WU International Taxation Research Paper Series

No. 2016 - 01

Tax Rate Biases in Tax Planning Decisions: Experimental Evidence

Harald Amberger
Eva Eberhartinger
Matthias Kasper

Tax Rate Biases in Tax Planning Decisions: Experimental Evidence

Harald Amberger*
Vienna University of Economics and Business
Department of Finance, Accounting and Statistics
Tax Management Group
harald.amberger@wu.ac.at

Eva Eberhartinger
Vienna University of Economics and Business
Department of Finance, Accounting and Statistics
Tax Management Group
eva.eberhartinger@wu.ac.at

Matthias Kasper
Vienna University of Economics and Business
WU Global Tax Policy Center
University of Vienna
Faculty of Psychology
matthias.kasper@wu.ac.at

Keywords:

heuristics, decision bias, salience, tax planning, intra-group financing, overconfidence

JEL-Classification:

C91, D03, H32, K34, M21, M41

We appreciate valuable comments from Kathleen Andries, Sebastian Beer, Tobias Bornemann, Erich Kirchler, Saskia Kohlhase, Petro Lisowsky, Ben Lockwood (discussant), Michaele Morrow (discussant), Martina Rechbauer, Bill Rees and Rupert Sausgruber, three anonymous reviewers for the 22nd Journal of the American Taxation Association (JATA) Conference, participants at the 108th NTA Conference on Taxation in Boston, the 5th Workshop on Current Research in Taxation in Prague, the 5th Doctoral Meeting of the Oxford University Centre for Business Taxation in Oxford, the 2015 IAREP-SABE Joint Conference in Sibiu, the 1st Doctoral Colloquium of the British Accounting and Finance Association SAG (BAFA) in Edinburgh, the 2nd Doctoral Research Seminar in Vienna and seminar participants in the DIBT Research Seminar at WU Vienna. Harald Amberger and Matthias Kasper gratefully acknowledge financial support by the Austrian Science Fund (FWF): W 1235-G16. Matthias Kasper gratefully acknowledges financial support by the Austrian National Bank (OeNB): 16042.

* Corresponding Author: Harald Amberger, Vienna University of Economics and Business, Vienna, Austria. He can be reached at harald.amberger@wu.ac.at or +43/1/31336-5656.

Tax Rate Biases in Tax Planning Decisions: Experimental Evidence

Abstract

Contrary to standard economic theory, recent empirical findings suggest that firms do not always minimize their tax payments. We conduct a laboratory experiment and find robust evidence that decision biases offer a behavioral explanation for suboptimal tax planning. When facing time pressure in an intra-group, cross-border financing decision, subjects apply heuristics based on the salience of statutory tax rates. This stirs decision makers to underestimate the effects of tax base changes and causes economically suboptimal tax planning decisions. We find that tax planning behavior is, to a large extent, unaffected by subjects' work experience or education in accounting, taxation, and/or finance. Yet, we observe an overconfidence bias in subjects with moderate work experience. In line with models of rational inattention, an increasing tax burden difference between two tax planning strategies weakly mitigates the use of heuristics and thus the decision bias.

1. Introduction

The present paper investigates behavioral aspects of tax planning decisions by analyzing the role of tax base and tax rate effects. While in recent years the focus of public scrutiny and academic research has been on tax avoidance of U.S. and multinational firms (e.g. Dyreng, Hanlon, and Maydew 2008; Lisowsky, Robinson, and Schmidt 2013), only little attention has been paid to firms that appear to not minimize their tax payments. At the firm level, effective tax rates (ETRs) differ considerably where the sources of variation are yet not fully understood (Hanlon and Heitzman 2010). Dyreng et al. (2008), for instance, find that one-fourth of the firms in their sample persistently pays taxes in excess of the statutory U.S. corporate tax rate. In accounting research the term "undersheltering puzzle" was coined for this phenomenon (Weisbach 2002; Desai and Dharmapala 2006; Hanlon and Heitzman 2010; Gallemore, Maydew, and Thornock 2014). Building on this empirical evidence, we investigate whether decision biases cause economically suboptimal tax planning behavior.

Standard economic theory assumes that agents make optimal choices and consider all relevant information. As a result, when deciding on whether to implement a tax planning scheme, decision makers balance all costs and benefits to maximize the principal's economic benefit (Scholes, Wolfson, Erickson, Hanlon, Maydew, and Shevlin 2015). With constant non-tax factors, an optimal tax planning decision likewise depends on tax rate and tax base effects (Hines and Rice, 1994; Huizinga, Laeven, and Nicodeme 2008). However, it is well-established that behavioral aspects shape decision making. Previous research drawing on the work of Simon (1955) and Tversky and Kahneman (1974, 1981) shows that individuals could be prone to decision biases due to simplified decision making based on heuristics. For the case of taxation, empirical findings indicate that decisions, if based on heuristics, could result in economically suboptimal outcomes. Graham, Hanlon, Shevlin, and Shroff (2015), for instance, show that managers base financial decisions on salient information such as the average tax rate, rather than on less accessible but more accurate information (e.g. the marginal tax rate). The firms in their sample experience an estimated average financial loss of $10 million due to poorly designed capital structures and of $25 million caused by suboptimal acquisitions. Along the

same lines, Powers, Seidman, and Stomberg (2015) find that the U.S. statutory tax rate serves as a heuristic that reduces information processing costs.

An experimental study by Blaufus, Bob, Hundsdoerfer, Kiesewetter, and Weimann (2013) provides evidence that subjects take biased decisions when instructed to choose the tax system with the lowest tax burden among a set of alternatives. In line with earlier research that identified salience as a key driver for taxpayer behavior (Chetty, Looney, and Kroft 2009), the authors conjecture that tax rate effects are more salient than tax base effects, and thus affect choices more strongly. However, Blaufus et al. (2013) do not investigate the effect of situational or personal factors on the probability of taking biased decisions, and the authors are not able to rule out that their results are driven by a lack of knowledge or understanding of the task. Apart from these studies, behavioral aspects of tax planning have received little scholarly attention. Inefficient tax structures, however, could reduce a firm's competitiveness, investment and growth (Eberhartinger and Fellner-Röhling 2016; Donohoe, Lisowsky, and Mayberry 2015) which increases the need for a more profound understanding of tax planning behavior. By following these lines, it is necessary to further investigate whether tax burden differences across firms stem from purely economic arguments, or whether the variation could partly be driven by biased behavioral patterns.

In exploring the behavioral dimension of tax planning, the present paper adds to the understanding of tax planning decisions and the heterogeneity in firms' ETRs. We investigate various aspects of tax planning decisions that have not been addressed in the literature, and extend current research on the processing of tax-related information (e.g. Blaufus et al. 2013; Graham et al. 2015; Powers et al. 2015). More precisely, we provide a comprehensive analysis of multiple factors that influence the outcome of tax planning decisions. First, we analyze the effects of tax rate and tax base changes on decision making. Second, we explore how resource constraints affect tax planning decisions. Specifically, we examine whether time pressure as a proxy for resource constraints stimulates the use of heuristics. Third, we analyze whether the use of heuristics is mitigated by personal experience such as work experience or education in accounting, taxation, and/or finance. Fourth, we explore how financial consequences of tax planning decisions influence decision making. More precisely, we investigate whether, in line with the theory of rational inattention, the use of

heuristics decreases with an increasing tax advantageousness of a tax planning strategy (Abeler and Jaeger 2015).

We take an experimental approach to analyze the role of tax rate and tax base effects in tax planning decisions. Therefore, we design a basic intra-group, cross-border financing scenario and vary statutory tax rates and tax bases. Based on that, we ask subjects to indicate the tax-minimizing form of financing (equity or debt capital). Unlike alternative research designs such as survey studies, an experiment allows us to objectively identify the relative importance of specific factors. We model tax rate effects via differences in statutory tax rates (i.e. the tax rate differential) between the financed entity and the financing entity, while tax base effects are modelled via a tax loss carry-forward at the financed subsidiary. Our sample includes experienced students from a public business university in [to be resolved] who have a solid background in business administration, business law, and/or economics.

Our study provides consistent evidence that tax planning decisions could lead to economically suboptimal results as decision makers underestimate tax base effects. While we do not find systematic decision biases in situations with unlimited decision time, time pressure significantly aggravates systematically biased decision making. Under time pressure, decision performance is, to a large extent, unaffected by participants' work experience or education in accounting, taxation, and/or finance. Subjects with moderate work experience of up to six months, however, indicate high confidence in having identified the tax-minimizing form of financing, yet at the same time they perform relatively poorly. Such a behavior suggests an overconfidence bias in these individuals as they rely on their knowledge rather than seeking additional information (Zacharakis and Shepherd 2001). Finally, we observe that an increasing tax burden difference between two tax planning strategies weakly mitigates the decision bias. Taken together, these findings suggest that certain aspects of firms' tax behavior (such as the heterogeneity in ETRs or the undersheltering puzzle) could – at least partly – be driven by decision biases.

This paper proceeds as follows: Section two outlines a simple model for tax preferences in intra-group financing decisions under the assumption of optimal decision making, and develops our behavioral hypotheses. Section three describes the experimental design, with results presented in section four. Section five discusses the main implications of our findings and potential limitations.

2. Theoretical Background

2.1. A Model for Optimal Tax Planning through Intra-Group Financing

Tax planning is economically optimal behavior if it reduces costs and increases shareholder wealth. Widely adopted tax planning schemes involve discretion in setting intra-group transfer prices for intermediate inputs (Klassen and LaPlante 2012; Beer and Loeprick 2015), domestic or cross-border structures to benefit from special tax regimes (Dyreng and Lindsey 2009; Dyreng, Lindsey, and Thornock 2013), as well as specific instruments like financial hybrids (Johannesen 2014), derivatives (Donohoe 2015), and insurance contracts (Brown 2011). In addition to these schemes, profit shifting through intra-group debt financing is widespread (Heckemeyer and Overesch 2013). Internal capital markets enable multinationals to exploit tax rate differentials (Desai, Foley, and Hines 2004) and to shift profits via interest payments (Buettner and Wamser 2013). Empirical evidence supports this claim, given that low-taxed group members finance their high-taxed counterparts with intra-group debt (Huizinga et al. 2008; Buettner, Overesch, Schreiber, and Wamser 2009; Overesch and Wamser 2014).

Aside from statutory tax rates, several tax system features affect the tax base of a firm and thus the choice of an optimal tax planning scheme. An example of a tax base effect is the possibility to carry tax losses forward, which may reduce a firm's periodic tax base and turn a high-taxed entity into a low-taxed one. As a result, profit shifting via interest payments on intra-group debt and a tax loss carry-forward may conflict with each other, as the tax benefit from the interest deduction does not materialize if the entity does not pay taxes due to a tax loss carry-forward. These interest payments are, at the same time, subject to taxation at the receiving entity which induces double taxation.

In the following, we derive tax preferences of a multinational for intra-group equity or debt. We assume economically optimal decision making and consider a parent company A with its wholly owned foreign subsidiary B. The firms earn π_A and π_B which denote taxable income before deducting interest payments on intra-group debt or a tax loss carry-forward. The tax base after deducting interest payments or a tax loss carry-forward is taxable at the statutory tax rates τ_A and τ_B, respectively.[1] The parent A may finance its subsidiary B via intra-group equity or debt. A is risk neutral and has no

[1] Given our interest in the trade-off between the tax rate differential and the tax loss carry-forward, we assume that $\pi_a \geq 0$; $\pi_b \geq L_b$; $I_b \geq 0$; and $\pi_b \geq I_b$ where any unused tax loss carry-forward will be forfeited. Moreover, we abstract from agency considerations, information asymmetries and tax planning costs.

preference for either form of financing. If A chooses equity financing, dividends are neither tax deductible for the subsidiary nor taxable at the level of the parent company. If the subsidiary is financed via debt, interest payments I are tax deductible at the subsidiary and taxed at the parent company. In a one-period setting, A selects the form of intra-group financing which implies the smallest group tax burden.

First, the group tax burden for equity financing T_E in a given period amounts to

$$T_E = \pi_a \tau_a + (\pi_b - L_b)\, \tau_b, \tag{1}$$

where L_b denotes the amount of tax loss carry-forward available at B which is equal to or less than π_b. As a result, π_b is sufficiently large to offset an existing tax loss carry-forward which implies $L_b \leq \pi_b$ to hold. Any unused tax loss carry-forward, however, will be forfeited in later periods.

