



DE GRUYTER
OPEN

Scientific Annals
of the "Alexandru Ioan Cuza" University of Iași
Economic Sciences
61 (1), 2014, 1-15
DOI 10.2478/aicue-2014-0004



THE IMPACT OF TRUST IN GOVERNMENT ON TAX PAYING BEHAVIOR OF NONFARM SOLE PROPRIETORS

Liucija BIRSKYTE

Faculty of Economics and Financial Management
Mykolas Romeris University
Vilnius, Lithuania
lbirskyte@mruni.eu

Abstract

The paper explores the relationship between the taxpayers' trust in government and their willingness to pay taxes. When honored, trust promotes feelings of goodwill between individuals, strengthens democracy, and reduces transaction costs in economic exchange. Literature on government regulation finds that if citizens trust the government they are more likely to comply with laws and regulations. In this article, the index of trust in government calculated by the American National Elections Studies (ANES) and the AGI (adjusted gross income) gap produced by the Department of Commerce's Bureau of Economic Analysis (BEA) are used to test an empirical model if trust in government has a positive impact on tax compliance of the least compliant taxpayers group – nonfarm sole proprietors - controlling for the deterrent effects of tax enforcement. The results indicate that the higher trust in government improves tax compliance. The paper contributes to the existing literature on tax compliance by combining survey and statistical income reporting data to find evidence that perceptions about the trust in the government translate into actual tax payments.

Keywords: trust, government, compliance, tax evasion, sole proprietors, tax gap

JEL classification: H26; H83; H3

1. INTRODUCTION

The question of what induces better tax compliance remains relevant for the government responsible with the provision of public goods and services that are financed through tax revenue. Even if paying taxes represents a legal responsibility of citizens, with penalties attendant on noncompliance, substantial tax evasion exists. It is hard to gauge the magnitude of tax evasion. In the US the tax gap—the difference between the annual amount of taxes owed and the amount voluntarily paid on time- is determined using a program of random intensive audits. For decades, this gap has been registering 16-17% with respect to individual income taxes (U.S. Department of Treasury, 2009). Though the measurement of the tax gap may be less sophisticated in other countries it can be stated with high degree of certainty that other governments face a problem of similar magnitude. The tax gap constitutes 9% of total tax liability in the UK, and reaches 16% for indirect taxes (HM Revenue&Customs, 2010). The problem is even graver in emerging economies and

economies that recently underwent transition from the command economy to a free market economy, where the level of shadow economy –commonly associated with tax evasion – reaches as high as 32% of GDP in Lithuania, 29% in Latvia, and 31% in Estonia (Murphy, 2012).

Therefore as policy makers struggle with the best strategies to improve tax compliance, the researchers continue to puzzle over what makes people evade taxes, and what motivates people pay taxes. The prevalent view is that taxpayers need both “sticks and carrots” as incentive to pay taxes on time and in full (Cowell, 2004). Taxpayers are not a homogenous class. On the one side of the spectrum there’s a taxpayer who, like a rational actor, seeks to minimize his tax payments. Such an individual calculates the costs of being caught cheating on his taxes and weights them against the benefits if evasion succeeds. He is aware of the “sticks” the government may use to collect his taxes and reports his income depending upon the risk aversion. Other taxpayers are more responsive to the “carrots” than to the policies based on “sticks”. Taxpayers are citizens who are motivated to support a “trustworthy” government. There is strong evidence for a link between perceptions of trust in government and citizen compliance, including tax compliance (Levi and Stoker, 2000; Scholz and Lubell, 1998).

There is also a large amount of evidence that opportunities to evade may represent a single most important factor in tax compliance behavior (Alm, Blackwell and McKee, 2004; Bloomquist, 2003a; IRS, 2006; Scholz and Lubell, 1998). Therefore we can expect that the taxpayer behavior will vary depending on the source of income they receive. Taxpayers that receive highly visible income (wages and salary) and income subject to third party reporting (dividends and interest) may respond differently to tax enforcement strategies (like audit and penalties) and the change in the economic and political environment than the taxpayers who largely receive income that is not subject to withholding or third party reporting. Self-employment business income is not subject to information reports. Therefore it comes as no surprise that according to the regular noncompliance studies conducted by the Internal Revenue Service (IRS) the noncompliance of nonfarm sole proprietors constitutes the largest portion of the overall tax gap. The tax gap estimates for 2001 reveal that as much as 57% of nonfarm proprietor income, that is 68 billion, was misreported which by itself accounts for more than a third of the total estimated underreporting for the individual income tax (Internal Revenue Service, 2006). The tax gap figures remain rather stable over the years. The particularly high noncompliance rate associated with self-employed income has been corroborated by evidence from the United Kingdom. Pissarides and Weber (1989) estimate that self-employed people in the United Kingdom underreported their income on average by about one-third. All in all, there is substantial evidence that the extent of evasion for sole proprietor income is high compared to such income sources as wages, salaries, interest, and dividends, and may be more than half of true income (Slemrod, 2007).

The link between perceptions of trust in government and citizen compliance has also been confirmed by research (Alm and Torgler, 2004; Levi and Stoker, 2000; Scholz and Lubell, 1998). The taxpayer’s behavior depends not only on the behavior, motivations, and intentions of other individuals, but also of the government itself. If citizens believe that the government will act in their interests, that its procedures are fair, and that their trust in the state and others is reciprocated, then people are more likely to become “contingent consenters” who cooperate in paying taxes even when their short-term material interest would make evasion the best option (Levi, 1998).

This research tests the hypothesis that trust enhances compliance with federal income tax laws of the least compliant taxpayer group- nonfarm sole proprietors.

The hypothesis to be tested is that

A taxpayer's trust in government will increase tax compliance even controlling for the risk of detection.

