Why Pay Taxes? A Review of Tax Compliance Decisions

**Erich Kirchler
Stephan Muehlbacher
Barbara Kastlunger
Ingrid Wahl**

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OF POLICY STUDIES

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Erich Kirchler*, Stephan Muehlbacher, Barbara Kastlunger, Ingrid Wahl

*Corresponding Author:

University of Vienna, Faculty of Psychology

Universitaetsstrasse 7, 1010 Vienna, Austria

E-mail: erich.kirchler@univie.ac.at

T: +43 1 4277 47880, F: +43 1 4277 47889

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Abstract

Since the standard model of income tax evasion (Allingham & Sandmo, 1972; Srinivasan, 1973) was published, much research has tested its four parameters (level of actual income, tax rate, audit probability, penalty rate) for empirical validity. Surveys, laboratory experiments and analysis of aggregate data revealed ambiguous evidence for the model's behavioral implications. The present article reviews these studies and concludes that compliance decisions can only partly be explained by the rational choice approach. We suggest that depending on the climate in a society, compliance stems from two different factors. In a climate of distrust, high power of authorities is needed to enforce tax compliance and increasing fines and audit probabilities may be an effective tax policy. In a climate where taxpayers trust the authorities of their state, however, other variables gain in importance. Knowledge, attitudes, moral appeals, fairness and democracy may lead to voluntary compliance. In this case, draconian fines and intrusive audits can take unintentional effects and would corrupt tax morale.

Keywords: compliance decisions, tax evasion, audits, fines, trust

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WHY PAY TAXES? A REVIEW OF TAX COMPLIANCE DECISIONS

1. Introduction

Tax compliance has evolved into a major research topic in economic psychology. The issue has been approached from various viewpoints shedding light on different aspects of taxpayers' behavior. Attitudes were measured, prevailing social norms captured and lay theories explored, which people have in mind when brooding over their annual tax declarations (for an overview see Kirchler, 2007).

One line of research focuses on judgment and decision processes in tax compliance. In the seminal works of Allingham and Sandmo (1972) and Srinivasan (1973) income tax evasion was modeled as decision under uncertainty[1]. Since then, parameters specified in the formal model were empirically studied in various publications. This review summarizes results and conclusions of research on tax compliance decisions within the paradigm of maximizing expected utilities. After illustrating the model, each of its parameters is addressed separately and empirical evidence for or against their effects on tax compliance is reported. Finally, a summary of results is provided, typical problems of tax compliance research and alternative theoretical approaches are discussed.

Allingham and Sandmo's (1972) and Srinivasan's (1973) analyses are restricted to income tax evasion. Research dealing with value added tax, other taxes or related duties, therefore, is omitted in the present review. Most of the cited studies focus on self-employed taxpayers, because this group has the most opportunities to evade income taxes.

2. Tax evasion as a decision under uncertainty

Following the neoclassical approach in economics, Allingham and Sandmo (1972) and Srinivasan (1973) assume that taxpayers are rational agents whose choice behavior conforms to the Von Neumann-Morgenstern axioms, and who try to maximize utility of

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[1] In fact, Allingham and Sandmo (1972) and Srinivasan (1973) published their analyses of tax evasion nearly at the same time without knowing about each other's work.

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their taxable income. They do so by weighing costs and benefits of compliance with the expected utility of evasion. Choosing the risky strategy of evading all or part of actual income will result in a better outcome, if the respective tax file is not audited. In case of an audit, however, compliance would have been the better strategy since paying a fine decreases income even further than an honest payment of one's taxes.

Accordingly a compliance decision depends on (i) the level of actual income, (ii) tax rates, (iii) audit probabilities and (iv) the magnitude of fines. Though Allingham and Sandmo (1972) admit that other, less economic variables might be also important in understanding tax compliance (and exemplarily outline a more complex model incorporating changes in the taxpayer's reputation among society due to his or her compliance behavior), their analysis is based on the simpler model with the four parameters described above.

Since their analysis – often (and herein after) referred to as the standard economic model - was published, empirical research gathered evidence for (and against) the significance of its parameters in tax compliance decisions. The following four sections give a review of these studies, structured by the respective variable being tested. Each section begins with predictions of the formal model and concludes in potential explanations for empirical deviations. Implications for tax policy and everyday practice of fiscal authorities are discussed.

