October, 2025 ERI-CES DP 25/05

Whistleblowing and conspiracy effect

> Adriana Alventosa
Universitat de València and ERI-CES, Spain
> Altair Breckwoldt
Universitat de València, Spain
> Penélope Hernández
Universitat de València and ERI-CES, Spain

eri-ces www.erices.es

Discussion Papers in Economic Behaviour

Universitat de València

Whistleblowing and conspiracy effect

Adriana Alventosa,[a,*] Altair Breckwoldt [b] and Penélope Hernández [a]

21 October 2025

[a] *ERI-CES, University of Valencia*
[b] *University of Valencia*

Abstract

We experimentally explore VAT evasion under different auditing regimes: a Tax Agency with a known probability of auditing, a Tax Agency with an unknown probability of auditing and a Whistleblowing regime where buyers can report on tax evasion. Evasion is higher when there is a Tax Agency with risk than when there is a Tax Agency with ambiguity randomly auditing. Moreover, evasion is higher when there is a whistleblowing policy than when there is a Tax Agency randomly auditing. Our results suggest an ambiguity aversion effect counteracted by a conspiracy effect.

Keywords: tax evasion, whistleblowing, ambiguity aversion, conspiracy effect, experimental economics

JEL classification: C92, D81, H26.

[*] **Corresponding author.** E-mail address: Adriana.Alventosa@uv.es. Address: Av. de los Naranjos s/n, 46022, Valencia, Spain.

1. Introduction

Tax evasion is relevant because of its close relation with the underground economy. However, most part of the literature on tax evasion relates to direct (Alm. 2012) rather than to indirect taxes, such as VAT[1](Balafoutas et al. 2015). A potential mechanism that fiscal authorities in OECD countries are introducing to overcome tax evasion is to rely on citizens as whistleblowers. The effect of this mechanism is promising (Masclet et al. 2019), but still novel.

However, in the direct comparison of auditing by a Tax Agency (TA) and by whistleblowers, two issues arise. Firstly, the nature of the monitor differs, as individuals do not necessarily behave equally if they can be randomly monitored by nature (exogenous monitoring) or be reported (endogenous monitoring). Secondly, while the probability that a TA audits can be known (risky monitoring), the probability that someone blows the whistle on you is unknown (ambiguous monitoring).

In this work, we experimentally explore the effect of exogenous vs. endogenous monitoring under two perspectives: risk and ambiguity.

2. Theoretical model and experimental design

2.1. Baseline Model

The VAT-Evasion Game is a sequential game with two players, $i = S, B$, a Seller and a Buyer, each with an endowment ω, where the Seller has provided a service for a price p to the Buyer. Players decide whether to evade or not the associated taxes, the VAT rate, $0 < v < 1$, paid by the Buyer, and the profit tax rate, $0 < t < 1$, paid by the Seller.

In *Stage 1*, the Seller must decide whether to offer a VAT-including invoice (Not Evade, NE) or a VAT-excluding payment (Evade, E). If the Seller chooses NE, there is no evasion and the game ends. If the Seller chooses E, players move onto Stage 2.

In *Stage 2* the Buyer can decide whether to accept such proposal (Evade, E) or not (Not Evade, NE). If the Buyer chooses NE there is no evasion

[1]This issue is relevant because VAT is one of the most important sources of tax income (Enache, 2020).

and the game ends. If the Buyer chooses E, there will be evasion and players will move onto Stage 3.

In *Stage 3* the Tax Agency (nature) randomly audits each Buyer-Seller transaction with a probability $0 < q < 1$. If there has been evasion, both players pay a fine rate $0 < f < 1$ over the price.

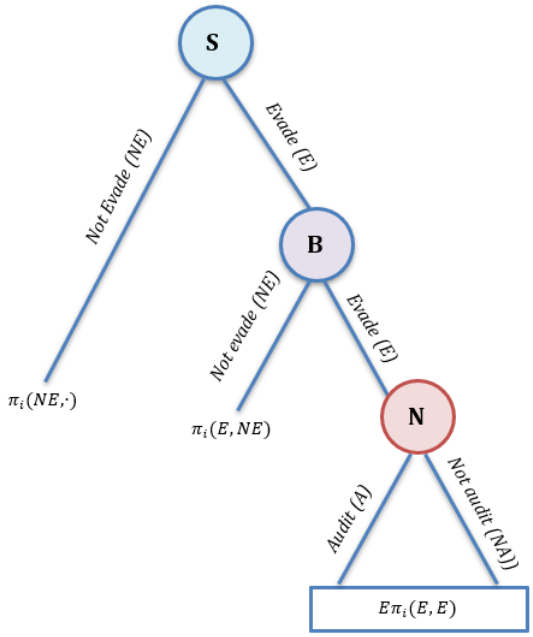

Figure 1: The VAT Evasion Game for the Baseline Model

Figure 1 shows the game in extensive form, with the payoff functions:

