The Relationship between Mental Budgeting and Tax Compliance

amongst self-employed people without personnel

WAGENINGEN UNIVERSITY
WAGENINGEN UR

Belastingdienst

Steffanie Eberson

July 2013

Wageningen University MSc Thesis

The Relationship between Mental Budgeting and Tax Compliance

Author:	S.E.M. Eberson
Registration number:	861022-214-130
Course code:	ECH - 80433
University:	Wageningen University and Research Centre Social Science Department Economics of Consumers and Households group
Supervisor:	Prof. Dr. G. Antonides
Co-supervisor:	Belastingdienst Nederland Dr. I.M. de Groot
Date:	July 2013

Acknowledgement

This research has been carried out as a final part of the MSc program Management, Economics and Consumer studies at Wageningen University and Research centre. After by internship at D.E MASTER BLENDERS 1753 I really appreciated to do research, to be able to discuss in depth and to have time to think through concepts and problems. The whole process of working with such a large respondent group and extensive database gave me an opportunity to gain more analytic and academic skills.

I want to thank Gerrit Antonides for guiding me all the way through, the hours spend together on statistics and for reading all my paper work and giving specific, critical and positive feedback.

The research was commissioned by the Dutch Tax Administration. Therefore I was able to spend some days at the Dutch Tax Administration office in Utrecht and this give me a small insight in this market. I want to thank Manon de Groot for all the discussions, specific and academic feedback and arranging the operational part of data collection.

Index

Summary

Previous research by the Dutch Tax Administration, amongst starting self-employed people without personnel, indicates that this group has difficulties to fulfil their tax liability completely. Therefore the DTA frequently has to send reminders, demand notices, distress warrants and warnings for attachments to starting entrepreneurs. Possible causes of these difficulties could be lack of financial overview or simply because money is not available at the moment of tax payment. Either way mental budgeting, as a financial management technique applied by the entrepreneur, including making reservations for payments, setting budgets and tracking their expenses against it, could be useful to increase overview and enhance tax compliance.

This research is accomplished via a questionnaire amongst 654 self-employed people (both starters and non-starters). We show that mental budgeting can be measured by asking survey questions and comprises four factors: 'making reservations,' 'non-fungibility' (of money across budgets), 'budgeting' and 'compensate.' Mental budgeting is positively associated with tax compliance. Socio-economic factors and company characteristics have no significant influence on this association. This means that the DTA does not have to focus on starters exclusively in order to increase tax compliance, but may intervene and train all self-employed people to enhance mental budgeting. Training should be done on the parts of mental budgeting that influence tax compliance the most: 'making reservations,' 'budgeting' and 'non-fungibility'. For example increasing the awareness about how money as budgets can be labelled in various ways. Financial knowledge and long-term time orientation have positive effects on mental budgeting whereas worry about finances and number of saving goals showed no effect. Some scales that were tested in this research are unreliable, including short-term time orientation and enforced tax compliance. Other scales need further refinement and research because they are formed by only two items, including 'non-fungibility,' 'compensate' and 'financial situation.' Also the factors of 'making reservations' and 'budgeting' need further refinement as they correlate to a relatively high level (which means they measure to a high extent the same) and the items are quite similar.

Samenvatting

Vorig onderzoek onder ZZP-ers door de Belastingdienst gaf aan dat deze groep moeilijkheden heeft met zijn belastingplicht na te komen. Daardoor moet de Belastingdienst regelmatig aanmaningen, dwangbevelen en beslagleggingen naar voornamelijk startende ZZP-ers versturen. Mogelijke oorzaken van deze moeilijkheden zouden kunnen zijn: het geld is niet beschikbaar op het moment van betaling of er is een tekort aan financieel overzicht. Mentaal budgetteren, als zijnde een financieel management techniek gebruikt door de ondernemer, inclusief het maken van reserveringen voor uitgaven, het maken van budgetten en de uitgaven monitoren, kan in elk geval nuttig zijn om overzicht te vergroten en daarmee de belasting compliantie te verhogen.

Dit onderzoek is gedaan aan de hand van een enquête onder 654 ZZP-ers (starters en niet starters). We tonen aan dat mentaal budgetteren gemeten kan worden doormiddel van enquête vragen en bestaat uit vier factoren: 'het maken van reserveringen', 'niet-uitwisselbaarheid' (van geld tussen budgetten), 'budgetteren' en 'compenseren'. Mentaal budgetteren is positief geassocieerd met belasting compliantie. Sociaal-economische factoren en bedrijfseigenschappen hebben geen significante invloed op deze associatie. Dit betekent dat de Belastingdienst niet zou moeten focussen op alleen starters, maar alle ZZP-ers kan benaderen en trainen om de belasting compliantie te stimuleren. Deze training zou zich moeten focussen op de factoren van mentaal budgetteren die belasting compliantie het meeste beïnvloeden: 'het maken

van reserveringen', 'budgetteren' en 'niet-uitwisselbaarheid'. Bijvoorbeeld het bewustzijn vergroten van de manieren waarop geld als budget kan worden gelabeld. Financiële kennis en lange-termijn oriëntatie hebben positieve effecten op mentaal budgetteren en zorgen over financiën en het aantal spaardoelen hadden geen effect. Sommige geteste schalen bleken onbetrouwbaar in dit onderzoek, inclusief korte-termijn oriëntatie en afgedwongen belastingcompliantie. Andere schalen hebben verdere verfijning en onderzoek nodig omdat deze schalen maar uit twee items bestaan, inclusief 'niet-uitwisselbaarheid' (van geld tussen budgetten), 'compenseren' en 'financiële situatie'. Ook de factoren 'reserveren' en 'budgetteren' hebben nog verdere verfijning nodig, aangezien deze factoren in hoge mate correleren (en daarmee tot een zekere hoogte het zelfde meten) en de items waaruit de factoren zijn opgebouwd op elkaar lijken

Introduction

The Dutch Tax Administration (DTA) has started its Knowledge Agenda in 2012. This new policy document places topics for future research on the agenda. One of these topics is the business life cycle in relation to tax compliance and the determinants of tax compliance. Within the population of entrepreneurs starters and self-employed people take up 70% of the total (Statistics Netherlands, 2012) and are therefore interesting subgroups. Previous research by the DTA amongst starting self-employed people indicates that this subgroup has difficulties to fulfil their tax liability completely. Therefore, the DTA frequently has to send reminders, demand notices, distress warrants and warnings for attachments to starting (<3 years) entrepreneurs (DTA, 2012a). Why this group is less compliant is not entirely clear; possible causes could be a lack of financial overview, skills or simply because money is not available at the moment of tax payment. Either way, mental budgeting, as a financial management technique, could be useful in order to increase overview and hence compliance.

Mental budgeting is a topic studied in the domain of economic psychology and behavioural economics. Mental budgeting focuses on the psychology involved in financial accounting. The theory of mental budgeting argues that people set budgets which are considered binding and they track their expenses against their set budgets (Heath, 1995).

Mental budgeting has proven to be a good tool to enhance financial management and financial overview amongst consumers and households (Antonides et al., 2011). Since self-employed people without personnel are consumers on the one hand and entrepreneurs on the other hand, mental budgeting could also have a positive influence on the financial management and financial overview of this group. In turn, a better financial overview could have a positive effect on tax compliance. Aiming to increase tax compliance the DTA has started research to investigate the role of mental budgeting in tax compliance of self-employed people. To clarify, a self-employed person, according to the DTA (2010), is a person who owns a one-person company, has no personnel and a minimum annual profit of €10,000.- (before reduction of costs due to entrepreneurial facilities) in the last three years. This research will focus on the measurement of mental budgeting, its determinants, and the effects on tax compliance among self-employed people.

Several studies on tax compliance have been conducted (Kirchler, 2007; Schepanski & Shearer, 1995). However, these studies have focused predominantly on consumers and households (e.g. Heath, 1995; Antonides et al., 2011) and not on tax compliance of self-employed people.

To obtain a better insight in the potential relation between mental budgeting and tax compliance the potential aspects, determinants and effects of mental budgeting will be distinguished in this research. A conceptual model will be developed and hypotheses will be stated in order to answer the main question: “What is the relationship between mental budgeting and tax compliance amongst self-employed people?” In the first chapter the aspects and determinants of mental budgeting will be explained. In Chapter 2 the meaning of (tax) compliance will be explained. Chapter 3 will bring the literature together in a conceptual model that will be empirically tested in this research. Chapter 4 deals with the research methods and defines the study sample.

1. Mental budgeting

This chapter aims at explaining aspects and determinants of mental budgeting. First, aspects of mental budgeting will be indicated by explaining how mental budgeting takes place, and which behavioral and mental actions and processes are considered aspects of mental budgeting. Next, several determinants of mental budgeting will be explained.

1.1 Aspects of mental budgeting

In this section aspects of mental budgeting will be explained. Mental budgeting studies are predominantly focused on consumers and households. Although mental budgeting will be explained in the context of consumer and household behavior, the relevance for self-employed entrepreneurs will be made clear.

1.1.1 Mental budgeting in households

Mental budgeting focuses on the psychology involved in financial accounting. The theory of mental budgeting argues that people set budgets and track their expenses against their set budgets (Heath, 1995). Mental budgeting is a psychological process where money is labeled for particular spending or saving categories. Once the money is labeled it serves as a budget, which is reserved for particular expenditures or savings. The labeling of money is also applied to different types of income such as bonuses, windfalls, regular income or future income. Studies have shown that people have a strong tendency to label money when the environment does not provide a label (Heath & Soll, 1996). For example, they divide their wages into separate budgets and dedicate it for different kinds of expenses. In earlier days, setting a budget was often physically accomplished by putting a sum of money in envelopes, pitchers, cans or drawers (Bakke, 1940; Rainwater, Coleman, & Handel, 1959). The framing (as gain or loss) and the distribution (spread or lump sum) of the received money further influences the labeling of the money and also the marginal propensity to consume (MPC*) from different budgets (Shefrin & Thaler, 1988).

Labeled money tends to serve as a budget. People try to set budgets for personal consumption probably by trial and error (Heath, 1995). The set budgets are most likely inaccurate even though a process of trial and error took place, because expenses are rarely perfectly predictable. When budgets have been set, the second part of mental budgeting comes in, namely tracking expenses. Mental budgeting assumes that, after the budgets have been set, the expenses will be tracked against the set budgets. This tracking is a psychological process divided into two stages. First, expenses should be noticed (‘booking’). Noticing expenses sounds easy, because they are usually visible and easy to track. However, not all costs are clearly visible. For example, opportunity costs where benefits could have been received if an alternative option was chosen (Heath, 1995). Sometimes costs are overseen when, for example, buying a concert ticket the costs for dressing up when going to this concert is not taken into account.

After noticing the expenses, they should be assigned to one of the budgets (‘posting’). An expense may be assigned to a particular account for different reasons: because it meets similar goals (Barsalou, 1991) or because it has similar purchase features such as magnitude ("things you can do for five dollars"), format ("things you pay for with a credit card"), or location ("things you buy at the electronics store")(Heath & Soll, 1996).

*The marginal propensity to consume is the proportion of additional income that people desire to consume. When this income is labelled as (unforeseen) gain the MCP increases compared to income which is labelled as standard like salary.

Different reasons for categorizing expenses are stated but people are likely to pay attention to expenses that are typical for a particular budget and, therefore, easy to post (Heath, 1995). For example, a theater ticket is typical for an expense in the entertainment budget. When 'booking' and 'posting' are completed a person can imagine how an additional expense will affect the rest of the set budget (Heath & Soll, 1996) and can see the consequences when spending from the budget.

The process of mental budgeting, involving labelling, booking, and posting, is assumed to be similar for the management of household finance and self-employed business activities, even though the latter often involve relatively large sums of money. Besides the aspects of mental budgeting discussed above, 'fungibility,' 'compensation,' and 'minimal amount on bank account' are distinguished as aspects of mental budgeting. Next, these aspects will be described and hypotheses will be stated.

1.1.2 Fungibility

Fungibility implies that money should be freely transferable between budgets (Arkes et al., 1994). Therefore there should be no difference in the MPC across budgets. The assumption of fungibility is violated as people (in a household) seem to set budgets and treat them as binding (Heath & Soll, 1996). Violation of fungibility could lead to rejection of a specific expense within a particular budget while at the same time the money was available within another budget. This should occur quite often since setting an inaccurate budget is highly likely. So, budgets are binding and only the MPC from these budgets can be influenced in order to stay within the budget.

Research by Arkes et al. (1994) shows that the anticipation of income determines the level of general MPC. When income is anticipated, the MPC from that income is generally lower than when the income is unanticipated. In other words, bonus money (unanticipated) is spent more easily than regular income (anticipated). Economic analysis of spending behavior is complicated, because the assumption of fungibility does not generally hold. The level of MPC will have to be predicted by the degree of anticipation of the income (e.g. lottery gains versus salary). Besides anticipation, one of the factors influencing the MPC is the framing of income. When income is framed as a surplus (gain) the MPC is generally higher than when it is framed as a return of income (Epley et al., 2006).

Concluding, fungibility generally does not hold; people (in a household) generally have binding mental budgets. Also, the degree of MPC (the budget) is positively related to unanticipated income and framing of income as a bonus. In contrast, Piscaer (2012) shows that a minority of self-employed people might be willing to transfer or use money from one particular budget for other goals or budgets, provided that income to fill up the deficit is expected. Therefore a difference in mental budgeting amongst households and self-employed people may be seen in the degree of fungibility of budgets. Undisputable, fungibility is an aspect of mental budgeting that is likely to play a part in the management of self-employed activities. Therefore Hypothesis 1 is stated:

H1: Fungibility can be distinguished from other aspects of mental budgeting amongst self-employed people.

