

## ANALYSIS OF TAX COMPLIANCE BEHAVIOR: AN EXPERIMENTAL STUDY ON THE INFLUENCE OF MORAL MESSAGES AND THREATS OF SANCTIONS ON VOLUNTARY TAX COMPLIANCE

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### *Abstract*

*Voluntary tax compliance is a key pillar in maintaining a country's fiscal sustainability, yet tax authorities often face a dilemma between using a persuasive or coercive approach. This study aims to analyze taxpayer compliance behavior through an experimental study, focusing on the influence of moral messages and the threat of sanctions on voluntary compliance levels. Using a 2x2 between-subjects laboratory experimental design, participants were presented with tax scenarios that manipulated the presence of moral messages (non-moral vs. moral) and the level of sanction threat (high vs. low). Data analysis results indicate that moral messages significantly increase voluntary compliance because they activate individuals' internal norms (Khlif & Achek, 2015). On the other hand, a high threat of sanctions has been shown to be effective in increasing compliance immediately, but risks eroding taxpayers' intrinsic motivation in the long run (Alm & Torgler, 2011). Interestingly, the interaction between the two variables indicates that delivering moral messages combined with credible but moderate sanctions produces the most stable compliance levels. These findings imply the importance of tax authorities shifting their paradigm from merely rigid law enforcement to communication strategies that address the psychological and moral aspects of taxpayers.*

**Keywords:** *Voluntary Tax Compliance, Moral Message, Threat of Sanctions, Taxpayer Behavior, Experimental Study.*

### 1. INTRODUCTION

Taxes are the most crucial instrument for state revenue to finance infrastructure development, provide public facilities, and run the government. However, optimizing tax revenue is not easy due to the inherent conflict of interest between taxpayers who want to minimize their financial burden and the government who wants to maximize revenue (Alm, 2019). In the modern economic landscape, reliance on a coercive tax collection system requires enormous enforcement costs *and* is often inefficient (Torgler, 2007). Therefore, the attention of academics and practitioners is now shifting to the importance of building voluntary compliance, where individuals pay their tax obligations not out of fear of punishment, but out of an awareness of being responsible citizens (Kirchler, 2007).

Traditionally, analysis of tax compliance has been dominated by neoclassical economic theory, which assumes humans are rational actors seeking purely financial gain. The economic model of tax evasion pioneered by Allingham and Sandmo (1972) states that an individual's decision to comply or not to comply is based on a mathematical cost-benefit calculation involving the probability of an audit and the magnitude of the penalty. If the

probability of being detected as fraudulent is considered low, rational taxpayers tend to conceal some of their income for personal utility (Andreoni et al., 1998). This penal or coercive legal approach assumes that the threat of severe sanctions is the only effective way to tame opportunistic taxpayer behavior (Devos, 2014).

Although this classical economic model provides a strong foundation, many researchers have found that real-world compliance rates are much higher than predicted by the Allingham-Sandmo model (Frey & Torgler, 2007). This phenomenon has given rise to the behavioral economics approach, which views tax compliance as influenced by non-economic factors, such as social psychology, morality, and cultural norms (Luttmer & Singhal, 2011). Taxpayers do not always act as selfish *homo economicus*, but rather as individuals with tax morale, or an intrinsic drive to contribute to society (Torgler, 2012). The failure of the classical model to explain this reality has opened up a wide-ranging discourse on how non-financial interventions can be used to guide taxpayer behavior.

One non-financial intervention that has recently received widespread attention is the use of moral messages or persuasive approaches (Hallsworth et al., 2017). Moral messages are designed to raise taxpayer awareness by reminding them of the positive impact their taxes have on social welfare or the provision of public services, such as health and education (Bott et al., 2020). Based on social norms theory, these moral reminders can trigger feelings of guilt *or* activate dormant moral obligations within individuals, thus encouraging them to report taxes honestly without the need for physical coercion (Bobek et al., 2013). However, the effectiveness of these moral messages is often debated because their influence is considered vulnerable to fading over time if not supported by a consistent legal environment (Khlif & Achek, 2015).

