Mental Accounting and the Impact of Tax Penalty and Audit Frequency on the Declaration of Income - An Experimental Analysis - *

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March, 2001

Abstract

We investigate (i) whether traders on an experimental asset market form different and separate mental accounts for sale revenues and for dividend earnings and whether (ii) an increase in tax penalty or (iii) an increase in audit frequency increases tax compliance. The results indicate that participants did not form separate mental accounts for sale revenues and for dividend earnings. However in line with prospect theory, it can be shown that a purchase of assets is perceived as a subjective loss that one tries to "repair" by risk seeking behavior. Participants who increased their net asset holdings declared less income to the tax authorities. Furthermore, the results indicate that an increase in tax penalties as well as an increase in audit frequency increased compliance. In addition, it was found that tax compliance was lower after an audit, especially after the first audit, and that it was lower for participants with high incomes.

Keywords: Mental Accounting; Tax Evasion; Prospect Theory

JEL-Classification: C91; D44

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* The authors acknowledge financial support by the University of Vienna under the project title "600 Jahre Universität Wien". Thanks are also due to Tarek El-Sehity and Eva Hofmann who have helped to run the experiment at the University of Vienna. Valuable comments by Werner Güth and Erik Theissen are gratefully acknowledged.

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1. Introduction

Psychological evidence on individual decision biases and heuristics challenges the validity of standard finance theory – which is still the leading paradigm in modern finance. While standard finance theory predicts that investors behave according to the rationality axiom of normative theory, psychological evidence indicates that individuals consistently and systematically deviate from the normative predictions.

However, most of the psychological evidence is based on questionnaire results involving hypothetical decision tasks with no monetary consequences to the decision maker. Recent empirical evidence from experimental asset markets providing substantial financial incentives, however, shows that the framing of endowments (Weber, Keppe and Meyer-Delius, 2000), the framing of objectively irrelevant information (Kirchler, Maciejovsky and Weber, 2001) or the introduction of selective information (Maciejovsky, Helmenstein, Kirchler, Haumer and Hofmann, 2001) influences individual decision making, and thus proves the predictions of standard finance theory to be descriptively weak.

The aim of the present study is to investigate whether traders on an experimental asset market form different and separate mental accounts for sale revenues, that is income from selling assets, and for dividend earnings. According to the theoretical framework of mental accounting different income sources are posted to different distinct mental accounts, and correspondingly are also used differently. Thus, it is hypothesized that sale revenues and dividend earnings are posted to two distinct mental accounts.

Note that our approach to mental accounting stresses the original questionnaire framework in which it has originally been studied. In trying to investigate psychological evidence within the context of an economic approach, focussing on market choice, one faces the risk of deviating too much from the original theoretical context. Thus, this research should not be considered as a test of mental accounting in the strict sense, but rather as an exploration whether derived predictions from it can also be identified within the context of a substantially different environment.[1] In addition, this paper investigates the impact of (a high and a low) tax penalty and (a high and a low) audit frequency on the declaration of income.

The paper is organized as follows: Section 1.1 discusses the theoretical framework of mental accounting and section 1.2 deals with the impact of tax penalty and audit frequency on the income declaration. In section 2 the experiment is introduced. Also, the participants, the experimental design, and the procedure are briefly discussed. Section 3 deals with the experimental results, and in section 4 the basic conclusions are drawn.

1.1 Mental accounting

Prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) is a descriptive approach to decision making under uncertainty. It is (i) defined on gains and losses, (ii) generally concave for gains and convex for losses, and (iii) steeper for losses than for gains. Thus, prospect theory assumes risk aversion in the domains of gains, and risk seeking behavior in the domains of losses.

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[1] See, for instance, Davis and Holt (1993) for other examples of theory stresses, and Myagkov and Plott (1997) for another "extension" of prospect theory.

The framework of mental accounting is based on an idea first proposed by Thaler (1980; 1985) and can be derived directly from the assumptions of prospect theory. Key features of mental accounting are the assumption of (i) editing, particularly the integration and segregation of outcomes, (ii) the employment of reference points in the decision making process, and (iii) framing effects. Editing refers to the organization and reformulation of the options in order to simplify the subsequent evaluation and choice. Both integration and segregation are part of the editing of outcomes. Integration refers to the combination of those options with identical outcomes, whereas segregation refers to the fact that options that contain a risk-less component are segregated from the risky component. Mental accounting is also based on the assumption that options are evaluated relative to a neutral reference point. Eventually, framing draws attention to the semantic labeling of options and outcomes. Thaler (1980), for instance, emphasized that a difference between two prices can either be labeled as a surcharge (loss frame) or as a discount (gain frame).

Mental accounting is based on the assumption that individuals form separate, mental accounts and use them to evaluate events and options. In particular, mental accounting refers to a situation in which an individual may value two identical monetary gains differently because they are coded and evaluated in two distinct mental accounts. Kahneman and Tversky (1984) showed that individuals form separate accounts for certain events, and that costs which are more or less associated with an event are posted to such accounts. For instance, only 46% of the respondents would buy another theatre ticket worth $10 if they realized that they had lost the ticket, whereas 88% would still buy a ticket if they realized that they had lost a $10 bill. This result has been explained by the posting of costs to see the play to a specific mental account. Buying a second theatre ticket increases the cost of seeing the play to an unfavorable degree, whereas the loss of cash is not posted to the same account and thus does not influence the decision to see the play.