1.1.3 Compensation in expenses

An important aspect of mental budgeting is underconsumption. Underconsumption occurs after consumers have purchased an item that is a typical example of a particular budget (e.g. a jacket in the clothing category). After purchasing particular items they are much less willing to purchase from that particular budget in a certain period, because they do not want to spend beyond the budget (Heath & Soll, 1995). When the number of typical expenses increase the particular budget will become depleted. This suggests that the MPC of a budget becomes lower when the budget becomes depleted. A lower MPC can be seen as a compensation for expenses already made (by spending less than before). Compensation in expenses is expected among expenses that are labeled to the same budget. For example, when the budget for entrepreneurial facilities becomes depleted self-employed people compensate in expenses that are also labeled as entrepreneurial facilities, by postponing expenses, reducing expenses or canceling future expenses. This leads to hypothesis 2:

H2: Compensation in expenses can be distinguished from other aspects of mental budgeting amongst self-employed people.

1.1.4 Threshold for setting a budget

According to Piscaer (2012) it is possible that expenses are too small to set a budget. It seems that self-employed people do not set a budget for small expenses, but keep a minimum amount in their bank accounts to cover small expenses. This minimal amount of money in the bank account is also used for fixed costs such as rent. This suggests that fixed costs and small expenses (which are hard to book explicitly to a budget) are covered by one budget and therefore also seen as one budget (Piscaer, 2012). The aspect of 'leaving a minimum amount on the bank account' can be distinguished from other aspects of mental budgeting. To validate the qualitative findings of Piscaer (2012), the following hypothesis is stated:

H3: Having a minimal amount on the bank account can be distinguished from other mental budgeting aspects amongst self-employed people.

Socio-economic factors may influence the degree of mental budgeting (Antonides et al., 2011). A higher level of cognitive reflection for men than for women has been found (Frederick, 2005), which becomes evident by their higher time preference and higher risk tolerance. Hence, to the extent that cognitive reflection influences negatively mental budgeting, men may be expected to use less mental budgeting than women. We assume that this socio-economic factor also holds for self-employed people, and state Hypothesis 4:

H4: Self-employed males apply mental budgeting more than self-employed females.

Antonides et al. (2011) expect that the better people can deal with money the less mental budgeting they apply. The capability of dealing with money is influenced by life experience and education. Life experience, as indicated by age, generally increases over time. Thus, the higher the age the less mental budgeting will be applied. Dealing with money is not only learned by life experience but also by education, such that more educated people use mental budgeting less. Also, it may be expected that education contributes to rational behavior (which mental budgeting is not). In turn hypothesis 5 is formulated as:

H5: Both age and education are negatively related to mental budgeting amongst self- employed people.

Mental budgeting is practiced to keep control of household finances, especially when financial means are limited. Hence, the need for mental budgeting will be lower and mental budgeting will be practiced less the more money is available within the household (Antonides et al., 2011). Income of self-employed people is different from income of employees. In this research the turnover of a self-employed person will be an indication of the level of income, as the research is about the finances of the company and turnover is the 'income' of the company. Also, high turnover is expected to facilitate making payments. So a negative relation between turnover and mental budgeting is expected, leading to Hypothesis 6:

H6: Turnover is negatively related to mental budgeting amongst self-employed people.

1.2 Determinants of mental budgeting

In this section several determinants of mental budgeting will be explained, including 'time orientation,' 'saving goals,' 'regulatory focus,' 'worry,' and 'escalation of commitment to invest'.

1.2.1 Time orientation

An important aspect of decision making is time. People make decisions by weighing the costs and benefits of choice alternatives. Behavioral economic research shows that people generally have much higher time preference rates to obtain something in the near future and lower time preference rates to obtain something in the far future. This research also indicates that future outcomes are not discounted using a constant discount rate (Strotz, 1956). Different time preference rates can be modeled by hyperbolic discount functions, which show a relatively high discount rate over short time horizons and a relatively low discount rate over long horizons. This difference in discount rates implies a conflict between today's preferences, and preferences that will be held in the future. The conflict could be overcome by making commitments (Laibson, 1997), for example committing to a saving plan, such that future behavior is guided by current preferences. For example, a saving plan pre-commits people to save for consumption of valued items in the future (Thaler, 1985).

Not only time plays a role in weighing benefits and costs and decision making, but also framing these amounts of money as costs or benefits. Gains (benefits) are generally more discounted than losses (costs), and small amounts more than large amounts (Frederick et al., 2002). Therefore not only commitment to a saving plan would be beneficial, but it would also be beneficial to frame costs as (forgone) gains. An example in this context is paying income tax ex ante (considered as a forgone gain of income) instead of charging surtax after spending the income (considered as a loss of income).

Because of the psychological effort involved in the mental budgeting process, entrepreneurs with a short time orientation are considered relatively unlikely to spend this effort in the present. Therefore a negative relationship is expected between time orientation and mental budgeting.

1.2.1.1 Difference in time orientation

In research the terms time orientation and time preference (Antonides et al., 2011) are mentioned in relation to mental budgeting and self-control issues associated with saving (Shefrin & Thaler, 1988).

Time orientation and time preference are both related to the MPC. People with a short-term time orientation have a higher MPC for current income (Shefrin & Thaler, 1988), which means that people with a short-term orientation have a relatively high time preference and could be labeled as 'impatient.' In contrast, long-term time orientation goes with low time preference and is reflected in behavior such as taking care of the future, making long-term investments and saving (Antonides et al., 2011).

Mental budgeting is expected to be related to time orientation. Short-term and long-term time orientation can be seen as two non-excludable dimensions (Joireman, et al., 2012). The more future oriented one is the more mental budgeting is applied, suggesting that more patient consumers practice mental budgeting more, presumably because they can see the long-term advantages of saving e.g. mental budgeting. People with a short-term time orientation apply mental budgeting less, suggesting that mental budgeting requires some effort in the short term, which is costly, and is avoided by impatient consumers. Hypotheses 7 and 8 are stated as follows:

H7: Long-term time orientation amongst self-employed people is positively related to mental budgeting.
H8: Short-term time orientation amongst self-employed people is negatively related to mental budgeting.

1.2.2 Saving goals

Mental budgets are used to keep an overview of finances. Mental budgeting is also a tool to ensure the availability of money in the future, and therefore enhances saving. Savings may be labeled by their destination, e.g, pension or investment. Hence, labeled savings may indicate the existence of mental budgets, and the more saving goals exist the more mental budgeting is applied. Therefore the number of labeled savings (goals) may indicate the extent of mental budgeting. Hypothesis 9 is formulated to test this idea:

H9: The number of saving goals of self-employed people is positively related to mental budgeting.

1.2.2.1 Regulatory focus

Savings frequently have a goal and could therefore be indicated as goal-oriented behavior. Conceptually, goal-oriented behavior can be divided into two phases: goal setting and goal striving (Bagozzi & Dholakia, 1999; Lewin et al., 1944). Specific goal-oriented behavior is enacted through a series of explicit steps, e.g., writing down the source of the saving deposits and the timing of the deposits.

Previous literature suggests that forming this type of implementation plan can lead to a greater likelihood of achieving a behavioral goal (Gollwitzer, 1993). However, Soman and Cheema (2004) indicate that those who detailed an implementation plan saved less than those who did not. This may be because individuals in the treatment group perceived their stated goal as a reference point and quit saving when either they achieved their goal or saw that they would not be able to achieve their goal. A reference point could also be seen as marking success or failure. When it becomes clear that a goal will not be met, one is likely to give up rather than attempt to move closer to the goal (Heath et al, 1999; Soman & Cheema, 2004).

Regulatory focus theory (Higgins, 1997; Higgins et al., 2001) aims at explaining the relation between people's motivation and their goal pursuit. According to regulatory focus theory people can adopt one of two goal pursuit strategies. One strategy is oriented toward

promotion, which facilitates achieving ideal goals (hopes and aspirations) by focusing an individual's efforts on achieving positive outcomes. The promotion focus could have a positive relation with mental budgeting as it focuses on promotion goals such as accumulating savings. The other goal pursuit strategy is prevention oriented, which facilitates achieving ought goals (duties and responsibilities). When people have a prevention orientation they put all their effort in avoiding negative outcomes, such as buying insurance, buying products with low risks, and paying bills in time.

People who are promotion oriented are likely to focus on the future consequences of their actions, whereas prevention-focused people are likely to focus on the immediate consequences of their actions (Joireman et al., 2012). A prevention focus could influence the level of tax compliance as people are focused on living up to duties and avoiding negative outcomes such as fines. These findings lead to Hypothesis 10:

H10: Self-employed people with a promotion orientation apply mental budgeting more than self-employed people with a prevention orientation.

The focus on prevention or promotion will be indicated by the type of saving that is applied. 'Saving for emergencies' and 'saving for retirement' could be seen as a prevention orientation and 'saving for future purchases' and 'saving to increase capital' could be seen as a promotion orientation.

1.2.3 Worry

Worry has been defined as follows. "Perhaps the most important, fundamental characteristic of worry is that it involves a type of internal verbal-linguistic activity, i.e. thinking" (Borcovec, 1994 p5). According to Schade & Kunreuther (2001) high-worriers show a higher involvement and are cognitively more active than low worriers in decisions under risk. Consequently, in decisions on protective measures (like savings or paying for assurances) high worriers carefully think through the choice they have to make and utilize data on the risk and benefits for protection.

High-worriers are willing to pay more for a warranty when it is bundled together with a purchase, rather than in unbundled situations (Schade & Kunreuther, 2001). Because highly worried people are more likely to buy bundled products than low-worried people. Bundling of expenses is one of the characteristics of mental budgeting as it divides all expenses in bundles and budgets. High worriers' bundles expenses more than low worrier, this suggests that worrying has a positive impact on the degree of mental budgeting. This suggestion leads to Hypothesis 11:

H11: Worry is positively related to mental budgeting amongst self-employed people.

1.2.4 Investment decisions

Mental budgeting so far has been considered within the personal consumption domain or within the domain of making business expenses, but self-employed people also face mental budgeting in terms of setting budgets for investments. Self-employed people are likely to use relatively straightforward procedures to set budgets in the investment domain. Their decisions are based on the total resources available for investment in order to achieve a desired 'rate of return.' This 'rate on return' indicates decision making based "on the margin" (Frank, 1991). Marginal decision making tells us that to make a good decision we should weigh the present value of future costs and future benefits and choose the action where benefits outweigh the costs. Past

costs and benefits in that case are irrelevant to the current decision; these past costs are called 'sunk costs.'

Frequently, decisions about continuing investing or quitting and about decreasing or increasing the amounts to invest have to be made. These decisions are called escalation of commitment (increasing investment) or de-escalation of commitment (decreasing investment), respectively (Heath, 1995). According to marginal decision theory people should escalate commitment as long as total future benefits outweigh the costs.

Escalating commitment is not only aligned with marginal decision making but is also explained by several psychological or social effects. Examples of these are the fact that people want to justify previous investments that have been less successful (yet) (Brockner & Rubin, 1985; Brockner, 1992; Staw, 1976; Staw & Ross, 1989), they do not want to 'waste' their previous investments (Arkes & Blumer, 1985), risk-seeking behavior occurs when losses happen (Garland, 1990; Thaler, 1980; Whyte, 1986), or the fact that a given investment seems psychologically 'smaller' when it occurs in the context of larger absolute investments in the past (Garland & Newport, 1991; Garland, 1990).

1.2.4.1 Escalation of commitment to invest

Economic and psychological evidence has been provided for escalating commitment (Heath, 1995). Decision makers are encouraged to set limits and budgets to prevent escalation. For businesses, it is not clear which is worse: stop escalating too late, or stop escalating too early. There are many situations where escalating commitment to investment is rational, for example when uncertain benefits are expected to be lower than in reality. Odean (1998) shows that investors indeed keep escalating commitment to invest because they are reluctant to close an account at a loss and therefore keep investing in order to close the account positively. Also, according to Heath (1995) escalating commitment occurs amongst investors. In these cases escalating commitment seems to be positively related to mental budgeting because investors have different budgets in mind and are reluctant to use money from one budget for another budget (non-fungibility) and see each budget as a separate account to be closed positively.

On the other hand Heath (1995) qualifies this escalation of commitment to invest by stating that this happens when it is hard to track and book expenses. In other words, when an expense is explicit or typical for a budget it is easy to book. Also, when an expense is regular or permanent it is easy to book. But when an expense is implicit and incidental it will be harder and less frequently booked to a particular budget. Therefore these expenses are hard to track and escalation of commitment to invest will more likely occur.

Although there is currently no evidence that people will make errors of escalating commitment to invest when marginal investments are explicit. Recently some researchers have argued that escalation is not a robust phenomenon. If people engage in mental budgeting, escalating commitment with explicit investments is not possible as long as they are within a budget limit, no matter how high the sunk costs are. This implies that there is a negative relationship between mental budgeting and escalating commitment; the more mental budgeting, the less escalating of commitment to invest. This leads to Hypothesis 12:

H12: Mental budgeting and escalation of commitment to invest are negatively related amongst self-employed people.

2. Tax compliance

Tax compliance is defined by the Dutch Tax Administration as the voluntary willingness of citizens and companies to meet their tax obligations. If people were making rational decisions based purely on economic factors, as to whether or not to pay their taxes, then most taxpayers would be involved in tax evasion or fraud because of the low probability of detection and the relatively small penalties (Alm et al., 1999). Therefore, predicted non-compliance by classic economic theory is much more prevalent than in reality. In this context, the Dutch Tax Administration strives for maximum tax compliance (DTA, 2012b).

Becker (1968) describes tax compliance as a decision under uncertainty with a safe option of an honest tax report and a risky option of evading all or part of the tax due. In economic psychology, other factors also are assumed to influence tax compliance. Tax compliance can be achieved by encouraging voluntary action or by enforcing compliance. Accordingly, the 'slippery slope' framework differentiates voluntary from enforced compliance. Voluntary compliance is assumed to depend on trust in authorities, whereas enforced compliance is assumed to depend on the (perceived) power of authorities (Muehlbacher et al., 2011). A balance in this 'slippery slope' should be found and according to Braithwaite (2003) the taxpayer should be supported by authorities, whereas persistent tax evaders should be prosecuted with the rigor law. Muehlbacher et al., (2011) developed a questionnaire to measure voluntary and enforced compliance. Voluntary compliance is measured by the perceived importance of paying taxes correctly and in time. Socio-economic factors influence compliance further. For example, voluntary compliance is positively related to age according to Muehlbacher et al. (2011). Therefore Hypothesis 13 is stated:

H13: Age is positively related to voluntary tax compliance amongst self -employed people.