The primary purpose of this article is to test empirically whether, on average, trust in government has a positive effect on tax compliance of sole proprietors in the United States. In Section 2 of the paper literature review on tax compliance and the concept of trust is presented. In Section 3 the model and data are described. The research design is time series analysis using archival data for the USA from year 1959 to 2008. The multiple regression method is used to test the empirical model based on the classic tax evasion economic model developed by Allingham and Sandmo (1972). In Section 4 the results of the empirical findings are presented and discussed. Finally conclusions are drawn at the end of the paper.

2. LITERATURE REVIEW

2.1. Tax compliance

The recent literature on tax compliance agrees that at least two aspects emerge when questioning why people pay taxes. First theory states that taxpayers are deterred from tax evasion by the enforcement policies and actions of tax administrations. The other element refers to tax morale, or citizens' willingness to pay their taxes correctly by honoring their share of a larger social contract with the government. Attempts have been made to build both theoretical and empirical foundations for these two broad views on tax compliance.

The formal economic theory of tax evasion has started to develop about 40 years ago with the publication in 1972 of the article "Income Tax Evasion: A Theoretical Analysis" by Allingham and Sandmo (1972), who adapted Becker's model of economics of crime to taxation (Becker, 1968; Sandmo, 2005). The economic model of tax compliance assumes rational behavior. Taxpayers conduct cost-benefit analysis to see if the expected utility of non-compliance exceeds the utility of complying. The economic model is often referred to as a deterrence model, economics of crime model, taxpayer-as-gambler model or compliance as lottery, and is widely discussed in literature (Andreoni, Erard and Feinstein, 1998; Cowell, 1990; Cowell, 2004; Graetz and Wilde, 1985; Mikesell and Birskyte, 2006, Slemrod, 2007). The basic economic model has been extended in several directions. First, it has been noted that audit rate is endogenous. Probability of detection varies with the amount and type of income reported as well as with other taxpayer characteristics observed by tax authorities. It has also been observed that tax evasion decisions are not made at the moment of filing the income tax return as assumed by the economic model and in isolation from other economic choices. Clearly, choices of labor supply are influenced by taxes. Sandmo extended the model to allow the taxpayer to make choices between regular market hours, black market hours and leisure (Sandmo, 2005). This and other modifications did not change the findings of the basic model; increased penalty rates as well as an increased risk of detection deter tax evasion.

Research findings on the effects of audit rates on compliance show that tax audits have deterrent effects (Alm, 1999; Alm, Jackson and McKee, 1992a, 1992b; Alm, McClelland and Schulze, 1992). Increased probability of getting caught at cheating deters potential tax evaders. However, the effects are small and vary by an income bracket. Taxpayers in lower and middle income class are more likely to respond to increased audit coverage and evade less than high income taxpayers (Beron, Tauchen and Witte, 1992; Dubin and Wilde, 1988). Studies also find evidence that marginal effect of an additional audit on compliance decline as audit coverage increases. (Alm, McClelland and Schulze, 1992).

Studies on the effects of tax rates generally indicate that higher tax rates increase tax evasion. The basic explanation is that a taxpayer gains more in case of successful evasion. The empirical analysis on the effects of tax rates on tax compliance is complicated by the fact that tax rates and income are strongly correlated. Therefore it is difficult to separate the independent effects of tax rates and income. However, both higher income and higher tax rates generally are associated with reduced compliance (Mikesell and Birskyte, 2006). Taxpayer characteristics such as age, education, occupation have been found to have a significant impact on propensity to comply (Andreoni, Erard and Feinstein, 1998).

The view that there is more to tax compliance than a simple rational calculation or a mere reaction to the “stick” was offered rather early by Georg von Schvanz (1890) who said that it was relevant to see taxpayers as partners in the contract between the state and its citizens (Martinez-Vazquez and Torgler, 2005). However, little research has been done in this area until quite recently, except for a brief interest in tax morale by “Cologne school of tax psychology” in 1960s. The revival of the interest in tax morale is witnessed by a number of empirical works using data from World Values Survey (Alm and Torgler, 2004; Martinez-Vazquez and Torgler, 2005; Torgler, 2002, 2004, 2005; Torgler and Schaltegger, 2005; Torgler and Schneider, 2005).

Tax morale is embedded in a broader culture of the country, and depends upon its political and legal institutions. In their current research Torgler and Alm (2004) define “tax morale” as the intrinsic motivation to pay taxes. Using the World Value Survey they analyze tax morale as a dependent variable and find that, to a great extent, tax morale generally depends upon the level of trust in government. They found that there’s significant positive relationship between tax morale and trust in legal system and trust in parliament (Alm and Torgler, 2004). Cheating on government is found less justifiable in societies with a greater degree of trust in government and its institutions.

2.2. *Trust*

Trust is most simply defined as the expectation that other people’s future actions will safeguard our interests (Paxton and Smith, 2008). Trust is relational; it involves an individual exposing himself to another individual, group or institution that has an ability to harm or deceive him (Levi and Stoker, 2000). Trust is seldom unconditional. It is given to specific individuals or institutions over specific domain or a specific time period. We trust others when we cede them some control over our property, privacy, safety, or other things we value. When honored, trust promotes feelings of goodwill between individuals, which in turn benefits community. High levels of trust are also associated with lower crime and lower corruption (Paxton and Smith, 2008). Political trust is helpful, if not essential, for democratic government. Indeed, democratic society is unlikely to emerge without political trust (Dahl, 1971). Trust makes everyday life easier, less complex, and more orderly. It

increases democratic stability and lowers citizen anxiety over uncertainty (American National Elections Studies, 2007).