$$\pi_S(NE,\cdot) = \pi_S(E,NE) = (1-t)p \tag{1}$$

$$\pi_B(NE,\cdot) = \pi_B(E,NE) = \omega - (1+v)p \tag{2}$$

$$E\pi_S(E,E) = (1-q)p + q(1-f)p \tag{3}$$

$$E\pi_B(E,E) = (1-q)(\omega - p) + q(\omega - (1+f)p) \tag{4}$$

2.2. Experimental design and procedures

We consider that $\omega = 20$, $p = 10$, $t = v = 0.1$ and $f = 0.2$. This way, both receive a payoff of 9 if there is no evasion, 8 in case of caught evasion and 10 if there is evasion that is not caught.[2]

We consider three treatments: Tax Agency with Risk (TAR), Tax Agency with Ambiguity (TAA) and Whistleblowing (W).

The difference between TAR and TAA lies on *the nature of the uncertainty of being audited*. In TAR, auditing probability q was given (risk), whereas in TAA only information about how it was obtained was given (uncertainty).

We also explore the impact of *who does the auditing process*. In W, Stage 3 was implemented by the Buyer (person), rather than by nature, i.e., the Buyer decided whether to blow the whistle and report the evasion (audit) or not (not audit).

The treatments were equivalent in terms of payoffs. We also make them equivalent in terms of expected payoffs by first implementing W and eliciting the frequency with which Buyers blew the whistle and using it as the audit probability in TAR and TAA. i.e. $\lambda = q$.

The experiment was implemented at LINEEX (University of Valencia) in September 2021 and 2022. 144 subjects participated in 3 sessions with 48 subjects in each treatment. Subjects were randomly arranged in groups of 6, with 3 being assigned the role "Buyer" and 3 the role "Seller". In each round, they were randomly matched with a participant of the other type of his/her group (stranger-matching within clusters). They played 20 rounds. The experiment was expressed in points, where 3 points = 1 Euro. Each session lasted around 1 hour and the average payoff was 16.20 Euros.[3]

3. Predictions and hypotheses

Proposition 1. *In the one-shot VAT-Evasion Game with $v = t$:*

[2]These payoffs are symmetric between partners as to avoid inequity aversion in the lab.

[3]The experimental implementation was approved by LINEEX, as it conforms to their charter of protocols for running behavioural experiments.

- *If $q \leq q^*$, then the best response for $i = S, B$ is $a_i = E$.*
- *If $q > q^*$, then the best response for $i = S, B$ is $a_i = NE$.*

where $q^* = v/f$

In our case, $q^* = 1/2$. Applying the Folk Theorem in finitely repeated games, the prediction for the repeated game with $T = 20$ follows that from the one-shot game (Benoit and Krishna, 1985).

Analysing whistleblowing attitudes, payoffs of whistleblowing are strictly smaller than payoffs of not whistleblowing (8<10), so Buyers should never blow the whistle and $\lambda = 0$. Hence, $q = \lambda = 0$ satisfies the condition from Proposition 1 for the values considered. The type of uncertainty should not generate different evasion attitudes as long as the way we obtain q is explained to the participants in TAA. Finally, who implements the auditing does not affect payoffs so it should not affect selfish agents' evasion attitudes either. We present these predictions in four hypotheses to be tested in the lab:

H1: *There is always full tax evasion.*
H2: *No Buyer whistleblows in W.*
H3: *Evasion does not change from an environment with risk (TAR) to one with uncertainty (TAA), given the same probability of being audited.*
H4: *Evasion does not change from an environment with nature auditing (TAA) to one where a person audits (W), given the same probability of being audited.*

4. Results

Given the incentives, we expected Sellers and Buyers to tax evade. Over the total number of interactions (N=480), there is tax evasion in 77.08% of the cases in W, in 66.67% of the cases in TAR and in 57.08% of the cases in TAA. These evasion rates are all significantly different from 100% (2-sample test for equality of proportions with continuity correction, prop test hereinafter, p-value<2.2 x10^{-16} in the three cases). Therefore, we reject **H1.** Furthermore, we expected buyers not to blow the whistle. Over the number of interactions where there is tax evasion in W (N=370), buyers blew the whistle 4.86% of the times. This whistleblowing rate is significantly different from 0% (prop test, p-value=4.98 x10^{-5}). Hence, we reject **H2** too.