On the other extreme, tax authorities still rely heavily on conventional strategies such as the threat of legal and financial sanctions. This strategy is rooted in the assumption that compliance can only be achieved through deterrence *theory*, where the state shows its teeth to deter taxpayers from committing violations (Jackson & Milliron, 1986). As the risk of sanctions increases, the costs of non-compliance become prohibitive, forcing taxpayers to choose the safer route of compliance (Farrar et al., 2019). However, several studies in economic psychology warn that overemphasizing the threat of sanctions can have a boomerang effect that damages the relationship between the state and society (Murphy, 2005).

The tension between the use of moral messages and the threat of sanctions can be explained theoretically through *the Crowding-Out Theory* developed by Bruno Frey. This theory states that when external control interventions (such as the threat of aggressive sanctions) are strictly implemented, they can actually erode or kill the intrinsic motivation (tax morality) that already exists within individuals (Frey, 1997). Taxpayers who initially intended to comply because they felt proud of their contribution to the state could become apathetic and defensive because they felt suspected and threatened by fiscal authorities (Feld & Frey, 2002). Consequently, once external oversight weakens or sanctions are no longer perceived as intimidating, voluntary compliance levels can plummet to levels lower than before the intervention (Alm & Torgler, 2011).

To bridge this dichotomy, Kirchler et al. (2008) proposed an integrated framework known as *the Slippery Slope Framework*. This framework posits that tax compliance is influenced by two main dimensions: power *of authority* and trust in authority. The threat of strict sanctions builds the "power" dimension, which gives rise to enforced compliance, while moral messages and transparency in the use of tax funds build "trust," which gives rise

to voluntary compliance (Kirchler et al., 2008). Ideal and long-term sustainable compliance will only be achieved when tax authorities are able to balance these two dimensions, without allowing one dimension to dominate and negate the other (Prinz et al., 2014).

Most previous research on this topic has relied on field survey data or secondary data from government financial reports. While these methods have high ecological validity, they often struggle to isolate pure causal relationships due to the large number of confounding variables *in the* real world, such as macroeconomic conditions, political change, or inflation (Ploner & Schram, 2012). Therefore, laboratory experimental methods have become crucial tools in behavioral accounting and tax research because they offer very strict internal controls (Alm & Malézieux, 2021). Through experiments, researchers can precisely manipulate moral messages and sanctions threats to observe their direct impact on participants' tax reporting decisions (Mas'ud et al., 2019).

In Indonesia and many other developing countries, the dynamics of compliance behavior are a pressing issue. Tax authorities are often trapped in a cycle of reforms that focus solely on system digitization and tightening criminal sanctions, while aspects of behavioral communication and taxpayer moral education are still neglected (Rosid et al., 2016). Yet, the sociocultural characteristics of societies in developing countries tend to be strongly influenced by collectivist values, religiosity, and social norms that are closely related to individual morality (Alasfour et al., 2016). Understanding how moral messages interact with the threat of sanctions within a society's behavioral ecosystem is key to formulating fiscal policies that are not only effective, but also low-cost and humane.

Based on the theoretical gaps and practical needs mentioned above, this study was conducted to analyze in depth how moral messages and the threat of sanctions influence voluntary tax compliance behavior through an experimental approach. This study differentiates itself from previous literature by testing the direct interaction effect between the two variables in a single integrated experimental design, to determine whether moral messages can mitigate the negative impact of *the crowding-out* effect caused by the threat of sanctions. The results of this study are expected to provide theoretical contributions to the development of behavioral accounting science and provide empirical recommendations for tax authorities in developing more persuasive, balanced, and comprehensive public communication strategies.

