Dye, R. F., McGuire, T. J., & Merriman, D. F. (2001). The impact of property taxes and property tax classification on business activity in the Chicago metropolitan area. *Journal of Regional Science*, *41*(4), 757–778.

Easterlin, R. A., & Angelescu, L. (2007). *Modern economic growth and quality of life: Cross sectional and time series evidence*. Working Paper No. 07,4. IEPR.

Easterly, W. (1999). *Life during growth: International evidence on quality of life and per capita income*. Policy Research Working Paper No. 2110. World Bank.

Edmiston, K. D. (2002). Strategic apportionment of the state corporate income tax. *National Tax Journal*, *55*(2), 239–262.

Fischel, W., Oates, W., & Youngman, J. (2011). *Are local property taxes regressive, progressive or what?* Unpublished manuscript. Can you add date of version you consulted? University of Maryland, College Park, MD.

Goolsbee, A., & Maydew, E. L. (2000). Coveting thy neighbor's manufacturing: The dilemma of state income apportionment. *Journal of Public Economics*, *75*, 125–143.

Granger, M., & Price, G. (2008, July 1). *Is Mississippi really the worst state to live in? A spatial equilibrium approach to ranking quality of life*. doi:10.2139/ssrn.1154261. Available at SSRN: https://ssrn.com/abstract=1154261

Guilfoyle, J. P., & Rutherford, R. C. (2000). The effect of property taxes on home values. *Journal of Real Estate Literature*, *8*(2), 109–127.

Gupta, S., & Hofmann, M. A. (2003). The effect of state income tax apportionment and tax incentives on new capital expenditures. *Journal of the American Taxation Association*, *25*(Suppl.), 1–25.

Hamilton, B. W. (1976). Capitalization of intrajurisdictional differences in local tax prices. *American Economic Review*, *66*(5), 743–753.

Jung, C. (2001). Does the local-option sales tax provide property tax relief? The Georgia case study. *Public Budgeting and Finance*, *21*(1), 73–86.

Kahn, M. E. (2002). City quality of life dynamics: Measuring the costs of growth. *The Journal of Real Estate Finance and Economics*, *22*(2–3), 339–352.

Klassen, K., & Shackelford, D. (1998). State and provincial corporate tax planning: Income shifting and sales apportionment factor management. *Journal of Accounting and Economics*, *25*(3), 385–406.

Lewis, C. W., & McNutt, P. J. (1979). The incidence of property taxes on single family housing. *American Real Estate and Urban Economics Association Journal*, *7*(3), 344–361.

Lightner, T. (1999). The effect of the formulary apportionment system on state-level economic development and multijurisdictional tax planning. *Journal of the American Taxation Association*, *21*, 42–57.

Lutz, B., Molloy, R., & Shan, H. (2011). The housing crisis and state and local government tax revenue: five channels. *Regional Science and Urban Economics*, *41*(4), 305–414.

Man, J. Y. (1995). The incidence of differential commercial property taxes: Empirical evidence. *National Tax Journal*, *48*(4), 479–496.

Mattey, J., Wascher, W., & Gabriel, S. A. (2003). Compensating differentials and evolution in the quality-of-life among U.S. states. *Regional Science and Urban Economics*, *33*(5), 619–649.

McDougall, G. S. (1976). Local public goods and residential property values: Some insights and extensions. *National Tax Journal*, *29*, 436–447.

Nyman, J. A., Barleen, N. A., Dowd, B. E., Russell, D. W., Coons, S. J., & Sullivan, P. W. (2007). Quality-of-life weights for the U.S. population: Self-reported health status and priority health conditions, by demographic characteristics. *Medical Care*, *45*(7), 618–628.

Oates, W. E. (1969). The effects of property taxes and local public spending on property values: An empirical study of tax capitalization and the Tiebout hypothesis. *Journal of Political Economy*, *77*(6), 957–971.

Oates, W. E. (1973). The effects of property taxes and local public spending on property values: A reply and yet further results. *Journal of Political Economy*, *81*(4), 1004–1008.

Palmon, O., & Smith, B. (1998). New evidence on property tax capitalization. *The Journal of Political Economy*, *106*(5), 1099–1111.

Rappaport, J. M. (2009). The increasing importance of quality of life. *Journal of Economic Geography*, *9*(6), 779–804.

Reinhard, R. M. (1981). Estimating property tax capitalization: A further comment. *Journal of Political Economy*, *89*, 1251–1260.

Rosen, H. S., & Fullerton, D. J. (1977). A note on local tax rates, public benefit levels, and property values. *Journal of Political Economy*, *85*, 433–440.

Rosen, H. S., & Fullerton, D. J. (1997). A note on local tax rates, public benefit levels, and property values. In *The fiscal behavior of state and local governments: Selected papers of Harvey S. Rosen*. Cheltenham: Edward Elgar (first published in 1977).

Ross, S., & Yinger, J. (1999). Sorting and voting: A review of the literature on urban public finance. In *Handbook of regional and urban economics* (Chapter 47, 1st ed., Vol. 3, pp. 2001–2060). Amsterdam: Elsevier.

Shapiro, J. M. (2005). *Smart cities: Quality of life, productivity, and the growth effects of human capital*. NBER Working Paper Series Vol. w11615.

Sirmans, G. S., Diskin, B. A., & Friday, H. S. (1995). Vertical inequity in the taxation of real estate. *National Tax Journal*, *48*(1), 71–84.

Sirmans, G. S., Gatzlaff, D. H., & Macpherson, D. A. (2008). The history of property tax capitalization in real estate. *Journal of Real Estate Literature*, *16*(3), 327–343.

Tiebout, C. M. (1956). A pure theory of local expenditures. *The Journal of Political Economy*, *64*(5), 416–424.

Veenhoven, R., & Hagerty, M. R. (2006). Rising happiness in nations 1946–2004: A reply to Easterlin. *Social Indicators Research*, *79*(3), 421–436.

Vocino, T. (2011). *Counties in crisis, assessing the quality of life in Alabama*. Montgomery, AL: Center for Leadership and Public Policy, Alabama State University.

Wassmer, R. W. (1993). Property taxation, property base, and property value: An empirical test of the new view. *National Tax Journal*, *46*(2), 135–159.

Wasylenko, M., & McGuire, T. (1985). Jobs and taxes: The effect of taxes on states' employment growth rates. *National Tax Journal*, *38*, 497–514.

Zodrow, G. R. (2001). The property tax as a capital tax: A room with three views. *National Tax Journal*, *54*(1), 139–156.

MEASURING AND CHARACTERIZING THE DOMESTIC EFFECTIVE TAX RATE OF US CORPORATIONS

Yaron Lahav and Galla Salganik-Shoshan

ABSTRACT

Our study concentrates exclusively on the domestic effective tax rate (ETR), with the purpose of finding and characterizing their financial determinants. Using data on almost 5,000 US companies between fiscal years 2003 and 2010, we use regression analysis to find that the domestic ETR is affected by company size (as measured by sales), the extent to which the company is leveraged, level of fixed assets intensity, and the state of the economy. In addition, we find that domestic ETRs are also affected by the company's level of internationality, which counterintuitively implies that the greater the company's international activity, the less domestic taxes it pays for every dollar of US income. Both financial managers and policy makers can use our findings to reduce tax liabilities domestically, and to improve corporate tax regulations. While several attempts are made in the literature to compare ETRs of corporations

Advances in Taxation, Volume 23, 33–57

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023001

that reside in different geographic locations, this is the first to characterize ETR determinants.

Keywords: Effective tax rate; internationality; corporate taxation

JEL classifications: F23; H25; H71

INTRODUCTION

Interest in corporate tax rates has recently been growing, mostly because of concerns regarding government debt but also because of the strong impact tax rates have on resource allocation. As more corporations become multinational and shift at least some of their business overseas, the competition between nations to attract such multinationals to their territories is often based on each nation's tax rate and how that rate applies to foreign businesses. This competition, however, encumbers the decision process about tax policy.

Indeed, growth in the number of multinational corporations has led many countries to lower their corporate statutory tax rates (STRs) in an effort to attract foreign businesses. According to OECD data, the average rate of corporate tax decreased at merely 20% over the last three decades.[1] In contrast, other countries, including such significant economies as Brazil (with STR of 30%), France (with STR of 33%), Mexico (with STR of 29–30%), and India (with STR around 34–35%), have avoided lowering their tax rates,[2] apparently realizing potential adverse consequences that "tax competition" might have on their tax revenues. Some countries have even increased their rates of corporate taxes. For example, according to KPMG, over the last decade, countries like Chile or Egypt have increased their corporate tax at around 5% (from 17% to 22.5%, and from 20% to 25%, respectively).[3] Thus the question of how to determine the statutory corporate tax rate has become central to tax, public policy, and financial researchers and practitioners.

Debate in the United States about what corporate tax rate should be implemented is ongoing. On the one hand, corporations argue that the relatively high US tax rate reduces their competitive edge vis-à-vis corporations that reside in other countries. In fact, US STR is one of the highest in the world.[4] Researchers, on the other hand, argue that while the US STR is, in fact, one of the highest in the world, its effective tax rate (ETR, the ratio of

actual tax paid to pretax income) is relatively low (see, e.g., Avi-Yonah & Lahav, 2012; Markle & Shackelford, 2012a, 2012b). Moreover, recent study by Dyreng, Hanlon, Maydew, and Thornock (2014) reports that while the level of US STR remains relatively high, the level of US ETR tends to decrease. Dyreng et al. (2014) show that over the period between 1988 and 2012, US ETR declined at an average pace of 0.4 percentage points per year, which has accumulated to a decrease of nearly 10% over the estimation period. Each side to the debate typically uses publically available data on corporate tax, which is the data companies publish in their financial reports.[5] Firms in different countries, however, are required to follow different accounting standards systems. In their work from 2012, Markle and Shackelford (2012a) mention a few examples for differences in tax-based standards including implementation of worldwide versus territorial system, providing favorable taxation for intangibles, differences in the level of restrictions related to foreign corporations, differences in transfer pricing, earnings stripping, interest allocation, and other elements that determine tax level. Thus, differences in implemented accounting standards make the comparison conducted at the level of STR rather inaccurate, and even misleading. To accomplish an appropriate comparison, researchers should have comparable data that are published in both countries. Such data are the total ETR, which can be measured for virtually every company.

In this paper we raise the following question: can we infer any information about tax policy based on a comparison of the total ETRs of multinational enterprises (MNEs) that reside in different countries? Take, for instance, a US MNE whose overall revenue comprises a known portion generated in the United States and the remainder, which created abroad. Changing the US STR will only partially affect this company's ETR. Of course, the company's resource allocation is based on the STRs of all the jurisdictions in which it operates, and changes in STRs around the world evoke behavioral changes in the typical MNE. But perhaps for this reason a comparison of the tax burdens of, for example, US and EU MNEs based on their ETRs may not provide the desired results. Consider, for instance, two MNEs, one American and one European. In comparing the ETRs of two MNEs, a researcher finds that the European MNE is paying less than the US MNE. What can the researcher infer from this? That US tax rates are higher? This type of analysis should lead the researcher to the conclusion that the US MNE pays more taxes on each dollar of income than does the European MNE. But can this type of conclusion be used to claim that US policy makers should reduce domestic tax rates in order to advance US MNEs' competitiveness? Not necessarily. It is possible (at least partially)

that the US MNE faces a higher ETR because the US statutory rate is higher. But it could also be the case that these two MNEs do not operate in the same foreign countries, and if so, then the difference in the domestic STRs applied to the two MNEs is irrelevant.

To obtain a valid comparison of tax policies across national boundaries, we should first assess how countries tax their corporations domestically. As such, we will focus our research exclusively on the local ETRs. In this paper, our analysis is limited to US corporations only. The aims of this paper are first to calculate the domestic effective tax rate (DETR) applied to US corporations and then to investigate what determines this rate. For example, do large and small companies pay the same DETR? Does the company's financing policy (i.e., leverage) influence its DETR? Are companies charged different tax rates during recessions? And so on.

Important as this topic may be, the accuracy of any economic analysis is constrained by the quantity and quality of available data. Because records of the actual tax payments made by a company are not publically accessible, most researchers use approximations that are calculated based on financial statements. This means that the DETRs that we measure are book values rather than actual values. But even if book values are accepted as sufficient approximations, the question still remains as to whether consolidated values can be used to measure ETRs.[6] Most previous research focused on the determinants of total (or global) ETRs, but a study of DETRs will be more relevant to policy makers because the taxes paid by corporations domestically are affected by certain business and economic variables. This is, in fact, the purpose and focus of this research.

Before diving into the literature, we should note that in addition to the STR, the tax base is also an important determinant of ETR (and consequently DETR). While tax base is different around the world and subject to local tax regulations, we do not focus on this aspect in our paper, partly because we do not have empirical information. We should keep in mind, however, that measuring and using effective rather than statutory rates in our analysis captures both STR and tax base.

LITERATURE REVIEW

The literature on corporate tax is extensive. Our paper builds on much of it, especially that relevant to corporate tax, tax regulations, ETRs, and foreign direct investment (FDI). In a comprehensive review of corporate

tax, Graham (2003) emphasizes the effects of corporate taxes on corporation capital structure, international structure, organizational form, and restructuring. Graham's overall impression is that the existing research supports the hypotheses that corporations, especially those that face high tax rates, look for policies that provide tax benefits. But interest in the effects that ETRs have on firm policy can be traced back even further. In earlier work, Desai, Foley, and Hines (2001) show how differences in ETRs make companies unwilling to repatriate foreign profits. Djankov, Ganser, McLiesh, Ramalho, and Shleifer (2010) measure the effect of ETRs on macroeconomic variables. They show, for instance, that ETRs are negatively correlated with growth, or the portion of the investment that constitutes the GDP. Markle and Shackelford (2012a) use data on more than 11,000 companies to measure ETRs at the firm level. They show that ETRs fell during the past two decades and characterize the ETR levels based on geographical location. Markle and Shackelford (2012b) conduct an empirical study using data from almost 4,000 companies situated in 62 countries to discover what options corporations have to lower their ETR. They find that lower ETRs are associated with corporations that own intangibles, issue long-term debt, and establish subsidiaries in tax havens.

A wealth of research has focused on the effect of corporate tax rates on the tendency of corporations to shift their businesses abroad (also known as FDI). Most of these studies suggest that there is a negative connection between tax rates in host countries and levels of FDI inflows. For example, Hartman (1984) and Loree and Guisinger (1995) suggest that FDI in the United States is affected by US tax policy. Hubert and Pain (2002) show that tax competitiveness affects FDI. de Mooij and Ederveen (2003) review previous empirical results and use previously collected data to measure the tax rate elasticity, thereby showing the negative connection between a change in tax rate and FDI. Finally, Wijeweera, Dollery, and Clark (2007) conduct panel data analysis to show that the combination of foreign and US income tax rates affects the level of FDI inflows. The list of research, of course, is much longer, but these examples emphasize both the importance of and the interest in corporate ETRs.

DATA

We collect data from the COMPUSTAT database. Our sample comprises all US firms that existed at any time during the fiscal years (FY)

2003−2010 and for which relevant financial variables[7] are reported by COMPUSTAT. We use FY 2003 as a starting point because some of the relevant data (namely, the level of firm internationality − one of the key parameters of interest in our study) that we use was not available prior to that year. Thus, our initial sample includes 89,932 firm-year observations of 15,838 firms.

For each firm's FY, we calculate the total ETR and DETR as follows:

$$\mathrm{ETR}_{j,t} = 100\% \times \frac{\mathrm{TT}_{j,t}}{\mathrm{TPI}_{j,t}} \tag{1}$$

$$\mathrm{DETR}_{j,t} = 100\% \times \frac{\mathrm{DT}_{j,t}}{\mathrm{DPI}_{j,t}} \tag{2}$$

where $\mathrm{ETR}_{j,t}$ is the total ETR of firm j in year t denominated in percentage points, $\mathrm{TT}_{j,T}$ and $\mathrm{TPI}_{j,t}$ are correspondingly the total current tax and the pretax income of firm j in that same year.[8] $\mathrm{DETR}_{j,t}$ denotes the DETR of firm j measured in percentage points, $\mathrm{DE}_{j,t}$ and $\mathrm{DPI}_{j,t}$ are correspondingly the current domestic tax[9] and the domestic pretax income of firm j in that same year. If domestic data of pretax income or current tax is not available, we use other available data to calculate $\mathrm{DETR}_{j,t}$ according to Eq. (2).[10] After eliminating observations from which DETR could not be calculated, we are left with 12,928 firm-years of 2,715 firms.

Furthermore, to reduce the possible effects of outliers on our results, we eliminate all observations for which the value of $\mathrm{DETR}_{j,t}$ is either negative or higher than 100%. This elimination step reduces our sample to 7,899 firm-years of 2,397 firms.

As a proxy of the firm's level of internationality we use the simple average of two measures − the proportion of firm foreign sales from its total sales and the proportion of firm foreign total assets from the firm total assets.[11] The internationality measure can be formally expressed as follows:

$$\mathrm{Inter}_{j,t} = 100\% \cdot \left[1 - \left(0.5 \times \frac{\mathrm{DS}_{j,t}}{\mathrm{TS}_{j,t}} + 0.5 \times \frac{\mathrm{DA}_{j,t}}{\mathrm{TA}_{j,t}}\right)\right] \tag{3}$$

where $\mathrm{DS}_{j,t}$ and $\mathrm{DA}_{j,t}$ represent US sales and US assets, respectively, and $\mathrm{TS}_{j,t}$ and $\mathrm{TA}_{j,t}$ represent total sales and total assets, respectively.

Thereafter, we delete observations for which the parameters required for estimation of internationality are missing, further reducing our sample to 3,132 firm-years of 1,010 firms.

Lastly, we eliminate an additional 24 firm-years due to missing data, leaving us with a final sample size of 3,108 firm-years from 1,003 firms.

HYPOTHESES

In this section we describe the methodology for testing how firm characteristics – particularly company size, internationality, and leverage – affect the DETR. There are several proxies for measuring company size, including the company's sales, total assets, fixed assets (i.e., property, plant, and equipment or PP&E), equity, and even market capitalization. Although the question of which variable is the most suitable is open to debate, we use total company sales to approximate company size.[12] Based on our results (Fig. 1), we hypothesize that sales positively affect DETR, but this should not be a straightforward conclusion. First, keep in mind that the DETR is the tax paid by companies on every dollar of pretax earnings, and therefore, it should not be affected by either company size or profitability. It can, however, be affected by the tax base, since only part of a company's income is exempt from tax. That being said, we expect large companies to be more effective in the ability to exploit tax laws to reduce their tax liabilities as much as possible, which leads to our first hypothesis:

> **Hypothesis I.** The size of the company has a negative effect on DETR.

In considering the effect of leverage on the DETR, because US companies can deduct their interest expenses, we posit that companies that borrow will have lower tax burdens. This hypothesis is consistent with the findings of Markle and Shackelford (2012b), who show that companies with higher long-term debt have lower ETRs. The reason for this negative association is the tendency of US MNEs to finance their foreign operations through domestic borrowing. However, while such a practice may reduce tax payments, it should not affect the DETR. We therefore hypothesize the following:

> **Hypothesis II.** The debt ratio (portion of liability to assets) should not affect the DETR.

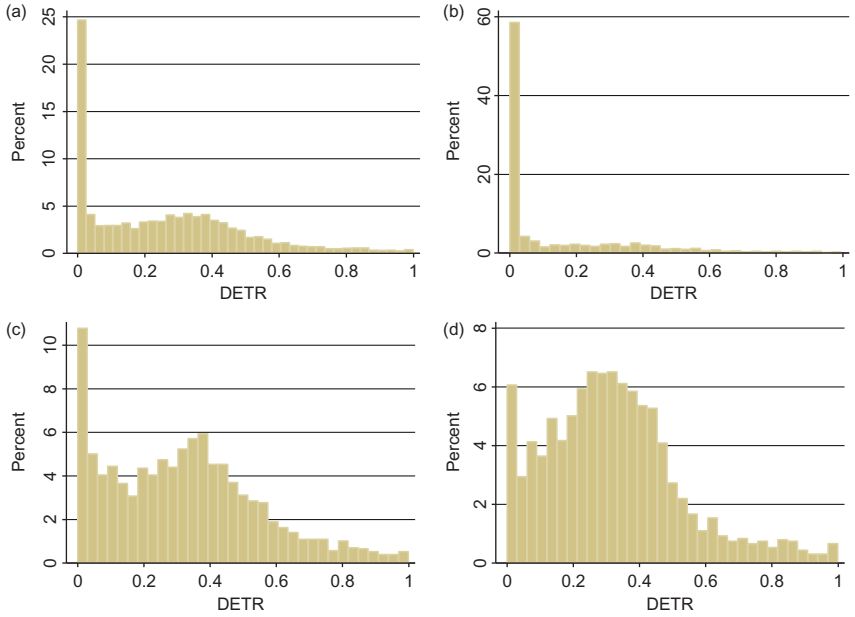

Fig. 1. Overall DETR Distribution and DETR Distributions of Small, Medium, and Large Companies (Determination of Company Size Based on Volume of Sales): (a) Overall DETR Distribution; (b) DETR Distribution of Small Companies; (c) DETR Distribution of Medium Companies; and (d) DETR Distribution of Large Companies.

The effect that level of internationality may have on domestic tax payments is more difficult to predict. At first glance, it seems that the tax paid by US companies on every dollar of domestic income should not be affected by the company's level of internationality. Some accounting issues, however, should be considered. An MNE with overseas operations for which it must establish foreign headquarters can book expenditures associated with its foreign offices as a domestic expense. However, as long as these expenses are tax deductible, they should not affect DETR. Our third hypothesis, therefore, is stated as follows:

Hypothesis III. The level of internationality should not affect DETR.

US companies may report their depreciation expenses differently depending on whether the calculation is for book or tax purposes. Several

methods exist for booking each asset's depreciation, which is accelerated for tax purposes as the greater the depreciation, the lower the tax expenses. Consider, for example, two companies, both with $10 million in revenue and costs totaling $8 million (excluding depreciation). The first company owns $10 million of depreciable equipment while the second company has no equipment. The pretax income of the second company is $2 million. If the STR is 35%, then the second company owes $700 thousand in corporate tax. The first company, on the other hand, estimates its depreciation for book value using the straight-line depreciation method with a ten-year budget horizon. For book purposes, therefore, the first company's annual depreciation is $1 million and its pretax profit is $1 million. For tax purposes, however, the first company is allowed to estimate its depreciation using the accelerated method, so the tax value of depreciation is, say, 1.5 million. Using the same tax rate, the first company will pay $175 thousand over a pretax income of $500 thousand. When calculating the first company's DETR, the tax payment of $175 thousand is divided by the book value of the pretax income, which is $1 million. Therefore, the first company's ETR is 17.5% and not 35%.

As data regarding depreciation for tax purposes is not publically available, depreciation is calculated based on fixed assets. Therefore, we hypothesize that the higher the level of PP&E relative to total assets, the higher the expected level of depreciation. Our hypothesis is then:

> **Hypothesis IV.** The higher the ratio of PP&E to assets, the lower the DETR.

Lastly, we conjecture that government policy to ease the economic distress experienced by companies during recessions will reduce the DETR during years of economic contraction. One example for such policy is the permission to use accelerated depreciation computations. Therefore:

> **Hypothesis V.** The DETR for US companies is lower during recessions.

DESCRIPTIVE STATISTICS

Table 1 reports summary statistics on US firms that constituted our final sample. According to Table 1, the average ETR of these US companies is roughly 28%, and the average DETR is 30%. Also provided in Table 1 is the average level of internationality of these US companies. Calculated as 32.65%, it incorporates data gleaned from a range of companies, from

Table 1. Descriptive Statistics for US Companies.

	Mean	Median	Min.	Max.	St. Dev.
Total assets	6,676	967	1	242,082	25,116
Sales	7,043	991	0	402,298	27,761
PP&E	3,476	321	0	259,284	16,853
Pretax income	776	90	−3,299	60,231	3,557
Income taxes − Federal	126.40	15.81	−618.00	4,929	409.36
Income taxes − Foreign	116.92	3.40	−119.70	21,093	1,101.74
Income taxes − State	17.25	2.03	−61.00	669.00	60.15
DTER (%)	29.77%	29.08%	0	99.63	22.46
ETR (%)	27.54%	29.58%	0	93.45	15.99
Internationality (%)	32.65%	29.82%	0	99.75	25.57
Leverage (%)	51.30%	45.86%	0.33	648.86%	120.03%

Based on 3,132 firm-years from 1,010 US firms that existed at any time during the FYs 2003−2010 and for which the Total Effective Tax Rate, Domestic Effective Tax Rate, and Level of Internationality can be calculated.

purely domestic to those whose operations are based almost completely overseas. Using the level of internationality as an approximation of the portion of foreign income, we can roughly estimate the average foreign ETR as 23%.[13]

We also calculate the mean and standard deviation of the same variables for expansion and recession years separately (Table 2) and for each company size (Table 3). To this end, following the definition of the National Bureau of Economic Research, we define FY 2003−2007 and 2010 as expansion years and FY 2008−2009 as recession years. Separating the data into expansion and recession years shows that both DETR and ETR are higher during expansion years. The average DETR values are 28.6% and 30.1% during recession and expansion years, respectively. The ETR is 1% higher during expansion (28%) than during recession (27%), which implies that the decrease in ETR during recessions is mostly due to the decrease in the DETR.[14] Also, company internationality level does not change during recession years (around 33% on average).

We also estimate the mean and standard deviation of the above variables for each size category separately (Table 3). Table 3 shows the differences in size between small, medium, and large companies. For the size definition, we first sort all companies in our final dataset by sales.

Table 2. Descriptive Statistics for US Companies Based on our Sample and Categorized by Economic Condition.

	Recession		Expansion		Δ Mean Expansion versus Recession	
	Mean	St. Dev.	Mean	St. Dev.		
Total assets	5,664	16,796	7,117	27,972	1,453	*
Sales	6,208	27,155	7,407	28,020	1,199	
PP&E	2,983	15,122	3,692	17,553	709	
Pretax income	644	3,444	834	3,604	190	*
Income taxes − Federal***	101.11	340.55	137.43	435.59	36	***
Income taxes − Foreign	106.26	1,176.00	121.59	1067.92	15	
Income taxes − State	14.25	56.30	18.56	64.36	4	**
DETR (%)	28.58	22.11	30.29	22.59	1.71	**
ETR (%)	26.84	16.54	27.84	15.74	1.00	**
Internationality (%)	32.61	25.63	32.67	25.55	0.06	
Leverage (%)	52.12	62.17	50.95	137.82%	−1.17	

The expansion period consists of the FYs 2003−2007 and 2010, and the recession period consists of the FYs 2008−2009. Statistics with "*", "**", and "***" are significant in the 10%, 5%, and 1% levels, respectively.

The one-third of the companies with the lowest volume of sales are categorized as small, the one-third of the companies with the highest volume of sales are categorized as large, and the remainder are classified as medium size companies.[15] As Table 3 shows, the pretax income of the large companies are more than 14 times higher than those of the medium companies and more than 417 times higher than those of the small companies. Interestingly, the profit margin (ratio of pretax profit to sales) of small companies is around 4.4%, much lower than those of medium and large companies (13% and 11%, respectively). With respect to DETR, small companies have much lower rates on average (21.3%) than medium or large companies (34.7% and 33.6%, respectively). The level of internationality increases by approximately 2 percentage points with size (30.9%, 33%, and 34.2% for small, medium, and large companies, respectively). Finally, large companies are highly leveraged, with 57% on average, compared to 49% and 48% for small and medium companies, respectively.

Table 3. Descriptive Statistics for US Companies Based on Our Sample and Categorized by Company Size.

	Small		Medium		Large	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Total assets	178	354	1,443	1,576	18,6134	41,20204
Sales	120	103	1,140	589	20,089	45,64095
PP&E	62	107	501	603	9,983	28,25905
Pretax income	5	39	150	209	2,198	5,942
Taxes – Federal	2.67	6.13	33.36	45.407	347.09	658.0835
Taxes – Foreign	0.81	3.13	9.56	13.15	343.88	1,898.201
Taxes – State	0.44	0.92	4.50	7.69	47.34	97.76
DETR (%)	21.26	23.31	34.66	21.15	33.64	20.21
ETR (%)	20.05	18.78	31.54	13.74	31.24	11.63
Internationality (%)	30.87	29.28	32.98	23.56	34.15	23.21
Leverage (%)	49.22	203.39%	47.78	23.85	56.97	18.16

Note: The means of Total Assets, Sales, PP&E, Pretax Income, and Taxes (all three) are significantly different at the 1% level for both small versus medium and medium versus large companies. The differences for DETR and ETR are significant at the 1% level for small versus medium size companies, and insignificant for the medium versus large companies. Internationality is significantly different at the 5% level for the small versus medium size companies and insignificantly different for the medium versus large companies. Leverage is significantly different at the 10% level for the small versus medium companies, and at the 1% level for the medium versus large.
The one-third of the companies with the lowest or highest sales was categorized as small or large companies, respectively, and the rest were given the status of medium company.

Fig. 1 describes the distributions of DETRs. Panel 1(a) shows the distribution of the entire set, while panels 1(b)–(d) show the distributions for each group size. As can be seen from panel 1(a), the DETR is 0.25% or less for approximately 25% of the companies. Panels 1(b)–(d) show that most of the companies whose DETRs are lower than 0.25% are small companies. Moreover, the distribution of medium and large companies is more or less the same in terms of their DETRs.

Fig. 2 shows the average DETR per year, for each company size. Consistent with our expectations, tax rates increase as the economy expands (years 2003–2006), slightly decrease during 2007,[16] and then fall markedly, probably due to tax cuts, during the recession years.

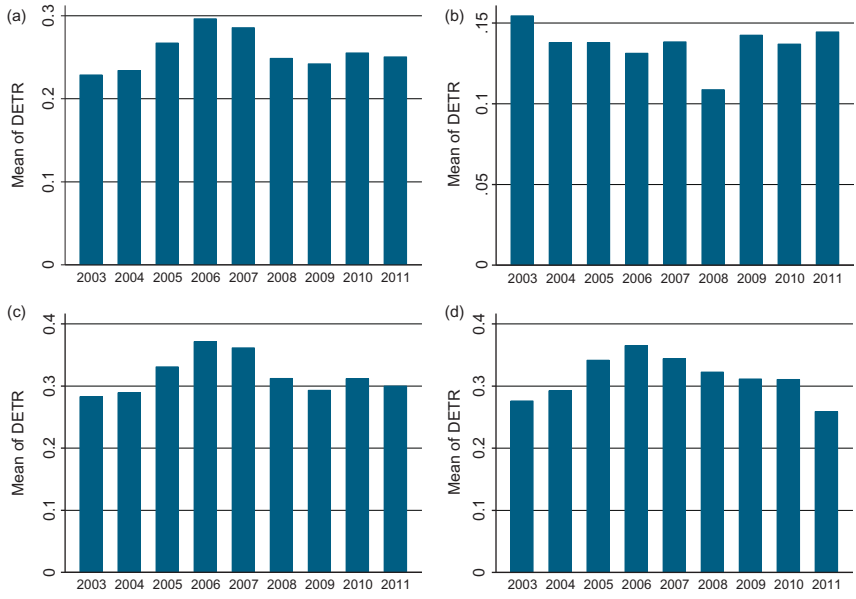

Fig. 2. DETR per Year: Each Bar Represents a Tax Year from 2003 to 2011. Panel 2(a) represents the entire sample. Panels 2(b)–(d) Represent the Smallest, Medium, and Largest Companies, Respectively. According to Panel 2(a), DETRs Grew until 2006 as the US Economy was Expanding, Remained Stable during 2007, and then Gradually Decreased until 2010. This Pattern, however, is Consistent Only for Medium and Large Companies. (a) Average DETR by FY for the Entire Sample; (b) Average DETR by FY for Small Companies; (c) Average DETRs by FY for Medium Companies; (d) average DETR by FY for large companies.

RESULTS

We run a random effect model[17] using the following equation:

$$\begin{aligned} \mathrm{DETR}_{it} = {} & \alpha_1 + \beta_1 \times \mathrm{Inter}_{it} + \beta_2 \times \mathrm{Size}_{it} + \beta_3 \times \mathrm{Leverage}_{it} + \beta_4 \times \mathrm{BCD}_t \\ & + \beta_5 \times \mathrm{ppe}_t + \varepsilon_{it} \end{aligned} \tag{4}$$

where Inter_{it} represents firm internationality level calculated as shown in Eq. (3); Size_{it} is firm size calculated as the natural logarithm of the sales for firm i in year t; $\mathrm{Leverage}_{it}$ is the financial leverage of firm i in year t,

estimated as a fraction expressed by the firm's total liabilities over its total assets in year t; BCD_t is a dummy variable controlling for business cycle, and it is "1" if year t is defined as an expansion year and "0" otherwise.[18] Here, we determine whether each year was a recession or an expansion year as in Table 2.

The regression results show that DETR is negatively affected by the level of internationality and by the intensity of fixed assets, and it is positively affected by sales (Table 4). Furthermore, economic environment also

Table 4. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies.

	Coef.	St. Err.
Internationality	−0.052***	0.020
Firm size	2.986***	0.223
Leverage	−0.004	0.003
Expansion year	1.768**	0.718
PP&E/total assets	−0.045***	0.011
Intercept	11.788***	1.797
R^2 adjusted	0.1055	
Number of observations	3,108	

The coefficients of a random effect model using Eq. (4) are listed. Standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Table 5. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies: Expansion versus Recession.

	Expansion		Recession	
	Coef.	St. Err.	Coef.	St. Err.
Internationality	−0.048**	0.023	−0.057**	0.029
Firm size	3.128***	0.255	2.699***	0.309
Leverage	−0.003	0.004	−0.028**	0.012
PP&E/total assets	−0.036***	0.012	−0.082***	0.022
Intercept	12.214***	1.965	17.350***	2.541
R^2	0.104		0.117	
Number of observations	2,166		942	

The coefficients of a random effect model using Eq. (4) are listed for each economic condition separately. The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

affects DETR. On average, DETR is 1.77% lower during recession years. Surprisingly, firm leverage has no significant effect on DETR.

To better understand how recessions influence DETR, we conduct the same regression in Eq. (4) for recession or expansion years separately (Table 5). We can see that although the effect of internationality on DETR is preserved during both expansion and recession years, the effect is stronger over the period of contraction. The size effect is higher during expansion, but the positive effect is preserved under the two periods.

The effect of asset intensity on DETR is negative during both recession and expansion years, while being more than twice stronger during recession. This result is anticipated, because specific regulations are typically issued in difficult times to aid companies that have higher fixed costs (PP&E), and therefore, it may be more difficult for them to adjust to financial distress. Regarding the effect of leverage, contrary to our hypothesize, a significant negative effect on the DETR is found during recession years. This finding is a bit counterintuitive, as we expect to find no relationship. One potential explanation involves the connection between leverage, size, and DETR. If smaller companies are more highly leveraged, on the one hand, and have lower DETRs, on the other hand, compared medium or large companies, then it is possible that the regression depicts the resulting negative relationship between leverage and DETR. However, this relationship should be unaffected by economic conditions (namely, it should be

Table 6. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies: By Company Size.

	Small		Medium		Large	
	Coef.	St. Err.	Coef.	St. Err.	Coef.	St. Err.
Internationality	−0.067**	0.029	−0.043	0.035	−0.047	0.038
Firm size	4.975***	0.477	−0.603	1.459	−0.270	0.879
Leverage	0.000	0.003	−0.093***	0.035	−0.050	0.046
Expansion year	0.360	1.197	1.980	1.326	2.911**	1.224
PP&E/total assets	−0.017	0.013	−0.076***	0.028	−0.098***	0.027
Intercept	3.101	2.522	45.591***	10.173	42.554***	8.284
R^2	0.189		0.031		0.028	
Number of observation	1,061		1,022		1,025	

The coefficients of a random effect model using Eq. (4) are listed for each economic condition separately. The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

preserved during expansion years). In addition, the correlation between size and leverage is less than 0.05, which contradicts our assumption.

To examine the potential effect of size inequality, we conduct the regression Eq. (4) for each subgroup of size separately. In fact, the results (Table 6) do reveal the size inequality effect: thus, among small companies, DETRs increase with size. Medium and large companies face much higher DETRs regardless of their sizes within their subgroups. These results indicate that the relationship between size and DETR should be attributed less to company size (sales) and more to company size category.

Another important dissimilarity about size differences is that the economic environment (as depicted by the dummy variable for expansion and recession years) only affects large companies (Table 6). DETR values of small and medium companies are not affected by the economic environment, the reason for which could be either business or policy related. On the one hand, MNEs have some geographic flexibility that allows them to adjust their business to macroeconomic conditions and that may enable them to react differently to expansions and recessions. But there is also the possibility that attempts by policy makers during a recession to ease the economic pressure of companies were aimed mostly toward large companies. It is conceivable that in circumstances such as recessions, policy makers actually aim their policies toward larger firms to have greater impacts. If this is the case, then a future research should aim to discover more about the reason for the varied reactions to the economic environment across company size.

Lastly, we find that leverage has a significant negative effect on the DETR paid by medium companies.

We also conduct the same regressions as above using Eq. (4) for all data and for each economic environment (recession or expansion) but without the internationality variable. Internationality is excluded because we omit a large number of observations when using this variable. In particular, we suspect that its use would exclude mostly domestic companies, whose natural lack of geographically segmented data could result in biased findings. The results without the internationality variable are presented in Tables 7 and 8 for the entire dataset and for each economic environment, respectively.[19] From Table 7, pooling all the data lead to results that are qualitatively similar to those presented in Table 4.

Running the regression separately for recession or expansion (with the exclusion of the internationality variable) reveals that the effect of asset intensity is negative and significant during both expansion and recession years, although this effect is a bit milder during the former.

Table 7. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies: Excluding the Internationality Variable.

	Coef.	St. Err.
Firm size	3.514***	0.138
Leverage	−0.001	0.001
Expansion year	1.124**	0.491
PP&E/total assets	−0.036***	0.008
Intercept	3.606***	1.007
R^2 adjusted	0.157	
Number of observations	7,779	

The coefficients of a random effect model using Eq. (4), but without the internationality variable, are listed. The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Table 8. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies: Expansion versus Recession, and Excluding the Internationality Variable.

	Expansion		Recession	
	Coef.	St. Err.	Coef.	St. Err.
Firm size	3.612***	0.154	3.375***	0.204
Leverage	−0.002	0.002	−0.002	0.002
PP&E/total assets	−0.032***	0.008	−0.058***	0.014
Intercept	4.217***	1.039	5.719***	1.453
R^2	0.153		0.169	
Number of observations	5,834		1,945	

The coefficients of a random effect model using Eq. (4) but without the inclusion of the internationality variable are listed for each economic condition separately. The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Rather than estimating the linear (absolute) relationship between the DETR and our explanatory variables from Eq. (4) (i.e., measuring the changes in DETR in absolute values), for the last analysis, we measure the effect of our explanatory variables on DETR in relative values

(i.e., how percentage changes in our explanatory variables affect DETR in percentage changes)[20]:

$$\ln(\mathrm{DETR}_{it}) = \alpha_1 + \beta_1 \times \ln(\mathrm{Inter}_{it}) + \beta_2 \times \ln(\mathrm{Size}_{it}) + \beta_3 \times \ln(\mathrm{Leverage}_{it}) + \beta_4 \times \ln(\mathrm{ppe}_{it}) + \varepsilon_{it} \quad (5)$$

Table 9. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies for the Entire Sample.

	Coef.	St. Err.
Internationality	−0.067***	0.021
Firm size	0.025***	0.002
Leverage	−0.076***	0.018
PP&E/total assets	−0.079***	0.018
Intercept	0.144***	0.015
R^2 adjusted	0.124	
Number of observations	3,072	

The coefficients of a random effect model using Eq. (5). The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Table 10. Effect of Specific Firm Characteristics on Domestic Effective Tax Rate of US Companies for the Entire Sample: Expansion versus Recession.

