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“Administering an unexpected additional compulsory tax:
Implications for individuals’ trust, reactance, and tax compliance”

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Table of Contents

Acknowledgment	5
Foreword	6
Abstract	7
1. Introduction	9
1.1. The Slippery Slope Framework	10
1.2. Fairness	11
1.3. Trust	12
1.4. Prospect Theory	12
1.5. Bomb Crater Effect	13
1.6. Effects of Income Source and Context	13
1.7. Attitude toward Risk	14
1.8. Gender and Age Differences	15
1.9. Tax Morale	15
1.10. Reactance	16
1.11. Unexpected Compulsory Tax	17
2. Method	19
2.1. Participants	19
2.2. Design and Procedure	19
3. Results	24
3.1. Tax Compliance	24
3.2. Bomb Crater Effect	26
3.3. Attitudes toward Risk	27
3.4. Post-Experimental Questionnaire	28
3.5. Fairness and Trustworthiness	31
3.6. Reactance	31
3.7. Tax Morale and Similarity to Austria	32
4. Discussion	33
References	39
Summary in German	44
Appendix A	45
Appendix B	47
Appendix C	48
Appendix D	49
Curriculum Vitae	53

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Foreword

The current investigation was conceptualized in the form of a scientific study to be published in English. Furthermore, the present study is a continuation of Kristyna Votavova's (2014) Master's thesis. It therefore disposed of partly the same pool of data, including data collected on the experimental group termed Compulsory Aggregated Loss, and on both control groups Investment Loss and Investment Denial.

Abstract

With the rise of regional tensions with Russia in March 2014, European banks are now under financial pressure. This may have serious implications for European taxpayers, including the threat of an additional compulsory tax. Such a drastic measure may have repercussions that go beyond the initial distress experienced by citizens that are subjected to this unjust procedure. Past studies demonstrate that treating citizens with fairness is crucial in promoting voluntary compliance with authorities. The current empirical study explored how an unexpected compulsory tax may influence participants' future tax compliance, depending on whether it was administered at once, or in rates. An experiment with 20 tax periods was conducted with 170 students, who were assigned to either control or experimental groups, in which an additional compulsory tax was administered in varying rates. While current results showed no difference in compliance on a behavioral level, the manipulation had a significant effect on participants' psychological reactance to comply with tax authorities. Possible reasons as well as implications and suggestions for future studies are explored in the discussion section of this paper.

Keywords: tax behavior, additional compulsory tax, slippery slope, prospect theory, psychological reactance.

1. Introduction

In March 2013, Cyprus suffered a financial crisis that led the island's government to take controversial financial measures in order to survive. It was recapitalized with the money of depositors in the Bank of Cyprus, who lost 30% of their savings to a compulsory tax over the course of a weekend (Persianis & Granitsas, 2014). Those with deposits of more than 100,000 Euros were forced to lose billions of Euros in order to prevent the Mediterranean tax haven from being forced out of the single currency (Traynor, Moulds, Elder, & Amos, 2013). With the rise of regional tensions in the Ukraine followed by the Annexation of Crimea by the Russian Federation in March 2014, Austrian banks, which have invested heavily in the former Soviet bloc since the 1990s, now face rising financial and geopolitical risks (Ewing, 2014). Depending on how this crisis turns out, the consequences for European banks could be very serious, since they are vulnerable to Russia for around 144 billion Euros. The Raiffeisen Bank International and the Bank Austria, which is a unit of the Italian lender UniCredit, are two of the country's largest banks and they operate in both the Ukraine and in Russia. With that, Austria has an exposure of over 12 billion Euros. From 2008 to 2014, the Austrian government had to save the country's banks by providing 14 billion Euros, including 2.5 billion Euros to Raiffeisen, at approximately 5% of its GDP. This rate makes up one of the highest amongst non-crisis countries in Central Europe (Ewing, 2014). Werner Kogler, a member of the Austrian Parliament and deputy leader of the opposition Green Party, adds: "The banks always knew if something went wrong the taxpayers would pick up the tab in the end" (Ewing, 2014, p. 6). In fact, taxpayers have already begun to suffer the aftermath of the Ukrainian crisis. Because the Raiffeisen bank might need the money to cope with losses from the Ukraine, Austrian regulators have already blocked plans by the bank to repay its state aid. Additionally, the Italian bank UniCredit, owner of the Bank of Austria, has lent 12.4 billion Euros to Russia, having reported a 15-billion-Euro loss due to Eastern European diminished holdings value at the end of 2013 (Ewing, 2014).

After the above review of the currently threatened situation of European banks, Cyprus' case in 2013 suddenly does not seem that unimaginable for richer countries in the Euro Zone. Other occurrences of bank deposit levies around the world include a bank deposit tax in Norway in 1936, a 0.6% one-off levy on bank accounts in Italy in 1992, a deposit levy conducted in Brazil that same year, as well as in Argentina in the year 2000 (Cowen, 2013). Such drastic government measures as imposing an overnight compulsory tax on taxpayers' savings not only causes a state of panic amongst affected individuals, but it may have even

more damaging repercussions for the financial welfare of countries that resort to such an extreme procedure. As a starting point, subsequent paragraphs review the literature on tax behavior, while the present empirical study attempts to explain the implications of an unexpected compulsory tax for the subsequent collection of income tax.

1.1. The Slippery Slope Framework

Economists and social scientists have attempted to understand and explain the determinants of individuals' willingness to pay their taxes honestly. Allingham and Sandmo (1972) highlight that tax declarations are made under uncertainty, as noncompliance may or may not result in a fine. This means that an individual's payoff depends on the probability of being audited by tax authorities as well as on the severity of fines. Accordingly, tax compliance should increase when both the probability of getting caught and the severity of fines are high. However, this paradigm of tax compliance behavior bares several inconsistencies. For instance, Alm et al. (2012) argue that if compliance was only achievable through enforcement, the relatively low rates of audits and fines in most countries should produce effectively no honest income tax declarations. Additionally, the effects of audits and fines have been found to be particularly short-lived, as tax compliance has been consistently shown to drop following audits, even without any changes in the audit probability (Kastlunger, Kirchler, Mittone, & Pitters, 2009). Furthermore, audits and fines can be interpreted as signaling a lack of trust on the authorities' part, which in turn may generate mistrust amongst taxpayers, who then develop more negative attitudes toward authorities. As a consequence, taxpayers' intrinsic motivation to cooperate becomes inhibited as negative attitudes toward taxes are formed (Alm et al., 2012).

Given the evident limitations of classic economic models, which conceive of taxpayers as perfectly rational actors, more recent research has highlighted the importance of social aspects such as fairness as well as trust in and power of tax authorities (Kirchler, 2011; Kirchler, Hoelzl, & Wahl, 2008; Kogler et al., 2013; Wenzel, 2002). The interaction between these factors is described within the slippery slope framework, which integrates two determinants of tax behavior (Kirchler, 2007; Kirchler, Hoelzl, & Wahl, 2008). While trust enhances voluntary compliance, power promotes enforced compliance. Trust has been found to increase when the general public perceives tax authorities as benevolent and serving the common good. Power, on the other hand, is defined as individuals' perception of tax authorities' ability to control and punish noncompliance. The slippery slope model, therefore, predicts compliance by measuring the level of both trust in and power of tax authorities,

where at least one of these two variables needs to be on its higher end in order for compliance to occur (Kirchler et al., 2008). Wahl, Kastlunger, and Kirchler (2010) suggest that when tax authorities are perceived to employ coercive power, this creates an atmosphere of distrust, thus paradoxically leading citizens to experience more psychological reactance to comply. Governmental agencies all over the world invest largely in enforcement policies such as tax audits and penalties for non-compliant behavior. However, increasing voluntary compliance instead is, in fact, considered to be the most effective tactic for reducing the tax gap (Bobek, Hageman, & Kelliher, 2013). From a financial point of view, it is also more expedient for tax authorities to increase individuals' voluntary compliance as opposed to enforcing it through power. That is because enforcement measures, such as performing more tax audits, are considerably more costly than the more just and long-term solution of earning the public's trust by, for example, providing them more insight into the tax system.

1.2. Fairness

As mentioned earlier, one of the psychological factors shaping tax behavior has been found to be the perceived fairness of the tax system (Kirchler, 2007). Hofmann, Hoelzl, and Kirchler (2008) define fairness as the balance between taxes paid and the public goods that are received as well as the justice concerning procedures and consequences of noncompliance. Three types of justice have been identified: (1) distributive justice (i.e. fair exchange of resources, benefits, and costs); (2) procedural justice (i.e. a just process of tax collection and resource distribution); and (3) retributive justice (i.e. a punishment system) (Wenzel, 2003). The present study focuses on procedural justice. Tyler (1988) defines this type of justice as perceived fairness of procedures used in order to make allocation decisions, such as refraining from self-interest and giving voice to the citizens in the decision process. Studies have revealed the provision of information on tax law as well as participation in decisions regarding use of tax revenues to enhance fairness perceptions, all of which correlate with higher tax compliance rates (Hofmann et al, 2008; Wahl, Muehlbacher, & Kirchler, 2010). Additionally, van Dijke and Verboon (2010) provide converging support for the fairness heuristic theory, which purports that trust in authorities is a key element in the positive effect of procedural fairness of the tax office on the voluntary compliance of taxpayers. The authors conclude that trust in the authorities is a significant predictor of the effectiveness of procedural fairness as a method for increasing tax compliance.