Mental accounting can also be seen in the light of individual saving behavior. A person who earns 12 times an amount of $1,200 could, for instance, save $200 per month, whereas a person who earns 12 times $1,000 and receives an additional bonus of $2,400 at the end of the year may also wish to save a certain (smaller) amount on a monthly basis. The second person, however, considers the bonus as an additional payment which will be posted to a separate mental account and treated differently than the normal (wage) income.

In this study it is investigated whether traders on an experimental asset market form different and separate mental accounts for sale revenues, that is income from selling assets, and for dividend earnings. Participants traded risky assets on an experimental asset market. After each trading period participants had to decide (i) whether they want to declare their income to the tax authorities, and (ii) if they do, to what extent they want to declare their income. Tax returns have to be completed separately for sale revenues, that is for income from selling assets, and for dividend earnings.

According to the theoretical framework of mental accounting different income sources are posted to different distinct mental accounts, and correspondingly are also used differently. As the theoretical framework of mental accounting is derived from prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), it distinguishes between gains which are associated with risk aversion and losses associated with risk seeking behavior. One way of transferring this assumption to our decision framework is to expect that sale revenues which involve the "psychic" costs of giving up assets are associated with risk aversion, whereas dividend earnings which can be expected regularly in our experiment are associated with risk

seeking behavior. Thus, it can be expected that tax compliance will be substantially higher in case of sale revenues as compared to dividend earnings. However, also the reverse reasoning is conceivable: The declaration of sale revenues is perceived as a subjective loss, due to the obligation to pay taxes on hard earned income by giving up assets, involving risk seeking behavior, whereas dividend earnings are perceived as subjective gains which imply risk aversion. Correspondingly, it can be expected that tax compliance is substantially lower for sale revenues than for dividend earnings.

Criticism on the ambiguous predictions of descriptive theory have been consistently put forward and restrict the application of such a theory and the possibility to systematically test its predictions empirically. "The normative status of the effects of mental accounting is questionable" (Kahneman and Tversky, 1984, p. 348). Since in our experimental design both expectations, namely that the declaration of sale revenues and dividend earnings, respectively are perceived as gains or as losses, seem reasonable we formulate our hypothesis two-tailed.

Hypothesis 1: Investors form separate mental accounts for sale revenues, that is for income from selling assets, and for dividend earnings. Thus, it is expected that declared income will differ for the two income sources.

1.2 The impact of tax penalty and audit frequency on the income declaration

Standard economic theory stresses that compliance solely is the result of punishment and of threat of detection. This approach is based on few but restrictive assumptions, like rationality and individual utility maximization. According to this paradigm it is expected that taxpayers weigh the expected utility of the benefits from successful tax evasion with the uncertain prospect of detection and punishment (e.g., Allingham and Sandmo, 1972). Thus, tax compliance is considered to be solely determined by exogenous variables.

The basic standard model assumes that tax compliance is positively correlated with tax penalty and audit frequency. Thus, an increase in tax penalty as well as an increase in audit frequency are both expected to lead to a higher level of tax compliance. However, experimental evidence on the impact of tax penalty and audit frequency are ambiguous.

Spicer and Lundstedt (1976), for instance, could only confirm the expected influence of audit frequency on tax compliance. Also, Baldry (1987) could only show that the threat of detection increases compliance rates, punishment on the other hand did not influence tax behavior. To the contrary, Friedland, Maital and Rutenberg (1978) showed that large fines are more effective deterrents than small ones, even when audit frequencies are reduced proportionally. Alm, Sanchez and Juan (1995) showed that compliance is positively related to audit rate, at least for fines greater than 1. Alm, McClelland and Schulze (1992) emphasize that the rate of compliance rises in a non-linear way as the probability of detection increases. In their experiment an audit frequency of 0% led to a compliance rate of 20%, and it increased significantly to 50.20% and to 67.50%, respectively for an audit frequency of 2% and 10%, respectively.

Endogenous audit selection rules were studied in an experiment by Alm, Cronshaw and McKee (1993). In the first treatment taxpayers were informed that the tax agency would audit all taxpayers who reported less than a certain cutoff level (cutoff rule). In the second treatment the tax agency made use of individual compliance histories of the taxpayers. Taxpayers known to had been non-compliant in the past would be audited more frequently in the future (conditional future audit rule). And in the third treatment taxpayers faced a tax

agency that would go back in time to previous periods' declarations in case of non-compliance in the present period (conditional back audit rule). These three alternative and endogenous audit selection rules were contrasted to random selection rules. The results indicate that compliance rates were substantially higher in case of endogenous audit rules as compared to random audit rules.