3. Level of actual income

Regarding income-effects, predictions of the standard economic model are ambiguous. Though wealthier citizens are more likely to evade their taxes since the level of absolute risk aversion decreases with income, it is not clear if severity of evasion is an increasing or decreasing function of income. Once taxpayers have decided to evade taxes, the degree of underreporting depends on their relative risk aversion (i.e., the risk-attitude at a specific

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point of the utility function). The relation of income and relative risk aversion is not unique and consequently Allingham and Sandmo (1972) conclude "…that, when actual income varies, the fraction [of income] declared increases, stays constant or decreases according as relative risk aversion is an increasing, constant or decreasing function of income" (p. 329).

As ambiguous as the standard economic model's predictions is the empirical evidence for income effects on compliance. If any impact of income level was found, both proposed directions of the effect were supported.

A *negative relation* of income and tax compliance is reported by Slemrod (1985), who analyzed archival data from the United States' Treasury tax file for 1977, and by Ali, Cecil and Knoblett (2001), who analyzed IRS data for the period between 1980 and 1995. Consistently, Weck-Hannemann and Pommerehne (1989) found lower compliance among high income earners in archival data on Swiss taxpayers. Lang, Nöhrbaß, and Stahl (1997) combined survey data from 33 000 West German households with national accounting data. Again, wealthier citizens were shown to be particularly prone to evade and avoid taxes. Further evidence for a negative relation is reported from laboratory experiments. Baldry (1987) manipulated participants' income (among other variables) and found lower compliance at higher income-levels. Anderhub, Giese, Güth, Hoffmann, and Otto (2001) report similar results from a multi-period experiment, where participants had to earn their income in small tasks. Collins and Plumlee (1991) also found decreased compliance among participants with higher income. The importance of how one's economic status is *perceived*, was demonstrated by Vogel (1974). Taxpayers who reported improvement of their economic status were less compliant than others who reported deterioration of their financial well-being.

A *positive relation* of income and tax compliance also found empirical support. Christian (1994) analyzed data of the Taxpayer Compliance Measurement Program

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(TCMP) of the Internal Revenue Service (IRS) in the United States. On average, taxpayers with an annual income of more than $ 100 000 reported 96.6% of income, but only 85.9% if income was below $ 25 000. Fishlow and Friedman (1994) found decreased compliance at low income-levels in archival-empirical data from Argentina, Brazil and Chile, three countries with low economic growth and high inflation rates. A single laboratory experiment found also support for a positive relation of income and compliance. Alm, Jackson, and McKee (1992) report that in their experiment compliance significantly increased with income.

Other studies found *no relation* of income level and tax compliance. Feinstein (1991) compared pooled data from the 1982 and 1985 TCMP and found no significant effects of income on tax compliance. In a laboratory experiment conducted in Korea, Park and Hyun (2003) among other variables varied experimental income. No effect of income on compliance behavior was found. Self-reported compliance behavior was not related to income among American (Porcano, 1988) and Swedish taxpayers (Wärneryd & Walerud, 1982).

Definite conclusions can not be drawn from the empirical studies reported. Evidence for income effects is inconsistent (as Andreoni, Erard, and Feinstein, 1998, already concluded in an earlier review). Though a slight majority of studies reports a negative relation of income and compliance, also opposite and zero effects were found.

The ambiguous evidence could possibly be explained by other variables moderating or mediating the effect of income. Besides the problem of relative risk-aversion, several variables can be imagined to weaken the income effect or to trigger its direction. For instance, opportunities for tax avoidance might vary with income. High-income earners are able to afford professional tax advisors, who know about the loopholes in tax law (Slemrod, Blumenthal, & Christian, 2001; Wärneryd & Walerud, 1982). If tax avoidance is

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possible, the tax burden can be reduced without breaking the law and taking the risk of paying a fine. Spicer and Lundstedt (1976) point out that also self-employed have more possibilities to avoid taxes than employed taxpayers. However, self-employed taxpayers have also more opportunities for tax evasion and opportunities might further increase with the number of different income sources. Hence, in compliance decisions the level of income might interact with its source. A different aspect of the income source - if income was earned by hard work or an effortless job - has been studied in experiments by Kirchler, Muehlbacher, Hölzl, and Webley (in press; Muehlbacher & Kirchler, in press). Participants were less compliant when they reported income earned by low effort than when they reported hard-earned income. It seems that taxpayers are reluctant to lose their hard-earned money by "gambling" with tax authorities.