1.3. Trust

The reason why fairness is so crucial in explaining tax compliance is because it is highly predictive of trust. Past literature suggests that individuals' decision to pay their income tax honestly depends largely on their trust in tax authorities, as determined by the perceived fairness of tax-related procedures (Kirchler, 2007; Hofmann et al, 2008). In order to explore the question as to what leads individuals to accept and obey third party decisions and rules, Murphy (2004) discusses the use of threat and coercion as a regulatory tool by agencies. After examining empirical data collected from 2,292 taxpayers accused of tax avoidance, the author concludes that trust is to be treated as the key to managing noncompliance as well as shaping compliance. Furthermore, trust has been argued to nurture compliance due to its important role in determining acceptance of an organization's rules, including governmental agencies. Interestingly, the perception of whether an organization is trustworthy correlates positively with the level of trust shown toward the individuals from whom authorities demand compliance (Braithwaite & Makkai, 1994). That is, if citizens are treated as being trustworthy, they are more likely to confirm that expectation by showing voluntary compliance. An important factor that leads to a decrease in trust is a breach in procedural justice. That happens when authorities implement measures which citizens perceive as being unfair (Tyler & Degoe, 1996). Individuals who perceive low procedural justice have been found to be less likely to trust the organizations responsible for it and they are consequently less inclined to accept their rules (Tyler & Smith, 1998).

1.4. Prospect Theory

Besides being treated with fairness and therefore being able to trust tax authorities, individuals are also concerned with maximizing their gains. That includes minimizing the risk of losing money when deciding whether to declare or not to declare their income honestly, and that is because, psychologically speaking, losing is particularly painful. Prospect theory (Kahneman & Tversky, 1979) purports that outcomes are either positive or negative deviations (gains or losses) from a neutral reference point (Tversky & Kahneman, 1986). Tversky and Kahneman (1986) describe this so-called *value function* as being *S-shaped*, that is, concave for gains (above the reference point), and convex for losses (below the reference point). Loss aversion is an important property of the value function, in which responses to losses are characteristically more extreme compared to responses to gains. This effect has not only been found in overt psychological responses, but also in physiological arousal and brain activation in cortical and striatal areas of the brain (Yechiam & Hochman, 2013).

Physiological correlates include significantly larger pupil diameter and higher heart rate following losses compared to equivalent gains (Hochman & Yechiam, 2011). Neurologically, higher frontal cortical sensitivity was found to occur as a response to increases in losses. Equally sized increases in gains, however, failed to produce higher sensitivity in the brain (Tom, Fox, Treper, & Poldrack, 2007). In order to maximize utility according to the value function, outcomes, that is losses and gains, should be organized in the following fashion: (a) gains should be segregated, since the gain function is concave; (b) losses should be integrated, since the loss function is convex; (c) smaller losses should be integrated with larger gains in order to offset loss aversion; and (d) small gains should be segregated (silver linings) from larger losses, since the gain function is steepest at the origin, the utility of a small gain can exceed the utility of slightly reducing a large loss (Thaler, 1999). Applying these principles to the payment of taxes, it can be assumed that incurring a compulsory tax would be less painful when administered in a single shot rather than in smaller recurring rates.

1.5. Bomb Crater Effect

As previously outlined, Alm et al. (2012) argue that individuals may perceive audits and fines as a sign of authorities' lack of trust in them. This perception may be linked to a curious effect, in which individuals tend to evade more right after they have been audited. This is referred to as the bomb crater effect (Guala & Mittone, 2005), and it is characterized by a strong and systematic decrease in compliance immediately after a tax audit (Kastlunger et al., 2009). This robust effect may happen either as a result of an underestimation of chance, or due to loss repair efforts. In other words, individuals might evade more after an audit because they assume the probability of a subsequent audit to be lower, even though it is not. Alternatively, the bomb crater effect may reflect an attempt to restore one's losses by evading even more after a tax period in which money has been lost to tax fines. Moreover, Maciejovsky, Kirchler, and Schwarzenberger (2007) also explain the bomb crater effect in terms of taxpayers' increased non-compliance as a way of retaliating against tax agencies.

1.6. Effects of Income Source and Context

Not only does losing money affect individuals' tax behavior, but also the way in which money is earned has been found to have an effect on compliance (Durham, Manly, & Ritsema, 2012). Durham, Manly, and Ritsema (2012) analyzed the interaction between income source (earned versus endowed) and context (tax versus non-tax). They found that participants who had to pay taxes on their earned income, as opposed to an endowed income,

complied less, especially as their income increased. The authors suggest that earned income may be perceived as *net income*, while endowed income may be viewed as *gross income*. The difference between the two is the psychological reference point that each type of income creates for individuals and it determines what is perceived as gains or losses. If money is more easily earned than expected, it may surpass individuals' aspiration level. The psychological "surplus gain" is then much more easily invested in risky choices that may maximize the gain even more, or lead to its loss. Muehlbacher et al. (2008) provides compelling evidence for this premise, as they found that unexpected gains, such as easily earned or endowed income, lead to increased tax evasion. This effect has been described as a *reverse sunk cost effect*. Higher effort, on the other hand, implies in more behavioral sunk costs (e.g. time), which, in turn, is related to higher levels of compliance. It was also found that tax compliance is highest when individuals have to invest high effort for their income and when honest reporting allows them to achieve their aspiration levels. Conversely, if the aspiration level is high and can only be achieved by evading, underreporting then becomes the behavior of choice, independently of the effort invested initially.

1.7. Attitude toward Risk

A further aspect influencing individuals' compliance as taxpayers has been found to be their attitude towards risk (Allingham & Sandmo, 1972; Srinivasan, 1973). It is argued that the degree of risk aversion experienced by an individual increases with the size of the payoff. By using a simple lottery-choice experiment, Holt and Laury (2002) were able to measure the degree of risk aversion over a wide range of payoffs as well as comparing behavioral outcomes under hypothetical versus real monetary incentives. Their results showed that behavior is somewhat less predictable under hypothetical treatments. Still, risk aversion could be observed in around two thirds of their participants, even when the payoff was low (below \$4). The authors also found that risk aversion increased drastically when real payoffs were offered that were 20, 50, and 90 times higher. Interestingly, scaling up hypothetical payoffs did not affect behavior to a significant extent. Contrary to Kahneman and Tversky's (1979) assumption, the aforementioned results by Holt and Laury demonstrate that individuals confronted with a hypothetical situation do not seem to be able to predict their own behavior under high-incentive conditions.

Moreover, Scholz and Lubell (1998) found that trust in government and in other citizens significantly increase the likelihood of compliance above and beyond the effects of feelings of duty and fear of being caught cheating. As argued by Cullis, Jones, and Lewis

(2006), individuals who evade their taxes are making a risky decision. If they perceive the payment of taxes as a loss, prospect theory (Kahneman & Tversky, 1979) would predict them to become more risk seeking. Perceiving taxation as a gain (e.g., better public services), on the other hand, would make tax evasion less likely due to increased risk aversion. Correspondingly, Kirchler and Maciejovsky (2001) found support for the prospect theory in reports on self-reported tax evasion of 60 self-employed respondents. More specifically, the authors observed that an unexpected compulsory additional payment led to more risk seeking behavior, that is more evasion, while a surprise refund led to more risk aversion, that is, higher tax compliance.

1.8. Gender and Age Differences

Gender differences have been empirically supported in a vast array of studies on tax behavior (Cullis, 2006; Hasseldine & Hite, 2003; Kastlunger et al., 2010; Kirchler, 1999; Kogler et al., 2013). Kastlunger et al. (2010) conducted a novel analysis in which they focused on gender-role orientation as well as on prenatal testosterone exposure (indicated by the second-to-fourth digit ratio). In their experiment, participants received an endowment representing their income, on which they had to pay taxes. Results demonstrate the significance of demographic sex and gender-role as being related to tax compliance, but not the prenatal testosterone exposure. More specifically, the authors found that women and less male-typical individuals paid their taxes more honestly compared to more male-typical individuals. They also found differences between males and females in their taxpaying strategies, with males evading more after audits, and females being less affected by prior audits when paying their taxes. Furthermore, Kogler et al. (2013) found women to be consistently more compliant, showing significantly higher tax morale as compared to their male counterparts. Similarly, Hasseldine and Hite (2003) observed that men are generally more tolerant of tax evasion than women, as measured by Roberts' (1994) non-compliance scale. Age also has been found to correlate negatively with evasion, with younger participants being more inclined to condone evasion than older ones (Kirchler, 1999).

1.9. Tax Morale

There is a clear distinction between individuals' compliance-related behaviors and their motivational postures. Tax morale reflects individuals' tax attitudes, as opposed to their tax behavior (Torgler, 2002; Torgler & Schneider, 2009). Five different motivational postures have been identified, which describe taxpayers' conscious beliefs and attitudes toward tax

authorities. These include (1) commitment; (2) capitulation; (3) reactance; (4) disengagement; and (5) game playing (Braithwaite, 2003). While commitment and capitulation represent positive attitudes toward authorities, such as feelings of moral obligation to act in the interest of the collective and acceptance of the tax office as a legitimate authority and benign power, the last three postures are defiant of authorities. Reactance takes place when taxpayers distrust the intentions of the tax office, which leads to more alertness on the part of taxpayers as well as the urge to “*fight for their rights, and to curb tax office power*” (Braithwaite, 2003, p. 18). Disengagement is also viewed as being part of reactance, however, it is more passive, as taxpayers that are disengaged are no longer willing to defy authorities and prefer to just ignore them. Finally, game playing is described as a type of attitude in which the law is viewed as something that can be adjusted to suit individuals’ goals rather than something to abide to, unconditionally. Compliance-related behaviors, on the other hand, are more concrete and include actions such as lodging a tax return, paying a tax debt, declaring income through an income tax return, engaging in shadow economy, and claiming work-related expenses and other deductions.

Tax morale has been found to explain at least 20% of the variance in tax evasion levels in the United States and Europe (Alm & Torgler, 2006). This implies that tax morale has a significant impact on tax behavior, where declining tax morale probably means a growing shadow economy (Torgler & Schneider, 2009). While tax evasion measured via self-reports correlates significantly with attitudes as well as with subjective norms, observational data points towards dissatisfaction with the government, tolerance of illegal actions, competitive orientations, and egoistic motives as being strongly predictive of tax behavior (Kirchler, 1999). Loss of freedom was found to correlate significantly with tax evasion, which in turn was also significantly related to tax morale. Perceived freedom, anti-tax attitudes and morale do not have a causal relationship, especially since behaviors can often precede attitudes, which then occur as a post-hoc rationalization of past behavior.