	Expansion		Recession	
	Coef.	St. Err.	Coef.	St. Err.
Internationality	−0.058**	0.024	−0.077***	0.030
Firm size	0.027***	0.002	0.023***	0.003
Leverage	−0.074***	0.021	−0.103***	0.027
PP&E/total assets	−0.068***	0.020	−0.095***	0.026
Intercept	0.135***	0.017	0.176***	0.022
R^2	0.124		0.13	
Number of observations	2,145		927	

The coefficients of a random effect model using Eq. (5) for expansion (2003−2007 and 2010) and recession (2008−2009) years separately. The standard errors are clustered by firm. *Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

where ln represents the natural logarithm of each variable. Each coefficient of regression in fact represents the elasticity of the DETR with respect to the relevant variable.

The results for the entire dataset appear in Table 9 and are grouped according to expansion and recession years in Table 10. Percentage change in DETR is positively related to the percentage change in company size and negatively related to internationality level, leverage, and the ratio of PP&E to assets. These associations are preserved during expansion and recession periods. In fact, the effects of size are approximately the same during both expansion and recession (during expansion years, on average percent change in DETR is approximately 2.7% for every 1% change in sales, and around 2.3% during years of recession). However, a 1% increase in the level of internationality reduces DETR by 5.8% during expansion and by 7.7% during recession. These results are consistent with those shown in Table 5.

Finally, DETR responds differently to changes in the level of asset intensity during expansion and recession years. A 1% increase in this variable reduces DETR by 6.8% during expansion years and by 9.5% during recession years. Again, the difference in DETR response to the level of fixed assets during expansion or recession years is consistent with the findings presented in Tables 5 and 8.

DISCUSSION

The findings above show that ETRs applied to US companies in the United States are not as homogenous as expected. Unlike income tax, corporate tax is planned as a neutral tax, but we, in fact, show that this is not the case. Some of the influences we report here, however, still deserve our attention.

Beginning with the impact of internationality on the DETR, the fact that a company's level of internationality is not determined solely by the domestic STR should be beyond dispute. As far as tax rates are concerned, corporations mainly care about the differences in tax rates across different tax jurisdictions (countries). In addition, companies are incentivized to shift business overseas by additional issues related to overall profit, like the cost of labor, the marginal productivity of inputs, shipping costs, geographic differences in demand for the company's products, and so forth. The effect of corporate taxes as felt by the company paying

them, however, should be related to the difference between the domestic and foreign ETRs.

But regardless of the extent to which companies shift their activities geographically, even though such shifts can markedly change the amount of taxes paid by the company in each jurisdiction, they should not affect the tax paid by a company on each dollar of pretax income in the United States. Although it is determined by this profit, the DETR should not change when the pretax profit is lower or when the STRs in other countries change. We find strong evidence that companies that shift more business overseas pay less US tax on each dollar of pretax income, a finding that begs explanation. While we cannot provide facts, we can speculate regarding the possible reasons. One such explanation is related to the ability of international companies to shift profits via transfer pricing practices, especially with the determination of the geographic location of intangible assets.

Companies usually attribute their abnormal profits to the intangible assets (logos, trademarks, technology, patent, etc.) that they own. After all, the value of an intangible asset is determined by the contribution it makes to company activity. Ownership of a proprietary technology, for example, requires research and development expenses that subject the company to greater risk.[21] Indeed, the company expects to be compensated for bearing this risk by earning abnormal profits. When such a company is multinational, it is in the company's best interest to situate its entity that owns the intangible assets in the jurisdiction with the lowest tax rate. In so doing, this entity can claim all the abnormal profit and pay a low tax rate on this profit. For tax purposes, the international company is expected to comply with transfer pricing regulations and show that its profit margin is commensurate with its business risk. Furthermore, US tax regulations determine that a dollar of income cannot be taxed twice. Therefore, any taxes paid by a US MNE on income earned abroad are usually not subject to US tax.[22]

Consider two companies – both of which comprise two entities – that are involved in the same business and that own the same intangible assets. The first is located exclusively in the United States. The second is multinational, with one entity residing in the United States and the other in a lower tax jurisdiction outside the United States. Both companies earned $10 million in revenue and booked $8 million as their total costs. Being a multinational, the second company reports equal revenues and costs in each jurisdiction,[23] which means that its domestic profit is $1 million. However, for tax purposes, the multinational company claims that, as the owner of the intangible assets, the foreign entity should earn the abnormal profit. Using

transfer pricing documentation (as required by law), the multinational company allocates an additional $0.5 million in profit to the foreign jurisdiction (again, for tax purposes only) and pays taxes domestically on only $0.5 million. This lowers the DETR of the multinational company to 17.5%[24] of total pretax profit, compared to the 35% paid by the domestic company.

Another finding that deserves attention is the effect of leverage (as measured by total liability divided by total assets) on DETR. Comparing the differences in the ETRs applied to high-leveraged versus to low-leveraged multinational companies, the former pays a lower ETR because to increase its profits, it has chosen to borrow domestically (in the United States) and use that money to finance its foreign operations. As a weighted average of DETRs, the ETR decreases when tax expenses decline in the jurisdiction with the higher tax rate. This explanation is consistent with the findings of Markle and Shackelford (2012b).[25]

However, even though high leverage decreases taxes in the United States, the DETR should still be the same. Although high leverage indeed reduces pretax income, it should not lower the tax paid domestically on every dollar of pretax income. Our findings contradict this notion. We show that during recession years, leverage has a significant negative effect on DETR: the higher the company is leveraged, the lower its DETR is during recession years. And just as we lack an explanation for this anomaly, we are unable to understand how or why the relationship between leverage and taxes vanish during the expansion years.

CONCLUSION

In this paper, we investigate how ETRs paid domestically by US companies are affected by factors that represent business and financial structure along with macroeconomic conditions. We conduct several regression analyses that show how the influence of some variables change when the economic environment changes.

In particular, we show that the DETR is in fact affected by company size (as measured by volume of sales). Our findings show that larger companies pay higher taxes in the United States on every dollar of pretax income. We also show that while the size of small companies significantly affects their DETR, medium companies' and large companies' DETR is relatively uniform within size groups.

We also measure the effect of internationality on the DETR. A multinational company is a corporation that manages some of its business overseas. The greater the portion of foreign sales or PP&E, the higher the corporation's level of internationality. Our findings reveal that the greater a company's internationality, the lower its DETR. When controlling for economic environment, however, this negative internationality effect is preserved only during recession years.

Interestingly, the leverage effect is also found to be negative, implying that the more a company is leveraged, the lower its DETR. This negative relationship, however, is shown to be the strongest during recession years and insignificant during expansion years.

We show that, as expected, depreciation negatively affects DETR: the higher the company's level of depreciable assets, the lower its DETR. We explain this finding via different measurement methodologies for book and tax purposes, but even this effect diminishes during expansion years.

Although most of our findings can be explained (or can at least be anticipated), issues that remain unexplained, such as leverage, indicate the need for further research. It is reasonable to expect a negative relationship between leverage and ETR. But we found that this relationship is preserved for DETR. Because it is outside the scope of the current study, we do not address this issue here, instead leaving it for future research.

NOTES

1. See OECD, Corporate Income Tax Rates 19981−2013. Retrieved from http://taxfoundation.org/article/oecd-corporate-income-tax-rates-1981-2013. Accessed on November 8, 2015.

2. See KPMG, Corporate Tax Rate Table. Retrieved from https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html. Accessed on November 8, 2015.

3. See KPMG, Corporate Tax Rate Table. Retrieved from https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html. Accessed on November 8, 2015.

4. See OECD, Corporate Tax Income around the World, 2015. Retrieved from http://taxfoundation.org/article/corporate-income-tax-rates-around-world-2015. Accessed on November 8, 2015.

5. See, for example, Shackelford and Slemrod (1998), Markle and Shackelford (2012a), Clausing and Lahav (2011) and Avi-Yonah and Lahav (2012). Others, like Altshuler, Grubert, and Newlon (2000) and Altshuler and Grubert (2003) use actual tax data.

6. The literature about ETR measurement methodology is characterized by debate about whether ETR should be measured with book or actual values. See, for example, Hanlon (2003) and Musumeci and Sansing (2010). Others proposed different ETR measurement methods. See Mendoza, Razin, and Tesar (1994) or Gordon, Kalambokidis, and Slemrod (2003).

7. Relevant financial variables include parameters that allow for the calculation of total and domestic effective tax rates, such as total income tax, total pretax income, federal income tax, foreign income tax, federal deferred tax, and foreign deferred tax.

8. For measuring ETR, we use current, rather than total, as a portion of pretax income, following Markle and Shackelford (2012b) and Dyreng et al. (2014).

9. Measured as the sum of total (federal and state) tax, subtracted by deferred (federal and state) tax.

10. For example, we could calculate domestic values by subtracting foreign values from total values or by subtracting deferred domestic tax from total domestic tax to find current domestic tax.

11. This measure is inspired by Shackelford and Slemrod (1998).

12. We also checked the correlation of the suggested measures and all of them are highly correlated with sales (correlation is positive and higher than 0.7).

13. We calculate the foreign effective tax rate (FETR) as follows:

$$\text{ETR} = (1 - \text{internationality}) \times \text{DETR} + \text{internationality} \times \text{FETR}$$

Using data from Table 1, the only unknown is FETR:

$$\text{FETR} = \frac{\text{ETR} - (1 - \text{internationality}) \times \text{DETR}}{\text{internationality}} = \frac{.2754 - .6735 \times .2977}{.3265} \cong 23\%$$

This number should be treated, of course, as an approximation. Assuming the tendencies of multinationals to shift profits overseas (i.e., via geographical transfer of intangible assets), this number may be even higher.

14. In fact, using the same calculation as in note 5, the FETR is actually lower during expansion.

15. The division into three groups of same size was important for some of our analyses, for example the distributions of DETRs in Figs. 1–2.

16. The National Bureau of Economic Research defines the beginning of the recession in December 2007. Therefore, we should expect some effect of the recession on FT 2007 as well.

17. We conducted Hausman test to account for possible heterogeneity and to check weather fixed or random effects are present.

18. Wilkie (1988) documents the effect that tax incentives in the form of depreciation standards have on the gap between taxable income and book income, and concludes that the ratio of tax incentives to book income significantly affects the level of effective tax rate. Since data regarding depreciation for tax purposes is not publically available, we account for the explained above effect in a different way. More specifically, we estimate depreciation based on fixed assets. Therefore, we hypothesize that the higher the level of PP&E (property, plant, and equipment)

relative to total assets, the higher the expected level of depreciation. We also formulate a separate hypothesis for the expected effect of the explained above measure on the domestic effective tax rate (see Hypothesis IV in the current version of the paper).

19. Notice that the exclusion of the internationality variable more than doubled the number of observations.

20. Taking the natural log of all variables (except the dummies) in Eq. (4) transforms slope into the elasticity of substitution between its corresponding explanatory variable and DETR, thus provides the relative effects.

21. When a company invests in risky projects, there is always the risk that the investment will fail.

22. US tax regulations also determine that if the tax rate paid abroad is lower than the US tax rate, then the MNE should pay the difference as tax in the United States as soon as the foreign income is repatriated. Many MNEs exploit this regulation and keep profits overseas.

23. This means that each entity report $5 million revenues and $4 million total costs.

24. The international company pays 35% tax on $500 thousand ($175 thousand), while the DETR is calculated as the ratio of this tax to the book value of the US entity − $1 million.

25. Markle and Shackelford (2012b) used long-term debt to assets, which is a different measure than what we used.

ACKNOWLEDGMENTS

We wish to thank Reuven Avi-Yonah, Kimberly Clausing, Michael Durst and Bret Wells for their important contribution to this paper.

REFERENCES

Altshuler, R., & Grubert, H. (2003). Repatriation taxes, repatriation strategies and multinational financial policy. *Journal of Public Economics*, *87*, 73−107.

Altshuler, R., Grubert, H., & Newlon, T. S. (2000). Has US investment abroad become more sensitive to tax rates? In *International taxation and multinational activity* (pp. 9–38). Chicago, IL: University of Chicago Press.

Avi-Yonah, R. S., & Lahav, Y. (2012). The effective tax rates of the largest US and EU multinationals. *The Tax Law Review*, *65*, 375−390.

Clausing, K. A., & Lahav, Y. (2011). Corporate tax payments under formulary apportionment: Evidence from the financial reports of 50 major US multinational firms. *Journal of International Accounting, Auditing and Taxation*, *20*, 97−105.

de Mooij, R. A., & Ederveen, S. (2003). Taxation and foreign direct investment: A synthesis of empirical research. *International Tax and Public Finance*, *10*, 673−693.

Desai, M., Foley, C. F., & Hines, J. R., Jr. (2001). *Repatriation taxes and dividend distortions*. NBER Working Paper Series w8507.

Djankov, S., Ganser, T., McLiesh, C., Ramalho, R., & Shleifer, A. (2010). The effect of corporate taxes on investment and entrepreneurship. *American Economic Journal: Macroeconomics*, *2*(3), 31–64.

Dyreng, S. D., Hanlon, M., Maydew, E., & Thornock, J. R. (2014). *Changes in corporate effective tax rates over the past twenty-five years*. Working Paper Series SSRN 2521497.

Gordon, R., Kalambokidis, L., & Slemrod, J. (2003). *A new summary measure of the effective tax rate on investment*. NBER Working Paper Series w9535.

Graham, J. R. (2003). Taxes and corporate finance: A review. *Review of Financial Studies*, *16*(4), 1075−1129.

Hanlon, M. (2003). What can we infer about a firm's taxable income from its financial statements? *National Tax Journal*, *56*(4), 831−863.

Hartman, D. G. (1984). Tax policy and foreign direct investment in the United States. *National Tax Journal*, *37*(4), 475−487.

Hubert, F., & Pain, N. (2002). Fiscal incentives, European integration and the location of foreign direct investment. *The Manchester School*, *70*(3), 336−363.

Loree, D. W., & Guisinger, S. E. (1995). Policy and non-policy determinants of US equity foreign direct investment. *Journal of International Business Studies*, *26*(2), 281−299.

Markle, K. S., & Shackelford, D. A. (2012a). Cross-country comparisons of corporate income taxes. *National Tax Journal*, *65*(3), 493−528.

Markle, K. S., & Shackelford, D. A. (2012b). Cross-country comparisons of the effects of leverage, Intangible assets, and tax havens on corporate income taxes. *Tax Law Review*, *65*, 415.

Mendoza, E. G., Razin, A., & Tesar, L. L. (1994). Effective tax rates in macroeconomics: Cross-country estimates of tax rates on factor incomes and consumption. *Journal of Monetary Economics*, *34*, 297−323.

Musumeci, J., & Sansing, R. C. (2010). *The net present value effective tax rate*. Working Paper SSRN 1904917.

Shackelford, D., & Slemrod, J. (1998). The revenue consequences of using formula apportionment to calculate US and foreign-source income: A firm-level analysis. *International Tax and Public Finance*, *5*, 41−59.

Wilkie, P. (1988). Corporate average effective tax rates and inferences about relative tax preferences. *The Journal of the American Taxation Association*, *10*(1), 75–88.

Wijeweera, A., Dollery, B., & Clark, D. (2007). Corporate tax rates and foreign direct investment in the United States. *Applied Economics*, *39*, 109−117.

TAX AND PERFORMANCE MEASUREMENT: AN INSIDE STORY

Emer Mulligan and Lynne Oats

ABSTRACT

Against the background of increasing regulation and spotlight on the tax position of MNEs, this study explores the relationship between tax and performance measurement. The paper is informed by a series of in-depth semi-structured interviews conducted in 2006 with 26 senior tax executives from 15 Silicon Valley-based companies. We also draw on documentary evidence including the relevant 10K reports and take an interpretive approach to the analysis. Many of the performance measures referred to in prior literature were employed in the companies. There was no evidence to suggest the profit centre performance measurement model is being adopted by MNEs for their tax departments. Two distinct aspects particularly exercised the interviewees, that is, the effective tax rate (ETR) and post-tax versus pre-tax performance measurement. Many interviewees did not perceive the ETR as being an appropriate measure of performance, yet they recognised its importance internally and externally. Many companies worked on the basis that there is an 'acceptable range' of ETRs which won't give rise to any unwanted questions. Most interviewees shared the view that a post-tax basis of

Advances in Taxation, Volume 23, 59–85

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023003

measuring performance of business units might only serve to increase tax risks, preferring instead for the in-house tax executives to remain the exclusive tax knowledge experts. This study contributes to the diversification of tax research within accounting by demonstrating how qualitative work can provide unique insights. It enhances our understanding of how performance measurement of tax might influence the tax-planning behaviour of in-house tax executives and cautions against exclusive reliance on the ETR as a measure of the effect of tax planning.

Keywords: Performance measurement; effective tax rate (ETR); post-tax performance measurement; pre-tax performance measurement; multinational enterprises (MNEs); profit centre

INTRODUCTION

The tax field is unquestionably complex, particularly in the context of multinational enterprises (MNEs). It includes a regulatory aspect in which the relationship between the regulated and regulator has been described, for example, as a 'dance' (Braithwaite, 2009, p. 35; see also Gracia & Oats, 2012, p. 306) and a 'game' (Picciotto, 2007). It includes a professional aspect; highly skilled and professionally qualified actors within both regulator and regulatee organisations work to create and maintain the field doxa, whilst engaged in the struggle for dominance. Our understanding of many aspects of the tax field is circumscribed, however, by a lack of information. Relying on publicly available data, as is the case with much tax research within accounting, requires assumptions to be made and proxies to be found which lead to caveats about the reliability of conclusions reached. In this paper an alternative methodology is used, in particular semi-structured interviews with senior tax executives in US MNEs. We thereby contribute to the diversification of tax research within accounting by demonstrating how qualitative work can provide unique insights and make a contribution to tax policy debates (Clemons & Shevlin, 2014).

This paper is concerned with one particular dimension of the tax world of MNEs at a particular point in time; 2006, in the wake of the Enron scandals but before the advent on the global financial crisis. Specifically, we explore three different, but curiously overlapping aspects of the relationship between tax and performance measurement. The first is the measurement

of the performance of the tax department within a large multinational organisation. The second is the use of tax as a measure of organisational performance presented to external stakeholders. The third is the extent to which tax is recognised in the measurement of performance in other parts of the organisation.

A wide range of performance measures were employed in the companies examined (ranging from timely and accurate compliance to reacting to the unexpected such as an Internal Revenue Service (IRS) audit), and some interviewees put a greater emphasis on qualitative as opposed to quantitative measures. The Chief Financial Officer (CFO) emerged as a key evaluator of the performance of tax executives. However, there was no consensus on the degree of formality around the performance management process. Two distinct aspects relating to performance measurement particularly exercised the interviewees, that is, the effective tax rate (ETR) and post-tax versus pre-tax performance measurement of business units. Many interviewees did not perceive the ETR as being an appropriate measure of performance, yet they were very aware of it, and needed to be able to understand and explain to internal (the Board, CFO, etc.) and external (market analysts) interested parties, its make-up and why it differs from their competitors' rates. The latter demonstrated clearly the importance of relativities over absolutes in this context. Only one company among those in the study subscribed to and employed a post-tax measurement of performance to business units. Most interviewees shared the view that a post-tax basis might only serve to increase tax risks, preferring instead for the in-house tax executives to remain the exclusive tax knowledge experts within their organisation, and be rewarded on that basis.

ETR as an externally presented measure of organisational performance serves several diverse purposes. Predicting the ETR for the market (the Street), and the subsequent reaction by the investment community was a recurring theme in the discussions with interviewees on ETRs, as well as reputation risks flowing from adverse media attention. It appears that when a company sets a target ETR, it was monitored and changed typically on a quarterly basis, and fluctuations from the rate given to the market were generally perceived as not good news, which ultimately can impact on share price.

An intriguing aspect of this study is the differences between the approaches of the organisations examined in terms of the extent of monitoring of the tax function in terms of formal performance measurement. Another is the gap between theory and practice in relation to the use of tax as an external measure of organisational performance. By examining both

of these simultaneously, we are able shed light on to an aspect of organisational life, the functions and functioning of the tax department that has previously received very little attention in the literature.

This paper proceeds as follows. The next section provides some background on the changing regulatory landscape within which US MNEs operate and the role of in-house tax executives, which is being carried out under an increased level of scrutiny. This is followed by an outline of the methodology used in the study. The findings are then presented and discussed in line with the key themes, which emerged throughout the interviews. The paper then concludes summarising key findings and insights on tax and performance measurement.

BACKGROUND

This study is based on interviews conducted in 2006, subsequent to the Enron scandal and pre-dating the financial crisis. The post-Enron environment presents a new risk terrain for the companies involved in the study, in which new regulations with concomitantly onerous penalties have been introduced; most obviously the Sarbanes Oxley 2002 (SOX) reporting requirements as they apply to tax. Donald T. Nicholaisen, Chief Accountant of the US Securities and Exchange Commission (SEC), observed in 2004 that '[t]he accounting and reporting of income taxes has received increased scrutiny by investors, analysts, Congress and others. Your auditor will be asking for more information, and you may have noticed an increased level of scrutiny from the SEC staff. That spotlight is likely to continue. Welcome to the new world' (cited in Mulligan & Oats, 2009). As a result of SOX, quarterly reserve setting had become burdensome and subject to auditor scrutiny, who in turn is scrutinised by the Public Company Accounting Oversight Board. This development was described by one interviewee in the following terms: 'We do what the people who measure them [the auditors] count and that oversight body can put them out of business, so they do what that body tells them to do' (see also Deloitte, 2006). Another significant change in the US tax landscape, introduced in 2003, is a regulatory requirement to disclose participation in tax 'shelters', essentially abusive tax avoidance schemes.

For all companies, but in particular MNEs, tax is a significant cost that requires careful management and control. Such management and control is not only in the sense of the amount of tax payable, but also managing the external scrutiny that arises under the regulatory regime. Tax management

is a highly specialised area of practice, and in the case of MNEs, it is carried out by highly skilled specialists with either accountancy or legal qualifications, most usually the former. When the organisation's business crosses international borders, tax management becomes even more complex and requires careful coordination of specialised teams in different geographical locations.

MNEs, to varying degrees, create teams of in-house specialists responsible for tax aspects of the organisation's operations. This will include mundane activities such as the computation of tax liabilities, discharging filing and payment obligations and managing the relationship with the tax authority. It may also include more creative tax-planning activities which entail careful consideration of the opportunities provided in the tax law to structure transactions and activities so as to achieve a favourable tax outcome. A favourable tax outcome in this context should not be construed as the lowest possible tax; a common misnomer perpetuated by the popular press and tax activists. A contemporaneous survey by Deloitte (2006) revealed that a majority of respondents were concerned about the in-house tax department's ability to perform tax-planning activities and avoid tax-related errors in financial statements. The in-house tax team will most likely also be responsible for interacting with other parts of the organisation. Armstrong, Blouin, and Larcker (2012), for example, characterise the role of the tax director as including responsibility for compliance, an advisory role to the firm's senior executives on tax minimisation opportunities and 'actively pursuing tax-planning opportunities by generating investment opportunities where the net present value of the project derives solely from tax benefits' (p. 392). In addition we have argued elsewhere that such in-house tax specialists work largely in the shadows of their organisations, but are also engaged in institutional work, helping to shape the institutional environment within which they operate (Mulligan & Oats, 2016).

Traditionally, the activities of in-house tax departments have been considered to be back room operations. The changing tax landscape referred to above, however, signalled an important shift in tax practice; bringing the tax aspects of organisational life to the fore and exposing in-house tax specialists to unprecedented levels of scrutiny, both within organisations and by actors external to the organisation, not only in the United States but also elsewhere (see, e.g., HMRC, 2006). In much the same way that corporate managers 'exercise discretion as to how rules are enacted' (Cooper & Robson, 2006, p. 427), in-house tax executives are engaged in acts of interpretation; of the rules themselves and also, importantly, presentations of compliance with those rules. In-house tax executives develop mastery of

field-specific language through acquisition of knowledge and skill and awareness of current and emerging practices (Gracia & Oats, 2012, p. 310). By looking 'inside' organisations and questioning how the tax function operates in practice, new insights can be obtained about the effectiveness of the regulatory environment.

METHODOLOGY

This paper is informed by a series of face-to-face interviews conducted with 26 tax executives[1] from 15 Silicon Valley IT companies, conducted in 2006 by one of the authors as part of a wider collective case study (Rogers & Oats, 2012; Stake, 2000). Ahrens and Chapman (2006) suggest that interviews can be used with different methodologies '*depending on the notion of reality they are supposed to explore*' (p. 4), and we use them here in line with a constructivist notion of a social reality (Berger & Luckmann, 1966) of tax planning in MNEs. The interviews provided us with a source of rich data that enabled us to work towards understanding the social reality of the world in which MNEs' tax executives operate. The interviews were in-depth and semi-structured (see Oats, 2012) giving us some flexibility and spontaneity and allowing the interviewees 'a degree of freedom to explain their thoughts' (Horton, Macve, & Struyven, 2004, p. 340). The focus on one industry facilitated more in-depth interviews since both the geographical and sector commonality between respondents lead to them facing similar business and planning issues which have to be managed from a tax perspective (Mulligan & Oats, 2016).

This study focused on MNEs in the information technology sector. The headquarters of all our sample companies were located in the Silicon Valley area of California.[2] These US MNEs operate in many jurisdictions throughout the world and accordingly had many and varied tax issues to address on a worldwide basis. Silicon Valley provided a geographically concentrated relevant sample of companies which facilitated an efficient scheduling of interviews.[3] Choosing these MNEs was a deliberate attempt to seek out companies and individuals engaged in the subject being studied; that is, 'purposive sampling' (Miles & Huberman, 1994, p. 27). US MNEs invest heavily in tax-planning activities (Scholes et al., 2014), which incorporate engagement with the external environment, and there is good evidence to suggest this investment is economically worthwhile: Mills, Erickson, and Maydew (1998), examining the tax-related expenditures of

365 large US corporations, estimate that (on average) they save $4 for every $1 they spend on tax planning. Focusing on one industry (IT in this study) facilitates more in-depth interviews: companies operating in the same industry frequently face similar business and planning issues which have to be managed from a tax perspective, so this limited focus provides insights into the commonalities (or otherwise) of how performance of the tax executives in these companies is measured, and the associated implications.

The interviewees were all highly qualified tax executives, many of whom headed up the in-house tax departments. Job titles held by the tax executives in our study were 'Senior Director of Taxes', 'VP Tax and Trade', 'VP Tax', 'VP Tax, Licensing and Customs', 'International Tax Director', 'Director, US International Tax and Audits' and 'Senior VP Taxation'. Use of the designation 'Vice President Tax', regardless of the exact nature of their activities or real powers, indicates that the company takes tax matters seriously.

The 26 interviewees were all part of arguably the 'elite' set of tax executives in Silicon Valley: many headed up their organisations' tax functions, and the others were all in senior management positions reporting directly to the head of tax. There were also a small number of interviews carried out with large tax advisors with experience of advising large MNEs in the IT sector. All interviews were recorded and written up immediately afterwards, noting the tone of the interview, overall impression formed and any other significant observations.[4] The interview transcripts, post-interview notes and email correspondence from interviewees before and after the interview amounted to a significant amount of data for analysis. QSR NVivo was used to assist data management and data interrogation and analysis (Mulligan, Cunningham, & Gawley, 2016), and it also provided a form of 'audit trail' (Bringer et al., 2006). We also draw on documentary evidence including the relevant 10K reports and other corporate documentation and take an interpretive approach to the analysis (Oats, 2012).

MEASURING THE PERFORMANCE OF THE TAX FUNCTION

The size of MNEs' in-house tax departments (in terms of staff and other resources) varied, as did their relative importance, and the extent to which they are integrated or embedded in those organisations. While their size depended on both internal and external factors, size and complexity of the

company and the amount of resources a company is willing to put into the tax function and the increasing demands on tax departments arising from the changing regulatory environment were recurring issues referred to by our interviewees.

The constitution of in-house tax departments was found to be dynamic, and tax team membership fluctuated over time. In the United States, there tends to be considerable movement of tax professionals between in-house roles and positions in public accounting firms (at this level, generally Big 4 companies) or the revenue authority (IRS) (Borkowski, 2005). There was evidence of MNEs taking a strategic attitude towards recruiting ex-IRS officials and ex-partners from accounting and law practices, with the latter in particular being well positioned to manage external impressions of the companies (Mulligan & Oats, 2016).

Whatever a company's overall approach to performance measurement, tax is, as noted by TE 19,[5] 'a difficult one to measure'. Many companies formally set objectives and goals, often on a quarterly basis. The performance measurement of the tax personnel then tends to revolve around the extent to which and the effectiveness with which these objectives are met (Ernst & Young, 2006). Other companies don't formally set out goals and objectives for the purposes of performance measurement. According to TE 23, this lack of formality was due to company size and tax budgets. He identified the need to have larger departments and budgets to address this area by way of formalised goals and objectives.

Typical goals/objectives of performance being measured included (although definitely not agreed upon nor used within all of the companies involved)[6]:

- timely and accurate compliance with the tax rules and regulations;
- tax personnel's ability to interact with its internal customers (i.e., other departments within the organisation) to provide timely and accurate advice;
- responsiveness to management's questions, issues and concerns relating to the tax aspects of organisational life;
- staying within budget guidelines;
- staying ahead on issues;
- 'keeping us out of trouble' with Tax Authorities around the world, reaching settlements with them (extremely important for Company 7)[7];
- impact on the 'bottom line', dollars saved;
- successful and efficient completion of specific projects;
- presenting tax-planning opportunities;

- tax risk minimisation;
- reacting to the unexpected (e.g., an IRS audit);
- maintaining/reaching a specific ETR and the cash tax rate.

These measures are a mix of qualitative and quantitative measures, many of which are self-explanatory, and their importance and usefulness were agreed upon by many of the interviewees. Such measures are not therefore discussed further.[8]

In light of the published report on the role of professional firms in the US tax shelter industry (US Senate, 2005), one potentially controversial issue at the time was the question of whether the tax department is considered within the organisation to be a cost centre or a profit centre. Some strong philosophical views were expressed by interviewees in this regard. One interviewee, TE 5 said 'I would have a problem with going into a tax department that was viewed as a profit centre. Now that makes me nervous and I have made that comment, I have some colleagues that worked in places like that, most of them are in jail now'. Most of the interviewees described the department as service centre, service provider or in one case a 'support center … we don't design anything, we don't build anything and we don't sell anything so we're not a profit center' (TE 24). Some interviewees were unsure how to approach this question; one saying it was more of a service provider, liking to think of themselves as 'consultants to the other groups within the company advising them on the tax aspects' of transactions etc.' (TE 22). In some contrast, Robinson, Sikes, and Weaver (2010) referred to some firms moving to using the profit centre performance measurement model for their tax departments in the 1990s and they examined this choice further.[9] They suggest that firms are more likely to adopt profit centre models when the firm is large, diverse and has tax-planning opportunities that can affect a number of business units. Notably, this paper drew on survey data from 1999 and as outlined earlier the tax landscape had changed considerably since then, which might explain the absence of the profit centre approach to measuring the performance of tax departments by 2006.

Importantly TE 15 expressed a very strong view that 'no-one in the tax department should be directly rewarded, a link created between the benefit they produce and their own compensation' (e.g., decreasing ETR or saving a certain amount of tax dollars). He suggested this gets 'some tax departments into trouble'. Such performance measurement techniques do, in his view encourage aberrant behaviour and may result in taking unwise tax risks. Interestingly, his argument continued that the tax personnel who

engage in such behaviour might well have left the company by the time any ramifications are felt.[10] He jokingly added 'I should have gone about 14 years ago because you shouldn't stay or get audited right'. This is a very serious point which exposes a very short-sighted perspective which some tax personnel may take towards tax planning. Arguably it should encourage tax authorities towards a shorter rather a longer audit cycle.

TE 15 managed the tax department's performance measurement process by producing a very summarised and 'very cryptic' list of its achievements delivered annually to the CFO either orally or is handwritten on a piece of paper. This was then sent onto 'the Boss'.[11] This was done before bonuses or pay rises are decided on every year. When questioned about this somewhat mysterious process with apparent inattention to metrics, the sensitivity of this with respect to the IRS was evident: 'I don't really want it to fall into the IRS' or anyone's hands'. When asked about the nature of the achievements that might be listed, no specifics were given, but he said there are qualitative and quantitative ones and 'a lot of it has to do with is there a feeling that the tax department is in control of what's going on'. Interestingly, TE 10 also emphasised the qualitative nature of performance measurement: 'we don't use metrics for this stuff'.

Somewhat at the other end of the spectrum in terms of process, TE 24 was very proud of the company's very formal performance measurement system in place for the previous 5 years whereby all tax personnel have personal goals and objectives set up in such a way that there's a very clear alignment within the company of everybody's objectives and how their performance will be measured so that

> it aligns directly to what the company is trying to accomplish and it's gotten to be pretty, I think a pretty good system as it's been perfected.

A key factor he identified was how well tax supports the business, namely 'business partnering'. Tax personnel in this company, rather exceptionally, were rated by their internal customers (e.g., operations group, VP logistics) through a survey on performance against expectations and requirements. This interviewee (VP Tax) had frequent one-on-one meetings with tax personnel to ensure everybody was clear on the objectives and to monitor how all of these objectives are being met. Interestingly, this company did not look to the ETR for performance measurement as its overall tax structure was Cayman Islands–based which in itself results in a very low ETR (see below). It was particularly important, therefore, for this VP to look to other measures of performance.

In relation to very specific tax-planning strategies TE 2 referred to the measure of success as 'is it sustained on audit', and are the tax benefits effectively kept intact? The term 'audit' is used in a comprehensive sense here incorporating internal audit, external audit, auditor's auditors and IRS audit. Rather amazingly, TE 18 admitted there was no formal performance measurement of the tax function, which he attributed to the way the business is organised and its net operating loss (NOL) position.

There was general support for Douglas and Ellingsworth's (1996) view that the CFO is the primary internal evaluator of tax, with the one notable exception noted above where all of the internal customers (from business units to logistics) were involved in such evaluation. Most of the performance measures referred to in the literature (Douglas & Ellingsworth, 1996; Porter, 1999) were mentioned by many of the interviewees, although not all of them were being utilised by any one company. A number of interviewees did emphasise qualitative rather than quantitative measures, and although performance measurement was recognised as an important, albeit difficult function there was no consensus on the degree of formality around the performance measurement process. In the next section we focus on one particular and somewhat controversial metric, the ETR.

EFFECTIVE TAX RATE

All of the interviewees in this study talked at some length about the ETR as a measure of performance of the tax function. ETR can be calculated in several ways and so it was necessary to clarify and assess the degree of consensus as to how a company's ETR is calculated and reported. Scholes et al. (2014) provide two possible definitions of ETR as follows:

1. tax currently payable and deferred tax expense/net income before tax (which they posit is popular for external reporting purposes);
2. taxes paid currently/net income before tax (which is popular with the 'tax reformer', e.g., citizens for tax justice).

Having reviewed the most recently filed 10ks of all of the companies involved in the study, the ETR is computed as the provision for income taxes/income before tax provision, which is in line with the first definition above. This is therefore the definition based on reporting requirements (GAAP)[12] and was also confirmed to me by some of the interviewees.[13] Blouin (2014) in her discussion on tax risk and tax aggressiveness also

noted that 'research has shown that public corporations are primarily concerned with their GAAP ETR' (p. 880).

Importantly however, TE 14 referred to another ETR that the investors and analysts are interested in also; a 'pro-forma' ETR which is based on the core business activities only and does not include the impact of items such as acquisitions, disposals, write-off of goodwill, etc. Similarly TE 19 referred to being measured on a non-GAAP rate which is calculated based on 'our normal operations'. The process of how that is managed, monitored and communicated is very important as opposed to the actual rate itself.

While being aware of the existence in some cases of the alternative operations-only based definition referred to above, the following discussion is based on the first Scholes et al. (2014) definition of ETR above which is based on US GAAP. Table 1 sets out the 2004 ETRs for the companies calculated using this definition, based on the information contained in their 10k returns.[14] While companies 3 and 13 stood out for their relatively low ETRs, having an ETR in the high 20s/low to mid-30s would appear to be 'normal'.

Table 1. Sample Companies EFRs.

Company	ETR % 2004 Year End
C1	28
C2	26.10
C3	8.10
C4	30
C5	16.7
C6	27.8
C7	32
C8	Tax benefit
C9	32
C10	36
C11	31.6
C12	18.8
C13	13.6
C14	35
C15	Tax benefit

Quite mixed views and opposing philosophies emerged in relation to ETR being used for performance measurement purposes. In Company 1 for instance, ETR did not feature for performance measurement purposes at all. Some of the debate with respect to the ETR in a measurement context revolved around meeting (or not as the case may be) the forecasted ETR.[15] As pointed out by TE 19 when the ETR comes in above or below the forecasted rate, there will be 'a communication between you and management to make sure that they understand what the drivers are in that and what may change it'. TE 3 spoke in terms of having an acceptable ETR range (27−35%) and staying within that range means 'nothing horrible is going to happen'. This means there are no negative repercussions for the tax function. Getting the CFO, etc., to understand that fluctuations outside of this range is mostly out of the tax function's control relates to the continuing need for education internally about tax.

The forecasted or target ETR appeared to be set in some cases by people outside of the tax function, for example, the CFO and company President at Company 3 set the target ETR. Its tax director did not understand how it is decided upon and claims it may even be 'arbitrary' but was still 'my measure' and he appeared to be quite content with this situation as he was at the time meeting this objective 'comfortably'. Of course his view may well have been different if he wasn't meeting this particular objective comfortably. He did understand why tax directors might have a problem with being measured in this way as it can put 'pressure on you to perhaps do things that you might not normally do. It does incline you to be more aggressive' (TE 5). This provides some important insight perhaps into what drives and determines the tax risk profile within an organisation. Similarly TE 22 spoke of the CFO and the head of tax setting the objective ETR, he himself, being quite removed from and unsure of the process.

Company 5's tax group as a whole was measured primarily on the company's ETR so everything the tax group does was assessed in terms of its impact on the US GAAP ETR. More than 50% of what the Senior VP for taxes in this company was measured on was the ETR. One of the interviewees at this company contrasted this with his previous employer (another one of the companies in this study) that believed the ETR does not impact on stock price and that it should not take on high tax risks (presumably with the intention of reducing the ETR) as well as its existing high technology and market risks. Clearly there is a link here with the overall corporate risk profile (Lavermicocca, 2011).

TE 8 was adamant on the appropriateness of ETR as a measure of performance, content that he could personally influence it. This was in striking

contrast with TE 14 who 'would never sign up for a job where bonuses were conditioned upon a certain effective tax rate or a certain amount of tax savings'. He saw these as being out of his control, 'based on law and … much more a function of statutory tax rates than of planning', and he suggested that it is only management that had not worked with tax before that tried to tie the success of tax with 'the amount of money that does not have to be paid to the government'. He argued that you would want to be measured by something else when new tax reliefs are introduced, which your company simply cannot avail of. This view aligns with traditional agency theory which, as pointed out by Armstrong et al. (2012, p. 393) 'suggests that compensation should be based on performance measures that are controllable by the agent'.[16] Interestingly the second individual interviewed from this company who had responsibility in the EMEA[17] tax compliance domain said the Director of Tax was 'probably monitored on the overall rate and why it is what it is and what we need to do to change it'. TE 24 said he felt sorry for 'poor tax directors getting screwed', being measured on the ETR, only a small portion of which they could control. He said the ETR is an inadequate and inappropriate measure of performance as it is accounting based. He further suggested that there are legitimate accounting alternatives available for transactions which facilitate changing or creating different ETRs on the same set of circumstances so, quite infuriated, he said 'what kind of measure is that?' Clearly 'creative accounting' techniques can be employed to deliver the required ETR to the market. Interestingly and somewhat surprisingly based on the findings of this study, Armstrong et al. (2012) observe a correlation between tax directors' compensation and the GAAP ETR.[18] They posit therefore that the GAAP ETR is 'a more informative measure of the tax director's actions and, accordingly, it is allocated more weight in the incentive compensation contract' (p. 392).