In contrast to the above discussed studies in which participants were endowed with an exogenous income distributed to them by the experimenter, participants in our experiment had to earn their income endogenously on an experimental asset market.[2] It is expected that endogenously earned income increases the external validity of the experiment by making the setting more life-like. Participants in our experiment were asked to declare their income, separately for sale revenues and dividend earnings, after each trading period. In order to investigate the impact of tax payment and audit frequency on the income declaration systematically, a tax payment of 50% and 100% as well as an audit frequency of 17% and 34% were varied by the experimenter.

Hypothesis 2: An increase in tax penalty increases tax compliance.

Hypothesis 3: An increase in audit frequency increases tax compliance.

2. The experiment

2.1 Participants

Overall, 72 participants, all students either at the University of Vienna or at the Vienna University of Economics and Business Administration, participated in six sessions of an experimental asset market. On average, participants earned a remuneration of ATS 198.82, approximately $13, in June 2000 when the experiment was conducted. The standard deviation was ATS 239.13 (about $15). Remuneration ranged from a minimum of ATS 15 to a maximum of ATS 1,168. Twenty-six females and 46 males, aged 19 to 30 (M = 22.17, SD = 2.65), participated in the experiment. The total time required was about 2 hours and 15 minutes. Fifty-one participants were students of economics, whereas the remaining 21 participants were enrolled in other social science disciplines.

2.2 Experimental design

The experiment was conducted in a 2 x 2 x 2 factorial design. The independent variables were (i) separate tax declarations for two income sources (sale revenues from selling assets versus dividend earnings) as a within-subjects factor, (ii) tax penalty (penalty of 50% payment of the evaded income versus 100% payment of the evaded income) as a between-subjects factor, and (iii) audit frequency (17% versus 34%) as a between-subjects factor.

Participants were randomly assigned to the experimental conditions tax penalty and audit frequency. In addition, the sequence of the tax declarations for the income sources was varied in order to control for position effects (see Figure 1). Thus, in one trading period, participants

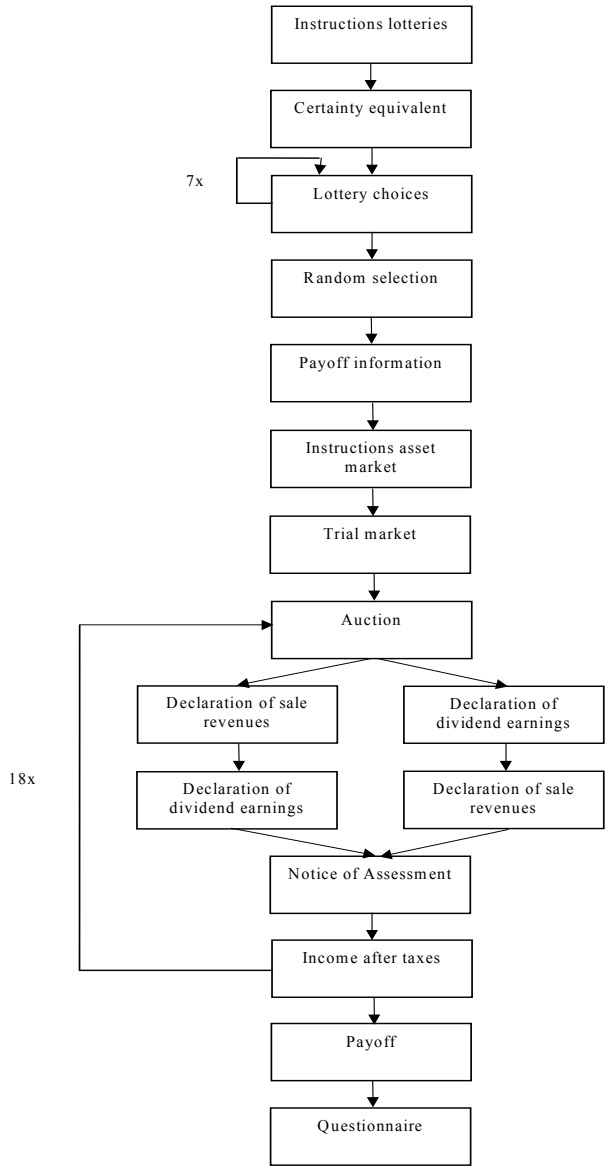
[2] Other tax experiments, in which participants earned their income endogenously are for instance Anderhub, Giese, Güth, Hoffmann and Otto (1999) and Giese and Hoffmann (2000). A good survey of experimental results on individual tax compliance is, for instance, provided by Webley, Robben, Elffers and Hessing (1991).

were first asked to declare their sale revenues and then their dividend earnings, whereas in the next trading period, this sequence was reversed.

2.3 Procedure

The experiment consisted of three phases. In the first phase, subjective propensity towards risk was measured experimentally by the methods of certainty equivalents and by lottery choices in order to control for differences in individual risk attitude. In the second phase, the experimental asset market was opened, assets were traded, and participants were asked to complete their income tax returns. In the third and last phase, participants were asked to fill out a short questionnaire. The complete experiment was conducted on computers and was programmed by z-Tree (Zurich Toolbox for Readymade Economic Experiments, Fischbacher, 1998). The exact sequence of events in the experiment is shown in Figure 1.