Not only age has a positive relation with tax compliance but also entrepreneurial experience (OECD, 2010). The longer a business exists the more compliant the entrepreneur will become. Therefore Hypothesis 14 is stated:

H14: Entrepreneurial experience is positively related to voluntary tax compliance.

Eriksen and Fallan (1996) showed that fiscal knowledge about taxes leads to a more positive attitude towards the tax system. Hence it is likely to assume that with knowledge about taxes, understanding of their necessity increases, which in turn yields voluntary tax compliance. Hypothesis 15 is formulated to test if previous findings also hold amongst self-employed people:

H15: Fiscal knowledge is positively related to voluntary tax compliance amongst self -employed people.

There is a distinction between knowledge and education: knowledge is broader than education. For example, there are many people with shorter degree courses who have better knowledge about taxation than others with higher education and long duration (Eriksen & Fallan, 1996). According to Muehlbacher et al. (2011) education is negatively related to enforced tax compliance. Hypothesis 17 is stated:

H16: Education is negatively related to enforced tax compliance amongst self-employed people.

Besides socio-economic factors the regulatory focus of people may be of influence as mentioned previously. Prevention orientation is likely to facilitate achieving ought goals (duties and responsibilities) by focusing an individual's efforts on avoiding negative outcomes. A prevention focus could influence the level of tax compliance as people are focused on living up to duties and avoiding negative outcomes such as fines. Therefore Hypothesis 16 will be tested:

H17: Prevention orientation is positively related to voluntary tax compliance amongst self-employed people.

The decision of a taxpayer to comply is determined by several parameters. One of these parameters could be audit probability. When the result of an audit indicates tax evasion the tax authority can fine the taxpayer. These fines should result in higher tax compliance, because the taxpayer wants to avoid fines. However, the effect of (Heath & Soll, 1995) fines is generally nil and has no impact on reported income (Webley et al., 1991). So, the level of fines does not have a relation with compliance. Audit probability, however, influences tax compliance and has a predominantly positive effect on compliance (Kirchler et al., 2008). Nevertheless the possibility of the bomb-crater effect may exist: a decrease in tax compliance after being audited, because of the underestimation of audit probability (Mittone, 2006).

Apart from the probability to get a fine, the amount of the fine could play a role. But also the amount of the fine does not seem to have an effect on the compliance level, even when the amount could be seen as unfair. According to Ahmed & Braithwaite (2005) self-employed people believe that they pay less than their fair share of taxes. But do not feel treated differently than other groups of taxpayers. This suggests that fairness is not the most important reason for tax evasion by self-employed people. This finding is also underpinned by the Swedish Tax Agency (2009), which indicates that businesses without employees (self-employed people) are happier with the tax system than businesses with employees. However, self-employed appear to comply less than businesses with employees.

The DTA is dealing daily with compliance of self-employed people. In doing so, they use their own measures of compliance. One of them is tax morale measured by the attitude towards being tax compliant (OECD, 2004) and is based on predefined obligations as imposed by the DTA: registration (at chamber of commerce), filing out tax forms completely, accurately and in time, and paying due taxes in time (p 62). The other measure is the restrictive measures by the DTA; these consist of demand for payment, a warrant or a seizure. Although Webley et al. (1991) state that fining has no effect to reported income, the DTA does measure which restrictive measures were taken towards self-employed people as an indicator of tax compliance.

Concluding, the DTA measures both the attitude towards tax compliance, which is called 'tax compliance' by the OECD (2004) and the amount of received restrictive measures by the DTA as an indicator of tax compliance. Furthermore does Muehlbacher et al. (2011) indicate two more tax compliance approaches: voluntary and enforced.

2.1 Tax compliance and mental budgeting

Mental budgeting is measured by the previously stated aspects. The relationship between all mental budgeting aspects and tax compliance will be investigated. As different aspects could relate differently to compliance, the relationship between mental budgeting and compliance will be tested separately for each aspect.

Self-employed people have their own businesses and should live up to all their financial obligations. One of these obligations is to pay taxes to the Dutch Tax administration. Mental

budgeting increases one's financial overview and financial management (Antonides et al., 2011), which in turn could result in setting budgets for different purposes such as paying taxes. And mental budgeting limits the chance of exceeding the set budget. So when the escalation of commitment to invest is stopped in time, investors will save money and be able to pay taxes. Having a budget for taxes and being able to de-escalate commitment to invest ensures availability of money for paying taxes. Therefore the following two hypotheses can be stated:

H18: Escalation of commitment to invest has a negative relation to tax compliance.

As mentioned above mental budgeting has a positive effect on financial overview and therefore also on the financial situation. The financial situation indicates to what degree one can make ends meet. (Antonides et al., 2011). When the financial situation is healthy, money will be available to be able to pay taxes. Hypothesis 19 can be stated as:

H19: Financial situation has a positive relation to tax compliance.

A remarkable finding is that age has contradicting effects. It has a negative effect on mental budgeting (Antonides et al., 2011) but a positive effect on voluntary tax compliance (Eriksen & Fallan, 1996). Thus, older people apply mental budgeting less, but are more willing to pay their taxes than younger people. Hence the age effect is a balanced outcome of two opposing effects. The direct effect of age on tax compliance may be positive, whereas the indirect effect (via mental budgeting) may be negative.

3. Conceptual model

Figure 3.1 shows the conceptual model that will be tested empirically.
Determinants of mental budgeting are defined as 'worry,' 'time orientation,' 'regulatory focus' and 'saving goals.' The determinants will be tested for their effects on mental budgeting which is defined by the aspects of mental budgeting: 'setting a budget,' 'tracking a budget,' 'posting to a budget,' 'fungibility,' 'minimal amount on the bank account' and 'compensation.' To the extent that 'worry,' and 'saving goals' are related to mental budgeting but not to tax compliance, they may serve as instrumental variables in explaining tax compliance. 'Escalation of commitment to invest' and 'financial situation' have a mediating function between mental budgeting and tax compliance, as mental budgeting negatively influence 'escalation of commitment to invest' and therefore may ensure money in the future to enable taxpaying in time. Mental budgeting enhances financial overview and in turn makes finances in a better state. When a financial situation is healthy there also will be money available to pay taxes. Tax compliance is measured by the enforced and voluntary approach by Muehlbacher et al. (2011) and the tax compliance and taken measures defined by the DTA.

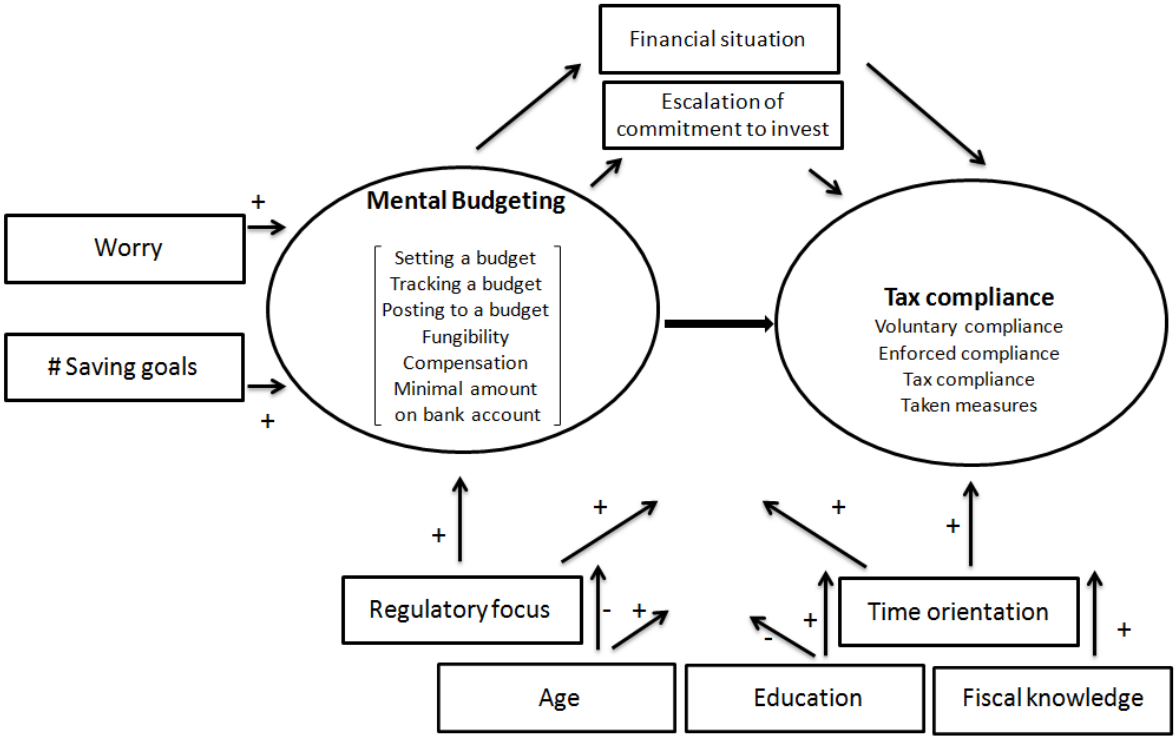

Figure 3.1 Conceptual model of mental budgeting and tax compliance

Besides the determinants and aspects of mental budgeting background information will be included in the empirical tests of the model. Background information, including age and education, fiscal knowledge, regulatory focus and time orientation could serve as extra determinants of mental budgeting and tax compliance and gives an opportunity to differentiate the sample of self-employed people.

4. Method

This chapter describes the methodology that was used in the empirical part of this research. In the first section the sample is described. In the second section the questionnaire will be explained as the operationalization of the theoretical concepts. In section 3 the data collection will be explained including the pre-test.

4.1 Sample

In this research self-employed people are the respondent group. Self-employed people can be defined according to the DTA (2010) as "people who own a one-person company for more than three years and have no personnel."

Apart from this definition of self-employed people the following categories were also included in this research: self-employed people withno personnel who:

- Just started a business. Starters (existence of their business between 0 to 3 years) and non-starters were included in equal proportions;
- Semi-entrepreneurs. This category includes self-employed people that also have a job as an employee, working part-time for an employer and part-time for their own business. In this research semi-entrepreneurs are seen as self-employed people when spending at least 1,225 hours a year on activities regarding their own business (DTA, 2012b);
- Are in all levels of turn-over, without a minimum or maximum level;
- Are of all ages and stages in life. This also concerns respondents who are officially retired and therefore not solely rely on businesses revenues.

4.2 Questionnaire

Based on previous research (Centiq, 2008; DTA, 2012a; Piscaer, 2012) a new questionnaire was designed for this research. In table 4.1. the theoretical concepts and their operationalization is shown. In the first column the concepts are mentioned and in some cases also the sub concepts such as long-term and short–term time orientation. In the second column the questionnaire items are stated which measure the concepts and are used to test the hypotheses. The last column indicates the type of answers, e.g., scales or labeled answer categories.

Table 4.1 Operationalization on the Model and Hypotheses by Stating, Concepts and Linked Questions and Answers

Concept	Questions	Type of answer
Mental Budgeting consiting of the aspects; 'budget setting,' 'budget tracking,' 'posting of expenses,' 'compensation,' 'fungibility' and 'minimal amount of money on the bank account.'	B1 I have reserved money for various expenses.(Q80003.1) B2 When I budget, I always take fixed and outstanding costs into account. (Q80003.2) B3 I always put money a side in case the Dutch Tax Administation comes with an after tax. (Q80003.3) B4 When I earn money I automatically think about the needed tax to pay. (Q80003.4) B5 As soon as I expect an expense I reserve money (Q80003.5) B6 I Always keep my private and business money strictly parted. (Q80003.6) B7 If I have too much money of a certain expense in a certain period, then I spend less on it in the reamining period.(Q80003.7) B8 Iff I have more of a certain expense than usual in one period, then I spend less on it in the next period. (Q8000.8) B9 Reserved money for taxes I only spend on taxes (Q80003.9) B10 To determine how much I want to spend, I first calculate the gains Q80003.10) B11 My expenses are clearly to classify in recognizable categories. (Q80003.11) B12 I usually know from which budget something has to be paid. (Q80003.12) B13 I always leave an amount on the business bank account for fixed costs. (Q80003.13) B14 I always leave an amount on the business bank account for unforeseen expenses. (Q80003.14) B15 Sometimes I spend money that I have reserved for a certain expense on somethng else.(Q80003.15) B16 If I run short of money within the company. I sometimes use money that was meant for something else.(Q80003.16) B17 Money I reserved for something is rarely spent on something else. (Q80003.17) B18 I have an accurate view of the company's revenues and expenses. (Q80003.18) C4 I use well-defined budgets.(Q280.2)	All answers are on a 5-point scale, ranging from 'totally not applicable for me' (1) to 'totally applicable for me' (5)
Time orientation: long term and short term	E1 Concerning my future, I leave as less as possible to fate. (Q330.1) E2 I often act to achieve something which is visible in many years. (Q330.2) E3 I mainly focus on the short term (Q330.3) E4 I think the future will show.(Q330.4) E5 I often ignore warnings about future problems, because I think they will be solved. (Q330.5) E6 I usually think about the immediate consequences of my acting. (Q330.6) E7 I think it is important to put money aside for later. (Q330.7) E8 Regarding the future, you should always take into account that it could always be worse. (Q330.8) E9 When I make a decision, I think about its influence on the future. (Q330.9)	All answers are on a 5-point Likert scale, ranging from 'totally disagree (1)' to 'totally agree (5)'
Escalation of commitment to invest	F1 It often occurs that I spend more money than I planned to.(Q340.1) F2 I find it hard to stop investing in something I'm not sure about the gains. (Q340.2) F3 I rarely end up in company's financial problems due to high costs. (Q340.3) F4 When I invest, I ex ante determine a maximum total amount. (Q40.4) F5 When deciding to invest. I always take related previous investments into account. (Q340.5)	All answers are on a 5-point scale, ranging from 'totally not applicable for me' (1) to 'totally applicable for me' (5)
Goal Saving	K For which reasons do you put money aside? You may give several answers.(Q400)You mag give several answer.	Saving for future expenses (for company and privatly). Q400_1 K1 Saving for emergencies (for company and privatly) Q400_2 K2 Saving for my retirement Q400_3 K3 Saving to gain more capital (for company and privatly)