1.10. Reactance

Hong and Faedda (1996) identified four components of psychological reactance proneness: (1) Reactance to compliance; (2) resisting influence from others; (3) reactance toward advice and recommendations; and (4) emotional response toward restricted choice. Reactance to compliance is defined as the tendency to experience resistance when expected to follow rules. Within context of tax behavior, it represents the unwillingness to comply with tax laws. According to Shen and Dillard (2005), reactance serves the purpose of protecting

one's perceptions of freedom of choice. The need to reinstate one's own autonomy, that is, the tendency to experience psychological reactance, varies between individuals. Brehm and Brehm (1981) explain reactance as being a result of a threat to or breach of freedom, which may be attitudinal or behavioral. This, in turn, leads the persuasive message, such as tax law, to fail.

Within the context of tax behavior, Kirchler (1999) conceives taxes as a restriction of individuals' freedom to decide about their income autonomously. In order to reinstate their freedom, individuals are likely to defy such restrictions. This reactance may take the form of a change in attitudes, tax morale, and, or, tax behavior. By administering a questionnaire to a sample of 117 employers with one or more employees, the authors collected information on their perceived limitation of their freedom through tax obligations, attitudes towards tax evasion, as well as moral standards with regard to paying taxes, and actions taken in order to reduce or avoid taxes. The results of their analyses showed a positive correlation between employers' perceived restriction of freedom and attitudes toward evasion, lower tax morale, and reported tendencies to resist paying taxes.

1.11. Unexpected Compulsory Tax

Votavova (2014) investigated the effects of an unexpected compulsory tax on individuals' perception of the fairness of the tax system as well as their tax-related behavior in an experimental setting with remuneration. The experiment consisted of 20 tax periods. Participants in the experimental group incurred an additional unexpected compulsory tax, which led them to lose 30% of their savings on their bank account, all at once. The controls either lost a similar amount in an investment game or they didn't lose any additional money. The author then compared the level of tax compliance between the groups after the onset of the manipulation. While results showed no effects of the additional tax on a behavioral level, the psychological reactions of participants in the experimental group differed significantly from both control groups, where participants incurred no additional tax. More specifically, Votavova (2014) found that after the administration of the additional unexpected tax, participants continued to pay their taxes as honestly as the controls. However, the additional tax led individuals to rate the tax authorities as significantly less fair. Consequently, they felt more reactance towards authorities and became angrier, since they felt that their freedom was being restricted by the unfair measure implemented. One of the possible reasons for these results is that the experimental manipulation might not have been strong enough as to influence participants' tax compliance on a behavioral level, since the additional tax happened

only once and participants' bank accounts still contained some amount of savings thereafter. Hence, they would have concluded that they would still get paid at the end of the experiment. The author suggests that future studies should explore manipulations that may be subjectively perceived as being more severe and unfair.

Building on this experimental study, the present paper aims at investigating whether an unexpected additional tax administered at once or in rates may have a different effect on individuals' reactance and tax compliance. According to prospect theory (Kahneman & Tversky, 1979), rational individuals should prefer aggregated losses to segregated losses, that is, administering an additional tax in rates should hurt more than administering it all at once. If so, the additional compulsory tax in rates can be expected to lead to lower compliance amongst participants due to an attempt to compensate for their lost freedom (Kirchler, 1999). On the other hand, since fairness and trust have been found to play an important role in voluntary compliance (Kirchler, 2007; Kirchler, 2011; Kirchler, Hoelzl, & Wahl, 2008; Kogler et al., 2013; Wenzel, 2002), informing participants that they will be charged with an additional tax in multiple consecutive rounds may indirectly increase their perceptions of fairness, since this indirectly provides them more insight into the taxing system. This, in turn, may not lead to such a strong psychological reactance compared to participants who are charged 30% of their savings at once and without warning.

As mentioned in previous paragraphs, individuals' decision to pay their taxes honestly is influenced by a series of other factors, including their attitudes toward risk (Holt & Laury, 2002) as well as their tax morale. Accordingly, risk attitudes and tax morale are also expected to correlate with tax behavior in the present study. Furthermore, salient drops in tax compliance are expected to follow audits due to the bomb crater effect (Guala & Mittone, 2005). Also, tax compliance is expected to decrease systematically across time, that is, compliance is expected to be lower in later rounds of the experiment. In accordance with past literature on the effects of gender (Cullis, 2006; Hasseldine & Hite, 2003; Kastlunger et al., 2010; Kogler et al., 2013), women are expected to pay their taxes more honestly than men, while men are expected to not only be more tolerant towards tax evasion, but also to show a stronger bomb crater effect than women (see appendix A for the concrete hypotheses).

2. Method

2.1. Participants

The participants in the present study were predominantly recruited via the Online Recruiting System for Economic Experiments (ORSEE) at the University of Vienna, with about 25% recruited by convenience, on campus. Upon being invited to participate, individuals were told that the experiment was about financial decisions in the context of tax payments. They were also informed that they would get paid for participating, and that the amount of money to be received depended on their behavior in the experiment.

The overall sample used in the present investigation consisted of 179 students (72.6% females, 27.4% males) of the University of Vienna. Their mean age was 24.76 years (min = 18, max = 49; $SD = 6.09$). Of these participants, 79.3% ($n = 142$) studied psychology, 3.4% ($n = 6$) studied sociology, 1.7% ($n = 3$) studied business, and 15.8% ($n = 28$) studied other subjects such as communications, politics, and law. Nationalities included 56.6% ($n = 99$) Austrians, 36.0% ($n = 63$) Germans, 6.3% ($n = 11$) Europeans from other EU-countries, and 1.1% ($n = 2$) from countries not belonging to the European Union. Of all participants, 36.6% ($n = 64$) reported having experience as income taxpayers, while 63.4% ($n = 111$) reported having no experience with reporting income taxes.

2.2. Design and Procedure

The current experiment was composed of three parts: (a) a tax game with 20 rounds; (b) assessment of risk attitudes (Holt & Laury, 2002); and (c) a post-experimental questionnaire including manipulation checks and collection of demographic data. The experiment took place in the social science laboratory of the Faculty of Economic Psychology of the University of Vienna. In each experimental session, up to 20 participants could be tested at a time. First, each participant was seated in a separate cubicle with a computer and a sheet of paper with instructions (see Appendix B for German version). They were informed that the experiment was about taxes and that they were supposed to imagine that they were self-employed professionals. Participants were instructed that they would have to pay a 40% income tax on a series of consecutive tax periods and that they would each have an individual savings account, where their net income of 3,000 ECU would accumulate in each round. At the end of the experiment, their savings would be converted into Euros, with an exchange value of 5,000 ECU = 1 Euro, which they would then receive as a payoff for participation. It was clearly communicated that their behavior throughout the experiment would impact on

their individual payoff at the end. Furthermore, participants were instructed that the probability of being audited was about 15% in each round. If they were audited and caught cheating, they would have to pay a fine equivalent to double the amount that had been evaded. Additionally, they were informed that they would learn whether they had been audited at the end of each period. Before the start of the experiment, participants were also explicitly reminded that all data collected would remain anonymous and that it would only be used for scientific purposes. The experimental data, including questionnaires, was collected via computer. Upon receiving their income of 3,000 ECU in each of the 20 rounds, participants were subsequently asked to type in the amount of taxes they would like to pay, knowing that a total of 1,200 ECU (i.e. 40%) was the correct amount according to the experiment's tax legislation. At the end of each round, the generated revenue was added to each participant's savings account, which was visible to them at the bottom of their computer screens throughout the entire experiment. For standardization purposes, the tax audits always took place in rounds 3, 7, and 15. This enabled the control of possible sequence effects, therefore also allowing for the assessment of the bomb crater effect (Guala & Mittone, 2005), as mentioned in the introduction. After each audit, participants were immediately informed whether they had to pay a fine.

The experimental design consisted of three different groups to which participants were randomly assigned: (1) Compulsory Aggregated Loss ($N = 55$; 30.7%); (2) Compulsory Segregated Loss ($N = 62$; 34.6%); and (3) Control ($N = 62$; 34.6%). Participants in the experimental groups Compulsory Aggregated Loss and Compulsory Segregated Loss were subjected to an unexpected additional compulsory tax after round 10. In the Compulsory Aggregated Loss Group, 30% of participants' savings was removed from their virtual bank accounts at once, at the end of round 10. In contrast, in the Compulsory Segregated Loss Group, the same 30% of their savings were calculated in round 10, however, the resulting amount was removed from their virtual bank accounts little by little, in the following 10 consecutive rounds in equal amounts. Participants in the Control Group were offered the option to take part in a gambling game. Those who chose not to take part in it formed the Investment Denial Group ($N = 44$; 24.6%), while those who took part and lost comprised the Investment Loss Group ($N = 18$; 10.1%). Before choosing to take part in it, participants were informed that there was a $p = \frac{1}{2}$ probability of losing. In order to incentivize participation, they were also instructed that winners would gain 40% of their savings. Since it was not theoretically relevant for the present investigation, the third control group - Investment Gain ($N = 33$) - was not included in the analysis.

The rationale for this design was twofold. On one hand, it allowed for the creation of a flawless control group in which participants lost the same amount of money as in the experimental groups, yet without being coerced into this situation. The second reason was to avoid deception of participants in the Control Group by allowing them to actually win money according to the probability they were given in the gambling game. In the control groups Investment Denial and Investment Loss, no additional compulsory tax was administered. While participants' savings account remained untouched in the Investment Denial Group, participants in the Investment Loss Group lost 30% of their savings account in the gamble they chose to participate in after round 10.

After participants were seated in their respective cubicles, they were asked to read the instructions on a sheet of paper in front of them. Additionally, the experimenter emphasized the instructions verbally and asked participants whether they had any questions. Next, the 20-round tax game started. After the tax game was over, participants received a new instructions sheet (see appendix C) for the subsequent Risk Attitude Task (Holt & Laury, 2002) to be completed on the computer. Again, instructions were emphasized verbally. In this task, subjects were given two options – A and B – to choose from. For each option there were two probabilities of winning a lottery. Each of these probabilities was coupled with a certain amount of money. Participants had to decide ten times. The items are shown in table 1.