Second, the group tax burden for debt financing T_D in a given period amounts to

$$T_D = (\pi_a + I)\, \tau_a + (\pi_b - I - \theta L_b)\, \tau_b, \tag{2}$$

where I indicates interest payments on intra-group debt ($I > 0$) which are tax deductible at the subsidiary and taxable at the level of the parent. θ denotes the fraction of L_b which can be offset against taxable profits after deducting I. As country B does not offer a tax refund in case of a loss, the deductible fraction of a L_b is limited to the tax base, which implies that

$$\theta = \left\{ \begin{matrix} 1, \\ \frac{\pi_b - I}{L_b}, \end{matrix} \middle| \begin{matrix} L_b \leq (\pi_b - I), \\ L_b > (\pi_b - I). \end{matrix} \right\} \tag{3}$$

A selects the form of intra-group financing which yields the lowest group tax burden, thus

$$\min\{T_E, T_D\}. \tag{4}$$

It follows for the group tax burden to be a function of both the statutory tax rates and the tax loss carry-forward. These factors determine tax preferences for intra-group equity or debt financing.

We first consider the case where $\theta = 1$. The income of the subsidiary after deducting I exceeds the available tax loss carry-forward. In this case, A prefers intra-group debt over equity if

$$\pi_a \tau_a + (\pi_b - L_b) \tau_b > (\pi_a + I) \tau_a + (\pi_b - I - L_b) \tau_b. \quad (5)$$

All else being equal, the relation holds if $\tau_a < \tau_b$. Substituting τ_b for $\tau_a + d$ where d denotes the difference in statutory tax rates between the subsidiary and the parent company (i.e. the tax rate differential; $d = \tau_b - \tau_a$) and changing the order of preferences yields a preference for intra-group debt if

$$Id > 0 \quad (6)$$

If the income of the subsidiary after deducting I exceeds its tax loss carry-forward, debt financing is preferable in the case of a positive tax rate differential. For a negative tax rate differential, equity financing is the tax-minimizing choice. If $d = 0$, A is indifferent between both forms of financing. Hence, preferences do not depend on the amount of tax loss carry-forward.

Second, we consider $\theta = \frac{\pi_b - I}{L_b}$ where the tax loss carry-forward exceeds the subsidiary's income after the deduction of I. The advantageousness of intra-group equity or debt financing again depends on d. It follows from (5) that A prefers debt over equity if

$$(\pi_b - L_b)(\tau_a + d) - I \tau_a > 0. \quad (7)$$

The definition of θ implies that $I > \pi_b - L_b$ must hold. (7) does not hold if the tax rate differential is negative ($d < 0$) or zero ($d = 0$). If a subsidiary's tax loss carry-forward exceeds its income after deducting I (i.e. $L_b > (\pi_b - I)$), A prefers intra-group equity over debt if its statutory tax rate equals or exceeds the subsidiary's statutory tax rate. If the tax rate differential is positive ($d > 0$), the preference depends on the tax loss carry-forward and the positive tax rate differential.

Overall, (6) and (7) reveal that the sign of the tax rate differential determines the tax-minimizing form of intra-group financing in a variety of scenarios. However, if a tax loss carry-forward exceeds a subsidiary's taxable profit after deducting interest payments and given a positive tax rate differential, a trade-off between the tax rate differential and the tax loss carry-forward appears (see Table 1). To arrive at an optimal decision (ignoring non-tax costs or benefits), both effects must be considered and the gain from profit shifting via intra-group debt financing must be balanced with

the tax consequences of foregoing a tax loss carry-forward. If agents are incentivized to exploit tax planning opportunities, they should resolve this conflict and minimize the group tax burden.

<Insert Table 1 about here>

2.2. Hypothesis Development

While empirical evidence suggests that firms differ in their tax planning activities and a significant share of firms appears to not minimize their tax burden (Dyreng et al. 2008), little is known about the behavioral dimension of tax planning decisions. While it is acknowledged that firms use tax planning to reduce their effective tax burden, the overall extent of these activities tends to fall short of model predictions, given the vast spectrum of easily accessible tax-minimizing opportunities (Hanlon and Heitzman 2010).[2]

While large parts of the heterogeneity in tax planning can be attributed to firms' legal or economic circumstances,[3] behavioral aspects could trigger suboptimal decisions in tax contexts (Graham et al. 2015). This notion is in line with research in behavioral economics and economic psychology which finds systematic biases in economic decision making where decision outcomes are less optimal than theoretically assumed (for a review, see Kirchler (2007)). Building on early work by Simon (1955) and discussing the effects of individuals' limited knowledge and ability in decision making, Tversky and Kahneman (1974) identify cognitive principles that guide decision making in complex situations. As it is often difficult to assess the consequences of a decision, individuals seek simplified decision strategies known as heuristics. These decision strategies affect the way information is processed (Gigerenzer and Gaissmaier 2011) and reduce the cognitive load of a problem, as they alleviate the complexity of a task (Tversky and Kahneman 1974; Kahneman 2003). In contrast to extensive decision strategies, heuristics often do not yield economically optimal choices but could imply biases.

[2] A meta-study by Feld, Heckemeyer, and Overesch (2013), for instance, finds that a 10 percentage point change in statutory tax rates induces only a 3 percentage point reaction in the debt ratio of a firm.
[3] For instance firms tend to differ in their financial reporting costs of tax avoidance (e.g. Frank, Lynch, and Rego 2009; Badertscher, Philips, Pinco, and Rego 2009), regulatory costs of tax avoidance (e.g. Mills, Nutter, and Schwab 2013), or reputational costs of tax avoidance (e.g. Gallemore et al. 2014).

The literature discusses several types of heuristics (see Kahneman 2003).[4] For taxation, McCaffery and Baron (2003) observe systematic decision biases in a series of experiments and find that the salience of tax information is a key heuristic. When presented with tax-related information, decision makers use salient information as a primary heuristic, while the remaining – yet relevant – information is widely neglected. Similarly, Chetty et al. (2009) show that variation in the salience of tax information causes systematic optimization errors, and individuals' choices tend to be affected by the salience rather than the magnitude of taxes. Fochmann and Weimann (2013) find that high tax salience reduces tax misperception. This is in line with studies that find effects of the visibility of tax rates on financial decision making. For instance Rupert and Wright (1998) show that decision performance is positively affected by highly visible tax rate schedules. While these studies focus on the behavior of individual taxpayers, two recent papers provide the first evidence that corporate tax planning decisions could be more systematically biased than expected.[5] Graham et al. (2015) empirically show that capital structuring and acquisition decisions could be economically suboptimal, as tax executives overestimate the importance of salient information when evaluating the effect of taxes. Along the same lines, Powers et al. (2015) find that the U.S. statutory tax rate is used as a heuristic to reduce information processing costs.

With regard to tax rate and tax base effects, previous research suggests that decision makers consider tax rate effects more carefully than tax base effects when evaluating the economic consequences of tax planning decisions (e.g. Sørensen 1992; Buettner and Ruf 2007). Statutory tax rates are highly salient, i.e. they are easily available and their effects are well-known to executives (Graham et al. 2015). Tax base effects, on the other hand, are more complex and their economic effects are less straightforward to comprehend (Blaufus et al. 2013). Based on these considerations, we conjecture that the choice between equity and debt financing is driven by the salience of statutory tax

[4] For instance, decision makers often estimate the outcome of a decision based on some initial value (i.e. the anchor) that is adjusted to derive a solution. As they fail to adjust sufficiently, "different starting points yield different estimates" and decisions are biased towards the anchor (Tversky and Kahneman 1974, p. 1128).
[5] Some scholars argue that organizational decision making is always economically optimal. In this respect, DellaVigna (2009) posits that firms have measures at hand to increase the optimality of their decisions which include, for instance, external consultants or feedback from the capital market. Others, however, acknowledge that corporate decision making could be biased if no feedback is provided to the decision maker (Camerer and Melmendier 2007). Given the complexity of tax planning, the specificity of information required to take tax planning decisions and the possibility to obscure relevant information in the financial statements (Balakrishnan, Blouin, and Guay 2011), the probability of identifying suboptimal decisions tends to be relatively low.

rates, as their economic effect on the group tax burden is institutive and easy to compute. A simplified decision strategy based on the salience of tax rate effects, however, potentially induces a decision bias if tax base changes do not receive adequate attention and decision makers underestimate their economic effects. Based on these considerations, we hypothesize the following:

H1: *If (1) a tax rate differential and (2) a tax loss carry-forward determine the tax consequences of a tax planning decision, the decision is biased towards the tax rate effect.*

As heuristics accelerate decision processes, they are used not only if decision makers face complex situations, but also if resources for decision making are limited. Extensive decision making, on the contrary, requires time and cognitive effort, but leads to more accurate decisions (Kahneman 2003, 2011). Previous research in psychology found that time pressure stimulates the use of heuristics where decision quality follows an inverted U-shaped curve and increases in moderate time pressure, while it decreases if stress levels become onerous (Rothstein 1986; Payne, Bettman, and Johnson 1988; Dror, Busemeyer, and Basola 1999). Several studies in auditing research confirm the negative effects of time pressure on decision quality (e.g. Ponemon 1992; Choo 1995; Braun 2000; Low and Tan 2011). Accordingly, we conjecture that time pressure in tax planning scenarios increases the probability of reliance on heuristics based on the salience of statutory tax rates and posit the following:

H2: Time pressure increases the decision bias in tax planning decisions.

Apart from situational factors that affect decision making, personal experience tends to shape decision making. Tax planning decisions are complex tasks and require specialized knowledge. Hence, in a simple environment with perfect information, we expect subjects with work experience in accounting, taxation, and/or finance, as well as advanced graduate students in these fields to perform better than subjects without relevant experience. Personally more experienced subjects could find it easier to identify the optimal solution to a problem, as they are familiar with the decision environment and have relevant knowledge of the topic. Therefore, we hypothesize the following:

H3: Work experience or education in accounting, taxation, and/or finance increases the share of optimal tax planning decisions.

Finally, we investigate whether the decision strategy and the use of heuristics depend on the financial consequences of a tax planning strategy, i.e. the tax burden induced. As in some settings overall tax effects are large and therefore obvious, heuristics may not be applied to the same extent as in decisions with less clear outcomes. This is in line with models of rational inattention which suggest that information is rather considered if ignoring it is costly (Abeler and Jaeger 2015). In our case, this theory suggests that the probability of taking optimal decisions is related to the tax burden difference between the two tax planning strategies (equity or debt financing). If, for instance, equity yields a significantly lower group tax burden than debt, we expect a higher likelihood of choosing equity. If, however, the tax effects of equity or debt differ only marginally, we expect a smaller share of optimal decisions. In other words: the more obvious the tax advantage of debt or equity, the less heuristics are used in decision making. Based on these considerations, we conjecture:

H4: *An increase in the tax burden difference between equity and debt financing mitigates the decision bias in tax planning decisions.*

Figure 1 summarizes our research hypotheses and graphically depicts the theoretical framework underlying our experimental tests.

<Insert Figure 1 about here>

3. Research Design

3.1. Experimental Setup

An economic experiment allows us to isolate behavioral responses to changes in statutory tax rates (i.e. the tax rate differential) and the tax base (i.e. the tax loss carry-forward). We run a computer-based experiment programmed in Z-Tree (Fischbacher 2007) with three stages: (i) a questionnaire, (ii) instructions for a tax planning game, and (iii) a set of 16 tax planning decisions. These are based on carefully constructed parameters which allow clustering the 16 decisions in different ways to achieve detailed insight for analysis.

We simulate decision making under time pressure by randomly assigning 60% of our subjects to a treatment with limited decision time (*time-pressure treatment*). The remaining subjects

do not face time constraints (*no-time-pressure treatment*). Before conducting the experiment, we ran pre-tests with 18 junior faculty members and tracked the decision time. On average, it took pre-test participants 90 seconds to take one tax planning decision. As the time-pressure treatment aims at triggering rapid decision making and exploring an adaption of the decision strategy (Payne et al. 1988), we restrict the time to 45 seconds per decision and introduce the time limitation immediately before the first tax planning decision (Low and Tan 2011). We do not force our subjects to provide a decision within the given time frame. Overall, this experimental setup yields a factorial design with between and within subject variation.

3.2. Experimental Procedure[6]

Questionnaire

We initiate our study with a questionnaire on participants' personal background, their work experience and education in accounting, taxation, and/or finance. Furthermore, we ask eight questions to identify personal attitudes towards debt financing. The questionnaire concludes with a test to measure reflexivity in individuals' decision making (*cognitive reflection test*; see Frederick 2005).[7]

Instructions

In the second part of the experiment, we introduce our subjects to a tax planning game which consists of 16 intra-group financing decisions. The scenario describes a multinational that operates in two countries. While the parent company is located in country A, the subsidiary operates in country B. Subjects take the position of the multinational's CFO and are in charge of intra-group financing provided by the parent company to the subsidiary. Financing arrangements can take the form of intra-group equity or debt. We instruct participants to choose the form of financing which minimizes the total group tax burden in a one-period setting.