Regulatory focus	K For which reasons do you put money aside? You may give several answers.(Q400) promotional focus You may give several answers prevention focus prevention focus promotional focus	Saving for future expenses (for company and privatly). Q400_1 K1 Saving for emergencies (for company and privatly) Q400_2 K2 Saving for my retirement Q400_3 K3 Saving to gain more capital (for company and privatly) Q400_4 K4 Other, namely.... Q400_0 K5 Various Q400_5 K6
Financial situation	C2 How often do you check the balance (and/or debits and credits) of your business bank account? C3 Seen for the company I often have to makethe ends meet to prevent financial problems C4 I use well defined budgets	Daily. C2.1 At least once a week, but not daily. C2.2 At least once in two weeks, but not every week. C2.3 At least once a month, but not every two weeks. C2.4 Rarely or never. C2.5 I do not know. C2.6 Questions are on a 5-point scale, ranging from 'totally not applicable for me' (1) to 'totally applicable for me' (5)
Worry	I1 I worry that I cannot afford things for my company. (Q370.1) I2 I worry I cannot pay the business bills. (Q370.2) I3 I worry that my business financial sources are getting depleted. (Q370.3)	All answers are on a 5-point scale, ranging from 'totally not applicable for me' (1) to 'totally
Paying taxes	D1 Which description describes your personal feeling the best? (300) Q300	I contribute I spare something Something is taken from me
Taken measures (DTA)	D2 Did you in the past needed to arrange a pay arrangement with the Dutch Tax Administration, because you could not pay the owed money in time? (310.1) Q310.1	Yes No I do not know
	D3 Did the Dutch Tax Administration fined you in the last three years because of an overdue payment? (310.2) Q310.2	Yes No I do not know
	D4 Did the Dutch Tax Administration fined you in the last three years because of an overdue declaration? You may give several answers. (310.3) Q310.3	Demand notice Warrant Seizure Other measures, namely Non of these measures
Tax compliance (DTA)	H1 How important do you think it is that the Dutch Tax Administration has the declarations in time? (Q360.1) H2 How important do you think it is that the Dutch Tax Administration has the right declarations? (Q360.2) H3 How important do you think it is that the when money needs to be paid to the Dutch Tax Administration has it in time? (Q360.3)	All answers are on a 5-point scale, ranging from ' very umimportant'(1) tot ' very important'(5)
Enforced compliance (Meuhlbacher) **Voluntary compliance**	G3 I feel forced to pay taxes. (Q350.3) G4 I pay taxes because the risk to get checked is too high. (Q350.4) G1 I would also pay tax when there were no controls. (Q350.1) G2 I see paying taxes as something natural. (Q350.2)	All answers are on a 5-point Likert scale, ranging from 'totally disagree' to 'totally agree' (5)

Socio- economical factors Turn over	A7 What was the total turnover of the company in 2012, VAT excluded? This may be an estimation.(70) Q70	Less than €5.000 €5.000 to €10.000 €10.000 to €15.000 €15.000 to €20.000 €20.000 to €25.000 €25.000 to €50.000 €50.000 to €100.000 €100.000 to €250.000 €250.000 or more
Entrepreneurial knowledge	A2 When did you started this company? (20) Q20_1	.....Year
Fiscal knowledge	A23 How good would you describe your fiscal knowledge? (Q240.1)	This question is on a 5-point Likert scale, ranging from 'very bad' (1) to 'very well' (5)
Age	L1 What is your age? (Q450_1)	.....Month .....Year
Gender	L2 What is your gender? (Q460)	Male Female
Education	L4 What is your highest education degree? (Q470)	No education Primary education Lower vocational eduaction(LBO, VBO, VMBO, LTS, LEAS, LHNO, e.d.) Vocationak eduaction (MAVO, MMS, MULO, ULO, VMBO-TL) Miedium vocational education (MBO, MTS, MEAO, e.d.) Applied education (HAVO, VWO, HBS, Gymnasium) Applied Science (HBO,WO-bachelor (Hogeschool, HTS, HEAO, PABO, e.d.) Acedemic or Master

4.3 Data collection

The questionnaire was digitalized and programmed by a market research agency. The data were collected via the online CASI (Computer Assisted Self Interviewing) system. The data base of the market research agency consists of 150,000 people of which 3,000 were self-employed. Sixty-six respondents were randomly chosen from this panel for a pre-test of the questionnaire and no requirements were taken into account to make this sub sample representative for the Dutch self-employed people because this was not the aim of the pre-test.

4.3.1 Pre-test

Besides the quantitative pre-test a qualitative test was conducted amongst seven self-employed people or entrepreneurs (Appendix Entrepreneurs). The respondents for the qualitative test were a convenience sample found in the private network. The qualitative research was mainly done to test the questionnaire on comprehension and wording of the items. Results from the quantitative and qualitative tests were compared. The results led to some adaptation of the questionnaire. The main changes were:

- Answering categories about arrangements were added about dealing with pension – and work disability measurements, because people may be already pensioned and therefore already have saved for their pension and possible work disability.
- Elimination of questions that looked odd or were seen as odd, such as:"I live more for today than for tomorrow" and "I try to choose the easy way in all my decisions." In order to retain the balance in items between short-term and long-term time orientation, two extra questions were added. The added questions were: "I often ignore warnings about problems in the future because I think they will be solved" and "With every decision I make I think about the immediate consequences."
- Elimination of questions to prevent a high irritation level amongst respondents was done, such as:"Do you make reservation for different expenses?" This question caused irritation because all respondents had to answer questions about mental budgeting, despite the previous answer.

5. Results

In this chapter the results will be shown. In the first section the sample will be described, the second section illustrates how the scales were constructed. The third section will show the results of the stated hypotheses. Part of the tables and figures will be shown in the text, another part in the appendix (indicated by stating an A in front of the table or figure number).

5.1 Sample group

In total 4,212 entrepreneurs were drawn from two samples. The first sample was taken from the research agency's panel and consisted of 1,617 non-starting self-employed people without personnel. The second sample group was a fresh sample and consisted of 2,595 entrepreneurs owning a small company (1-4 employees). In the latter group information on the age of the company and whether they were self-employed without personnel was lacking beforehand. Therefore, the second sample was approached with the notification that (only) self-employed people without personnel with a company younger than three years should participate in this study. The total number of respondents who filled out the (online) questionnaire was 654 (response rate 16%). The sample consisted of 39% starters (company age less than 3 years) and 61% non-starters (company age equal or more than 3 years). This distribution is to a certain extent a reflection of the Dutch self-employed population consisting of 21.9% starters and 78.1% non-starters (DTA, 2012c). Also the markets in which the sample group operates are quite representative for the Dutch self-employed population (see Table A5.1). On average the sample owned their company for 10 years. Table 5.1 shows other socio-economic data from the sample. It is remarkable that in the group of the non-starters only 29% were female and in the group of starters this was 42%, suggesting that females drop out from their business more often than males, or that more females start a business nowadays. The average age of the total sample is 49 years; the age of starters (43) and non-starters (53) on average differs by 10 years. The education level is relatively high compared to the Dutch working population, as 50% of the total sample has a Bachelor degree or higher and only 14% has a low education level (VMBO or lower).

Table 5.1 Socio-Economic Variable Distribution

	Total sample group	Starter	Non-starter	Dutch working population
Male (%)	66	58	71	
Female (%)	34	42	29	
Average age	49	44	53	
Low education level (%)	14	13	14	29**
Medium education level (%)	36	41	33	43**
High education level (%)	50	46	53	28**
Turnover on average a year (euros)	18,178	16,038	19,593	

**Statistics Netherlands, 2011

Low education level is defined as VMBO level or lower by the Statistics Netherlands

Medium education level is defined as MBO or high school level by Statistics Netherlands

High education level is defined as BSc level or higher by Statistics Netherlands

5.2 Scales

One-third of the respondents (204 out of 654) was randomly picked and used for construction of the scales. The remaining part of the sample was used for estimating structural relationships between the scales. All results in this section are based on the 204 respondents used for scale construction.

5.2.1 Mental budgeting

As indicated in chapter 4 (methods) an extra item (QC4: "I use well-defined budgets") was included in the analysis of mental budgeting. This was done because the item had a higher factor loading on 'budgeting' than on 'financial situation.' The very first factor analysis, with all mental budgeting items included, showed 5 factors (scree plot: Figure A5.2 in Appendix), the fifth factor having an eigenvalue of 1.105 (Table A5.3 in Appendix). Consecutive deletion of items resulted in factors formed by items constituting more reliable scales. Items were deleted because they loaded on more than one factor which made these items non-discriminative. After each deletion a new factor analysis was run. The first deletion was of two items (QB2 and QB11) which loaded on three components. After deletion of these two items, only item QB18 loaded on component 3 and was therefore also deleted as one item does not make a reliable scale. After the first item deletion round the scree plot (Figure A5.4 in Appendix) and eigenvalue levels (Table A5.5 in Appendix) indicated four factors. Again items (QB4 and QB17) were deleted for loading almost equally on two factors. After a new factor analysis items QB3, QB9 and QB10 were deleted. The factor loadings were then looking similar to table 5.2 except for item QB6 that was still in the analysis and loaded on 'budgeting'. Finally QB6 was deleted because it's loading on the underlying factor of 'budgeting' was implausible as the item says:"I always keep my private and business money strictly separate." It would be more plausible if it had loaded on component 2: 'non-fungibility.' After deleting item QB6 the final factor loadings of the mental budgeting items were as shown in table 5.2.

Mental budgeting was measured by several items (Table 5.2) which were factor analysed by principal component analysis in different rounds as indicated previously. The item responses of the final solution have a KMO of .742 which indicates that a principal component analysis is feasible. According to the scree plot (Figure A5.6) there are four factors explaining 60.2% of the item variance. The items are grouped into four components which are shown in Table 5.2 after oblique rotation. Factor loadings lower than .3 are not reported in the results. Factor 1 could be interpreted as 'making reservations.' 'Making reservations' included items about leaving a minimal amount on the bank account for unforeseen expenses (QB13) and fixed costs (QB14). The items QB15 and QB16 (fungibility) were positively related to the second factor (after recoding such that the items pointed in the mental budgeting direction). Hence, the second factor could now be labelled 'non-fungibility' with high factor scores indicating higher levels of 'non-fungibility.' Factor 3 consists of items measuring 'budgeting.' The fourth factor consists of items measuring the tendency to compensate when budgets have been exceeded. This factor can be labelled 'compensate.' All factors are associated with items having relatively high factors loadings, indicating the degree the items contribute to the underlying factor.

The items making up the factors 'making reservations,' 'non-fungibility,' 'budgeting' and 'compensate' have mean scores (standard deviations between parentheses) of respectively 3.94 (1.00), 2.66 (1.14), 3.56 (1.04) and 3.51 (0.98). These results mean that the respondents tend to agree more with items about making reservations than with items dealing with non-fungibility. Besides the simple structure of the pattern matrix, the correlation between the factors is an important indicator of discriminant validity as a low correlation indicates that the factors are

discriminative and a high correlation means that they belong together and measure to some extent the same. Across all factors the correlations are relatively low (see Table A5.7) except for the correlation (.39) between factor 1 (making reservations) and 3 (budgeting), which means that they measure to some extent the same.

Table 5.2 Pattern Matrix of Mental Budgeting Items

	Making reservations	Non-fungibility	Budgeting	Compensate
Cronbach's alpha	.77	.66	.72	.75
Question B14: I always leave an amount in the business bank account for unforeseen expenses.	.896			
Question B13: I always leave an amount in the business bank account for fixed costs.	.843			
Question B5: As soon as I expect a certain expense, I reserve money for it.	.623			
Question B15: Sometimes I spend money that I have reserved for a certain expense on something different.*		.888		
Question B16: If I run short of money within the company, I sometimes use money that was meant for something different.*		.790		
Question C4: I use well-defined budgets.			.804	
Question B1: I have reserved money for various expenses.			.773	
Question B12: I usually know from which budget something has to be paid.			.765	
Question B7: If I have too much of a certain expense in a certain period, then I spend less on it in the remaining period.				.892
Question B8: If I have more of a certain expense than usual in one period, then I spend less on it in the next period.				.823

* reversed coding

5.2.2 Time orientation

The scree plot (Figure A5.8) indicates two main factors which influence the items in 'time orientation,' which can be seen in the pattern matrix (Table A5.9 in Appendix). The first component could be labelled as the 'long-term time orientation' factor and the second component could be labelled as the 'short-term time orientation' factor. The correlation between these two factors is .24, which is relatively low. In the initial factor analyses all items were included. But looking at the loadings (Table A5.10 in Appendix) two item loadings were implausible: QE2: "I often act to achieve something which is visible in many years" loaded on component 2 'short-term time orientation,' and QE6:"I usually think about the immediate consequences of my acting" loaded on component 1 'long-term time orientation.' Hence, these two items were deleted from the scale.

Checking the remaining 'long-term time orientation' scale on reliability it gave a Cronbach's alpha of .63 and for 'short-term time orientation' (Table A5.11) .56. Improving the scales by deleting an item was not an option as seen in tables A5.12 and A5.13. The Cronbach's

alpha of .56 indicated that the scale of ´short-term time orientation' is not reliable and therefore will not be taken in account in further analyses.