Trust also helps the economy. An atmosphere of distrust reduces individuals' incentives and achievements, and increases the cost of doing business. There is evidence that countries whose citizens trust each other experience stronger economic growth (Paxton and Smith, 2008).

What assures potential trustors that the trusted party will not betray their trust? A person or an institution may possess attributes of trustworthiness that involve a commitment to act in the interests of the trustor. The notion of trust encompasses citizen expectations that political authorities will be responsive to society's needs even if their actions are not under a constant scrutiny. This is the conception of trustworthiness that underlies the American National Elections Survey (ANES) trust-in-government questions. Questions ask whether respondents believe politicians are dishonest, incompetent, waste tax money, serve special interests and not the people, or try to do what is right.

One of the most important concerns of the historical and comparative literature on trust is what makes political officials trustworthy and, more generally, what makes a trustworthy government. The critical attributes that scholars have identified are the capacities to make credible commitments, to design and implement policies in a non arbitrary way, and to demonstrate competence. Trustworthy government institutions must also be fair, transparent in their policy making, and objective. Research in the fields of legal authorities, military service policy, and taxation provides evidence in support of these propositions (Levi and Stoker, 2000).

A trustworthy government protects the interests of those they serve. This paper attempts to find the link between macro-level outcomes such as political trust/distrust and the individual choices and behavior at micro-level such as taxpaying behavior.

2.3. Trust and compliance

One of the findings of the literature on government regulation is that the more trustworthy citizens perceive government to be, the more likely they are to comply with demands and regulations (Levi and Stoker, 2000). Although there is strong evidence for a link between perceptions of trustworthy government and citizen compliance, the interpretations of this evidence vary. Some interpret it as a confirmation of institutional arrangements that ensure government actors are adequately constrained and cannot abuse their power over citizens. Others emphasize the role of credible commitments (Majone, 1997). Other accounts call attention to the psychological interactions between the governed and the governors. In repeated interactions "individuals learn to trust more trustworthy individuals" (Scholz and Lubell, 1998, p. 157).

Those who study the relationship between trustworthy government and citizen compliance differ as to whether the source of trust is a social bond or some form of protected interest. However, all agree that government officials who act in a trustworthy manner are more likely to elicit compliance, and virtually all agree that government regulators who trust the people they are regulating are more likely to evoke trustworthy behavior and compliance (Levi and Stoker, 2000).

From a transaction cost perspective, trust is involved in transactions in which one individual is at risk of losing if another individual or a party to the transaction does not honor his trust. Both parties may undergo loss of opportunity if the exchange is forgone for lack of trust. In repeated transactions an equilibrium may emerge where both parties reciprocate

the trust. In this situation both sides benefit by reducing the transaction costs that otherwise would be involved in writing and enforcing risk-free contracts (North, 1990).

Compliance involves a similar risky relationship. Citizens face immediate costs by paying taxes now, and expose themselves to some risk that future collective benefits expected in return for compliance (tax-supported public goods for tax compliance) may not materialize unless the government and other citizens honor their side of the deal (Scholz and Lubell, 1998). Any citizen who does not "trust" the government and other citizens to meet expectations would be irrational to comply with a law unless otherwise deterred by fear of detection and punishment.

However, if the trust between the citizens and the government is high, there is less need for obtrusive and expensive monitoring and punishment mechanisms. Trust reduces the costs of maintaining cooperation between the governed and the governors.

Most of the research is based on surveys. Though survey data allows researchers to investigate a rich set of hypotheses about the factors associated with noncompliance, they are based on self-reports and may provide inaccurate information. Survey responses may reflect ex post rationalization of noncompliance behavior. In general, survey results substantially overstate the degree of compliance (Andreoni, Erard and Feinstein, 1998). This study attempts to carry the research on trust in government one step further, i.e., to see if reported support of the government translates into actual tax payments. Declaring that cheating on taxes is immoral and declaring the correct amount of income on your tax return are two different things. The research aims to find the relationship between the reported perceptions about the trustworthiness of the government and the willingness to pay taxes, measured in actual payments.

3. THEORETICAL MODEL

The empirical research is based on the standard economic model developed by Allingham and Sandmo (1972). In this model a taxpayer is risk averse and chooses to declare an amount of income so as to maximize expected utility. The individual can be audited with a random probability. If a taxpayer is audited, all underreported income is discovered; hence the taxpayer must pay tax on each undeclared dollar at a penalty rate higher than the tax rate. This model concludes that increasing audit rates and penalty rates boosts the level of declared income. However, this model alone does not account for observed level of tax compliance (Alm and Martinez-Vazquez, 2003). The observed level of tax compliance is higher than the basic model predicts. Therefore the basic economic model has been extended by the author of this paper to account for tax morale that depends upon the level of trust in government institutions.

4. EMPIRICAL MODEL AND DATA

This section describes the empirical test of the extended standard model of income tax evasion. The variable "TRUST" has been added to the model. The model is used to explain the variation in the income reporting behavior of nonfarm sole proprietors for the period 1959- 2008. The regression equation to be estimated is:

$$GAP_t = \beta_0 + \beta_1 TRUST_t + \beta_2 AR_{t-2} + \beta_3 PINC_t + \beta_4 ATR_t + \beta_5 T + \varepsilon_t$$

where,

GAP is the natural log of non-farm sole proprietors' income gap

TRUST is the index of the trust in government

AR is the natural log of audit rate

ATR is the natural log of average effective individual income tax rate

PINC is the natural log of percent of nonfarm proprietors' income in total privately earned income.