Given the present results on income and compliance, it is too early to consider practical implications for tax policy. The issue, however, is important not only for designing proper audit strategies, but also for tax ethics, since a negative relation of income and compliance would put "[…] into question the intended (or pretended?) distributional effects of progressive income taxation." (Lang, Nöhrbaß, & Stahl, 1997, p. 328)

2. Tax rate

Would higher tax rates decrease compliance? No clear hypothesis emerges from the standard economic model. Two counteracting effects are proposed: On the one hand, a high tax rate reduces effective income and, therefore, makes tax evasion more profitable. On the other hand, by reducing effective income absolute risk aversion increases. Consequently, evasion should be reduced.[2]

Both of the model's predictions on the impact of tax rates on compliance found empirical support, though most studies report that compliance is lower at high tax rates.

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2 The latter proposition is also supported by Yitzhaki (1974), who suggests that if fines are posed on the evaded tax instead of undeclared income, compliance will be related positive to tax rates.

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A *negative relation* of tax rate and compliance was found by Clotfelter (1983), who analyzed American taxpayers' data from the 1969 TCMP, and by Slemrod (1985), who studied data from the United States' Treasury tax file of 1977. Consistently, lower compliance at high marginal tax rates is reported by Lang, Nöhrbaß, and Stahl (1997) for German taxpayers and by Pommerehne and Weck-Hannemann (1996; Weck-Hannemann & Pommerehne, 1989) for Swiss taxpayers. An analysis of IRS data for the period between 1980 and 1995 revealed that the negative effect of tax rate on compliance is more pronounced among high-income earners (Ali, Cecil, & Knoblett, 2001). Experimental evidence for the negative impact of high tax rates is reported by Alm, Jackson, and McKee (1992). In 25 periods participants received an income, paid taxes and were randomly audited and fined. During the sessions of the experiment tax policy changes were introduced, including a change of tax rate (10%, 30%, and 50%). When tax rate increased in the experiment, participants' compliance decreased. Similar results are reported by Friedland, Maital and Rutenberg (1978) from an experiment where tax rate varied between subjects (25% and 50%). Thus, instead of the impact of an increasing or decreasing tax burden, this experiment tested for the effect of absolute differences in tax rates. Actually studying the effect of different audit schemes, Collins and Plumlee (1991) tested also for the effect of different tax rates (30% vs. 60%). Again, lower compliance was observed at the higher tax rate. An experiment by Moser, Evans III, and Kim (1995) revealed the importance of perceived fairness when studying the impact of different tax rates. A negative effect of a high tax rate was found only if participants felt inequitably treated compared to others.

A *positive relation* of tax rates and compliance, as proposed by Yitzhaki (1974), is less often reported. Feinstein (1991) found higher compliance at higher tax rates in aggregate data on American taxpayers from the TCMP. In an experiment Alm, Sanchez, and De Juan

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(1995) conducted in Spain, participants were more compliant when tax rate increased over time.

No effect of the tax rate was found in an experiment by Baldry (1987) and in a study by Porcano (1988), dealing with self-reported compliance behavior.