One interviewee who would not want to be measured by the ETR suggested:

> it's the business that controls your effective tax rate really … been going all over the place but that's as a result of the business side. (TE 18)

Another, while believing the ETR is very important was emphatic that in his organisation 'there is no pressure or goal to arrive at a desired rate'. They strive towards an 'optimal' rate

> within the organisation and operation that we have and so there is no pressure to be entering into activities that don't coincide with our normal business operations. (TE 23)

For companies with significant net-operating losses (NOLs), the ETR did not feature for performance measurement purposes. However, it was not clear how the performance of the tax function was measured in these companies. In one case it seemed that because the ETR was not appropriate, there was no need to measure the performance at all which is somewhat surprising.

There was some evidence to suggest a link between the ETR and resources for the tax function, with it sometimes being used as a 'sword' to defend against inadequate resourcing:

> if we can't spend money on X, Y and Z the effective tax rate is going to go up two points. (TE 3)

> if tax rate is going down and … the company sees objective results I think he's [Sr VP Tax] getting resources and will be able to continue to get resources in this environment. (TE 17)

For TE 20 an important aspect of managing the ETR is it shows

> that a company is putting some resource, some emphasis on effective tax planning, to minimise what could be a pretty significant cost to the company.

One interviewee, TE 19, interestingly spoke of the possibility of doing some 'one-time things' that would lower its ETR towards its competitor's rate, but he and his company were against a one-time hit because 'its too painful to have to go back'. Equally going too low is 'very hard to sustain' and at some stage is likely to 'pop back up again' with possible negative consequences. Instead his strategy was clearly to stick with a more consistent ETR performance over time. Notwithstanding the above, this company was cognisant of competitors' ETRs. When they looked at tax-planning ideas they addressed the short-term and long-term impact on the rate, what other companies are doing, the investment community reaction and finally talked it through with the executives. This process provided them with a balanced perspective on managing the ETR.

ETR AS AN EXTERNAL MEASURE OF CORPORATE PERFORMANCE

Predicting the ETR for the market (the Street), and the subsequent reaction by the investment community/market/street was a recurring theme in the discussion on ETRs. As referred to by a number of interviewees, when a

company sets a target ETR, it is monitored and changed typically on a quarterly basis, and fluctuations from the rate given to the Street were generally perceived as not good news, which ultimately can impact on share price. TE 3 referred to his company being criticised when the rate fluctuates as the analysts have built what turns out to be an incorrect ETR into their business models. Arguably the Street's attention to companies' ETR is a source of coercive isomorphism (DiMaggio & Powell, 1991b). As noted by TE 21, the ETR

> is something that the investor relations side of things focus on big time … we know that the investor relations people and the Wall Street guys look at it so we have to look at it.

The importance for these companies of having an ETR that does not fluctuate significantly and is competitive with peer group companies was also highlighted by Advisor 3. This 'importance' however attached to ETR on the Street did not always filter through to the companies in terms of internal performance measurement as observed above. TE 11 suggested that the ETR is 'a lot more important I think to Wall Street' than to (his company), although the CFO does need to understand and be able to talk to the analysts about it. TE 1 stated:

> if for whatever reason, for legitimate reasons, the rate is higher than our peer companies … that would be ok, as long as there was a good explanation for why.

This interviewee was more concerned however with explaining to the CFO rather than the Street. Another, TE 15, described his mechanism for dealing with and managing market reaction. He said there are so many 'flying points', that is, factors which may influence the ETR, that he was only prepared to say to the Market what its ETR will not exceed. He was not prepared to say what it actually will be.

Despite many interviewees' reservations about the appropriateness and validity of the ETR as a measure of performance, comparison of a company's ETR with its peer companies certainly happened, and seemed to matter considerably to the tax executives, the CFOs and the investment community.[19] TE 8, for example, presented at least yearly to the Board concerning the ETR, specifically comparing and explaining the company's ETR vis-a-vis its competitors. He did emphasise however that this did not present a pressure which would make them more tax aggressive. Instead he might 'work on resources differently, prioritise things differently'. Clearly, the Board are interested in the company's ETR (this interest could be

driven by many things), which filters through to performance measurement in the tax group. He sums up the importance of the ETR as follows:

> I think it's a competitive advantage to [my company] to have a lower tax rate than [a named competitor company] and I work on it. (TE 8)

TE 12 monitored its competitors and saw this as a 'key measure'. This interviewee raised specific concerns about not being able to match a competitor's ETR which was based on 'an extremely aggressive tax structure … we can only hope that the IRS goes after them from now on'. Importantly, however as observed by Blouin (2014) a low ETR does not in itself infer a company is tax aggressive.

One really interesting aspect of performance measurement with respect to how a company is doing vis-a-vis its competitors concerns the idea of absolutes versus relativities. TE 26 (an Irish-based in-house tax executive) suggested that having a very low ETR vis-a-vis your competitors may in fact pose a question mark in terms of tax risks, with the obvious possible negative impact on the market. He explained that a relatively low ETR

> attracts a lot of attention and the Board, the CFO may not necessarily see it as a positive to be sort of six points ahead of your competition … beating the market rate by extra points is not perceived to be a critical factor.

His US-based colleague's view (who probably has greater visibility) was a little different however who said they try to be 'at or below' their competitors, ETR as they would see this as a competitive advantage.

TE 15 spoke of the rather lengthy and detailed presentation he previously used to do to the Audit Committee (of the Board) explaining the differences between his company's and its competitors' ETRs. Part of this analysis involved trying to 'glean' what they could from the competitors' financial statements. This was not done any more as it was considered to be 'meaningless'. They discovered that even a company listed as a competitor (he named an example) has such a different business model, that they are not really comparable in any meaningful way. He believed the Street does not care about these differences. He did caveat this however by adding 'unless we were sitting there with a 40% effective tax rate or something'.

His colleague in the interview did point out however another factor, that is, the 'CFO network'. When these CFOs talk to each other they become very aware of why other companies' ETRs may be lower than theirs (e.g., it may be some structural differences), and they often come back to the VP for Tax querying why their company can't, for example, restructure to

match or beat the competitors' ETR so 'there is some level of comparison' with competitors taking place. The over-riding important point here does appear to be having an awareness of why your rate is different to your competitors and to be able to explain this satisfactorily to the CFO. TE 23 spoke of the need to 'explain to the CFO or in some cases the CEO the differences between the character of our competitors and ourselves'. The latter may be particularly relevant in the context of the companies operating in the Silicon Valley area whose businesses and business models could vary significantly across a wide range of technologies.

While TE 2 claimed not to benchmark himself against competitors and claimed no external influences exist at all in terms of performance measurement of tax, his boss (TE 1) did allude to the fact that he contacted a small number of companies in Silicon Valley on an informal basis 'keeping an eye on what other companies are doing' and in that way these other companies have an influence on decisions and ultimately therefore performance and performance measurement.

Although at the time of this study, media and civil society attention was much more muted, market analysts nonetheless exerted meso-level influences on MNEs' tax practice through their evaluations of firm performance, which influence Boards' perceptions about tax, and also puts pressure on CFOs – as well as issuing commentaries which impact MNEs' share prices. They are particularly interested in companies' ETRs – what rates they should use for their modelling purposes and why, and why such rates might differ from the rates of their competitors. A CFO having to deal with analysts' questions about their company's ETR, is an example of engaging with the organisational field level – the questions push tax onto their agenda (Mulligan & Oats, 2016).

POST- VERSUS PRE-TAX PERFORMANCE MEASUREMENT

The preceding section considered the measurement of the performance of the tax function within MNEs and considered the use of ETR for this purpose. ETR was also considered as a measure of organisational performance used by external actors such as the Street. In this section we consider the final strand of our exploration of the relationship between tax and performance measurement: the difficult question of whether performance measurement within an organisation should be on a pre-tax or post-tax basis.

In this study, all companies in the sample except one measured the performance of the business units and the non-tax personnel leading these units (typically VPs for different operations) on a pre-tax basis. Very strong views were held by the interviewees on this topic. Most interviewees shared the same philosophy and were clearly not in favour of ever having tax being treated as a business expense of the business units.

In the one company where the post-tax basis applied, the bonuses of the VPs of the different businesses depended in part on how much taxes his/her group pays so 'he cares a whole lot about taxes' (TE 8). TE 9 (with the same company) acknowledged the counter argument to measuring on a post-tax basis but explained why it can work:

> the businesses can get too aggressive and … unconstrained … a business could do all sorts of less than fully kosher things from a tax accounting view … it can be controlled and I think you have to have a strong respected central tax group that sets the rules.

TE 8 admitted this is politically a difficult area and most tax directors' attitude would be:

> My gosh the businesses will run crazy with this stuff and they do. They will do anything now to save taxes and they do and you have to control them and you have to educate them.

In terms of who drives this performance measurement approach, it goes firmly back to the CFO in 1984/1985 who introduced it because he said 'the only way you are going to get these people to manufacture stuff in Puerto Rico and Singapore is if we put it in their performance'.[20]

Only one other interviewee (TE 2) indicated that he would like to see a post-tax basis of performance measurement because he was really big on 'accountability' and thinks 'it would be good to include tax as a cost of their business.' This view was not shared however by his tax colleague who believes the business units 'are pulling tax in now as it is' (TE 1). Two other companies could see some merit in it but only in certain situations, but even then said it would be difficult to apply in an equitable fashion. TE 14 spoke of the difficulties with trying to assess on a post-tax basis referring to the fact that some countries (e.g., Ireland) have a significantly lower corporation tax rate than others (e.g., Italy) so these would have to be compensated differently.[21]

The predominant finding was that companies employ a pre-tax basis of performance measurement on business units and almost all interviewees philosophically agree with this approach. TE 11 said: 'I don't want the

businesses worrying about the tax rates and making decisions'. His colleague (TE 10) agreed:

> Absolutely do not want ever to be measured on an after tax basis … people should be looking at the business side of things and let the tax department worry about tax.

Specifically in relation to transfer pricing it could potentially result in tax executives constantly 'fighting with your operations … they all want to optimize their own P & L as opposed to what's the correct thing' (TE 10). This company was very strong on this viewpoint which was really interesting as what were by far the two largest companies in the study held completely oppositional stances philosophically and in practice on this matter, suggesting limits to isomorphism in this regard. TE 18 was also keen to retain control over the tax expertise and focus:

> I don't think that the business should really concern themselves with something that they have zero control over. That's my job to come in there and try and control that … sometimes what happens is what could be good for one group might be bad for another group and you'd have to have all these different battles all over the place.

TE 19's concern about moving to a post-tax basis was 'you start to get people focused more on the process than on what they really should be doing which is the core business'. TE 23 found the idea of post-tax basis as quite 'worrisome' and thinks it would put a pressure on business managers that he would not be comfortable about. He referred to the fact that many of the local operations were headed up by sales people and

> the character of those people is to be aggressive and to want to achieve goals that they've established, or goals in most cases that they haven't established, somebody else has established for them and you know I would not want to see them under that pressure and therefore be susceptible to overly aggressive tax strategies.

The company which engaged in the post-tax basis was aware that it is part of a minority of companies in Silicon Valley. Its approach, however, was well embedded, that is, 'institutionalized' (Powell & DiMaggio, 1991) as it was introduced by a very powerful internal actor over 20 years ago. The philosophy and practice within this company would most likely not change without a change at CFO level to somebody with an opposing philosophy signifying the role of powerful actors or 'elites' in the institutionalisation process, who are themselves through their exercise of power 'sources of heterogeneity' in the tax institutional environment (Powell, 1991). However, the chances of this company employing somebody with an opposing view on performance measurement were, at the time, very slim. A post-tax approach to performance measurement can be viewed as a 'cultural rule'

(Edelman & Suchman, 1997) within this company which explains some of its rules and organising logics (DiMaggio & Powell, 1991a) with respect to tax. Interestingly this company was perceived as a 'leader' with respect to other tax-based activities, yet it was not followed by other Silicon Valley companies with respect to post-tax performance measurement. Another very large company in the Silicon Valley facing many of the same tax-planning opportunities and challenges did not share the post-tax measurement philosophy, which again could be explained by an internal cultural perspective created and sustained by some powerful internal actor(s) in the tax domain.

Whilst there was some limited evidence to support the idea that managers (non-tax) managers being assessed on a post-tax basis leads to more tax aggressive planning (Phillips, 2003), as pointed out by Armstrong et al. (2012, p. 394) taken as a whole, 'prior literature provides limited evidence that managerial incentives influence tax planning choices'.

These findings support the contemporaneous KPMG (2005) observation that pre-tax performance measurement still predominates. The tax executives for the most part were keen to retain a sense of power through being the exclusive tax knowledge experts in the business. Despite not being terribly close to the business, and not always understanding the business, they feel they are best positioned to address the tax implications of the business activities both in terms of expertise and character. It appears something of a contradiction to demand of the business units to consider tax (through early consultation with the tax executives) in their strategic business decision making yet not reward them for doing so through for example a post-tax performance measurement system.

DISCUSSION AND CONCLUSION

This paper demonstrates the value of qualitative research as a means of diversifying and enriching tax research within accounting. Interviewing tax professionals allowed us to examine tax in its practical operation, going behind the scenes and thereby adding to our understanding of how tax work is performed within organisations. Although the landscape has changed significantly since this study was conducted, in particular as a result of the global financial crisis and subsequent attempts to tighten up regulation, the empirical data presented here provides rich insights into a neglected aspect of tax practice: the inside story of tax and performance measurement within organisations.

Many of the performance measures referred to in the literature were employed in the companies (ranging from timely and accurate compliance to reacting to the unexpected, such as an IRS audit), and some interviewees put a greater emphasis on qualitative as opposed to quantitative measures. In contrast to earlier research there was no evidence to suggest the profit centre performance measurement model was being adopted by MNEs for their tax departments, which might well be due to the changing international tax and regulatory landscape. The CFO emerged as a key evaluator of the performance of tax executives. However there was no consensus on the degree of formality around the performance measurement process. Two distinct aspects particularly exercised the interviewees, that is, the ETR and post-tax versus pre-tax performance measurement. Many interviewees did not perceive the ETR as being an appropriate measure of performance, yet they were very aware of it, and needed to be able to understand and explain to internal (the Board, CFO, etc.) and external (market analysts) interested parties, its make-up and why it differed from their competitors' rates. The latter demonstrated clearly the importance of relativities over absolutes in this context. Only one company subscribed to and employed a post-tax measurement of performance to business units. Most interviewees shared the view that a post-tax basis might only serve to increase tax risks, preferring instead for the in-house tax executives to remain the exclusive tax knowledge experts within their organisation, and be rewarded on that basis.

There was certainly a great awareness of the ETR among all of the interviewees in this study. However, there was no consensus regarding the extent to which it was used in practice to measure the performance of tax executives, with only one company's tax executives being very content about being measured based on the ETR. The philosophical position of a number of the interviewees was very clear, that is, the ETR is an inappropriate measure of performance as it is not totally within the control of the tax executives, and may encourage aggressive tax planning if it were used to measure performance. ETR moves due to other factors such as business activity, new tax laws, etc. In any event as suggested by Slemrod (2005) a relatively very low ETR may in the eyes of the 'savvy investors … result from a more aggressive stance that pushes the limits of what is legal' (p. 95), but in itself it may not at all be a reliable indicator of tax aggressiveness (Blouin, 2014). This is not to suggest, however, that all investors are the same and there may well be a 'clientele' very happy to invest in a company with a very low ETR, notwithstanding the degree of tax aggressiveness that might imply. Educating the CFO, the CEO, etc., as to why the ETR has fluctuated, appeared to be paramount in securing legitimacy and credibility internally.

Nonetheless, the Street, a source of coercive isomorphism (DiMaggio & Powell, 1991b) attached great importance to a company's ETR, and therefore managing it and explaining it was very important. The Street therefore is an important constituent in the organisational field level and the analysts are important actors at this level. So whether tax executives like it or not they must pay attention to the ETR purely because this important organisational field member does so, in a way that could impact ultimately on shareholder wealth. The latter is a concern, taking account of the fact that the findings do not really support the validity of the ETR as a measure of performance and it clearly seems to be subject to manipulation through creative accounting or flexible accounting standards (Bauman & Shaw, 2005). We welcome the work of Armstrong et al. (2012) on the correlation between tax directors' compensation and the GAAP ETR, but our work suggests there are many other measures of performance used in practice, so further work could seek to establish a correlation (if any) between such measures and the compensation of tax managers.

Most interviewees were quite exercised with his/her company's ETR relative to competitor companies' ETR. While some interviewees believe a lower ETR is a competitive advantage, a relatively low ETR could also signal aggressive tax planning with possible negative consequences. The need for tax executives to be able to explain the basis of the difference between companies' ETRs to CFOs, the Street and arguably tax executives/CFOs in the competitor companies appeared to be very important and necessary and a mechanism towards achieving legitimacy (Scott, 2008), often revolving around different business models. Such an explanation or understanding cannot be obtained through an examination of a company's published financial statements. It would appear the case for legitimacy is stronger than economic efficiency with respect to the ETR, itself a possible measure of economic efficiency. Identifying and recognising the influence of external constituents like competitor companies and the Street enhance our understanding of 'the relationship between organizational structures and the wider social environment in which organizations are situated' (Hussain & Hoque, 2002, p. 164). Strategically many companies work on the basis that there is an 'acceptable range' of ETRs which won't give rise to any unwanted analysts' questions, or get unwanted attention from their peer group companies, thereby securing external legitimacy (Scott, 2008) which is arguably important for their personal survival within the Silicon Valley tax arena.

Contrary to Karayan and Swenson's (2007) suggestion, comparing a company's ETR to the standard US corporation tax rate of 35% did not

feature as important in the interviews. These findings do question the validity of the ETR as a measure of the effect of tax planning, yet it has been used by many researchers for that purpose (Mills et al., 1998; Rego, 2003; Zimmerman, 1983). It should clearly continue to be used therefore with great caution as suggested by Phillips (2003).

This paper is based on research conducted prior to the financial crisis and in the wake of Enron and Worldcom scandals. It provides valuable insights into the differences and similarities between companies in a particular industry in a particular geographical location at a particular point in time. There is considerable scope for more studies in this vein, in the ever-changing international tax landscape, the outcomes of which should be of interest to researchers in the area of performance measurement and regulators and tax policy makers alike.

NOTES

1. Not all interviewees were male, however in the interests of protecting anonymity, all will be referred to as 'he'.
2. Although one company has a Cayman Islands–based tax structure.
3. See Suchman and Cahill (1996) also for a qualitative study focussing on Silicon Valley area.
4. For example, some individuals were keen to distinguish his/her company from others in Silicon Valley using phrases like: 'we are different', 'maybe other companies don't do it this way', 'SOX may have changed things for other companies, but not for us'.
5. 'TE' denotes Tax Executive.
6. Some of these align with the economic environmental factors referred to by Ashton and Roberts (2011).
7. Company 7 had recently succeeded in reaching a favourable agreement with the IRS.
8. Specifically in the context of tax risk minimisation, it might be expected to see some reference to FIN48 reserves, but these interviews took place pre-FIN48. As pointed out by Blouin (2014) some researchers use the FIN48 reserve as a proxy for tax risk/aggressiveness of a firm. In further research currently being undertaken by the authors of this paper, involving interviews with tax executives in MNEs, the impact of FIN48 on performance measurement of the tax function and the related area of tax risk management is being examined. Under FIN48, publicly traded firms are required to disclose their unrecognised tax benefits which represent an income tax provision for future tax contingencies.
9. They drew on a survey of over 200 CFOs of Fortune 1000 companies focussing on the survey question that asks whether the tax department in their respective firms is measured as a profit or cost centre. They specifically examined the link between four constructs and the performance measurement choice of the firms,

namely, firm decentralisation, the degree of coordination between the tax department and operating divisions within the firm, firm growth and tax-planning opportunities, and the importance of financial tax management to the firm. This paper also refers to a body of research linking compensation and aggressive tax reporting.

10. See Blouin (2014) for an interesting and thought-provoking discussion on the challenge of defining and measuring tax risk and tax aggressiveness.

11. 'The Boss' was the CEO and was named in the interview.

12. In the United States, GAAP denotes generally accepted accounting principles, that is, accounting rules used to prepare, present, and report financial statements for a wide variety of entities, including publicly traded and privately held companies, non-profit organisations and governments.

13. Not all interviewees were asked to confirm their agreement of the definition, however.

14. These rates refer to each company's 2004 year end which was not the same in each case.

15. In accordance with US GAAP, an ETR is forecasted for the year, but each quarter this is re-evaluated, which if it changes the tax provision must be re-evaluated.

16. See Chyz and White (2014), Armstrong, Blouin, Jagolinzer, and Larcker (2015) and others for substantial research on the topic of agency conflicts/problems and tax avoidance.

17. Europe, Middle East and Africa.

18. This study used a proprietary data set that includes detailed compensation information for many executives, including the members of the tax department, for large US firms, which facilitated the identification of the attributes of the compensation plan that are unique to tax directors, as opposed to the general compensation policy of the firm.

19. The investment community's interest clearly goes beyond this comparative context however.

20. Manufacturing in these countries typically leads to lower tax payable by the manufacturing groups.

21. Standard Irish corporate tax rate on trading income is 12.5% compared to 33% in Italy.

REFERENCES

Ahrens, T., & Chapman, C. S. (2006). Doing qualitative field research in management accounting: Positioning data to contribute to theory. *Accounting, Organizations and Society*, *31*(8), 819–841.

Armstrong, C., Blouin, J., & Larcker, D. (2012). The incentives for tax planning. *Journal of Accounting and Economics*, *53*(1–2), 391–411.

Armstrong, C., Blouin, J., Jagolinzer, A. D., & Larcker, D. F. (February 25, 2015). *Corporate governance, incentives, and tax avoidance*. Forthcoming, Journal of Accounting and Economics; Rock Center for Corporate Governance at Stanford University Working Paper No. 136. doi:10.2139/ssrn.2252682

Ashton, R. H., & Roberts, M. H. (2011). Effects of dispositional motivation on knowledge and performance in tax issue identification and research. *Journal of American Taxation Association*, *33*(1), 25–50.

Bauman, M. P., & Shaw, K. W. (2005). Disclosure of managers' forecasts in interim financial statements: A study of effective tax rate changes'. *Journal of the American Taxation Association*, *27*(2), 57–82.

Berger, P. L., & Luckmann, T. (1966). *The social construction of reality: A treatise in the sociology of knowledge*. New York, NY: Penguin Books.

Blouin, J. (2014). Defining and measuring tax planning aggressiveness. *National Tax Journal*, *67*(4), 875–900.

Borkowski, S. (2005). Turnover in transfer pricing management: Revolving door or opportunity for expertise. *International Tax Journal*, *31*(3), 17–30.

Braithwaite, V. (2009). *Defiance in taxation and government*. Northampton, MA: Edward Elgar Publishing.

Bringer, J. D., Johnston, L. H., & Brackenridge, C. H. (2006). Using computer-assisted qualitative data analysis software to develop a grounded theory project. *Field Methods*, *18*, 245–266.

Chyz, J. A., & White, S. D. (2014). The association between agency conflict and tax avoidance: A direct approach. *Advances in Taxation*, *21*, 107–138.

Clemons, R., & Shevlin, T. J. (2014). *The tax policy debate: How accounting researchers can obtain a place at the table*. Retrieved from http://ssrn.com/abstract=2489379 or doi:10.2139/ssrn.2489379. Accessed on August 30, 2014.

Cooper, D. J., & Robson, K. (2006). Accounting, professions and regulation: Locating the sites of professionalization. *Accounting, Organizations and Society*, *31*(4–5), 415–444.

Deloitte. (2006). What do companies want from the corporate tax function? CFO and Tax Executives; Perspectives on Corporate Tax.

DiMaggio, P. J., & Powell, W. W. (Eds.). (1991a). Introduction. In *The new institutionalism in organizational analysis* (pp. 1–38). Chicago, IL: University of Chicago Press.

DiMaggio, P. J., & Powell, W. W. (1991b). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. In *The new institutionalism in organizational analysis* (pp. 63–82). Chicago, IL: Chicago University Press.

Douglas, R. F., & Ellingsworth, P. J. (1996). What management expects: Evaluation of the tax department and its executives. *Tax Executive*, *48*(1), 29–32.

Edelman, L., & Suchman, M. C. (1997). The legal environment of organizations. *Annual Review of Sociology*, *23*, 479–515.

Ernst & Young. (2006). Tax risk: External change, internal challenge: Global tax risk survey.

Gracia, L., & Oats, L. (2012). Boundary work and tax regulation: A Bourdieusian view. *Accounting Organisations and Society*, *37*, 304–321.

HMRC. (2006). *Business tax on the boardroom agenda – The views of business*.

Horton, J., Macve, R., & Struyven, G. (2004). Qualitative research: Experiences in using semi-structured interviews. In C. Humphrey & B. Lee (Eds.), *The real life guide to accounting research* (pp. 339–358). London: Elsevier.

Hussain, M., & Hoque, Z. (2002). Understanding non-financial performance measurement practices in Japanese banks: A new institutional sociology perspective. *Accounting, Auditing and Accountability Journal*, *15*(2), 162–183.

Karayan, J. E., & Swenson, C. W. (2007). *Strategic business tax planning*. Hoboken, NJ: Wiley.

KPMG. (2005). *Tax in the boardroom: A discussion paper*.
Lavermicocca, C. (2011). Tax risk management practices and their impact on tax compliance behaviour – The views of tax executives from large Australian companies. *eJournal of Tax Research*, *9*(1), 89–115.
Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Thousand oaks, CA: Sage.
Mills, L., Erickson, M. M., & Maydew, E. L. (1998). Investments in tax planning. *The Journal of the American Taxation Association*, *20*(1), 1–20.
Mulligan, E., Cunningham, J., & Gawley, J. (2016). Alignment of tax planning functions and activities with corporate strategy in multinational organisations. In D. Salter (Ed.), *Contemporary issues in tax research*. Bath: Fiscal Publications.
Mulligan, E., & Oats, L. (2009). Tax risk management: Evidence from the United States. *British Tax Review*, *6*, 680–703.
Mulligan, E., & Oats, L. (2016). Tax professionals at work in Silicon Valley. *Accounting Organizations and Society*, *52*, 63–76. doi:10.1016/j.aos.2015.09.005
Oats, L. (2012). Gathering and interpreting qualitative data. In L. Oats (Ed.), *Taxation: A fieldwork research handbook* (pp. 19–25). New York, NY: Routledge.
Phillips, J. D. (2003). Corporate tax-planning effectiveness: The role of compensation-based incentives. *Accounting Review*, *78*(3), 847–874.
Picciotto, S. (2007). Constructing compliance: Game playing, tax law and the regulatory state. *Law and Policy*, *29*, 11–30.
Porter, B. A. (1999). Survey of in-house tax departments in United Kingdom corporates. *British Tax Review*, *1*, 32–51.
Powell, W. W. (1991). Expanding the scope of institutional analysis. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis*. Chicago, IL: University of Chicago Press.
Powell, W. W., & DiMaggio, P. J. (Eds.). (1991). *The new institutionalism in organizational analysis*. Chicago, IL: University of Chicago Press.
Rego, S. O. (2003). Tax avoidance activities of US multinational companies. *Contemporary Accounting Research*, *20*, 805–833.
Robinson, J. R., Sikes, S. A., & Weaver, C. D. (2010). Performance measurement of corporate tax departments. *The Accounting Review*, *85*(3), 1035–1064.
Rogers, H., & Oats, L. (2012). Case studies. In L. Oats (Ed.), *Taxation: A fieldwork research handbook* (pp. 107–113). New York, NY: Routledge.
Scholes, M. S., Wolfson, M. A., Erickson, M. M., Hanlon, M. L., Maydew, E. L., & Shevlin, T. J. (2014). *Taxes and business strategy: A planning approach*. New Jersey, NJ: Prentice Hall.
Scott, W. R. (2008). *Institutions and organizations*. Thousand Oaks, CA: Sage.
Slemrod, J. (2005). What corporations say they do, and what they really do: Implications for tax policy and tax research. *Journal of the American Taxation Association*, *27*(1), 91–99.
Stake, R. E. (2000). Case studies. In N. K. Densin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*. Thousand Oaks, CA: Sage.
Suchman, M. C., & Cahill, M. L. (1996). The hired gun as facilitator: Lawyers and the suppression of business disputes in Silicon Valley. *Law and Social Inquiry*, *21*(3), 679–712.
US Senate Permanent Subcommittee on Investigations. (2005). The role of professional firms in the U.S. Tax Shelter Industry.
Zimmerman, J. L. (1983). Taxes and firm size. *Journal of Accounting and Economics*, *5*, 119–149.

THE IMPACT OF CULTURE AND ECONOMIC STRUCTURE ON TAX MORALE AND TAX EVASION: A COUNTRY-LEVEL ANALYSIS USING SEM

William D. Brink and Thomas M. Porcano

ABSTRACT

The purpose of this study is to develop a comprehensive international tax evasion framework by examining how national cultural variables and economic structural variables impact individuals' tax morale and tax evasion.

This study uses structural equation modeling (SEM) to simultaneously analyze direct and indirect paths between country-level variables, tax morale, and tax evasion.

The results of this study show that multiple cultural and structural level variables directly impact tax evasion. Further, multiple cultural variables indirectly impacts tax evasion via changing individuals' tax morale attitudes. In that, higher tax morale leads to lower levels of tax evasion. Finally, the analysis demonstrates that tax morale attitudes and tax evasion levels differ significantly in developed countries versus in-transition

Advances in Taxation, Volume 23, 87–123

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023004

or developing countries. In addition, the impact of these cultural variables and economic variables on tax morale and tax evasion differ depending on a country's economic development.

This study further develops an understanding of how various cultural variables and economic variables impact tax evasion. Such that, some of the variables change tax morale attitudes which impacts tax evasion while other variables impact tax evasive behavior directly. This more holistic model can be used by researchers to further explore tax evasion behavior in an international context.

Policy makers should take note of this study when developing strategies to mitigate tax evasive behavior. Specific country characteristics, such as culture and economic structure, will impact how individuals respond to policy (e.g., new laws or penalties).

Keywords: Tax morale; tax evasion; SEM; national culture; Hofstede; economic structural metrics

INTRODUCTION

Tax evasion continues to be a concern for many governments throughout the world. Estimates of the shadow ("underground") economy as a percent of GDP in various countries help provide a measure of tax evasion. This ratio is on average 20.2 percent, with the United States and Switzerland at the low end (8.7 percent and 8.3 percent, respectively) and Turkey and Bulgaria at the high end (30.6 percent and 34.6 percent, respectively) (Schneider & Elgin, 2013). Because of the variability in the amount of tax evasion seen between countries, it is important to understand why some countries experience higher levels of tax evasion than others. Therefore, the purpose of this study is to use data collected from 45 countries and examine how culture and economic structure impact tax morale attitudes and tax evasive behavior. This study helps create an enhanced framework for studying international tax evasion.

Taxpayers' decisions to comply or evade are influenced by many factors, and not all taxpayers are affected similarly by these factors. Clearly there is some form of economic rationality involved in some decisions; some taxpayers look at the risk and reward of not complying and base their decisions on expected outcomes (Allingham & Sandmo, 1972; Cowell, 1990).

However, taxpayers are not always motivated by rationality. Tax morale is another metric that can explain taxpayers' tax evasion behavior; it also explains why compliance rates are still relatively high in many countries. For example, IRS data indicate that the federal income tax compliance rate in 2006 was about 85.5 percent (Internal Revenue Service [IRS], 2012). This suggests that taxpayers use other decision models and/or other variables affect the tax evasion decision, and research starting in the late 1990s has started to focus on variables beyond traditional variables such as audit and penalty rates (Torgler, 2003a).

Studies now incorporate variables and models that do not rely on the economic-rational decision model to help explain why taxpayers comply (Bobek, Roberts, & Sweeney, 2007), and more studies are analyzing international databases to look at cross-country differences and similarities. The current models and variables are quite diverse and include (1) country-level factors such as national culture dimensions (Tsakumis, Curatola, & Porcano, 2007); (2) country-level measures of economic prosperity (Porcano, Tsakumis, & Curatola, 2011); (3) country-level measures of public expenditures (Halla & Schneider, 2008); (4) individual-level variables such as religiosity, trust in government, and tax morale (Torgler, 2003a); (5) exchange relationship between citizens and government in terms of what citizens pay relative to what they receive (Güth, Levati, & Sausgruber, 2005); (6) taxpayers' perceptions of government quality (Cullis & Lewis, 1997); and (7) the entire compliance process (Torgler & Schneider, 2009).

The relation between tax morale and tax evasion also has been explored more frequently.[1] The results suggest a strong negative relation between tax morale and tax evasion; as tax morale decreases, tax evasion increases, and this result has been shown in developed, in-transition, and developing countries (Torgler, 2003b). Thus, factors related to tax morale have been analyzed, and results are somewhat consistent across countries (Torgler, 2003b). Similarly, tax morale and other variables that are related to tax evasion have been analyzed simultaneously (Torgler & Schneider, 2007, 2009). These studies use multiple regression analysis to establish a baseline equation then add related variables. The new equations are analyzed to determine the stability of the relation between tax morale and tax evasion. The presumption is that tax morale is related to tax evasion if tax morale remains significant in all subsequent models. Whether this establishes a causal relation is uncertain (Halla, 2010a).

The current study examines the relation between tax morale and tax evasion by using structural equation modeling (SEM) and regression analysis. The relation between country-level variables (cultural dimensions and general

structural metrics indicative of prosperity and economic development), tax morale and tax evasion is analyzed simultaneously. Using data from several sources (Hofstede, 1980; Schneider, 2004; Schneider, Buehn, & Montenegro, 2010; World Values Survey Association, 2009; World Economic Forum, 2000–2005), we find that tax morale has a significant impact on tax evasion but also that multiple variables impact tax morale attitudes. Thus these variable indirectly impact tax evasion by changing taxpayer attitudes. We also find that one cultural dimension and two structural metrics do not appear to impact tax moral attitudes, but instead are directly linked to tax evasion. Finally, we show that a country's economic developmental level (e.g., developed vs. in-transition or developing) significantly shapes tax morale attitudes and tax evasion behavior. Further the impact of the cultural variables and economic structural metrics on tax morale attitudes and tax evasion differs in developed countries compared to developing or in-transition countries.

The results in this study have impact on both research and practice. This study further develops an international tax evasion framework which future researchers can utilize to further develop or explore why tax evasion differs from country to country. Not only understanding which cultural variables impact tax evasion but how (e.g., indirectly by changing tax morale attitudes) will help researchers better understand tax evasion behavior. Tax policy makers should also take note of the results of this study. By understanding taxpayers motivations to comply or evade with tax laws is vital when trying to implement tax policy. For example, some cultures will exhibit lower levels of tax evasion if regulations increase while other cultures will exhibit higher levels of tax evasion in response to increased regulation. Understanding the impact of culture and economic climate is vital for implementing successful tax policy.

The remainder of this paper is organized as follows. The next section presents a review of the literature on tax evasion and tax morale, especially in an international context. The third section contains a discussion of the hypothesis and the variables of interest in the current study. Results are presented in the fourth section, and the fifth section contains implications of the findings and conclusions.

TAX EVASION AND TAX MORALE

Tax evasion occurs when taxpayers do not pay their expected ("determined") share of taxes; that is, for one reason or another they fail to comply with existing tax rules and regulations. Many studies analyze the

relation between a variety of variables and tax compliance. Most of the variables used in the analyses are individual-level ones (e.g., age, employment type, gender, marital status, religiosity, trust in government). Only a few studies use country-level variables in their models. Regardless, all find at least one variable in their models significantly related to tax evasion).

In an early study, Strumpel (1969) noted the association between national cultures and tax evasion. Subsequent studies looked at tax evasion in a specific country (Alm, Bahl, & Murray, 1990; Porcano, 1988). Cross-country comparisons began appearing in the 2000s (Torgler, 2003b; Torgler & Schneider, 2009; Tsakumis et al., 2007) and now occur frequently. The relevant literature in this area is discussed later.

Tax morale is the intrinsic motivation to pay taxes. It represents a taxpayer's willingness or moral belief in paying taxes and therefore contributing to society. Tax morale is the collective name for all the non-rational factors and motivations (such as social norms, personal values, and various cognitive processes) that strongly affect an individual's voluntary compliance with tax laws. Although tax morale is internally motivated, the outside world affects it (Kornhauser, 2007).[2]

Tax morale helps explain why taxpayers comply with tax rules and regulations even though the risk/reward economic payoff to evading might enhance their economic position. There were relatively few papers addressing tax morale prior to 2000. The number started rising in 2000 and since 2006 there have been more than 100 papers per year (Halla, 2010a). The next subsection presents a review of some of the tax morale studies.

Tax Evasion/Tax Morale Studies

In General

Recent studies consistently find variables dealing with institutional quality and national governance (e.g., political risk, bureaucratic corruption, law and order) and tax morale are associated with tax evasion. Feld and Frey (2007) describe the exchange relationship between taxpayers and government as a psychological contract whereby each party gives and receives. If taxpayers perceive the relationship favorably than they are more likely to comply. Feld and Frey (2007) find government policy, tax authorities' behavior, and government institutions affect taxpayer perceptions and therefore the perceived "fairness" of the contract. Torgler and Schneider (2007, 2009) analyze within country data (Switzerland) at the cantonal level. They find tax evasion is negatively correlated with tax morale and

with national governance and institutional quality measures. These variables, as well as individual's perceptions of the government (e.g., trust in government), help define the exchange relationship taxpayers experience with their governments. They also provide a portent of future prospects. All of these affect taxpayers' beliefs, values, and behavior (including tax morale and tax evasion).

Alm and Torgler (2006) find tax morale differs significantly and systematically across countries (the United States and Western Europe) because the countries exhibit different levels of political and economic institutional quality and structure. These differences affect citizens' perceptions about trust in government, tax payments, and the supply of public goods, which affect tax morale. Nerre (2006) notes that each country has its own national tax culture, and defines it as the entirety of all interacting formal and informal institutions connected with the national tax system and its practical execution that are historically embedded within the country's culture, including the dependencies and ties caused by their ongoing interaction. These studies show that the tax culture affects taxpayer behavior.

Martinez-Vazquez and Torgler (2009) find improving socioeconomic conditions and level and quality of public services increased Spaniards' tax morale. Taxpayers appear to have reacted favorably to economic and tax policy changes and public expenditure initiatives that strengthened institutional structures and appeared to improve income opportunities. The aggregate effects of economic policy changes led to a higher level of trust in the government and an increase in tax morale.

Lago-Penas and Lago-Penas (2010) and Li (2010) study the association between a country's ethnic or linguistic fractionalization (ELF) and tax morale. ELF can act as a causal mechanism in that trust does not travel well across racial lines. Increased ELF can make the public goods provision less efficient and can lower participation in social activities and trust. Lago-Penas and Lago-Penas (2010) find cross-national differences in tax morale are not related to ELF. However, Li (2010) finds significantly lower tax morale in ethnically heterogeneous countries than in homogenous ones. The detrimental effect of heterogeneity may be driven by the low level of tax morale by a relatively large minority population and by the adverse effect of ELF on the majority group's compliance attitudes. People are more willing to pay taxes to finance a public sector that benefits their own group and are reluctant to bear the economic cost for other groups; thus, ELF undermines the public's tax morale by eroding altruism and sense of mutual obligation and increases the probability of noncompliance.

Halla (2010b) notes that tax morale is affected by multiple components and that part of tax morale is inherited from one's parents/relatives. The inherited part of tax morale is not affected by the current economic and institutional environment. He finds tax morale of second-generation Americans is mainly and significantly influenced by the country of origin of their ancestors. There is an effect of inherited moral values; that is, an intergenerational transmission of tax morale. He concludes that tax morale causally affects tax compliance. (Tax morale is not inherited in a genetic sense but in a transmittal way; parents'/relatives' attitudes influence their children's attitudes/norms, as does the overall social/cultural environment.)

Some studies use more aggregate measures in analyzing tax evasion. The variables are country-level metrics as opposed to individual-level metrics. The inclusion of the aggregate measures provides additional environmental factors of the tax compliance environment. That is, individuals experience events separately but multiple events combine to provide overall experiences, and these overall experiences affect taxpayer behavior (Porcano et al., 2011). Country-level metrics provide measures of the overall experiences that help shape behavior.