5.2.3 Worry

The scree plot (Figure A5.14) indicated one main factor of 'worry.' Checking the 'worry' scale on reliability it gave a Cronbach's alpha of 0.89, which means that these items formed a reliable scale.

5.2.4 Escalation of commitment to invest

The scree plot indicated one main factor 'escalation of commitment to invest.' Checking the 'escalation of commitment to invest' scale on reliability it gave a Cronbach's alpha of 0.54. Improving the scale by deleting an item was not an option as seen in table A5.15. Cronbach's alpha of .54 indicated that the scale of ´escalation of commitment to invest' is not reliable and therefore will not be taken in account in further analyses.

5.2.5 Financial situation

'Financial situation' was initially measured by three items, but item QC4 ("I use well-defined budgets") fitted better with the 'budgeting' aspect of the mental budgeting concept (see Section 5.4.1.). Item QC4 did not load on any items in the factor analysis on 'financial situation.' Hence, item QC2 moved and therefore 'financial situation' was only measured by two items: QC2 and QC3. 'Financial situation' measured by two items made a reliable scale (Cronbach's alpha of 0.69).

5.2.6 Tax compliance

The DTA measures tax compliance in several ways. The first is the attitude towards being tax compliant (tax morale). This scale of the OECD (2004) is based on predefined obligations for tax payers as imposed by the DTA: registration at chamber of commerce, filing tax forms in time, filling out the tax forms completely and accurately and paying money in time (p 62). This scale is called the tax compliance scale. In this study the 'tax compliance scale' has a KMO of .725 (Table A5.16) and the scree plot (Figure A5.17) showed one factor: tax compliance. Checking the scale for reliability, 'tax compliance' has a Cronbach's alpha of .85 (Table A5.18). The DTA also considers which measures were reported by self-employed people: demand notice of payment, warrant or attachment. This scale is called 'measures taken' by the DTA.

Tax compliance has not only been measured by the DTA, but also by other researchers. According to Muehlbacher et al. (2011) there are two types of compliance: voluntary and enforced. Voluntary compliance is assumed to depend on trust in authorities, enforced compliance is assumed to depend on the (perceived) power of authorities (Muehlbacher et al., 2011). The items which formed these compliance scales had a KMO of .644 which indicates that factor analysis is feasible. According to the scree plot (Figure A5.19) there are two factors of statistical importance. The items were grouped into two components which can be seen in table A5.20. Looking at the loadings of component items, component 1 seems to be related to the underlying factor of 'voluntary compliance.' The second component seems to be related to 'enforced compliance.' The 'voluntary compliance' scale has a Cronbach's alpha of .60 (Table A5.18) and 'enforced compliance' .41 (Table A5.18), which means that 'enforced compliance' is not a reliable scale.

As can been seen in table 5.18 not all scales are reliable, therefore the scales of the DTA and Muehlbacher et al. (2011) were combined and put in one factor analysis (with a KMO of .761). Factor loadings lower than .3 are not reported in the results. The results showed three distinct factors as can been seen from the scree plot (Figure A5.21) and explained 65.4% of the item variance (Table A5.22). As can be seen in table 5.3 the items loaded on three components and the underlying factors were clearly distinguished.

Component 1 is 'tax compliance' measured by the DTA. Component 2 is 'measures taken' as measured by the DTA. Component 3 is 'enforced compliance' measured by Muehlbacher et al. (2011). The 'voluntary compliance' items by Muehlbacher et al. (2011) did not obtain unique factor loadings which means it is not a distinct underlying factor in tax compliance. Therefore 'voluntary compliance' by Muehlbacher et al.(2011) is excluded when measuring tax compliance. Item QG1 as it loaded on two components: positively on component 1 and negatively on component 3. The item 'demand notice' is actually part of the 'enforced compliance' measure of the DTA and reflects the number of received measures (Table A5.23). Looking at the reliability of these scales they had a Cronbach's alpha of .85 for 'tax compliance' by the DTA, .80 for 'taken measures' by the DTA and .54 for 'enforced compliance' (the Cronbach's alpha's are shown in table 5.3 A5.18). Cronbach's alpha of .54 indicated that the scale of ´enforced compliance' of Muehlbacher et al. (2011) is not reliable and therefore will not be taken in account in further tests.

Table 5.3 Pattern Matrix of Final Tax Compliance Scales

	Tax compliance DTA	Measures taken (DTA)	Enforced tax compliance Muehlbacher
Cronbach's alpha	.850	.800	.540
Question H1: the Dutch Tax Administration has the declaration in time.	.912		
Question H2: the Dutch Tax Administration has the right declarations?	.889		
Question H3: When money needs to be paid the Dutch Tax Administration has it in time.	.825		
Demand notice		.844	
Question D2: Situation: Did you in the past needed to arrange a pay arrangement with the Dutch Tax Administration, because you could not pay the owed money in time?		.704	
Question D3: Situation: Did the Dutch Tax Administration fined you in the last three years because of an overdue payment?		.772	
Question G3: Paying tax: I feel forced to pay taxes.			.726
Question G4: Paying tax: I pay taxes because the risk to get checked is too high.			.758

Concluding, tax compliance will be measured by summing the items from the DTA, as items QH1, QH2 and QH3 form the scale 'tax compliance' and items QD1, QD2, QD3 and 'demand notice' form the scale 'measures taken.' The mean score of the tax compliance items is 4.22 (0.86) and for taken measures 1.64 (0.33), which means that the sample group strongly agrees

with the tax compliance statements. In contrast, the low mean of taken measures indicated that the sample did not report a lot of measures taken by the DTA.

Factor analysis assumes continuous normal distributions of the item responses. However, the items (QD1, QD2, QD3 and 'demand notice') measuring 'measures taken' by the DTA were rated on a 0–1 scale and these items were therefore not meeting the criterion of normal distribution, therefore the items for measuring 'measures taken' by the DTA should not be included in a factor analysis. A factor analysis should therefore only be done on the items of 'tax compliance' by the DTA, which resulted in one factor (see Figure A5.17). The 'measures taken' scale equals the sum of the scores on all the items.

5.2.7 Conclusion

Four mental budgeting factors can be distinguished: 'making reservations,' 'non-fungibility,' 'budgeting' and 'compensate.' All scales were coherent and reliable except the scale of 'short-term time orientation' and 'escalation of commitment to invest.' In testing our hypotheses these scales will be left out of the analyses. Tax compliance is measured by two separate scales for 'tax compliance' and 'measures taken.'

5.3 Conceptual model

In this section the results on the scales of mental budgeting, tax compliance and their possible relation will be explained. Some of the main results will be shown in the text; the remaining results are included in the appendix. All results in this section are based on 450 (out of the 654) respondents of the sample group, which were excluded in the scale construction process.

5.3.1 Mental budgeting

Not all respondents state that they fully apply mental budgeting and six respondents scored all mental budgeting items relatively low: 1 or 2. When looking at the socio-economic background of this group, the group is quite typical and can be described as predominantly elderly males, being relatively highly educated (not low educated) and worry about financial business issues to a lesser extent (they do not entirely depending on this income or have a high turnover). The group of high mental budgeters (scores on mental budgeting items 4 or 5) consists of 47 respondents. Compared to the low mental budgeting group this group is predominantly female, younger of age, lower educated, had entrepreneurial upbringing and indicated that their fiscal and financial knowledge is good (more than people without entrepreneurial upbringing). This group also had more variation in level of turnover and was more depending on this income.

The correlations between the mental budgeting factors can be seen in table 5.4. Only 'compensate' and 'non-fungibility' are not significantly correlated. This means that these factors do not relate and therefore also do not effect each other although they both belong to mental budgeting, Also the instrumental variables 'worry' and '# of saving goals' relate significantly to all factors of mental budgeting, besides 'compensate.'

Table 5.4 Correlation Matrix of Mental Budgeting Scales and Instrumental Variables

	Making reservations	Non-fungibility	Budgeting	Compensate
Making reservations	1.000"			
Non-fungibility	.252**	1.000"		
Budgeting	.267**	.260**	1.000""	
Compensate	.250**	.040"	.357""	1.000
Worry	.350**	.449**	.167**	.120
# of Saving goals	.377**	.200**	.220**	.026

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

5.3.2 Factors influence mental budgeting

As shown in the regression table (5.5) the instrumental variables 'worry' and '# of saving goals' have significant effects on mental budgeting, except on 'compensate.' Although there are significant effects the proportion of explained variance in the mental budgeting aspects varied substantially. 'Worry' has the most influence on 'non-fungibility' (R^2=.200) and '# of savings goals' on 'making reservations' (R^2=.140).

Table 5.5 Regression of Mental Budgeting Factors on the Instrumental Variables Worry and # of Saving Goals

	Making reservations			Non- fungibility			Budgeting			Compensate		
	Adjusted R^2	F	B	Adjusted R^2	F	B	Adjusted R^2	F	B	Adjusted R^2	F	B
Worry	.069	34.439**	.267	.200	113.270**	.449	.026	12.892**	.167	-.002	0.066	.012
# of Saving goals	.140	74.040**	.295	.038	18,469**	.156	.046	22.838**	.172	-.002	0.306	.020

**. Regression is significant at the 0.01 level (2-tailed).
* Regression is significant at the 0.05 level (2-tailed).

'Worry' and '# of savings goals' are a significant prediction of 'tax compliance' and 'taken measures' as shown in table 5.6. The assumption that 'worry' and '# of saving goals' are instrumental variables for mental budgeting, unrelated to tax compliance, may therefore be rejected. Consequently, 'worry' and 'escalation of commitment to invest' will not be considered in this research as instrumental variables.

Table 5.6 Regressions of Tax Compliance on Worry and # of Saving Gaols

	Tax compliance			Taken Measures		
	Adjusted R^2	F	B	R^2 (Nagelkerke)	-2 log likelihood	B
Worry	.023	11.468**	-.158**	.101	326893**	-.681**
# of Saving goals	.014	7.184**	.099**	.029	83.662**	.294**

** significant at the 0.01 level (2-tailed).
* significant at the 0.05 level (2-tailed).

The literature indicated that social and psychological factors could influence mental budgeting. Tables A5.24 – A5.28 show the influence of the factors on, respectively, 'making reservations,' 'non-fungibility,´ 'budgeting´ and 'compensate,' Socio-economic factors solely affect 'making reservations' and 'non-fungibility' significantly but still had a low explaining variance (respectively 0.31% and 0.15%). On 'making reservations' 'turnover,' 'gender' and 'education' had significant positive effect. Only 'age' was a predictor of 'non-fungbility' although slightly negative (-.015). To conclude in general socio-economic factors were no significant and big predictors for mental budgeting.

When psychological factors were added to the model the variance explained increased to about 20% (see table 5.24-5.28). 'Long-term time orientation' and 'financial knowledge' had significant effects on all mental budgeting factors. Table 5.8 and 5.9 show that these variables had no overall significant effect on 'tax compliance' and 'taken measures.'

5.3.3 Mental budgeting and tax compliance

When looking at the univariate relationships between mental budgeting and tax compliance all factors are positively and significantly related to 'tax compliance' and also significantly related to 'taken measures' (except for the correlation between 'compensate' and 'Taken measures').

Table 5.7 Correlations between Mental Budgeting Factors and Tax Compliance

	Tax compliance	Taken measures (DTA)
Making reservations	.320**	.203**
Non-fungibility	.095*"	.256**
Budgeting	.349**	.131**
Compensate	.209**	-.004"'

**Significant at the 0.01 level (2-tailed)
* Significant at the 0.05 level (2-tailed)

Next, we assess the multivariate effects of the mental budgeting factors on tax compliance, then the socio-economic variables, and finally the psychological variables are added in the regression analysis. The hierarchical regression analysis was done to measure the added value on tax compliance of these sets of variables. The results for the tax compliance factor are shown in table 5.9. The R^2 reflects the proportion of tax compliance variation explained by the mental budgeting variables: .325. By adding the socio-economic variables the R^2 increased to .330 and by adding the psychological variables the R^2 increased to .355. 'Making reservations'

and 'budgeting' affect 'tax compliance' significantly whereas the other mental budgeting variables have no significant effect. The B value indicates in which direction and to what extent the variables affect tax compliance. For example 'making reservations' has a B value of .459 which means that when the 'making reservation' factor score increases by 1 'tax compliance' increases by 1.459. When looking at the set of socio-economic variables only education of the self-employed person has a significant negative effect. When looking at the psychological variables only financial knowledge had a significant positive effect. Concluding 'making reservations' and 'budgeting' had significant effects on tax compliance. Also education had a negative significant effect on tax compliance, meaning the higher the education the lower the tax compliance, although the effect is not large (-.079).

Table 5.8 Regression of Tax Compliance DTA on Mental Budgeting, Socio-Economic and Psychological Factors

		Step 1	Step 2	Step 3
		B		
1 Mental budgeting factors				
	Constant	.188**	.097	.983
	Making reservations	.459**	.451**	.353**
	Non-fungibility	.097	.102	.056
	Budgeting	.262**	.267**	.207**
	Compensate	.029	.035	.031
2 Socio-economic factors	Turnover		.027	.023
	Gender		-.001	.049
	Education		-.056	-.079*
	Age		.000	.002
	Age business		.011	.008
3 Psychological factors	Long-term time orientation			.102
	Promotion focus			.182
	Prevention focus			.178
	Worry			-.075
	# of saving goals			-.026
	Financial situation			-.017
	Fiscal knowledge			-.044
	Financial knowledge			.228*
	Entrepreneurial upbringing			.021
	Adjusted R^2	.325	.330	.355
	F	26.664**	12.647**	7.508**

** Significant on at a 0.01 level (2-tailed)
* Significant at the 0.05 level (2-tailed)

To measure the effect of mental budgeting on 'taken measures' ordinal regression is applied as 'taken measures' is a count variable. Again looking at the R^2 mental budgeting variables predicted 11.9% of the probability of 'taken measures' (Table 5.10). Adding socio-economic variables the R^2 increased to 14.6% and adding psychological variables it increased to

20.7%. The regression estimates indicate in which direction and to what extent the variables affect 'taken measures'. For example, 'making reservations' has an estimate of .375. 'Making reservations' and 'non-fungibility' affect 'taken measures' significantly and affect 'taken measures' the most of all mental budgeting variables. When looking at the socio-economic variables, only turnover and gender had significant effects and amongst the psychological variables only worry had significant effects. Adding psychological variables gender (-.611), turnover (-.108) and worry (-.379) had significant and relatively large effects. Concluding, 'making reservations' has a significant positive effect on taken measures. Also 'turnover, 'gender' and 'worry' had negative significant effects on taken measures. Gender is indicated by scoring 1 (male) or 2 (female), so the higher coefficient in this case indicates that females report less measures taken. Furthermore, both worry and turnover effects are negative, which means that the higher the level of worry and/or turnover the higher the 'taken measures' (which is in turn an indicator for lower tax compliance).