Table 1: *Paired lottery-choice decisions adapted from Holt and Laury (2002).*

Item	Option A	Option B
1	1/10 chance of €2.00, 9/10 of €1.60	1/10 chance of €3.85, 9/10 of €0.10
2	2/10 chance of €2.00, 8/10 of €1.60	2/10 chance of €3.85, 8/10 of €0.10
3	3/10 chance of €2.00, 7/10 of €1.60	3/10 chance of €3.85, 7/10 of €0.10
4	4/10 chance of €2.00, 6/10 of €1.60	4/10 chance of €3.85, 6/10 of €0.10
5	5/10 chance of €2.00, 5/10 of €1.60	5/10 chance of €3.85, 5/10 of €0.10
6	6/10 chance of €2.00, 4/10 of €1.60	6/10 chance of €3.85, 4/10 of €0.10
7	7/10 chance of €2.00, 3/10 of €1.60	7/10 chance of €3.85, 3/10 of €0.10
8	8/10 chance of €2.00, 2/10 of €1.60	8/10 chance of €3.85, 2/10 of €0.10
9	9/10 chance of €2.00, 1/10 of €1.60	9/10 chance of €3.85, 1/10 of €0.10
10	10/10 chance of €2.00, 0/10 of €1.60	10/10 chance of €3.85, 0/10 of €0.10

Note. Participants had to make ten decisions, choosing one option A or B for every line.

As the options progress, the probability of a high payoff also increases. For instance, at the beginning of the table, choosing option A gives participants a 1/10 chance of winning 2.00 Euros and a 9/10 chance of winning 1.60 Euros, while option B would give them a 1/10 chance of winning 3.85 Euros and a 9/10 chance of winning 0.17 Euros. Rational, risk-neutral

actors trying to maximize their profit would calculate the expected value for option A and option B. They would then choose the option with the highest expected value, that is, option A for items one to four, and option B for items five to ten. According to Holt and Laury, even the most risk-averse person should choose option B at the last option pair, as it provides them with a guaranteed payoff of 3.85 Euros, compared to a payoff of only 2.00 Euros in option A. Higher scores on this task mean lower risk aversion. Participants were informed that they would also receive the payoff according to their choices at the end of the experiment. Following this task, participants had to answer a 14-item questionnaire including manipulation checks and demographic data (see appendix D). The first item measured the perceived fairness of tax authorities “*The tax authorities in the experiment treated taxpayers with fairness.*” and served as a manipulation check. That is, if participants perceive no difference in fairness between the conditions, it is unlikely that they will experience differences in trust and reactance, which are assumed to guide tax behavior. Consequently, if fairness is not perceived to be different between the conditions, any differences in tax compliance cannot be interpreted as being explained by fairness. The second item measured participants’ trust in the tax authorities “*The tax authorities in the experiment proved themselves to be trustworthy*”. Item number three measured participants’ perceived probability of being audited “*The probability of being caught evading my taxes in the experiment was high*”, and item number four “*The fine administered for evading taxes in the experiment was high*” measured their perception of the severity of punishment for evasion.

The three subsequent items were obtained from the Tax Compliance Inventory (TAX-I) by Kirchler and Wahl (2010) and measured participants’ type of compliance: “*If I paid my taxes as required in the experiment, I did so because to me it was obvious that this is what you do*” (voluntary tax compliance); “*If I paid my taxes as required in the experiment, I did so because a great many tax audits were carried out*” (item 6: enforced tax compliance due to audit probability); and “*If I paid my taxes as required in the experiment, I did so because the punishments for tax evasion were very severe*” (item 7: enforced tax compliance due to punishment). In order to measure participants’ reactance toward compliance, four items were adapted from the Hong Psychological Reactance Scale (Hong and Faedda’s, 1996): “*The regulations by tax authorities triggered reactance in me.*” (item 8); “*When something was prohibited in the experiment, I thought ‘That’s exactly what I am going to do’*” (item 9); “*In the experiment, I became angry when my freedom of choice was restricted by tax authorities*” (item 10); and “*When I felt forced to do something in the experiment, I felt like doing the opposite*” (item 11). Additionally, there was a similarity item comparing the experimental

condition to real life in Austria “*How similar did you find the situation in the experiment compared to the situation in Austria?*” (item 12) as well as an item measuring attitudes toward tax evasion (Torgler, 2002) “*In your opinion, is tax evasion never justifiable, always justifiable, or something in between?*” (item 13). All items were answered on a nine-point Likert scale (1 = completely disagree, 9 = completely agree). The last item was “*What percentage of their taxes due do you think other participants actually paid?*”, which participants had to answer on a ten-point scale ranging from 0-10% to 91-100%, with according categories in between (1 = very different, 9 = very similar). Demographic data collected included gender, age, nationality, study subject, and experience as a taxpayer. Upon completion, participants’ payoff in Euros was shown individually on their computer screens and the experimenter handed out the money. Thereafter, the experiment was over.

3. Results

A total of nine participants had to be excluded from the overall sample, because they did not make an economically rational choice at the Holt and Laury (2002) Risk Attitude Task. At the last option pair of this task, they chose option A instead of option B, even though option B offered them a 10/10 chance of winning 3.85 Euros compared to option A, which offered them 10/10 chance of winning only 2.00 Euros. This indicates a misunderstanding of the instructions and may have therefore also undermined participants' previous financial choices in the experiment.

3.1. Tax Compliance

A repeated measures ANOVA was conducted, whereby the dependent variable was the mean compliance of rounds 1 to 10 and of rounds 11 to 20, that is, with rounds before and after the manipulation as the repeated factor. Results revealed no significant difference compliance across all conditions as a consequence of the manipulation after round 10, even after controlling for gender, age, experience as taxpayer, and risk attitudes, $F(1, 162) = 1.04$, $p = .310$. Tax compliance means, measured as the mean amount of taxes paid in ECU in each round, are provided in table 2. In the total sample, female participants ($M = 550.16$, $SD = 422.57$) paid their taxes significantly more honestly compared to male participants ($M = 394.64$, $SD = 376.40$) in rounds 11 to 20, $F(1, 165) = 4.08$, $p = .045$. These gender differences were only significant when the entire sample was taken into account. No significant gender differences in compliance were found in rounds 1 to 10 across all conditions, $F(1, 165) = .88$, $p = .351$. A series of univariate ANOVAs with compliance as the dependent variable and gender and condition as the independent variables were conducted, one for each condition. No significant difference in tax compliance was found between female and male participants in rounds 11 to 20 in the Compulsory Segregated Loss ($F(1, 48) = .68$, $p = .415$), in the Compulsory Aggregated Loss ($F(1, 53) = .32$, $p = .572$), in the Investment Loss ($F(1, 13) = 1.20$, $p = .29$), and Investment Denial ($F(1, 36) = 2.81$, $p = .102$) conditions, separately. Tax compliance did not vary significantly according to condition after controlling for age, gender, study subject, nationality, risk attitudes, and experience as taxpayer, $F(3, 160) = .57$, $p = .636$. Moreover, a significant negative correlation was found between risk attitudes and overall mean compliance, $r(175) = -.15$, $p = .050$. Furthermore, a univariate ANOVA with compliance as the dependent variable, condition as the independent variable, and experience as taxpayer, age, nationality, and risk attitudes as covariates, revealed a significant interaction between experience as taxpayer and gender on overall compliance ($F(1, 150) = 4.52$, $p = .026$), where

women with no experience as taxpayers ($M = 598.77$, $SD = 431.61$) paid the highest amount of taxes compared to women with experience as taxpayers ($M = 474.90$, $SD = 383.27$) and men both with ($M = 457.93$, $SD = 374.74$) and without experience ($M = 420.76$, $SD = 380.05$). No significant effect of age was found, $F(1, 162) = .54$, $p = .465$.

Table 2. Mean tax paid in ECU in rounds 1 to 20, 1 to 10, and 11 to 20.

Condition	Rounds	Gender	N	Mean tax paid	SD
Compulsory Segregated Loss	1-20	Male	18	484.71	790.78
		Female	40	529.15	438.40
		Total	58	515.36	396.42
	1-10	Male	18	523.33	321.53
		Female	40	533.18	463.49
		Total	58	530.13	421.71
	11-20	Male	18	446.08	308.68
		Female	40	525.12	343.55
		Total	58	500.59	398.73
Compulsory Aggregated Loss	1-20	Male	11	404.57	457.93
		Female	42	484.72	382.29
		Total	53	468.09	395.77
	1-10	Male	11	408.86	448.86
		Female	42	491.44	391.48
		Total	53	474.30	400.90
	11-20	Male	11	400.28	471.44
		Female	42	478.00	392.22
		Total	53	461.87	406.26
Investment Loss	1-20	Male	9	486.94	452.58
		Female	9	618.15	460.77
		Total	18	552.55	448.17
	1-10	Male	9	567.22	513.58
		Female	9	602.33	471.25
		Total	18	584.78	478.50
	11-20	Male	9	406.67	428.81
		Female	9	633.97	462.19
		Total	18	520.32	448.03
Investment Denial	1-20	Male	11	352.50	373.45
		Female	30	688.54	420.28
		Total	41	598.38	430.87
	1-10	Male	11	410.00	415.50
		Female	30	717.67	422.91
		Total	41	635.12	438.03
	11-20	Male	11	295.00	364.48
		Female	30	659.42	430.78
		Total	41	561.65	440.99
Total sample	1-20	Male	49	437.45	374.20
		Female	121	559.87	419.43
		Total	170	524.58	409.61
	1-10	Male	49	480.26	403.65
		Female	121	569.58	433.99
		Total	170	543.83	426.22
	11-20	Male	49	394.64	376.40
		Female	121	550.16	422.57
		Total	170	505.33	414.75

Note. SD = Standard deviation.