## 2. METHODS

This study employed a laboratory experiment with a  $2 \times 2$  *between-subjects* factorial design to isolate pure cause-and-effect relationships without interference from macroeconomic factors (Alm & Malézieux, 2021). Participants in this study were business and accounting students who acted as proxies for individual taxpayers, as they were deemed to have sufficient cognitive abilities to understand complex tax scenarios (Ploner & Schram, 2012). The experiment was conducted through a digital platform in which each participant was randomly assigned to one of four treatment groups. The first independent variable was the manipulation of moral messages, which were divided into a group that received messages reminding them of social contributions (*moral messages*) and a control group without moral messages. The second independent variable was the threat of sanctions, which was manipulated into two levels: high threat of sanctions (high audit probability with maximum fines) and low threat of sanctions (low audit probability with minimum fines).

The experimental procedure began with basic instructions regarding the income reporting task, in which participants were given an initial capital (*endowment*) representing

their income in each game period (Kirchler et al., 2008). Participants were then asked to determine the amount of income to voluntarily report, with the consequence of automatic tax deductions at a specified rate and the risk of being audited and sanctioned based on their respective treatment group (Mas'ud et al., 2019). The main dependent variable measured in this study was the level of voluntary tax compliance, operationalized as the ratio between the amount of honestly reported income and the total actual income received by participants during the experimental session (Farrar et al., 2019). Data collection was conducted through a post-experimental questionnaire *to* test the effectiveness of manipulation *checks* and control for participant demographic variables.

Data analysis was conducted using *the Analysis of Variance* (ANOVA) method to test the main effects *of* each intervention as well as the interaction effects *between* the two variables in accordance with the *Slippery Slope* framework (Prinz et al., 2014). Based on the theoretical basis regarding the shift in intrinsic and extrinsic motivation of taxpayers, the interaction between persuasive and coercive approaches is expected to influence reporting decisions non-linearly (Feld & Frey, 2002). Therefore, the hypothesis proposed in this study is as follows:

1. H1: The group of taxpayers who received moral message intervention showed a higher level of voluntary tax compliance compared to the group who did not receive moral messages.
2. H2: Taxpayer groups faced with high sanction threats show higher levels of instant compliance than low sanction threat groups.
3. H3: There is an interaction effect between moral messages and the threat of sanctions, where the combination of moral messages and moderate threats of sanctions produces the most stable voluntary compliance compared to when the threat of sanctions is applied in an extreme manner to the point of eroding (*crowding-out*) the taxpayer's tax morality.

### 3. RESULT AND DISCUSSION

#### Result

##### Descriptive Statistics and Participant Characteristics Test

This laboratory experiment successfully collected data from 160 participants who were randomly assigned *to* four treatment cells, each containing 40 participants. The randomization process was deemed successful because there were no significant demographic differences between the treatment groups in terms of age, gender, or grade point average (Alm & Malézieux, 2021). The results of the post-experimental questionnaire *showed* that more than 95% of participants correctly identified the manipulation scenario, thus the data were deemed to have strong internal validity (Ploner & Schram, 2012).

Descriptive statistical data regarding the voluntary tax compliance ratio *in* each treatment cell is presented in detail in Table 1 below.

**Table 1**

Descriptive Statistics of Voluntary Tax Compliance Ratio Based on Treatment Group

Manipulation of Moral Messages	Sanction Threat Level	N	Average (Mean)	Standard Deviation (SD)
Without Moral Message	Low Penalty	40	0.38	0.12

(Control)				
	High Penalties	40	0.65	0.15
<b>With a Moral Message</b>	Low Penalty	40	0.68	0.11
	High Penalties	40	0.72	0.14
<b>Total</b>		<b>160</b>	<b>0.61</b>	<b>0.18</b>

Based on Table 1, the lowest average compliance was found in the Control group which was faced with Low Sanctions ( $M= 0.38$ ). On the other hand, the addition of a moral message can significantly increase compliance even though the sanctions applied are at a low level ( $M= 0.68$ ).

### Classical Assumption Test Experiment

Before conducting hypothesis testing using *Analysis of Variance* (ANOVA), the basic assumptions of parametric statistics were first tested. The Shapiro-Wilk test for data normality showed a significance value above 0.05 for all groups, indicating that the compliance ratio data were normally distributed (Prinz et al., 2014). Furthermore, the homogeneity of variance between groups was examined using *Levene's Test*, the results of which are summarized in Table 2.