To summarize, most empirical studies on the impact of tax rates support the assumption that high tax burdens have negative impact on compliance. However, the strong connection of income and tax rate makes final conclusions difficult (Andreoni, Erard, & Feinstein, 1998; Slemrod, 1985). In experimental studies it is hard to separate the effects of tax rates and income, if both variables are varied at the same time. In field studies a similar critique as in the discussion on income effects can be made, i.e., opportunities for tax evasion or avoidance and source of income are likely to interact with tax rate. Regarding the source of income, Boylan and Sprinkle (2001) report that participants in their experiment reacted to a tax rate increase with lower compliance if they were endowed with income by the experimenters, but reacted with higher compliance to a tax rate increase if they had to earn their income by performing in a one-hour multiplication exercise. Findings by Moser, Evans III, and Kim (1995) seem to suggest that perceived fairness of the tax rate is more important than its absolute level. Judging the fairness of taxation, however, requires comprehensive knowledge and correct interpretation of the tax law, and complex tax rate structures, such as progressive taxation, are not perfectly understood by taxpayers. Roberts, Hite, and Bradley (1994) showed that taxpayers' preferences for progressive, flat, and regressive taxation depend on the form the respective tax rates are presented, e.g., if tax rates are described as abstract concept or in concrete terms by giving hypothetical examples. McCaffery and Baron (2004) asked their participants to indicate what they consider a fair tax for different levels of income. Preference for progressive taxation was stronger when the amount of taxes had to be indicated in percentages of income than when

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it had to be indicated in absolute amounts. Such framing effects suggest that tax policies are hard to understand and can easily be misinterpreted. Knowledge about framing effects could help authorities in promoting changes in tax policy such as tax rate increases without undermining taxpayers' compliance.

3. Audit probabilities

The economic model assumes that taxpayers try to maximize the outcome of the compliance decision by weighing the gain of successful evasion against the risk of detection and punishment. The expected value of non-compliance depends on audit probabilities and fines. Allingham and Sandmo (1972) therefore conclude that "… an increase in the probability of detection will always lead to a larger income being declared" (p. 330).

Most empirical studies found support for the effect of audit probability on compliance, though the reported effects are sometimes weak (c.f., the specific review on audit rates by Fischer, Wartick, & Mark, 1992).

A *positive effect* was found in aggregate data on tax compliance behavior of Swiss taxpayers. Pommerehne and Weck-Hannemann (1996; Weck-Hannemann & Pommerehne, 1989) compared 25 Swiss cantons and report that compliance was higher in cantons where more audits occurred in the observed period. Ali, Cecil, and Knoblett (2001) report similar results in an analysis of a dataset from the American IRS. However, audit probability affected compliance more among high-income earners. An opposite interaction of audit probability and income was found in a field experiment with a sample of 1 724 American taxpayers by Slemrod, Blumenthal, and Christian (2001). The experimental group in this study received a notification by mail that their next tax files will be audited. While low and middle-income earners increased tax payments compared to previous years, high income earners reacted differently and indicated a lower tax liability. The authors assumed that the

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notification letter induced high income taxpayers to seek help of professional tax advisors to minimize their tax liability. The effectiveness of frequent audits found also support in laboratory experiments. Alm, Sanchez, and De Juan (1995) compared audit rates of 5%, 30%, and 60% and found a corresponding increase in compliance. In the experiments by Trivedi, Shehata, and Lynn (2003) and Trivedi, Shehata, and Mestelman (2004) audit rates were either zero or 25%. As expected, compliance was higher in the latter condition. Gërxhani and Schram (2006) conducted experiments in Albania and in the Netherlands. Participants in Albania were not affected by audit rates (16.6% and 50%), but Dutch participants evaded more when audit probability was low. That the relation between audit probability and compliance is non-linear revealed an experiment by Alm, McClelland, and Schulze (1992). At audit probabilities of 0%, 2%, and 10% participants declared 20%, 50%, and 68% of their income. Spicer and Thomas (1982) varied audit rates and provided their participants with either concrete (1 in 20, 5 in 20, and 3 in 20) or non-concrete information (*low*, *high,* and *medium*) on the probability of being audited. Again, with increasing audit rates evasion declined. Furthermore, precise information had stronger impact than imprecise information. By contrast, Friedland (1982) reports that at small audit probabilities imprecise information can enhance compliance.