3.2. Bomb Crater Effect

In order to test for differences in compliance across all 20 rounds of the entire sample, a repeated measures MANOVA was conducted with mean compliance per round as the repeated factor with 20 levels, and age, study subject, nationality, experience as taxpayer, and risk attitude as covariates, while gender was entered as the between-subjects factor. Mauchly's test indicated that the assumption of sphericity was violated, $\chi^2(189) = .000$, $p = .001$. Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = .659$). Compliance, measured by the mean amount of taxes paid in every round, varied significantly across rounds, $F(1, 159) = 5.18$, $p = .024$. Pairwise comparisons revealed that compliance was significantly lower in round 4 ($M = 510.19$, $SD = 508.58$) compared to round 1 ($M = 646.19$, $SD = 508.88$), $p = .003$. Compliance in round 8 ($M = 394.02$, $SD = 471.62$) was significantly lower than in round 7 ($M = 614.19$, $SD = 498.85$), $p = .002$, and compliance in round 16 ($M = 317.63$, $SD = 449.12$) was also significantly lower than in round 15 ($M = 577.76$, $SD = 510.75$), $p = .000$. There were no significant differences in compliance between male and female participants on a round level, $F(19, 141) = 1.23$, $p = .243$. However, as can be observed in figure 1, male participants are visibly less compliant than their female counterparts throughout the 20 rounds, and this tendency became more pronounced after round 10.

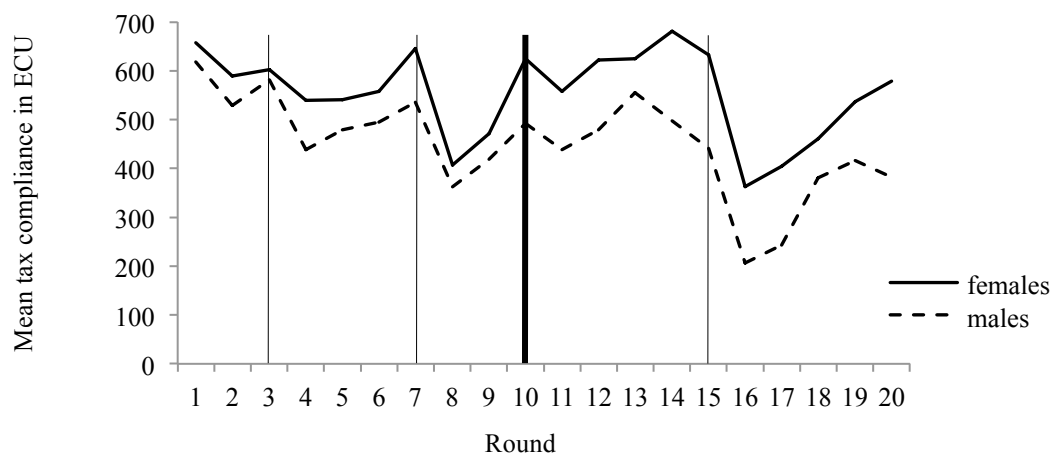


Figure 1. Mean tax compliance of male and female participants in rounds 1 to 20. The perpendicular lines indicate tax audits (rounds 3, 7, and 15) and the experimental manipulation in round 10.

For the Compulsory Segregated Loss condition, Mauchly's test also indicated that the assumption of sphericity was violated, $\chi^2(189) = .000$, $p = .001$. Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = .527$). A repeated measures MANOVA with compliance per round as the repeated factor with 20 levels

indicated that compliance was significantly lower in rounds 8 ($M = 354.14$, $SD = 471.12$), 16 ($M = 255.48$, $SD = 430.66$), and 17 ($M = 314.69$, $SD = 443.59$) compared to all other rounds, $p = .01$. Tests of between subjects-effects showed no significant differences in compliance between male and female participants across all rounds, $p = .70$. No significant differences in compliance were found between conditions on a round level, $F(3, 162) = .70$, $p = .554$. As can be seen in figure 2, however, the Compulsory Aggregated Loss condition shows the lowest levels of compliance across almost every round, with the exceptions of rounds 18, 19, and 20. The Investment Denial Group, on the other hand, shows highest levels of compliance from the outset of the game and remained relatively high until the end. The data also shows clear dips in the mean relative tax compliance after rounds 3, 7, and 15, that is, after every audit. These drops in compliance gradually became more extreme towards later game rounds across all conditions.

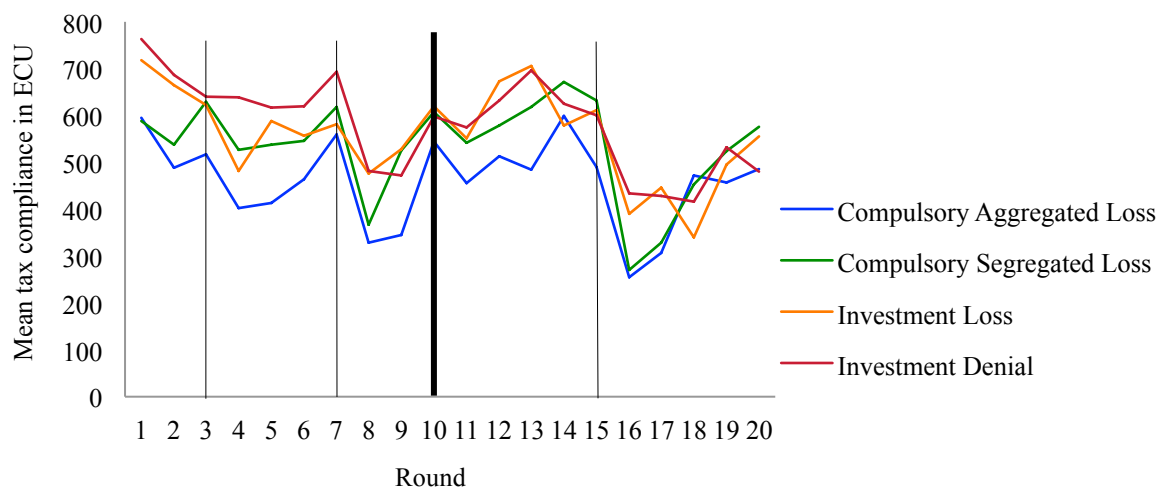


Figure 2. Mean tax compliance in rounds 1 to 20 of each condition. The perpendicular lines indicate tax audits (rounds 3, 7, and 15) and the experimental manipulation in round 10.

3.3. Attitudes toward Risk

A partial correlation revealed a significant negative relationship between risk attitudes and tax compliance for the entire sample ($N = 170$), such that participants who chose riskier options in the Risk Attitude Task (Holt & Laury, 2002) were more prone to evading their taxes ($r(162) = -.14$, $p = .000$), even after controlling for gender, age, study subject, nationality, and experience as taxpayer. Results showed no significant correlation between age and tax compliance ($p = .183$) after controlling for gender, age, study subject, nationality, and experience as taxpayer.

There was a significant interaction between risk attitudes and experience as taxpayer, whereby individuals with experience as taxpayers were significantly less risk averse ($N=60$, $M=5.13$, $SD=1.78$) compared to individuals with no experience as taxpayers ($N=110$, $M=4.43$, $SD=1.53$), $F(1, 166)=6.70$, $p=.011$. While there was no significant effect of gender on participants risk attitudes ($F(1, 153)=.82$, $p=.367$), there was a significant effect of experience as taxpayer on risk attitudes, $F(1, 153)=6.00$, $p=.015$, after controlling for age and gender. Condition had no significant effect on risk attitudes, $F(3, 153)=5.40$, $p=.109$.

3.4. Post-Experimental Questionnaire

A zero-order Pearson correlation was calculated between all post-experimental questionnaire items, with condition, gender, age, study subject, nationality, and experience as taxpayer as covariates. As can be seen in table 3, strong positive correlations were found between perceived fairness (item 1) and trustworthiness of authorities (item 2), between enforced compliance through punishment (item 7) and perceived severity of fine (item 4), and between enforced compliance through punishment and enforced compliance through tax audits (item 6). Psychological reactance (items 8-11) was strongly and positively correlated with tax morale (item 13), while voluntary compliance (item 5) also had a strong positive relationship with participants' perception of others' compliance (item 14). Compliance through punishment (item 7) was positively related to the participants' perception of authorities' trustworthiness (item 2), and voluntary compliance (item 5) was positively correlated with both the perceived audit probability (item 3) and the perceived severity of fine (item 4). Strong negative relationships were found between mean reactance (items 8-11) and both the perceived fairness of authorities (item 1) and voluntary compliance (item 5). That is, the lower participants' perception of authorities' fairness, the higher the psychological reactance they felt, while the higher their reactance was, the lower their voluntary compliance.

Furthermore, a MANOVA was conducted in order to test for gender differences in answers to the post-experimental questionnaire across the entire sample. Female participants ($M=3.49$, $SD=1.91$) perceived the audit probability as being significantly higher compared to male participants ($M=2.45$, $SD=1.62$), $F(7, 162)=9.02$, $p=.003$. The perception of fine severity was also significantly higher in females ($M=4.85$, $SD=2.26$) compared to males ($M=2.92$, $SD=2.16$), $F(7, 162)=24.17$, $p=.000$. Tax morale was significantly higher in female participants ($M=4.45$, $SD=2.72$) in comparison with their male counterparts ($M=3.22$, $SD=2.75$), $F(7, 162)=4.71$, $p=.031$. Compliance through punishment was significantly higher in females ($M=4.70$, $SD=2.45$) compared to males ($M=3.47$, $SD=2.68$), $F(7, 162)=7.33$,

$p = .008$. Finally, female participants ($M = 3.92$, $SD = 2.04$) also experienced significantly higher psychological reactance compared to male participants ($M = 3.25$, $SD = 1.67$), $F(7, 162) = 6.38$, $p = .013$. Within the Compulsory Segregated Loss condition, the results of the analysis revealed that female participants ($M = 3.43$, $SD = 1.74$) rated the severity of the fine for evasion as significantly higher compared to their male counterparts ($M = 2.89$, $SD = 2.19$), $F(1, 51) = 21.66$, $p = .000$.