Table 5.9 Ordinal Regression of Taken Measures on Mental Budgeting, Socio-Economic and Psychological Factors

		Step 1	Step 2	Step 3
		B		
1 Mental budgeting factors				
	Making reservations	.375**	.421**	.341*
	Non-fungibility	-.474**	-.493**	-.250
	Budgeting	.236	.261*	.214
	Compensate	-.230	-.277*	-.248
2 Socio-economic factors	Turnover		-.099*	-.108*
	Education		.116	.043
	Gender		-.506*	-.611*
	Age		-.006	-.011
	Age business		.023	.023
3 Psychological factors	Long-term time orientation			.183
	Promotion focus			-.045
	Prevention focus			-.673
	Worry			-.379*
	# of saving goals			.251
	Financial situation			-.265
	Fiscal knowledge			.208
	Financial knowledge			-.288
	Entrepreneurial upbringing			-.138
	R^2 Nagelkerke	.119	.146	.207
	-2 log likelihood	788.689**	803.689**	776.228**

** Significant at the 0.01 level (2-tailed)

* Significant on at a 0.05 level (2-tailed)

Note: threshold estimates are omitted from the results

5.3.4 Conclusion

Aspects of mental budgeting are related to tax compliance and measures taken. No other effects on tax compliance were found except 'education' which slightly negatively affected tax compliance. On taken measures also no other effects were found besides negative effects for turnover, gender and worry.

5.4 Model

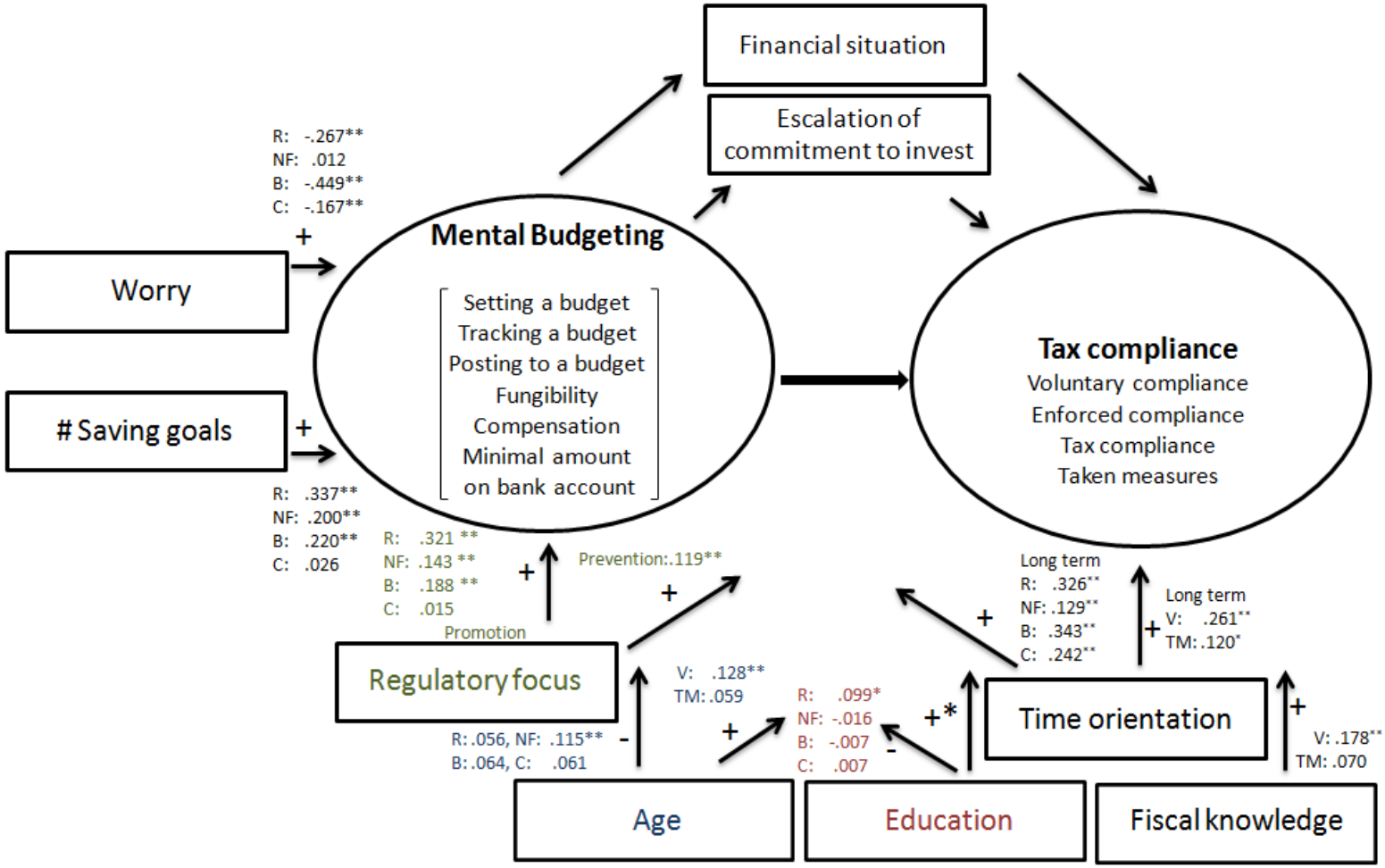

Figure 5.5 Model after Results

*This relation was not measured as the scale of enforced tax compliance was not reliable. Although education had an effect (-.079**)on tax compliance (DTA)

R= Making reservations, NF= Non-fungibility, B= Budgeting, C= Compensate, V= Voluntary, TM= Taken Measures DTA

5.5 Hypotheses

In this section the previously stated hypotheses were tested. The results of the tested hypotheses are shown in table 5.12.

Table 5.10 Result of Tested Hypotheses

Hypotheses	Result	
H1: Fungibility can be distinguished from other aspects of mental budgeting amongst self-employed people.	Confirmed	Factor analysis gave non-fungibility as a distinct factor in mental budgeting (see figure 5.8 and Table 5.10) with relatively low correlations with 'making reservations' (.170), 'budgeting'(.087) and 'compensate' (.100).
H2: Compensation in expenses can be distinguished from other aspects of mental budgeting amongst self-employed people.	Confirmed	Factor analysis gave it as a distinct factor in mental budgeting (see Figure 5.8 and Table 5.10) with relatively low correlations with 'making reservations' (.225), 'non-fungibility' (.100) and 'budgeting'(.309).
H3: Having a minimal amount on the bank account can be distinguished from other mental budgeting aspects amongst self-employed people.	Confirmed, but other mental budgeting items are also included in this factor	Factor analysis gave it as a distinct factor in mental budgeting (see Figure 5.8 and Table 5.9). But having a minimal amount on the bank account formed together with item 3 a factor labeled: 'making reservations' (see Table 5.2). 'Making reservations' was relatively low correlated with 'non-fungibility '(.170)' budgeting' (.384) 'compensate' (.225).
H4: Self-employed males apply mental budgeting more than self-employed females.	Rejected	Gender has no significant correlation with mental budgeting, the mean mental budgeting scores for females was .0575 (1.03) and for males -.019 (1.00).
H5: Both age and education are negatively related to mental budgeting amongst self-employed people.	Rejected	There is only a significant (p=.036) relation between education and 'making reservations' (.099). For age and mental budgeting there is also no significant correlation, except for 'non- fungibility' which has a significant (p=.014) positive correlation (.115).
H6: Turnover is a negatively related to mental budgeting amongst self-employed people.	Rejected	There was only one negative correlation between turnover and 'non-fungibility' (-.047), but not significant (.315). The other mental budgeting factors are positive correlated: 'budgeting' (.064), 'compensate' (.061) and even a significant (p=.014) positive correlation (.115) for 'making reservations.'

H7: Long-term time orientation amongst self-employed people is positively related to mental budgeting.	Confirmed	Long-term time orientation had a significant correlation on all factors of mental budgeting, the largest correlation was between long-term orientation and 'budgeting' (.343) and 'making reservations' (.326).
H8: Short-term time orientation amongst self-employed people is negatively related to mental budgeting.	Short-term time orientation was not a reliable scale; therefore this Hypothesis could not be tested.	–
H9: The number of saving goals of self-employed people is positively related to mental budgeting.	Confirmed	There is a positive relation between # of saving goals and mental budgeting: significant correlations on 'making reservations'(.377), 'non-fungibility' (.200) and 'budgeting' (.220). The correlation on 'compensate' was positive (.026) but not significant (p=.581).
H10: Self-employed people who are promotion oriented apply mental budgeting more than self-employed people with a prevention focus.	Rejected	Self-employed people with a promotion focus score on the mental budgeting items on average 0.09 (.94) and with a prevention focus .105 (.91). Also self-employed people with a promotion focus have a lower correlation with mental budgeting and have less effect on mental budgeting than when having a prevention focus (see Table A5.28 &A 5.29). So Self-employed people with a prevention focus apply mental budgeting more.
H11: Worry has a positively related to mental budgeting amongst self-employed people.	Rejected	Worry only correlates positively with 'compensate' (.012) but not significantly so (p=.797). Worry relates to all other mental budgeting factors significantly negatively.
H12: Mental budgeting and escalation of commitment to invest are negatively related amongst self-employed people.	Escalation of commitment was not a reliable scale; therefore this Hypothesis could not be tested.	–
H13: Age is positively related to voluntary tax compliance amongst self -employed people.	Confirmed	Age is significant (p=.007) and positively (.128) related to voluntary tax compliance.
H14: Entrepreneurial experience is positively related to voluntary tax compliance.	Rejected	Entrepreneurial experience is not significantly (.280) related to voluntary tax compliance.
H15: Fiscal knowledge is positively related to voluntary tax compliance amongst self -employed people.	Rejected	Fiscal knowledge is positively (.081) related to voluntary tax compliance but not significantly (p=.87).

H16: Education is negatively related to enforced tax compliance amongst self-employed people.	Enforced tax compliance was not a reliable scale, therefore this Hypothesis could not be tested	–
H17: Prevention orientation is positively related to voluntary tax compliance amongst self-employed people.	Confirmed	Prevention is significantly (p=.011) and positively (.119) related to voluntary tax compliance.
H18: Escalation of commitment to invest has a negative relation to tax compliance.	Escalation of commitment was not a reliable scale, therefore this Hypothesis could not be tested	–
H19: Financial situation has a positive relation to tax compliance.	Rejected	Financial situation is significant (p=.005) and negatively (-.133) related to voluntary tax compliance and also significant (p=.000) and negatively (-.282) related to taken measures.

Note: when a '–' is placed in cells no data could be obtained because of unreliable scales.

6. Conclusion & Discussion

In this chapter the main research question that has been raised in the introduction: "What is the relationship between mental budgeting and tax compliance amongst self-employed people?" will be addressed. In order to answer the main question, first mental budgeting and tax compliance needed to be formulated and tested. So far mental budgeting has been measured via field research and experiments. This research showed that measuring mental budgeting via a questionnaire is also a valid way of measuring mental budgeting.

Mental budgeting consisted of four factors: 'making reservations,' 'non-fungibility,' 'budgeting´ and 'compensate.´ Making reservations included having an amount on the bank account but also reserving money when an expense is expected. All factors are related to a certain extent and form reliable scales of mental budgeting aspects. Earlier, mental budgeting was measured only amongst consumers but mental budgeting apparently is also applied by self-employed people.

There were no significant effects of socio-economic factors on mental budgeting. The effect of being a starter or not, made no significant impact on the relation between mental budgeting and tax compliance. Further there was no effect of time orientation on tax compliance or the relationship between mental budgeting and tax compliance. Although no socio-economic effects were significant, the category who applied mental budget at a minimum level (score of 1 or 2 on the 5-point scale on all mental budgeting items) had a specific background (see section 5.3.1) and consisted of predominantly elderly males who are relatively highly educated (not low educated), worry hardly about financial business issues and depend on the income of the company (or have a high turnover level). The category who applied mental budgeting to a high degree are (compared to low mental budgeters) predominantly female, younger of age, lower educated, had more variation in level of turnover, but are also more depending on this income and had entrepreneurial upbringing. A remarkable finding in this group is that the ones who had entrepreneurial upbringing state that their financial- and fiscal knowledge is good and even better than the ones that were not brought up this way. In literature, risk taking has been connected to gender: females generally are more risk-averse than males (Byrnes, Miller, & Schafer, 1999) and lower educated are more risk averse than higher educated people (Rosen, Tsai, & Downs, 2003). In this research gender and education had no significant effects on mental budgeting, whereas mental budgeting had positive effects on tax compliance. These findings suggest that there was no relationship between risk attitude and tax compliance amongst self-employed people, although forced compliance was excluded from the analysis (risk attitudes may be related more with forced than with voluntary compliance because of its deterrent effect).