Fischer, Wartick, and Mark (1992) point out that perceived and objective probabilities widely differ. Given the extreme low audit probabilities in most countries, tax evasion should approach 100% if no overweighting occurs as suggested in prospect theory (Kahneman & Tversky, 1979). Subjective rather than objective probabilities should therefore be of greater interest in tax research. Survey research revealed that taxpayers who admitted to evade taxes perceive chances of being caught lower than honest taxpayers (Mason & Calvin, 1978). However, correlations of perceived risk and compliance are sometimes weak or even not present (Elffers, Weigel, & Hessing, 1987; Spicer &

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Lundstedt, 1976; Wärneryd & Walerud, 1982). Subjective probability that an audit will occur may partly depend on prior experience. In an experiment by Spicer and Hero (1985) participants paid taxes on a given income and were randomly checked in overall 10 periods. Compliance in the tenth period was correlated with the number of audits in previous rounds. Similar results from a business simulation study are reported by Webley (1987). That the experience of an audit induces a learning process for evaluating audit probabilities is suggested by findings from Guala and Mittone (Guala & Mittone, 2005; Mittone, 2006). Participants in their experiments paid taxes in overall 60 periods and were audited either only in the first or only in the last 30 periods. If participants were audited early in the experiment, compliance was relatively high and remained at a high level also in the latter 30 periods, though no more audits had occurred. By contrast, if participants were not audited in the first half of the experiment, compliance was comparably low and did not increase even when audits started in the latter 30 periods. Learning and understanding objective probabilities of uncertain events by experiencing (or observing) their occurrence can be understood as applying the availability heuristic (Tversky & Kahneman, 1974). Analogous to Tversky and Kahneman's example that seeing a burning house influences judgments on the occurrence of such accidents, experiencing an audit could increase the subjective probability of being audited. On the other hand, it was frequently observed in tax experiments that compliance sharply decreases after an audit (Guala & Mittone, 2005; Mittone, 2006). Such a reaction to an audit has been coined "bomb-crater" effect by Mittone (2006). In a recent study Kastlunger, Kirchler, Mittone and Pitters (submitted manuscript) investigated if the "bomb-crater" effect is caused by misperception of chance or by the attempt to repair losses from paying a penalty. Results suggest that misperception of chance is the major cause for the strong decrease in compliance immediately after an audit. At least in some cases, however, also loss repair tendencies seem to reduce

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compliance. The "bomb-crater" effect affects only the first periods after an audit before compliance increases again. After a "bomb-crater" occurred in an experiment by Kirchler, Maciejovsky, and Schwarzenberger (2005) compliance increased faster to its baseline in a condition with a high audit rate (30%) than in a condition with a lower audit rate (15%). Thus the duration of this effect seems to depend on when the next audit is expected.

To summarize, empirical evidence for the impact of high audit probabilities is quiet strong. Yet, in practice tax audits are costly and research consequently changes its focus towards alternative control mechanisms. Reinganum and Wilde (1985), and Alm, Cronshaw, and McKee (1993) contrasted random audits schemes with several alternatives. They tested the effectiveness of a cut-off rule (i.e., when the declaration falls below a certain threshold), a retrospective audit scheme (i.e., when the random detection of non-compliance results in examination of previous tax files), and a prospective audit scheme (i.e., when the detection of non-compliance increases future audit probability). Alternative audit mechanisms lead to higher tax compliance even if the audit rules implicated fewer audits than random control systems. Also the findings by Guala and Mittone (Guala & Mittone, 2005; Mittone, 2006) can be used to design an efficient audit-scheme. According to their results it might be advisable to audit particularly young and inexperienced taxpayers. Probably they will "learn" to be compliant if their very first tax file is checked by authorities.

4. Fines

The second parameter determining the expected value of being non-compliant besides audit probabilities is the amount of fines. Due to their multiplicative linkage fines and audit rates may substitute each other, as long as neither of them is set to zero. Higher fines simply make evading taxes more hazardous for taxpayers and should, therefore, deter from evasion.

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Empirically the deterrent effect of fines could not always be supported. The observed effects were weaker than expected and some studies even suggest that an increase of penalties can have undesirable effects and result in more tax avoidance.

Supporting evidence for the effect of fines is reported by Alm, Jackson, and McKee (1992), though its impact on compliance was virtually zero. In experiments by Friedland, Maital, and Rutenberg (1978), and by Park and Hyun (2003) compliance was stronger affected by the amount of fines than by audit probabilities. By contrast, Friedland (1982) reports that audit rates affected compliance more than the amount of fines. Finally, Alm, Sanchez, and De Juan (1995) point out that fines are only effective in combination with high audit rates. The interaction of both variables seems to be more important than their separate effects.