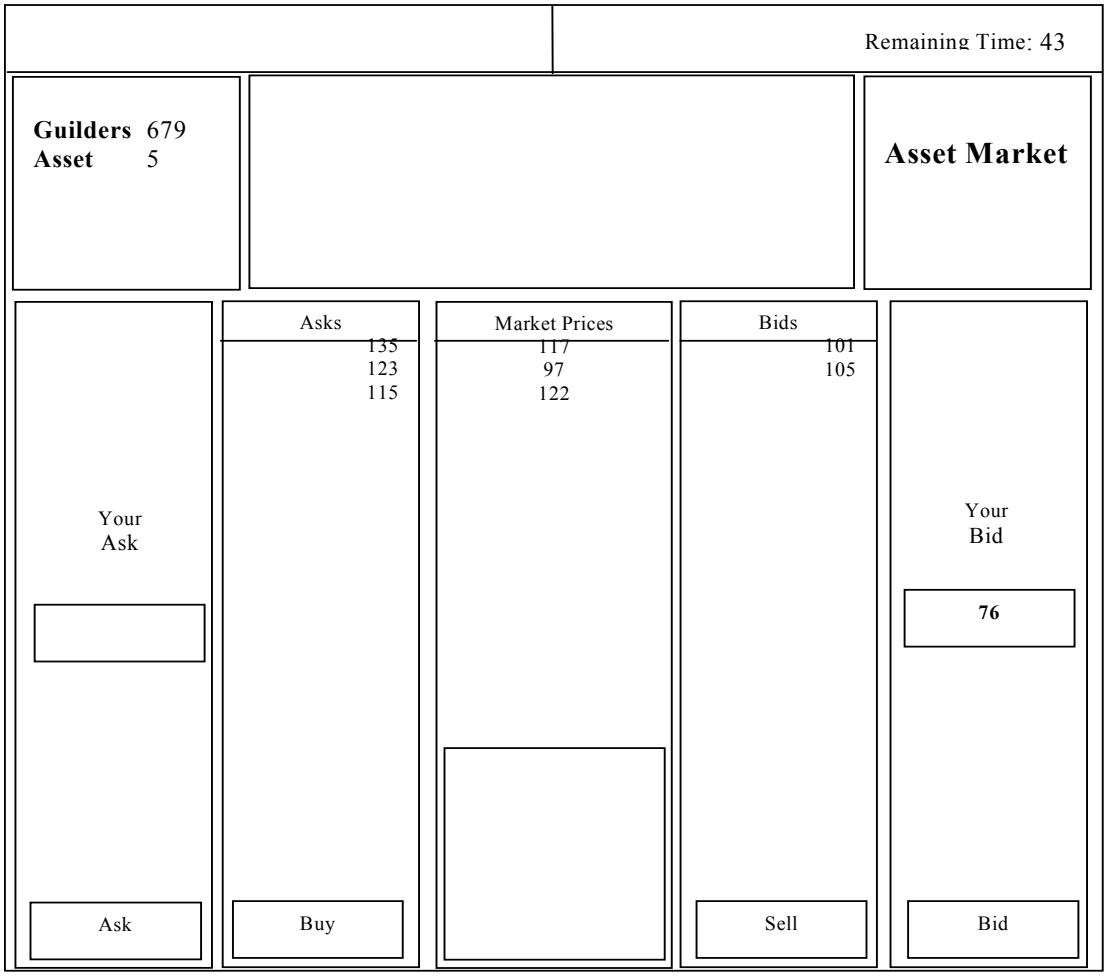
Figure 1: The sequence of events



Phase 1. After brief instructions, participants were asked (i) to reveal their certainty equivalent for a lottery offering a payoff of 100 Experimental Guilders with a probability of p = .50, and zero Experimental Guilders[3] otherwise; and (ii) to make seven decisions among risky lotteries. As a control for position effects, the lotteries were systematically varied.

The certainty equivalent allows the experimenter to infer whether participants are risk averse, risk neutral, or risk seeking, whereas the lotteries were designed in a way that allows the experimenter only to distinguish between risk aversion and risk neutrality. A certainty equivalent that is lower than the expected value of the lottery, which is 50 Experimental Guilders, indicates risk aversion, whereas a certainty equivalent equal to the expected value indicates risk neutrality, and finally a certainty equivalent above the expected value indicates risk seeking behavior. Also, the seven decisions among lotteries can be used to infer risk attitude. However, since each lottery has the same expected value in each of its two components, namely the certain payoff and the risky payoff, the design only allows to distinguish between risk aversion (certain payoff) and risk neutrality (risky payoff).

Figure 2: The computer screen of the auction



[3] The exchange rate for Experimental Guilders was 10 to 1, that is 10 Experimental Guilders equal 1 Austrian Schilling.