After providing some background on taxes and financing decisions, we outline a simple tax system which comprises three dimensions:[8] (i) the statutory tax rates τ_a, τ_b, (ii) the amount of tax loss

[6] A copy of the experimental instrument is available on request.
[7] As we conduct our study in [language to be resolved], we apply a translated version of the cognitive reflection test provided by Piazolo (2007).
[8] Tax parameters are identical to the model derived in section 2.1. For a definition of the tax variables, see the respective section.

carry-forward L_b available at the subsidiary, and (iii) an asymmetric tax treatment of interest payments I and dividends. As we are interested in the trade-off between a positive tax rate differential and a tax loss carry-forward determined under (7), τ_a is strictly smaller than τ_b. Moreover, the subsidiary in country B reports a tax loss carry-forward L_b which can be offset against its taxable income. Any unused L_b will be forfeited in later periods.[9] Equity and debt financing receive an asymmetric tax treatment where dividends are tax-exempt in country A, while debt financing triggers interest payments that are tax deductible at the subsidiary and taxable at the parent company. We also outline a simple economic environment where the parent company does not report any income besides interest or dividend payments received from the subsidiary. The subsidiary earns a constant profit of ECU 4,000,000[10] and fully distributes after-tax profits as dividends. Also, the financed amount (ECU 50,000,000) and interest payments (ECU 3,000,000) do not vary.

We integrate three safeguards to ensure that subjects understand the experimental task. First, we present a table summarizing all information and depicting how to compute the group tax burden, conditional on the form of intra-group financing. Based on that, we present two model calculations which comprise all relevant factors, i.e. the financed amount, interest payments, the taxable profit of the subsidiary, statutory tax rates, the tax loss carry-forward at the subsidiary, as well as the group tax burden which results from equity or debt financing. While one model calculation yields equity as the tax-minimizing solution, the other implies debt financing. Moreover, we explain the tax effects of both choices in written form. The third and final safeguard involves three questions (*check questions*) which cover the three dimensions of the tax system: (i) the effects of the tax rate differential, (ii) the effects of a tax loss carry-forward and (iii) the effects of asymmetric taxation of dividends and interest payments. To ensure that only participants who fully understand the general mechanism are included in the primary analysis, we exclude those who did not correctly solve the *check questions*.

[9] This assumption is crucial to rule out timing and interest effects implied by shifting an existing tax loss carry-forward to future periods.
[10] ECU ("Electronic Currency Unit") is an abbreviation for a fictitious currency we introduce in the experimental testing.

Tax Planning Game

The main part of our experiment consists of a tax planning game with 16 intra-group financing decisions. Every participant faces these 16 decisions in random order. At any time, participants may refer back to the general information and model calculation provided in the table described in the previous section. We also provide a calculator, paper, and a pencil to ensure perfect information throughout the experiment. However, subjects do not receive feedback on their decisions; i.e. we do not reveal whether they took tax-minimizing decisions until the end of the experiment.

Based on the trade-off determined under (7), we systematically vary the tax-minimizing solution by changing (i) the statutory tax rates and (ii) the amount of tax loss carry-forward available at the subsidiary. We keep the remaining parameters constant, which enables us to determine the decision relevance of the tax rate effect (i.e. the tax rate differential) and the tax base effect (i.e. the tax loss carry-forward). Panel A of Table 2 presents the tax parameters for the 16 decisions (*items*). Eight items (items 5-8 and 13-16) yield equity as the tax-minimizing outcome. Debt financing is the optimal choice for the remaining items (items 1-4 and 9-12). We design eight item pairs where the tax burden difference between equity and debt financing is constant for each pair. For items 1 and 9, for instance, debt financing reduces the group tax burden by 200,000 ECU compared to equity. Vice versa, equity financing yields a 200,000 ECU smaller group tax burden for items 8 and 16. We vary the tax burden difference in a way that one option is clearly preferable for some items, while the difference is less pronounced for others. Items 1, 8, 9, and 16, for instance, result in a tax advantage of 200,000 ECU (*delta200000*) for the tax-minimizing choice, while the difference is reduced to roughly 1,280 ECU[11] (*delta1280*) for items 4, 5, 12, and 13. Items 3, 6, 11, and 14 yield a difference of 25,000 ECU (*delta25000*), and items 2, 7, 10, and 15 a difference of 60,000 ECU (*delta60000*).

<Insert Table 2 about here>

As our paper aims at identifying unequal responses to tax rate and tax base effects, three item groups are particularly relevant (see Panel B of Table 2). Debt capital is the tax-minimizing choice in

[11] Due to rounding difficulties in obtaining readable statutory tax rates, tax burden differences implied by equity or debt financing do not completely match for items 4, 5, 12, and 13 (i.e. *delta1280*). For the remaining item groups (*delta25000, delta60000*, and *delta200000*), the tax burden differences match.

the *baseline* item group (items 1 to 4). While the tax rate differential is constant within this group, the subsidiary's tax loss carry-forward increases by the ordering of items, while the tax advantage of debt diminishes. Equity is the tax-minimizing choice in the *changeTLCF* item group (items 5 to 8) where the tax rate differential is identical to *baseline*, while the subsidiary's tax loss carry-forward further increases. Therefore, the tax advantage of equity financing increases by the ordering of items. We posit under H1 that subjects are biased towards the tax base effect (i.e. the tax rate differential) and rather choose debt instead of tax-minimizing equity. Therefore, we expect a smaller share of tax-minimizing choices in the *changeTLCF* group item compared to *baseline*. *changeTD* comprises items 13 to 16 where equity financing is the tax-minimizing choice. While the tax rate differential is constant at a low level in this group, the tax loss carry-forward decreases by the ordering of items. For every item in this group, the tax-burden difference between equity and debt financing is identical to one item of the *changeTLCF* group so that, for instance, equity yields the same tax advantage for items 14 and 6 (see Panel A of Table 2). Again, we expect a smaller share of tax-optimal decisions in the *changeTD* item group compared to *baseline*, as the tax rate differential suggests debt financing while equity financing yields the tax-optimal choice. Debt capital is the tax-minimizing choice in the *symmetry* item group (items 9 to 12). While the tax rate differential is constant at a high level, the tax loss carry-forward decreases by the ordering of items. In such a case, we do not expect a smaller share of optimal choices compared to *baseline*, as the tax rate differential indicates debt financing (which is the tax-minimizing choice). We create the *symmetry* item group so that eight items yield debt and eight items yield equity financing as the tax-minimizing choice.

3.3. Dependent Variable and Remuneration

We ask our subjects to indicate the tax minimizing form of intra-group financing. Thus, they face 16 binary choices between equity and debt financing. For our analysis, every decision is recoded as one or zero, where one denotes a tax-minimizing decision while zero indicates otherwise. We provide monetary incentives for participation (Croson 2005) and pay subjects based on their performance in the tax planning game. Participants receive a show-up fee of [to be resolved] 6.00 and we reward tax-minimizing (i.e. economically optimal) choices with [to be resolved] 0.50 each. We do not remunerate decisions that failed to minimize the tax burden. For a total of 16 decisions, this

schedule yields an expected payoff of [to be resolved] 10.00 and a maximum of [to be resolved] 14.00 per person.[12] After every decision, we ask our subjects to indicate their confidence of having identified the tax-minimizing form of financing on a scale from 0 to 8.

3.4. Sample

Our sample comprises experienced students from a public business university in [to be resolved] with a background in business administration, business law, and/or economics. We invited all active students to participate via email, and personally recruited graduate students in accounting, taxation, and/or finance. These students have professional experience and a sound understanding of the topic. We conducted the experiment in the computer laboratory of the university in January 2015 and tested a total of 185 subjects in 11 sessions. Observations of 44 subjects are excluded from the primary analysis, as 40 did not pass the *check questions* and another 4 did not provide decisions for any of the 16 items. As we do not require a full set of 16 decisions per subject, we include subjects who did not provide a decision on every item in our primary sample.[13] These missing observations concern the time-pressure treatment where we did not force our subjects to take a decision within the given time frame. If no decision was taken within 45 seconds, the item was counted as unsolved and the next item was presented. However, by not taking a decision, participants forewent the opportunity to be compensated for that item.[14] The final sample consists of 141 subjects and 2,024 decisions. Table 3 provides an overview on the sample selection.

<Insert Table 3 about here>

Table 4 presents demographic data per treatment. 46.1% of the participants in the final sample are male and the average age is 25.1 years. The time-pressure treatment contains significantly more subjects with education in accounting, taxation, and/or finance ($p = 0.06$). Other than that, there is no significant difference between the two treatment groups. On average, a session without time pressure lasted approximately one hour, and a time pressure session around 45 minutes. Accordingly,

[12] We expect a payoff of [to be resolved] 10 if participants guess throughout the experiment. This is true, as a binary choice implies a 50% chance to randomly select the optimal solution.
[13] As a robustness check, we limit our sample to subjects who provided decisions on all 16 items. The results presented in section 4.6. do not differ qualitatively from the primary analysis.
[14] We do not observe a systematic distribution of missing observations across items ($X^2 = 0.932$, $df = 15$, $p > 0.999$). Thus, missing observations are randomly distributed and not driven by the perceived subjective difficulty of certain items.

the average payoff in the time-pressure treatment ([to be resolved] 10.76) amounts to about 75% of the payoff in the no-time-pressure treatment ([to be resolved] 12.82). Within a session, participants were neither allowed to leave the laboratory nor provided with feedback on their performance until the last session participant had finished the task.

<Insert Table 4 about here>

4. Results

4.1. Descriptive Statistics

Table 5 presents the distribution of tax-minimizing decisions across our treatments. We find that 18.4% of our subjects provide tax-minimizing solutions to all 16 items, which yields an average share of 68.8% tax-minimizing decisions per subject (SD = 0.23). Not surprisingly, t-tests indicate a significant difference from the optimum of 100% correct decisions per subject ($t = -16.04$, $p < 0.001$ (one-tailed)). The result holds for the no-time-pressure treatment, where roughly 40% of the subjects provide a full set of tax-minimizing decisions. The average share of 83.9% tax-minimizing decisions per subject (SD = 0.20) is significantly smaller than the optimum of 100% ($t = -6.35$, $p < 0.001$ (one-tailed)). Similarly, the average share of 58.0% tax-minimizing decisions per subject (SD = 0.19) in the time-pressure treatment is again significantly smaller than the optimum ($t = -19.93$, $p < 0.001$ (one-tailed)). If participants were to have systematically guessed, we would expect a share of 50% tax-minimizing choices. Yet, the average share of tax-minimizing decisions per subject is significantly larger than 50% ($t = 9.68$, $p < 0.001$ (one-tailed)). This result holds for the no-time-pressure treatment ($t = 13.34$, $p < 0.001$ (one-tailed)) and the time-pressure treatment ($t = 3.79$, $p < 0.001$ (one-tailed)).[15] Table 5 also indicates that the average share of tax-minimizing decisions is significantly larger for the no-time-pressure treatment compared to the time-pressure treatment ($t = 7.87$, $p < 0.001$ (one-

[15] Our results hold if the sample is limited to subjects who provided a full set of 16 decisions (untabulated). The average share of tax-minimizing decisions per subject equals 12.43 (SD = 3.43), which is significantly less than 16 ($t = –9.24$, $p < 0.001$ (one-tailed)) and significantly more than 8 ($t = 11.47$, $p = < 0.001$ (one-tailed)). For the no-time-pressure [time pressure] subsample, the average share of tax-minimizing decisions per subject equals 13.63 [9.52] (SD = 3.07; [SD = 2.39]) which is significantly less than 16 ($t = –5.79$, $p < 0.001$ (one-tailed); [$t = –13.00$, $p < 0.001$ (one-tailed)]) and significantly more than 8 ($t = 13.70$, $p < 0.001$ (one-tailed); [$t = 3.05$, $p < 0.01$ (one-tailed)]).

tailed)).[16] While almost 40% of the subjects in the no-time-pressure treatment consistently make tax-minimizing decisions, only 5% do so under time pressure. Overall, these results imply that subjects do not always take tax-minimizing decisions and that time pressure negatively affects decision quality.