Result 1. *There is no full tax evasion.*

Result 2. *When buyers can whistleblow tax evasion, they blow the whistle even if this is costly for them.*

Comparing across different types of uncertainty, the tax evasion rate under TAR, 66.67%, is significantly higher than under TAA, 57.09% (Wilcoxon rank sum test with continuity correction, WRS test hereinafter, p-value=0.002787). Therefore, we reject **H3**. Such evasion can be avoided by (i) sellers not proposing buyers to evade or (ii) by buyers rejecting the proposal that sellers make (See Table 1).

Table 1: Sources of tax evasion under TAR and TAA

	Risk (TAR)		**Ambiguity** (TAA)	
	Seller	*Buyer*	*Seller*	*Buyer*
Evade	74.79%	89.14%	77.5%	73.66%
Not Evade	25.21 %	10.86 %	22.5%	26.34 %

We find that differences in sellers' evasion proposals between TAR (74.79%) and TAA (77.5%) are not significant (prop test, p-value=0.3635). Moreover, the proportion of buyers rejecting evasion is higher under ambiguity, TAA, (26.34%) than under risk, TAR, (10.86%), being these differences significant (prop test, p-value=$1.387\text{x}10^{-7}$).

Result 3. *Evasion is higher when there is a Tax Agency with risk than when there is a Tax Agency with ambiguity randomly auditing. The difference is due to a higher rejection of evasion proposals.*

Comparing across differences on who carries out the inspection, the tax evasion rate under W, 77.08%, is significantly higher than under TAA, 57.087% (WRS test, p-value=$6.805\ \text{x}10^{-11}$). Thus, we reject **H4**. We find that differences in evasion are due to both a lower rate of sellers' proposals and a higher rate of buyers' rejections (See Table 2).

Table 2: Sources of tax evasion under W and TAA

	Whistleblowing (W)		**Tax Agency (TAA)**	
	Seller	*Buyer*	*Seller*	*Buyer*
Evade	86.04%	89.59%	77.5%	73.66%
Not Evade	13.96 %	10.41 %	22.5%	26.34 %

We observe that sellers' evasion proposals are higher in W (86.04%) than in TAA (77.5%), and that these differences are significant (prop test, p-value=0.0008264). The proportion of buyers rejecting evasion is higher in TAA, (26.34%) than in W, (10.41%), being these differences significant (prop test, p-value=$1.108\text{x}10^{-8}$).

Result 4. *Evasion is higher when there is a whistleblowing policy than when there is a Tax Agency randomly auditing. The difference is due to both a lower rate of evasion proposals and a higher rejection of them.*

5. Conclusions

Our results suggest that in the frame of VAT evasion, contributors comply more with their taxes when facing an ambiguous audit than when the audit is risky. This suggests an ambiguity aversion effect (Ellsberg, 1961). However, this effect that helps to combat tax evasion disappears when introducing a person in the auditing process. In particular, if it is a person (involved in the transaction) who can report the evasion, tax evasion increases with respect to a situation where nature or a machine carries out the auditing process randomly. This goes in line with what in previous literature has been identified as a conspiracy effect.(Balafoutas et al. 2015), which occurs when two tax dishonest agents meet, they tend to behave in a friendly manner, implying the absence of betrayal aversion in a VAT frame.

Acknowledgements

This work has been funded by the Spanish Ministry of Economics, Industry and Competitiveness under projects ECO2017-87245-R and PID2021-128228NP-I00 and by the Conselleria d'Innovació, Universitats, Ciència i

Societet Digital (Generalitat Valenciana) under project AICO 2021/257.

Disclosure Statement

The authors report there are no competing interests to declare.

References

[1] Alm, J. (2012). Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. International tax and public finance, 19(1), 54-77.

[2] Balafoutas, L., Beck, A., Kerschbamer, R., & Sutter, M. (2015). The hidden costs of tax evasion.: Collaborative tax evasion in markets for expert services. *Journal of Public Economics, 129, 14-25.*

[3] Benoit, J.P., & Krishna, V. (1985). Finitely Repeated Games. *Econometrica, 53 (4): 905.*

[4] Ellsberg, D. (1961). Risk, ambiguity, and the Savage axioms. *The quarterly journal of economics, 643-669.*

[5] Enache, C. (2020). Sources of Government Revenue in the OECD. *Tax Foundation, 19.*

[6] Masclet, D., Montmarquette, C., & Viennot-Briot, N. (2019). Can whistleblower programs reduce tax evasion? Experimental evidence. *Journal of Behavioral and Experimental Economics, 83, 101459.*