Phase 2. After receiving instructions on the experimental asset market, subjects participated in two trial periods of six minutes in order to become familiar with the selling and buying procedures on the market. After the trial periods, the asset market was opened. Overall, six market sessions were run with 12 participants each on a computerized asset market (Zurich Toolbox for Readymade Economic Experiments, Fischbacher, 1998).

The computer screen for the auction is displayed in Figure 2. Each market participant was entitled (i) to submit bids and asks, (ii) to accept standing bids and asks, whereas only improving offers, i.e. higher bids and lower asks, respectively, were allowed, or (iii) to stay aloof. Bids and asks were automatically ranked, indicating the most favorable offer. Information about trading history, provided as a chronological list of contracts, was common knowledge.

The experiment was performed as a continuous anonymous double auction. Participants were endowed with 300 Experimental Guilders plus five risky assets. Dividends were determined randomly before the experiment was conducted and applied to all six sessions (see Table 1) in order to ensure comparability between sessions. Participants were informed that the markets would be open for at least 16 and at most 20 periods. The probability that the markets would end after the 16^{th}, 17^{th}, 18^{th}, or 19^{th} period was 25 percent. Participants were informed that at the end of the final market period the liquidation value of the asset would be zero. To ensure comparability between the sessions, the last market period was randomly chosen once for all six sessions. According to this random selection, it was determined that each market ended after the 18^{th} period. Each trading period lasted for 120 seconds.

Table 1: Dividend payments in Experimental Guilders

Period	Dividend	Period	Dividend	Period	Dividend
1	39	7	25	13	32
2	25	8	48	14	32
3	43	9	39	15	45
4	40	10	37	16	48
5	37	11	29	17	40
6	43	12	45	18	29

After the auction, participants had to declare their income, separately for sale revenues from selling assets and for dividend earnings. Afterwards they were informed about the amount of taxes they paid, and whether their tax files were audited (notice of assessment). In the latter case, participants were also informed about the tax penalty and about a possible additional tax payment.[4] Participants were told how penalties were calculated, and they were also informed about audit frequency. Finally, participants were informed about their income after taxes. The time required for phase 2 was about 80 to 90 minutes.

Phase 3. Participants were asked to fill out a computerized post-experimental questionnaire with items designed to measure how well they had understood the experiment and how much effort they had put into arriving at accurate decisions. The time required for phase 3 was about 15 to 20 minutes.

[4] Tax penalties were chosen in a way that they could not exceed the gross income from a period.

3. Experimental results

3.1 Descriptive data analysis

First it was investigated whether individual risk attitude differs between sessions and between experimental conditions with respect to the elicitation method of certainty equivalents and with respect to the lottery decisions. The average certainty equivalent that was revealed by the participants was 39.54 (SD = 28.41), indicating a slight degree of risk aversion. Certainty equivalents did not differ significantly between the six sessions ($F(5; 66) = 1.47$, $p = .21$). An index for risk attitude ranging from 0=risk neutrality to 7=risk aversion was computed out of the seven decisions among lotteries. Participants' average risk attitude amounted to 3.67 (SD = 2.07), indicating that in 3.67 cases the secure rather than the risky alternative in the lottery was chosen. Again no statistically significant difference between the six sessions was observed ($F(5; 66) = 0.86$, $p = .51$).

However, there was a statistically significant difference with respect to the certainty equivalent between those participants who were assigned to the low-penalty condition (50% tax payment on evaded income tax) and those assigned to the high-penalty condition (100% tax payment on evaded income tax). Results indicate that participants assigned to the high-penalty condition ($M_{HP} = 48.67$, $SD_{HP} = 31.99$) were less risk averse than those assigned to the low-penalty condition ($M_{LP} = 30.42$, $SD_{LP} = 21.05$; $F(1; 70) = 8.18$, $p < .01$) with respect to the certainty equivalent. However, the two groups did not differ with respect to their lottery decisions ($M_{HP} = 3.50$, $SD_{HP} = 1.86$; $M_{LP} = 3.83$, $SD_{LP} = 2.27$; $F(1; 70) = 0.46$, $p = .50$).[5]

There was also a statistically significant difference with respect to risk attitude (lottery decisions) between those participants assigned to the low-audit frequency condition (audit frequency of 17%) and those assigned to the high-audit frequency condition (audit frequency of 34%). Results indicate that participants assigned to the high-audit frequency condition ($M_{HA} = 4.19$, $SD_{HA} = 2.19$) were more risk averse than those assigned to the low-audit frequency condition ($M_{LA} = 3.14$, $SD_{LA} = 1.82$; $F(1; 70) = 4.94$, $p < .05$) with respect to their lottery choices. However, the two groups did not differ with respect to the certainty equivalents ($M_{HA} = 44.33$, $SD_{HA} = 33.52$; $M_{LA} = 34.75$, $SD_{LA} = 21.61$; $F(1; 70) = 2.08$, $p = .15$). Thus, the results of our study with respect to tax compliance might not be the result of the experimental manipulation, but the result of different underlying risk attitudes. In order to control for this effect, risk attitude was considered as a covariate in the subsequent statistical analyses.