<Insert Table 5 about here>

4.2. Salience of Statutory Tax Rates and Biases in Tax Planning Decisions

Under H1, we conjecture that biases in tax planning decisions are not randomly distributed, but a result of heuristics based on salient pieces of information (i.e. the tax rate differential). We investigate this hypothesis by clustering the 16 items into item groups *baseline*, *changeTCLF*, *changeTD*, and *symmetry*. As shown in Table 6, we observe the largest share of tax-minimizing decisions in *baseline*, while the share is significantly smaller in *changeTLCF* and *changeTD*. To investigate the effect of a variation in the tax parameters on decision making while controlling for the experimental treatment and personal characteristics of the subject, we estimate the following logistic regression model for decision *i* of subject *j*:

$$\ln \frac{P_{\text{tax-minimizing decision}}}{1-P_{\text{tax-minimizing decision}}}_{i,j} = \alpha + \beta_2 \text{changeTLCF} + \beta_3 \text{changeTD} + \beta_4 \text{symmetry} + \beta_5 \text{Treatment} + \beta \sum X_j + \varepsilon, \quad (8)$$

where $P_{\text{tax-minimizing decision}}{}_{i,j} = \frac{e^{(\alpha+\beta_2 \text{changeTLCF}+\beta_3 \text{changeTD}+\beta_4 \text{symmetry}+ \beta_5 \text{Treatment}+ \beta \sum X_j+\varepsilon)}}{1+ e^{(\alpha+\beta_2 \text{changeTLCF}+\beta_3 \text{changeTD}+\beta_4 \text{symmetry}+ \beta_5 \text{Treatment}+ \beta \sum X_j+\varepsilon)}}$ denotes the probability that subject *j* takes a tax-minimizing decision in item *i*.

changeTLCF, *changeTD*, and *symmetry* are indicator variables with the value of one if the decision belongs to the respective item group, and zero otherwise. α captures the natural logarithm of the odds ratio to take a tax-minimizing decision in the *baseline* item group. The coefficients for the indicator variables denote the incremental change in the odds ratio due to a variation in the item group. *Treatment* is an indicator variable which takes on the value of one if the subject belongs to the time-

[16] If we limit our sample to subjects providing decisions on all 16 items, the average share of tax-minimizing decisions per subject is again significantly smaller under time pressure ($t = 5.73$, $p < 0.001$).

pressure treatment, and zero otherwise. Vector X_j includes control variables for subject *j*'s personal characteristics (i.e. gender, work experience, education, cognitive reflexivity, and age).[17]

<Insert Table 6 about here>

Regression results depicted under column (1) in Table 7 indicate that, compared to *baseline*, the probability of taking a tax-minimizing decision is significantly lower for *changeTLCF* (by 14.8 percentage points) and *changeTD* (by 10.9 percentage points) items. Thus, decision making in the tax planning game seems to be driven by statutory tax rates where the positive tax rate differential points in the direction of debt financing for *changeTLCF* and *changeTD* items, while the size of the tax loss carry-forward causes equity financing to be tax beneficial. This unequal response to tax rate and tax base effects in the decision making process indicate a significant decision bias. As expected, we do not observe significantly different decision patterns for *baseline* and *symmetry* items. Moreover, we do not find an effect of personal characteristics (such as education, work experience, gender, age, and cognitive reflexivity) on the probability of taking tax-minimizing decisions.

4.3. Time Pressure and Biases in Tax Planning Decisions

Under H2, we conjecture that time pressure increases the propensity towards decisions biases, as it urges decision makers to rely on heuristics. Under column (1) in Table 7, we find that time pressure negatively affects the general probability of taking a tax-minimizing decision (by 25.3 percentage points), which indicates that time pressure has an overall negative effect on decision quality. To investigate the impact of time pressure on the decision bias, we re-estimate the previous regression for each experimental treatment. Results shown under columns (2) and (3) in Table 7 suggest that the decision bias exclusively occurs in the time-pressure treatment, where a decision from the *changeTLCF* item group reduces the probability of taking a tax-minimizing decision by a significant 26.6 percentage points compared to *baseline*. The coefficient for *changeTD* renders negative, as well, which indicates that participants systematically underestimate tax base effects. Without time pressure, neither changes in the tax loss carry-forward (*changeTLCF)* nor changes in the tax rate differential (*changeTD*) significantly affect the probability of taking a tax-minimizing decision

[17] A definition of variables is provided in Appendix A.

(column (3) in Table 7). Under column (4), we interact our item groups with *treatment* and retain the full sample. As expected, the interactions *changeTLCF*Treatment* and *changeTD*Treatment* yield significant coefficients. In terms of personal characteristics, we find that *education* increases the general probability of taking a tax-minimizing decision in the absence of time pressure. Overall, our results support H1 and H2: Tax planning decisions are biased towards the salient tax rate effect. Decision makers apply these heuristics more frequently when facing time pressure.

<Insert Table 7 about here>

4.4. Personal Experience and Biases in Tax Planning Decisions

We conjecture under H3 that the propensity towards decision biases in tax planning decisions depends on the personal experience of the decision maker. To investigate this hypothesis, we explore the personal characteristics of our subjects and define personal experience as (i) work experience in accounting, taxation, and/or finance or (ii) education in a specialized graduate program. Given our sample and to achieve a more nuanced analysis, we subdivide work experience into *moderate* (less than 6 months) and *advanced work experience* (more than six months). 25.5% of our subjects have *moderate work experience* while 21.3% show *advanced work experience*. 27.0% of our subjects study in a specialized graduate program. Univariate results in Table 8 indicate that subjects with work experience (Panel A) or education (Panel B) do not make a larger share of tax-minimizing choices than subjects without personal experience in accounting, taxation, and/or finance. Under time pressure, subjects with moderate or advanced work experience take significantly less tax-minimizing decisions in the *changeTLCF* item group. To further investigate the effect of personal experience on the decision bias, we modify regression (8) as follows:

$$\ln \frac{P_{\text{tax-minimizing decision}}}{1-P_{\text{tax-minimizing decision}}}_{i,j} = \alpha + \beta_2 \text{changeTLCF} + \beta_3 \text{changeTD} + \beta_4 \text{symmetry} + \beta_5 \text{changeTLCF} * \sum \text{EXPERIENCE}_j + \beta_6 \text{changeTD} * \sum \text{EXPERIENCE}_j + \beta_7 \text{symmetry} * \sum \text{EXPERIENCE}_j + \beta_8 \text{Treatment} + \beta \sum X_j + \varepsilon, \quad (9)$$

where $P_{\text{tax-minimizing decision}_{i,j}} = \frac{e^{(\alpha+\beta_2 \text{changeTLCF}+\beta_3 \text{changeTD}+\beta_4 \text{symmetry}+[\ldots])}}{1+e^{(\alpha+\beta_2 \text{changeTLCF}+\beta_3 \text{changeTD}+\beta_4 \text{symmetry}+[\ldots])}}$ denotes the probability that subject *j* takes a tax-minimizing decision in item *i*.

EXPERIENCE_j captures personal experience and includes indicator variables for *moderate* and *advanced work experience*, as well as *education*. α is the natural logarithm of the odds ratio to take a tax-minimizing decision in the *baseline* item group if subject *j* does not have personal experience. β_5, β_6, and β_7 denote the incremental effect of *changeTLCF*, *changeTD* and *symmetry* items, conditional on personal experience. *Treatment* and the remaining control variables are in line with regression (8).

<Insert Table 8 about here>

We present regression results in columns (1) to (6) of Table 10. Columns (1) and (4) comprise the full sample; (2) and (5) the time-pressure treatment; and (3) and (6) the no-time-pressure treatment. In line with our univariate results, the interaction terms between item groups and personal experience (e.g. *changeTLCF*Moderate Work Experience*) reveal that work experience or education do not imply a higher probability of taking a tax-minimizing decision in *changeTLCF* and *changeTD* item groups. The only significant positive effect of *advanced work experience* on the probability of taking a tax-minimizing decision concerns the *changeTCLF* item group in the no-time-pressure treatment. Contrary to our hypothesis, we find that, under time pressure, *moderate work experience* tends to reinforce the decision bias for *changeTLCF* and *changeTD* items. Our estimation reveals a reduction in optimal choices by 22.0 percentage points for *changeTLCF* and by 19.4 percentage points for *changeTD* items. Thus, for decision makers with a moderate level of work experience, the probability of taking a tax-minimizing decision in these item groups decreases significantly, while the effect is not significant for decision makers with an advanced degree of work experience. Overall, these results do not support H3: The decision bias in tax planning decisions identified under H1 and H2 is largely independent from personal experience as defined above. In fact, somewhat experienced decision makers tend to apply heuristics to a similar degree as decision makers without experience.

Overconfidence

When contrasting the relation between personal characteristics and the probability of taking a tax-minimizing decision with univariate results in Table 8, we find some evidence for an overconfidence bias in subjects with *moderate work experience.* These subjects indicate a higher confidence of having identified the tax-minimizing choice for *changeTLCF* and *changeTD* items compared to subjects without personal experience (see *mean of indicated confidence* in Table 8). At the same time, subjects with *moderate work experience* exhibit a significantly larger decision bias in the time-pressure treatment. Such a pattern suggests that decision makers with some work experience in accounting, taxation, and/or finance tend to overestimate their abilities – which reinforces the decision bias. A similar conclusion, however, is not possible for subjects with *advanced work experience* or *education*.

4.5. The Mitigating Effect of Tax Burden Differences in Tax Planning Decisions

We posit under H4 that the probability to take biased tax planning decisions depends on the tax effects of the available strategies. To test our final hypothesis, we evaluate the effects of tax burden differences which range from 1,280 ECU to 200,000 ECU (see Panel B of Table 2) on the probability of taking a tax-minimizing decision. Univariate results in Table 9 suggest that the share of tax-minimizing decisions is lowest for items with the smallest tax burden difference (*Delta1280*), and increases along the tax burden difference in the *changeTLCF* item group. However, we do not find a consistent pattern for the *changeTD* item group. To investigate our hypothesis in a multivariate setting, we modify regression (8) as follows:

$$\ln \frac{P_{\text{tax-minimizing decision}}}{1-P_{\text{tax-minimizing decision}_{i,j}}} = \alpha + \beta_2 \text{delta25000} + \beta_3 \text{delta60000} + \beta_4 \text{delta200000} + \beta_5 \text{Treatment} + \beta \sum X_j + \varepsilon, \quad (10)$$

where $P_{\text{tax-minimizing decision}_{i,j}} = \frac{e^{(\alpha+\beta_2 \text{delta25000}+\beta_3 \text{delta60000}+\beta_4 \text{delta200000}+\beta_5 \text{Treatment}+\beta \sum X_j+\varepsilon)}}{1+e^{(\alpha+\beta_2 \text{delta25000}+\beta_3 \text{delta60000}+\beta_4 \text{delta200000}+\beta_5 \text{Treatment}+\beta \sum X_j+\varepsilon)}}$ denotes the probability of taking a tax-minimizing decision under item *i*.

delta25000, *delta60000*, and *delta200000* are indicator variables which take on the value of one if the decision belongs to the respective item group, and zero otherwise. α captures the natural

logarithm of the odds ratio to take a tax-minimizing decision for the item with the smallest tax burden difference (*delta1280)*. Coefficients β_2, β_3, and β_4 indicate the incremental change in the odds ratio to take a tax-minimizing decision due to a variation in the tax burden difference. *Treatment* and vector X_j are identical to regression (8).

We present regression results under columns (7) to (12) in Table 10. Columns (7) to (9) include observations from the *changeTLCF* item group, while columns (10) to (12) comprise observations from the *changeTD* item group. Coefficient estimates for the indicator variables denote that within the *changeTLCF* item group, a *delta200000* item increases the probability of taking a tax-minimizing decision by a significant 15.5 percentage points compared to a *delta1280* item. Thus, the decision bias is weakly mitigated by an increasing tax burden difference. In contrast to the tax rate bias, this finding also holds for the no-time-pressure treatment. However, we do not find a mitigating effect for *changeTD* items (columns (10) to (12)). The remaining results are in line with our previous analysis where *treatment* significantly reduces the general probability of taking a tax-minimizing decision for both item groups. Overall, our results partly confirm H4: An increase in the tax burden difference between debt and equity financing weakly mitigates the decision bias.

<Insert Table 9 about here>

4.6. Supplementary Tests

To provide evidence for the robustness of our main findings and to rule out alternative explanations, we conduct additional tests and report results in Table 11. Specifically, we rerun column (1) in Table 7 on a modified sample. As a first step, we drop all subjects who did not pass the *check questions* and did not provide decisions for all 16 items. This step reduces our sample to 79 subjects (column (1) in Table 11). Although coefficient estimates are smaller, results remain qualitatively similar to our main findings. *changeTD* does not render significantly negative, while the coefficient for *changeTLCF* is still significantly less than zero. In a second step, we drop the requirement of correct *check questions* – which extends the initial sample to any observation, irrespective of whether these questions were answered correctly. This step yields a sample of 181 subjects (see column (2) in Table 11). Similarly, we obtain significant negative coefficients for both *changeTLCF* and *changeTD*.

These tests support our main finding that subjects tend to apply heuristics based on the salience of the tax rate effect. The decision bias induced by a large tax rate differential seems to be particularly stable and does not depend on the sampling procedure. Interestingly, *CRT*, which captures the outcome of the cognitive reflection test, renders a positive coefficient under column (2) in Table 11. As its coefficient is insignificant in the primary analysis, subjects with a low degree of reflexivity in decision making appear to have failed the *check questions*. This result increases our confidence that subjects who did not comprehend the experimental task are excluded from the primary analysis, and that the decision bias does not emerge from a lack of understanding. Moreover, we test whether our results could be driven by the distribution underlying our regression models, and replace the logistic regression estimated under column (1) in Table 7 with a probit model.[18] Results are similar to those of the primary analysis (see column (3) in Table 11).