Tsakumis et al. (2007) analyze the association between four country-level variables and tax evasion. They use an expanded definition of culture based on Hofstede's (1980) national cultural dimensions (individualism (IND), masculinity (MASC), power distance (PD), and uncertainty avoidance (UA)) and find all four dimensions significantly associate with tax evasion. Richardson (2007) finds UA significantly associates with four aspects of a tax system (equity, neutrality, simplicity, and visibility) and IND and PD with three aspects. Richardson (2008) expands Tsakumis et al. (2007). In addition to the four cultural dimensions, he included three individual-level variables (perceptions of legal enforcement, trust in government and religiosity), and finds UA, IND, religiosity, and trust in government significantly associate with tax evasion. He notes the importance of culture in influencing tax systems but suggests that the relation between the four national cultural variables and tax evasion may be unstable. Deyneli (2014) conducted a similar study in which tax morale replaced tax evasion as the dependent measure of interest and found that cultural dimensions impact tax morale attitudes. Neither of these studies explore how the culture variables may impact tax morale and tax evasion simultaneously as this paper does.

Barone and Mocetti (2011) note that most studies use microdata (e.g., confidence and trust in government), mainly taken from the World Values Survey, and that the main limitation with these studies is they generally base their inference on cross-individual data on both tax morale and the

microdata selected for their models. The association found might be undermined by some other individual-level variables omitted in their models. They analyze the effects of a government-level variable (public-spending efficiency) on tax morale. If tax morale affects tax evasion then their results also show the effect of public-spending efficiency on tax evasion. Tax morale affects tax evasion in part to the extent that ethical and social norms of compliance influence individuals' beliefs and behaviors. If there is a stigma associated with tax evasion then inefficient public spending may lower the psychological and social cost in terms of guilt, bad conscience or bad reputation.

Barone and Mocetti (2011) find that public-spending inefficiency negatively affects citizens' tax morale; so, spending efficiency contributes to an increase in the citizens' propensity to pay taxes.[3] The negative effect of inefficiency is higher if the level of public spending is lower. Citizens treated with a higher level of public spending are more satisfied with the fiscal exchange and therefore less worried about spending inefficiency, whereas citizens receiving a lower level of public spending are more likely to have resentment because they consider the quality of goods and services inadequate given the level of spending. If tax morale affects tax compliance behavior then their results suggest the impact of these institutions on tax compliance is an indirect effect (via their effects of tax morale) and possibly a direct effect.

Porcano et al. (2011) explore the relation between tax evasion, the four cultural variables and four country-level metrics that in the aggregate provide overall measures of government quality, economic prosperity and sustainability, and the overall environment. The latter four measures are taken from World Economic Forum data and specifically provide metrics about the macroeconomic environment (MA), microeconomic environment (MI), public-institutions' quality (PI), and technology level (TI). They find MI, MASC, PD, and UA are significantly associated with tax evasion. A country's level of development also is significantly related to tax evasion, and the separate models for developed versus developing countries have some similarities and some differences.

A common thread through studies previously cited is that the sum of all government institutions, programs, administrators, the environment and one's culture combine to create an experience that directly and indirectly affects citizens and their perceptions of the future. These perceptions affect their taxpaying behavior.

Influence of Level of Economic Development

Studies also find a country's level of economic development is related to tax morale and tax evasion. Government/environment quality generally is

poorer in developing/transitional countries than in developed countries and this leads to lower tax morale and higher tax evasion. Frey and Torgler (2007) analyze data for Eastern European (further divided into Former Soviet Union and Central Eastern European groups) and Western European countries and find transitional countries that have better property rights (and therefore had a faster transition process) exhibited higher tax morale than slower-transitioning countries. Citizen uncertainty was reduced as more-stable institutions followed. Developed countries generally have greater government institutional quality and reduced citizen uncertainty, and tax morale in these countries is greater than tax morale in less developed ones.

Public spending also is very important in developing countries. Bahl and Bird (2008) look at tax policy in developing countries over a 30-year period and conclude that in all likelihood it is more important for economic growth and development that countries spend well than that they tax well. Perhaps more so in developing countries than in developed countries, citizens look to the government for help to enable them to live well (or better), and current and expected public (social) spending provides a cue regarding how much help they will receive. This in turn affects the perceived fairness of the psychological contract, which affects tax morale and tax evasion.

Taxpayers in developing and transitional countries also may be more willing to evade taxes than people in higher income-per-capita countries if they believe this will help their economic position. Statman (2008) notes that people in lower income-per-capita countries are not as happy as people in higher income-per-capita countries because they have a greater desire to move up relative to the desire of those in higher income-per-capita countries. This might contribute to lower tax morale and higher tax evasion in developing countries whereby a greater percentage of the population is not well off.[4] As noted earlier, Porcano et al. (2011) find level of development affected the relation between variables and tax evasion. Not only was tax evasion greater in developing and in-transitional countries but the strength and significance of variables associated with it also were different.

HYPOTHESES

National Cultural Dimensions

Hofstede developed his national cultural framework with data from 116,000 morale surveys completed in the late 1960s to early 1970s by 88,000 IBM

employees from 72 countries and regions. He used country-level factor analysis to identify the four national cultural dimensions, and scored 50 countries on each dimension. The scores generally range from 0 to 100, although higher and lower values are possible. *Culture's Consequences* (Hofstede, 1980) documented the research and was published in 1980. Subsequent books and articles followed, and the most recent book, *Cultures and Organization: Software of the Mind: Intercultural Cooperation and Its Importance for Survival*, was published in 2010 (Hofstede, Hofstede, & Minkov, 2010).

Hofstede et al. (2010, p. 6) define culture as the collective programming of the mind that distinguishes the members of one group or category of people. It is learned, not innate. It is derived from one's social environment rather than from one's genes. Human nature is what all individuals have in common and is inherited in our genes. It is what determines our physical and basic psychological functioning. Personality is based on traits partly inherited and partly learned.[5]

Further summarizing Hofstede et al. (2010, p. 346), national cultures are part of the mental software we acquired during the first ten years of our lives, in the family, in the living environment, and in school, and they contain most of our basic values. Mental programming (or software of the mind) is patterns of thinking, feeling and potential acting that were learned throughout the person's lifetime (p. 4). The sources of one's mental programs lie within the social environment in which one grew up and collected one's life experiences. The programming starts within the family; it continues within the neighborhood, at school, in youth groups, at the workplace, and in the living community (p. 5).

Analyses at the individual level and at the level of society complement one another because they contribute to understanding what happens in the arena of everyday life (Hofstede et al., 2010, p. 467). Measures of the four national cultural dimensions are taken from Hofstede (1980). The four dimensions make up a country's overall culture and help explain similarities and differences across cultures and countries.

The relationship between these variables and other variables has been studied frequently. Taras, Kirkman, and Steel (2010) note that Hofstede's (1980, 2001) books have inspired thousands of empirical studies of Hofstede's cultural value dimensions and that Hofstede-inspired research in organizational behavior and psychology has increased exponentially over the last decade. Hofstede-inspired research also is prevalent in other areas such as accounting, marketing, and information systems (Agourram & Ingham, 2007; Chan, Lin, & Mo, 2003; de Mooij, 2005; Lu, Rose, & Blodgett, 1999; Tsakumis et al., 2007).

Uncertainty Avoidance

UA provides a measure of the extent to which members of a culture feel threatened by uncertainty or ambiguity and can be defined as the extent to which the members of a culture feel threatened by ambiguous or unknown situations; how anxious they are (Hofstede et al., 2010, p. 191). Anxiety and fear are not synonymous. We fear an object but are anxious about what might happen. In weak UA countries anxiety levels are relatively low; aggression and emotions are not supposed to be shown in low UA societies (Hofstede et al., 2010, p. 196). UA is not the same as risk avoidance. Like fear, risk is focused on something specific such as an event, and can be stated in probability terms; whereas uncertainty reflects the fact that anything can happen and we have no idea what that might be (Hofstede et al., 2010, p. 197). There is a need for rules and formality to structure life in cultures with high UA (de Mooij, 2005, p. 67). So, citizens of countries with high (less) UA cultures are more (less) likely to avoid uncertain and ambiguous situations. In countries with high UA, there is a lack of trust in government which encourages tax evasion as a means of minimizing the likelihood will misuse the funds (Tsakumis et al., 2007). However, in lower UA countries individuals are more trustworthy about how their tax revenue will be used by the government leading to less reason for tax evasion. As a result the following hypotheses are proposed:

H1a. Higher uncertainty avoidance countries will have lower levels of tax morale.

H1b. Higher uncertainty avoidance countries will have higher levels of tax evasion.

Masculinity

Masculinity (MASC) relates to gender roles, which values (performance, visible achievement, relationships, caring, and nurturing) are emphasized and how they are differentiated. MASC is bounded by masculinity and femininity. This dimension was given this name because it was the only one in the original study where men and women consistently scored differently. The differences related to this scale are both social and (even more) emotional based. A society is masculine if emotional gender roles are clearly distinct and it is feminine if emotional gender roles overlap (Hofstede et al.,

2010, p. 140). The dominant values in a masculine society are achievement and success; performance (being a winner) is important. The dominant values in a feminine society are caring for others and quality of life; reaching a consensus is important (de Mooij, 2005, p. 65). Thus, citizens of countries high in MASC place a greater emphasis on competition and material success ("masculine" characteristics). Citizens of countries with low MASC cultures place a greater emphasis on mentoring and attaining a higher quality of life ("feminine" characteristics).

Doupnik and Tsakumis (2004) indicate that masculine countries are more likely to disclose financial information to outside parties. This is in part because masculine societies have that desire for visible success. This may lead to higher levels of tax compliance because more visibility can lead to more potential scrutiny. Hofstede (2001, p. 319) supports this notion showing the negative correlation between masculinity and a country's permissiveness in dealing with lawbreakers. Masculine countries tend to focus on punishment rather than leniency and take greater pride in following rules. As a result, the following hypotheses are proposed:

H2a. Higher masculinity countries will have higher levels of tax morale.

H2b. Higher masculinity countries will have lower levels of tax evasion.

Power Distance

PD deals with how societies handle human inequality. PD can be defined as the extent to which less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally (Hofstede et al., 2010, p. 60). In higher PD societies everyone has his or her rightful place in a social hierarchy, and as a result acceptance and giving of authority is something that comes naturally (de Mooij, 2005, p. 60). As such, countries with high PD cultures have citizens who accept inequality and its institutionalized hierarchies. Citizens of countries with low PD cultures believe that inequalities between people should be minimized.

As a result of power differential acceptance, wage differentials in high PD countries are large. These wage differentials are exacerbated by high PD countries having a less progressive tax structure than low PD countries. This creates are higher perceived level of unfairness in the tax system of high PD countries and leads to an increased incentive to evade taxes. As a result the following hypotheses are proposed:

H3a. Higher power distance countries will have lower levels of tax morale.

H3b. Higher power distance countries will have higher levels of tax evasion.

Individualism

Individualism (IND) relates to the degree of interdependence a society maintains among individuals and one's self concept and is bounded by extreme collectivism and extreme individualism. Individualism refers to societies in which the ties between individuals are loose; everyone is expected to look after him- or herself and his or her immediate family. Collectivism pertains to societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetimes continue to protect them in return for unquestioning loyalty (Hofstede et al., 2010, p. 92). Members of collectivist societies emphasize goals, needs, and the views of the in-group over those of the individual; the social norms of the in-group are favored over individual pleasure and shared in-group beliefs over unique individual beliefs (de Mooij, 2005, p. 62).

People from individualistic cultures tend to believe there are universal values that should be shared by all. In high individualist cultures the tax burden should be equally and consistently applied which would lead to higher tax moral and lower tax evasion. Conversely, collectivist societies have standards that may differ from in-group to in-group. Since all tax laws may be viewed differently depending upon in-group affiliation, collectivist cultures view the tax system as unfair and taxpayers do not comply with tax law (Richardson, 2008, p. 69). This leads to the following hypothesis:

H4a. Higher individualist countries will have higher levels of tax morale.

H4b. Higher individualist countries will have lower levels of tax evasion.

Economic Structural Metrics

A country's economic competitiveness and ability to sustain economic growth over the medium to long term is affected by various factors. A strong macroeconomic environment is necessary but not sufficient by itself

to sustain growth. Public-institution quality (e.g., property rights, corruption, transparency, government efficiency) affects uncertainty and the investment climate, which affect private-sector development activities. Technological capacity/quality impacts the development process. There is an interplay between these three factors; thus, three "pillars" widely accepted as being critical to economic growth are the quality of the economic environment, the state of the country's public institutions, and the country's technological readiness (World Economic Forum, 2004, p. 3). Additionally, while macroeconomic and institutional factors are necessary for national competition, they are not sufficient factors for creating wealth (World Economic Forum, 2004, p. xiv). Wealth is created at the microeconomic level by firms operating in an economy; thus, a fourth factor is the microeconomic environment.

The World Economic Forum annually publishes a *Global Competitiveness Report*. Using a series of statistical procedures and a combination of hard data (e.g., GNP) and survey data from business leaders/executives regarding their perceptions of numerous aspects of a country, it develops numerous indices and sub-indices that provide measures of various aspects of a country. Since these scales are constant across countries, country-by-country comparisons can be made. Measures for the four country-structural metrics (macroeconomic environment (MA), microeconomic environment (MI), public institution quality (PI), and technological capacity/quality (TI)) are taken from the 2000 to 2006 *Global Competitiveness Reports* (World Economic Forum, 2000–2005). In 2000, there were approximately 4,000 respondents and 59 economies were represented. In 2006, there were more than 10,000 respondents and 177 economies were represented. Raw score indices are used for country rankings, and these rankings are used as input data. Since it is a ranking, a descending scale is used; thus, a rank of 1 is the best.

Microeconomic Index

Microeconomic Index (MI) measures the country's microeconomic environment and is based on a country's set of institutions, market structures, and economic policies, and how well the country uses its current resources. MI provides a measure of a country's ability to sustain its prosperity. It is composed of company operations and strategy variables and national business environment variables (factor/input conditions, demand conditions, related and supporting industries, and context for firm strategy and rivalry).

Macroeconomic Index

Macroeconomic Index (MA) provides a measure of a country's macroeconomic environment and consists of nine variables. It is a composite index composed of macroeconomic stability, country credit rating and a measure of government waste, and is based on a country's macroeconomic stability, government management of public funds, inflation rate, budget surplus/deficit, government debt, country credit rating, national savings rate, and recession expectations.

Public Institution Index

Public Institution Index (PI) provides an indicator of the soundness/quality of a country's public institutions ("good governance"). It is a composite index composed of contracts and law variables and corruption variables, and is based on how well a country protects property rights, the quality of its judicial system, the even-handedness in its political process, and the extent of corruption in its institutions.

Technology Index

Technology Index (TI) is a metric of a country's current technological level and technological innovativeness. TI is computed differently for countries that are core innovators and those that are non-core innovators.[6] TI for core innovators is composed of the innovation sub-index and the information and communication technology sub-index. These sub-indices address the extent of information technology R&D, interest in new technology, patent production and technology education, and information and communication capacity and prevalence. A technology transfer sub-index (which measures foreign investment and licensing in new technology) is included in TI for non-core innovators.

Each of the four above country-level structural metrics measure a country's economic foundation, health, and institutional/government quality. Citizens in countries that are higher ranked should perceive themselves as better off and that the proper infrastructure exists for sustained current and future prosperity. This should therefore lead to a better relationship between individuals and government. As a result, the higher a country's

rank, the lower the level of tax evasion is expected. This leads the following set of hypotheses:

H5a. Higher microeconomic index countries will have higher levels of tax morale.

H5b. Higher microeconomic index countries will have lower levels of tax evasion.

H6a. Higher macroeconomic index countries will have higher levels of tax morale.

H6b. *Higher macroeconomic index countries will have lower levels of tax evasion.*

H7a. Higher public institution index countries will have higher levels of tax morale.

H7b. Higher public institution index countries will have lower levels of tax evasion.

H8a. Higher technology index countries will have higher levels of tax morale.

H8b. Higher technology index countries will have lower levels of tax evasion.

Level of Economic Development

Level of economic development (DEV) is a discrete variable. It is expressed using OECD status. Schneider (2004) classifies the 21 most-highly developed countries as developed and this study uses the same classification. Economically developed countries generally have strong economies relative to other countries, and their citizens tend to be better off than those in countries with developing and in-transition economies. Individuals from developing or in-transition economies may feel the need to evade taxes relatively more than individuals in economically developed countries in order to increase their economic position. As a result the following hypothesis are suggested:

H9a. Developed countries will have higher levels of tax morale.

H9b. Developed countries will have lower levels of tax evasion.

GNP

Many tax evasion studies use the natural log of GNP (LNGNP) as a control variable, which allows for a better isolation on the independent variables of interest on the dependent measures of interest. Countries that have a higher LNGNP tend to exhibit lower levels of tax evasion. This relationship is expected in the current study as well.

Tax Evasion

Tax evasion (TE) can be measured in several ways (self-reported, experimentally determined, and estimated from economic data). The current study uses a commonly-used measure of tax evasion: a country's shadow economy (SE) as a percentage of its GDP. This metric is comparable across countries. Countries with larger shadow economies as a percentage of GDP are less tax compliant. A higher (lower) ratio is representative of a larger (smaller) SE or higher (lower) tax evasion:

$$\mathrm{TE} = \frac{\mathrm{SE}}{\mathrm{GDP}}$$

Therefore, the larger the value of TE, the greater is the extent of tax evasion in a country. The data are taken from Schneider (2004) and Schneider et al. (2010). They provide data for all time periods in our study (2000−2005).

Tax Morale

In numerous tax morale studies, tax morale is measured based on the World Values Survey (WVS) question: Is it justifiable to cheat on taxes if you have the chance? The answers range from 1 = never to 10 = always. Thus, lower values are indicative of higher tax morale. The responses were

re-coded into a variable with four values, where responses four through ten were collapsed into one response and coded as four. World Values Survey Association (2009) data are available for 2000 and 2005.

WVS provides tax morale (TM) data for 2000 (TM_{2000}) and 2005 (TM_{2005}). Data for the other variables are available throughout this time period. TM_{2000} and TM_{2005} were highly (significantly) correlated, and t-tests (untabulated) indicated that the means for each year were not significantly different. Thus, taxpayers' attitudes toward their tax systems (as measured by TM) appear to have remained relatively stable.[7] This enabled us to increase the sample size. Given that changes in TM were relatively small and not significant, TM for each intervening year was imputed assuming that the change in TM from TM_{2000} and TM_{2005} was evenly distributed over the intervening years.[8]

The purpose of this study is to explore the relationships between tax evasion, tax morale, Hofstede's four cultural dimensions, and four country-level metrics that affect tax morale and tax evasion. SEM is used to determine the final causal paths. Fig. 1 contains the expected paths of the final model.

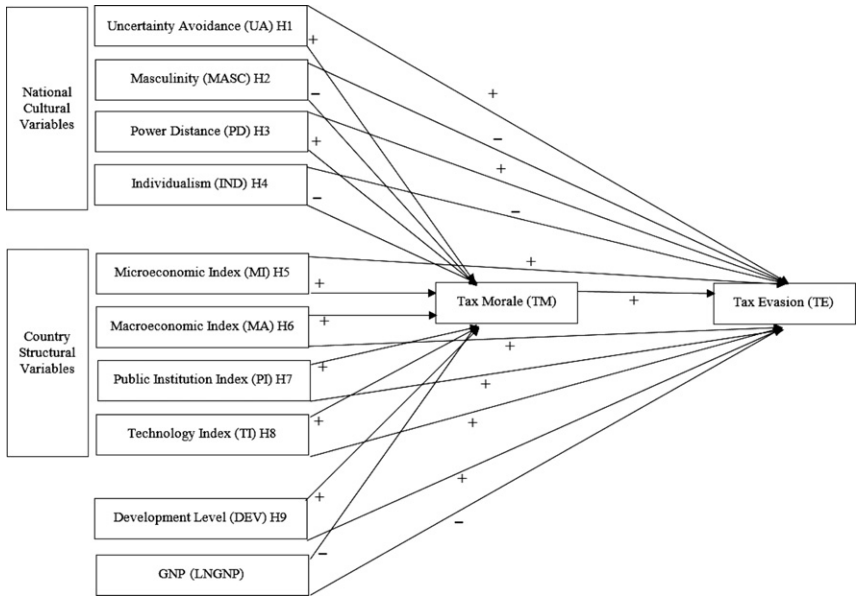

Fig. 1. Predicted Path Analysis.

Table 1 contains a list of the variables used in the study and sources of their measurement. All sources have been used in other studies.

Variables' Data Summary

Data for all variables are available for 45 countries. Table 2 contains the list of the 45 countries. Table 3 contains descriptive statistics for the pooled data for all variables in the 2000–2005 period. A review of the two tables indicates that a wide variety of countries is represented and the range of each variable is large. Twenty-one countries have developed economies and 24 have developing or in-transition economies.

Table 1. Variables in Study.

National Cultural Variables – Hofstede (1980)	
Uncertainty Avoidance (UA)	Low values indicate lower uncertainty avoidance and higher values indicate high uncertainty avoidance.
Power Distance (PD)	Low values indicate lower power distance and higher values indicate high power distance.
Individualism (IND)	Low values indicate greater collectivism and higher values indicate greater individualism.
Masculinity (MASC)	Low values indicate greater feminism and higher values indicate greater masculinity.
Country-Structural Variables – World Economic Forum (2000, 2001, 2002, 2003, 2004, 2005)	
Macroeconomic Index (MA)	Low values indicate better ranking (e.g., 1 is best).
Microeconomic Index (MI)	Low values indicate better ranking (e.g., 1 is best).
Public-Institutions Index (PI)	Low values indicate better ranking (e.g., 1 is best).
Technology Index (TI)	Low values indicate better ranking (e.g., 1 is best).
Development Level (DEV) – Schneider (2007) – OECD	1 = Highly developed economics 2 = Developing or in-transition economies
Natural log of GNP (LNGNP) – World Bank (2008) and Taiwan (2005)	Low values indicate lower LNGNP and higher values indicate high LNGNP.
Tax Morale (TM) – World Values Survey Association (2009)	Low values indicate higher tax morale and higher values indicate lower tax morale.
Tax Evasion (TE) – Schneider (2007) and Schneider et al. (2010)	Low values indicate lower tax evasion and higher values indicate high tax evasion.

Table 2. Countries in Study.

Highly Developed Economies[a]	Developing or In-Transition Economies[a]
Australia	Argentina
Austria	Brazil
Belgium	Chile
Canada	Colombia
Denmark	El Salvador
Finland	Guatemala
France	Hong Kong
Germany	India
Greece	Indonesia
Ireland	Iran
Italy	Malaysia
Japan	Mexico
The Netherlands	Pakistan
New Zealand	Peru
Norway	Philippines
Portugal	Singapore
Spain	South Africa
Sweden	South Korea
Switzerland	Taiwan
The United Kingdom	Thailand
The United States	Turkey
	Uruguay
	Venezuela
	Yugoslavia[b]

[a]The classification of countries dichotomously into the categories of highly developed economies and having developing or in-transition economies is provided by Schneider (2007) based on OECD data.

[b]Since Yugoslavia broke up into smaller countries, values for latter years are based on combined amounts for existing countries that were a part of Yugoslavia prior to the breakup. Overall results did not change when Yugoslavia was not included in the analysis so it was retained.

Table 3. Descriptive Statistics.

Variables	*n*	Minimum	Maximum	Mean	SD
Dependent(s)					
TE	250	7.9	65.3	27.02	13.92
TM	225	1.27	3.4	1.93	0.38
Independent					
UA	250	8	112	65.9	24.71
IND	250	6	91	43.94	25.64
MASC	250	5	95	48.92	18.66
PD	250	11	104	55.82	21.81
MI	241	1	107	33.66	25.27
MA	241	1	111	36.7	27.28
PI	241	1	113	36.1	26.26
TI	241	1	100	34.37	23.56
DEV	250	1	2	1.58	0.49
LNGNP	250	6.04	11.02	8.9	1.29

Variable definitions and data sources:
TE = shadow economy/GDP per Schneider (2007) and Schneider et al. (2010); TM = tax morale per World Values Survey Association (2009); UA = uncertainty avoidance per Hofstede (1980); IND = individualism per Hofstede (1980); MASC = masculinity per Hofstede (1980); PD = power distance per Hofstede (1980); MI = microeconomic index ranking per World Economic Forum (2000–2005); MA = macroeconomic index ranking per World Economic Forum (2000–2005); PI = public-institutions index ranking per World Economic Forum (2000–2005); TI = technology index ranking per World Economic Forum (2000–2005); DEV = level of economic development per Schneider (2007); OECD (1 = 21 highly developed economies and 2 = 24 developing or in-transition economies); GNP = GNP per capita per World Bank (2008) and Taiwan (2005); LNGNP = natural log of GNP per capita; *n* = data pooled for 2000–2005.

Model Specification

SEM simultaneously estimates the relationships between multiple independent variables, latent (unobservable) variables, and dependent variables. It uses a family of statistical techniques to identify causal paths. Thus, it is more powerful than multiple regression analysis (Kline, 1998 for a detailed discussion). To our knowledge our study is the first to explore various cultural level and other economic structural variables direct impact on tax evasion and indirect impact via tax moral using SEM. Fig. 1 shows the expected causal paths whereby the relation amongst variables is analyzed using SEM.

In addition to the SEM analysis, the relationships between the variables of interest are also examined using least-squared regression. TM is the dependent variable in three separate regression models. The first model contains DEV. Since DEV is significant, the countries are split into two groups ((1) developed economies and (2) developing and in-transition economies). Regressions are run for each group are ran separately. The TM models are as follows (all variables are discussed previously and are in Table 3):

$$\mathrm{TM}_i = a_0 + a_1\mathrm{UA}_i + a_2\mathrm{IND}_i + a_3\mathrm{MASC}_i + a_4\mathrm{PD}_i + a_5\mathrm{MA}_i + a_6\mathrm{MI}_i + a_7\mathrm{PI}_i + a_8\mathrm{TI}_i + a_9\mathrm{DEV} + a_{10}\mathrm{LNGNP}_i + e_i \tag{1}$$

$$\mathrm{TM}_i = a_0 + a_1\mathrm{UA}_i + a_2\mathrm{IND}_i + a_3\mathrm{MASC}_i + a_4\mathrm{PD}_i + a_5\mathrm{MA}_i + a_6\mathrm{MI}_i + a_7\mathrm{PI}_i + a_8\mathrm{TI}_i + a_9\mathrm{LNGNP}_i + e_i \tag{2}$$

As noted previously, TE is the dependent variable in three regression models. Eq. (3) is the first model; it contains DEV as an independent variable. Since DEV is significant in that model as well, the group (as before) is split based on DEV status and separate regressions are run for each group. Eq. (4) contains that model.

$$\mathrm{TE}_i = a_0 + a_1\mathrm{TM}_i + a_2\mathrm{UA}_i + a_3\mathrm{IND}_i + a_4\mathrm{MASC}_i + a_5\mathrm{PD}_i + a_6\mathrm{MA}_i + a_7\mathrm{MI}_i + a_8\mathrm{PI}_i + a_9\mathrm{TI}_i + a_{10}\mathrm{DEV} + a_{11}\mathrm{LNGNP}_i + e_i \tag{3}$$

$$\mathrm{TE}_i = a_0 + a_1\mathrm{TM}_i + a_2\mathrm{UA}_i + a_3\mathrm{IND}_i + a_4\mathrm{MASC}_i + a_5\mathrm{PD}_i + a_6\mathrm{MA}_i + a_7\mathrm{MI}_i + a_8\mathrm{PI}_i + a_9\mathrm{TI}_i + a_{10}\mathrm{LNGNP}_i + e_i \tag{4}$$

RESULTS

The next two subsections present results when all 45 countries are included in the models. Results are based on regression analysis and SEM. As noted previously, since DEV is significant in these models, separate models are run for developed and developing or in-transition countries. Only regression analysis is used to explore the relations in these separate models, and the last subsections contain the results.[9]

Determinants of Tax Morale – All Countries

Table 4 contains the regression results where TM is the dependent variable. A review of column 1, which contains the model for all 45 countries, indicates that three cultural dimensions (IND, MASC, and PD) and DEV are significantly related to TM. Fig. 2 presents the final paths in the SEM and SEM results. The results shown in Fig. 2 demonstrate the relationship and show a significant link between these four variables and TM.

More specifically, in both the regression model and the SEM, results indicate that more UA levels in a culture does not have a significant impact on the countries level of tax morale. Therefore, H1a is not supported. In both the regression model and the SEM, results indicate that more masculine cultures have an increased level of tax morale. This is indicated by a significant negative coefficient in both models. Therefore H2a is supported. Both models also support that the greater power distance in a culture, the lower the levels of tax morale. This is indicated by the positive coefficient in both models. Therefore H3a is supported.

The last cultural variable that is significantly related to tax morale in both models is individualism. It was hypothesized that more individualized cultures would have a higher level of tax morale that collectivist cultures. In the models, this would be indicated by a significant negative correlation. However, in both models we observe a significant positive correlation. Therefore, H4a is not supported and in fact the opposite is found. It appears that collectivist cultures have higher levels of tax morale. The outcome may be the result that when it comes to tax compliance decisions, collectivist cultures feel as though they are all part of the same in-group. The original hypothesis assumes that collectivist cultures are made up of many smaller in groups. These in-groups favor their group affiliation over the country as a whole, however this may not be the case with a tax compliance decision.

Table 4. Tax Morale Regression Results.[a]

Independent Variable	Full Model	Developed Economies	Developing and In-Transition Economies
	(1) Coefficient[b]	(2) Coefficient[b]	(2) Coefficient[b]
UA	.000 (0.16)	.006 (2.85)***	−.000 (−0.19)
IND	.005 (2.86)***	.005 (2.25)**	.014 (4.34)****
MASC	−.005 (−3.95)****	−.007 (−6.43)****	−.013 (−3.63)****
PD	.012 (7.10)****	.001 (0.56)	.019 (6.09)****
MA	.001 (0.76)	.001 (0.46)	.001 (0.50)
MI	−.001(−0.56)	−.002 (−0.42)	−.001 (−0.28)
PI	−.000 (−0.09)	−.005 (−1.49)	.004 (1.28)
TI	−.001 (−0.28)	.012 (4.10)****	−.005 (−1.21)
DEV	−.326 (−3.05)***	NA	NA
LNGNP	−.062 (−1.49)	−.071 (−1.03)	−.016 (−0.26)
R^2	0.283	0.529	0.407
Adjusted R^2	0.248	0.484	0.354
F-statistic	8.1	11.86	7.71
p-Value	<.0001	<.0001	<.0001

Models:

Full Model:

$$\begin{aligned} TM_i &= a_0 + a_1 UA_i + a_2 IND_i + a_3 MASC_i \\ &\quad + a_4 PD_i + a_5 MA_i + a_6 MI_i + a_7 PI_i \quad (1) \\ &\quad + a_8 TI_i + a_9 DEV + a_{10} LNGNP_i + e_i \end{aligned}$$

Developed Economies and Developing and In-Transition Economies Models:

$$\begin{aligned} TM_i &= a_0 + a_1 UA_i + a_2 IND_i + a_3 MASC_i \\ &\quad + a_4 PD_i + a_5 MA_i + a_6 MI_i + a_7 PI_i \quad (2) \\ &\quad + a_8 TI_i + a_9 LNGNP_i + e_i \end{aligned}$$

[a]All variables are defined in Table 2. Standardized coefficients are shown with *t*-values in parentheses.

[b]*, **, ***, ****Significant at <.10, <.05, <.01, <.001, respectively.

Interestingly, none of the country-level structural metrics are significantly related to tax morale. Therefore we fail to reject the null hypothesis and do not find support for H5a, H6a, H7a, and H8a. Finally, based on both the regression model and the SEM, there is support to conclude that developed countries have lower levels of tax morale than developing or in-transition countries. Therefore we conclude that there is not support to accept H9a.

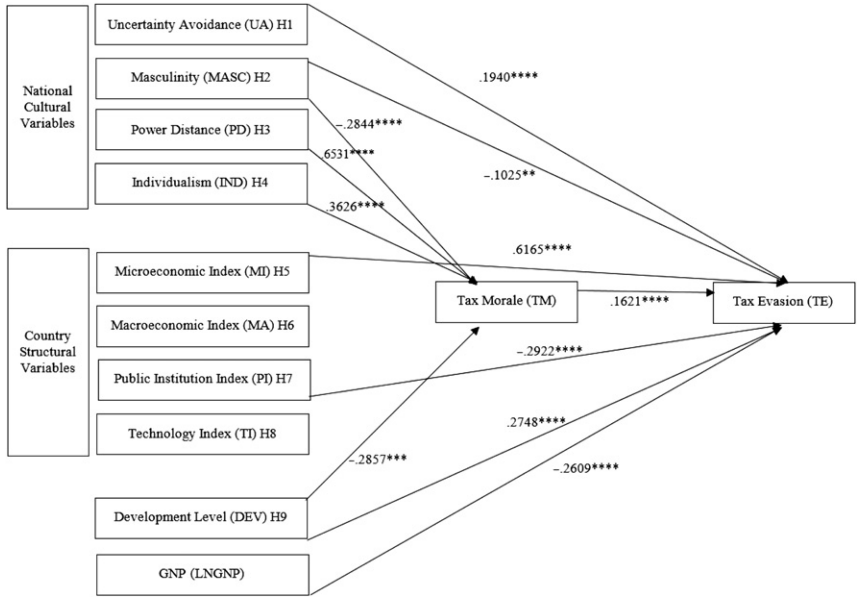

Fig. 2. Path Analysis Results. *Notes*: Standard Estimates. **, ***, ****Significant at <.05, <.01, <.001, respectively.

Determinants of Tax Evasion – All Countries

The results of the TE regression models are presented in Table 5. Column 1 contains the model for all countries. Tax morale is significantly related to tax evasion as expected. In both models there is a significant positive coefficient indicating that when there are lower levels of tax morale present in a country there are higher levels of tax evasion. Two cultural dimensions (UA and MASC), two country-structural metrics (MI and PI), DEV, and LNGNP also are significantly related to tax evasion.

More specifically, both models indicate that countries with higher levels of UA have higher levels of tax evasion. This is indicated by a significant positive confident in both models. Therefore H1b is supported. Both models also indicate a significant negative coefficient for higher masculinity cultures. This supports the conclusion that masculine cultures engage in lower levels of tax evasion than feminine cultures. Therefore H2b is supported. There is not a significant coefficient related to either power distance or

Table 5. Tax Evasion Regression Results.[a]

Independent Variable	Full Model	Developed Economies	Developing and In-Transition Economies
	(3) Coefficient[b]	(4) Coefficient[b]	(4) Coefficient[b]
TM	.003 (4.32)****	3.789 (2.56)***	10.555 (5.04)****
UA	.107 (4.34)****	−.029 (−0.87)	.194 (3.99)****
IND	.006 (0.16)	−.035 (−1.08)	−.214 (−2.80)***
MASC	−.055 (−2.12)**	−.074 (−4.24)****	.166 (2.14)**
PD	−.043 (−1.11)	−.002 (−0.05)	−.123 (−1.59)
MA	−.040 (−1.11)	.021 (0.61)	−.034 (−0.53)
MI	.343 (5.78)****	.086 (1.54)	.377 (3.97)****
PI	−.121 (−2.79)***	.197 (3.91)****	−.266 (−4.32)****
TI	−.014 (−0.27)	.010 (0.23)	−.057 (−0.72)
DEV	8.770 (4.04)****	NA	NA
LNGNP	−2.907 (−3.49)****	−3.167 (−3.15)***	−5.481 (−4.35)****
R^2	0.782	0.74	0.658
Adjusted R^2	0.77	0.712	0.624
F-statistic	66.48	26.7	19.24
p-Value	<.0001	<.0001	<.0001

Models:

Full Model:

$$\begin{aligned} TE_i &= a_0 + a_1 TM_i + a_2 UA_i + a_3 IND_i + \\ &\quad a_4 MASC_i + a_5 PD_i + a_6 MA_i + a_7 MI_i + \\ &\quad a_8 PI_i + a_9 TI_i + a_{10} DEV + a_{11} LNGNP_i + e_i \end{aligned} \quad (3)$$

Developed Economies and Developing and In-Transition Economies Models:

$$\begin{aligned} TE_i &= a_0 + a_1 TM_i + a_2 UA_i + a_3 IND_i + \\ &\quad a_4 MASC_i + a_5 PD_i + a_6 MA_i + a_7 MI_i \\ &\quad + a_8 PI_i + a_9 TI_i + a_{10} LNGNP_i + e_i \end{aligned} \quad (4)$$

[a]All variables are defined in Table 2. Standardized coefficients are shown with *t*-values in parentheses.

[b]**, ***, ****Significant at <.05, <.01, <.001, respectively.

individualism when analyzing either model showing a direct effect on tax evasion. Therefore both H3b and H4b are not supported.

Results from both models indicate that there is a significant positive coefficient on a countries microeconomic index and the level of tax evasion. This supports the conclusion that better ranked (lower value) countries on

the microeconomic index engage in lower levels of tax evasion and supports H5b. However there is not significant support analyzing either model to suggest that a countries macroeconomic index rank impacts the country's level of tax evasion and therefore H6b is not supported.

The public institution index is a surrogate measure for a country's "good governance." It was hypothesized that countries with better governance would engage in lower levels of tax evasion. However, results from both models indicate that there is a significant negative correlation between PI and TE. Therefore H7b is not supported and the evidence suggest that higher ranked countries according to their public institution score have higher levels of tax evasion. There is not a significant relationship between a country's technology index rank and the level of tax evasion, which does not support H8b.

Finally, based on both the regression model and the SEM, there is support to conclude that developed countries have lower levels of tax evasion than developing or in-transition countries. Therefore we conclude that there is support to accept H9b.

It is interesting to note that the nine variables analyzed in this study all either impacted tax morale or tax evasion or both. Using SEM we were able to conclude that tax morale as expected significantly impacts tax evasion. But more importantly, SEM allows us to determine whether the variables of interest affect tax evasion directly, indirectly via changing tax morale attitudes, or both. A country's level of UA, their microeconomic index rank, and their public institution index rank all impact the level of tax evasion observed in the country directly, but do not appear to impact tax morale attitudes. Whereas a country's power distance and individualism appear to impact tax evasion, but only indirectly by altering tax morale attitudes. Finally, a country's masculinity and developmental level appear to not only impact tax morale attitudes, but also directly impact tax evasion levels. As a country's developmental level can play a significant role in tax evasion levels observed, we feel it is important to analyze these countries separately.

Determinants of Tax Morale and Tax Evasion – Countries with Developed Economies

Column 2 of Table 4 presents the results for the TM models of countries with developed economies. Three national cultural dimensions (IND, MASC and UA) are significant, as is TI. The country's level of

individualism and masculinity in the developed countries impacts tax morale in a similar manner as when all countries are included in the analysis. However, unique to developed countries is that UA now has a significantly positive coefficient. This suggest that for developed countries only, higher levels of UA lead to lower levels of tax morale. Further this suggests that H1a is supported when analyzing only developed countries.

Contrary to the complete population, developed country's level of power distance is not related to the level of tax morale in these developed countries. This suggests, that although H3a was supported in the primary analysis earlier, it appears that the power distance in not a significant driver of tax morale in developed countries. Lastly, when analyzing only developed countries, there is a significant positive coefficient on a country's technology index suggesting for developed countries only, countries with a better technology index rank have higher levels of tax morale.

Column 2 of Table 5 contains the regression results for the TE model. As expected in developed countries there is a relationship between tax morale and tax evasion, in that higher levels of tax morale lead to lower levels of tax evasion. In addition, similar to the full model, in developed countries there is a direct relationship between masculinity and tax evasion suggesting that more masculine countries have lower levels of tax evasion. However, contrary to the full model, a developed country's level of UA present in their culture does not appear to impact tax evasion directly instead based on results in Table 4 discussed above, UA in developed countries appears to impact tax evasion indirectly via changing tax morale attitudes. In addition a country's microeconomic index rank does not appear to impact a developed country's level of tax evasion. Finally, for developed countries, their public institution index ranking has a positive coefficient suggesting that a better ranking (lower value) leads to lower levels of tax evasion. This is contrary to the full model.