Questionnaire data reveals that the instructions were well understood and that participants had carefully considered their decisions. Participants agreed to the statement that the instructions were clear and easy to understand (M = 7.64, SD = 1.95, all items are nine-step items ranging from 1=I do not agree to 9=I fully agree), and they also agreed that they had carefully considered their buying offers (M = 5.93, SD = 2.22) and selling offers (M = 5.97, SD = 2.21).

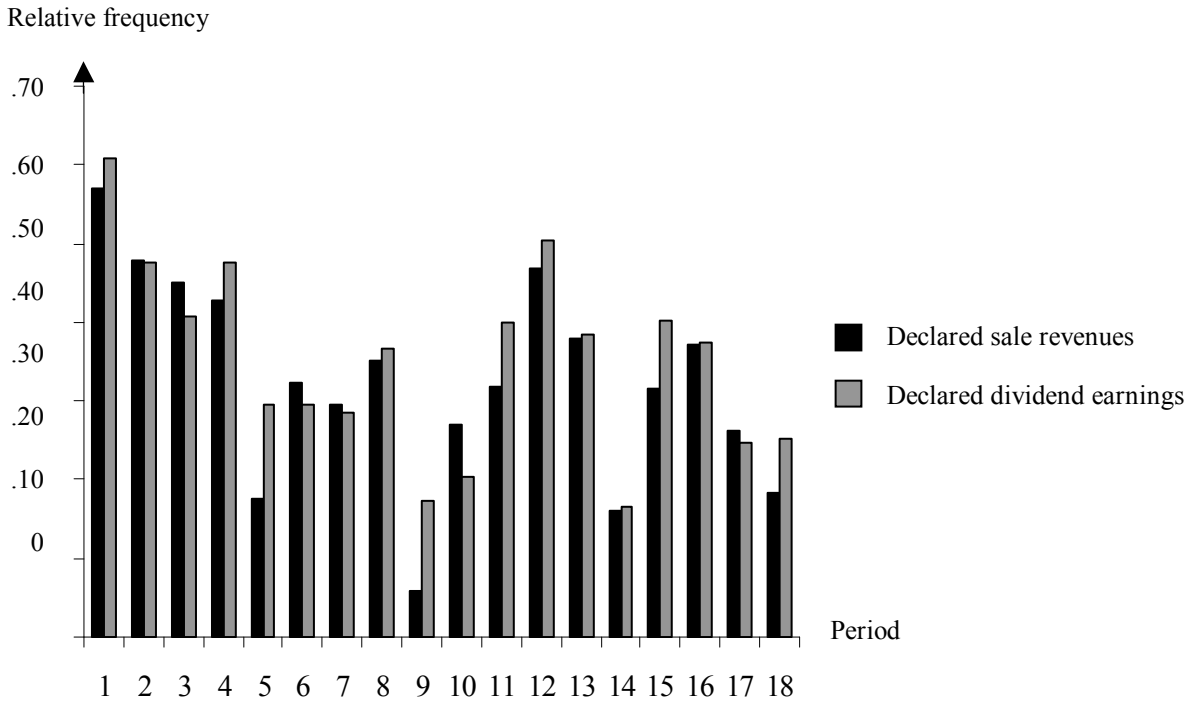
[5] For a discussion of the low correspondence between the methods of certainty equivalents and lottery choices see, for instance, Kirchler, Maciejovsky and Weber (2001).

3.2 Mental accounting

It was hypothesized that sale revenues from selling assets would be treated differently from dividend earnings because they would be mentally posted to two distinct mental accounts. Thus, it was expected that declared income would differ for the two income sources.

The results of a repeated multivariate analysis of variance with the declaration of sale revenues and the declaration of dividend earnings as repeated factor and tax penalty and audit frequency as independent factors as well as the risk attitude (certainty equivalent and lottery choices) as covariates indicate that there is no statistically significant difference between the declared sale revenues from selling assets and the declared dividend earnings ($F(1; 371) = 0.14$, $p = .71$).[6] On average, the relative frequency of declared sale revenues from selling assets amounted to $M = .35$ ($SD = .39$), whereas the relative frequency of declared dividend earnings amounted to $M = .37$ ($SD = .40$). Figure 3 displays the relative frequency of declared income for sale revenues and dividend earnings across trading periods.

Figure 3: Relative frequency of declared income for sale revenues and dividend earnings across trading periods



In a further step it was analyzed whether there are any differences in tax compliance with respect to (i) those participants who declared a positive fraction of income for both income sources (that is the declared income for sale revenues and for dividend earnings is positive) and (ii) to participants who never fully complied for both income sources (that is the declared income for sale revenues and for dividend earnings is smaller than 100%).[7] The results neither confirm the first ($F(1; 191) = 0.32$, $p = .57$) nor the second conjecture ($F(1; 283) = 0.03$, $p = .96$). In both cases declared income for sale revenues and for dividend earnings was not statistically significantly different. Income declarations did also not differ significantly for

[6] In total, there were 377 cases where participants both had positive sale revenues and dividend earnings that they could declare.