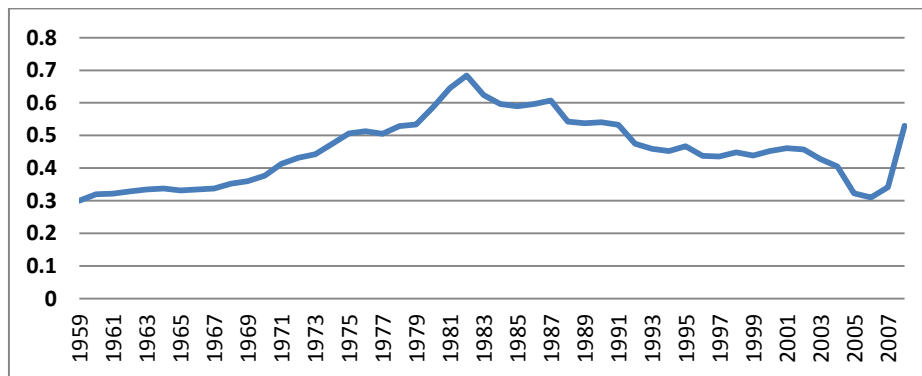
T stands for time trend

ε_t is an error term.

4.1. Dependent variable

The noncompliance of nonfarm sole proprietors constitutes the largest portion of the overall tax gap in the US. The tax gap estimates for 2001 reveal that as much as 57% of nonfarm sole proprietor income was misreported (Internal Revenue Service, 2006). Therefore this study tests the basic extended tax compliance model on nonfarm sole proprietors.

The noncompliance of nonfarm sole proprietors is measured by the adjusted gross income (AGI) gap. AGI gap is the difference between personal income in national income accounts (NIPA) derived by Bureau of Economic Analysis (BEA) and income reported for taxation purposes to the IRS. (Ledbetter, 2005). In this paper the relative AGI gap is used, i.e., gap as a percentage of AGI derived by BEA.



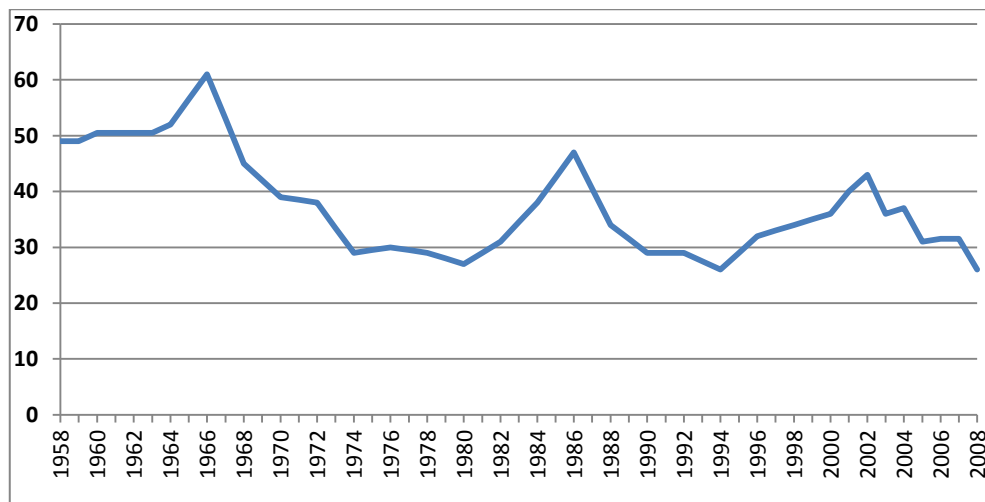
Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2012

Figure no. 1 Adjusted Gross Income (AGI) gap (%) for US nonfarm proprietors, 1959 to 2008

This gap equals the unexplained difference between adjusted gross income (AGI) measured by the Department of Commerce's Bureau of Economic Analysis (BEA) and adjusted gross income reported to the Internal Revenue Service (IRS). While the national accounts data compute the purchasing side, the tax data indicate income accrual. The difference between both indicates that more is spent than officially earned and thus suggesting that some of that difference is due to tax evasion. The measure has been criticized on several grounds. However, Engel and Hines (1999) find that the AGI gap measurement captures extraordinarily well the dynamics of tax evasion in the U.S. BEA provides data on the relative AGI gap by type of income from 1959 to 2008. For the period of the research the gap has been growing and peaked at almost 0.7% in 1982. Since then the gap has been going down showing some upward trend since 2005.

4.2. Explanatory Variables

Trust. If taxpayers trust the government, then they are more willing to pay taxes (Alm and Torgler, 2004). In this article, the index of trust in government computed by the American National Elections Studies (ANES) is used to measure the impact of trust on tax compliance (American National Elections Studies, 2012). As shown in Figure 3, the index of trust has a tendency to fluctuate. It peaked in 1966 and though there were increases in 1986 and 2002, it has never reached the same level as in 1960s. Generally, the trust in government amongst Americans is in decline. The Trust in Government Index is constructed from answers to the following questions (1): "How much of the time do you think you can trust the government in Washington to do what is right-- just about always, most of the time or only some of the time?" (2) "Would you say the government is pretty much run by a few big interests looking out for themselves or that it is run for the benefit of all the people?" (3) "Do you think that people in the government waste a lot of money we pay in taxes, waste some of it, or don't waste very much of it?" (3) "Do you think that quite a few of the people running the government are a little crooked, not very many are, or do you think hardly any of them are crooked at all?" These questions closely capture the perceptions about the "exchange inequity", i.e. the perception that the value of public goods and services received is less than the taxes paid, that government may be corrupt ("crooked") and the government is not responsive to the needs of the voters in general (the voters preferences are disregarded). All these perceptions are deemed as important determinants of taxpayer behavior (Bloomquist, 2003b, Frey and Feld, 2002, Torgler, 2004). The major limitation of ANES data is that surveys are biennial, i.e. carried out as a rule only on election years. The missing values had to be replaced by mean of nearby points. For years 2001 and 2005 the values from the population survey conducted by Pew Research Center have been used (Pew Research Center, 2010).