Determinants of Tax Morale and Tax Evasion – Countries with Developing and In-Transition Economies

Column 3 of Table 4 present the results for TM model of countries with developing and in-transition economies. Three national cultural dimensions are significant: IND, MASC, and PD. The significant coefficient's sign is the same as that discussed earlier in the primary analysis section above. This suggest that the full model and the in-transition/developing countries model are similar. However what is interesting to note is that for

developing countries PD replaces UA which was found to be significant in the developed economies model.

Column 3 in Table 5 contains the TE model. Many of the variables are significantly related to TE. TM, three cultural dimensions (UA, IND, and MASC), and two national structural metrics (MI and PI) are significant in the model. There is a positive coefficient for both tax morale, UA, and microeconomic index rank, which is consistent with the full model. In addition, consistent with the full model, when analyzing only in-transition or developing countries, there continues to be a significant negative coefficient on the public institution index ranking on tax evasion.

However when analyzing only developing countries, there is a significant negative coefficient for individualism on tax evasion. This suggest that for developing countries, more individualistic cultures engage in lower levels of tax evasion, and the effect is direct. Additionally, there is a positive coefficient for masculinity on tax evasion when analyzing only developing countries. This suggests that for in-transition cultures a more masculine culture leads to more tax evasion. This is the opposite of what is found in developed countries.

The regression results for the separate models confirm that cultural variables and economic variables impact the level of tax morale and tax evasion in a country. However the separate models show that depending upon if a country is developed or developing which and how these variable impact tax morale and tax evasion may be different. Therefore, just as developing a model for international tax compliance research is important, having an understanding of how economic developmental level impacts this framework is also vital. These findings are discussed in the next section.

IMPLICATIONS AND CONCLUSIONS

Tax Morale

It is clear that national cultural dimensions affect tax morale attitudes. This conforms to Halla's (2010b) finding that part of tax morale is not affected by a country's current economic and institutional environment. IND and MASC are present in all models. Countries high in IND have less tax morale (higher TM value) than countries with low IND. Citizens in high individualism countries focus more on self-identity as opposed to group affiliation and generally believe that the law should apply equally to all

members of society (Trompenaars & Hampden-Turner, 1998). Countries high in IND also tend to be wealthier and have stronger economies (Hofstede, 2001). All this suggests that high IND countries should have high tax morale. However, as noted in footnote 4, Halla and Schneider (2008) find that as income rises tax morale falls. Better-off taxpayers (and those of high IND cultures) use a self-justification system to endorse their lower tax morale. This appears to be the case based on the results presented in this study.

Increases in MASC lead to increases in tax morale. High MASC cultures focus on performance, outcome, and success, whereas low MASC cultures focus on caring for others. This suggests that low MASC cultures would have higher tax morale since they see higher taxes as a way to help subsidize lower income citizens (Hofstede, 2001). However, Hofstede (2001) also notes a negative correlation between MASC and the National Permissiveness Index, which suggests that high MASC cultures are less tolerant of lawbreakers (Tsakumis et al., 2007). This would lead to greater tax morale in high MASC countries, and the results of the current study confirm that position.

PD is present in all but the models for countries with developed economies. This suggests that developing and in-transition economies are driving the overall results. Higher PD leads to lower tax morale. High PD cultures accept inequality; each member of society has his/her place in the hierarchy, which leads to a leniency toward rules of civil morality (Hofstede, 2001). Also, Richardson (2007) finds a significant negative relation between PD and perceived tax equity in a country. This suggests that higher PD leads to lower tax morale, which is a finding in the current study. The current study also shows that PD has a greater impact in countries with developing and in-transition economies, probably because wealth and income (old and new) are more visible since a greater proportion of citizens are in very low income levels. This can lead to greater perceptions of an "unfair" wealth distribution system and a breakdown in tax morale.

UA is significant only in the models for countries with developed economies. Those higher in UA have lower tax morale. Richardson (2008) notes that tax systems in high UA countries are perceived by their citizens as having less simplicity, neutrality, or visibility. Citizens' confidence in their countries' institutions is negatively correlated with UA (Hofstede, 2001). Countries high in UA are more tolerant of corrupt activities (Tsakumis et al., 2007). All this suggests that higher UA leads to lower tax morale, which is the case in countries with developed economies.

Several country-level structural metrics are significant in the separate models based on a country's level of development. This provides evidence that a country's current economic and institutional environment also affects a part of tax morale. PI is significant in the separate TM models when TE is an independent variable. The effect in each model is the exact opposite. PI has a negative effect on TM in the developed economies model and a positive effect on TM in the developing and in-transition model.

PI is a measure of the quality of a country's public institutions. A lower PI value indicates a better quality level. In countries with developing and in-transition economies, the relation is logical and direct: poorer quality leads to lower tax morale. Since the PI in these countries generally is lower than the PI in developed economies, the poor quality can lead to greater frustration and a belief that the exchange relationship between the government and its citizens is imbalanced. As such, citizens in these countries have lower tax morale.

The direction of the relation between PI and TM in developed economies is unexpected. Countries within this group that have a better PI exhibit lower tax morale. Apparently citizens have a very high expectation of institutional quality (perhaps because they pay high taxes). This expectation leads to a "disconnect" between actual quality and perceived quality, resulting in lower tax morale.

TI is significant in the models for countries with developed economies. Poorer technological quality is associated with lower tax morale. This could be due to several factors. Perceptions that technology and innovation do not meet expectations lead to a general dissatisfaction with the government's use of funds and lower tax morale. However, a lower TI could reflect the government's reduced ability to detect and pursue tax cheating. Thus, if taxpayers perceive this then they might justify having a lower tax morale.

Tax Evasion

Tax morale clearly has a direct effect on tax evasion. TM is significant in the SEM final path and in all regression models. Lower tax morale leads to increased tax evasion. These results are in-line with and add to the growing body of literature indicating that tax morale is an extremely important factor in taxpayers' tax evasion decisions.

The SEM results also support the conclusion that TM is a mediator for national cultural dimensions. These results are in-line with Taras et al.'s

(2010) findings that the national cultural dimensions are more significantly associated with emotions and attitudes than with behavior and performance. TM is an emotion or attitude whereas TE is a behavior. The results also conform to their findings that the four dimensions have significantly higher predictive power for organizational commitment (TM) than for performance (TE), and help explain why when adding several variables Richardson (2008) finds the relation between the four dimensions and TE to be different than Tsakumis et al.'s (2007) findings. The dimensions are more strongly associated with TM than with TE.

It also appears that tax morale has a greater impact on tax evasion in countries with developing and in-transition economies. Additionally, other variables contribute to tax evasion behavior, especially in countries with developing and in-transition economies.

Three of the cultural dimensions and two of the country-structural metrics are associated with TE in countries with developing and in-transition economies. TE increases in countries in that group which have high UA, high MASC, and low IND. MI and PI also are associated with TE. Existing microeconomic conditions impact the efficacy of a country's macroeconomic, political, legal, and social reforms (World Economic Forum, 2004, p. 19) and provide cues of potential future prosperity. Thus, a poorer MI leads to perceptions of difficult times ahead, which leads to increased TE. Surprisingly, countries in this group that have a better PI experience more tax evasion. Improvements in public institutions led to increases in TM and should lead to reduced TE. The unexpected results could be due to citizen's impatience. Citizens might believe that the changes are not enough or are not happening fast enough (i.e., they do not meet expectations) and in response resort to tax evasion.

Lower MASC in the countries with developed economies group is associated with increased tax evasion. Additionally, poorer public institutional quality also is associated with increased tax evasion in this group.

CONCLUSION

The results of this study clearly demonstrate that national culture and economic conditions impact the level of tax evasion in a country. However, what is unique is how the variables impact tax evasion. Many of these variable only impact tax evasion indirectly by changing individuals' tax morale attitudes. Since tax morale attitudes in certain countries are lower, higher

tax evasion is observed. Other variables instead have a direct impact on tax evasion levels. Said differently some of the variables change attitudes which alters behavior while other variables simply alter behavior.

The results of this study are particularly important to researchers interested in understanding taxpayer compliance on an international level. This study helps to develop a more comprehensive model incorporating many variables into the same analysis. Using SEM, this more comprehensive model was able to demonstrate clearer paths regarding how these variables impact tax evasion. This expanded framework for studying international tax compliance can be utilized further by future researchers interested in the area. One particularly important area is the comparison between developed and developing countries. As the separate regression results indicate, some variables are significant when examining only developed countries while other variables are significant when examining only developing countries. This suggest that future research can expand upon the current framework by further developing a model specific to the developmental state of the culture.

Policy makers should also be interested in the results of this study. By demonstrating that national cultural variables and economic variables impact tax morale attitudes and tax evasion, policy makers can explore policy recommendations tailored to the culture and economic condition present in their country. For example, penalties may be the best deterrent of tax evasion in some cultures, whereas publicizing a social norm of tax compliance may be the best technique to reduce tax evasion in other cultures.

Additionally these results should be taken into consideration when tax compliance decision making is taking place across national borders. For example, in the United States where tax morale is higher and tax evasion low, we may naturally assume that taxpayers are going to be compliance whereas in another culture with low tax morale and high tax evasion, we may naturally assume taxpayers are going to be noncompliant on some level. In situations where a decision maker may be from a low tax moral/high tax evasion culture but is making a tax compliance decision for an international company in the United States, audit testing models will want to account for such cultural differences.

This paper expands the international tax compliance framework by testing multiple variables simultaneously. We believe that although this framework has been advanced thru our efforts, future researchers should be encouraged to take further steps to continue developing these models.

NOTES

1. Many studies use the size of shadow economy or the size of the shadow economy as a percent of GDP as a measure of tax evasion.
2. Torgler, Schneider, and Schaltegger (2010) note that in many countries the level of deterrence is too low to explain the high level of compliance, as are the reported levels of risk aversion in countries.
3. Halla and Schneider (2008) also find an increase in social expenditures associated with an increase in tax morale.
4. However, within country wealth may lead to different results. Halla and Schneider (2008) find that income increases are associated with tax morale decreases and benefit morale increases. They also find that those not subject to tax had higher tax morale and lower benefit morale. Thus, both income types exhibit self-justification (rationalization) of their behavior.
5. There are three levels of uniqueness in one's mental programming: human nature, culture, and personality.
6. Core innovators are defined as countries with more than 15 U.S. utility patents per one million population; all other countries are non-core innovators. The technology transfer sub-index also is included in developing the TI for non-core innovators.
7. Wenzel (2005) also finds tax compliance and tax evasion moderately stable over time.
8. Models also were run for 2000 and 2005 (pooled) and the results are similar to the larger data set used. The larger data set did produce more stable results (as measured by adjusted R^2 and goodness of fit metrics).
9. The number of variables in the models relative to the number of observations can be problematic in regression-type analysis. Increasing the number of explanatory variables can artificially increase the amount of explained variance (R^2). Babyak (2004) notes that several well-verified and highly used techniques help control this problem. Two are used in this study: (1) an adequate sample size (greater than 20 observations per variable in this study) and (2) adjusted R^2 (which is reported in the tables).

ACKNOWLEDGMENTS

We would like to thank the two anonymous reviewers and Dr. John Hasseldine (editor) for providing valuable and constructive comments for this paper. We also thank Jon Patton for statistical advice/support and Tony Curatola for helpful comments on early versions of this paper.

REFERENCES

Agourram, H., & Ingham, J. (2007). The impact of national culture on the meaning of information system success at the user level. *Journal of Enterprise Information Management*, *20*(6), 641–656.

Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, *1*, 323–338.

Alm, J., Bahl, R., & Murray, M. N. (1990). Tax structure and tax compliance. *The Review of Economics and Statistics*, *72*, 603–613.

Alm, J., & Torgler, B. (2006). Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology*, *27*, 224–246.

Babyak, M. A. (2004). What you see may not be what you get: A brief, nontechnical introduction to overfitting in regression-type models. *Psychosomatic Medicine*, *66*, 411–421.

Bahl, R. W., & Bird, R. M. (2008). Tax policy in developing countries: Looking back–and forward. *National Tax Journal*, *61*(2), 279–301.

Barone, G., & Mocetti, S. (2011). Tax morale and public spending inefficiency. *International Tax and Public Finance*, *18*(6), 724–729.

Bobek, D., Roberts, B., & Sweeney, J. (2007). The social norms of tax compliance: Evidence from Australia, Singapore, and the United States. *Journal of Business Ethics*, *74*(1), 49–64.

Chan, K. H., Lin, K. Z., & Mo, P. L. L. (2003). An empirical study of the impact of culture on audit-detected accounting errors. *Auditing: A Journal of Practice and Theory*, *22*, 281–295.

Cowell, F. (1990). *Cheating the government: The economics of evasion*. Cambridge, MA: MIT Press.

Cullis, J. G., & Lewis, A. (1997). Why people pay taxes; from a conventional economic model to a model of social convention. *Journal of Economic Psychology*, *18*, 305–321.

de Mooij, M. (2005). *Global marketing and advertising: Understanding cultural paradoxes*. Thousand Oaks, CA: Sage.

Deyneli, F. (2014). Analyzing the relationship between national cultural dimensions and tax morale. *Journal of Alanya Faculty of Business*, *6*(2), 55–63.

Doupnik, T. S., & Tsakumis, G. (2004). A critical review of tests of gray's theory of cultural relevance and suggestions for future research. *Journal of Accounting Literature*, *14*, 231–248.

Feld, L., & Frey, B. (2007). Tax compliance as the result of a psychological tax contract: The role of incentives and responsive regulation. *Law & Policy*, *20*(1), 102–120.

Frey, B., & Torgler, B. (2007). Tax morale and conditional cooperation. *Journal of Comparative Economics*, *35*(1), 136–159.

Güth, W., Levati, V., & Sausgruber, R. (2005). Tax morale and (de-)centralization: An experimental study. *Public Choice*, *125*(1/2), 171–188.

Halla, M. (2010a). The link between the intrinsic motivation to pay and compliance behavior: A critical appraisal of existing evidence. In F. G. Schneider (Ed.), *Handbook on the shadow economy*. Cheltenham: Edgar Elgar.

Halla, M. (2010b). *Tax morale and compliance behavior: First evidence on a causal link*. IZA Discussion Paper No. 4918. Institute for the Study of Labor (IZA), Bonn, Germany.

Halla, M., & Schneider, F. G. (2008). *Taxes and benefits: Two distinct options to cheat on the state?* IZA Discussion Paper No. 3536. Institute for the Study of Labor (IZA), Bonn, Germany.

Hofstede, G. H. (1980). *Cultures consequences: International differences in work-related values*. London: Sage.

Hofstede, G. H. (2001). Cultures consequences comparing values, behaviors, institutions and organizations across nations (2nd ed.). Thousand Oaks, CA: Sage.

Hofstede, G. H., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind: Intercultural cooperation and its importance for survival*. New York, NY: McGraw Hill.

Internal Revenue Service (IRS). (2012). *Tax gap for tax year 2006*. Washington, DC: U.S. Department of Treasury.

Kline, R. B. (1998). *Principles and practices of structural equation modeling*. New York, NY: The Guilford Press.

Kornhauser, M. E. (2007). *Normative and cognitive aspects of tax compliance: Literature review and recommendations to the IRS regarding individual taxpayers*. The National Taxpayer Advocate's 2007 Annual Report to Congress, 2, 138–180. Retrieved from http://www.irs.gov/advocate/article/0,,id=177301,00.html

Lago-Penas, I., & Lago-Penas, S. (2010). The determinants of tax morale in comparative perspective: Evidence from a multilevel analysis. *European Journal of Political Economy*, *26*(4), 441–453.

Li, S. X. (2010). *Social identities, ethnic diversity, and tax morale*. Retrieved from http://ssrn.com/abstract=1422121

Lu, L. C., Rose, G. M., & Blodgett, J. G. (1999). The effects of cultural dimensions on ethical decision making in marketing: An exploratory study. *Journal of Business Ethics*, *18*, 91–105.

Martinez-Vazquez, J., & Torgler, B. (2009). The evolution of tax morale in modern Spain. *Journal of Economic Issues*, *43*(1), 1–28.

Nerre, B. (2006). The concept of tax culture. *Intereconomics*, *July/August*, 189–194.

Porcano, T. M., & Price, C. E. (1993). The effects of social stigmatization on tax evasion. *Advances in Taxation*, *5*, 197–217.

Porcano, T. M. (1988). Correlates of tax evasion. *Journal of Economic Psychology*, *9*, 47–67.

Porcano, T. M., Tsakumis, G. T., & Curatola, A. P. (2011). Tax evasion, national cultural dimensions and other country-structural metrics. *Journal of Forensic and Investigative Accounting*, *3*(1), 86–115.

Richardson, G. (2007). The influence of culture on tax systems internationally: A theoretical and empirical analysis. *Journal of International Accounting Research*, *6*(1), 57–79.

Richardson, G. (2008). The relationship between culture and tax evasion across countries: Additional evidence and extensions. *Journal of International Accounting, Auditing and Taxation*, *17*, 67–78.

Schneider, F. G. (2004). *The size of the shadow economies of 145 countries all over the world: First results over the period 1999–2003*. IZA Discussion Paper No. 143. Institute for the Study of Labor (IZA), Bonn, Germany.

Schneider, F. (2007). Shadow economies and corruption all over the world: New estimates for 145 countries. *Economics*, *9*, 1–47.

Schneider, F. G., Buehn, A., & Montenegro, C. E. (2010). New estimates for the shadow economies all over the world. *International Economic Journal*, *24*(4), 443–461.

Schneider, F. G., & Elgin, C. (2013). Shadow Economies in OECD Countries: DGE vs. MIMIC Approaches [Online]. Retrieved from http://www.econ.boun.edu.tr/public_html/repec/pdf/201313.pdf. Accessed on May 20, 2016.

Statman, M. (2008). *Countries and culture in behavioral finance*. CFA Institute. Retrieved from www.cfapubs.org. Accessed in September.

Strumpel, B. (1969). The contribution of survey research to public finance. In A. T. Peacock (Ed.), *Quantitative analysis in public finance* (pp. 13–32). New York, NY: Praeger.

Taiwan. (2005). *GNP data*. Retrieved from http:/www.internetworldstats.com/asia/tw.htm.
Taras, V., Kirkman, B. L., & Steel, P. (2010). Examining the impact of *Culture's Consequences*: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, *95*(3), 405–439.
Torgler, B. (2003a). To evade taxes or not to evade: That is the question. *Journal of Socio-Economics*, *32*(3), 283–302.
Torgler, B. (2003b). Tax morale in transition countries. *Post-Communist Economic Studies*, *15*(3), 357–381.
Torgler, B., & Schneider, F. (2007). *Shadow economy, tax morale, governance and institutional quality: A panel analysis*. IZA Discussion Paper No. 2563. Institute for the Study of Labor (IZA), Bonn, Germany.
Torgler, B., & Schneider, F. (2009). The impact of tax morale and institutional quality on the shadow economy. *Journal of Economic Psychology*, *30*, 228–245.
Torgler, B., Schneider, F., & Schaltegger, C. A. (2010). Local autonomy, tax morale, and the shadow economy. *Public Choice*, *144*, 293–321.
Trompenaars, F., & Hampden-Turner, C. (1998). *Riding the waves of culture: Understanding cultural diversity in business* (2nd ed.). New York, NY: Praeger.
Tsakumis, G. T., Curatola, A. P., & Porcano, T. M. (2007). The relation between national cultural dimensions and tax evasion. *Journal of International Accounting, Auditing & Taxation*, *16*, 131–147.
Wenzel, M. (2005). Motivation or rationalism? Causal relations between ethics, norms and tax compliance. *Journal of Economic Psychology*, *26*(4), 491–508.
World Bank. (2008). *Data and statistics*. Retrieved from http://econ.worldbank.org
World Economic Forum. (2000). *Global competitiveness report 2000*. New York, NY: Oxford University Press.
World Economic Forum. (2001). *Global competitiveness report 2001*. New York, NY: Oxford University Press.
World Economic Forum. (2002). *Global competitiveness report 2002*. New York, NY: Oxford University Press.
World Economic Forum. (2003). *Global competitiveness report 2003*. New York, NY: Oxford University Press.
World Economic Forum. (2004). *Global competitiveness report 2004*. New York, NY: Oxford University Press.
World Economic Forum. (2005). *Global competitiveness report 2005*. New York, NY: Oxford University Press.
World Values Survey Association. (2009). *World values survey 1981–2008 official aggregate v. 20090901, 2009*. Madrid: Aggregate file producer: ASEP/JDS. Retrieved from www.worldvaluessurvey.org

THE DETERMINANTS OF TAX MORALE AND TAX COMPLIANCE: EVIDENCE FROM JORDAN

Fadi Alasfour, Martin Samy and Roberta Bampton

ABSTRACT

This paper investigates how individuals determine their tax morale levels and tax compliance decisions. Using a questionnaire survey and a multivariate tests procedure, the paper revealed that tax evasion is morally acceptable in Jordan under some circumstances, indeed there could be an affirmative duty to evade taxes since the government is perceived to be highly corrupted. The findings also show that while the extent of the governmental corruption has a positive (negative) effect on tax non-compliance (tax morale), the efficient expenditure of governmental tax revenues has a negative (positive) impact on tax non-compliance (tax morale). The individuals' tax non-compliance decisions are likewise positively affected by the tax rates and by the taxation system's being perceived as unjust, but decline with the increase of audit rates and the subsequent penalty rates. The degree and effectiveness of these determinants are dependent on the individual's level of risk aversion, financial constraints and the surrounding referent groups. The results also confirm that individual factors play a significant role in determining the level of tax morale. Overall, the tax morale level and the compliance decision of

Advances in Taxation, Volume 23, 125–171

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023005

an individual are greatly influenced by gender, age, educational level, occupational status and religious background.

Keywords: Tax morale; tax compliance; corruption; Jordan

INTRODUCTION

Tax compliance and tax morale have been extensively researched, yet Slemrod's (1992) classic question 'why people pay taxes'? remains unanswered. The economics of crime model entails that the extent of tax evasion involves balancing the probability of detection and the level of fines with the tax rate (Allingham & Sandmo, 1972). The empirical support for this model, however, is far from conclusive. For instance, while Clotfelter (1983) criticises the model, Cowell (1985) finds support. The inclusion of tax ethics (Lewis, 1982; Song & Yarbrough, 1978) has made the debate even more complex. In the early 1990s, theories based on social norms (Alm, McClelland, & Schulze, 1992a, 1992b) and the ethicality of tax evasion (McGee, 1994) joined the debate.

The economics of crime model based on Rational Economic Man (REM) stresses that evading taxes will be eliminated only through highlighting individual risk aversion associated with the level of subsequent punishments resulting from tax evasion. While this model is widely accepted amongst economists, the structure of this model incorporates some well-known limitations (Lewis, Carrera, Cullis, & Jones, 2009). The views of Allingham and Sandmo (1972) have been widely criticised empirically (Clotfelter, 1983) and experimentally (Alm et al., 1992a, 1992b; Baldry, 1987).[1] For Feld and Frey (2002), the literature on tax evasion has pursued two lines of research. One line of argument highlights the subjective nature of the probability of detection, an approach which is widely supported by experimental research. It hypothesises that individual perceptions of being discovered could be much higher than the objective probabilities of detection (Erard & Feinstein, 1994). More recent literature on the issue of tax compliance is based on an alternative approach to the 'expected utility theory' (e.g. cumulative prospective theory, rank dependent expected utility theory) as proposed by behavioural economics (Dhami & al-Nowaihi, 2007; Piolatto & Rablen, 2014). Such critique has encouraged scholars to conduct empirical analyses on peoples' decision to evade tax payments.

Previous studies have left at least two major gaps in the literature on tax compliance. First, there are virtually no studies directed towards the analysis of tax morale practiced in Middle Eastern countries.[2] However, an understanding of the implications related to tax morale and the impact of tax compliance determinants in developed and developing economies on the tax compliance decision is important. This is because these implications and determinants have direct effects on the sources of funds available to most governments. In this context, Andreoni et al. (1998, p. 852) propose that 'adding moral and social dynamics to models of tax compliance is as yet a largely undeveloped area of research'. It is particularly important in the light of the extent of literature that shows that the environments in which governments operate differ across countries (Bame-Aldred, Cullen, Martin, & Parboteeah, 2013; Hanno & Violcttc, 1996). Therefore, the lessons learned from one environment cannot be generalised to countries with different cultural backgrounds and legal provisions.[3] This paper bridges this gap by analysing the determinants of tax morale in Jordan, which has different tax systems and different tax rates.

Secondly, empirical studies generally concentrate on public finance or the economic perspective, ignoring the possible implications of tax morale that could affect their choice of tax compliance. In order to address this gap, this paper measures the possible implications of such factors on tax compliance decisions. In addition, it is apparent that the degree to which factors influencing individuals' tax compliance decisions does change across countries. It is important to analyse whether tax morale gives an explanation of why tax compliance rates are so high, through analysing what may shape tax morale among taxpayers (Alm & Torgler, 2011; Torgler & Schneider, 2007). In this respect, previous empirical studies have constructed several measures of tax morale based on a variety of surveys such as the International Social Survey Program (Torgler, 2005a), the World Values Surveys (Alm & Torgler, 2006; Torgler, 2006), the European Values Surveys (Hug & Spörri, 2011; Lago Peñas & Lago Peñas, 2010), the British Social Attitudes Survey (Orviska & Hudson, 2002), the Latinobarometro (Torgler, 2005b), and the Afrobarometer (Cummings, Martinez-Vazquez, McKee, & Torgler, 2009). Typically, tax morale has been measured as the percentage of survey respondents who agree with statements such as: 'Citizens should not cheat on their taxes', 'Cheating on taxes is justifiable if there is the opportunity to do so', or 'Managing to avoid tax payments is legitimate' (Russo, 2013, p. 111). Yet, Torgler and Valev (2010) claims that developing a tax morale variable using several questions to capture taxpayers' willingness to pay taxes would increase the reliability and validity of such variable.

Therefore, this research uses the well-known phenomenon of Creative Tax Morale in a novel way[4] to investigate whether using a multi-item measurement tool would increase the reliability and validity of a targeted variable (Tekeli, 2011; Torgler & Schneider, 2007). Seventeen questions are used as a multi-item index in order to measure tax morale concept dimensions, which clarify individuals' 'intrinsic motivations' to pay taxes (Appendix A). This paper adds to the literature in the field by incorporating a more dynamic perspective on the models of tax compliance. This is achieved by analysing a questionnaire survey, involving tax auditors, Jordanian Certified Public Accountants (JCPA holders), and financial managers of shareholding companies registered at Amman Stock Exchange (ASE).

The results reveal that tax evasion is morally acceptable in Jordan under some circumstances, and indeed, based on cultural differences, there could be an affirmative duty to evade taxes due to government corruption. The findings also indicate that while the extent of the governmental corruption has a positive (negative) effect on tax non-compliance (tax morale), the efficient governmental expenditure of tax revenues that yield benefits for taxpayers has a negative (positive) impact on tax non-compliance (tax morale) in Jordan. The individuals' tax non-compliance decisions are likewise positively affected by the tax rates and by the taxation system being perceived as unjust, but decline with the increase of audit rates and the subsequent penalty rates. The degree and effectiveness of these determinants are dependent on the individual's level of risk aversion, financial constraints and the surrounding referent groups. The results also confirm that demographic factors play a significant role in determining the level of tax morale and tax compliance. Overall, the tax morale level and compliance decision of individuals are greatly influenced by their gender, age, educational level, occupational status, and religious background.

The rest of the paper is organised as follows. The next section identifies the determinants of tax morale. Model and variables, and their robustness are discussed and in the final section the empirical results are analysed.

LITERATURE REVIEW

The Determinants of Tax Morale

According to (Alm, Martinez-Vazquez, & Schneider, 2004; Cowell, 1990; Schneider et al., 2010), tax non-compliance is actually an inevitable fact on

the social level and is one of the most important and highly debated topics in the accounting, economics and law literature (Gupta, 2008; Kirchler, Hoelzl, & Wahl, 2008; Torgler & Valev, 2010). In fact this issue topped the list of corruption practices in third world countries (Levin & Widell, 2007), with Middle Eastern countries affected by corruption practices in a way that reduces tax revenues (Imam & Jacobs, 2014). Tax evasion is considered to be a corrupt behaviour itself (Akdede, 2006). Schneider (2005) proposes that tax evasion or shadow economy activities could be effectively limited 'through measures such as punishment and prosecution, or by relying on economic growth or education. Gathering statistics about who is engaged in shadow economy activities and the frequencies with which these activities occur and magnitudes, is important' (Schneider, 2005, p. 598). The shadow economy is, however, not always considered to reflect actions that are illegal and of criminal standards such as gambling, burglary, robbery, drug dealing, prostitution etc. (Schneider et al., 2010).

Schneider et al. (2010) provided estimates of the size of the shadow economies for developing, transitional and highly developed OECD countries. They concluded that, for all the countries investigated, the shadow economy had increased substantially over the years. Empirical results demonstrate that 'an increasing burden of taxation and social security payments, in addition to rising state regulatory activities, are the major driving forces underlying the size and growth of the shadow economy (Schneider et al., 2010, pp. 445−446). Torgler and Schneider (2007) stress that individual values and attitudes can affect tax compliance behaviour and, drawing on the views of Lewis (1982), maintain that 'we can be confident in our general prediction that if tax attitudes become worse, tax evasion will increase' (Torgler & Schneider, 2007, pp. 10−11).

Since tax morale is seen as a major factor in understanding the dynamics of tax compliance, this paper will investigate the determinants of tax morale. Frey (1997) and Alm and Torgler (2006) defined tax morale as '*the intrinsic motivation to pay taxes*'. Tax morale measures an individual's willingness to pay taxes, that is 'the moral obligation to pay taxes' or 'the belief that paying taxes contributes to society'.

Theories and Hypotheses Development

This section identifies the tax morale-specific factors and demographic-related factors (control variables) that are potentially responsible for determining the tax morale level of an individual. All variables used in this

study, namely dependent, explanatory, and control variables, are defined in Appendix B. The choice of the research tool is attributed to the fact that survey data sources allow a greater chance to measure tax morale as a dependent variable and to search for factors that shape tax morale. In addition, surveys enable the researcher to include many socio-economic, demographic and attitudinal variables (Torgler, 2007). The questionnaire design developed by Nasadyuk and McGee (2006) and McGee, Benk, Yildirim, and Kayikçi (2011) was drawn upon in order to capture taxpayers' willingness to pay taxes.

Dependent Variable

The dependent variable in this paper is Tax Morale (TMi). The measurement of tax morale variable was extracted as the average of all seventeen statements. The general question to measure the level of tax morale is 'please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between 'Tax evasion is ethical if …' The level of tax morale was measured on a scale from 1 to 7, where 1 indicates that tax evasion is never justifiable, and 7 means it is always justifiable.

Explanatory Variables

Several studies have examined the effect of individual-specific factors on Tax Morale. There is no doubt that the socio-demographic and socio-economic backgrounds of individuals affect tax morale, with tax evasion and corruption being related. Substituting corruption expenses for public expenditure might yield positive results in terms of decreasing financial loss caused by evading taxes. Sanyal, Gang, and Omkar (2000) found that tax revenues may decline with income tax rates in the presence of corrupt tax officials. In addition, the empirical results of Joulfaian (2009) show that business non-compliance increases with corruption. He argues that tax evasion thrives when bribes paid to tax officials are common. The corrupted tax officials may encourage taxpayers to escape tax payments by paying bribes. Previous studies, which investigated the effect of corrupted tax officials on tax evasion found a positive relationship between the two (Crequeti & Coppier, 2009; Escobari, 2005; Gupta, 2008; Hindriks, Keen, & Muthoo, 1999; Imam & Jacobs, 2007; Sanyal, 2000). Therefore, it

is anticipated that greater corruption levels should have a negative impact on tax morale and compliance. Torgler (2012), amongst others, confirmed that the relationship between taxpayers and their governments seems to be crucial in terms of understanding tax morale. In other words, the level of tax morale depends on whether taxpayers trust their governments or not, with higher degrees of trust leading to higher level of tax compliance. We would therefore expect to find a negative relationship between tax morale and corruption.

A positive correlation is expected between tax morale and efficient governmental spending. Individual tax morale is likely to be also influenced by the level of public spending and the degree of fiscal autonomy in municipalities, specifically, tax morale is anticipated to be higher when individuals see more benefits in return for their tax contributions (Alm et al., 1992b). Güth, Levati, and Sausgruber (2005) argue that taxpayers exhibit less tax morale under centralised tax structures, while Torgler, Schneider, and Schaltegger (2010) state that greater fiscal autonomy allows regions to spend tax revenues according to local preferences which, in turn, might have a positive impact on tax morale. Barone and Mocetti (2011) concluded that tax morale is higher when the taxpayer perceives and observes that the government is efficient. By contrast, if taxpayers perceive that the government is spending too much on unnecessary things, taxpayers might feel betrayed and attempt to evade. Therefore, a positive relationship is expected between tax morale and effective government spending, and a negative relationship between tax evasion and effective government spending.

Jackson and Milliron (1986) argued that it is generally accepted that perceptions of equity and fairness and tax compliance are related, while Spicer and Lundstedt (1976) found a significant negative association between fairness and tax evasion. Song and Yarbrough (1978) also detected a significant negative association between these variables, with 75% of taxpayers claiming that the fairness notion of 'ability to pay' is much more essential for tax evasion than is the 'benefits' concept. Spicer and Becker (1980) also affirmed that tax evasion increases (decreases) when taxpayers perceive fiscal inequity (equity), because they feel victimised by imbalanced income redistributions. Etzioni (1986) argues that an unfair taxation system is more likely to lead to tax evasion than an increasing tax rate, finding that taxpayers evade tax in the period they consider the taxes to be unfair, even when the tax rates remained stable. Furthermore, Hite and Roberts (1992) found that fairness is significantly connected with a perception of an improved tax system, and that fairness and tax evasion are negatively linked. Yet the literature on this point is scant, nobody appears to wish to go beyond the general concept of

fairness to determine what a fair share exactly is (McGee, 1998a, 1998b). Crowe (1944) claimed that everyone should pay just taxes but there is no moral duty to pay unjust taxes. Following the above discussions, it is hypothesised that there is a negative relationship between tax morale and perceptions of equity and fairness of the taxation system.

The belief that if the tax rate is zero (i.e. there is absolutely no tax), all income would be reported, but if the tax rate is 100% (i.e. all income is confiscated), no income would be reported, has clear 'intuitive appeal' (Jackson & Milliron, 1986, p. 143). Therefore, the motivation to evade is going to be considerably diminished by eliminating the progressive rate structure (Clotfelter, 1983). Clotfelter (1983, p. 363) claimed that 'reducing tax rates is not the only policy that has the potential to discourage tax evasion'. Yet, the tax rate is a key factor in determining tax compliance behaviours although the precise effect continues to be unclear and debatable (Kirchler, 2007). While raising marginal tax rates would likely motivate taxpayers to evade taxes (Witte & Woodbury, 1985), reducing tax rates would not necessarily increase tax compliance (Kirchler, 2007; Trivedi, Shehata, & Lynn, 2003). This debate has attracted the attention of tax researchers and motivated them to come up with more certain and concrete evidence of the impact of tax rates on evasion. Allingham and Sandmo (1972) attempted to find a relationship between actual income, tax rates, penalty and audit rates on the one hand and tax evasion on the other hand using statistical modelling, concluding that taxpayers may choose either to fully report income or report less, regardless of tax rates, therefore tax rates appeared to be insignificant in determining tax evasion. Porcano (1988) also argued that tax rates have no impact on tax compliance. However, Richardson and Sawyer (2001) argue that this inconsistency could be a result of the inability to control the correlation between marginal tax rates and income levels. Kirchler et al. (2008) and McKerchar and Evans (2009) proposed that the degree of trust between taxpayers and the government has a primary role in ascertaining the effect of tax rates on evasion. That is, when trust is low a high tax rates could be perceived as an unfair treatment of taxpayers, but when trust is high the exact same level of tax rate may very well be interpreted as contribution to the community (Kirchler et al., 2008). Furthermore, Crequeti and Coppier (2009) argue that higher tax rates in a corrupt administration can pave the way for higher bribe rates, and this may create an incentive for taxpayers to pay bribes, and also increase the number of corrupt tax inspectors. Following the above discussions, it is hypothesised that there is a negative relationship between tax morale and marginal tax rates.

Personal financial constraints are believed to have an impact on tax evasion as financial distress faced by an individual might encourage him to prioritise his financial liabilities, with people facing personal financial problems being more prone to evade tax (Abdul, 2001). Conversely, Vogel (1974) and Wärneryd and Walerud (1982) found that people with no financial distress will also evade tax and, perhaps surprisingly, the level of evasion is higher than that of people with financial distress. Vogel (1974) presumed that this situation is related to economic status rather than personal condition.

Control Variables

In addition to the main independent variables discussed above, additional independent variables are employed in an attempt to more fully explore what factors might determine tax morale. Further control variables are age, gender, educational level, occupation status and religious background. Each of these variables and expected coefficient are discussed below.

Tittle (1980) argues that older people (of more than 65 years old) are more sensitive to the threat of sanctions, both social and financial, than individuals of other age groups on the social scale. Similarly, Clotfelter (1983) and Dubin and Wilde (1988) argued that age was positively related to compliance. However, the association between tax compliance and age is inconclusive, Warneryd and Walerud (1982) reported that older people are less compliant, whereas Spicer and Lundstedt (1976); Spicer and Becker (1980) and Porcano (1988) found no relationship between both variables. The inconsistency of the findings could be attributed to the inconsistent non-compliance definitions used in the research along with the interaction of age with other variables (Torgler, 2007). However, the majority of the previous studies concluded that younger taxpayers are more willing to take risks and evade tax than older taxpayers (Dubin & Wilde, 1988; Feinstein, 1991; Hanno & Violcttc, 1996; McGee & Tyler, 2007; Tittle, 1980). Torgler and Murphy (2004) stated that older people have acquired more material goods, have obtained greater status in their community, and have a stronger dependency on the reactions from others. Tittle (1980) also highlighted the lifecycle variations and generational differences, that is younger taxpayers are more risk-seeking, less sensitive to penalties (a lifecycle variation), and reflect the social and psychological differences related to the period in which they are raised (i.e. generational difference). Here we are concerned whether this sensitivity to sanction among older taxpayers also affects their levels of tax morale. On the other hand, it could be argued

that older people might be more experienced in tax matters, which might reduce their tax compliance. However, we would argue that this is unlikely, firstly due to attachment to the community (Pommerehne & Weck-Hannemann, 1996), and secondly older people may not always be subject to income taxes so may exhibit a higher tax morale (Torgler, 2004). Therefore, we expect a positive relation between tax morale and age.

With regard to the gender of taxpayers, the findings of the effect of gender on tax compliance are inconclusive. While many studies on gender ethics have found that women are more ethical and more compliant than men (Baldry, 1987; Brooks & Doob, 1990; Dollar, Fisman, & Gatti, 2001; Mason & Calvin, 1978; McGee & Bose, 2007; McGee & Cohn, 2008; Mocan, 2008; Ruegger & King, 1992; Spicer & Becker, 1980; Vogel, 1974), other studies asserted that males were more compliant (Barnett & Karson, 1987; McGee & Benk, 2011; McGee & Tusan, 2008; Weeks, Moore, McKinney, & Longenecker, 1999), with a significant number of studies finding no correlation between gender and tax compliance (McGee & An, 2006; McGee & Rossi, 2006). Differences in tax morale levels might be attributed to differences in gender values or to lower female labour participation rates. The literature offers two major theories to explain gender differences (Gottfredson & Hirschi, 1990), either attributing differences to fundamental differences at the cognitive, emotional and behavioural levels due to biological, psychological and experiential realities, or to the different degrees of involvement between men and women in the workforce and in government. However, McGee and Tusan (2008) and Torgler and Schaltegger (2005) argued that women are becoming liberated from their traditional gender roles, and evading taxes in a similar way to men. The anticipated relation between tax morale and gender is that women have higher level of tax morale than men.