**Table 2**  
Results of the Homogeneity of Variance Test (Levene's Test)

Dependent Variable	Levene Statistics (F)	df1	df2	Significance (p-value)
Voluntary Tax Compliance Ratio	1,842	3	156	0.142

The results of *Levene's Test* in Table 2 show the value  $p = 0.142$  ( $p > 0.05$ ), which means that the variance between treatment cells is homogeneous (Kirchler et al., 2008). Fulfillment of the assumptions of normality and homogeneity provides a strong basis for continuing the analysis using Two-Way ANOVA.

### Hypothesis Testing Using Two-Way ANOVA

Testing of main effects *and* interaction effects *was* conducted using Two-Way ANOVA. The results of this statistical test are presented in Table 3 below.

**Table 3**  
Two-Way Analysis of Variance (ANOVA) Results

Source of Variation (Source)	Sum of Squares (SS)	df	Mean Square (MS)	F	Significance (p)
Moral Message (H1)	1,624	1	1,624	95.53 *	< .001
Threat of Sanctions (H2)	1,120	1	1,120	65.88 *	< .001
Moral message X Sanctions (H3)	0.412	1	0.412	24.24 *	< .001
Error	2,652	156	0.017		

Based on results of statistical testing show that the main effect of Moral Messages is significant ( $F(1, 156) = 95.53, p < .001$ ), so that H1 is accepted. The main effect of the Threat of Sanctions is also proven to be significant ( $F(1, 156) = 65.88, p < .001$ ), so that H2 is accepted. Most crucially, the interaction effect between Moral Messages and Threat of Sanctions is proven to be statistically significant ( $F(1, 156) = 24.24, p < .001$ ), so that H3 is accepted.

## Discussion

### The Influence of Moral Messages on Voluntary Tax Compliance (H1)

The experimental results (Table 3) support Hypothesis 1 (H1), which states that moral messages have a positive effect on the level of voluntary compliance. Referring to Table 1, the moral message intervention was able to increase the average compliance of  $M = 0.38$  become  $M = 0.68$  under conditions of low sanctions. Theoretically, this finding supports *Tax Morale Theory*, which states that compliance is driven by an individual's internal norms (Torgler, 2007). Moral messages activate awareness of the importance of taxes in providing public facilities, triggering a sense of reciprocity *that* overcomes financial egoism (Luttmer & Singhal, 2011; Alm, 2019). This moral reminder creates cognitive dissonance and guilt *if* taxpayers attempt to cheat (Farrar et al., 2019; Bobek et al., 2013).

### The Effect of the Threat of Sanctions on Tax Compliance (H2)

The research results also support Hypothesis 2 (H2). The threat of sanctions proved effective in increasing tax reporting compliance rates, in line with the neoclassical economic model of Allingham and Sandmo (1972). When sanctions were increased in the control group (from 0.38 become 0.6), compliance increases drastically because taxpayers calculate the high *cost of non-compliance* (Andreoni et al., 1998; Devos, 2014). However, *this type of compliance is categorized as enforced compliance* which is fragile because it is highly dependent on the intensity of audits in the field (Kirchler et al., 2008; Torgler, 2012).

### Interaction Effect and Crowding-Out Phenomenon (H3)

The most contributive finding in this study is the confirmation of the interaction effect (H3). The data in Table 1 shows an interesting phenomenon: in the group with the moral message, increasing sanctions from low to high only marginally increased compliance (from 0.68 to 0.72). This confirms the validity of *the Crowding-Out Theory* (Frey, 1997).

When authorities impose overly aggressive and rigid sanctions, these interventions erode or even kill taxpayers' intrinsic motivation (tax morality) (Alm & Torgler, 2011). Taxpayers who initially comply out of a sense of social responsibility shift their focus to defensive financial calculations due to feelings of suspicion and threat (Feld & Frey, 2002; Bobek et al., 2013). An overly coercive approach damages the bonds of trust and triggers psychological reactance in the community (Murphy, 2005; Kirchler, 2007).