[7] Once again individual risk attitude was considered as a covariate in the statistical analysis.

those participants who neither fully complied nor fully evaded (that is the declared income for sale revenues and for dividend earnings is larger than 0% but smaller than 100%; $F(1; 113) = 0.01$, $p = .95$).

The results, however, indicate that the purchase of assets, more precisely an increase in net holdings of assets, leads to a lower declaration rate ($F(3; 1{,}031) = 4.08$, $p < .05$). The relative frequency of declared dividend earnings by participants who increased their net holdings of assets amounted only to $M = .30$ ($SD = .38$), whereas the relative frequency of declared dividend earnings for those participants who did not increase their asset holdings amounted to $M = .35$ ($SD = .40$) of their dividend earnings. This result can be interpreted in terms of prospect theory. An increase in asset holdings is associated with payments which are considered to be subjective losses, and these in turn are associated with risk seeking behavior. Correspondingly, it is not surprising that the declared income for these participants was lower than for others. Tax evasion was considered to be a means to "repair" subjective losses.

In summary, the results do not suggest that sale revenues, that is income from selling assets, are posted to a different mental account than dividend earnings. Thus, the null hypothesis that these two income sources are treated equally cannot be rejected. However in line with the predictions of prospect theory, the results did show that a purchase of assets is perceived as a subjective loss that has to be "repaired" by engaging in risk seeking behavior and by declaring less income.

3.3 The influence of tax penalty and audit frequency on the declaration of income

It was also hypothesized that an increase in tax penalty as well as an increase in audit frequency would increase tax compliance. Since our results did not support hypothesis 1, indicating that the declaration of income did not differ with respect to sale revenues and dividend earnings, these two income sources were pooled for subsequent analyses.

Table 2: Average tax compliance of sale revenues and dividend earnings in percent with respect to tax penalty and audit frequency

	Tax penalty of 50%		Tax penalty of 100%		Total	
	M	SD	M	SD	M	SD
Audit frequency of 17%	.15	.29	.24	.30	.19	.30
Audit frequency of 34%	.43	.39	.51	.40	.47	.40
Total	.28	.37	.37	.38		

The results confirm both hypotheses. An increase in tax penalty ($F(5; 1{,}101) = 16.05$, $p < .001$) as well as an increase in audit frequency ($F(5; 1{,}101) = 165.73$, $p < .001$) were found to be positively related to tax compliance, again controlled for individual risk attitude. The higher the tax penalty and the higher the audit frequency the higher also the relative frequency of declared income. Table 2 indicates that an increase of tax penalty from 50% to 100% led to an increase of the relative frequency of tax compliance from $M = .28$ ($SD = .37$) to $M = .37$ ($SD = .38$). Also, an increase of audit frequency from 17% to 34% led to an increase of the relative frequency of tax compliance from $M = .19$ ($SD = .30$) to $M = .47$ ($SD = .40$). The results further indicate that there is no statistically significant interaction effect between tax penalty and audit frequency ($F(5; 1{,}101) = 0.08$, $p = .78$).

Figure 4a and Figure 4b display the influence of tax penalty and audit frequency on tax compliance across trading periods. As can be seen from Figure 4a and Figure 4b the overall effect of audit frequency on tax compliance seems much stronger than the effect of tax payment on compliance. For the latter it was found that in four out of 18 trading periods the expected pattern, namely that black bars exceed grey bars, was violated, whereas such violations were only observed in two out of 18 trading periods for audit frequency.

Figure 4a: Relative frequency of declared total income in the high-penalty and in the low-penalty condition across trading periods