The literature on tax compliance provides support for a direct, positive association between educational level and taxpayer compliance. Educated taxpayers might be more aware of their responsibility and the sanctions to be imposed if they are not compliant with tax laws (Chan, Troutman, & O'Bryan, 2000). Torgler (2006) drawing on the views of Lewis (1982) states that 'education is related to taxpayer's knowledge about the tax law. Better educated taxpayers are supposed to know more about tax law and fiscal connections, and thus would be in a better position to assess the degree of compliance' (Torgler, 2006, p. 89). Moreover, educated taxpayers might be more aware of the public services and benefits. If this assumption is correct, then we might expect that better educated taxpayers would be more compliant, however it could be the case that the degree of knowledge involving

evasion or avoidance opportunities might increase with the education level. Therefore, we might expect that better educated taxpayers may be less compliant because they better understand opportunities for tax evasion and avoidance and might be better aware of how the state uses tax revenues (Torgler, 2006; Torgler & Murphy, 2004; Torgler & Schneider, 2005). Jackson and Milliron (1986) argued that education has two components, including the overall level of fiscal knowledge and the particular level of knowledge relating to tax evasion opportunities. They claim that tax compliance is enhanced by increasing the level of general fiscal knowledge because of the resulting increase in favourable perceptions about taxation. Nevertheless, improved knowledge of tax evasion possibilities has a negative effect on tax compliance because it allows non-compliance. For the purpose of this study, a positive relation is hypothesised between tax morale and the level of education.

A standard argument in the literature is that self-employed taxpayers would have more opportunity to evade their taxes than taxpayers who have their taxes deducted each payday by their employers (Torgler & Murphy, 2004). Torgler (2006, p. 90) concluded from Vogel's survey in Sweden that 'self-employed taxpayers are more likely to think that large parts of taxes were used for meaningless purposes, that the government had made a great number of unnecessary social reforms, that they have had less benefit from government programs than the average taxpayer, and that the burden of taxes was too high'. Lewis (1982) argued that the self-employed have higher compliance costs and hence taxes become more visible for them. Torgler and Schaltegger's (2006) survey findings proposed that the coefficient of occupational status is not significant except in the case of transitional countries where the coefficient is mostly significant with a negative sign. They argue that in these countries, self-employed individuals might be more sensitive to financial restrictions, as compliance costs and taxes become more visible. Furthermore, the lack of visibility of income for the self-employed may encourage non-compliance as it is difficult for the tax authority to trace income (Wallschutzky, 1984). It is not easy, however, to make a clear prediction about the influence of individuals' occupational status on their tax morale. However, in line with the findings of Vogel (1974) and Torgler and Schaltegger (2006), we would hypothesise that self-employed individuals would have a lower level of tax morale than others.

Torgler and Murphy (2004, p. 310) stated that 'there are many behavioural norms and moral constraints that are strongly influenced by religious motivations', arguing that religion might influence people's habits and have the function to economise and simplify people's actions. Smith

(1776), in his Theory of Moral Sentiments, analysed religiosity from a rational perspective and claimed that religiosity works like a kind of internal moral enforcement mechanism (Anderson, 1988). Torgler (2003) argued that religion forms habits of thought common to all human beings. According to Torgler (2006) and Torgler and Schneider (2007), religious organisations provide moral social rules for a society and, to a certain extent, act as 'supernatural police' that enforce accepted rules. This is because religion can act as a sanctioning system that 'legitimizes and reinforces social values and may also inhibit illegal behaviour' (Torgler & Schneider, 2007, p. 449). Hull and Bold (1994) claim that religion possesses a comparative benefit in creating or motivating social goods in large cultures of middle complexity in which the central government is very weak at enforcing property rights. Hull and Bold (1994, p. 449) argued that 'Heaven rewards desirable behaviour and hell increases the expected cost of misbehaviour, causing an increase in enforcement effectiveness'. Margolis (1997, p. 247) argued that the right behaviour possesses two components: 'Right behaviour in the sense of proper performance or rituals honouring what is sacred in the society and hence serving also to bind the society together; and right behaviour in the secular sense of what is fair and just'.

METHOD

The research sample was initially divided into three main groups, including Income and Sales Department auditors, Jordanian Certified Public Accountant (JCPA holders), and financial managers of public shareholding companies registered at the Amman Stock Exchange. The main reason behind the selection of these groups stems from their ability to either protect public interest or reduce and obstruct the growth of public revenues. Research has shown that professional accountants have helped companies and rich individuals to evade taxes, denying that these corrupt practices took place, even after legal investigations had confirmed their involvement (Bakre, 2007; Sikka, 2008). One of the most direct reasons leading to such actions is to gain financial profit (Bakre, 2007). Yet, 'little data has been collected and examined on tax preparers in a manner that would enable assessment of preparers' effect on taxpaying behaviour and administration' (Leviner, 2012, p. 1080). Out of the 475 surveys that were distributed, 121 were disregarded due to the insufficiency of the data provided.

RESULTS

Tax auditors scored the highest participation rates with 194 questionnaires returned, financial managers, on the other hand, only returned 45 questionnaires. Of the 354 surveys that were completed, 329 were analysed, representing 18.8% of the total population. The participants' attitude to tax evasion was measured using a Lickert style seven scale, where the value of one (1) indicates that tax evasion is never ethical or justifiable and the value of seven (7) meaning that it is always justifiable or ethical.

Table 1 summarises the respondents' demographic characteristics, showing the distribution of respondents' gender, age, educational level, occupational status and religious background. Table 2 reveals that over three quarters (77.2%) of respondents were male, with 61.4% aged less than 40 years old. As for the participants' religious backgrounds, 93.9% were Muslims and only 5.5% were Christians. 94.2% had obtained educational qualifications equivalent to a diploma degree or higher, whereas the remaining 5.8% had only completed their high school education. This small % triggered the question of how participants with low educational qualifications could have been employed by the professional organisations and institutions addressed in this research.

Tax morale ratios reveal on average that males have higher ratios of tax morale than females with males' tax morale (mean = 2.638, SD = 1.207) being better than females' (mean = 2.963, SD = 1.447). Table 1 also shows variations amongst the views of participants of different age groups on the issue of tax morale, that is age played a major role in determining the level of tax morale in Jordan. The age group of 50 + year-old respondents scored a mean of 2.664 and SD of 1.108, whereas the group aged less than 30 years old scored a mean of 3.259 and SD of 1.352. Educational level also appeared to have a strong impact on tax morale levels. Table 2 shows that those with a higher level of education (i.e. Bachelor level or higher) have a higher level of tax morale than those with a lower level of education (High School or Diploma). Table 2 also shows that self-employed and unemployed participants scored the lowest levels of tax morale, and therefore the highest levels of tax non-compliance. The table also shows that Christians have a higher level of tax morale than their Muslim counterparts with a mean of 2.157.

The third column of Table 1 displays the statistics of corruption in the government which slightly differs from tax morale levels. The lowest tax morale level when it relates to the corruption is for unemployed respondents (5.200), whilst Christian respondents scored the highest (3.111).

Table 1. Summary Statistics of Individual-Specific Variables.

	FREQ	TM	COR	GOV	FAIR	HTR	FIN
Gender							
Male	254	2.638 (1.207)	3.798	1.608	3.610	3.004	2.744
Female	69	2.963 (1.447)	4.171	1.857	3.812	3.304	3.043
Age							
Less than 30	55	3.259 (1.352)	4.509	2.042	4.509	3.545	3.455
30 > 40	147	2.586 (1.259)	3.669	1.599	3.483	3.020	2.585
40 > 50	89	2.608 (1.161)	3.879	1.604	3.427	2.876	2.865
50 and above	35	2.664 (1.108)	4.051	1.438	3.629	3.029	2.457
Education level							
Secondary school	19	2.960 (1.061)	4.063	1.789	4.895	3.158	3.211
Diploma	37	3.275 (1.640)	4.346	2.057	4.189	4.027	3.676
Bachelor degree	232	2.630 (1.198)	3.822	1.622	3.466	2.935	2.677
MA, MSc or PhD	41	2.555 (1.166)	3.902	1.398	3.683	3.000	2.488
Occupational status							
Unemployed	5	3.412 (0.838)	5.200	1.933	5.800	4.400	4.200
Self-employed	21	3.308 (1.385)	4.724	1.905	4.619	3.952	3.524
Public sector-employed	222	2.565 (1.186)	3.723	1.544	3.446	2.977	2.613
Private sector-employed	77	2.919 (1.388)	4.075	1.900	3.883	3.026	3.078
Retired	4	2.897 (0.821)	4.800	1.250	3.250	3.500	2.000
Religious background							
Muslim	309	2.744 (1.242)	3.955	1.655	3.702	3.142	2.858
Christian	18	2.157 (1.422)	3.111	1.5	2.833	1.889	1.833
Average	329	2.712	3.905	1.653	3.657	3.079	2.796

Notes: Tax morale (TM) is defined as the intrinsic motivation of paying taxes, the level of tax morale was measured on a seven-point scale where 1 indicates that tax evasion is never justifiable or ethical and 7 means it is always justifiable or ethical. Corruption in the government (COR), efficient governmental spending (GOV), the perception of fairness (FAIR), Marginal tax rates (HTR) and financial constraints (FIN) were also measured on a seven-point scale (1 = strongly disagree to 7 = strongly agree).

Among all demographic characteristics, males aged between 30 and 40 with a Bachelor's degree, public sector-employed and Christians have the highest mean. The next column of Table 2 represents the mean of efficient expenditure for tax revenues that yield benefits to taxpayers. Overall, efficient governmental expenditure has a negative (positive) impact on tax

Table 2. Computing Probability of Scores Falling in Range between 2 and 6.

Statement	Mean	SD	Mode	Median	z-Score for $x = 2$	z-Score for $x = 6$
1	3.079	2.151	1	2	9.10	−24.63
2	1.705	1.351	1	1	−3.96	−57.67
3	3.657	2.252	1	3	13.34	−18.87
4	3.930	2.290	1	4	15.29	−16.40
5	1.639	1.337	1	1	−4.89	−59.16
6	4.401	2.377	7	5	18.32	−12.20
7	1.590	1.256	1	1	−5.92	−63.68
8	2.441	1.925	1	2	4.15	−33.54
9	1.729	1.310	1	1	−3.75	−59.13
10	2.240	1.859	1	1	2.34	−36.68
11	4.040	2.455	1	4	15.07	−14.49
12	1.932	1.574	1	1	−0.78	−46.88
13	2.796	2.080	1	2	6.94	−27.93
14	1.991	1.672	1	1	−0.10	−43.49
15	1.787	1.462	1	1	−2.64	−52.26
16	3.894	2.368	1	4	14.50	−16.13
17	3.258	2.277	1	3	10.02	−21.84
Overall	*2.712*	*1.257*	*1*	*2.588*	*10.28*	*−47.43*

non-compliance (tax morale) in Jordan. The vast majority of respondents believe that tax evasion is ethically unacceptable when tax revenues are spent wisely, however respondents with a lower level of education (2.057) and aged less than 30 years old (2.042) recorded the lowest score of tax morale when considering the efficient spending of tax revenues, despite this factor scoring the highest level of tax morale with a mean of 1.653.

The perception of the taxation system as unjust is shown in the fifth column, revealing that unemployed respondents have the lowest level with a mean of 5.8, whilst Christian respondents scored highest with a mean of 2.833. However, the perception of equity and fairness scored a mean of 3.657 on the seven-point scale. Regarding the marginal tax rates, while the lowest level of tax morale is recorded for unemployed respondents (5.8), the highest level is reported for Christian respondents (1.889), with Muslim respondents scoring 3.142, showing that Christian respondents have a higher level of tax morale when tax rates are high. Likewise, the highest

financial constraints averages are reported for Christians (1.833) and retired (2.0) respondents, whereas the lowest averages are recorded for unemployed respondents (4.20). However, this purely descriptive analysis only gives information about the raw effects and not the partial effects. A statistically significant outcome does not give information about the strength or size of the outcome. Therefore, it is important to know the size of the effect of the difference between levels of the independent variable to the dependent variable (Morgan, Leech, Gloeckner, & Barrett, 2012). The observed differences between different groups might be explained in terms of differences in socio-demographic and socio-economic factors, the next section therefore examines the results in greater detail.

The Model

Elffers (2000) argues that it is important that people remain at the lower level of the staircase to tax evasion, using the term 'willingness step' to denote the role of attitude in tax evasion. The empirical analyses focus on attitudes regarding tax evasion, defined as tax morale. The set of hypotheses formulated for this research was tested with the use of a statistical test for population means and level of significance tests. The assumption that the scores collected from different groups of respondents in Jordan were normally distributed has been made. In addition, the assumption that the scores for each of the statements are independent of one another was also made. These assumptions were necessary in order to avoid potential bias in the research results. The scores were converted into standard normal distribution and the calculation of z-score was done in order to make inference after obtaining the p-value of the statements. This was done at a 5% level of significance. The analytical method adopted in this section is consistent with other related studies like McGee and Maranjyan (2006), Nasadyuk and McGee (2006) and Fagbemi et al. (2010).

H1. The prevalent view is that tax evasion is sometimes ethical.

This hypothesis will be accepted if the average scores are more than two (2) but less than six (6) in 95% of the cases. To test this hypothesis the inference is that the probability is that the average score for each statement will fall in the range between 2 and 6. For this purpose, hypothesis testing under standard normal distribution is made and z-scores are computed according to the test statistic formula:

$$Z = \frac{(\mu - \mu 0)}{\sigma/\sqrt{n}} = \frac{(\overline{X} - X0)}{\sigma/\sqrt{n}}$$

where μ – population mean, $\mu 0$ and $X0$ – the particular value that the mean is compared to, $\overline{X}$ – sample mean, σ – standard deviation of the sample, n – number of sample observations.

For instance, in case of unfair tax system statement for $x0 = 2$ and $x0 = 6$ the corresponding z-scores are:

$$Z(x0 = 2) = \frac{(\overline{x} - X0)}{\sigma/\sqrt{n}} = \frac{(3.66 - 2)}{2.25/\sqrt{329}} = 13.34$$

$$Z(x0 = 6) = \frac{(X - X0)}{\sigma/\sqrt{n}} = \frac{(3.66 - 6)}{2.25/\sqrt{329}} = -18.87$$

Thus, in case of the tax morale average score, the corresponding z-scores are

$$Z(x0 = 2) = \frac{(\overline{x} - X0)}{\sigma/\sqrt{n}} = \frac{(2.71 - 2)}{1.26/\sqrt{329}} = 10.28$$

$$Z(x0 = 6) = \frac{(\overline{x} - X0)}{\sigma/\sqrt{n}} = \frac{(2.71 - 6)}{1.26/\sqrt{329}} = -47.43$$

Computed z-scores show that score 2 lies 10.28 standard deviations below the sample mean, which is equal to 2.71 and score 6 is 47.43 standard deviations above the sample mean. Referring to the standard normal distribution probabilities the probability that the z-score would be between 0 and 10.28 (meaning the response score would fall between 2 and the sample mean 2.71) is equal to 0.5. Similarly the probability that the z-score is between −47.43 and 0 (meaning the response score would be between the sample mean 2.71 and 6) amounts to 0.5. In mathematical terms:

$$p(2 < x < \bar{x}) = 0.5$$

$$p(\bar{x} < x < 6) = 0.5$$

$$p(2 < x < 6) = p(2 < x < \bar{x}) + p(\bar{x} < x < 6) = 0.5 + 0.5 = 1$$

According to the response score data collected, the probability that the average score falls between 2 and 6 is 100%, showing that the view that tax evasion is sometimes moral is prevalent with actual 100% confidence. Similar probability estimates apply to all statements and the computed results are shown in Table 2. Therefore, the null hypothesis can be rejected and the alternative hypotheses accepted, with the conclusion that there is a statistical significant difference amongst the respondents which indicates that tax evasion is moral in some circumstances and immoral in others.

H2. Tax evasion will be more acceptable (i.e. scores will be higher) when the government is perceived to be corrupt.

This hypothesis will be accepted if the average score of statements in corruption categories (4, 6, 11, 16, and 17) is significantly higher than the average score of the other twelve (12) statements at a significant level of 5% (i.e. for 5% significance level $Z\alpha = Z0.05 = 1.645$). Assuming that the scores are normally distributed and individually independent we can set up the hypothesis testing if the average score for corruption statements is significantly higher at the 5% level than the score for each other statement in the survey.

$$\begin{aligned} &\text{H0} : (\mu\text{cor} - \mu i) \leq 0 (\text{i.e. } \mu\text{cor} \leq \mu i); \\ &\text{H1} : (\mu\text{cor} - \mu i) > 0 (\text{i.e. } \mu\text{cor} > \mu i) \end{aligned}$$

$$z = \frac{\bar{x}\text{cor} - \bar{x}I - 0}{\sigma(\bar{x}\text{cor} - \bar{x}I)} = \frac{\bar{x}\text{cor} - \bar{x}I}{\sqrt{((\sigma\text{cor}\text{\^{}}2)/n + (\sigma I\text{\^{}}2)/n)}}$$

$$I = 1, 2, 3, 5, 7, 8, 9, 10, 12, 13, 14, 15$$

$\bar{x}\text{cor} - \bar{x}I$ – Response samples mean, $(\sigma\text{cor})^2$ and $(\sigma i)^2$ – the variances of the two response samples, and n_{cor} and n_{i} are the respective sample sizes.

This is the right-tail test and we reject if computed $z > z\alpha$.

For 5% significance level $Z\alpha = Z0.05 = 1.645$.

Z-score for responses to the statement 1:

$$z = \frac{\bar{x}\text{cor} - \bar{x}I}{\sqrt{((\sigma\text{cor}\text{\^{}}2)/n + (\sigma I\text{\^{}}2)/n)}} = \frac{3.905 - 3.079}{\sqrt{((1.926\text{\^{}}2)/329 + (2.151\text{\^{}}2)/326)}} = 5.189$$

Since the computed z-score is greater than 1.645, we reject the null hypothesis and accept the research hypothesis $(\mu_{\text{cor}} - \mu_1) > 0$. We can also compute the p-value estimating the probability of obtaining a z-score that is as likely to reject H0 as the calculated z-score:

$$p\text{-value} = p(z \geq \text{computed } z) = p(z \geq 5.189)$$

Rejection decision: if the p-value $\leq \alpha$, then reject H0. According to the standard normal distribution table the corresponding p-value is equal to 0.000. Since the p-value is less than the accepted significance level 0.5 we reject H0 and accept Ha, $\mu_{\text{cor}} > \mu_1$. We can conclude that the score for corruption statements is significantly higher than the score for statement 1, meaning that tax evasion is considered by the respondents to be more acceptable in cases of government corruption than cases where tax rates are too high. Similar tests comparing the average score for corruption statements and the scores for the other statements are made and reported in Table 3.

As seen from Table 3, the computed z-score for corruption statements is greater than 1.645 for all statements other than statement 3. Therefore, the null hypothesis was rejected and the research hypothesis that the difference between the mean score of corruption statements and all other statements, except statement 3, is greater than zero (0) was accepted. It can be seen in two ways, either the computed z-score exceeds the $z0.05$ or p-value is less than the accepted 0.05 level. We have found that the level of tax evasion tolerance in the case of corrupt government is significantly higher than in all other cases except for unfair tax system.

In essence, the score for corruption statements is significantly higher than the score for statement 14. This implies that respondents view tax evasion to be more acceptable in the case of corruption than in a situation

Table 3. Comparing Scores for Corruption and Scores of Each Other Statements.

Corruption	3.905	1.926	H0:(μcor $-$ μi) $\leq$ 0			
			Ha:(μcor $-$ μi) >0			
Statement	Mean	SD	z-score	$Z_{0.05}$	p-value	Test result
1	3.079	2.151	5.189	1.645	0.0000	Rejected
2	1.705	1.351	16.962	1.645	0.0000	Rejected
3	3.657	2.252	1.518	1.645	0.0643	Accepted
5	3.930	2.290	17.530	1.645	0.0000	Rejected
7	1.639	1.337	18.262	1.645	0.0000	Rejected
8	4.401	2.377	9.752	1.645	0.0000	Rejected
9	1.590	1.256	16.945	1.645	0.0000	Rejected
10	2.441	1.925	11.282	1.645	0.0000	Rejected
12	1.729	1.310	14.388	1.645	0.0000	Rejected
13	2.240	1.859	7.096	1.645	0.0000	Rejected
14	4.040	2.455	13.612	1.645	0.0000	Rejected
15	1.932	1.574	15.888	1.645	0.0000	Rejected
Overall	*2.712*	*1.257*	*9.409*	*1.645*	*0.0000*	*Rejected*

where the penalty rates are low. In addition, this same view is prevalent for statements 1, 2, 5, 7–10 and 12–15. Most of the respondents, however, have indicated that a large portion of the money that is collected as taxes is wasted by the government.

> **H3.** Tax evasion will be less acceptable (scores will be lower) when the government spends tax revenue effectively.

This hypothesis will be accepted if the average score for statements falling into this category is significantly lower than the scores for the statements that do not belong to this category. The hypothesis in this case is the opposite. We will determine whether the scores for the statements referring to efficient governmental expenditure of tax revenues (# 5, 7 and 9) are lower than the scores for each other item on the survey. It allows checking for the difference in average score to be significantly negative. First, the test is set up to compare the average score of the government spending statements and average scores of the remaining statements not falling into the government spending category.

$$\text{H0} : (\mu_{\text{gov}} - \mu_i) \geq 0 \text{ (i.e. } \mu_{\text{gov}} \geq \mu_i);$$
$$\text{H1} : (\mu_{\text{gov}} - \mu_i) < 0 \text{ (i.e. } \mu_{\text{gov}} < \mu_i)$$

$$z = \frac{\overline{x}\text{gov} - \overline{x}\text{I} - 0}{\sigma(\overline{x}\text{gov} - \overline{x}\text{I})} = \frac{\overline{x}\text{gov} - \overline{x}\text{I}}{\sqrt{((\sigma\text{gov}\text{\^{}}2)/n + (\sigma \boldsymbol{I}\text{\^{}}2)/n)}}$$
$$\boldsymbol{I} = 1,2,3,4,6,8,10 - 17$$

This is a left-tail test and we reject if computed $z < -z\alpha$ or $z < -z0.05 = -1.645$ at 5% significance level. As seen from Table 4, the computed z-score for efficient government spending statements is lower than -1.645 for all statements other than 2 and 15 statements. The null hypothesis was rejected in all cases when comparing to the sample mean for efficient government spending statements, suggesting that these cases are considered to be the weakest arguments to support tax evasion on moral grounds, except

Table 4. Comparing Scores for Efficient Spending and Scores.

Government Spending	1.653	1.112	H0:(μgov $-$ μi) $\geq$ 0		
			Ha:(μgov $-$ μi) $<$ 0		
Statement	Mean	SD	z-score	$Z_{0.05}$	Test result
1	3.079	2.151	−10.682	−1.645	Rejected
2	1.705	1.351	−0.539	−1.645	Accepted
3	3.657	2.252	−14.473	−1.645	Rejected
4	3.930	2.290	−16.224	−1.645	Rejected
6	4.401	2.377	−18.994	−1.645	Rejected
8.	2.441	1.925	−6.429	−1.645	Rejected
10	2.240	1.859	−4.915	−1.645	Rejected
11	4.040	2.455	−16.065	−1.645	Rejected
12	1.932	1.574	−2.626	−1.645	Rejected
13	2.796	2.080	−8.790	−1.645	Rejected
14	1.991	1.672	−3.053	−1.645	Rejected
15	1.787	1.462	−1.323	−1.645	Accepted
16	3.894	2.368	−15.538	−1.645	Rejected
17	3.258	2.277	−11.488	−1.645	Rejected
Overall	*2.712*	*1.257*	*−11.445*	*−1.645*	*Rejected*

for statement 2 and 15. Therefore, we rejected the null hypothesis and accepted the research hypothesis that the difference between the mean score of government expenditure statements and all other statements, except statements 2 and 15, is lower than zero (0). We have found that the level of tax evasion tolerance in the case of efficient government spending is significantly lower than the one in all other cases except for statements 2 and 15.

In essence, the score for efficient government spending statements is significantly lower than the score for statement 1. This implies that respondents view tax evasion to be less acceptable in the case of good government spending than a situation where the tax rates are high. In addition, this same view is prevalent for statements 3−14, 16 and 17.

H4. Tax evasion will be more acceptable (i.e. scores will be higher) when the tax system is perceived as being unfair.

H5. Tax evasion will be more acceptable (i.e. scores will be higher) when tax rates are perceived to be high.

H6. Tax evasion will be more acceptable (i.e. scores will be higher) when the taxpayers are facing financial constraints.

These hypotheses will be accepted if the average score for each statement in those categories individually is significantly higher in more than 8 statements of the other statements not falling into that category at a significant level of 5% (i.e. for 5% significance level $z\alpha = z0.05 = 1.645$).

The statements referring to the case of unfair tax system is (3), high tax rates (1) and financial constraints (13). The test will determine if the difference between scores for each of the statement 3, 1 and 13, and the scores of the remaining statements is positive and statistically significant at the 5% level in 9 or more of the remaining statements. This is the right-tail test and H0 will be rejected if computed $z > z\alpha$ or $z > z0.05 = 1.645$ at 5% significance level. The setup of the test is:

$$\text{H0} : (\mu i\text{-test} - \mu i\text{-remaining}) \leq 0 (i.\text{e. } \mu i\text{-test} \leq \mu i\text{-remaining});$$
$$\text{Ha} : (\mu i\text{-test} - \mu i\text{-remaining}) > 0 (i.e. \ \mu i\text{-test} > \mu i\text{-remaining})$$

Table 5 presents the results of the computed z-scores. First, the sample mean for statement 3 is compared to the sample mean of all other statements. It can be seen that the null hypothesis is rejected in most of the cases (12 out of 16), except for the test of statements 4, 6, 11 and 16 which were

Table 5. Comparing Scores for Other Determinants and Scores of Each Other Statements.

Statement	H0 : (μi(test) − μi(remaining)) ≤ 0(i.e.μi(test) ≤ μi(remaining)); Ha : (μi(test) − μi(remaining)) > 0(i.e.μi(test) > μi(remaining))					
	Mean	SD	*z*-unfair	*z*-tax rate	*z*-financial	$Z_{0.05}$
1	3.079	2.151	4.669	–	−2.454	1.645
2	1.705	1.351	15.728	11.592	9.519	1.645
3	3.657	2.252	-	−4.859	−7.493	1.645
4	3.93	2.29	−2.183	−7.160	−9.873	1.645
5	1.639	1.337	16.259	12.148	10.095	1.645
6	4.401	2.377	−5.975	−11.131	−13.979	1.645
7	1.59	1.256	16.653	12.561	10.522	1.645
8	2.441	1.925	9.805	5.391	3.107	1.645
9	1.729	1.31	15.534	11.389	9.310	1.645
10	2.24	1.859	11.423	7.085	4.859	1.645
11	4.04	2.455	−3.066	−8.085	−10.830	1.645
12	1.932	1.574	13.901	9.680	7.542	1.645
13	2.796	2.08	6.948	2.400	–	1.645
14	1.991	1.672	13.427	9.183	7.028	1.645
15	1.787	1.462	15.068	10.901	8.805	1.645
16	3.894	2.368	−1.892	−6.855	−9.558	1.645
17	3.258	2.277	3.229	−1.494	−4.013	1.645
Overall	*2.712*	*1.257*	*7.616*	*3.100*	*0.737*	

Notes: Where *z*-unfair is the computed *z* when the tax system is perceived as being unfair, *z*-tax rate is the computed *z* when the tax rates are perceived to be high, and *z*-financial is the computed *z* when the taxpayer is facing financial constraints.

used as an indicator for corruption. Thus, the average score is higher (i.e. tax evasion is more tolerable) in case of an unfair tax system than in the other cases, except when the government is perceived to be corrupt.

Regarding the high tax rate statement, the sample mean for statement 1 is greater than the sample mean of 10 statements out of specified category. Therefore, the null hypothesis is rejected in 10 of the cases. From the table above, it can be seen that statements referring to financial constraints was rejected in 9 statements out of 16. It can be concluded that the null hypotheses are rejected in the case of an unfair tax system, high tax rates and personal financial constraints, with the average scores being higher (tax evasion is more tolerable) in these cases than in the other cases.

This section presents the results of the association between tax morale determinants and demographic factors. Table 6 presents the one-way ANOVA for the control variables in relation to tax morale variable. It indicates that only age, educational level and occupational status significantly affect tax morale level. Table 7 reveals that, on average, age is the major determinant of tax morale with $F = 3.046$ ($p = 0.006$), while occupational status is the least with $F = 2.934$. By contrast, gender and religious background tend to not influence tax morale levels. However, researchers such

Table 6. Analysis of Variance – Demographic Factors.

		Sum of Squares	df	Mean Square	*F*	Sig.
Gender	Between groups	7.666	7	1.095	.688	.682
	Within groups	510.781	321	1.591		
	Total	518.447	328			
Age	Between groups	27.998	6	4.666	3.064	.006
	Within groups	490.448	322	1.523		
	Total	518.447	328			
Educational level	Between groups	15.439	3	5.146	3.325	.020
	Within groups	503.008	325	1.548		
	Total	518.447	328			
Occupational status	Between groups	18.125	4	4.531	2.934	.021
	Within groups	500.322	324	1.544		
	Total	518.447	328			
Religious background	Between groups	9.227	3	3.076	1.963	.119
	Within groups	509.219	325	1.567		
	Total	518.447	328			

Table 7. Mean Different between Variables (*t* and ANOVA tests).

	TM	COR	GOV	FAIR	HTR	FIN
Gender	−1.900***	−1.429	−1.643	−0.656	−1.029	−1.056
Age	3.064*	2.299**	1.574	2.279**	1.184	1.675
Educational level	3.325**	0.833	2.535***	3.226**	2.813**	3.068**
Occupational status	2.934**	2.420**	1.989***	2.867**	1.520	2.174***
Religious background	1.936***	1.811***	0.577	1.594	3.219*	2.675**

as Hair, Black, Babin, Anderson, and Tatham (2010) have argued that the t test should be used to examine the significant difference between two means, whereas the ANOVA should be used to examine the significant difference among two or more means. Therefore, while the t test was used to compare the respondents' views on tax evasion morality in the light of differences between the respondent's gender and religious backgrounds, ANOVA was used to compare their age, educational levels and occupational statuses.

Table 6 presents the results of the t and ANOVA tests for the dependent and independent variables. Again, the table indicates that an individual's age, educational level and occupational status significantly affect tax morale level at $p < 0.05$. Table 7 also indicates that gender and religious background have a significant impact on tax morale at $p < 0.10$. In general there was a significant difference ($t = -1.900$, $p < 0.10$) between males and females tax morale. The results show that males tax morale (mean = 2.638, SD = 1.207) was significantly better than females' (mean = 2.963, SD = 1.447). Although the result show that males scored lower, that is have a higher level of tax morale, in all the 17 statements, only two statements were statistically significant at 5%. Based on Table 7, there was no significant mean difference between Muslim and Christian tax morale level at 5% significant. However, there was a significant mean difference at 10% ($p = 0.054$), with Christians demonstrating a higher level of tax morale (mean = 2.157, SD = 1,422, $t = 1.936$, $p < 0.10$). A significant mean difference was found between the two groups with respect to their tax morale in the light of high tax rates, financial constraints and corruption with $t = 3.219$ ($p < 0.01$), 2.675 ($p < 0.05$) and 1.811 ($p < 0.10$) respectively. In other words, Christians' average scores were lower than Muslims' in 16 statements out of 17. Theses scores were, however, found to be significant at a 10% level in only seven of the statements.

The ANOVA test also revealed that there were significant variations amongst the views of participants of different age groups on the issue of tax morale with $F(6, 322) = 3.064$, $p < 0.01$. The mean differences covered the respondents' perception of equity and fairness ($F = 2.279$, $p < 0.05$) and whether they perceive that the government is corrupt ($F = 2.299$, $p < 0.05$), showing that younger groups of respondents were statistically less ethical. As for the relation between the respondents' educational levels and their tax morale, Table 7 indicates that there is a significant difference between an individual's educational level and tax morale with $F = 3.325$, $p < 0.05$. Educational level also appeared to have a strong impact in terms of sub tax morale variables, namely high tax rate ($F = 2.813$, $p < 0.05$),

perception of equity and fairness ($F = 3.226$, $p < 0.05$), governmental spending ($F = 2.535$, $p < 0.10$) and financial constraints ($F = 3.068$, $p < 0.05$).

With regard to occupational status, Table 7 shows that there is a significant difference between an individual's occupation status and tax morale with $F = 2.934$, $p < 0.05$. In addition, occupation status appears to have an impact in terms of sub tax morale variables, namely corruption ($F = 2.420$, $p < 0.05$), their perception of the government's ways of spending tax revenues ($F = 1.989$, $p < 0.10$), perception of equity and fairness ($F = 2.867$, $p < 0.05$) and their financial constraints ($F = 2.174$, $p < 0.10$).

In summary, the above table showed that tax morale was influenced by gender, age, occupational status, education level and religious background. Results also revealed that the most ethical group of taxpayers were males, Christians, older taxpayers over 50 years old and well-educated. Discussion of the results is presented in the next section.

DISCUSSION

The finding that tax morale and tax compliance are highly affected by the level of corruption in the government is consistent with the findings of Gupta (2008), Joulfaian (2009); Crequeti and Coppier (2009), among others. Specifically, tax evasion would be highly acceptable, if not obligatory, when tax revenues are spent on projects that taxpayers morally disapprove of. Similar evidence is reported by Rothstein (2000) and Seligson (2002). Therefore, those who engage in tax evasion often justify such behaviour by suggesting that the government wastes tax revenues and spends unwisely, an argument which might decrease voluntary compliance in the long run (Braithwaite, Reinhart, & Smart, 2010), undermine the legitimacy of the political system and interpersonal trust (Seligson, 2002). By contrast, if taxpayers trust their governments, political representatives and the judicial system, taxpayers would be more willing to comply with their tax obligations (Alm, 1999; Alm & Martinez-Vazquez, 2007; Alm & Torgler, 2011).

In line with Ballas and Tsoukas (1998), who investigated the situation in Greece, it can be argued that the political processes in Jordan, along with the historical context, and the cultural matrix within which the state in modern Jordan is administered have created a deep distrust between the citizens and the state. The consequences of this distrust are both the

significant extent of tax evasion on the one hand, and the extremely complicated, volatile, and quite often unfair character of the Jordanian tax system on the other. Sanyal et al. (2000), Acconcia, D'Amato, and Martina (2003) and Akdede (2006) concluded that corrupt tax officials may encourage taxpayers to escape tax payments by paying a bribe. Joulfaian (2009) argues that tax evasion thrives when bribes paid to tax officials are commonplace, and the ability of the tax officials to accept bribes from the taxpayer increases when there is no suitable reward for the tax officials to detect the evasion. Taxpayers may find it more affordable to pay a bribe for tax officials rather than to pay their taxes, however Akdede (2006) found that when a bribe is large, taxpayers prefer to pay their taxes voluntarily rather than to evade taxes. Heidenheimer and Johnston (2011) argued that in the context of pervasive and cumbersome regulations in developing countries, corruption may actually improve efficiency and help growth, that is 'in the second-best world when there are pre-existing policy induced distortions, additional distortions in the form of black-marketing, smuggling, etc., may actually improve welfare even when some resources have to be spent in such activities' (Bardhan, 1997, p. 1322).

Lack of transparency and accountability in the use of public funds have the effect of building public distrust both in the tax system and the government, which in turn is believed to increase the level of tax evasion (Pashev, 2005). Therefore, 'the way out of this vicious circle is for trust to be created between the citizens and the state' (Ballas & Tsoukas, 1998, p. 554). Using clear and transparent procedures with taxpayers, listening to their concerns, helping them to meet their tax obligations, are all part of the new paradigm of tax compliance that seeks to build a relationship of trust and respect between taxpayers and authorities (Alm & Martinez-Vazquez, 2007; Braithwaite, 2003). Taxpayers respond to the treatment received from authorities when deciding whether to comply with their taxes (Feld & Frey, 2002). Overall, fair treatment of those who deal with the output side of government – procedural justice – is a key element in eliciting cooperation and trust from individuals (De Cremer & Tyler, 2007).

The belief that taxpayers base their attitudes towards the payment of taxes on the economic outputs of policy makers as perceived by the taxpayers is consistent with the findings of Sen (1977), Alm et al. (1992a) and Blanchard and Perotti (1999). That is, 'when spending increases, output increases; when taxes increase, output falls' (Blanchard & Perotti, 1999, p. 25). Therefore, the government should spend taxpayers' money wisely so that tax compliance and collection will increase. Recent empirical research has found that tax morale is higher when the relation between the paid tax

and the performed government services is found to be equitable (Torgler, 2007). A transparent decision-making process instead of the results of political deliberation may improve tax morale but further research is necessary to explore which of these exercises greater influence on the taxpayer. A possible explanation for these phenomena, as suggested by Sen (1977) and Johansen (1977), is that human beings are sophisticated enough to understand that in a situation of voluntary provision of public goods, the adoption of a strictly selfish strategy by individuals may be detrimental in terms of their own objectives. As a consequence, they might be stimulated to follow those rules of behaviour that they perceive might produce a better outcome if followed by everybody.

To sum up, the government should prudently spend taxpayers' money because the way in which the government's expenditure is undertaken produces different levels of compliance. Yet, economic policies in developing countries often differ sharply from those commonly advocated by economists, generating advice to adopt policies that are more consistent with both the successful practices in richer countries and/or those that appear best based on existing economic theories (Gordon & Li, 2009). The deviation from conventionally recommended policies is systematic among poorer countries and has existed for many years, which makes it hard to dismiss this evidence as being a result of some officials misunderstanding of the implications of the policies that they choose. Gordon and Li (2009, p. 856) explain that in developing economies such policies fall under the general category of 'political economy' problems. That is, these policies are designed to benefit selected groups who have unusual strong political influence within certain countries. In particular, a government can favour these groups by designing the tax system to transfer resources to them, and perhaps by interfering with market allocations so as to alter equilibrium market prices in ways that benefit particular favoured industries, but these policies might still impose large costs on the rest of the population, justifying altruistic intervention from outside.

As for perceptions of equity and fairness, in line with the Equity Theory, this research confirms that individuals will be motivated to alter their tax perceptions if a comparable rate does not exist (Cuccia & Carnes, 2001). Some authors such as Allingham and Sandmo (1972), Spicer and Lundstedt (1976), Jackson and Milliron (1986) and Andreoni et al. (1998) characterise and explain tax compliance as the output of interrelation among variables including the perception of equity and efficiency. Based on Equity Theory, the taxpayer should become less (more) compliant when they are victims (beneficiaries) of tax inequity. Walster, Walster, and

Berscheid (1978) predicted that when individuals find themselves in inequitable relationships, they become distressed and attempt to restore equity either by altering their own or their counterparts' output or input. Richardson (2006) highlighted five major underlying tax fairness dimensions including the general fairness and the distribution of the tax burden, exchange with the government, attitudes towards the taxation of the wealthy, preferred tax rate structure and self-interest. Spicer and Becker (1980) also proposed that tax evasion increases when taxpayers perceive fiscal inequity because they feel victimised by imbalanced income redistributions.

Hasseldine and Li (1999) placed the government as the main influencing factor in relation to tax evasion since the government plays a central role through designing and enforcing the tax systems, and collecting taxes. Therefore, in order to increase tax compliance rates, the authorities are required to design an effective taxation system and laws that utilise tax funds in projects directed towards the development of the country because the way in which the government spends its revenues results in different levels of compliance. This target could be achieved through the establishment of money-generating tax-funded projects, which in turn, would reduce tax rates in the future. Drawing on the views of Eriksen and Fallan (1996), a successful way to reduce tax evasion is to enrich individuals with tax knowledge as much as possible, in order to improve their tax ethics and their perceptions of fairness and equity.