<Insert Table 10 about here>

Personal Attitude towards Debt Financing

In additional tests (untabulated), we investigate whether personal attitudes towards debt financing could drive our results and explain the significant share of debt choices in *changeTLCF* and *changeTD* items. Based on eight questions presented in the questionnaire (scale from 0-8), where four concern the debtor side and four the lender side of debt financing, we construct two measures to proxy for these attitudes. Both scales comprise four questions, where higher values indicate a higher propensity towards debt financing. We estimate an OLS regression with the share of debt choices per subject as a dependent variable and the debt-attitudes scales as well as the controls from regression (8) as independent variables.[19] Our results suggest no significant effect of either the debtor side (mean = 3.23, t = 0.09, p = 0.932 (one-tailed)) or the lender side scale (mean = 2.69, t = -0.68, p = 0.496 (one-tailed)) on the share of debt choices. Thus, we are confident that personal attitudes towards debt financing do not affect our results and our subjects are not driven by a general debt preference.

[18] Both models apply a maximum likelihood method to estimate coefficients. Logit models assume a logistic distribution (logit-transformation), while probit models assume a normal distribution (probit-transformation).
[19] A Wilcoxon-Mann-Whitney test does not yield significant differences between our experimental treatments in terms of the debtor side (z = 0.289, p = 0.773) and the lender side (z = –0.157, p = 0.875) scale.

5. Discussion

This paper experimentally investigates behavioral aspects of tax planning. Our results suggest that tax planning decisions, under certain conditions, could be systematically biased, as participants consider tax rates effects more carefully while they underestimate tax base changes. Such a behavior leads to a substantial share of economically suboptimal tax planning decisions. In line with recent experimental and empirical evidence by Blaufus et al. (2013), Graham et al. (2015), and Powers et al. (2015), we attribute these results to the use of heuristics, which simplify decision making but increase the share of economically suboptimal choices. Previous research found that salient information drives decision behavior (Chetty et al. 2009) where tax rate effects appear more salient to decision makers than the effects of tax loss carry-forwards. Similarly, taxpayers could find it easier to evaluate the economic consequences of tax rate changes relative to changes in the tax base. This is true, as tax rate changes are often subject to policy debates and the media primarily refer to tax rate changes when discussing the consequences of tax reforms. Hence, strong public scrutiny of tax rate changes could imply a better understanding of their economic consequences which potentially lead participants to consider tax rates more carefully in their decisions.

While our subjects do not take systematically biased decisions if decision time is unlimited, time pressure as a proxy for resource constraints significantly intensifies the decision bias. This is true, as the likelihood to rely on heuristics decreases if subjects are able to reflect extensively on their decisions. Our finding is in line with studies that document an impact of the decision environment on the susceptibility to apply heuristics and the magnitude of a decision bias (Rothstein 1986; Payne et al. 1988; Dror et al. 1999). Under resource constraints, decision biases are largely independent from personal work experience or education. However, subjects with moderate work experience of up to six months are more confident about their decisions, but exhibit greater decision biases than subjects without work experience in accounting, taxation, and/or finance. Regarding the effect of tax burden differences on decision making, we find some support for the theory of rational inattention (Abeler and Jaeger 2015). Absent a significant tax burden difference between two available tax planning strategies, decision makers ignore relevant information and tend to apply heuristics. However, the share of tax-minimizing decisions increases in the tax burden difference between two options.

In exploring the behavioral dimension of tax planning, this paper offers several implications. In light of recent research, our findings add to the understanding of the heterogeneity in firms' tax status and the undersheltering puzzle (Dyreng et al. 2008; Hanlon and Heitzman 2010). In particular, our results indicate that tax planning decisions could be less optimal than theoretically assumed, as decision makers overestimate the effects of salient information such as statutory tax rates. Such an effect is in line with recent research by Graham et al. (2015), who report substantial financial losses for firms due to simplified decision making.

Although we do not exclusively investigate tax professionals, our results offer implications for corporate decision making. While shareholder scrutiny is assumed to rule out suboptimal decisions in public firms (DellaVigna 2009), lacking feedback for decision makers could facilitate biased decision making (Camerer and Malmendier 2007). Non-disclosure of tax planning schemes in financial statements, for instance, may hinder the evaluation of tax planning decisions. The same is true for tax audits, which could reveal overly aggressive tax planning structures while decision makers do not receive feedback on tax planning schemes which fail to minimize a firm's tax burden. In light of the large proportion of U.S. firms paying taxes in excess of the 35% statutory tax rate (Dyreng et al. 2008), our results suggest that managers and stakeholders should be aware of systematic decision biases when evaluating tax planning schemes or strategies.

Furthermore, corporate decision making is regularly affected by resource constraints, such as strict time limits or budget restrictions. Such an environment exacerbates the collection of decision-relevant information and facilitates the application of heuristics. The propensity to apply heuristics could, for instance, increase if a tax planning decision is taken by an executive who neither is familiar with the decision framework evaluated by the tax department nor receives sufficient internal information from the respective department (Gallemore and Labro 2015). An overrepresentation of salient information may cause decision biases leading to financial losses and negative effects on a firm's competitiveness, investments and growth. Along the same lines, an overconfidence bias in subjects with some work experience in accounting, taxation, and/or finance could facilitate economically suboptimal tax planning. Ben-David, Graham, and Harvey (2013) support this

conclusion, as they find that overconfidence of executives translates into more aggressive but less optimal corporate behavior.

Finally, our results suggest that the increasing complexity of tax rules and the difficulty to comprehend their economic effects, foster decision making based on heuristics (Rupert, Single and Wright 2003). Such a behavior seems plausible, as overly complicated tax rules tend to require simplified decision strategies which result in economically suboptimal decisions and, for instance, lead to a misallocation of resources. In this respect, our results offer a behavioral explanation for the fact that tax revenues in industrialized countries did not decline in response to recent tax rate cutting and base broadening actions (Carone, Schmidt, and Nicodeme 2007). This is true, as corporate taxpayers may have underestimated tax base effects and insufficiently adapted their tax planning strategies.

Findings from the laboratory are sometimes criticized for their lack of external validity as the complexity of real-life decisions is difficult to model in a laboratory setting. With regard to the present study, tax executives and advanced students could differ in the way they approach tax planning tasks. Although we are unable to investigate decision making among senior executives with several years of work experience, a significant share of our participants has work experience or relevant graduate education in the fields of accounting, taxation, and/or finance. Moreover, there is ample evidence that students' decision making does not systematically deviate from professionals in accounting and management (Ashton and Kramer 1980; Remus 1996; Depositario, Nayga, Wu, and Laude 2009; Liyanarachchi 2007). Similarly, Elliot, Hodge, Kennedy, and Pronk (2007) show that investment decisions by students are valid if, like in the present case, the integrative complexity of an experimental task is rather low.

While laboratory experiments offer valuable insights into the behavioral dimension of tax planning decisions, we are unable to model all aspects of decision making. In practice, a variety of factors affect decisions, including external consultants, liquidity aspects, risk considerations and accounting consequences. These factors, together with a manager's incentives (e.g. compensation), could influence tax planning decisions. As we are interested in exploring the role of tax rate and tax base effects, we abstract from these dimensions. Nonetheless, we fully acknowledge their relevance for decision makers and leave their consideration in tax planning decisions for future research.

References

Abeler, J., and S. Jaeger. 2015. Complex Tax Incentives. *American Economic Journal: Economic Policy* 7 (3): 1-28.

Ashton, R. H., and S. S. Kramer. 1980. Students as Surrogates in Behavioral Accounting Research: Some Evidence. *Journal of Accounting Research* 18 (1): 1-13.

Badertscher, B., Phillips, J., Pincus, M., and S. Rego. 2009. Earnings Management Strategies and the Trade-Off between Tax Benefits and Detection Risk: To Conform or Not to Conform? *The Accounting Review* 84 (1): 63-97.

Balakrishnan, K., Blouin, J. L., and W. Guay. 2011. Does Tax Aggressiveness Reduce Financial Reporting Transparency? Working Paper, London Business School and University of Pennsylvania.

Beer, S., and J. Loeprick. 2015. Profit Shifting: Drivers of Transfer (Mis)pricing and the Potential of Countermeasures. *International Tax and Public Finance* 22 (3): 426-451.

Ben-David, I., Graham, J. R., and C. R. Harvey. 2013. Managerial Miscalibration. *The Quarterly Journal of Economics* 128 (4): 1547-1584.

Blaufus, K., Bob, J., Hundsdoerfer, J., Kiesewetter, D., and J. Weimann. 2013. Decision Heuristics and Tax Perception – An Analysis of a Tax-Cut-cum-Base-Broadening Policy. *Journal of Economic Psychology* 35 (1): 1-16.

Braun, R. L. 2000. The Effect of Time Pressure on Auditor Attention to Qualitative Aspects of Misstatements Indicative of Potential Fraudulent Financial Reporting. *Accounting, Organizations and Society* 25 (3): 243-259.

Brown, J. 2011. The Spread of Aggressive Tax Reporting: A Detailed Examination of the Corporate-Owned Life Insurance Shelter. *The Accounting Review* 86 (1): 23-57.

Buettner, T., and M. Ruf. 2007. Tax Incentives and the Location of FDI: Evidence from a Panel of German Multinationals. *International Tax and Public Finance* 14 (2): 151-164.

Buettner, T., Overesch, M., Schreiber, U., and G. Wamser. 2009. Taxation and Capital Structure Choice – Evidence from a Panel of German Multinationals. *Economics Letters* 105 (3): 309-311.

Buettner, T., and G. Wamser. 2013. Internal Debt and Multinational Profit Shifting: Empirical Evidence form Firm-Level Panel Data. *National Tax Journal* 66 (1): 63-96.

Camerer, C., and U. Malmendier. 2007. Behavioral Economics of Organizations. In *Behavioral Economics and Its Applications*, edited by Diamond, P., and Vartiainen, H., 235-291, Princeton, NJ: Princeton University Press.

Carone, G., Schmidt, J. H., and G. Nicodeme. 2007. Tax Revenues in the European Union: Recent Trends and Challenges Ahead. European Economy – Economic Papers, no. 280.

Chetty, R., Looney, A., and K. Kroft. 2009. Salience and Taxation: Theory and Evidence. *American Economic Review* 99 (4): 1145-1177.

Choo, F. 1995. Auditors' Judgement Performance under Stress: A Test of the Predicted Relationship by Three Theoretical Models. *Journal of Accounting Auditing & Finance* 10 (3): 611-641.

Croson, R. 2005. The Method of Experimental Economics. *International Negotiation* 10 (1): 131-148.

DellaVigna, S. 2009. Psychology and Economics: Evidence from the Field. *Journal of Economic Literature* 47 (2): 315-72.

Depositario, D. P. T., Nayga, R. M., Wu, X., and T. P. Laude. 2009. Should Students be used as Subjects in Experimental Auctions? *Economics Letters* 102 (2): 122-124.

Desai, M. A., Foley, F., and J. R. Hines. 2004. A Multinational Perspective on Capital Structure Choice and Internal Capital Markets. *The Journal of Finance* 59 (6): 2451-2487.

Desai, M. A., and D. Dharmapala. 2006. Corporate Tax Avoidance and High-Powered Incentives. *Journal of Financial Economics* 79 (1): 14-79.

Donohoe, M. P. 2015. The Economic Effects of Financial Derivatives on Corporate Tax Avoidance. *Journal of Accounting and Economics* 59 (1): 1-24.

Donohoe, M. P., Lisowsky, P., and M. A. Mayberry. 2015. Who Benefits from the Tax Advantages of Organizational Form Choice?, *National Tax Journal*, forthcoming.

Dror, I. E., Busemeyer, J. R., and B. Basola. 1999. Decision Making under Time Pressure: An Independent Test of Sequential Gambling Models. *Memory & Cognition* 27 (4): 713-725.

Dyreng, S., Hanlon, M,. and E. Maydew. 2008. Long-Run Corporate Tax Avoidance. *The Accounting Review* 83 (1): 61-82.

Dyreng, S., and B. Lindsey. 2009. Using Financial Accounting Data to Examine the Effect of Foreign Operations Located in Tax Havens and Other Countries on US Multinationals' Tax Rates. *Journal of Accounting Research* 47 (5): 1283-1316.

Dyreng, S., Lindsey, B., and J. Thornock. 2013. Exploring the Role Delaware Plays as a Domestic Tax Haven. *Journal of Financial Economics* 108 (3): 751-772.

Eberhartinger, E., and G. Fellner-Röhling. 2016. Why Don't they Minimize Their Tax? An Experimental Approach to Cross Border Hybrid Finance. *Business Administration Review* 76 (2): 167-184.

Elliot, W. B., Hodge, F. D., Kennedy, J. J., and M. Pronk. 2007. Are M.B.A. Students a Good Proxy for Nonprofessional Investors? *The Accounting Review* 82 (1): 139-168.

Feld, L., Heckemeyer, J. H., and M. Overesch. 2013. Capital Structure Choice and Company Taxation: A Meta-Study. *Journal of Banking & Finance* 37 (8): 2850-2866.