Table 3. *Post-experimental questionnaire zero-order Pearson correlation matrix for the entire sample (N= 170).*

Items	1. Fairness	2. Trustwor- thiness	3. Audit probability	4. Fine severity	5. Voluntary compliance	6. Compliance/ audit	7. Compliance/ punishment	8-11. Mean reactance	12. Similarity to Austria	13. Tax morale	14. Others' compliance
1. Fairness	1.00	.61***	-.02	-.09	-.03	.10	.05	-.24**	-.08	-.09	.07
2. Trustwor- thiness		1.00	-.02	.10	.13	.13	.17**	-.12	-.01	.00	.11
3. Audit probability			1.00	.20**	.25**	.34**	.20**	-.07	.14	-.08	.07
4. Fine severity				1.00	.21**	.21**	.61***	.08	.19*	.08	-.01
5. Voluntary compliance					1.00	-.04	.13	-.26***	.12	-.09	.42***
6. Compliance/ audit						1.00	.51***	.14	.08	.09	.03
7. Compliance/ punishment							1.00	.08	.10	-.01	.01
8-11. Mean reactance								1.00	.20*	.27***	-.22**
12. Similarity to Austria									1.00	.06	-.15
13. Tax morale										1.00	-.08
14. Others' compliance											1.00

Note. Control variables: Gender, age, nationality, experience as taxpayer, and risk attitudes. $d/≠$ 162; *** $p < .001$; ** $p < .01$; * $p < .05$.

3.5. Fairness and Trustworthiness

A multivariate ANOVA was calculated with fairness, trustworthiness, perceived audit probability, perceived fine severity, mean reactance, tax morale, and perception of others' compliance as dependent variables, while condition was entered as the independent variable, and gender, age, nationality, and study subject, and experience as taxpayer as covariates. Participants' perception of being treated with fairness by authorities did not vary significantly across conditions, $F(3, 160) = .137, p = .255$, or between individuals with experience as taxpayers and those without, $F(1, 163) = 2.16, p = .143$. Similarly, no main effect of condition or experience as taxpayer was found on the perception of the trustworthiness of tax authorities in the experiment, $F(3, 160) = 1.62, p = .648$ and $F(1, 163) = 1.42, p = .235$, respectively. Furthermore, there were no gender differences in neither perceived fairness nor in perceived trustworthiness across the entire sample, $F(1, 164) = .138, p = .711$ and $F(1, 164) = .121, p = .728$.

3.6. Reactance

Results also showed a significant main effect of the experimental condition on participants' psychological reactance, even after controlling for their gender, age, experience as taxpayer, and risk preference, $F(3, 149) = 7.974, p = .000$. Pairwise comparisons revealed that the mean reactance (calculated by combining items 8-11) was significantly higher in both the Compulsory Segregated Loss Group ($M = 4.36, SD = 1.96$) and in the Compulsory Aggregated Loss group ($M = 4.06, SD = 2.01$) compared to the Investment Denial Group ($M = 2.53, SD = 1.40$), $p = .000$ and $p = .004$, respectively. However, no significant difference in reactance levels were found between the groups Compulsory Segregated Loss and Compulsory Aggregated Loss, $p = 1.000$, or between the groups Compulsory Segregated Loss and the Investment Loss ($M = 3.42, SD = 1.69$), $p = .921$. Results also showed that, overall, female participants ($M = 4.56, SD = 2.03$) felt significantly higher levels of anger towards tax authorities for restricting their freedom than did male participants ($M = 3.88, SD = 1.77$), $F(1, 51) = 5.87, p = .019$. A univariate ANOVA was also conducted with mean reactance as the dependent variable and group (experimental versus control) as the dependent variable, while controlling for gender, age, nationality, study subject, and experience as taxpayers. Results revealed that participants in the experimental groups (Compulsory Aggregated Loss and Compulsory Segregated Loss combined) ($M = 4.21, SD = 1.98$) experienced significantly higher levels of psychological reactance compared to the controls (Investment Denial and Investment Loss combined) ($M = 2.80, SD = 1.53$), $F(1, 163) = 17.57, p = .000$.

3.7. Tax Morale and Similarity to Austria

Participants' tax morale did not vary significantly across conditions ($F(3, 159) = 2.07$, $p = .106$) or between male and female participants, $F(1, 159) = .11$, $p = .736$, after controlling for gender, nationality, and experience as taxpayer. Having experience as taxpayer did not have an effect on participants' tax morale either, $F(1, 164) = .54$, $p = .463$. Ratings about the similarity of the experimental situation with the situation in Austria did not vary significantly differently across conditions ($F(3, 160) = 2.23$, $p = .087$) or between males and females ($F(1, 165) = 2.74$, $p = .101$). These ratings did not differ significantly between participants with and without experience as taxpayers, $F(1, 164) = .51$, $p = .478$.

4. Discussion

The present study aimed at determining whether administering an unexpected additional compulsory tax of 30% in rates would result in different tax behavior and levels of psychological reactance compared to administering the same additional tax at once. In order to test for such differences, 170 participants were randomly assigned to one of three conditions: (1) Compulsory Segregated Loss; (2) Compulsory Aggregated Loss; (3) Control, which was further subdivided into the Investment Loss and the Investment Denial Groups, according to participants' decisions and their respective consequences. Contrary to predictions, results of the statistical analyses revealed no significant differences in tax compliance between the experimental and control groups. However, there was a trend in the expected direction such that participants in the Investment Denial Group paid the highest amount of taxes compared to all other groups, closely followed by the Investment Loss group. Participants in the Compulsory Segregated Loss Group paid the lowest amount of taxes and participants in the Compulsory Aggregated Loss Group, the second lowest. It can be argued that the lack of statistical significance may be because the number of female participants in the entire sample outweighed the number of male participants by 71%. Systematic gender and age differences have been consistently found in tax behavior literature (Cullis, 2006; Hasseldine & Hite, 2003; Kastlunger et al., Kirchler, 2007; Kirchler 2010; Kogler et al., 2013), which could be confirmed in the present study. Since females were significantly more compliant than males across the entire sample, this may have masked potentially more pronounced differences in compliance between groups, had there been a more balanced ratio of males to females in each group. The treatments had no effect on compliance, since no significant changes in participants' tax behavior could be observed after the manipulations. This, again, may be explained in terms of each group being composed of many more female participants than males. Alternatively, the experimental manipulation may not have been strong enough as to cause behavioral changes. As expected, participants' risk attitudes were negatively related to compliant behavior, such that the more risk-prone participants were, the lower the amount of taxes they paid. Furthermore, experience as a taxpayer had a different effect on the compliance of males compared to that of females. While females with no experience as taxpayers were more compliant than females with experience, males with no experience complied less than those that had experience.

Empirical support could also be found for the bomb crater effect (Guala & Mittone, 2005) across all conditions, since compliance was significantly lower in rounds 4, 8, and 16,

that is, following every tax audit. As expected, the clear drops in the mean tax compliance after every tax audit gradually became more pronounced towards later game rounds, with the lowest rate of compliance occurring in round 16 of each condition. Also, male participants tended to evade more than female participants after tax audits. The intractable loss experienced as a result of having to pay a tax fine or following the additional unexpected tax was predicted to lead to participants' attempt to make up for it in subsequent tax periods both attitudinally and behaviorally. Tax evasion (i.e. risky behavior) is thought to increase as an attempt to make up for lost money (Durham, Manly, & Ritsema 2012). However, in the current study, results showed that losing money either due to an additional tax or due to an investment loss did not lead to an increase in tax evasion. Therefore, this indicates that increased evasion following audits may not be explained by the sunk cost theory, as previously argued by Durham, Manly, and Ritsema (2012). Rather, the bomb crater effect found in the present study is more likely to have occurred due to participants' perception of a lower audit probability, as opposed to an attempt to make up for money lost to paying tax fines, in the case of being caught evading.

Perceptions of higher coercive power of the government in the experimental conditions do not seem to explain why participants continued to pay their taxes as honestly as before the manipulation. Interestingly, it has previously been found that investing time and effort into a task leads to more risk aversion, and thereby to higher compliance (Durham et al., 2012). It is possible that participants in round 10 of both experimental conditions felt that they had already put in so much time and effort that they were no longer willing to incur the risk of getting caught evading, having to pay a fine, and thus losing even more money. This is in line with past studies, which show that individuals' attitudes toward risk (Holt & Laury, 2002) correlate significantly with their tax behavior. Accordingly, current results revealed that participants who were more prone to risk taking also had a greater tendency to evade their taxes after the manipulation. Risk aversion may explain why some individuals hold themselves back from evading more, even when they feel higher levels of psychological reactance and when they perceive tax authorities to be untrustworthy and unfair. Future studies should therefore continue to explore the relationship between risk aversion and tax compliance while manipulating different levels of procedural fairness.

Based on the prospect theory (Kahneman & Tversky, 1979), an additional one-off levy on bank accounts should hurt less compared to a similar tax administered in rates. On the other hand, because participants in the Compulsory Segregated Loss condition were informed of the additional tax after round 10, this could have indirectly increased their perception of tax

authorities' fairness. As such, their trust might have been slightly less negatively impacted by the manipulation (additional tax in rates). Accordingly, results revealed no significant difference in participants' perception of fairness and trustworthiness of authorities across conditions. As shown by Scholz and Lubell (1998), trust in the government and in other citizens significantly increase the likelihood of compliance above and beyond the effects of feelings of duty and of fear of being caught cheating. This would explain why compliance did not vary significantly across conditions of the present study. Conversely, participants who perceived tax authorities to show more fairness experienced significantly less psychological reactance to pay their taxes honestly, as expected. Paradoxically, the higher participants rated the trustworthiness of tax authorities, the more they identified with the statement "*If I paid my taxes as required in the experiment, I did so because the punishments for tax evasion were very severe*" (item 7: enforced compliance through punishment). Contrary to previous reports in the literature, the current analysis revealed that the higher the perceived audit probability and the higher participants' perception of the severity of fine was, the more they also identified with the statement "*If I paid my taxes as required in the experiment, I did so because to me it was obvious that this is what you do*" (item 4, voluntary compliance). Presumably, participants perceive audit probability and severity of fine as applying to others who might evade, thus ensuring fairness, which would contribute to their voluntary compliance. As expected, the higher the psychological reactance participants experienced, the lower their reported voluntary compliance. Congruently to past findings, participants who felt higher levels of psychological reactance also reported lower tax morale and rated the perceived compliance of others as significantly lower. Interestingly, there was also a significant positive relationship between voluntary compliance and the perceived compliance of others, indicating a strong motivation to behave in a socially desirable way. Participants who perceived the experimental situation to be more similar to Austria also perceived the compliance of others to be higher. However, these participants also reported a higher level of psychological reactance than those who perceived a lower similarity to Austria's situation.