The effects of psychological factors were not as expected and indicated in previous literature; prevention or promotion orientation had no effect on mental budgeting and on tax compliance. However, some psychological factors did have predicted effects on mental budgeting: 'long-term time orientation' and 'financial knowledge.'

Some variables were not included in the structural analysis because the scales were not valid; 'short-term time orientation' 'enforced tax compliance' and 'escalation of commitment to invest' (sunk costs were part of the scale 'escalation of commitment to invest'). Scale development for these concepts is left for future research.

Concluding, this research found interesting and significant relations towards tax compliance , although some were not significant, including 'long-term time orientation,' 'financial situation,' 'worry,' 'promotion focus' and 'prevention focus.'

6.1 Discussion

This section consists of critical analysis of the results and recommendations for further research and interventions by the DTA.

In this research not only the relationship between mental budgeting and tax compliance was assessed, but also the plausibility of measuring mental budgeting via a questionnaire and the reliability of scales and factors influencing mental budgeting. Starting with the reliability of scales, some scales that were reliable in previous research were not reliable in this research, including 'enforced compliance' (Muehlbacher et al., 2011), 'short-term time orientation' (Centiq, 2008) and 'escalation of commitment to invest' (based on Heath, 1995). Since the self-employed sample differed from the samples used in previous research, these results may be due to differences between samples.

Some socio-economic factors were suggested to be of influence on mental budgeting (gender and education) according to previous consumer research, but showed no effect in this research, although different backgrounds were assessed between low-degree and high-degree mental budgeters.

The assumption that starters would be less compliant than non-starters is not supported by this research. A recommendation for the DTA would therefore be not to focus on starters in particular but on self-employed people in general. As the positive effect of mental budgeting on tax compliance is shown, intervention with self-employed people to enhance mental budgeting could be of significant influence on tax compliance. This intervention and training could be done by the DTA or the Chamber of Commerce. The most significant aspects of mental budgeting that had effect on tax compliance were 'making reservations' and 'budgeting.' Training for self-employed people should therefore be aimed at these two factors. The training could go in further detail about leaving an amount on the business bank account, defining budgets in terms to which expenses belong and for which expenses budgeting is necessary. Also 'non-fungibility' had an impact on 'taken measures.' According to Piscaer (2012) a minority of the self-employed people stated that they are willing to use money from one budget for other purposes than the money was intended for (provided that filling up the deficit is foreseen). This tendency of transferring money should be minimized as it decreases 'taken measures.' Another focus area of the training could lay in the fact that 'making reservations' contains items about leaving an amount on the business bank account for unforeseen or fixed costs. According Piscaer (2012) self-employed people do not see this minimum amount as a budget. Training to increase the awareness about what budgeting is and how money can be labeled in various ways, could be useful.

The DTA has a friendly and flexible policy with respect to completing tax (return) forms declarations correctly and in time, because wrong or overdue declarations do happen often out of ignorance and not intentionally. This research confirmed that most of measures taken rose out of ignorance. One respondent in the qualitative study indicated that there might be a difference in type of tax and tax attitude, as some taxes are seen as natural and some as restrictive or punishing. Further research could take this attitude difference with respect to different types of tax into account in order to be able to steer and stimulate tax compliance more effectively.

6.1.1. Recommendations for further research

Future research is needed on the exact role of 'escalation of commitment to invest.' As (Heath, 1995) showed 'escalation of commitment to invest' occurs when the expenses were not visible or traceable. This suggested that when mental budgeting was not applied to a maximum degree 'escalation of commitment to invest' occurred, which in turn could lead to a decrease of tax

compliance (as the money is simply not available). Odean (1998) also suggests that escalation occurs because people apply mental budgeting, are therefore reluctant to transfer money across accounts and want to close each account positively. The exact role of 'escalation of commitment to invest' could not be assessed by this research because the measurement scale was unreliable.

Besides that some scales were not reliable, some were measured by only a few items. Further research is therefore needed to refine these scales and increase the number of items. To be more specific the mental budgeting scales, especially 'non-fungibility,' 'compensate,' and 'financial situation' need refinement and an increased number of items. Also the factors of 'making reservations' and 'budgeting' need refinement as they correlate to a relatively high level (which means they measure to a high extent the same) and the items are quite similar, like 'QB5: As soon as I expect a certain expense, I reserve money for it' (making reservations) and 'QB1: I have reserved money for various expenses' (budgeting).

The variable 'long-term time orientation' had a positive effect on mental budgeting, but not on tax compliance, although there is an effect between mental budgeting and tax compliance. This suggests that further research about the relation between time orientation, mental budgeting and tax compliance is needed.

References

Ahmed, E., & Braithwaite, V. (2005). Understanding small business taxpayers: Issues of deterrence, tax morale, fairness and work practice. *International Small Business Journal*, *23*(5), 539–568.

Alm, J., McClelland, G. H., & Schulze, W. D. (1999). Changing the social norm of tax compliance by voting. *Kyklos*, *52*(2), 141–171.

Antonides, G., De Groot, I. M., & Van Raaij, W. F. (2011). Mental budgeting and the management of household finance. *Journal of Economic Psychology*, *32*(4), 546–555.

Arkes, H. R., & Blumer, C. (1985). The psychology of sunk costs. *Operational Behavior and Human Decision Processes*, *35*, 124–140.

Bagozzi, R. P., & Dholakia, U. (1999). Goal setting and goal striving in consumer behavior. *Journal of Marketing*, *63*, 19–32.

Bakke, E. W. (1940). *The unemployed worker* (pp. 142–143). New Haven,USA: Yale University Press.

Barsalou, L. W. (1991). Deriving categroies to achieve goals. In G. Bower (Ed.), *The phychology of learning and motivation: advances in research and theory* (pp. 1–64). New York,USA: Academic Press.

Becker, G. S. (1968). Crime and punishment: an economic approach. *The Journal of Political Economy*, *76*(2), 169–217.

Borcovec, T. D. (1994). The nature, functions, and origins of worry. In (G. C. L. Daveyd & Tallis F. (Eds.), *Worrying; perspectives on theory, assessment, and treatment*.(pp. 5–33). Chinester,UK: Wiley.

Braithwaite, V. (2003). Dancing with tax authorities: motivational postures and non-compliant actions. In V. Braithwaite (Ed.), *Taxing democracy* (pp. 15–39). Hants, UK: Ashgate.

Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theorectical progress. *Academy of Management Review*, *17*, 39–61.

Brockner, J., & Rubin, J. Z. (1985). *Entrapment in escalating conflicts: a social psychological analysis*. New york, USA: Springer-Verlag.

Byrnes, J. P., Miller, D. S., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, *125*, 367–383.

Centiq. (2008). *Financieel inzicht van Nederlanders*. Retrieved March 28,2013 from http://www.wijzeringeldzaken.nl/professioneel/publicaties/onderzoek.aspx

DTA. (2010). *Bedrijvend Nederland te onderscheiden segmenten kenmerken en omvang*.Utrecht, the Netherlands.

DTA. (2012a). Fiscale monitor. Retrieved February 20, 2013, from http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/standaard_functies/prive/organisatie/belastingdienst/fiscale_monitor_2012

DTA. (2012b). *Kennisagenda Belastingdienst* . Utrecht, the Netherlands (pp. 1–67).

DTA. (2012c). *Steekproef ondernemingen*.Utrecht, the Netherlands

Epley, N., Mak, D., & Idson, L. C. (2006). Bonus of rebate?: the impact of income framing on spending and saving. *Journal of Behavioral Decision Making*, *19*(3), 213–227.

Eriksen, K., & Fallan, L. (1996). Tax knowledge and attitudes towards taxation: a report on a quasi experiment. *Journal of Economic Psychology*, *17*(3), 387–402.

Fennema, M. G., & Perkins, J. D. (2008). Mental budgeting versus marginal decision making: Training, experience and justification effects on decisions involving sunk costs. *Journal of Behavioral Decision Making*, *21*(3), 225–239.

Frank, R. H. (1991). *Mircoeconomics and behavior*. New York, USA: Mc Graw - Hill.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, *19*(4), 25–42.

Frederick, S., Loewenstein, G., & Donoghue, T. O. (2002). Time Discounting and preference : A critical time review. *Journal of Economical Literature*, *40*(2), 351–401.

Garland, H. (1990). Throwing good money after bad: The effect of sunk costs on the decision to escalate commitment to an ongoing project. *Journal of Applied Psychology*, *75*, 728–731.

Garland, H., & Newport, S. (1991). Effects of absolute and relative sunk costs on the decision to persist with a course of action. *Organizational Behavior and Human Decision Processes*, *48*, 55–69.

Heath, C. (1995). Escalation and de-escalation of commitment in response to sunk costs: The role of budgeting in mental accounting. *Organizational Behavior and Human Decision Processes*, *62*(1), 38–54.

Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as refrence points. *Cognitive Psychology*, *38*(1), 79–109.

Heath, C., & Soll, J. (1995). *Mental accounting for costs: the budgeting process for consumer expenses*. University of Chicago.

Heath, C., & Soll, J. B. (1996). Mental budgeting and consumer decisions. *Journal of Consumer Research*, *23*(1), 40–52.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*, 1280–1300.

Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: promotion pride versus prevention pride. *European Journal of Social Psychology*, *31*, 3–23.

Joireman, J., Shaffer, M. J., Balliet, D., & Strathman, A. (2012). Promotion orientation explains why future-oriented people exercise and eat healthy: Evidence from the two-factor consideration of future consequences-14 scale. *Personality & social psychology bulletin*, *38*(10), 1272–87.

Kirchler, E. (2007). *The economic phychology of tax behaviour* (Cambridge.). Cambridge, UK.

Kirchler, E., Muehlbacher, S., Kastlunger, B., & Wahl, I. (2008). Why paying taxes? A review of tax compliance decisions. In J. Alm, J. Martinez- Vazquez, & B. Torgler (Eds.), *Development alternative frameworks for explaining tax compliance* (pp. 200–01). London,UK: Routledge.

Laibson, D. (1997). Golden eggs and hyperbolic discounting. *The Quaterly Journals of Economics*, *112*(2), 443–477.

Lewin, K., Dembo, T., Festinger, L. A., & Sears, P. S. (1944). Level of aspiration. In J. Mc Vincker Hunt (Ed.), *Personality and the Behavior Disorder*. New York, USA:Roland Press.

Mittone, L. (2006). Dynamic behaviour in tax evasion: an experimental approach. *The Journal of Socio-Economics*, *35*(5), 813–835.

Muehlbacher, S., Kirchler, E., & Schwarzenberger, H. (2011). Voluntary versus enforced tax compliance: Empirical evidence for the "slippery slope" framework. *European Journal of Law and Economics*, *32*(1), 89–97.

Odean, T. (1998). Are investors relunctant to realize their losses. *Journal of Finance*, 53(3), 1775-1795.

OECD. (2004). *Compliance risk management: managing and improving tax compliance* (pp. 1–73).

OECD. (2010). *Understanding and influencing taxpayers'compliance behaviour*.

Piscaer, G. (2012). *The role of mental budgeting in financial management of self-employed people in the Netherlands*. Wageningen University and Research centre.

Rainwater, L., Coleman, R. P., & Handel, G. (1959). *Workingman's wife: Her personaliy, world, and life style* (pp. 154–155). New York: Oceana.

Rosen, A. B., Tsai, J. S., & Downs, S. M. (2003). Variations in risk attitude across race, gender and education. *Medical decision making*, *23*(6), 511–517.

Schade, C., & Kunreuther, H. (2001). Worry and mental accounting with protective measures. Working paper.

Schepanski, A., & Shearer, T. (1995). A prospect theory account of the income tax withholding phenomenon. *Organizational Behavior and Human Decision Processes*, *63*(2), 174–186.

Shefrin, H. M., & Thaler, R. H. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry*, *26*(4), 609–643.

Soman, D., & Cheema, A. (2004). When goals are counterproductive: the effects of violation of a behavioral goal on subsequent performance. *Journal of Consumer Research*, *31*, 52–62.

Statistics Netherlands. (2009). Branche gegevens ZZP-ers. Retrieved April 8, 2013, from http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=81320NED&D1=1&D2=0&D3=a&D4=l&HDR=G3,T&STB=G2,G1&CHARTTYPE=1&VW=T

Statistics Netherlands. (2012). Verhouding zzp-ers binnen ondernemers groep. Retrieved April 8, 2013, from http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=81588NED&D1=1-8&D2=a&D3=l&HDR=T,G2&STB=G1&VW=T

Staw, B. M. (1976). Knee-deep in the big muddy: A study of escalating commitment to a chosen course of action. *Organizational Behavior and Human Performance*, *16*, 27–44.

Staw, J. B., & Ross, J. (1989). Understanding behavior in escalation situations. *Science*, *246*, 216–220.

Strotz, R. H. (1956). Myopia dynamic and utility inconsistency in maximization. *The Review of Economic Studies*, *23*(3), 165–180.

Swedish Tax Agency. (2009). Förtroende och medverkan. *Demoskops befolkningspanel*.

Thaler, R. H. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization*, *1*, 39–60.

Thaler, R. H. (1985). Mental accounting and consumer choice. *Marketing Science*, *4*(3), 119–214.

Webley, P., Robben, H. S. J., Elffers, H., & Hessing, D. J. (1991). *Tax evasion: An experimental approach*. Cambridge, UK: Cambridge University Press.

Whyte, G. (1986). Escalating commitment to a course of action: A reinterpretation. *Academy of Management Review*, *11*, 311–321.