Fochmann, M., and J. Weimann. 2013. The Effects of Tax Salience and Tax Experience on Individual Work Efforts in a Framed Field Experiment. *FinanzArchiv* 69 (4): 511-542.

Fischbacher, U. 2007. z-Tree: Zurich Toolbox for Ready-Made Economic Experiments. *Experimental Economics* 10 (2): 171-178.

Frank, M., Lynch, L., and S. Rego. 2009. Tax Reporting Aggressiveness and its Relation to Aggressive Financial Reporting. *The Accounting Review* 84 (2): 467-496.

Frederick, S. 2005. Cognitive Reflection and Decision Making. *Journal of Economic Perspectives* 19 (4): 25-42.

Gallemore, J., Maydew, E. L., and J. R. Thornock. 2014. The Reputational Costs of Tax Avoidance. *Contemporary Accounting Research* 31 (4): 1103-1133.

Gallemore, J., and E. Labro. 2015. The Importance of the Internal Information Environment for Tax Avoidance. *Journal of Accounting and Economics* 60 (2): 149-167.

Gigerenzer, G., and W. Gaissmaier. 2011. Heuristic Decision Making. *Annual Review of Psychology* 62 (1): 451-482.

Graham, J. R., Hanlon, M., Shevlin, T., and N. Shroff. 2015. Tax Rates and Corporate Decision Making. Working Paper, Duke University, Massachusetts Institute of Technology, and University of California-Irvine

Hanlon, M., and S. Heitzman. 2010. A Review of Tax Research. *Journal of Accounting and Economics* 50 (2-3): 127-178.

Heckemeyer, J. H., and M. Overesch. 2013. Multinationals' Profit Response to Tax Differentials: Effect Size and Shifting Channels. Zentrum für Europäische Wirtschaftsforschung (ZEW), Discussion Paper 13-045.

Hines, J. R., and E. M. Rice. 1994. Fiscal Paradise: Foreign Tax Havens and American Business. *Quarterly Journal of Economics* 109 (1): 149-182.

Huizinga, H., Laeven, L., and G. Nicodeme. 2008. Capital Structure and International Debt Shifting. *Journal of Financial Economics* 88 (1): 80-118.

Johannesen, N. 2014. Tax Avoidance with Cross-Border Hybrid Instruments. *Journal of Public Economics* 112 (1) 40-52.

Kahneman, D. 2003. A Perspective on Judgement and Choice – Mapping Bounded Rationality. *American Psychologist* 58 (9): 697-720.

Kahneman, D. 2011. *Thinking Fast and Slow*. London: Farrar, Straus, and Giroux.

Klassen, K. J., and S. K. LaPlante. 2012. Are U.S. Multinational Corporations Becoming More Aggressive Income Shifters? *Journal of Accounting Research* 50 (5): 1245-1285.

Kirchler, E. 2007. *The Economic Psychology of Tax Behaviour*. Cambridge: Cambridge University Press.

Lisowsky, P., Robinson, L., and A. Schmidt. 2013. Do Publicly Disclosed Tax Reserves Tell Us About Privately Disclosed Tax Shelter Activity? *Journal of Accounting Research* 51 (3): 583-629.

Liyanarachchi, G. A. 2007. Feasibility of Using Student Subjects in Accounting Experiments: A Review. *Pacific Accounting Review* 19 (1): 47-67.

Low, K., and H. Tan. 2011. Does Time Constraint Lead to Poorer Audit Performance? Effects of Forewarning of Impending Time Constraints and Instructions. *Auditing: A Journal of Practice & Theory* 30 (4): 173-190.

McCaffery, E. J., and J. Baron. 2003. The Humpty Dumpty Blues: Disaggregation Bias in the Evaluation of Tax Systems. *Organizational Behavior and Human Decision Processes* 91 (2): 230-242.

Mills, L. F., Nutter, S. E., and C. M. Schwab. 2013. The Effect of Political Sensitivity and Bargaining Power on Taxes: Evidence from Federal Contractors. *The Accounting Review* 88 (3): 977-1005.

Overesch, M., and G. Wamser. 2014. Bilateral Internal Debt Financing and Tax Planning of Multinational Firms. *Review of Quantitative Finance and Accounting* 42 (2): 191-209.

Payne, J. W., Bettman, J. R., and E. J. Johnson. 1988. Adaptive Strategy Selection in Decision Making. *Journal of Experimental Psychology* 14 (3): 534-552.

Piazolo, M. 2007. Gerechtigkeit siegt über Eigennutz, Ein Ultimatum Bargaining Game anhand von WM-Tickets. In *5th International Conference on Management, Enterprise and Benchmarking MEB 2007*, 45-48. Budapest.

Ponemon, L. A. 1992. Auditor Underreporting of Time and Moral Reasoning: An Experimental Lab Study. *Contemporary Accounting Research* 9 (1): 171-211.

Powers, K., Seidman, J., and B. Stomberg. 2015. Examining which Tax Rates Investors Use for Equity Valuation. Working Paper, University of Texas at Austin, University of Virginia, and University of Georgia.

Remus, W. 1996. Will Behavioral Research on Managerial Decision Making Generalize to Managers? *Managerial and Decision Economics* 17 (1): 93-101.

Rothstein, H. G. 1986. The Effects of Time Pressure on Judgement in Multiple Cue Probability Learning. *Organizational Behavior and Human Decision Processes* 37 (1): 83-92.

Rupert, T. J., and A. M Wright. 1998. The Use of Marginal Tax Rates in Decision Making: The Impact of Tax Rate Visibility. *Journal of the American Taxation Association* 20 (1): 83-99.

Rupert, T. J., Single, L. E., and A. M. Wright. 2003. The Impact of Floors and Phase-Outs on Taxpayers' Decisions and Understanding of Marginal Tax Rates. *Journal of the American Taxation Association* 25 (1): 72-86.

Scholes, M., M. Wolfson, M. Erickson, E. Maydew, and T. Shevlin. 2014. *Taxes and Business Strategy: A Planning Approach*. 5th edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Simon, H. A. 1955. A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics* 69 (1): 99-118.

Sørensen, P. B. 1992. The Effects of Taxation on International Investment and Economic Efficiency. In *Report of the Committee of Independent Experts on Company Taxation* edited by European Commission, 313-358, Luxembourg: Publications Office of the European Union.

Tversky, A., and D. Kahneman. 1974. Judgment under Uncertainty: Heuristics and Biases. *Science* 185 (4157): 1124-1131.

Tversky, A., and D. Kahneman. 1981. The Framing of Decisions and the Psychology of Choice. *Science* 211 (4481): 453-458.

Weisbach, D. 2002. Ten Truths about Tax Shelters. *Tax Law Review* 55 (2): 215-253.

Zacharakis, A. L., and D. A. Shepherd. 2011. The Nature of Information and Overconfidence on Venture Capitalist' Decision Making. *Journal of Business Venturing* 16 (4): 311-332.

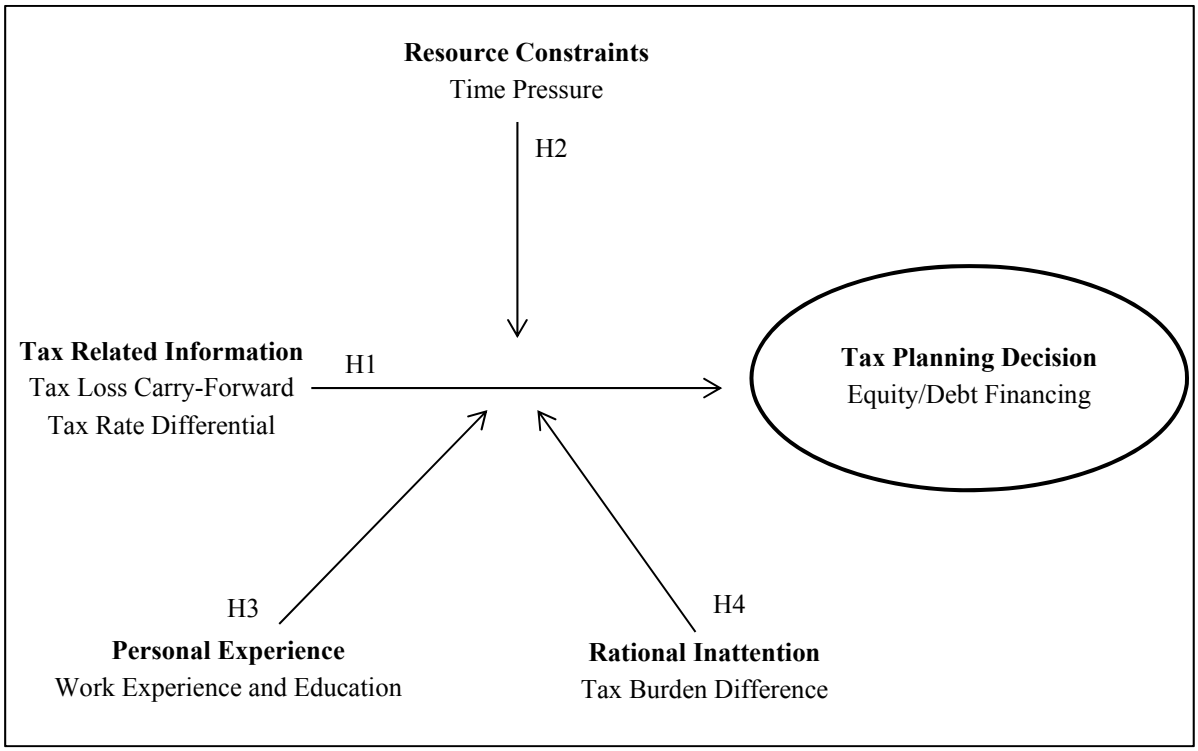
Appendix A: Definition of variables

Variable	Definition
Age	Discrete variable capturing the age of subject *j*.
baseline	Dummy variable which takes on the value of one if a decision stems from the *baseline* item group (items 1-4), and zero otherwise.
changeTD	Dummy variable which takes on the value of one if a decision stems from the *changeTD* item group (items 13-16), and zero otherwise.
changeTLCF	Dummy variable which takes on the value of one if a decision stems from the *changeTLCF* item group (items 5-8), and zero otherwise.
CRT	Dummy variable which takes on the value of one if subject *j* has correctly solved all three questions of the cognitive reflection test based on Frederick (2005), and zero otherwise.
delta1280	Dummy variable which takes on the value of one if a decision stems from the *Delta1280* item group (items 4, 5, 12, and 13), and zero otherwise.
delta25000	Dummy variable which takes on the value of one if a decision stems from the *Delta25000* item group (items 3, 6, 11, and 14), and zero otherwise.
delta60000	Dummy variable which takes on the value of one if a decision stems from the *Delta60000* item group (items 2, 7, 10, and 15), and zero otherwise.
delta200000	Dummy variable which takes on the value of one if a decision stems from the *Delta200000* item group (items 1, 8, 9, and 16), and zero otherwise.
Education	Dummy variable which takes on the value of one if subject *j* is studying in a program with a specific focus on accounting, taxation, and/or finance.
Advanced Work Experience	Dummy variable which takes on the value of one if subject *j* has more than six months of work experience in the area of accounting, taxation, and/or finance, and zero otherwise.
Male	Dummy variable which takes on the value of one if subject *j* indicated to be male, and zero otherwise.
Moderate Work Experience	Dummy variable which takes on the value of one if subject *j* has less than six months of work experience in the area of accounting, taxation, and/or finance, and zero otherwise.

symmetry	Dummy variable which takes on the value of one if a decision stems from the *symmetry* item group (items 9-12), and zero otherwise.
Treatment	Dummy variable which takes on the value of one if subject *j* was allocated to the time-pressure treatment, and zero otherwise.
Work Experience	Dummy variable which takes on the value of one if subject *j* has at least one month of work experience in the area of accounting, taxation, and/or finance, and zero otherwise.

Appendix B: Figures and tables

Figure 1: Theoretical framework and summary of hypotheses



Note: This figure depicts our theoretical framework and summarizes the hypotheses. Under H1, we investigate whether tax-related information is disentangled in tax planning decisions. H2 examines the effect of time pressure, and H3 the effect of education and work experience on tax planning decisions. H4 investigates the influence of tax burden differences.

Table 1: Summary of tax preferences for intra-group financing

Tax loss carry-forward	Factor θ	Tax rate differential	Tax preference
$L_b \leq (\pi_b - I)$	1	$d < 0$	Equity
$L_b \leq (\pi_b - I)$	1	$d = 0$	Indifference
$L_b \leq (\pi_b - I)$	1	$d > 0$	Debt
$L_b > (\pi_b - I)$	$(\pi_b - I)/L_b$	$d \leq 0$	Equity
$L_b > (\pi_b - I)$	$(\pi_b - I)/L_b$	$d > 0$	Dependent on d and L_b

Note: This table presents tax preferences for intra-group financing. θ denotes the fraction of the tax loss carry-forward which can be offset against taxable profits after the deduction of interest payments I. π_b describes the income of the subsidiary before deducting interest payments on intra-group debt and a tax loss carry-forward. I captures interest payments on intra-group debt provided by the parent company. L_b denotes the amount of tax loss carry-forward available at the subsidiary. d refers to the tax rate differential (i.e. the difference in statutory tax rates) between the subsidiary and the parent company.