With regard to marginal tax rates, this research draws on the views of Spicer and Becker (1980); Clotfelter (1983), Baldry (1987) and Joulfaian and Rider (1996) who showed that taxpayers base their attitudes towards the payment of taxes on their perception of marginal tax rates. However, other research has shown that tax rates have a debatable impact on tax evasion, that is, decreasing tax rates do not necessarily lead to a decrease in tax evasion (Kirchler et al., 2008) and increasing tax rates will not necessarily decrease compliance behaviours (Allingham & Sandmo, 1972). Despite the fact that income tax rates are low in Jordan, this research is in line with Kirchler et al. (2008) and McKerchar and Evans (2009) who proposed that the degree of trust (distrust) between taxpayers and the government plays a major role in affirming the positive (negative) impact of tax rates on tax evasion. That is, when individuals' trust is low, a high tax rate could be considered an unfair treatment of taxpayers and when trust is high, the same level of tax rates could be interpreted as a contribution to the community (Kirchler et al., 2008). Torgler (2007) argues that in situations where people believe that the tax system is unfair as is the case where they have a

high tax burden, the propensity to behave honestly decreases and tax evasion can be seen as a kind of self-defence.

With regard to personal financial constraints, the result that taxpayers who faced personal financial problems were more prone to evade taxes compared to those who are under less financial constraints is consistent with the finding of Abdul (2001). People under financial constraints tend to prioritise their financial needs and obligations rather than pay taxes. For example, people are likely to pay their utility bills and mortgages because failure to do so would result in immediate fines or penalising actions by the relevant authorities. On the other hand, delaying the payment of taxes would not be fined immediately by the tax authority because enforcement is quite weak in Jordan (Malkawi & Haloush, 2008). However, this result contradicts the findings of Vogel (1974) and Wärneryd and Walerud (1982) who found that people with no financial distress also exercise tax evasion and the level of evasion is higher than that of people under financial distress. Vogel (1974) presumed that this situation is related to the economic status rather than personal condition. Similarly, Al-Oran and Al-Khdhoor (2004) concluded that income tax evasion in Jordan is related to the economic situation, with income tax evasion in Jordan generally following an increasing rate during most of the studied period, and whenever a new tax is imposed, or an old one is increased, evasion increases significantly.

With regard to the gender of taxpayers, while the finding of the current research is consistent with the findings of Barnett and Karson (1987); Weeks et al. (1999); McGee and Tusan (2008) and McGee and Benk (2011), it contradict the findings of Tittle (1980); Spicer and Becker (1980); Dollar et al. (2001); Mocan (2008) and McGee and Cohn (2008). A possible explanation for women's low tax compliance rates as proposed by McGee and Tusan (2008) and Torgler and Schaltegger (2005) was because women are becoming liberated from their traditional gender roles and will evade taxes just like men do. Yet, Dollar et al. (2001), Swamy, Knack, Lee, and Azfar (2001) and Torgler and Valev (2010) concluded that higher women parliamentarians' rates have led statistically to a significant negative impact on corruption. Criminology literature actually gives a basis to explain possible gender differences (Torgler & Valev, 2010).

With regard to the impact of age on tax compliance, the results of this research support the findings of Tittle (1980), Clotfelter (1983), Dubin and Wilde (1988), Gupta and McGee (2010) and Tekeli (2011) which asserted that age was positively related to tax compliance. Possible explanations include that older people are more sensitive to the threat of sanctions, whether they were social or financial, than individuals of other age groups

on the social scale (Tittle, 1980), and are also more strongly attached to the community (Pommerehne & Weck-Hannemann, 1996) resulting in a stronger dependency on others' reactions (Torgler & Murphy, 2004). Criminology findings also indicate that age is negatively correlated with breaking the law (Gottfredson & Hirschi, 1990; Torgler & Valev, 2010).

As for individuals' educational levels, the result of this research is in line with previous studies that support the direct, positive association between educational levels and taxpayers' compliance (Chan et al., 2000; Jackson & Milliron, 1986; Lewis, 1982; Roth, Scholz, & Witte, 1989). That is, although educated taxpayers may be aware of non-compliance opportunities, their more comprehensive understanding of the tax system and higher moral levels promote a more favourable taxpayer attitude and greater compliance (Chan et al., 2000). Individuals possessing higher educational qualifications are more likely to contribute positively to the understanding of taxation, especially regarding the laws and regulations of taxation (Eriksen & Fallan, 1996). Conversely, these individuals may also be more critical of how the state operates and spends its tax revenues. Moreover, a higher level of education would lead to a better income level and would improve one's knowledge about the available opportunities for evasion. Consequently, this might eventually change one's attitude towards tax compliance (Loo, 2006).

A reason behind the differences in the findings is attributed to the fact that several behavioural factors pull taxpayers' opinions in opposite directions. For instance, while wealthier taxpayers tend to be more educated than the general population and may have a tendency to be more respectful of the law, they are taxed more than poor people and so they might resent paying high taxes. Such a stance causes wealthy taxpayers to view tax evasion more favourably. Another reason is that most of prior studies such as Vogel (1974), Spicer and Lundstedt (1976), Song and Yarbrough (1978) have taken the general level of taxpayers' education. This indirect approach is based on the assumption that knowledge about taxation increases with the length of education, aside from the educational content, however there are many people with less formal education who have a better knowledge of taxation than those with higher educational qualifications. Such a criterion does not therefore give a completely satisfactory answer to the issue of whether there is a connection between tax knowledge and attitudes towards taxation. Torgler and Schaltegger (2006) claimed that future studies should investigate the impact of informal education such as the time that one spends reading a newspaper to investigate tax morale.

The result relating to the impact of individuals' occupational status on their tax morale is in line with Torgler and Schaltegger's (2006) and

Tekeli's (2011) that self-employed and unemployed participants scored the lowest levels of tax morale, and therefore the highest levels of tax non-compliance. By contrast, public sector employees scored the highest (lowest) level of tax morale (tax non-compliance). Vogel (1974) highlights that self-employed taxpayers possibly think that taxes were used for useless purposes or unnecessary social reforms, and that taxes were high along with less governmental programs benefit. Similarly, Lewis (1982) and Torgler and Schaltegger (2006) argued that self-employed individuals have higher compliance costs due to their being sensitive to financial restrictions. That is, paying off their taxes becomes more visible for them.

Religion includes a belief in what constitutes acceptable behaviour, including the performance of rituals and right behaviour in the secular sense of what is fair and just (Margolis, 1997; Torgler, 2006). While a number of studies were based on the inclination of religious values and its relation to the tax payment decision (Cohn, 1998; Gronbacher, 1998), other studies focused on the relationship between religious motivations and moral constraints (Torgler, 2006; Torgler & Murphy, 2004; Torgler & Schneider, 2007). The findings of this research indicate that Christians have a higher level of tax morale than their Muslim counterparts. Although the findings showed significant differences, they affirm that, in line with (Gronbacher, 1998; Pennock, 1998) who investigated the ethical stances of Christians, and (Ahmad, 1995; McGee, 1998a, 1998b) who investigated the ethical stances of Muslims, there are certain boundaries to the duty that any particular one owes to the state to pay taxes. That Christians have a higher level of tax morale than Muslims could be attributed to the fact that Muslims could morally avoid paying tariffs, sales tax (VAT), perhaps income taxes, and could engage in smuggling (Ahmad, 1995; McGee, 1998a, 1998b). Yet, a proportional tax at fix rate, on the pattern of Zakat, is to be levied on the accumulated wealth of the capable taxpayers without any distinction (Murtuza & Ghazanfar, 1998). Thus, the implementation of Shari'a laws pertaining to Zakat could provide effective solutions for the issues related to tax evasion in Jordan (khasharmeh, 2000). Crowe (1944) reviewed the Christian literature and revealed that tax evasion is not always unethical, that is, there is a moral obligation to pay just taxes but there is no moral obligation to pay unjust taxes. However, some Christian scholars believe that there is nothing ethically wrong with evading indirect taxes and others think that it is ethically improper to evade any tax, even if the state does evil things with the proceeds. What can be said about the Christian position on tax evasion is that there is no coherent, unified, non-contradictory position (McGee, 1998a, 1998b).

CONCLUSION

The primary objective of this research was to explore the importance of tax morale and to establish its place amongst the determinants of tax compliance in Jordan. This research was based on a national survey involving tax auditors, JCPA holders and financial managers of shareholding companies registered at the Amman Stock Exchange. The findings of this research provide evidence that tax morale along with improvements in several other factors (i.e. decreasing the level of corruption; improving development of perceptions of government spending; improving perceptions of fairness and equity in the taxation system; reducing tax rates; addressing personal financial constraints) would increase tax compliance. In addition, the findings of this research help to target specific programmes on tax compliance based on a specific national profile of gender, age, education levels, occupational status and religious backgrounds. This approach is more likely to deliver the desired increase in voluntary compliance compared to other possible approaches. In addition to these results, this research also explored the specific nature of tax morale in detail in order to illustrate how different profiles of tax morale (e.g. the typical characteristics of ethical, moderate and less ethical taxpayers) are important to provide useful guidance for tax administrators and improving the taxation system.

This research proposed that tax evading decisions could be affected by determinants that are categorised under two stages in terms of their importance to shaping taxpayers' choices. First, is taxpayers' perception of their governments' credibility, since governmental corruption might justify tax non-compliance. By contrast, efficient governmental tax revenue expenditure had a negative impact on tax evasion, finding that spending tax revenues wisely, on worthy projects, and in avenues that yield benefits for taxpayers would enhance tax morale and, therefore, reduce tax evasion. These two cases would be mutually exclusive. As for the second stage, it incorporates situations when the taxation system is perceived as unjust, when tax rates are too high and when taxpayers are encountering financial constraints. Such situations are the main determinants of tax evasion and have a positive impact on tax evasion.

In the light of the findings in this research, a number of implications were identified. The findings demonstrated that in formulating strategies to enhance voluntary compliance, it is crucial for the relevant authorities to be aware of, understand and appreciate individual taxpayers' compliance behaviour and the need to provide tax education services. There is a need for trust to be built between the citizens and the state in order to eliminate

individuals' incentives of evading taxes. In order to facilitate this, transparency and accountability in the taxation system must be enforced and publicised. The taxation system also needs to concentrate on income tax by expanding the tax tranches to collect sufficient tax revenues, rather than raising tax rates on essential commodities. Moreover, Income Tax Law needs to set forth stringent penalties for tax evasion along with shifting tax evasion into a more serious category of crimes rather than classifying it as a mere misdemeanour. A further study into how changes in levels of tax knowledge, taxpayers' financial situations and changes to tax laws and regulations that potentially affect compliance decisions could be beneficial.

NOTES

1. For an overview see Cowell (1990), Andreoni, Erard, and Feinstein (1998) and Slemrod (2007).
2. Nearest to this study McGee and Maranjyan (2006), Nasadyuk and McGee (2006) and Fagbemi, Uadiale, and Noah (2010) who report international evidence and pave the way for comparative analysis for tax ethics in various countries. However, no study, to our knowledge, explicitly investigates the cases of Jordan and incorporates a comprehensive set of possible determinants as does the model in this paper.
3. Example of such differences include governments operating in developed economies (such as the United States, the UK and Australia) are known to have lower level of corruption than governments operating in developing economies (such as Egypt, Iran and Jordan). The size of the shadow economy is also known to be higher in developing countries (Schneider, Buehn, & Montenegro, 2010).
4. To the best of our knowledge, we have not found references in the tax compliance literature that used Creative Tax Morale to provide evidence that contradicts the basic tenets of the neoclassical model of tax evasion.

REFERENCES

Abdul, M. (2001). *Personal income tax non-compliance in Malaysia*. PhD Thesis. Victoria University, Melbourne, Australia.

Acconcia, A., D'Amato, M., & Martina, R. (2003). Tax evasion and corruption in tax administration. *Journal of Public Economics*, *105*, 1–2.

Ahmad, M. (1995). Business ethics in Islam. The International Institute of Islamic Thought and the International Institute of Islamic Economics, Islamabad.

Akdede, S. (2006). Corruption and tax evasion. *Doğus Üniversitesi Dergisi*, *7*(2), 141–149.

Allingham, M., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, *1*(3), 323–338.

Alm, J. (1999). Tax compliance and administration. In W. Hildreth & J. Richardson (Eds.), *Handbook on taxation*. New York, NY: Marcel Dekker.

Alm, J., Jackson, B., & McKee, M. (1992a). Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*, *45*(1), 107–114.

Alm, J., & Martinez-Vazquez, J. (2007). *Tax morale and tax evasion in Latin America [www]*. Retrieved from http://icepp.gsu.edu/sites/default/files/documents/icepp/wp/ispwp0704.pdf. Accessed on June 3, 2012.

Alm, J., Martinez-Vazquez, J., & Schneider, F. (2004). Sizing the problem of the hard-to-tax. *Contributions to Economic Analysis*, *268*, 11–75.

Alm, J., McClelland, G., & Schulze, W. (1992b). Why do people pay taxes? *Journal of Public Economics*, *48*(1), 21–38.

Alm, J., & Torgler, B. (2006). Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology*, *27*(2), 224–246.

Alm, J., & Torgler, B. (2011). Do ethics matter? Tax compliance and morality. *Journal of Business Ethics*, *101*(4), 635–651.

Al-Oran, A., & Al-Khadhoor, R. (2004). Income tax evasion in Jordan: An analytical study for the period 1976–1997. *Journal of Social Sciences*, *32*(1), 31–68.

Anderson, G. (1988). Mr. Smith and the preachers: The economics of religion in the wealth of nations. *Journal of Political Economy*, *96*(5), 1066–1088.

Andreoni, J., Erard, B., & Feinstein, J. (1998). Tax compliance. *Journal of Economic Literature*, *36*(2), 818–860.

Bakre, O. (2007). The unethical practices of accountants and auditors and the compromising stance of professional bodies in the corporate world: Evidence from corporate Nigeria. *Accounting Forum*, *31*(3), 277–303.

Baldry, J. (1987). Income tax evasion and the tax schedule: Some experimental results. *Public Finance*, *42*(3), 357–383.

Ballas, A., & Tsoukas, H. (1998). Consequences of distrust: The vicious circle of tax evasion in Greece. *Journal of Accounting, Ethics and Public Policy*, *1*(4), 572–596.

Bame-Aldred, C., Cullen, J., Martin, K., & Parboteeah, K. (2013). National culture and firm-level tax evasion. *Journal of Business Research*, *66*(3), 390–396.

Bardhan, P. (1997). Corruption and development: A review of issues. *Journal of Economic Literature*, *35*(3), 1320–1346.

Barnett, J., & Karson, M. (1987). Personal values and business decisions: An exploratory investigation. *Journal of Business Ethics*, *6*(5), 371–382.

Barone, G., & Mocetti, S. (2011). Tax morale and public spending inefficiency. *International Taxation Public Finance*, *18*(6), 724–749.

Blanchard, O., & Perotti, R. (1999). *An empirical characterization of the dynamic effects of changes in government spending and taxes on output [www]*. Retrieved from http://www.nber.org/papers/w7269.pdf. Accessed on April 3, 2013.

Braithwaite, V. (2003). A new approach to tax compliance. In V. Braithwaite (Ed.), *Taxing democracy: Understanding tax avoidance and evasion* (pp. 1–11). Aldershot: Ashgate.

Braithwaite, V., Reinhart, M., & Smart, M. (2010). *Tax non-compliance among the under-30s: Knowledge, obligation or scepticism? [www]*. Retrieved from http://vab.anu.edu.au/present/agetax.pdf. Accessed on March 31, 2012.

Brooks, N., & Doob, A. H. (1990). Tax evasion: Searching for a theory of compliance behaviour. In M. L. Friedland (Ed.), *Securing compliance: Seven case studies* (pp. 120–164). Toronto: University of Toronto.

Chan, C., Troutman, C., & O'Bryan, D. (2000). An expanded model of taxpayer compliance: Empirical evidence from United States and Hong Kong. *Journal of International Accounting, Auditing and Taxation*, *9*(2), 83–103.

Clotfelter, C. (1983). Tax evasion and tax rates: An analysis of individual returns. *The Review of Economics and Statistics*, *65*(3), 363–373.

Cohn, G. (1998). The Jewish view on paying taxes. *Journal of Accounting, Ethics and Public Policy*, *1*(2), 109–120.

Cowell, F. (1985). Tax evasion with labour income. *Journal of Public Economics*, *26*(1), 19–34.

Cowell, F. (1990). *Cheating the government: The economics of evasion*. Cambridge: MIT Press.

Crequeti, R., & Coppier, R. (2009). Tax revenues, fiscal corruption and "Shame" costs. *Economic Modelling*, *26*(6), 1239–1244.

Crowe, M. (1944). The moral obligation of paying just taxes. The Catholic University of America Studies in Sacred Theology, Washington, DC.

Cuccia, A., & Carnes, G. (2001). A closer look at the relation between tax complexity and tax equity perceptions. *Journal of Economic Psychology*, *22*(2), 113–140.

Cummings, R., Martinez-Vazquez, J., McKee, M., & Torgler, B. (2009). Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment. *Journal of Economic Behavior and Organization*, *70*(3), 447–457.

De Cremer, D., & Tyler, T. (2007). The effects of trust in authority and procedural fairness on cooperation. *Journal of Applied Psychology*, *92*(3), 639–649.

Dhami, S., & al-Nowaihi, A. (2007). Why do people pay taxes? Prospect theory versus expected utility theory. *Journal of Economic Behavior and Organization*, *64*(1), 171–192.

Dollar, D., Fisman, R., & Gatti, R. (2001). Are women really the 'Fairer' sex? Corruption and women in government. *Journal of Economic Behavior and Organization*, *46*(4), 423–429.

Dubin, J., & Wilde, L. (1988). An empirical analysis of federal income tax auditing and compliance. *National Tax Journal*, *41*, 61–74.

Elffers, H. (2000). But taxpayers do cooperate! In M. Van Vugt, M. Snyder, T. Tyler, & A. Biel (Eds.), *Cooperation in modern society. Promoting the welfare of communities states and organizations* (pp. 184–194). London: Routledge.

Erard, B., & Feinstein, J. (1994). The role of moral sentiment and audit perceptions in tax compliance. *Public Finance/Finance Publiques*, *49*, 70–89.

Eriksen, K., & Fallan, L. (1996). Tax knowledge and attitudes towards taxation: A report on a quasi-experiment. *Journal of Economic Psychology*, *17*(3), 387–402.

Escobari, D. (2005). *Tax evasion and the remuneration of tax auditors in a corrupt tax administration [www]*. Retrieved from http://ssrn.com/abstract=924066. Accessed on September 3, 2013.

Etzioni, A. (1986). Tax evasion and perceptions of tax rate: A research note. *Journal of Applied Behavioral Science*, *22*(2), 177–185.

Fagbemi, T., Uadiale, O., & Noah, A. (2010). The ethics of tax evasion: Perceptual evidence from Nigeria. *European Journal of Social Sciences*, *17*(3), 360–371.

Feinstein, J. (1991). An econometric analysis of income tax evasion and its detection. *RAND Journal of Economics*, *22*(1), 14–35.

Feld, L., & Frey, B. (2002). Trust breeds trust: How taxpayers are treated. *Economics of Governance*, *3*(2), 87–99.

Frey, B. (1997). *Not just for the money: An economic theory of personal motivation*. Cheltenham: Edward Elgar.

Gordon, R., & Li, W. (2009). Tax structures in developing countries: Many puzzles and a possible explanation. *Journal of Public Economics*, *93*(7), 855–866.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Gronbacher, G. (1998). Taxation: Catholic social thought and classical liberalism. *Journal of Accounting, Ethics and Public Policy*, *1*(1), 91–100.

Gupta, R. (2008). Tax evasion and financial repression. *Journal of Economics and Business*, *60*(6), 517–535.

Gupta, R., & McGee, R. (2010). A comparative study of New Zealanders' opinion on the ethics of tax evasion: Students v. accountants. *New Zealand Journal of Taxation Law and Policy*, *16*(1), 47–84.

Güth, W., Levati, V., & Sausgruber, R. (2005). Tax morale and (De-) centralization: An experimental study. *Public Choice*, *125*(1–2), 171–188.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hanno, D., & Violcttc, G. (1996). An analysis of moral and social influences on tax behaviour. *Behaviour Research in Accounting*, *8*, 57–75.

Hasseldine, J., & Li, Z. (1999). More tax evasion research required in new millennium. *Crime, Law and Social Change*, *31*(1), 91–104.

Heidenheimer, A., & Johnston, M. (Eds.). (2011). *Political corruption: Concepts and contexts*. Piscataway, NJ: Transaction Publishers.

Hindriks, J., Keen, M., & Muthoo, A. (1999). Corruption, extortion and evasion. *Journal of Public Economics*, *74*(3), 395–430.

Hite, A., & Roberts, M. (1992). An analysis of tax reform based on taxpayers' perceptions of fairness and self interest. *Advances in Taxation*, *4*, 115–137.

Hug, S., & Spörri, F. (2011). Referendums, trust and tax evasion. *European Journal of Political Economy*, *27*(1), 120–131.

Hull, B., & Bold, F. (1994). Hell, religion, and cultural change. *Journal of Institutional and Theoretical Economics*, *150*, 447–464.

Imam, P., & Jacobs, F. (2007). *Effect of corruption on tax revenues in the Middle East [www]*. Retrieved from http://www.imf.org/external/pubs/ft/wp/2007/wp07270.pdf

Imam, P., & Jacobs, D. (2014). Effect of corruption on tax revenues in the middle east. *Review of Middle East Economics and Finance*, *10*(1), 1–24.

Jackson, B., & Milliron, V. (1986). Tax compliance research: Findings, problems, and prospects. *Journal of Accounting Literature*, *5*, 125–165.

Johansen, L. (1977). The theory of public goods: Misplaced emphasis? *Journal of Public Economic*, *7*(1), 147–152.

Joulfaian, D. (2009). Bribes and business tax evasion. *European Journal of Comparative Economics*, *6*(2), 227–244.

Joulfaian, D., & Rider, M. (1996). Tax evasion in the presence of negative income tax rates. *National Tax Journal*, *49*(4), 553–570.

Khasharmeh, H. (2000). A field study of the phenomenon of tax evasion among professionals in Jordan: Causes and factors that reduce evasion from the standpoint of self-employed. *Al-Manarah Journal*, *5*(1), 217–237.

Kirchler, E. (2007). *The economic psychology of tax behaviour*. Cambridge: Cambridge University Press.

Kirchler, E., Hoelzl, E., & Wahl, I. (2008). Enforced versus voluntary compliance: The "Slippery Slope" framework. *Journal of Economic Psychology*, *29*(2), 210–255.

Lago Peñas, I., & Lago Peñas, S. (2010). The determinants of tax morale in comparative perspective: Evidence from European countries. *European Journal of Political Economy*, *26*(4), 441–453.

Levin, J., & Widell, L. (2007). *Tax evasion in Kenya and Tanzania: Evidence from missing imports [www]*. Retrieved from www.oru.se/pagefiles/15374/wp2007-08.pdf. Accessed on October 11, 2011.

Leviner, S. (2012). Role tax preparers play in taxpayer compliance: An empirical investigation with policy implications. *The Buffalo Law Review*, *60*(4), 1079–1138.

Lewis, A. (1982). *The psychology of taxation*. Oxford: Martin Robertson.

Lewis, A., Carrera, S., Cullis, J., & Jones, P. (2009). Individual, cognitive and cultural differences in tax compliance: UK and Italy compared. *Journal of Economic Psychology*, *30*(3), 431–445.

Loo, E. (2006). *The influence of the introduction of self-assessment on compliance behaviour of individual taxpayers in Malaysia*. PhD Thesis. University of Sydney, Australia.

Malkawi, B., & Haloush, H. (2008). The case of income tax evasion in Jordan: Symptoms and solutions. *Journal of Financial Crime*, *15*(3), 282–294.

Margolis, H. (1997). Religion as paradigm. *Journal of Institutional and Theoretical Economics*, *153*(1), 242–252.

Mason, R., & Calvin, L. (1978). A study of admitted income tax evasion. *Law and Society Review*, *12*, 73–89.

McGee, R. (1994). Is tax evasion unethical? *University of Kansas Law Review*, *42*(2), 411–435.

McGee, R. (1998a). The ethics of tax evasion in Islam: A comment. In R. McGee (Ed.), *The ethics of tax evasion* (pp. 214–219). Dumont, NJ: The Dumont Institute for Public Policy Research.

McGee, R. (Ed.). (1998b). *The ethics of tax evasion*. Dumont, NJ: The Dumont Institute for Public Policy Research.

McGee, R., & An, Y. (2006). *The ethics of tax evasion: A survey of Chinese business and economics students [www]*. Retrieved from http://ssrn.com/abstract=869280

McGee, R., & Benk, S. (2011). The ethics of tax evasion: A study of Turkish opinion. *Journal of Balkan and Near Eastern Studies*, *13*(2), 249–262.

McGee, R., Benk, S., Yildirim, H., & Kayikçi, M. (2011). The ethics of tax evasion: A study of Turkish tax practitioner opinion. *European Journal of Social Sciences*, *18*(3), 468–480.

McGee, R., & Bose, S. (2007). *The ethics of tax evasion: A comparative study of Australian, New Zealand and USA opinion [www]*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=979408

McGee, R., & Cohn, G. (2008). Jewish perspective on the Ethics of tax evasion. *Journal of Legal, Ethical and Regulatory Issues*, *11*(2), 1–32.

McGee, R., & Maranjyan, T. (2006). *Tax evasion in Armenia: An empirical study [www]*. Retrieved from: http://core.kmi.open.ac.uk/download/pdf/11871031.pdf. Accessed on May 27, 2011.

McGee, R., & Rossi, M. (2006). *The ethics of tax evasion: A survey of law and business students in Argentina [www]*. Retrieved from http://ssrn.com/abstract=875892

McGee, R., & Tusan, R. (2008). The ethics of tax evasion: A survey of Slovak opinion. In R. McGee (Ed.), *Taxation and public finance in transition and developing economies* (pp. 575–601). New York, NY: Springer.

McGee, R., & Tyler, M. (2007). Tax evasion and ethics: A demographic study of thirty-three countries. *International Journal of Business, Accounting, and Finance*, *1*(1), 95–114.

McKerchar, M., & Evans, C. (2009). Sustaining growth in developing economies through improved taxpayer compliance: Challenges for policy makers and revenue authorities. *eJournal of Tax Research*, *7*(2), 171–201.

Mocan, N. (2008). What determines corruption? International evidence from micro data. *Economic Inquiry*, *46*(4), 493–510.

Morgan, G., Leech, N., Gloeckner, G., & Barrett, K. (2012). *IBM SPSS for introductory statistics: Use and interpretation* (5th ed.). New York, NY: Routledge.

Murtuza, A., & Ghazanfar, S. (1998). Taxation as a form of worship: Exploring the nature of Zakat. *Journal of Accounting, Ethics and Public Policy*, *1*(2), 134–161.

Nasadyuk, I., & McGee, R. (2006). *Tax evasion in the Ukraine: A survey of opinion [www]*. Available at SSRN. Retrieved from http://ssrn.com/abstract=943087. Accessed on December 4, 2011.

Orviska, M., & Hudson, J. (2002). Tax evasion, civic duty and the law abiding citizen. *European Journal of Political Economy*, *19*(1), 83–102.

Pashev, K. (2005). *Tax compliance of small business in transition economies: Lessons from Bulgaria [www]*. Retrieved from: icepp.gsu.edu/sites/default/files/documents/icepp/wp/ispwp0510.pdf. Accessed on February 2, 2012.

Pennock, R. (1998). Death and taxes: On the justice of conscientious war tax resistance. *Journal of Accounting, Ethics and Public Policy*, *1*(1), 58–76.

Piolatto, A., & Rablen, M. (2014). *Prospect theory and tax evasion: A reconsideration of the Yitzhaki Puzzle [Online]*. Retrieved from http://www.ifs.org.uk/wps/wp201325.pdf. Accessed on April 9, 2015.

Pommerehne, W., & Weck-Hannemann, H. (1996). Tax rates, tax administration and income tax evasion in Switzerland. *Public Choice*, *88*(1), 161–170.

Porcano, T. (1988). Correlates of tax evasion. *Journal of Economic Psychology*, *9*(1), 47–67.

Richardson, G. (2006). The impact of tax fairness dimensions on tax compliance behavior in an Asian Jurisdiction: The Case of Hong Kong. *International tax Journal*, *32*, 29–42.

Richardson, M., & Sawyer, A. (2001). A taxonomy of the tax compliance literature: Further findings, problems and prospects. *Australian Tax Forum*, *16*(2), 137–320.

Roth, J., Scholz, J., & Witte, A. (Eds.). (1989). *Taxpayer compliance: An agenda for research*. Philadelphia, PN: University of Pennsylvania Press.

Rothstein, B. (2000). Trust, social dilemmas and collective memories. *Journal of Theoretical Politics*, *12*(4), 477–501.

Ruegger, D., & King, E. W. (1992). A study of the effect of age and gender upon student business ethics. *Journal of Business, Ethics*, *11*(3), 179–186.

Russo, F. (2013). Tax morale and tax evasion reports. *Economics Letters*, *121*(1), 110–114.

Sanyal, A. (2000). *Income tax evasion and bribe chains [www]*. Retrieved from http://research-archive.lincoln.ac.nz/handle/10182/569

Sanyal, A., Gang, N., & Omkar, G. (2000). Corruption, tax evasion and the Laffer curve. *Public Choice*, *105*(1–2), 61–78.

Schneider, F. (2005). Shadow economies around the world: What do we really know? *European Journal of Political Economy*, *21*(3), 598–642.

Schneider, F., Buehn, A., & Montenegro, C. (2010). New estimates for the shadow economies all over the world. *International Economic Journal*, *24*(4), 443–461.
Seligson, M. (2002). The impact of corruption on regime legitimacy: A comparative study of four Latin American countries. *The Journal of Politics*, *64*(2), 408–433.
Sen, A. (1977). Rational fools: A critique of the behavioural foundations of economic theory. *Philosophy and Public Affairs*, *6*(4), 317–344.
Sikka, P. (2008). Enterprise culture and accountancy firms: The new master of universe. *Accounting, Auditing and Accountability Journal*, *21*(2), 268–295.
Slemrod, J. (Ed.). (1992). *Why people pay taxes, tax compliance and enforcement*. Ann Arbor, MI: University of Michigan Press.
Slemrod, J. (2007). Cheating ourselves: The economics of tax evasion. *The Journal of Economic Perspectives*, *21*(1), 25–48.
Smith, A. (1776). In E. A. Seligman (Ed.), *An inquiry into the nature and causes of the wealth of nations* (pp. 12–15). London: J. M. Dent. 1901, 400-401,436-437.
Song, Y., & Yarbrough, T. (1978). Tax ethics and taxpayer attitudes: A survey. *Public Administration Review*, *38*(5), 442–452.
Spicer, M., & Becker, L. (1980). Fiscal inequity and tax evasion: An experimental approach. *National Tax Journal*, *33*(2), 171–175.
Spicer, M., & Lundstedt, S. (1976). Understanding tax evasion. *Public Finance*, *31*(2), 295–305.
Swamy, A., Knack, S., Lee, Y., & Azfar, O. (2001). Gender and corruption. *Journal of Development Economics*, *64*(1), 25–55.
Tekeli, R. (2011). *The determinants of tax morale: The effects of cultural differences and politics [www]*. Retrieved from www.mof.go.jp/pri/research/discussion_paper/ron225.pdf. Accessed on April 22, 2013.
Tittle, C. (1980). *Sanctions and social deviance: The question of deterrence*. New York, NY: Praeger.
Torgler, B. (2003). Tax morale, rule governed behaviour and trust. *Constitutional Political Economy*, *14*(2), 119–140.
Torgler, B. (2004). Tax morale in Asian Countries. *Journal of Asian Economics*, *15*(2), 237–266.
Torgler, B. (2005a). Tax morale and direct democracy. *European Journal of Political Economy*, *21*(2), 525–531.
Torgler, B. (2005b). Tax morale in Latin America. *Public Choice*, *122*(1–2), 133–157.
Torgler, B. (2006). The importance of faith: Tax morale and religiosity. *Journal of Economic Behavior and Organization*, *61*(1), 81–109.
Torgler, B. (2007). *Tax compliance and tax morale: A theoretical and empirical analysis*. Cheltenham: Edward Elgar Publishing.
Torgler, B. (2012). Tax morale, Eastern Europe and European enlargement. *Communist and Post-Communist Studies*, *45*(1), 11–25.
Torgler, B., & Murphy, K. (2004). Tax morale in Australia: What factors shape it and has it changed over time? *Journal of Australian Taxation*, *7*(2), 298–335.
Torgler, B., & Schaltegger, C. (2005). *Tax morale and fiscal policy [www]*. Retrieved from http://www.yale.edu/leitner/resources/docs/taxmorale.pdf. Accessed on February 3, 2013.
Torgler, B., & Schaltegger, C. (2006). Tax morale: A survey with a special focus on Switzerland. *Swiss Journal of Economics and Statistics*, *142*(3), 395–425.

Torgler, B., & Schneider, F. (2005). Attitudes towards paying taxes in Austria: An empirical analysis. *Empirica*, *32*(2), 231–250.

Torgler, B., & Schneider, F. (2007). What shapes attitudes toward paying taxes? Evidence from multicultural European countries. *Social Science Quarterly*, *88*(2), 443–470.

Torgler, B., Schneider, F., & Schaltegger, C. (2010). Local autonomy, tax morale, and the shadow economy. *Public Choice*, *144*, 293–321.

Torgler, B., & Valev, N. (2010). Gender and public attitudes toward corruption and tax evasion. *Contemporary Economic Policy*, *28*(4), 554–568.

Trivedi, V., Shehata, M., & Lynn, B. (2003). Impact of personal and situational factors on taxpayer compliance: An experimental analysis. *Journal of Business Ethics*, *47*(3), 175–197.

Vogel, J. (1974). Taxation and public opinion in Sweden: An interpretation of recent survey data. *National Tax Journal*, *27*(4), 499–513.

Wallschutzky, I. G. (1984). Possible causes of tax evasion. *Journal of Economic Psychology*, *5*, 371–384.

Walster, E., Walster, G., & Berscheid, E. (1978). *Equity: Theory and research*. Boston, MA: Allyn and Bacon.

Wärneryd, K., & Walerud, B. (1982). Taxes and economic behaviour: Some interview data on tax evasion in Sweden. *Journal of Economic Psychology*, *2*(3), 187–211.

Weeks, W., Moore, C., McKinney, J., & Longenecker, J. (1999). The effects of gender and career stage on ethical judgment. *Journal of Business Ethics*, *20*(4), 301–313.

Witte, A., & Woodbury, D. (1985). The effect of tax laws and tax administration on tax compliance: The case of US individual income tax. *National Tax Journal*, *38*, 1–13.

Appendix A.

	Statement	1	2	3	4	5	6	7
		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
1	Tax evasion is ethical if tax rates are too high.							
2	Tax evasion is ethical even if tax rates are not too high because the government is not entitled to take as much as it is taking from me.							
3	Tax evasion is ethical if the tax system is unfair.							
4	Tax evasion is ethical if a large portion of the money collected is wasted.							
5	Tax evasion is ethical even if most of the money collected is spent wisely.							
6	Tax evasion is ethical if a large portion of the money collected is spent on projects that I morally disapprove of.							
7	Tax evasion is ethical even if a large portion of the money collected is spent on worthy projects.							

8	Tax evasion is ethical if a large portion of the money collected is spent on projects that do not benefit me.							
9	Tax evasion is ethical even if a large portion of the money collected is spent on projects that do benefit me.							
10	Tax evasion is ethical if everyone is doing it.							
11	Tax evasion is ethical if a significant portion of the money collected winds up in the pockets of corrupt politicians or their families and friends.							
12	Tax evasion is ethical if the probability of getting caught is low.							
13	Tax evasion is ethical if I cannot afford to pay.							
14	Tax evasion is ethical if penalty rates are low.							
15	Tax evasion is ethical even if it means that if I pay less, others will have to pay more.							

Appendix A. (*Continued*)

	Statement	1	2	3	4	5	6	7
		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
16	Tax evasion is ethical if the government discriminates against me because of my religion, race, or ethnic background.							
17	Tax evasion is ethical if the government imprisons people for their political opinions.							
18	I do not object if one of my friends or family evades tax.							
19	I do not object to buying smuggled goods (goods that the custom departments are unaware of).							

Appendix B. Variables Definition and Measurement.

Variables	Definition/Measurement
Tax morale (*TM*)	Following Togler and Alm (2006), tax morale is defined as "a moral obligation to pay taxes." The tax morale variable measure was extracted as the average of all the 17 statements that were related to tax morale. The general question to measure the level of tax morale is that: "please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between": *Tax evasion is ethical if ….*
	The level of tax morale was measured on a scale from 1 to 7, where 1 indicates that tax evasion is never justifiable, and 7 means it is always justifiable.
Tax compliance direct (*DIRTC*)	The general statement to measure the level of tax compliance (DIRTC) is that: *I do not object if one of my friends or family evades tax.*
	The level of tax compliance was measured on a scale from 1 to 7, where 1 indicates strong disagreement and 7 indicates strong agreement.
Tax compliance indirect (*INDTC*)	The general statement to measure the level of tax compliance (INDTC) is that: *I do not object to buying smuggled goods (goods that the custom departments are unaware of).*
	The level of tax compliance (INDTC) was measured on a scale from 1 to 7, where 1 indicates strong disagreement and 7 indicates strong agreement.
Explanatory variables	
The level of corruption (*COR*)	The relation between taxpayers and their governments (i.e., whether they trusted them or not). In order to measure this concept, four statements were chosen as follows.
	"please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between":
	Tax evasion is ethical if ….
	The tax morale variable measure was extracted as the average of 5 statements that were related to the government corruption (i.e., St. 4, 6, 11, 16, and 17, see Appendix 2-A) where 1 indicates that tax evasion is morally unacceptable and 7 means that tax evasion is morally acceptable.
Efficient government spending (*SPN*)	The statements that measure government spending are 5, 7, and 9. The government spending variable measure was extracted as the average of the three statements, where 1 indicates that tax evasion is never be justified and 7 means that tax evasion can always be justified.

Appendix B. (*Continued*)

Variables	Definition/Measurement
Personal interests (P.IN.)	Personal interests' variable was measured by extracting the average of statements 8 and 15.
Tax rate	The relation between tax morale and tax compliance with tax rates. On a 7-point Likert scale, the general question to measure this concept is that "Tax evasion is ethical if the tax rate are too high", where 1 indicates that tax evasion is unethical and 7 means that tax evasion is ethical.
Perception of fairness (FAIR)	The general question to measure this concept is that "Tax evasion is ethical if the tax system is unfair," where 1 indicates that tax evasion is unethical and 7 means that tax evasion is ethical.
Referent groups (REF)	The relation between tax morale and tax compliance with the individual's surrounding groups (i.e., friends and family). In order to measure this concept, the general question is that: "Tax evasion is ethical acceptable if everyone is doing it."
Financial constraints	The relation between tax morale and tax compliance with the individual's financial constraints. In order to measure this concept, the general question is that: "Tax evasion is ethical if I cannot afford to pay."
Audit and penalty rates	The relation between tax morale and tax compliance with the audit and penalty rates. In order to measure these concepts, the general questions are that: "Tax evasion is ethical if the probability of getting caught is low" and "Tax evasion is ethical if the penalty rates are low."
Control variables	
Age (*Age*)	Age will be used as a continuous variable and also treat age as a categorical variable (four classes are formed: less than 30, 30 > 40, 40 > 50, 50 and above. With less than 30 as the reference group).
Gender (*Gen*)	Gender will be used as a categorical variable, with 0 = male (the reference group) and 1 females.
Marital status (*Mar*)	Marital status will be treated as a categorical variable with married as the reference group. The marital status was divided into four categories, the question was: are you currently: (1) Single, (2) Married, (3) Divorced, (4) Widowed.
Education level (*Edu*)	Education level will be used as a continuous variable for higher educational level attained. The education level has been grouped into four levels where: (1) Complete secondary school, (2) Deploma, (3) Bachalors, (4) MA, MSc, or PhD.
Occupation status (*Ocu*)	Occupational status will be used as a categorical variable with a public sector employed in the reference group. The occupation status was separated into six groups. (1) Unemployed, (2) Self-employed, (3) Public sector-employed, (4) Private sector-employed, (5) Student, (6) Retired.