Kirchler (1999) found that psychological reactance correlated positively with employers' perceived restriction of freedom, positive attitudes toward evasion, lower tax morale, and reported tendencies to resist paying taxes. Current results are congruent with these findings, whereby participants' psychological reactance differed significantly depending on which condition they were in, whereby the experimental groups lead to significantly higher reactance compared to the control groups. More specifically, participants in the Compulsory Segregated Loss as well as in the Compulsory Aggregated Loss conditions

experienced significantly higher levels of psychological reactance compared to the Investment Denial condition. However, no difference in reactance was found between the Compulsory Segregated Loss and Compulsory Aggregated Loss Groups, or between the Compulsory Segregated Loss and the Investment Loss Group, contrary to predictions. Results revealed that female participants in the Compulsory Segregated Loss condition rated the severity of the fine for evasion as significantly higher compared to male participants, while also showing a more positive attitude towards tax compliance than males. These results can be explained in terms of the additional tax representing a further restriction in participants' freedom. As the additional compulsory tax was forcefully debited from their savings account, this left them with no chance to take control over the situation in order to regain their perception of freedom of choice, except for a more pronounced tendency toward evasion on an attitudinal level. Contrary to past findings (Kirchler, 2011; Kirchler, Hoelzl, & Wahl, 2008; Kogler et al., 2013; Wenzel, 2002). however, no significant correlations were found between enforced compliance and tax behavior, such that it remains to be further explored what, in fact, deterred participants to evade their taxes.

As argued by Votavova (2014), the fact that the unexpected compulsory tax did not significantly affect tax behavior may be due to the experimental manipulation not being strong enough as to affect participants' willingness to comply. Alternatively, an additional compulsory tax may simply not affect individuals' tax honesty. For governments, this would mean that administering an unexpected additional tax on citizens' savings would produce feelings of anger due to the lack of fairness of such a measure. However, these negative feelings would still not lead to a reduction in tax compliance. Yet it seems unimaginable that no further negative repercussions would follow such unfair measures beyond feelings of anger towards the government. If trust is at the center of voluntary compliance, breaking that trust would implicate in compliance having to be achieved solely through coercion. Future studies should therefore explore the effects of this manipulation at lower detection rates, in order to further explore the importance of trust in the voluntary and honest payment of individuals' taxes.

This study is subject to a few limitations. Starting with the sample chosen, most participants were students, of whom 65% reported having no experience in paying income taxes. Furthermore, not all individuals who were asked to join the experiment agreed to participate, which may have contributed to a selection bias. Those who participated in the experiment can be argued to be particularly compliant individuals, especially due to the much higher ratio of females to males, which may further explain the high levels of tax compliance

across all conditions. Since the degree of risk aversion experienced by an individual needs to be exceptionally high in order to guide behavior in low-payoff settings (Holt & Laury, 2002), it may be that the laboratory incentive offered to participants in the present study was unrealistic compared to the real incentive of retaining hard earned income taxes.

Although psychological reactance varied across conditions and correlated strongly with participants' perception of fairness by tax authorities in the experiment, fairness scores did not vary across conditions. This is, again, indicative that the manipulation of the present experiment may not have been strong enough. On the other hand, the current experiment used a tax rate that is realistic, and if the treatments did not affect participants' compliance, it may be that in real life, implementing an unexpected additional compulsory tax on citizens' savings would not decrease trust as conjectured in the present analysis. This may be achieved, for instance, by providing individuals with enough transparency in the tax system as a means of enhancing their perception of fairness and control.

A further limitation of the current study is that participants were instructed that their earnings in the game represented an earned income, but they did not have to actually work before earning it in every round. Therefore, they did not incur particularly high sunk costs (i.e. time and effort) besides the minimal effort taken to imagine the situation. That would imply that their income in the experiment might have been perceived and treated as an endowed income as opposed to earned income (Durham et al. 2012). Future studies should aim at detangling the effects of a compulsory tax on the compliance of individuals who received an earned income in comparison with receiving an endowed income.

Finally, the additional 30% tax administered at once was forcefully and unexpectedly debited from participants' individual savings accounts, thus giving them no chance to take control over the situation. In the Compulsory Segregated Loss condition, however, participants were warned at the beginning of round 10 that 30% of their savings would be debited from their bank account in rates until the end of the game, in addition to paying the regular income tax of 40% in every round. In real life, being warned of the additional tax administered in rates would have very different implications compared to those in the experimental situation, where participants had no influence over their savings accounts. In reality, taxpayers might be able to remove their money from the bank in order to evade further compulsory taxation. This was the case with the bank deposit tax implemented in Norway in 1936, which led to large sums of money being evacuated from the country (Cowen, 2013). Therefore, the low ecological validity of the current experimental conditions might have compromised the generalizability and implications of present results.

In summary, administering an unexpected compulsory 30% tax on participants' savings did not have a significant effect on tax compliance whether it was applied at once or in rates. Similarly, losing 30% of their savings to an investment game did not lead to higher levels of tax evasion as a means of recuperating the lost money. Not only were there no differences in compliance before and after the manipulation, but no differences in tax behavior could be identified between the four relevant groups Compulsory Aggregated Loss, Compulsory Segregated Loss, Investment Loss, and Investment Denial. Psychological reactance, on the other hand, varied significantly between conditions, whereby the Compulsory Segregated Loss and the Compulsory Aggregated Loss Groups produced the highest levels of reactance compared to the control groups. Since no difference in reactance was found between the experimental groups, this implies that psychologically, it doesn't matter whether 30% of one's savings is removed at once or in rates. It can therefore be concluded that the current experimental manipulation only had an effect on tax compliance on a psychological but not on a behavioral level, and that losing one's money in rates seems not to hurt any more than it does by losing it at once. Independently of the lack of a significant effect of the manipulation on a behavioral level found in the present investigation, however, governments should not discard the abundant empirical findings supporting the significance of procedural fairness for the cultivation of voluntary tax compliance (Hofmann, Hoelzl, & Kirchler, 2008; Tyler, 1988; van Dijke & Verboon, 2010; Wenzel, 2002). Congruent with past findings, the present study results revealed that reactance was significantly higher amongst participants who were subjected to an unexpected compulsory tax compared to those who lost no additional money. The higher the psychological reactance they felt, the lower participants' perception of authorities' fairness and the lower they reported their voluntary compliance to be. These results offer compelling empirical evidence for the argument that procedural fairness is crucial for the internalization of the collective's norms. That is because being treated with fairness by authorities allows citizens to feel valued and respected as members of the collective, thus increasing their willingness to cooperate and comply with authorities (van Dijke & Verboon, 2010). Not only is voluntary compliance more economically viable for governments, but it also ensures a more positive atmosphere for both taxpayers and tax authorities, all of which can be undermined by the administration of an unexpected compulsory tax.

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Summary in German

Mit dem Aufstieg der regionalen Spannungen mit Russland seit März 2014 stehen europäische Banken unter besonderem finanziellen Druck. Dies kann schwerwiegende Folgen für die europäischen Steuerzahler bringen, einschließlich der Gefahr einer Zusatzsteuer. Eine solche drastische Maßnahme kann allerdings schwerwiegende Auswirkungen auf die künftige Bezahlung der Einkommenssteuer mit sich bringen. Frühere Studien zeigen, dass die faire Behandlung von BürgerInnen von entscheidender Bedeutung bei der Förderung der freiwilligen Steuerehrlichkeit ist. Die aktuelle empirische Studie untersucht, ob eine unerwartete Zwangssteuer die künftige Steuerehrlichkeit der TeilnehmerInnen beeinflussen kann, je nachdem, ob die Zwangssteuer zu einem Zeitpunkt oder in Raten eingehoben wird. Ein Experiment über 20 Steuerperioden wurde mit 170 Studenten durchgeführt, die entweder einer der zwei Experimentalgruppen zugeordnet wurden, in denen eine zusätzliche Zwangssteuer in unterschiedlichen Raten verabreicht wurde, oder einer Kontrollgruppe. Während aktuelle Ergebnisse keinen Unterschied in der Steuerehrlichkeit der TeilnehmerInnen auf der Verhaltensebene zeigten, hatte die Manipulation einen signifikanten Effekt auf ihre psychologische Reaktanz, ihre Steuern ehrlich abzuführen. Mögliche Gründe sowie Implikationen und Anregungen für zukünftige Studien werden im Diskussionsteil dieser Arbeit erörtert.

Appendix A

Concrete Hypotheses

Tax Compliance

H1.1: Tax compliance will be significantly lower in rounds 10 to 20 compared to compliance in rounds 1 to 10 of the Compulsory Segregated Loss Group.

H1.2: Female participants will show higher tax compliance compared to male participants across all conditions.

H1.3: Participants in the Compulsory Segregated Loss Group will show different levels of tax compliance compared to participants in the Compulsory Aggregated Loss Group.

H1.4: Participants in the Compulsory Segregated Loss Group will evade more than the Investment Loss Group.

H1.5: Participants in the Compulsory Segregated Loss Group will evade more than the Investment Denial Group.

Reactance

H2.1: Participants in the Compulsory Segregated Loss Group will experience different levels of psychological reactance compared to participants in the Compulsory Aggregated Loss Group.

H2.2: Participants in the Compulsory Segregated Loss Group will experience significantly higher reactance compared to participants in the Investment Loss Group.