Table 2: Definition of items and item groups

Panel A: Tax parameters per item

Item	**1**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,400,000
Δ Group Tax Burden from Equity	**+200,000**

Item	**2**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,680,000
Δ Group Tax Burden from Equity	**+60,000**

Item	**3**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,750,000
Δ Group Tax Burden from Equity	**+25,000**

Item	**4**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,797,430
Δ Group Tax Burden from Equity	**+1,285**

Item	**5**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,802,570
Δ Group Tax Burden from Equity	**-1,285**

Item	**6**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,850,000
Δ Group Tax Burden from Equity	**-25.000**

Item	**7**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	2,920,000
Δ Group Tax Burden from Equity	**-60,000**

Item	**8**
Tax Rate Subsidiary	0.5
Tax Rate Parent	0.2
Tax Loss Carry-Forward	3,200,000
Δ Group Tax Burden from Equity	**-200.000**

Item	**9**
Tax Rate Subsidiary	0.388
Tax Rate Parent	0.0368
Tax Loss Carry-Forward	3,200,000
Δ Group Tax Burden from Equity	**+200,000**

Item	**10**
Tax Rate Subsidiary	0.5175
Tax Rate Parent	0.1663
Tax Loss Carry-Forward	2,920,000
Δ Group Tax Burden from Equity	**+60,000**

Item	**11**
Tax Rate Subsidiary	0.556
Tax Rate Parent	0.2048
Tax Loss Carry-Forward	2,850,000
Δ Group Tax Burden from Equity	**+25,000**

Item	**12**
Tax Rate Subsidiary	0.5838
Tax Rate Parent	0.2326
Tax Loss Carry-Forward	2,802,570
Δ Group Tax Burden from Equity	**+1,260**

Item	**13**
Tax Rate Subsidiary	0.201
Tax Rate Parent	0.081
Tax Loss Carry-Forward	2,797,430
Δ Group Tax Burden from Equity	**-1,283**

Item	**14**
Tax Rate Subsidiary	0.22
Tax Rate Parent	0.1
Tax Loss Carry-Forward	2,750,000
Δ Group Tax Burden from Equity	**-25,000**

Item	**15**
Tax Rate Subsidiary	0.25
Tax Rate Parent	0.13
Tax Loss Carry-Forward	2,680,000
Δ Group Tax Burden from Equity	**-60,000**

Item	**16**
Tax Rate Subsidiary	0.4
Tax Rate Parent	0.28
Tax Loss Carry-Forward	2,400,000
Δ Group Tax Burden from Equity	**-200,000**

Panel B: Tax parameters per item group

Item group	**Baseline**	**ChangeTLCF**	**ChangeTD**	**Symmetry**
Items	1, 2, 3, 4	5, 6, 7, 8	13, 14, 15, 16	9, 10, 11, 12
Tax loss carry-forward	increasing	increasing	decreasing	decreasing
Tax rate differential	high	high	low	high
Tax-minimizing choice	debt	equity	equity	debt
Item group	**Delta1280**	**Delta25000**	**Delta60000**	**Delta200000**
Items	4, 5, 12, 13	3, 6, 11, 14	2, 7, 10, 15	1, 8, 9, 16
Tax burden difference between tax-minimizing and suboptimal choice	1,280 ECU	25,000 ECU	60,000 ECU	200,000 ECU

Note: This table presents the 16 items used in the experimental testing (Panel A) as well as the item groups and their main properties (Panel B). *Items* denote the item numbers used in Panel A.

Table 3: Sample selection

Panel A: Sample selection: subject basis

Treatment	Time Pressure	No Time Pressure	Full Sample
N Total Sample	108	77	185
Check Questions Failed	-22	-18	-40
No Decisions Taken	-4	0	-4
N Final Sample	82	59	141

Panel B: Sample selection: item basis

Treatment	Time Pressure	No Time Pressure	Full Sample
N Total Decisions (hypothetical)	1,728	1,232	2,960
Check Questions Failed	-352	-288	-640
Missing Observations	-293	-3	-296
N Final Sample	1,083	941	2,024

Note: This table shows the sample selection procedure on subject (Panel A) and item basis (Panel B). *Total Decisions (hypothetical)* denotes the hypothetical number of decisions if every participant would have taken 16 tax planning decisions. Tax planning decisions are excluded from the primary analysis if the subject failed to correctly answer the check questions (*Check Questions Failed*). Additionally, observations are excluded if the subject did not provide at least one tax planning decision (*Missing Observations*).

Table 4: Demographic data

Variable \ Treatment	Time Pressure (N=82)	No Time Pressure (N=59)	Difference p-Value	Full Sample (N=141)
Male	42.68%	50.85%	0.337	46.10%
Age	25.15 (5.82)	25.00 (4.86)	0.898	25.09 (5.42)
Education	32.93%	18.64%	0.059*	26.95%
Work Experience	46.34%	47.46%	0.896	46.81%
CRT	1.49 (1.22)	1.44 (1.18)	0.799	1.47 (1.20)

Note: This table presents demographic data per experimental treatment. *Male* describes the share of male participants. *Age* displays mean age. *Education* covers the share of participants that study in a program with a specific focus on accounting, taxation, and/or finance. *Work Experience* describes the share of participants that have more than 1 month of work experience in the field of accounting, taxation and/or finance. *CRT* indicates the mean score of the cognitive reflection test (Frederick 2005; scale: 0-3). Standard deviations are provided in parentheses. A Wilcoxon-Mann-Whitney test is applied on ordinal or interval variables (*Age*), while a Chi²-Test is applied on categorical variables (*Male, Education, Work Experience,* and *CRT*). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Summary statistics: Share of tax-minimizing decisions across treatments

Descriptives / Sample	Number of Decisions	Share of Tax-Minimizing Decisions	Difference	p-Value	Standard Deviation	Min	Max	25th Percentile	Median	75th Percentile
Time Pressure	1,083	0.580	0.259***	< 0.001	0.191	0.000	1.000	0.500	0.563	0.692
No Time Pressure	941	0.839			0.195	0.313	1.000	0.688	0.938	1.000
Full Sample	2,024	0.688			0.231	0.000	1.000	0.500	0.688	0.938

Note: This table presents the distribution of tax-minimizing decisions across treatments. A two-sample t-test is performed to compare means between the time-pressure and no-time-pressure treatments. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (one-tailed).

Table 6: Summary statistics: Share of tax-minimizing decisions per item group

Treatment / Item group	Time Pressure	No Time Pressure	Difference	p-Value	Full Sample
	Share of Tax-Minimizing Decisions	Share of tax-Minimizing Decisions			Share of Tax-Minimizing Decisions
Baseline	0.715	0.843	-0.127***	< 0.001	0.774
ChangeTLCF	0.441	0.835	-0.394***	< 0.001	0.624
Difference	0.274***	0.008			0.150***
p-Value	< 0.001	0.409			< 0.001
Baseline	0.715	0.843	-0.127***	< 0.001	0.774
ChangeTD	0.515	0.843	-0.328***	< 0.001	0.667
Difference	0.200***	0.000			0.107***
p-Value	< 0.001	0.500			< 0.001
Baseline	0.715	0.843	-0.127***	< 0.001	0.774
Symmetry	0.679	0.838	-0.159***	< 0.001	0.754
Difference	0.036	0.004			0.020
p-Value	0.181	0.450			0.227

Note: This table presents the average share of tax-minimizing decisions per item group. A two-sample t-test is performed to compare means. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (one-tailed).

Table 7: Primary regression results for H1 and H2

Tax Minimizing Decision	Full Sample (1)	Time Pressure (2)	No Time Pressure (3)	Full Sample (4)
Constant	1.939*** (0.356)	0.645** (0.282)	1.705*** (0.543)	1.536*** (0.377)
changeTLCF	-0.795*** (0.216) [-0.148]	-1.162*** (0.271) [-0.266]	-0.058 (0.354) [-0.008]	-0.057 (0.342) [-0.149]
changeTD	-0.585*** (0.192) [-0.109]	-0.862*** (0.222) [-0.197]	-0.003 (0.348) [-0.001]	-0.001 (0.338) [-0.106]
symmetry	-0.135 (0.134) [-0.025]	-0.173 (0.171) [-0.039]	-0.033 (0.185) [-0.004]	-0.032 (0.179) [-0.024]
changeTLCF*Treatment				-1.110** (0.436) [-0.273]
changeTD*Treatment				-0.865** (0.405) [-0.199]
symmetry*Treatment				-0.147 (0.248) [-0.040]
Treatment	-1.359*** (0.202) [-0.253]			-0.782*** (0.299) [-0.256]
Male	0.260 (0.160) [0.048]	0.216 (0.148) [0.049]	0.369 (0.399) [0.048]	0.264 (0.162) [0.049]
Age	-0.005 (0.012) [-0.001]	0.005 (0.011) [0.001]	-0.020 (0.017) [-0.003]	-0.004 (0.012) [-0.001]
Education	0.296 (0.194) [0.055]	0.138 (0.108) [0.032]	1.116* (0.641) [0.145]	0.300 (0.197) [0.056]
Work Experience	0.030 (0.187) [0.006]	-0.017 (0.196) [-0.004]	0.044 (0.386) [0.006]	0.029 (0.188) [0.005]
CRT	0.235 (0.187) [0.044]	0.091 (0.182) [0.021]	0.611 (0.547) [0.080]	0.237 (0.189) [0.044]
Observations	2,024	1,083	941	2,024
Pseudo R^2	0.089	0.043	0.038	0.096

Note: We estimate logistic regressions with the natural logarithm of the odds ratio to take a tax-minimizing decision as a dependent variable. For Model (2), the sample is reduced to the time-pressure treatment, while Model (3) is estimated for the no time pressure group. Robust standard errors are estimated and clustered on subject level (provided in parentheses). Average marginal effects are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Table 8: Summary statistics: Share of tax-minimizing decisions and personal experience for *changeTLCF* and *changeTD* items

Panel A: Share of tax-minimizing decisions per subject dependent on work experience

Treatment	**Time Pressure**		**No Time Pressure**		**Full Sample**	
***changeTLCF* Item Group**	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence
No Work Experience	0.496	3.448	0.798	5.758	0.621	4.429
Moderate Work Experience	0.325	4.886	0.844	7.640	0.556	6.145
Difference	0.171**	-1.438**	-0.045	-1.883***	0.066	-1.716***
p-Value	0.033	0.017	0.325	0.002	0.199	< 0.001
No Work Experience	0.496	3.448	0.798	5.758	0.621	4.429
Advanced Work Experience	0.324	4.686	0.917	6.563	0.561	5.463
Difference	0.172**	-1.238**	-0.118	-0.804	0.060	-1.033**
p-Value	0.040	0.028	0.127	0.155	0.235	0.030
Moderate Experience	0.325	4.886	0.844	7.640	0.556	6.145
Advanced Work Experience	0.324	4.686	0.917	6.563	0.561	5.463
Difference	0.001	0.200	-0.073	1.078**	-0.006	0.683
p-Value	0.497	0.397	0.219	0.003	0.478	0.112
***changeTD* Item Group**	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence
No Work Experience	0.511	3.236	0.782	5.823	0.623	4.320
Moderate Work Experience	0.396	4.325	0.891	7.609	0.616	5.785
Difference	0.116	-1.089**	-0.108	-1.787***	0.008	-1.465***
p-Value	0.105	0.038	0.117	0.003	0.459	0.003
No Work Experience	0.511	3.236	0.782	5.823	0.623	4.320
Advanced Work Experience	0.519	4.623	0.931	6.236	0.683	5.290
Difference	-0.007	-1.386**	-0.148*	-0.414	-0.060	-0.970**
p-Value	0.468	0.011	0.065	0.300	0.208	0.036
Moderate Experience	0.396	4.325	0.891	7.609	0.616	5.785
Advanced Work Experience	0.519	4.623	0.931	6.236	0.683	5.290
Difference	-0.123	-0.298	-0.040	1.373***	-0.068	0.494
p-Value	0.143	0.350	0.292	0.009	0.231	0.203

Panel B: Share of tax-minimizing decisions per subject dependent on education

Treatment	**Time Pressure**		**No Time Pressure**		**Full Sample**	
***changeTLCF* Item Group**	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence	Share of Tax-Minimizing Decisions	Mean of Indicated Confidence
No Education	0.435	3.656	0.802	6.167	0.606	4.837
Education	0.380	4.997	0.977	7.591	0.553	5.812
Difference	0.055	-1.341***	-0.175**	-1.424**	0.053	-0.974**
p-Value	0.251	0.010	0.038	0.022	0.234	0.025
***changeTD* Item Group**	Share of tax-minimizing Decisions	Mean of Indicated Confidence	Share of tax-minimizing Decisions	Mean of Indicated Confidence	Share of tax-minimizing Decisions	Mean of Indicated Confidence
No Education	0.498	3.472	0.811	6.111	0.644	4.726
Education	0.457	4.454	0.977	7.614	0.607	5.368
Difference	0.042	-0.982**	-0.167**	-1.503**	0.037	-0.642*
p-Value	0.299	0.032	0.033	0.017	0.295	0.092

Note: This table presents the average share of tax-minimizing decisions per subject for the *changeTLCF* item group (Panel A) and the *changeTD* item group (Panel B). *Indicated Confidence* is the self-stated degree of confidence in having identified the tax-minimizing form of intra-group financing for a particular item (scale: 0-8). *No Work Experience* denotes subjects who do not have work experience in the field of accounting, taxation, and/or finance while *Moderate Work Experience* includes subjects who have less than six months of relevant work experience. *Advanced Work Experience* involves subjects who have more than six months of relevant work experience. *Education* covers participants who study in a graduate program for accounting, taxation, and/or finance, while *No Education* refers to subjects without relevant education. A two-sample t-test is performed to compare means. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (one-tailed).