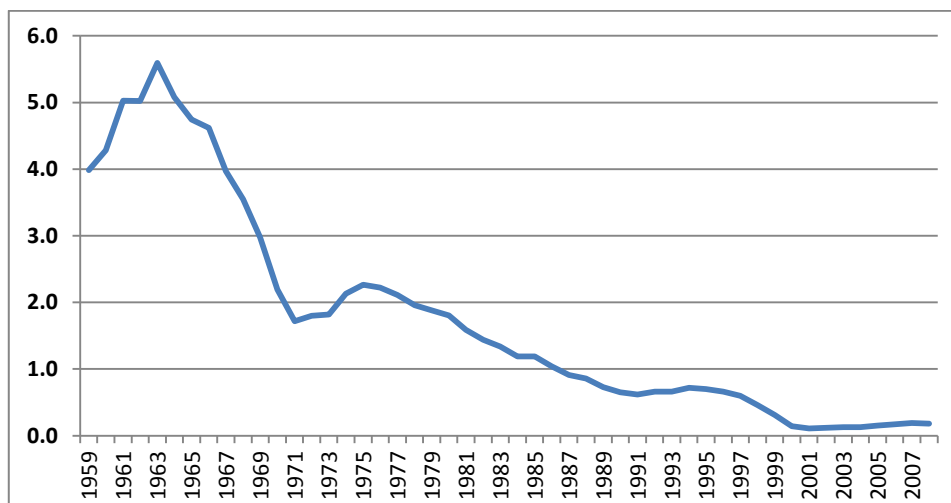
Source: *The American National Election Studies, 2012), Pew Research Center, 2010*

Figure no. 2 Index of trust in the US government, 1958- 2008

Audit rate. The audit rate represents the probability of detection. The study assumes that variation in tax compliance over time as measured by the AGI gap may be attributed to

the variation in the audit rate. The audit rate represents a tax enforcement measure used by tax administration to detect tax cheaters and to deter future noncompliance. In this study “Audit rate” is defined as a “face-to-face” audit of individual income tax returns conducted by revenue agents and tax auditors. It constitutes a percentage of audited returns in total returns filed. The data is obtained from IRS Commissioner’s Annual Report for the period 1959 - 1980, Transactional Records Access Clearinghouse, Syracuse University for the period 1981-2000, and U.S. Treasury Inspector General for Tax Administration (TIGTA) for the period 2001-2008 (TIGTA, 2008). Correspondence audits are not included when calculating tax audit rate. Since the effect of audit rate on compliance is not linear, logged variable “audit rate” is used in the analysis.

Federal audit rate has been decreasing steadily over several decades, and reached a 10-year low of 0.11% in 2000 (Treasury Inspector General For Tax Administration, 2008). It has rebounded slightly since that time but constitutes a major worry for civic groups and public organizations concerned with the performance of government (OMB Watch, 2008).

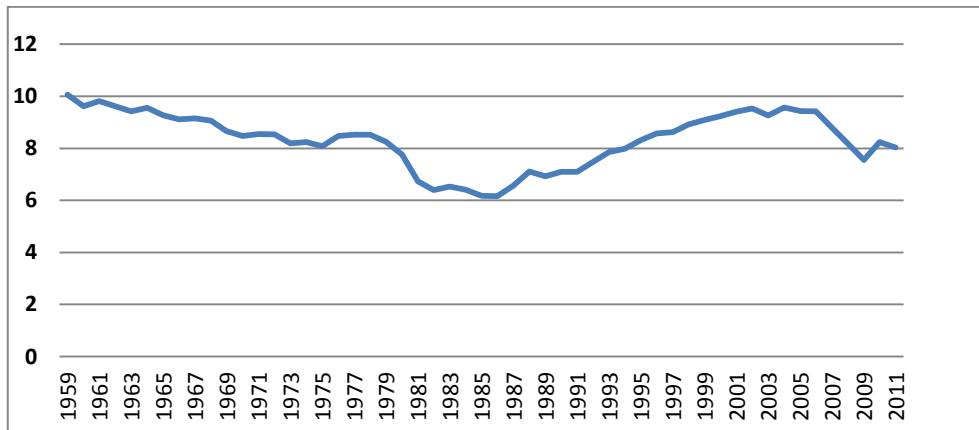


Source: IRS Commissioner’s Annual Report, 1959-1980; Transactional Records Access Clearinghouse, Syracuse University, 2000; U.S. Treasury Inspector General for Tax Administration (TIGTA), 2012

Figure no. 3 US audit rate as a percent of audited returns in total returns, 1959 - 2008

Percent of Non-farm Sole Proprietors Income in Total Privately Earned Income. The effect of income on compliance is ambiguous in standard economic model. Studies on tax evasion usually assume declining absolute risk aversion. From that follows that high – income taxpayers should be more willing to evade than low-income taxpayers, all else being equal. The prevailing finding of empirical work is that larger income is associated with more opportunities to evade and thus lower tax compliance.

Nonfarm proprietors’ income consists of the income that is received by nonfarm sole proprietorships and partnerships and the income that is received by tax-exempt cooperatives.¹ For the period of this study nonfarm sole proprietors’ income accounted for about 6% to 10% of total personal income at the national.



Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2012

Figure no. 4 Nonfarm sole proprietors' income as a percent of national income, 1959-2011, USA

Average effective tax rate. Theoretical studies indicate that tax rates have an ambiguous effect on compliance depending on taxpayer attitude toward risk, the structure of the penalty function, and other criteria (Andreoni, Erard, & Feinstein, 1998). The results of empirical research are equally mixed. The tax rate used in this study is the average effective tax rate obtained by dividing total individual income tax receipts by personal income (NIPA, BEA).