H2.3: Participants in the Compulsory Segregated Loss Group will experience significantly higher reactance compared to participants in the Investment Denial Group.

Attitudes toward Risk

H3.1: There will be a negative correlation between risk attitude and tax compliance across all conditions.

H3.2: Female participants will be more risk averse than male participants across all conditions.

Tax Morale

H4.1: The more negative participants' attitudes toward evasion, the higher their tax compliance will be across all conditions.

H4.2: Male participants will be more tolerant towards tax evasion compared to female participants across all conditions.

H4.3: Participants in the Compulsory Segregated Loss Group will be more tolerant towards tax evasion compared the Investment Loss Group.

H4.4: Participants in the Compulsory Segregated Loss Group will be more tolerant towards tax evasion compared to the Investment Denial control group.

Bomb Crater Effect

H5.1: Participants will evade significantly more after rounds 3, 7, and 15 across all conditions.

H5.2: Male participants will evade more after rounds 3, 7, and 15 compared to female participants across all conditions.

Appendix B

Instructions for the Tax Game in German

Liebe(r) Teilnehmer(in)!

Die folgende Untersuchung beschäftigt sich mit dem Thema Steuern.

Sie sollen sich vorstellen, ein(e) selbständige(r) Unternehmer(in) zu sein. Sie werden in mehreren aufeinander folgenden Perioden ein Einkommen verdienen, das versteuert werden soll. Der Steuersatz beträgt 40%.

Sie verfügen über ein virtuelles Bankkonto, auf dem Ihr verdientes Geld gesammelt wird. Am Ende des Experiments wird Ihr verdientes Geld auf dem Bankkonto von der Experimentalwährung ECU in Euro umgerechnet und tatsächlich an Sie ausbezahlt. Der Umrechnungsfaktor beträgt 1 : 5 000, das heißt 5 000 ECU ergeben also 1 Euro. Wie viel Sie am Ende verdienen, hängt von Ihrem Verhalten im Experiment ab.

Die Steuerbehörden haben die Möglichkeit, Sie zu kontrollieren. Die Wahrscheinlichkeit, dass in einer Periode eine Steuerprüfung stattfindet, beträgt ungefähr 15%. Falls Sie in einer Periode geprüft werden und Sie Ihre Steuern nicht vollständig bezahlt haben, müssen Sie den fehlenden Betrag nachzahlen plus eine Strafe in gleicher Höhe. Haben Sie also zum Beispiel 200 ECU zu wenig an Steuern bezahlt, müssen Sie diese 200 ECU zurückzahlen plus eine Strafe in Höhe von 200 ECU, ergibt insgesamt 400 ECU. Ob und wann Sie kontrolliert wurden, erfahren Sie am Ende jeder Periode.

Bitte lesen Sie die Instruktionen sorgfältig, Sie können auch während des Experiments jederzeit auf sie zurückgreifen. Die Teilnahme am Experiment erfolgt natürlich anonym und alle Daten werden vertraulich behandelt und nur zu wissenschaftlichen Zwecken verwendet.

Viel Erfolg!

Appendix C

Instructions for the Risk Attitude Task in German

Liebe(r) Teilnehmer(in)!

Die folgende Aufgabe beschäftigt sich mit finanziellen Entscheidungen.

Sie werden gebeten, sich jeweils zwischen zwei Auszahlungsoptionen A und B zu entscheiden. Die Optionen A und B unterscheiden sich in den ausgezahlten Geldbeträgen und in den Eintrittswahrscheinlichkeiten. Lesen Sie sich die Optionen sorgfältig durch und geben Sie dann Ihre Präferenz für eine der beiden Optionen an. Insgesamt gibt es 10 solche Entscheidungen.

Am Ende wird eine Ihrer 10 Entscheidungen per Zufall ausgewählt und tatsächlich durchgespielt. Der Gewinn wird zusätzlich zum verdienten Geld im Steuerexperiment an Sie ausbezahlt.

Bitte bearbeiten Sie die Aufgabe sorgfältig.

Vielen Dank!

Appendix D

Post-Experimental Questionnaire in German

1. Die Steuerbehörde I Experiment hat sich gegenüber den Steuerzahlern fair verhalten.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

2. Die Steuerbehörde im Experiment hat sich als vertrauenswürdig erwiesen.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

3. Die Wahrscheinlichkeit, im Experiment bei der Steuerhinterziehung erwischt zu werden, war hoch.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

4. Die Strafe für Steuerhinterziehung im Experiment was hoch.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

5. Wenn ich meine Steuern im Experiment ehrlich bezahlt habe, dann tat ich es, weil es für mich selbstverständlich war.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

6. Wenn ich meine Steuer im Experiment ehrlich bezahlt habe, dann tat ich es, weil viele Steuerprüfungen stattfanden.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

7. Wenn ich meine Steuer im Experiment ehrlich bezahlt habe, dann tat ich es, weil Steuerhinterziehung sehr hart bestraft wurde.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Stimme gar nicht zu

Stimme voll zu

8. Die Vorschriften der Steuerbehörde im Experiment lösten bei mir Widerstand aus.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Stimme gar nicht zu

Stimme voll zu

9. Wenn im Experiment etwas verboten war, hatte ich das Bedürfnis, das Verbotene erst Recht zu machen.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Stimme gar nicht zu

Stimme voll zu

10. Im Experiment wurde ich zornig, wenn meine Freiheit durch die Steuerbehörde eingeschränkt wurde.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Stimme gar nicht zu

Stimme voll zu

11. Wenn ich im Experiment gezwungen wurde, etwas zu tun, dachte ich „am liebsten würde ich genau das Gegenteil machen“.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Stimme gar nicht zu

Stimme voll zu

12. Wie ähnlich haben Sie die Situation im Experiment im Vergleich zur Situation in Österreich erlebt?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Sehr unähnlich

Sehr ähnlich

13. Ihrer Meinung nach, ist Steuerhinterziehung grundsätzlich nie gerechtfertigt, immer gerechtfertigt oder irgendwas dazwischen?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Nie gerechtfertigt

Immer gerechtfertigt

14. Wie viel Prozent der abzuführenden Steuern glauben Sie, dass die anderen Teilnehmer im Durchschnitt bezahlt haben?

- ☐ 0%-10%
- ☐ 11%-20%
- ☐ 21%-30%
- ☐ 31%-40%
- ☐ 41%-50%
- ☐ 51%-60%
- ☐ 61%-70%
- ☐ 71%-80%
- ☐ 81%-90%
- ☐ 91%-100%

15. Geschlecht

- ☐ männlich
- ☐ weiblich

16. Geburtsjahr

17. Studienrichtung

- ☐ Psychologie
- ☐ Wirtschaft
- ☐ Soziologie
- ☐ Politikwissenschaft
- ☐ Publizistik
- ☐ Rechtswissenschaft
- ☐ Andere Sozialwissenschaft
- ☐ Andere Studienrichtung

18. Nationalität

- ☐ Österreich
- ☐ Deutschland
- ☐ Europa
- ☐ Andere

19. Sind Sie Steuerzahler

- ☐ Ja
- ☐ Nein

Curriculum Vitae

Name Carolina Jurado Mueller
Email carolina.mueller@gmail.com

Education

- | | |
|-------------------|--|
| 09.2009 – 01.2015 | Psychology (Diploma Study Course)
Major in Economic Psychology
Minor in Clinical and Health Psychology
University of Vienna
Austria |
| 02.2007 – 11.2008 | Psychology Bachelor
University of Queensland
Australia |
| 06.2005 – 09.2006 | Bachelor
Psychology, Business, and Marketing
Central Queensland University at the Hartford Institute
Singapore |
| 07.2004 – 06.2005 | Theater Arts Foundation (Acting)
Lasalle CIA
Singapore |
| 07.2002 – 06.2004 | International Baccalaureate (IB) Diploma
International Baccalaureate Organization
Overseas Family School
Singapore |

Professional Experience

- | | |
|-------------------|--|
| 01.2014 - present | 360kompany GmbH (Vienna, Austria)

<i>Position:</i> Marketing and Customer Service Specialist
<i>Tasks:</i> <ul style="list-style-type: none">• Online marketing• Creative development of newsletter content• Customer survey development, administration, and analysis• Customer care via email and telephone |
| 02.2013 – 12.2013 | Gesellschaft für Personalentwicklung (GfP, Society for Human Resource Development) (Vienna, Austria)

<i>Position:</i> Project Manager and Research Assistant
<i>Tasks:</i> <ul style="list-style-type: none">• Questionnaire development for the assessment of employee satisfaction in a multinational company• Data collection, statistical analysis, interpretation, and evaluation |

- Mystery shopping and customer experience evaluation in a large company
- Research and literature review on various organizational and industrial psychology topics
- Customer care via email
- Back office activities

11.2010 – 01.2013

Yelster Digital GmbH (Vienna, Austria)

Position: Customer Service Specialist

Tasks:

- Educating customers about digital privacy
- Helping customers control their digital footprint

03.2010 – 03.2011

University of Vienna, Faculty of Psychology
Department of Developmental Psychology (Vienna Austria)

Position: Teaching Assistant (Developmental Psychology)

Tasks:

- Supporting professors in various academic activities
- Development of exam items
- Book translation from German to English “Wieviel Mutter braucht ein Kind?” (“How much mom to give a child?”) by Uni. Prof. Liselotte Ahnert

07.2009 – 08.2009

Internationales Familienzentrum (International Family Center) (Frankfurt a/M, Germany)

Position: Intern

Tasks:

- Various daily activities with patients in different psychiatric divisions
- Participation in individual and group therapy conducted in English, German, and Spanish
- Participation in Ergo-Therapy group sessions, out-patient house visits, and rehabilitation clinic

03.2009 – 07.2009

Österreichisches Institut für Kinderrechte und Elternbildung
(Austrian Institute for Children’s Rights and Parental Education) (Vienna, Austria)

Position: Intern

Tasks:

- Research and statistical analyses in psychology and sociology topics such as the importance of parental involvement in their children’s school life
- Publication of an article about the effects of poverty during childhood and the deleterious effects on child development and school performance