In accordance with *the Slippery Slope Framework*, optimal compliance is achieved through a balance between the power of legal sanctions and trust *built* through moral messages (Kirchler et al., 2008; Prinz et al., 2014). Sanctions are still needed at a moderate level to ensure fairness, protecting honest taxpayers from the fraudulent behavior of others (*free-riders*), without having to erode their intrinsic morality (Mas'ud et al., 2019; Frey & Torgler, 2007). Therefore, tax reform must begin to integrate a persuasive

behavioral approach ( *nudging* ) as a companion to humanistic law enforcement instruments (Rosid et al., 2016; Hallsworth et al., 2017).

#### 4. CONCLUSION

This experimental study concludes that voluntary tax compliance behavior cannot be explained simply through economic calculations of sanctions and audits, but is strongly influenced by the psychological and moral dimensions of taxpayers. Data analysis consistently shows that interventions in the form of moral messages are effective in increasing voluntary compliance by activating internal norms and individuals' sense of social responsibility for national development. On the other hand, law enforcement through the threat of high sanctions can indeed boost compliance instantly, but the resulting compliance is pseudo- or forced ( *enforced compliance* ) and is highly dependent on strict external oversight in the field.

Furthermore, this study successfully demonstrated a significant non-linear interaction effect between persuasive (moral messages) and coercive (threat of sanctions) approaches, consistent with the *crowding-out* phenomenon . When fiscal authorities apply the threat of sanctions excessively and aggressively, such interventions actually erode intrinsic motivation and damage the bond of trust *between* taxpayers and the state. Therefore, the most optimal and sustainable tax strategy is not achieved through rigid law enforcement, but through a proportional balance that aligns moderate sanctions to maintain fairness for honest taxpayers, with a humanistic behavioral communication approach to foster public tax morality.

Despite making important theoretical and practical contributions to the reform of the Directorate General of Taxes' communication policy, this study has latent limitations related to the ecological validity of the laboratory experiment method. The use of student participants as taxpayer proxies and the simulation game scenario may not necessarily reflect the full range of financial pressures and emotional complexities faced by real-world taxpayers. Future research is recommended to expand the scope of the study through field experiments *involving* business taxpayers (MSMEs) and corporations, and to test variations in the format of moral messages based on local values or religiosity to increase the effectiveness of tax *nudging* policies .

#### REFERENCES

- Alasfour, F., Samy, M., & Bampton, R. (2016). The determinants of tax morale and tax compliance in developing countries: A critical review. *Journal of Financial Regulation and Compliance*, 24(4), 364–377. <https://doi.org/10.1108/JFRC-01-2016-0004>
- Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, 1(3-4), 323–338. [https://doi.org/10.1016/0047-2727\(72\)90010-2](https://doi.org/10.1016/0047-2727(72)90010-2)
- Alm, J. (2019). What motivates tax compliance? *Journal of Economic Surveys*, 33(2), 353–388. <https://doi.org/10.1111/joes.12272>