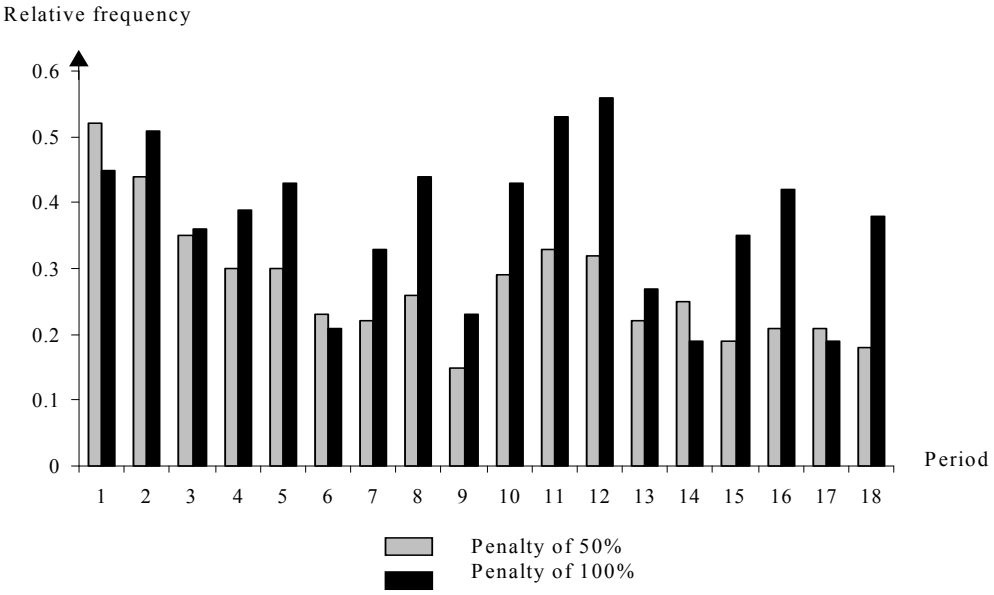
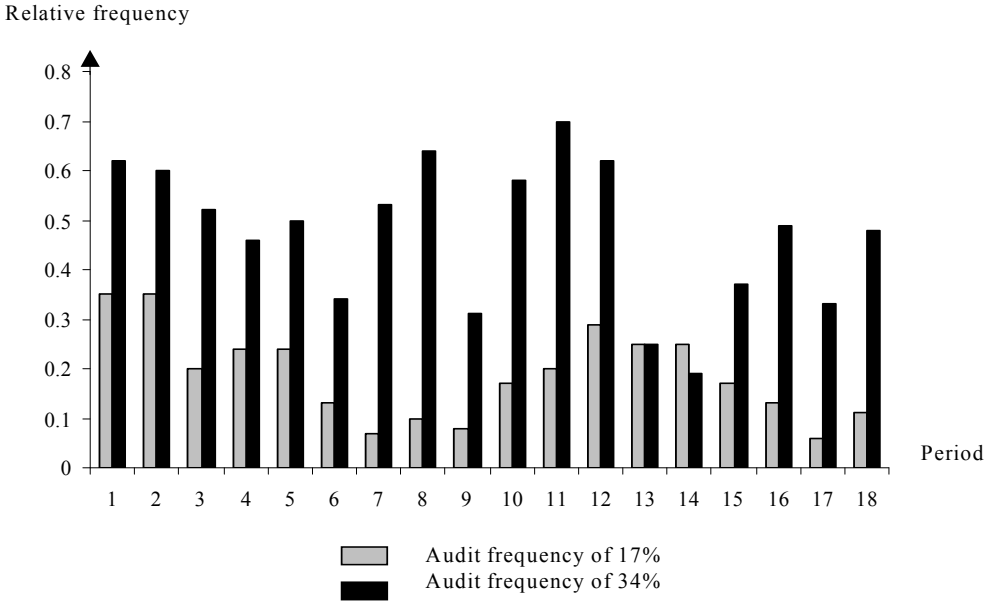


Figure 4b: Relative frequency of declared total income in the high-audit frequency and in the low-audit frequency condition across trading periods



Furthermore, the results indicate that tax compliance was statistically significantly lower after an audit ($M_A = .29$, $SD_A = .36$) compared to before an audit ($M_B = .45$, $SD_B = .40$; $F(2; 1,102) = 14.29$, $p < .001$). And in addition, the results show that the first audit ($M_F = .35$, $SD_F = .37$) had the highest impact on tax compliance as compared to later audits ($M_L = .27$, $SD_L = .36$; $F(2; 1,102) = 3.15$, $p < .05$). Furthermore, a median-split with respect to asset market income was computed in order to investigate whether tax compliance differs between participants with low and high income. The results replicate the findings of Anderhub, Giese, Güth, Hoffmann and Otto (1999), indicating that tax compliance was statistically significantly lower for participants with high income ($M_H = .27$, $SD_H = .35$) as compared to those with low income ($M_L = .39$, $SD_L = .40$; $F(1; 1,102) = 27.70$, $p < .001$).

4. Discussion

The main purpose of this paper was to investigate the theoretical framework of mental accounting within the context of an alternative approach, enriched by economic variables. Therefore, this research should not be considered as a strict theory test, but rather as an attempt to explore the theoretical framework of mental accounting within the context of a substantially different decision environment. In contrast to former studies investigating mental accounting that were carried out with questionnaires involving only hypothetical decision tasks, we provided participants with substantial monetary incentives and allowed for repetition. Thus, in our experimental setting we did not focus on one-shot behavior like former studies, but allowed for learning to take place. Participants made their choices – completed their income declarations - repeatedly over 18 periods.

The results indicate that participants who endogenously earned their income on an experimental asset market did not form separate mental accounts for sale revenues, that is income from selling assets, and for dividend earnings. The relative frequency of declared sale revenues and declared dividend earnings was not statistically significantly different. However in line with prospect theory, it was shown that a purchase of assets was perceived to be a subjective loss that had to be "repaired" by risk seeking behavior. Participants who increased their net asset holdings declared less income to the tax authorities.

In addition, it was investigated whether an increase in tax penalty as well as an increase in audit frequency leads to higher tax compliance. The results confirmed our conjecture. Both, tax penalty as well as audit frequency were found to be positively related to tax compliance. The higher the tax penalty and the higher the audit frequency the higher also the relative frequency of declared income. An interaction effect between tax penalty and audit frequency could not be observed. The results also indicate that tax compliance was statistically significantly lower after an audit than before one, and that tax compliance was highest after the first audit as compared to later audits. In addition, participants who earned a higher income on the asset market were found to be less compliant than participants with a low income.

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