Appendix B. (*Continued*)

Variables	Definition/Measurement
Economic class (income level) (*Inc*)	The income level will be used as a categorical variable. A scale from 1 to 4 will be used, where 1 is lowest income and 4 is the highest income.
Religiosity (Rely)	Religiosity will be used as a continuous variable. In order to measure religiosity in this study, the following question was taken from the World Values Survey: Apart from funerals, weddings, and christenings, about how often do you attend religious services these days? Daily, once a week, once a month, only on special holy days, never or practically never (1 = Daily to 7 = never or practically never).
Religious background (Rel)	Religion will be used as a categorical variable, with 0 = Muslims (the reference group) and 1 = Christians.

MEASURING TAX COMPLIANCE ATTITUDES: WHAT SURVEYS CAN TELL US ABOUT TAX COMPLIANCE BEHAVIOUR

Diana Onu

ABSTRACT

This brief paper discusses the relevance of conducting surveys that measure individuals' attitudes for understanding fiscal behaviour. While many surveys assess individuals' attitudes towards paying taxes (e.g. by asking them to what extent they believe tax evasion is ever justified), it is less clear whether individuals' responses to such survey questions are indicative of the way they would behave in reality. The paper presents a discussion of the way attitudes have been assessed in tax surveys and assesses existing evidence to support a link between these attitude measures and actual compliance behaviour. The paper suggests several avenues to improve the predictive value of attitude measures, such as increasing the specificity of measures, using evaluation scales or mitigating social desirability biases. A series of recommendations are made for measuring attitudes and interpreting attitude surveys for the use of researchers planning to conduct survey work, as well as for the use of

Advances in Taxation, Volume 23, 173–190

ISSN: 1058-7497/doi:10.1108/S1058-749720160000023006

findings from taxpayer surveys in the design of tax policy and administration.

Keywords: Tax compliance; tax morale; attitudes; attitude-behaviour link; surveys; questionnaire design

INTRODUCTION: TAX COMPLIANCE ATTITUDES

Broadly defined, attitudes refer to individuals' evaluations (favour or disfavour) of objects, persons, groups or behaviours. People hold attitudes that are relatively stable towards many aspects of social life, including the society they live in, its system of government and indeed about the tax system and their obligation to pay taxes. Some individuals may develop a chronic dislike of the tax system, while others may hold particularly favourable attitudes.

Given that attitudes are theorised to be relatively stable across individuals' lifespan (Ajzen & Fishbein, 1977), and may be useful indicators of the actions individuals take (such as tax compliance or non-compliance), it is not surprising that many studies looking at tax behaviour have focused on measuring attitudes, particularly survey research. Whether they look at attitudes towards tax compliance (Webley, Cole, & Eidjar, 2001), 'tax dodgers' (Kirchler, 1998), the tax system (Chan, Troutman, & O'Bryan, 2000) or the tax authority (Hartner, Rechberger, Kirchler, & Schabmann, 2008), many survey studies attempt to capture individuals' evaluations (whether researchers label these evaluations as 'attitudes' or not).

For the most part, the motivation of researchers in surveying attitudes is that they should be indicative of behaviour. For instance, they rest on the assumption that if individuals say that they feel strongly against tax evasion, then they are less likely to evade taxes. However, the relationship between attitudes and behaviour is rarely straightforward (Ajzen & Fishbein, 1980). In many cases, people do not necessarily 'do what they preach'. While it may seem counterintuitive, it is not unusual for individuals to favour a certain action (such as complying with tax obligations) but act in the opposite way. This inconsistency occurs because many other factors apart from attitudes are involved in determining behaviour. Among the array of psychological theories explaining human behaviour, this paper will make reference to the most widely used, the Theory of Planned

Behaviour (Ajzen, 1991, 2011). The theory proposes that attitudes are only one factor determining individuals' intentions to behave in a certain way, but that other factors can be essential, such as their ability to perform the action, or external circumstances such as peer pressure. For instance, a taxpayer may have positive attitudes toward tax, but lack knowledge of preparing their return correctly or may find themselves in a working environment that condones evasion.

There is a long research tradition, particularly in social psychology, of investigating the link between attitudes and behaviour (Olson & Zanna, 1993). While it became apparent early on in this research tradition that attitudes are sometimes completely unrelated to behaviour (so that people often say one thing but do another), advances over the last decades have focused on determining those circumstances that make individuals most likely to act in accordance with their attitudes. This paper employs these research results to understand the area of tax behaviour, and in particular to understand when attitudes related to tax are relevant for tax behaviour.

Although some may question the extent to which attitudes are at all relevant to understanding tax behaviour (Hessing, Elffers, & Weigel, 1988), our position is that attitude measurement can be useful, but it will be enhanced by understanding *when* attitudes are most likely to be indicative of behaviour. Rather than questioning the usefulness of measuring tax attitudes per se, this paper is concerned with providing some pointers on how to measure attitudes and interpret the results of attitude measurements in order to maximise their relevance for predicting tax behaviour. The remainder of the paper presents a brief overview of the nature of attitudes and how they have been assessed in the tax literature, and then investigates the link between tax attitudes and tax behaviour (particularly tax compliance). The paper does not aim to provide an exhaustive review of the literature on attitudes in tax compliance, but rather to present a critical inquiry into attitude measurement and interpretation in relation to tax behaviour. It concludes by discussing the implications for carrying out and interpreting tax compliance surveys.

TAX ATTITUDES RESEARCH – BRIEF OVERVIEW

Attitudes are often defined as evaluations in relation to a particular object, person, behaviour, etc. (Ajzen, 1991). They are complex psychological constructs that are theorised to have several components: cognitive

components (the beliefs that accompany an attitude), affective components (the emotional response related to an evaluation) and a behavioural component (the behavioural tendencies associated with an attitude). Individuals may hold attitudes towards objects (for instance, towards mobile phones), other people or categories of people (e.g. attitudes towards people belonging to a specific profession), towards certain behaviours (such as recycling) etc. Attitudes are thought to aid individuals when relating to the outside world, and are involved in many aspects of life from problem-solving to maintain a sense of personal identity (Pratkanis & Greenwald, 1989). While attitudes are broad evaluations, they are thought to impact specific behavioural intentions (Ajzen & Fishbein, 1980); for example, a general favourable attitude towards academic achievement may impact a wide range of specific behaviours throughout a person's life, from performance in early school years to interest in adult evening classes or professional development courses. Because attitudes are thought to be relatively stable over time, psychologists have been interested in measuring these attitudes because they are believed to be informative of a range of specific behaviours. Applied to the realm of tax behaviour, a researcher may be interested to measure a person's general attitude towards paying taxes because this stable general attitude may be indicative of a wide range of specific behaviours, such as underreporting income in any given year, filing a tax return on time, cooperating with the authorities, etc.

Given this apparent value in measuring broad attitudes, a wide range of tax compliance studies have assessed attitudes, even if they do not necessarily label it as such. For instance, in early research looking at the social and psychological determinants of tax compliance, Schmölders (1959) was interested in what he called individuals' 'tax mentality', their general favourable or unfavourable stance toward paying taxes, a concept akin to attitudes. Another example is the literature on 'tax morale', defined as 'intrinsic motivation' to pay taxes (Alm & Torgler, 2006), a generalised stance that is akin to the attitude concept, in particular its behavioural component. Reviewing taxpaying attitudes research, Kirchler (2007) notes that a wide variety of tax behaviour studies focus on concepts similar to attitudes, although they may not explicitly use the term 'attitude'. What varies across studies though is the object of these attitudes – while some may refer to 'paying or evading taxes' (Alm & Torgler, 2006), others refer to the 'tax system' (Schmölders, 1959), attitudes towards 'tax authorities' (Braithwaite, 2009) or even 'tax evaders' (Kirchler, 1998).

Some studies investigating attitudes have focused on attitudes towards the state in general or the tax system in particular. For instance, in his

pioneering work on tax compliance, Schmölders (1959) surveyed people's attitudes towards the state and the fairness of the tax system. More recent surveys also include measures of tax system fairness beliefs (Chan et al., 2000; Groenland & van Veldhoven, 1983; Stalans, Kinsey, & Smith, 1991; Vogel, 1974; Zahid, 2012), beliefs which underlie individuals' attitudes about the tax system (Bobek & Hatfield, 2003). A related area of attitude research is the investigation of attitudes towards tax authorities, such as the fairness of their approach (Hartner et al., 2008; Murphy, 2004; Vogel, 1974; Wallschutzky, 1984; Webley et al., 2001). Braithwaite (2003, 2009) argues that these attitudes underlie individuals' motivation to cooperate with or defy tax authorities.

A large proportion of studies that include attitude measures focused on attitudes towards the behaviour of tax evasion (Barham & Fox, 2011; Bobek & Hatfield, 2003; Eriksen & Fallan, 1996; Groenland & van Veldhoven, 1983; Hessing et al., 1988; Lewis, 1982; Niemirowski, Wearing, Baldwin, Leonard, & Mobbs, 2002; Orviska & Hudson, 2003; Porcano, 1988; Song & Yarbrough, 1978; Vogel, 1974; Wärneryd & Walerud, 1982; Webley et al., 2001). Many of these studies look at the relationship between individuals' attitudes towards evasion, on the one hand, and intentions to evade or self-reported compliance, on the other. These findings are discussed in the following section.

An area related to evasion attitudes research is the investigation of tax morale. Defined as intrinsic motivation to pay taxes (Frey & Torgler, 2007), tax morale is a construct often used to explain inter-individual and inter-group (e.g. cross-national) cultural differences in tax compliance. Many of the studies that rely on survey measures of tax morale (Alm & Torgler, 2006; Cummings, Martinez-Vazquez, & McKee, 2001; Frey & Torgler, 2007; Torgler & Schneider, 2002; Torgler, 2005a, 2005b) employ a measure of tax morale extracted from the World Values Survey, a single-question asking individuals to rate 'cheating on tax payments' from 'never justified' to 'always justified'. Although these authors do not use the term 'attitude', the construct and measurement of tax morale is similar to that of tax evasion attitudes (i.e. the evaluation of a behaviour as good-bad or right-wrong). Similar measures were used by Reckers, Sanders, and Roark (1994) to capture what they called 'ethical attitudes' in taxpayer compliance and Blanthorne and Kaplan (2008) to capture 'ethical beliefs'.

Finally, some studies investigating tax-related attitudes have focused on attitudes towards others who evade (Eriksen & Fallan, 1996; Kirchler, 1998), asking respondents to evaluate tax evaders on various dimensions. It is beyond the scope of this brief paper to review the results of all of these studies.

The succinct outline above of some of the main results in tax attitude research aims to showcase the diversity and heterogeneity of approaches to tax-related attitudes. It is important to note that definitions of attitudes in tax compliance research vary widely, and that many important research streams are directly relevant to attitude research, although they may not use the term 'attitude' (for a discussion, see also Kirchler, 2007). It is also important to note that while many studies investigate attitudes related to taxes, the object of these attitudes varies from attitudes towards the state, tax system, tax authorities, evasion behaviour (in its many forms), tax evaders etc. A number of researchers have attempted to create composite attitude scores to measure general tax-related attitudes by aggregating attitudes with different objects (i.e. towards the tax system, towards evasion, etc.) (e.g. Groenland & van Veldhoven, 1983; Lewis, 1982).

Given this variety of approaches to attitudes, the *measurement of attitudes* also varies greatly across studies. While some may employ simple single-question measures to capture attitudes, a number of studies provide more complex and theoretically derived measures. In their study on the validity of tax evasion self-reports, Hessing et al. (1988) created an index to measure compliance attitudes by combining three attitude questions: attitudes towards underreporting income, attitudes towards unjustified deductions and general attitudes towards evasion. They employed a widely used method for measuring attitudes towards a particular behaviour: a *semantic differential* rating scale. In this rating system commonly used to assess attitudes (Eagly & Chaiken, 1993), participants are asked to evaluate behaviours on scales ranging from negative to positive evaluations (e.g. bad-good, unfair-fair, very disgraceful-not at all disgraceful). Semantic differentials were also employed by Kirchler (1998), who used a previously developed set of differentials (Peabody, 1985) to assess the difference in attitudes towards tax evaders and honest taxpayers. An interesting approach to evaluating attitudes was employed by Kirchler, Maciejovsky, and Schneider (2003), who investigated attitudes towards the behaviours of tax evasion, tax avoidance and tax flight. They asked participants to produce as many spontaneous associations as possible to scenarios depicting the three tax evasion behaviours (e.g. common associations were 'clever', 'fraud', 'black money', etc.), and then asked participants to evaluate these associations on a continuum from 'very negative' to 'very positive'. Using this method, the authors managed to capture attitudes using scenarios rather than asking individuals to think about abstract behaviours such as 'concealing income'. Another approach to measuring attitudes was employed by Bobek and Hatfield (2003), drawing on psychological theory

on the nature of attitudes (Ajzen & Fishbein, 1980). The authors rely on the conceptualisation of attitudes towards evasion as the sum of all potential outcomes from engaging in evasion. Specifically, they investigated participants' beliefs about favourable and unfavourable outcomes from engaging in evasion, and found five categories of beliefs regarding the outcome of evasion: minimise taxes paid, engage in illegal behaviour, feel guilty, incur penalty, and affect fairness of taxes paid. The final attitude score was computed as the sum of participants' beliefs about these outcomes related to engaging in evasion (for a detailed description of the method, see Bobek & Hatfield, 2003; a similar measurement of attitude was employed by Hanno & Violette, 1996).

It becomes apparent from the outline above that attitudes have been defined and measured in very diverse ways across the literature, potentially making the comparability of all these research results difficult. Nonetheless, if we define attitudes broadly as individuals' favourable or unfavourable evaluations towards an attitude object (such as the behaviour of tax evasion, the category of tax avoiders, the fiscal system, etc.), it becomes apparent that much of the survey research conducted in the tax compliance field assesses attitudes. However, it is rare that researchers are interested in the attitudes they study as an end-goal – it is the behaviour that these attitudes are thought to be representative of that is of interest. For instance, it is inferred that when people respond in a survey that 'tax evasion is never justified', then they would be less likely to engage in tax evasion. It is this compliance behaviour that most attitude research is aiming to predict.

DO PEOPLE DO WHAT THEY SAY: ATTITUDES AND BEHAVIOUR

Although most attitude surveys are ultimately interested in behaviour (i.e. to predict tax compliance or non-compliance), the relationship between attitudes and behaviour is not necessarily straightforward. The attitude-behaviour link has been subject to debate since early 20th century, finding sometimes no correlation between what individuals report their attitudes to be and their actual behaviour (Wicker, 1969). For example, someone may display a strong negative attitude towards smoking, but still carry on smoking due to their addiction. A person may answer that they have positive attitudes towards bungee-jumping, but still be very unlikely to engage in

the behaviour because her loved ones disapprove. Many people may feel very positive towards owning their own private aeroplane if asked, but that does not necessarily mean they would purchase one. A multitude of factors intervene to make the relationship between attitudes and behaviour complex. This means people do not always act according to their attitudes, and it may sometimes be misleading to assess attitudes and infer conclusions about behaviour (for a discussion, see Ajzen, 1991).

Given the awareness that attitudes may not always predict behaviour, a number of studies in the tax compliance literature have been concerned with assessing the strength of the attitude-behaviour link. These studies attempt to measure both attitudes (for instance, attitudes towards tax evasion) and behaviour (past compliance record) to assess to what extent the two measures are correlated. For instance, Porcano (1988) measured both attitudes towards evasion and self-reported compliance to find a positive relationship between attitudes and compliance behaviour; a similar strong relationship between attitudes and evasion intentions was found by Niemirowski et al. (2002). Webley et al. (2001) found that attitudes towards tax authorities were a significant predictor of self-reported compliance. Looking at evasion intentions across different tax-related scenarios, Bobek and Hatfield (2003) also found a significant link between attitudes towards evasion and intentions to cheat (for similar results, see also Blanthorne & Kaplan, 2008; Hanno & Violette, 1996). Taken together, these results point to a positive link between attitudes and behaviour, suggesting that individuals' responses to tax attitude measures are actually related to their subsequent compliance decisions. However, all of these studies are based on *self-reported* measures of tax compliance, as people were asked either if they evaded in the past or whether they would evade in particular future situations. Such self-reports have been criticised as invalid; given that individuals are motivated to respond in a way that is socially acceptable, particularly in the case of ethical behaviour (Randall & Fernandes, 1991), people might be particularly motivated to report being more compliant than they actually have been or would be in the future (for discussions, see Elffers, Robben, & Hessing, 1992; Elffers, Weigel, & Hessing, 1987; Lewis, 1982; Webley et al., 2001). Such measurement error may cast doubt on the extent to which behaviour that is self-reported in a questionnaire is actually indicative of how individuals would behave in reality, in turn casting doubt on the legitimacy of the positive link between attitudes and behaviour as reported above.

It seems that an ideal solution to investigate whether attitudes are indeed linked to behaviour is to measure actual behaviour instead of self-reported

behaviour. In collaboration with the Dutch tax authorities, Hessing et al. (1988) were able to do just that – they looked at the relationship between attitudes as measured in a survey and taxpayers' actual documented status (compliant/noncompliant) with the tax authorities. They surveyed taxpayers who had been subject to a tax audit in the previous year, as well as a random sample of non-audited taxpayers. They found a positive but weak relationship between attitudes and self-reported behaviour, but there was no relationship between attitudes and respondents' actual documented behaviour with the tax authority. Given that there was no relationship between individuals' reported attitudes towards evasion and their actual compliance, the authors call into question the very utility of using attitude surveys to make any inferences about past or future compliance decisions. While this conclusion may seem valid at first glance, it is worth noting that individuals' documented status with the tax authority is not an error-free measure of evasion behaviour, as much evasion can go undetected and there is a degree of subjectivity in the categorisation of taxpayers by tax inspectors following an audit (Antonides & Robben, 1995; Boll, 2013; Elffers et al., 1992; Long & Swingen, 1991).

Elffers et al. (1987) became particularly interested in the lack of validity of self-reports (individuals' accounts of whether they have evaded or would evade taxes) and had the opportunity to compare a sample's documented status with the tax authority with their self-reports of compliance. They found no correlation at all between what individuals reported their compliance record to be in a survey and their actual status with the tax authority. In a subsequent study, Elffers et al. (1992) looked again at the relationship between questionnaire self-report and documented status, but also added a third measurement: individuals' behaviour in a tax evasion experiment. To their surprise, not only did they replicate the finding that there was no relationship between questionnaire self-report and documented status with the authorities, but none of these measures showed any correlation with how people behaved in a tax evasion experiment. Elffers, Robben, and Hessing (1991) also analysed in greater detail the tax inspectors' assessment by having income tax returns that were previously analysed by a tax inspector analysed again by both another inspector and a commission of experts from the tax authority. They found large disagreement rate between the assessment of the first inspector, one the one hand, and the assessment of the second inspector (41% disagreement) and the assessment of the expert commission (48% disagreement), on the other hand. These studies demonstrate how challenging it is to measure tax compliance behaviour reliably and that there are significant issues surrounding both self-report and document status measures.

It thus seems particularly difficult to make any assessment of the extent to which tax compliance attitudes influence individuals' compliance behaviour, given that actual behaviour is difficult to measure reliably. Although it is important to assess to what extent tax compliance attitudes influence people's compliance decisions, further research is necessary in order to provide a convincing answer regarding the relationship of attitudes and behaviour in the case of tax compliance. However, although further empirical evidence is needed, there are theoretical arguments in support of a relationship between attitudes and behaviour (discussed in the following section), and one can assume that attitudes have at least some impact on behaviour. The next section discusses the conditions under which attitudes are most likely to impact behaviour, and also how to assess tax compliance attitudes in order to maximise their predictive value.

MAXIMISING THE EFFICACY OF ATTITUDE SURVEYS

As discussed above, there is great diversity in the definition and measurement of tax-related attitudes, as well as debate regarding the extent to which tax attitudes do indeed influence tax compliance decisions. These issues have led some authors to question the very utility of researching tax attitudes using survey methods (Hessing et al., 1988). However, there is evidence across a range of human behaviours that attitudes do influence people's behaviour (Olson & Zanna, 1993), and there is evidence to support the relevance of measuring attitudes in the tax compliance field (Bobek & Hatfield, 2003; Hanno & Violette, 1996; Niemirowski et al., 2002; Webley et al., 2001). Rather than asking *whether* attitudes are predictive for tax compliance decisions, this paper argues that it is important to acknowledge that attitudes play a part in explaining tax behaviour, and rather focuses on understanding *when* it is most likely that attitudes will influence behaviour. By looking at the conditions under which attitudes are most likely to influence behaviour one can maximise the usefulness of attitude surveys.

The role of attitudes in influencing behaviour has been subject to heated debate in psychology over the last few decades (for discussions see for instance Ajzen, 2011; Armitage & Conner, 2001), from those who maintain that there is a strong attitude-behaviour link (Ajzen & Fishbein, 1977) to those who deny that such a link is significant and question the usefulness of measuring attitudes (Wicker, 1969). Current approaches to this issue generally maintain that there is a significant attitude-behaviour link, but that

behaviour is determined by a range of other factors in addition to attitudes, and there are several psychological models that explain how intentions to perform certain behaviours emerge (Olson & Zanna, 1993). For the sake of brevity, the only one referred here is the most widely researched of these models (Ajzen, 2011; Armitage & Conner, 2001), the Theory of Planned Behaviour (Ajzen, 1991). The theory postulates that intentions to perform certain behaviours (for example, to comply with fiscal obligations) are determined by three main factors: (1) attitudes towards that behaviour (e.g. whether a person evaluates the act of paying taxes favourably), (2) social norms held by close others (e.g. whether family and friend condone tax evasion) and (3) perceived control over the behaviour (e.g. whether there are external constraints affecting the decision to evade, such as opportunities to evade or knowledge about how to do so) (for applications of Theory of Planned Behaviour to tax compliance, see Bobek & Hatfield, 2003; Hanno & Violette, 1996; Hessing et al., 1988).

Reviews of Theory of Planned Behaviour generally find that the theory has good predictive power, managing to explain the variation in individuals' self-reported and actual behaviour (for a discussion, see Armitage & Conner, 2001). More importantly for the current focus on attitudes, such reviews find that attitudes are the strongest factor of the three in explaining a substantial proportion of variation in intentions to perform certain behaviours (Armitage & Conner, 2001). In other words, there is evidence that across a range of behaviours attitudes are relevant in explaining why people act in certain ways.

However, attitudes will be stronger predictors of behaviour in some instances than others. One factor to consider is the *strength of attitudes* – if individuals hold strong attitudes towards a behaviour, then these attitudes are likely to be particularly influential. For example, if one feels very strongly that being fully compliant with the law is the right thing to do, then it is likely that their attitudes will predict behaviour more than someone who feels equally favourable towards compliance, but does not have an equally strong attitude. It may be of value, then, in addition to measuring attitudes, to also include a measure of attitude strength or attitude variability. Adapting the work of Sparks, Hedderley, and Shepherd (1992) to tax-related attitudes, future research could look at the role of attitude strength by asking individuals whether their feelings on tax evasion are strongly in favour/mixed/strongly against. To further assess attitude variability, research may ask people whether their feelings are often mixed in relation to tax evasion or, more generally, to rate the extent to which their feelings about tax evasion vary. It is expected that when individuals report

mixed attitudes or when they report that their attitudes vary widely depending on the context, then their reported attitude will be a poorer predictor of behaviour than when they hold strong and stable attitudes.

Certain situations may weaken the effect of attitudes, such as a case of *strong normative influence* regarding the behaviour in question. For example, when social norms are particularly strong against evasion, people may be guided by these norms, especially for certain types of individuals prone to social influence (for a discussion, see Armitage & Conner, 2001) and when the people or groups who apply the normative influence are important for the individual (Terry & Hogg, 1996) (for a discussion of social norms and tax compliance, see also Onu & Oats, 2015). Therefore, it would be useful in tax attitude research to also assess existing social norms and assess whether these norms are congruent with or contradictory to individuals' attitudes (for measures of norms in tax compliance, see Bobek, Hageman, & Kelliher, 2013; Wenzel, 2004).

Another strong predictor of behavioural intentions, as discussed above in the context of Theory of Planned Behaviour, is the extent to which a person perceives that they have *control over the situation* to enact the behaviour. Perceived control affects the extent to which an intention to perform the behaviour arises, but also the extent to which that intention can actually be put into action (for a discussion, see Armitage & Conner, 2001). For example, if a person does not feel confident regarding their knowledge or ability to omit income in a tax declaration, they will be less likely to intend to do so. At the same time, even if they might intend to not declare income, they may be in a situation where they cannot enact that intention, such as their taxes being withheld at the source. The role of perceived control has been acknowledged in the tax literature in various forms, such as the influence of tax knowledge or opportunity on compliance decisions (for overviews, see Kirchler, 2007). Future research may assess the role of perceived control (for a measure of perceived control in tax behaviour see Bobek & Hatfield, 2003); attitudes are likely to be better predictors of behaviour when the individual's perceived behavioural control is high.

It is also worth noting that the factors above feed into the intention to behave in a certain way. While previous research has found that individuals who express intentions to act are likely to perform that behaviour, this is not always the case (Ajzen, 2011; Sheeran, 2002). Some questionnaires exploring tax compliance attempt to capture intentions to comply/evade taxes (Bobek & Hatfield, 2003), but factors related to individuals' control over their behaviour (e.g. whether they have the opportunity or ability to comply) will also influence the behaviour outcome. The fact that intentions

do not predict behaviour all the time is one explanations for why self-report measures of tax compliance are sometimes unreliable, as discussed earlier.

In summary, attitude measures will be most relevant for behaviour when individuals feel strongly about the behaviour in question (either favourably or unfavourably), when social norms are not particularly strong or the person is unlikely to be influenced by these norms, and when performing the behaviour is under the person's control. It is also important to keep in mind that the way attitudes are measured will impact on the usefulness of attitudes for understanding tax compliance. More valid results are likely to be produced by *measuring attitudes that are specific to the behaviour* the researcher is interested in (Ajzen, 1991). For example, if one is interested in predicting income tax evasion, it is most useful to assess attitudes towards tax evasion (perhaps by assessing attitudes toward specific behaviours such as not declaring income or over-claiming expenses, see Hessing et al., 1988). Or if one is interested in assessing to what extent taxpayers are likely to cooperate with authorities, it will be most useful to measure attitudes towards tax authorities.

The *scales used to measure attitudes* are also likely to be a factor that influences the validity of attitude survey measures. It is advisable to employ measures of attitudes that are consistent with the theoretical construal of attitudes as favourable or unfavourable evaluations. Such scales include semantic differentials (Hessing et al., 1988; Kirchler, 1998) or belief elicitation procedures (Bobek & Hatfield, 2003; Hanno & Violette, 1996) (these measures are discussed in more detail in Section 2).

Finally, it is worth noting that attitude measurements are susceptible to *self-presentation concerns*, particularly for behaviours that have a moral dimension. Beck and Ajzen (1991) noted that individuals may be more likely to respond in a socially desirable way in such cases, and used Theory of Planned Behaviour to predict behaviours such as cheating on a test and shoplifting. They found that the theory reliably predicted self-reported behaviour but was less able to predict actual behaviour, given that people tended to be dishonest in self-reports about the extent to which they engaged in those immoral behaviours. The authors also introduced a moral obligation measure that was useful in explaining self-reported behaviour but less so for actual behaviour (for a similar approach in the tax literature, see Bobek & Hatfield, 2003). This led the authors to conclude that it may prove more difficult to predict actual behaviour when people are motivated to present themselves in a positive light in self-report questionnaires, as also noted in the tax compliance literature (Elffers et al., 1992; Hessing et al., 1988). However, Beck and Ajzen (1991) were able to increase the

prediction of actual behaviour by including a measure that captures individuals' tendencies to present themselves in a socially desirable way (Social Desirability Scale, Crowne & Marlowe, 1964).

To summarise, in measuring tax-related attitudes the researcher can maximise the relevance of the attitude measures in predicting behaviour in several ways. Researchers are advised to (a) measure attitudes towards the specific behaviour they are aiming to predict, (b) use theory-driven scales and (c) take into account people's tendencies to present themselves in a way that is socially acceptable.

CONCLUSION

A large number of the surveys investigating tax behaviour have focused on attitude measures. Many of these studies rest on the assumption that attitudes are indicative of behaviour. For instance, they might assume that if a large proportion of people agree with a statement such as 'tax evasion is sometimes justified', then this result is indicative of endemic non-compliance. However, the relationship between such attitude measures and actual behaviour has been under intense debate in psychology over the last decades and has more recently been questioned in relation to tax compliance behaviour in particular. The position of the present paper is that attitudes have the potential to be a useful tool for understanding tax behaviour, but that it is important to understand the circumstances under which attitudes can be more or less relevant in predicting behaviour and also to improve the validity of attitude measures.

Given that an increasing proportion of researchers in the tax behaviour field focus on the role of psychological factors (such as attitudes) in compliance decisions, this paper suggests that it is particularly important to reflect on the value of attitude measures and to maximise their usefulness by understanding when they are most likely to be linked to compliance decisions. A brief discussion is presented here; hopefully, future research will provide a systematic and exhaustive review of the literature to assess the conceptualisation and use of tax-related attitudes and their association to behaviour.

ACKNOWLEDGEMENTS

This work was conducted in the Tax Administration Research Centre at the University of Exeter, jointly funded by the Economic and Social

Research Council, HM Revenue & Customs and HM Treasury (grant no. ES/K005944/1); we are very grateful to our funders for their support. The views expressed in this report are the authors' and do not necessarily reflect those of the funders. The author is also very grateful to Lynne Oats for her input and feedback in shaping this paper.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, *26*(9), 1113–1127. doi:10.1080/08870446.2011.613995

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, *84*(5), 888–918. doi:10.1037/0033-2909.84.5.888

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Upper Saddle River, NJ: Prentice-Hall.

Alm, J., & Torgler, B. (2006). Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology*, *27*(2), 224–246. doi:10.1016/j.joep.2005.09.002

Antonides, G., & Robben, H. S. J. (1995). True positives and false alarms in the detection of tax evasion. *Journal of Economic Psychology*, *16*(4), 617–640. doi:10.1016/0167-4870(95)00027-4

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, *40*(4), 471–499. doi:10.1348/014466601164939

Barham, E., & Fox, K. (2011). *Compliance perceptions survey – Individuals 2008–10*. HM Revenue and Customs Research Report 156. Retrieved from http://www.hmrc.gov.uk/research/cps-ind-report156.pdf

Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality*, *25*(3), 285–301. doi:10.1016/0092-6566(91)90021-H

Blanthorne, C., & Kaplan, S. (2008). An egocentric model of the relations among the opportunity to underreport, social norms, ethical beliefs, and underreporting behavior. *Accounting, Organizations and Society*, *33*(7–8), 684–703. doi:10.1016/j.aos.2008.02.001

Bobek, D. D., Hageman, A. M., & Kelliher, C. F. (2013). Analyzing the role of social norms in tax compliance behavior. *Journal of Business Ethics*, *115*(3), 451–468. doi:10.1007/s10551-012-1390-7

Bobek, D. D., & Hatfield, R. C. (2003). An investigation of the theory of planned behavior and the role of moral obligation in tax compliance. *Behavioral Research in Accounting*, *15*(1), 13–38. doi:10.2308/bria.2003.15.1.13

Boll, K. (2013). Mapping tax compliance: Assemblages, distributed action and practices: A new way of doing tax research. *Critical Perspectives on Accounting*. doi:10.1016/j.cpa.2013.03.002

Braithwaite, V. A. (2003). *Taxing democracy: Understanding tax avoidance and evasion*. Aldershot: Ashgate Publishing, Ltd.

Braithwaite, V. A. (2009). *Defiance in taxation and governance: Resisting and dismissing authority in a democracy*. Cheltenham: Edward Elgar Publishing.

Chan, C. W., Troutman, C. S., & O'Bryan, D. (2000). An expanded model of taxpayer compliance: Empirical evidence from the United States and Hong Kong. *Journal of International Accounting, Auditing and Taxation*, *9*(2), 83–103. doi:10.1016/S1061-9518(00)00027-6

Crowne, D. P., & Marlowe, D. (1964). *The approval motive: Studies in evaluative dependence*. Hoboken, NJ: Wiley.

Cummings, R. G., Martinez-Vazquez, J., & McKee, M. (2001). *Cross cultural comparisions of tax compliance behavior* (International Center for Public Policy. Working Paper Series, at AYSPS, GSU No. 0103). International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University. Retrieved from http://ideas.repec.org/p/ays/ispwps/paper0103.html

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace Jovanovich College Publishers.

Elffers, H., Robben, H. S. J., & Hessing, D. J. (1991). Under-reporting income: Who is the best judge – tax-payer or tax inspector? Journal of the Royal Statistical Society. Series A (Statistics in Society), *154*(1), 125–127. doi:10.2307/2982705

Elffers, H., Robben, H. S. J., & Hessing, D. J. (1992). On measuring tax evasion. *Journal of Economic Psychology*, *13*(4), 545–567. doi:10.1016/0167-4870(92)90011-U

Elffers, H., Weigel, R. H., & Hessing, D. J. (1987). The consequences of different strategies for measuring tax evasion behavior. *Journal of Economic Psychology*, *8*(3), 311–337. doi:10.1016/0167-4870(87)90026-2

Eriksen, K., & Fallan, L. (1996). Tax knowledge and attitudes towards taxation; A report on a quasi-experiment. *Journal of Economic Psychology*, *17*(3), 387–402. doi:10.1016/0167-4870(96)00015-3

Frey, B. S., & Torgler, B. (2007). Tax morale and conditional cooperation. *Journal of Comparative Economics*, *35*(1), 136–159.

Groenland, E. A., & van Veldhoven, G. M. (1983). Tax evasion behavior: A psychological framework. *Journal of Economic Psychology*, *3*(2), 129–144. doi:10.1016/0167-4870(83)90069-7

Hanno, D. M., & Violette, G. R. (1996). An analysis of moral and social influences on taxpayer behavior. *Behavioral Research in Accounting*, *8*, 57–75.

Hartner, M., Rechberger, S., Kirchler, E., & Schabmann, A. (2008). Procedural fairness and tax compliance. *Economic Analysis and Policy*, *38*(1), 137–152.

Hessing, D. J., Elffers, H., & Weigel, R. H. (1988). Exploring the limits of self-reports and reasoned action: An investigation of the psychology of tax evasion behavior. *Journal of Personality and Social Psychology*, *54*(3), 405–413. doi:10.1037/0022-3514.54.3.405

Kirchler, E. (1998). Differential representations of taxes: Analysis of free associations and judgments of five employment groups. *Journal of Socio-Economics*, *27*(1), 117–131.

Kirchler, E. (2007). *The economic psychology of tax behaviour*. Cambridge: Cambridge University Press.

Kirchler, E., Maciejovsky, B., & Schneider, F. (2003). Everyday representations of tax avoidance, tax evasion, and tax flight: Do legal differences matter? *Journal of Economic Psychology*, *24*(4), 535–553. doi:10.1016/S0167-4870(02)00164-2

Lewis, A. (1982). The social psychology of taxation. *British Journal of Social Psychology*, *21*(2), 151–158. doi:10.1111/j.2044-8309.1982.tb00523.x

Long, S. B., & Swingen, J. A. (1991). Taxpayer compliance: Setting new agendas for research. *Law & Society Review*, *25*(3), 637–683. doi:10.2307/3053731

Murphy, K. (2004). The role of trust in nurturing compliance: A study of accused tax avoiders. *Law and Human Behavior*, *28*(2), 187–209. doi:10.1023/B:LAHU.0000022322.94776.ca

Niemirowski, P., Wearing, A. J., Baldwin, S., Leonard, B., & Mobbs, C. (2002). The influence of tax related behaviours, beliefs, attitudes and values on Australian taxpayer compliance. Is *tax avoidance intentional and how serious an offence is it*.

Olson, J. M., & Zanna, M. P. (1993). Attitudes and attitude change. *Annual Review of Psychology*, *44*(1), 117–154. doi:10.1146/annurev.ps.44.020193.001001

Onu, D., & Oats, L. (2015). The role of social norms in tax compliance: Theoretical overview and practical implications. *Journal of Tax Administration*, *1*(1), 113–137.

Orviska, M., & Hudson, J. (2003). Tax evasion, civic duty and the law abiding citizen. *European Journal of Political Economy*, *19*(1), 83–102. doi:10.1016/S0176-2680(02)00131-3

Peabody, D. (1985). *National Characteristics* (Vol. 9). Paris, France: Editions de la Maison des Sciences de l'Homme.

Porcano, T. M. (1988). Correlates of tax evasion. *Journal of Economic Psychology*, *9*(1), 47–67.

Pratkanis, A. R., & Greenwald, A. G. (1989). A sociocognitive model of attitude structure and function. *Advances in Experimental Social Psychology*, *22*, 245–285.

Randall, D. M., & Fernandes, M. F. (1991). The social desirability response bias in ethics research. *Journal of Business Ethics*, *10*(11), 805–817.

Reckers, P. M. J., Sanders, D. L., & Roark, S. J. (1994). The influence of ethical attitudes on taxpayer compliance. *National Tax Journal*, *47*(4), 825–836.

Schmölders, G. (1959). Fiscal psychology: A new branch of public finance. *National Tax Journal*, *12*(4), 340–345.

Sheeran, P. (2002). Intention—Behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, *12*(1), 1–36. doi:10.1080/14792772143000003

Song, Y., & Yarbrough, T. E. (1978). Tax ethics and taxpayer attitudes: A survey. *Public Administration Review*, *38*(5), 442–452. doi:10.2307/975503

Sparks, P., Hedderley, D., & Shepherd, R. (1992). An investigation into the relationship between perceived control, attitude variability and the consumption of two common foods. *European Journal of Social Psychology*, *22*(1), 55–71. https://doi.org/10.1002/ejsp.2420220107

Stalans, L. J., Kinsey, K. A., & Smith, K. W. (1991). Listening to different voices: Formation of sanction beliefs and taxpaying norms. *Journal of Applied Social Psychology*, *21*(2), 119–138. doi:10.1111/j.1559-1816.1991.tb00492.x

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin*, *22*(8), 776–793. doi:10.1177/0146167296228002

Torgler, B. (2005a). Tax morale and direct democracy. *European Journal of Political Economy*, *21*(2), 525–531. doi:10.1016/j.ejpoleco.2004.08.002

Torgler, B. (2005b). Tax morale in Latin America. *Public Choice*, *122*(1–2), 133–157. doi:10.1007/s11127-005-5790-4

Torgler, B., & Schneider, F. (2002). Does culture influence tax morale?: Evidence from different European countries. Wirtschaftswissenschaftliches Zentrum (WWZ) der Universität Basel. Retrieved from http://www.crema-research.ch/papers/2004-17.pdf

Vogel, J. (1974). Taxation and public opinion in Sweden: An interpretation of recent survey data. *National Tax Journal*, *27*(4), 499−513.

Wallschutzky, I. G. (1984). Possible causes of tax evasion. *Journal of Economic Psychology*, *5*(4), 371−384. doi:10.1016/0167-4870(84)90034-5

Wärneryd, K.-E., & Walerud, B. (1982). Taxes and economic behavior: Some interview data on tax evasion in Sweden. *Journal of Economic Psychology*, *2*(3), 187−211. doi:10.1016/0167-4870(82)90003-4

Webley, P., Cole, M., & Eidjar, O.-P. (2001). The prediction of self-reported and hypothetical tax-evasion: Evidence from England, France and Norway. *Journal of Economic Psychology*, *22*(2), 141−155. doi:10.1016/S0167-4870(01)00026-5

Wenzel, M. (2004). An analysis of norm processes in tax compliance. *Journal of Economic Psychology*, *25*(2), 213−228. doi:10.1016/S0167-4870(02)00168-X

Wicker, A. W. (1969). Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects. *Journal of Social Issues*, *25*(4), 41−78. doi:10.1111/j.1540-4560.1969.tb00619.x

Zahid, I. (2012). *Compliance perceptions survey − Small and medium sized enterprises and individuals 2011*. HM Revenue and Customs. Retrieved from http://www.hmrc.gov.uk/research/report195.pdf