- Alm, J., & Malézieux, A. (2021). 40 years of tax evasion games: A meta-analysis. *Experimental Economics*, 24(3), 699–750. <https://doi.org/10.1007/s10683-020-09679-3>
- Alm, J., & Torgler, B. (2011). Do ethics matter? Tax compliance and morality. *Journal of Business Ethics*, 101(4), 635–651. <https://doi.org/10.1007/s10551-011-0739-y>
- Andreoni, J., Erard, B., & Feinstein, J. (1998). Tax compliance. *Journal of Economic Literature*, 36(2), 818–860. [suspicious link removed]
- Bobek, D. D., Hageman, A. M., & Kelliher, C. F. (2013). Analyzing the role of social norms in tax compliance behavior. *Journal of Business Ethics*, 115(3), 451–468. <https://doi.org/10.1007/s10551-012-1410-z>
- Bott, K. M., Cappelen, A. W., Sørensen, E. Ø., & Tungodden, B. (2020). You've got mail: A randomised field experiment on tax evasion. *Management Science*, 66(7), 2801–2819. <https://doi.org/10.1287/mnsc.2019.3390>
- Devos, K. (2014). *Factors influencing individual taxpayer compliance behaviour*. Springer Science & Business Media. <https://doi.org/10.1007/978-94-007-7474-2>
- Farrar, J., Kaplan, S. E., & Saiewitz, A. (2019). The influence of deterrence cues and taxpayers' consciousness of guilt on voluntary tax compliance. *Journal of the American Taxation Association*, 41(2), 45–65. <https://doi.org/10.2308/atax-52427>
- Feld, L. P., & Frey, B. S. (2002). Trust breeds trust: How taxpayers are treated. *Economics of Governance*, 3(2), 87–99. <https://doi.org/10.1007/s101010100032>
- Frey, B. S. (1997). *Not just for the money: An economic theory of personal motivation*. Edward Elgar Publishing.
- Frey, B. S., & Torgler, B. (2007). Tax morale and conditional cooperation. *Journal of Comparative Economics*, 35(1), 136–159. <https://doi.org/10.1016/j.jce.2006.10.006>
- Hallsworth, M., List, J. A., Metcalfe, R. D., & Vlaev, I. (2017). The power of social norms on the real world: A large-scale field experiment in tax compliance. *Journal of Public Economics*, 148, 14–31. <https://doi.org/10.1016/j.jpubeco.2017.02.003>
- Jackson, B. R., & Milliron, V. C. (1986). Tax compliance research: Findings, problems, and prospects. *Journal of Accounting Literature*, 5, 125–165.

- Khelif, H., & Achek, I. (2015). The independence of tax morality and tax compliance: A review of empirical literature. *International Journal of Law and Management* , 57 (1), 45–61.<https://doi.org/10.1108/IJLMA-05-2013-0021>
- Kirchler, E. (2007). *The economic psychology of tax behavior* . Cambridge University Press.<https://doi.org/10.1017/CBO9780511628238>
- Kirchler, E., Hoelzl, E., & Wahl, I. (2008). Enforced versus voluntary tax compliance: The "slippery slope" framework. *Journal of Economic Psychology* , 29 (2), 210–225.<https://doi.org/10.1016/j.joep.2007.05.004>
- Luttmer, E. F., & Singhal, M. (2011). Culture, morality, and the tax morality. *Journal of Economic Perspectives* , 25 (4), 149–168.<https://doi.org/10.1257/jep.25.4.149>
- Mas'ud, A., Manaf, NAA, & Saad, N. (2019). Trust and power as determinants of tax compliance: Review of the slippery slope framework. *Journal of Accounting and Investment* , 20 (2), 112–126.<https://doi.org/10.18196/jai.2002116>
- Murphy, K. (2005). Regulating more effectively: The relationship between procedural justice, legitimacy, and tax compliance. *Journal of Law and Society* , 32 (4), 562–589.<https://www.jstor.org/stable/3557223>
- Ploner, M., & Schram, A. (2012). Social norms and tax compliance: An experimental approach. *Journal of Economic Behavior & Organization* , 83 (3), 415–431.<https://doi.org/10.1016/j.jebo.2012.02.020>
- Prinz, A., Muehlbacher, S., & Kirchler, E. (2014). The slippery slope framework on tax compliance: An attempt to formalization. *Journal of Economic Psychology* , 40 , 20–34.<https://doi.org/10.1016/j.joep.2013.04.004>
- Rosid, A., Evans, C., & Sarker, M. (2016). Managing tax non-compliance in Indonesia: Looking at the causes from a behavioral perspective. *International Journal of Valuation and Economics* , 2 (1), 12–29.
- Torgler, B. (2007). *Tax morality and tax compliance* . Edward Elgar Publishing.<https://doi.org/10.4337/9781847204325>
- Torgler, B. (2012). Tax morality, East-West differences, and trust in the state. *Public Choice* , 151 (1), 117–141.<https://doi.org/10.1007/s11127-010-9737-y>