“Time” variable is included to detrend the time-series data (Gujarati, 2003). Definition of variables and data sources are summarized in the Annex.

5. RESULTS OF EMPIRICAL RESEARCH

The model has been estimated by ordinary least squares (OLS). The results are presented in Table 1. The table lists variables included in the equation as well as the manner in which some explanatory variables were transformed (e.g., logged to account for nonlinear relationships). The model is highly predictive with an adjusted R-squared equal to 0.82. The overall model significance is quite strong, ($F= 66.46, <.001$).

Table. no. 1 Tax compliance level as a function of trust, when controlling for audit rate (OLS).

<i>Dependent variable: Noncompliance</i>		
Variables in the model	Coef.	t
TRUST	-.0043*	-1.74
LnAR	-.1352**	-2.52
LnPinc	-1.444***	-9.67
LnAtr	.2077	1.04
$N = 50$		
<i>Adjusted R-sq</i>	0.82	
<i>Model significance</i>	$F= 66.46, p<0.001$	

Source: author

Notes: * significant at ≤ 0.1 ; ** significant at ≤ 0.05 ; *** significant at ≤ 0.01 (two-tailed tests)

As expected variable “TRUST” has a significant impact on tax evasion ($t = -1.74$, $p < .1$). If the index of trust increases by one point, the tax evasion is reduced by .004%, all else equal. This result supports the initial hypothesis that a taxpayer's trust in government will increase tax compliance. Moreover, the variable “Audit rate” has also a significant impact on tax evasion. Increasing audit rate by 1% reduces tax evasion by 0.13%, controlling for other variables. This finding provides evidence for the second part of the hypothesis that even controlling for the risk of detection trust induces better tax compliance. The variable income is negatively related to tax gap and significant at 0.01 level. This finding would suggest that as a percentage of income earned by nonfarm sole proprietors in total national income increases, the level of tax evasion declines. In theory, the relationship between income and tax evasion depends upon the assumptions about the risk aversion of an individual. This finding indicates that nonfarm sole proprietors as a group are rather risk averse and their tax compliance improves as income grows. The average tax rate has a positive sign. However, the results are not statistically significant.

6. CONCLUSIONS

The results of empirical analysis provide evidence that there's a positive relationship between the trust in government and tax compliance. Taxpayers are motivated to pay taxes if they trust the government. However, if taxpayers do not believe that the government is representing their interests, and not the interests of the selected few, they are less likely to pay their taxes correctly and on time. Trust is also based on the belief that government does “the right thing” most of the time and that the nation's representatives do not waste taxpayers' money. Citizens need to perceive an “equal exchange” in order to honor their part of the larger social contract with the government. This result holds for the least compliant group of taxpayers – sole proprietors. Since sole proprietors' low compliance can be attributed to evasion opportunities the positive impact of trust on tax compliance can be generalized to broader population. In addition, the findings provide evidence that efforts of tax administrators to detect noncompliant taxpayers pay off. The more tax returns are audited, the smaller the gap between the true income and the reported income. People are deterred from cheating on their taxes if they know that they can be caught at it and punished.

If trust in government declines, as has occurred in the United States and in other countries over the last decades according to public opinion polls, (American National Elections Studies, 2012; Edelman Trust Barometer, 2012) the decrease of tax compliance level imposes a constraint on the activities of government institutions, requiring more intrusive and costly enforcement strategies. By maintaining perceptions of trust among a sufficiently large sector of the citizenry, a democratic government can ensure high tax compliance while minimizing tax enforcement costs.

References

- Allingham, .G. and Sandmo, A., 1972. Income tax evasion: A theoretical analysis. *Journal of Public Economics*, 1, pp.323-338.
- Alm, J., 1999. Tax Evasion. In: J. Cordes, R. D. Ebel and J. G. Gravelle, eds. *Encyclopedia of Taxation and Tax Policy*. Washington, D.C.: The Urban Institute Press, pp.354-56.
- Alm, J., Blackwell, C. and McKee, M., 2004. Audit selection and firm compliance with broad-based sales taxes. *National Tax Journal*, LVII(2), pp.209-27.