Several studies found *no support* for the deterring effects of fines. Pommerehne and Weck-Hannemann (1996) found no impact of penalty rate in their comparison of tax compliance in different Swiss cantons. Ali, Cecil, and Knoblett (2001) analyzed compliance behavior of American taxpayers between 1980 and 1995. In this period penalty rate increased from 5% to 30% of the evaded tax. Overall, increasing the fines had no impact on compliance. However, high and low-income earners reacted differently. Whereas low-income earners showed no change in compliance, high-income earners reacted as expected and increased their tax payments. In experiments by Baldry (1987) and by Webley, Robben, Elffers, and Hessing (1991) compliance was unaffected by the amount of fines, though fines should have stronger effects in the laboratory than in the field due to the artificial situation of gambling with the experimenters. Perceived rather than objective severity of fines was studied in a survey by Spicer and Lundstedt (1976). Propensity for tax evasion was not related to the perceived severity of fines.

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Interestingly, increasing the fines can also have the *opposite effect* by initiating tax avoidance. In a field experiment by Schwartz and Orleans (1967) a random selection of American taxpayers received a letter emphasizing the severity of sanctions available to the government. Reported adjusted gross income did not increase compared to previous years, but amount of deductions increased substantially. It seems that taxpayers had tried to get back the higher income they were forced to declare due to the threat of a fine. Fjeldstad and Semboja (2001) report comparable results from a survey study they conducted in Tanzania. Oppressive tax enforcement and harassment of taxpayers increased resistance to pay taxes. Accordingly, a survey study by Strümpel (1969) revealed that unfair penalties have a negative impact on attitudes toward the tax office and taxes.

The conclusion from the empirical evidence reported above is that deterrent effects of fines are weak, if not negligible (as earlier reviews already had to conclude; c.f., Andreoni, Erard, & Feinstein, 1998; Fischer, Wartick, & Mark, 1992; Pommerehne & Weck-Hannemann, 1992). Some of the findings suggest that a policy based on deterrence is effective only in combination with frequent audits. The most extreme penalties will have no effect, if it is common knowledge that audits virtually do not occur.

The increasing tax avoidance and tax resistance due to an increase of fines puts into question how fines should be assessed to be effective. On the one hand, fines should be high enough to decrease the expected value of tax evasion and to assure its deterrent effect on taxpayers. On the other hand, if fines are too high, the tax system would be perceived as unjust und unfair and taxpayers would use any possibility to legally avoid their taxes. In most countries, fines are relative to the evaded tax. In Austria, for instance, the maximum (monetary) penalty for tax evasion is 200% of the evaded amount, though in practice the typical sentence is a fine of 40%. However, depending on the income of the accused such a system might yield too low fines to have deterrent effects. An alternative would be to

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adjust the fine to the income of taxpayers. In an experimental survey study by Muehlbacher, Hölzl and Kirchler (submitted manuscript) income-adjusted fines had more impact on the sentenced taxpayer's intention to commit the same offense again than fines which were solely adjusted to severity of evasion.

5. Summary and discussion

The standard economic model frames the tax compliance problem as a decision under uncertainty. Taxpayers are assumed to maximize income by weighing pros and cons of evading taxes. Though the model provides useful tools for tax policy and its publication stimulated a variety of tax research, empirical evidence for its validity is rather weak. Most of its parameters have unstable and unclear effects and it is hard to draw definite conclusions from the studies we have reviewed. If high or low-income earners are more prone to evade their taxes remains unclear. Regarding the effects of tax rate increases, most studies seem to support a negative relation to compliance, i.e., more tax evasion at high tax rates. The impact of audits and fines can hardly be separated, though a combination of both seems to be effective. Since audits are costly, however, tax policy has a wider scope in adjusting fines.

The weak empirical support of the economic model could either be due to constraints in the methodology applied to gather and analyze data, or the economic approach is too narrow for a comprehensive explanation of compliance behavior.