Table 9: Summary statistics: Share of tax-minimizing decisions per item

Treatment / Item	Time Pressure	No Time Pressure	Difference	p-Value	Full Sample
	Share of Tax-Minimizing Decisions	Share of Tax-Minimizing Decisions			Share of Tax-Minimizing Decisions
Item 1	0.739	0.814	-0.074	0.160	0.773
Item 2	0.723	0.914	-0.191***	0.003	0.813
Item 3	0.700	0.847	-0.147***	0.024	0.767
Item 4	0.700	0.797	-0.097	0.107	0.744
Item 5	0.382	0.780	-0.397***	< 0.001	0.567
Item 6	0.424	0.797	-0.372***	< 0.001	0.600
Item 7	0.435	0.814	-0.379***	< 0.001	0.609
Item 8	0.522	0.949	-0.427***	< 0.001	0.719
Item 9	0.716	0.780	-0.063	0.210	0.746
Item 10	0.667	0.898	-0.232***	< 0.001	0.773
Item 11	0.739	0.814	0.074	0.160	0.773
Item 12	0.583	0.862	-0.279***	< 0.001	0.720
Item 13	0.493	0.776	-0.283***	< 0.001	0.624
Item 14	0.493	0.898	-0.406***	< 0.001	0.683
Item 15	0.594	0.864	-0.270***	< 0.001	0.719
Item 16	0.478	0.831	-0.352***	< 0.001	0.641
Item 5	0.382	0.780			0.567
Item 6	0.424	0.797			0.600
Difference	-0.042	-0.017			-0.033
p-Value	0.312	0.412			0.298
Item 5	0.382	0.780			0.567
Item 7	0.435	0.814			0.609
Difference	-0.053	-0.034			-0.042
p-Value	0.268	0.325			0.247
Item 5	0.382	0.780			0.567
Item 8	0.522	0.949			0.719
Difference	-0.139*	-0.169***			-0.152***
p-Value	0.051	0.003			0.006
Item 13	0.493	0.776			0.624
Item 14	0.493	0.898			0.683
Difference	0.000	-0.122**			-0.059
p-Value	0.500	0.036			0.166
Item 13	0.493	0.776			0.624
Item 15	0.594	0.864			0.719
Difference	-0.102	-0.089			-0.095*
p-Value	0.119	0.108			0.055
Item 13	0.493	0.776			0.624
Item 16	0.478	0.831			0.641
Difference	0.014	-0.055			-0.017
p-Value	0.566	0.231			0.393

Note: This table presents the average share of tax-minimizing decisions per item. A two-sample t-test is performed to compare means. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (one-tailed).

Table 10: Additional regression results for H3 and H4

Tax Minimizing Decision	Full Sample (1)	Time Pressure (2)	No Time Pressure (3)	Full Sample (4)	Time Pressure (5)	No Time Pressure (6)	Full Sample changeTLCF (7)	Time Pressure changeTLCF (8)	No Time Pressure changeTLCF (9)	Full Sample changeTD (10)	Time Pressure changeTD (11)	No Time Pressure changeTD (12)
Constant	2.089*** (0.391)	0.494 (0.401)	2.281*** (0.643)	1.933*** (0.352)	0.628** (0.288)	1.783*** (0.530)	2.762*** (0.858)	0.560 (0.657)	1.968 (1.747)	1.046** (0.483)	-0.500 (0.488)	0.422 (0.973)
changeTLCF	-0.504* (0.263) [-0.157]	-0.541 (0.333) [-0.266]	-0.410 (0.415) [-0.013]	-0.782*** (0.248) [-0.157]	-1.128*** (0.332) [-0.272]	-0.206 (0.353) [-0.012]						
changeTD	-0.492** (0.239) [-0.114]	-0.471* (0.282) [-0.192]	-0.511 (0.419) [-0.006]	-0.533** (0.219) [-0.113]	-0.751*** (0.265) [-0.199]	-0.149 (0.348) [-0.004]						
symmetry	-0.222 (0.195) [-0.025]	-0.251 (0.248) [-0.040]	-0.141 (0.300) [-0.006]	-0.189 (0.162) [-0.026]	-0.259 (0.217) [-0.040]	-0.038 (0.206) [-0.005]						
changeTLCF* Moderate Work Experience	-0.799 (0.572) [-0.263]	-1.893*** (0.710) [-0.486]	0.774 (0.835) [0.054]									
changeTLCF* Advanced Work Experience	-0.465 (0.552) [-0.178]	-0.991 (0.694) [-0.350]	0.880 (1.023) [0.037]									
changeTD* Moderate Work Experience	-0.449 (0.535) [-0.184]	-1.498*** (0.579) [-0.386]	1.298 (0.877) [0.109]									
changeTD* Advanced Work Experience	0.071 (0.435) [-0.073]	-0.313 (0.515) [-0.167]	1.236* (0.675) [0.053]									
symmetry* Moderate Work Experience	-0.018 (0.281) [-0.045]	-0.234 (0.390) [-0.090]	0.174 (0.363) [0.005]									
symmetry* Advanced Work Experience	0.515 (0.365) [0.048]	0.589 (0.460) [0.071]	0.356 (0.564) [0.017]									
changeTLCF*Education				-0.050 (0.495) [-0.153]	-0.113 (0.573) [-0.282]	1.921 (1.447) [0.073]						
changeTD*Education				-0.206 (0.447) [-0.134]	-0.369 (0.478) [-0.252]	1.864 (1.445) [0.073]						

symmetry*Education				0.207 (0.275) [0.003]	0.273 (0.342) [0.003]	0.038 (0.385) [0.000]						
delta25000							0.169 (0.254) [0.031]	0.205 (0.350) [0.047]	0.113 (0.341) [0.014]	0.296 (0.245) [0.057]	0.017 (0.328) [0.004]	1.001*** (0.364) [0.122]
delta60000							0.223 (0.218) [0.031]	0.232 (0.313) [0.053]	0.232 (0.232) [0.028]	0.503* (0.275) [0.097]	0.423 (0.340) [0.104]	0.662 (0.460) [0.080]
delta200000							0.838*** (0.248) [0.155]	0.623* (0.322) [0.144]	1.772*** (0.534) [0.215]	0.085 (0.255) [0.016]	-0.063 (0.332) [-0.016]	0.381 (0.385) [0.046]
Treatment	-1.368*** (0.203) [-0.253]			-1.360*** (0.202) [-0.253]			-2.017*** (0.325) [-0.374]			-1.647*** (0.301) [-0.317]		
Male	0.267* (0.160) [0.049]	0.234 (0.152) [0.052]	0.349 (0.388) [0.005]	0.261 (0.160) [0.049]	0.218 (0.148) [0.050]	0.370 (0.401) [0.048]	0.076 (0.309) [0.014]	0.025 (0.316) [0.006]	0.171 (0.758) [0.021]	0.268 (0.259) [0.052]	0.234 (0.273) [0.057]	0.330 (0.605) [0.040]
Age	-0.014 (0.013) [-0.003]	0.001 (0.015) [0.000]	-0.032 (0.021) [-0.004]	-0.005 (0.012) [-0.001]	0.005 (0.011) [0.001]	-0.020 (0.017) [-0.003]	-0.052 (0.033) [-0.010]	-0.030 (0.024) [-0.007]	-0.051 (0.063) [-0.006]	0.008 (0.015) [0.002]	0.020 (0.017) [0.005]	0.000 (0.030) [0.000]
Education	0.261 (0.199) [0.048]	0.111 (0.226) [0.025]	1.036* (0.617) [0.133]	0.321 (0.364) [0.054]	0.208 (0.367) [0.031]	0.451 (0.860) [0.113]	0.540 (0.336) [0.100]	0.603 (0.435) [0.139]	2.247** (1.115) [0.273]	0.183 (0.298) [0.035]	0.049 (0.405) [0.012]	2.160** (0.985) [0.262]
Work Experience				0.028 (0.187) [0.005]	-0.022 (0.195) [-0.005]	0.044 (0.387) [0.006]	-0.465 (0.364) [-0.086]	-1.012** (0.418) [-0.233]	0.285 (0.747) [0.035]	0.027 (0.300) [0.005]	-0.339 (0.386) [-0.083]	0.704 (0.589) [0.085]
Moderate Work Experience	0.246 (0.429) [-0.020]	0.912** (0.464) [-0.017]	-0.847 (0.631) [-0.043]									
Advanced Work Experience	0.277 (0.389) [0.049]	0.317 (0.462) [0.021]	0.021 (0.590) [0.067]									
CRT	0.211 (0.190) [0.039]	0.067 (0.186) [0.015]	0.707 (0.594) [0.091]	0.236 (0.187) [0.044]	0.093 (0.183) [0.021]	0.613 (0.550) [0.080]	0.083 (0.292) [0.015]	-0.261 (0.316) [-0.060)	0.962 (0.873) [0.117]	0.173 (0.275) [0.033]	-0.046 (0.321) [-0.011]	0.780 (0.729) [0.095]
Observations	2,024	1,083	941	2,024	1,083	941	508	272	236	507	272	235
Pseudo R^2	0.095	0.064	0.058	0.089	0.044	0.047	0.169	0.050	0.141	0.109	0.014	0.106

Note: We estimate logistic regressions with the natural logarithm of the odds ratio to take a tax-minimizing decision as a dependent variable. For Models (2), (5), (8) and (11), the sample is reduced to the time-pressure treatment, while Models (3), (6), (9) and (12) are estimated for the no time pressure group. Models (7) through (9) involve observations for *changeTLCF*, and Models (10) through (12) for *changeTD*, respectively. Robust standard errors are estimated and clustered on subject level (provided in parentheses). Average marginal effects are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Table 11: Supplementary tests

Tax Minimizing Decision	Full Sample (1)	Full Sample (2)	Full Sample (3)
Constant	2.358*** (0.560)	1.380*** (0.310)	1.141*** (0.210)
changeTLCF	-0.522* (0.307) [-0.081]	-0.586*** (0.185) [-0.117]	-0.454*** (0.126) [-0.142]
changeTD	-0.276 (0.302) [-0.043]	-0.341** (0.161) [-0.068]	-0.330*** (0.113) [-0.104]
symmetry	-0.153 (0.187) [-0.024]	-0.067 (0.116) [-0.013]	-0.076 (0.076) [-0.024]
Treatment	-1.322*** (0.242) [-0.206]	-1.077*** (0.163) [-0.214]	-0.800*** (0.114) [-0.251]
Male	0.098 (0.268) [0.015]	0.318** (0.133) [0.063]	0.161* (0.097) [0.050]
Age	-0.026 (0.018) [-0.004]	-0.001 (0.010) [-0.000]	-0.003 (0.007) [-0.001]
Education	0.479 (0.320) [0.075]	0.161 (0.182) [0.032]	0.191 (0.120) [0.060]
Work Experience	0.178 (0.302) [0.028]	0.091 (0.151) [0.018]	0.018 (0.113) [0.006]
CRT	0.294 (0.343) [0.046]	0.427*** (0.159) [0.085]	0.150 (0.114) [0.047]
Observations	1,264	2,629	2,024
Pseudo R squared	0.089	0.063	0.088

Note: We estimate logistic regressions with the natural logarithm of the odds ratio to take a tax-minimizing decision as a dependent variable under Models (1) and (2), and a probit regression under Model (3). All regressions include observations for the time-pressure and no-time-pressure treatments. Under Model (1), the sample is reduced to the subjects who provided a decision on all 16 items and passed the check questions, while model (2) includes subjects who did not pass the check questions. Model (3) uses the same sample as the regressions in Tables 8 and 9. Robust standard errors are estimated and clustered on subject level (provided in parentheses). Average marginal effects are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).