- Alm, J., Jackson, B. and McKee, M., 1992a. Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*, XLV(1), pp. 107- 14.
- Alm, J., Jackson, B. and McKee, M., 1992b. Deterrence and beyond: Toward a kinder, gentler IRS. In: J. Slemrod, ed. *Why people pay taxes*. Ann Arbor: The University of Michigan Press, pp. 311-29.
- Alm, J. and Martinez-Vazquez, J., 2003. Institutions, paradigms, and tax evasion in developing and transition countries. In: J. Martinez-Vazquez and J. Alm, eds. *Public finance in developing and transitional countries*. 1st ed., Northampton, Ma: Edward Elgar, pp. 146- 78.
- Alm, J., McClelland, G. H. and Schulze, W. D., 1992. Why do people pay taxes? *Journal of Public Economics*, 48, pp. 21-38.
- Alm, J. and Torgler, B., 2004. *Culture differences and tax morale in the United States and in Europe*. Center for Research in Economics, Management and the Arts (CREMA), [online] Available at: <www.crema-research.ch> [Accessed 6 October 2008].
- American National Elections Studies, 2007. *Trust in government*. 2006 American National Election Studies Pilot Report: Eastern Kentucky University.
- American National Elections Studies, 2012. [online] Available at: <<http://www.electionstudies.org/>> [Accessed 18 September 2012].
- Andreoni, J., Erard, B. and Feinstein, J., 1998. Tax compliance. *Journal of Economic Literature*, 36, pp.818- 60.
- Becker, G. S., 1968. Crime and punishment: An economic approach. *Journal of Political Economy*, 76(2), pp. 169-217.
- Beron, K. J., Tauchen, H. V. and Witte, A. D., 1992. The effects of audits and socioeconomic variables on compliance. In: J. Slemrod, ed. *Why people pay taxes*. Ann Arbor: The University of Michigan Press, pp. 67 - 90.
- Bloomquist, K. M., 2003a. *Trends as changes in variance: The case of tax noncompliance*, [online] Available at:<http://www.irs.gov/pub/irs-soi> [Accessed 15 January 2005].
- Bloomquist, K. M., 2003b. *U.S. income inequality and tax evasion: A synthesis*. [online] Available at: <<http://web.lexis-nexis.com/universe/document>> [Accessed 28 February 2005].
- Cowell, F., 1990. *Cheating the government: The economics of evasion*. Cambridge, Ma: MIT Press.
- Cowell, F., 2004. Carrots and sticks in enforcement. In: H. J. Aaron and J. Slemrod, eds. *The crisis in tax administration*. Washington, D.C.: Brookings Institution Press, pp. 230-58.
- Dahl, R. A., 1971. *Polyarchy*. New Haven: Yale University Press.
- Dubin, J. A. and Wilde, L. L., 1988. An empirical analysis of federal income tax auditing and compliance. *National Tax Journal*, XLI(1), pp.61 – 73.
- Edelman Trust Barometer, 2012. Record decline in government trust. [online] Available at: <<http://www.slideshare.net/fullscreen/EdelmanInsights/2012-edelman-trust-barometer-global-deck/5>> [Accessed 14 June 2013].
- Engel, E. and Hines, J.R., 1999. *Understanding tax evasion dynamics*. NBER Working paper no. 6903.
- Frey, B.S. and Feld. L.P., 2002. *Deterrence and morale in taxation: An empirical analysis*. CESifo Working paper No. 760.
- Graetz, M. J. and Wilde, L. L., 1985. The economics of tax compliance: Facts and fantasy. *National Tax Journal*, 38(3), pp.355-63.
- Gujarati, D. N., 2003. *Basic Econometrics*. 4th Edition. New York: McGraw-Hill.
- HM Revenue&Customs, U. K., 2010. *Measuring tax gaps 2010*. An official statistics release.[online] Available at: <http://www.hmrc.gov.uk/about/reports.htm>> [Accessed 18 September 2012]
- Internal Revenue Service. 2006. *Tax Year 2001 Federal Tax Gap*. [online] Available at: <www.irs.gov/pub/irs-news/tax_gap_figures.pdf> [Accessed 19 September 2006].
- Ledbetter, M., 2005. *Comparison of BEA estimates of personal income and IRS estimates of Adjusted Gross Income*. [online] Available at: <www.bea.gov/scb/pdf/2005/11November/1105_AGI.pdf> [Accessed 6 October 2008].
- Levi, M., 1998. A state of trust. In: V. Braithwaite and M. Levi, eds. *Trust and governance*. New York: Russell Sage Foundation, pp. 77-101.

- Levi, M. and Stoker, L., 2000. Political trust and trustworthiness. *Annual Review of Political Science* (3), pp.475-507.
- Majone, G., 1997. Mutual trust, credible commitments and the evolution of rules for a single European market. In: D. G. Mayes, ed. *The evolution of the single European market*. Cheltenham: Edward Elgar, pp. 253-74.
- Martinez-Vazquez, J. and Torgler, B., 2005. *The evolution of tax morale in modern Spain*. Unpublished Working Paper. Center for Research in Economics, Management and the Arts (CREMA). [online] Available at:< www.crema-research.ch > [Accessed 6 October 2008].
- Mikesell, J. L. and Birskyte, L., 2006. Lessons of tax compliance research for lawmakers and tax administrators: Getting best returns from limited resources. In: H. A. Frank, ed. *Public financial management*. Boca Raton: Taylor&Francis, pp. 207-236.
- Murphy, R., 2012. *Closing the European tax gap*. [online] Available at:<www.socialistanddemocrats.eu/gpes/media3> [Accessed 18 September 2012].
- North, D. C. ,1990. *Institutions, institutional change, and economic performance*. New York: Cambridge University Press.
- OMB Watch, 2008. *Bridging the GAP*. [online] Available at:<<http://www.ombwatch.org/budget/irstaxgap2008pdf>> [Accessed 6 October 2008].
- Paxton, P. and Smith, J. A., 2008. *America's trust falls*. Greater Good. [online] Available at:<http://greatergood.berkeley.edu/article/item/americas_trust_fall>[Accessed 5 August 2013].
- Pew Research Center, 2010. [online] Available at:, from <<http://www.people-press.org/> >[Accessed 18 September 2012].
- Pissarides, C. A. and Weber, G.,1989. An expenditure-based estimate of Britain's black economy. *Journal of Public Economics*, 39(1), pp. 17-32.
- Plumley, A. H., 2002. *The impact of the IRS on voluntary tax compliance: Preliminary empirical results*. Paper presented at the National Tax Association 95th Annual Conference on Taxation, Orlando, Florida. [online] Available at: <<http://www.irs.gov/taxstats/article/0,,id=97312,00.html>> [Accessed 6 October 2008].
- Sandmo, A., 2005. The theory of tax evasion: A retrospective view. *National Tax Journal*, 58(4), pp.643-63.
- Scholz, J. T. and Lubell, M., 1998. Trust and taxpaying: Testing the heuristic approach to collective action. *American Journal of Political Science*, 42(2), pp.398-417.
- Slemrod, J., 2007. Cheating ourselves: The economics of tax evasion. *Journal of Economic Perspectives*, 21(1), pp.25-48.
- Torgler, B., 2002. *Direct democracy matters: Tax morale and political participation*. Paper presented at the 95th Annual Conference on Taxation, Orlando, Florida.
- Torgler, B., 2004. *Tax morale, trust and corruption: Empirical evidence from transition countries*. Working Paper No. 2004-5. Center for Research in Economics, Management and the Arts (CREMA). [online] Available at:<www.crema-research.ch> [Accessed 6 October 2008].
- Torgler, B., 2005. Tax morale in Latin America. *Public Choice* (122), pp.133-57.
- Torgler, B. and Schaltegger, C. A., 2005. *Tax morale and fiscal policy*. Unpublished Working paper. Center for Research in Economics, Management and the Arts (CREMA). [online] Available at:<www.crema-research.ch> [Accessed 6 October 2008].
- Torgler, B. and Schneider, F., 2005. *What shapes the attitudes towards paying taxes? Evidence from Switzerland, Belgium, and Spain*. Unpublished Working paper. Center for Research in Economics, Management and the Arts (CREMA). [online] Available at:<www.crema-research.ch> [Accessed 6 October 2008].
- Treasury Inspector General for Tax Administration, 2008. *Trends in compliance activities through Fiscal year 2007*. [online] Available at:< <http://www.tigta.gov> > [Accessed 3 June 2008].
- U.S. Department of Treasury, 2009. *Update on reducing the Federal tax gap and improving voluntary compliance*. [online] Available at:< http://www.irs.gov/pub/newsroom/tax_gap_report_final_version.pdf > [Accessed 22 July 2011].