Regarding methodology, empirical research on tax compliance faces severe problems, mainly the problem of low external validity. Most tax experiments deal with students as participants and often are designed as "gambling" experiments rather than providing more realistic tax paying environments. An experiment without monetary incentives has low external validity, but providing participants with windfall endowments additionally enhances the mentioned gambling situation in the laboratory. Additionally, if participants'

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profit is based on their behavior in the experiment, the impact of tax morale and the possibility of other, non-financial consequences are ruled out completely. Further methodological constraints were demonstrated in an extensive study done by Elffers, Weigel, and Hessing (1987). The authors compared actual tax files of Dutch taxpayers with self-reported compliance within the same sample. As expected, actual tax-evaders frequently indicated in self-reports to be fully compliant. More surprisingly, several participants admitted non-compliance, though their tax files proofed that income had been honestly reported. Accordingly, experimental data and especially self-reported data have to be interpreted very carefully before generalization.

Regarding the theoretical approach to the tax compliance problem, it might be useful to enrich compliance research by considering alternative theories, which are based on a more relaxed rationality assumption and take into account peoples' actual tax behavior. Prospect Theory (Kahneman & Tversky, 1979) for instance has been successfully applied in the field of tax research (e.g., Elffers & Hessing, 1997; Kirchler & Maciejovsky, 2001; Yaniv, 1999). Framing effects, i.e., presenting outcomes as losses or gains, were studied (Schepanski & Kelsey, 1990), and the withholding-phenomenon was explained by introducing the notion of a reference point (Schepanski & Shearer, 1995). However, Prospect Theory is of limited use for predicting behavior. For instance, it is an open question to which reference points taxpayers naturally adopt if it is not given externally by framing (Copeland & Cuccia, 2002).

Another research paradigm that has already been applied in tax research describes compliance decisions as social dilemma (Dawes, 1980). According to such models, taxpayers try to balance egoistic goals (i.e., maximizing effective income) and collective goals (e.g., establishing health care and welfare systems). The individual is better off by defecting and evading taxes. If too many individuals behave egoistically and evade taxes,

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collective goals cannot be achieved and everyone would have been better off by cooperating. The standard economic model fully neglects the utility of the collective.

Probably an even stronger constraint of the economic model is that tax morale is neglected. Braithwaite (2003) suggests that taxpayers follow quit diverse motivational postures in paying their taxes. While some may pay their taxes due to their commitment with the community, others are disengaged or enjoy tax evasion as sort of game playing with the state. According to Braithwaite only a small proportion of taxpayers are driven by the latter postures and should be pursued with full rigor of the law. Therefore, Ayres and Braithwaite (1992) argue for responsive regulation, where tax authorities treat taxpayers in accordance to their motivational posture. Responsive regulation suggests to maintain and stabilize compliant taxpayers and to respond with severe punishment to notorious non-compliant taxpayers. It is likely to assume that the economic model fits best for the group of disengaged and game playing taxpayers and loses validity among taxpayers with different motivational postures.

A related idea was proposed in the "slippery slope" model by Kirchler, Hoelzl, and Wahl (in press). Their approach is based on the interaction between taxpayers and authorities, and distinguishes enforced and voluntary compliance. Whereas enforced compliance is determined by how taxpayers perceive the power of authorities to prosecute and punish them, voluntary compliance can be achieved if the taxpayers perceive authorities as trustworthy and benevolent. Hence, in a climate where trust in authorities is low, a tax policy based on audits and fines is effective. In a climate of trust, however, tax morale, perceived fairness of the tax system, tax knowledge and social norms are important to foster compliance. Further, a dynamic interaction of power and trust has to be considered. Changes in trust might influence power (e.g., by whistle-blowing of compliant citizens) and vice versa (e.g., if frequent audits are perceived as a signal of distrust). The

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slippery slope model emphasizes the interaction of taxpayers and authorities, and suggests tax authorities to move from a "cops-and-robbers" to a "service-and-client" view.

The problem of tax compliance seems much too complex to be explained by a pure economic approach. Including alternative approaches could help to understand the irrational behavior of taxpayers, and could expand the toolbox for an efficient tax policy.

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