Notes

- American National Elections Studies, 2007. *Trust in Government. 2006 American National Election Studies Pilot Report*: Eastern Kentucky University.
- American National Elections Studies, 2012. Retrieved September 18, 2012, from <http://www.electionstudies.org/>
- Andreoni, J., Erard, B., & Feinstein, J., 1998. Tax Compliance. *Journal of Economic Literature*, 36, 818 - 860.
- Becker, G. S., 1968. Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2), 169-217.
- Dahl, R. A., 1971. *Polyarchy*. New Haven: Yale University Press.
- Edelman Trust Barometer, 2012. Record decline in Government. Retrieved June 14, 2013, from <http://www.slideshare.net/fullscreen/EdelmanInsights/2012-edelman-trust-barometer-global-deck/5>
- Gujarati, D. N., 2003. *Basic Econometrics* (4th ed.). New York: McGraw-Hill.
- HM Revenue&Customs, U. K., 2010. Measuring tax gaps 2010. An official statistics release.
- Internal Revenue Service, 2006. Tax Year 2001 Federal Tax Gap. Retrieved September 19, 2006, from www.irs.gov/pub/irs-news/tax_gap_figures.pdf
- Ledbetter, M., 2005. Comparison of BEA Estimates of Personal Income and IRS Estimates of Adjusted Gross Income. Retrieved from www.bea.gov/scb/pdf/2005/11November/1105_AGI.pdf
- Levi, M., 1998. A State of Trust. In V. Braithwait & M. Levi (Eds.), *Trust and Governance* (pp. 77-101). New York: Russell Sage Foundation.
- Majone, G., 1997. Mutual trust, credible commitments and the evolution of rules for a single European market. In D. G. Mayes (Ed.), *The Evolution of the Single European Market* (pp. 253-274). Cheltenham: Elgar.
- Murphy, R., 2012. Closing the European tax gap. Retrieved from www.socialistanddemocrats.eu/gpes/media3
- North, D. C., 1990. *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.
- OMB Watch, 2008. Bridging the GAP. Retrieved from <http://www.ombwatch.org/budget/irstaxgap2008pdf>
- Pew Research Center, 2010. Retrieved September 18, 2012, from <http://www.people-press.org/>
- Sandmo, A., 2005. The Theory of Tax evasion: A Retrospective View. *National Tax Journal*, 58(4), 643-663.
- Slemrod, J., 2007. Cheating Ourselves: The Economics of Tax Evasion. *Journal of Economic Perspectives*, 21(1), 25-48.
- TIGTA., 2008. Trends in Compliance Activities Through Fiscal Year 2008 Retrieved 2012 09 26 from http://www.treasury.gov/tigta/oa_auditreports.shtml
- Treasury Inspector General For Tax Administration, 2008. Trends in Compliance Activities Through Fiscal year 2007. Retrieved from <http://www.tigta.gov>
- U.S. Department of Treasury, 2009. Update on Reducing the Federal Tax Gap and Improving Voluntary Compliance. July 22, 2011, from http://www.irs.gov/pub/newsroom/tax_gap_report_-final_version.pdf

¹ A sole proprietorship is an unincorporated business owned by a person. A partnership is an unincorporated business association of two or more partners. A tax-exempt cooperative is a nonprofit business organization that is collectively owned by its customer-members.

Annex

Definition of variables and data sources

Variable name	Definition	Source
GAP	The difference between personal income in national income accounts (NIPA) derived by Bureau of Economic Analysis (BEA) and income reported for taxation purposes to the IRS divided by the income derived by BEA	U.S. Department of Commerce, Bureau of Economic Analysis
TRUST	Index of Trust in Government	American National Elections Studies (ANES)
AR (audit rate)	Number of tax returns audited divided by the number of total returns	IRS Commissioner's Annual Report (years 1959 to 1980) Transactional Records Access Clearinghouse, Syracuse University (years 1981 to 2000, and TIGTA (years 2001 to 2008)
PINC (percent income)	Percent of nonfarm proprietors income in national private income	U.S. Department of Commerce, Bureau of Economic Analysis
ATR (average tax rate)	Average effective tax rate obtained by dividing federal individual income tax receipts by national personal income	U.S. Department of Commerce, Bureau of Economic Analysis

Source: author