Appendix

Questionnaire

	Question	Answer categories
A1	When did you started as an entrepreneur (possible previous companies taken into account) (10) Q10_1	Year ..... Month .....
A2	When did you started this company? (20) Q20_1	Year ..... Month .....
A3	In which market are you operating?(30) Q30	1=Agriculture and fishery 2=Industry 3=Construction 4=Trade 5=Transport and stock 6=Hotel and catering industry 7=Business services 8=Non-profit 9=Culture, recreation and other services 10= Other,namely (V30_0)
A4	To which degree is the financial-economical situation of the company improved or deteriorated compared to a year ago? You can choose between 1 to 5, 5 means 'strongly improved' and 1 means 'strongly deteriorated.' In case your company exists less than one year, than compare it with to the period of staring up your company. (40) Q40_1	1=Strongly deteriorated 2 3 4 5=Strongly improved
A5	What is the best description of your occupation (50) Q50	1=Deliver specialized (craft) work A5.1 2=Services A5.2 3=Trade A5.3

		4=Other, namely ... Q50_0 A5.4
A6	What is your <u>main</u> reason to be an entrepreneur? (60) Q60	1=Freedom and independence A6.1 2=Satisfaction of customers (and services) A6.2 3=Turnover and profit A6.3 4=Love for the job A6.4 5=Started a company out of unemployment A6.5 6=Entrepreneurship is usual in this market A6.6 7= Other, namely... V60_0 A6.7
A7	What was the total turnover of the company in 2012, VAT excluded? This may be an estimation.(70) Q70	1=Less than €5.000 A7.1 2=€5.000 to €10.000 A7.2 3=€10.000 to €15.000 A7.3 4=€15.000 to €20.000 A7.4 5=€20.000 to €25.000 A7.5 6=€25.000 to €50.000 A7.6 7=€50.000 to €100.000 A7.7 8=€100.000 to €250.000 A7.8 9=€250.000 or more A7.9
A8	Do you have a business bank account for the company? (80) Q80	1=Yes 2=No
A9	Do you ever have debt on your business bank account? (90) Q90	1=Yes, usually is the amount lower than the revenues I expect on short term A9.1 2=Yes, and sometimes for an amount that is higher than the revenues I expect on short term A9.2 3=No, I never have debt on the business bank account A9.3

A10	Do you ever use private money to pay business bills? (100) Q100	1=Yes 2=No
A11	Do you take care of the financial business yourself, or is this partly outsourced? (110) Q110	1=Everything is handled independently A11.1 2=The biggest part independently, a smaller part is outsourced A11.2 3=The biggest part is outsourced, a smaller part is handled independently A11.3 4=Everything is outsourced A11.4
A12	Do you take care of the fiscal business yourself, or is this partly outsourced? (120) Q120	1=Everything is handled independently A12.1 2=The biggest part independently, a smaller part is outsourced A12.2 3=The biggest part is outsourced, a smaller part is handled independently A12.3 4=Everything is outsourced A12.4
A13	How do you generally determine your income out of the company? (130) Q130	1=I pay myself a fixed amount A13.1 2=What remains after all the (fixed) costs is my income A13.2 3=Other, namely …Q130_0 A13.3
A14	Are you besides entrepreneur also employee (140) Q140	1=Yes 2=No
A15	IN CASE YOUR ARE ALSO AN EMPLOYEE How many hours a week are you employee? (150) Q150_1	…… hours a week

A16	To which degree are you depending on the revenues of your company for your own living? (160) Q160	1=Absolutely not A16.1 2=Nearly not depending A16.2 3=A small part A16.3 4=A big part A16.4 5=Totally A16.5
A17	Did you (whether or not in the past) took measures for your pension? Pension measures arranged by a previous employer is NOT taken into account. (170) Q170	1=Yes 2=No (in case yes), namely,.... Q540
A18	IN CASE OF PENSION_MEASURES What is the reason you did not take pension measures? (180) Q180	1=Too busy A18.1 2=Not enough time A18.2 3=I do not know how A18.3 4=No financial means A18.4 5= Other, namely….. Q180_0 A18.5
A19	Did you take measures for a possible work disability? (190) Q190	1=Yes, I save/ saved Q550_1 A19.1 2=Yes, I took out an insurance Q550_2 A19.2 3=No Q550_3 A19.3
A20	IN CASE NO MEASURES FOR WORK DISABILITY: What is the reason you did not take any measures for work disability? (200) Q200	1=Too busy A20.1 2=Not enough time A20.2 3=I do not know how A20.3 4=No financial means A20.4 5= Other, namely…..Q200_0 A20.5
A21	Which taxes did you declare the last 12 months? You may give several answers. (210) Q210	1=Income tax Q210_1 A21.1 2=Turnover tax Q210_2 A21.2 3=Various Q210_3 A21.3 4= Other, namely Q210_0 A21.4

A22	How good would you describe your financial knowledge? You can chose between 1 to 5, 1 means 'very bad' and 5 means 'very well.' (Q240.1)	1=Very bad 2 3 4 5=Very well
A23	How good would you describe your fiscal knowledge? You can chose between 1 to 5, 1 means 'very bad' and 5 means 'very well.' (Q240.2)	1=Very bad 3 4 5=Very well
	The following propositions are about the financial management of your <u>company</u>, not about your private situation. You can indicate to which degree the situations are applicable to you. You can choose from 1 to 5, 1 means 'totally not applicable' and 5 means 'totally applicable.' (Q80003)	
B1	I have reserved money for various expenses. (Q80003.1)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B2	When I budget, I always take fixed and outstanding costs into account. (Q80003.2)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B3	I always put money a side in case the Dutch Tax Administration comes with an after tax. (Q80003.3)	1=Totally not applicable for me 2

		3 4 5=Totally applicable for me
B4	When I earn money I automatically think about the needed tax to pay. (Q80003.4)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B5	As soon as I expect an expense I reserve money for it (Q80003.5)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B6	I Always keep my private and business money strictly parted. (Q80003.6)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B7	If I have too much of a certain expense in a certain period, then I spend less in the remaining period. (Q80003.7)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B8	If I have more of a certain expense than usual in one period, then I spend less on it in the next period. (Q8000.8)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me

B9	Reserved money for taxes I only spend on taxes (Q80003.9)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B10	To determine how much I want to spend, I first calculate the gains Q80003.10)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B11	My expenses are clearly to classify in recognizable categories. (Q80003.11)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B12	I usually know of which budget needs to be paid. (Q80003.12)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B13	I always leave an amount on the business bank account for fixed costs. (Q80003.13)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me

B14	I always leave an amount on the business bank account for unforeseen expenses. (Q80003.14)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B15	Sometimes I spend money that I have reserved for a certain expense on something different. (Q80003.15)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B16	If I run short of money within the company, I sometimes use money that was meant for something different. (Q80003.16)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B17	Money I reserved for something is rarely spent on something else. (Q80003.17)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
B18	I have an accurate view of the company's revenues and expenses. (Q80003.18)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me

C1	What are your reasons to reserve money for different expenses? You may give several answers. Q230 (this question is not questioned when question 24.1 4 or 5 is filled out)	1= To prevent company's financial problems. Q230_1 C1.1 2= To prevent company's problems with the Dutch Tax Administration. Q230_2 C1.2 3= To have/ keep a good financial overview of the company. Q230_3 C1.3 4= To be able to take financial setbacks. Q230_4 C1.4 5= To be able to take company's unforeseen costs. Q230_5 C1.5 6= To have a good control.Q230_6 C1.7 7= To be able to plan right. Q230_7 C1.8 8= Other reasons, namely... Q230_0 C1.9
C2	How often do you check the balance (and/or debits and credits) of your business bank account? Q270	1=Daily. C2.1 2=At least once a week, but not daily. C2.2 3=At least once in two weeks, but not every week. C2.3 4=At least once a month, but not every two weeks. C2.4 5= Rarely or never. C2.5 6=I do not know. C2.6
C3	Seen for the company I often have to make the ends meet to prevent financial problems (Q280.1)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
C4	I use well-defined budgets.(Q280.2)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me

C5	I have to regularly adjust my budgets. (Q280.3)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
	The following questions are about the Dutch Tax Administration.	
D1	Which description describes your personal feeling the best? (300) Q300	1=I contribute D1.1 2=I spare something D1.2 3=Something is taken from me D1.3
D2	Did you in the past needed to arrange a pay arrangement with the Dutch Tax Administration, because you could not pay the owed money in time? (310.1) Q310.1	1=Yes 2=No 3=I do not know
D3	Did the Dutch Tax Administration fined you in the last three years because of an overdue declaration? (310.2) Q310.2	1=Yes 2=No 3=I do not know
D4	Did the Dutch Tax Administration fined you in the last three years because of an overdue declaration? You may give several answers. (310.3) Q310.3	1=Demand notice Q320.1 D4.1 2=Warrant Q320.2 D4.2 3=Seizure Q320.3 D4.3 4=Other measures, namely... Q320.0 D4.4 5=Non of these measures Q320.5 D4.5
	The following propositions are how you are in general. You can indicate to which degree you agree or disagree. You can choose between 1 to 5, 1 means 'totally disagree' and 5 'totally agree.'(Q330)	
E1	Concerning my future, I leave to put as less as possible to chance. (Q330.1)	1=Totally disagree

		2 3 4 5=Totally agree
E2	I often act to achieve something which is visible in many years. (Q330.2)	1=Totally disagree 2 3 4 5=Totally agree
E3	I mainly focus on the short term (Q330.3)	1=Totally disagree 2 3 4 5=Totally agree
E4	I think the future will show.(Q330.4)	1=Totally disagree 2 3 4 5=Totally agree
E5	I often ignore warnings about future problems, because I think they will be solved. (Q330.5)	1=Totally disagree 2 3 4 5=Totally agree
E6	I usually think about the immediate consequences of my acting. (Q330.6)	1=Totally disagree 2

		3 4 5=Totally agree
E7	I think it is important to put money aside for later. (Q330.7)	1=Totally disagree 2 3 4 5=Totally agree
E8	Regarding the future, you should always take into account that it could always be worse. (Q330.8)	1=Totally disagree 2 3 4 5=Totally agree
E9	When I make a decision, I think about its influence on the future. (Q330.9)	1=Totally disagree 2 3 4 5=Totally agree
	The following propositions are about your <u>company</u>, not about your private situation. You can indicate to which degree the situations are applicable to you. You can chose from 1 to 5, 1 means 'totally not applicable' and 5 means 'totally applicable.' (Q340)	
F1	It often occurs that I spend more money than I planned to.(Q340.1)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
F2	I find it hard to stop investing in something I'm not sure about the gains. (Q340.2)	1=Totally not applicable for me

		2 3 4 5=Totally applicable for me
F3	I rarely end up in company's financial problems due to high costs. (Q340.3)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
F4	When I invest, I ex ante determine a maximum total amount. (Q40.4)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
F5	When deciding to invest. I always take related previous investments into account. (Q340.5)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
	The following are about paying taxes. You can indicate to which degree you agree or disagree. You can choose between 1 to 5, 1 means 'totally disagree' and 5 'totally agree. (Q350)	
G1	I would also pay tax when there were no controls. (Q350.1)	1=Totally disagree 2 3 4 5=Totally agree

G2	I see paying taxes as something natural. (Q350.2)	1=Totally disagree 2 3 4 5=Totally agree
G3	I feel forced to pay taxes. (Q350.3)	1=Totally disagree 2 3 4 5=Totally agree
G4	I pay taxes because the risk to get checked is too high. (Q350.4)	1=Totally disagree 2 3 4 5=Totally agree
G5	I would also pay tax when there were no controls. (Q350.5)	1=Totally disagree 2 3 4 5=Totally agree
G6	I would rather have (temporarily) debt than not being able to pay the business bills (Q350.6)	1=Totally disagree 2 3 4 5=Totally agree

How important or unimportant to think it is that...

H1	... the Dutch Tax Administration has the declarations in time? (Q360.1)	1=Very unimportant 2 3 4 5=Very important
H2	... the Dutch Tax Administration has the right declarations? (Q360.2)	1=Very unimportant 2 3 4 5=Very important
H3	... when money needs to be paid to the Dutch Tax Administration has it in time? (Q360.3)	1=Very unimportant 2 3 4 5=Very important

You can indicate to which degree the situations in the following propositions are applicable to you. You can choose from 1 to 5, 1 means 'totally not applicable' and 5 means 'totally applicable.' (Q370)

I1	I worry that I cannot afford things for my company. (Q370.1)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me

I2	I worry I cannot pay the business bills. (Q370.2)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
I3	I worry that my business financial sources are getting depleted. (Q370.3)	1=Totally not applicable for me 2 3 4 5=Totally applicable for me
J	Do you put company's money aside? This can be for different purposes. (Q380)	1=Yes 2=No
K	IN CASE YOU PUT COMPANY~~'S~~ MONEY ASIDE For which reasons do you put money aside? You may give several answers.(Q400)	1=Saving for future expenses (for company and privately). Q400_1 K1 2=Saving for emergencies (for company and privately) Q400_2 K2 3=Saving for my retirement Q400_3 K3 4=Saving to gain more capital (for company and privately) Q400_4 K5 5=Other, namely... Q400_0 K6 6=Various Q400_5 K7

Finally some short questions.

L1	What is your age? (Q450_1)	…… year
L2	What is your gender? (Q460)	1=Male 2=Female
L3	What is your highest education degree? (Q470)	1=No education 2=Primary school

		3=Lower vocational education (LBO, VBO, VMBO, LTS, LEAS, LHNO, e.d.) 4=Vocational education MAVO, MMS, MULO, ULO, VMBO-TL 5= Medium vocational education (MBO, MTS, MEAO, e.d.) 6= Applied education HAVO, VWO, HBS, Gymnasium 7= Applied science HBO,WO-bachelor (Hogeschool, HTS, HEAO, PABO, e.d.) 8= Academic of Master
L4	Are you familiar with entrepreneurship? (Q440)	1=Yes 2=No

Thank you very much for you cooperation

Results

Table A5.1 Distribution of Branches where Self-Employed People Are Operating in

	Dutch Self-employed population (%)	The sample group (%)
Agriculture and Fishery	3.7	8
Industry	15.9	14
Construction	7.4	8
Trade	7	10
logistics and storage	2.3	2
Hotel and catering services	2.3	3
Business services	31.4	40
Recreation	9.4	1
Non-profit		6
Various	20.5	28

(Statistics Netherlands, 2009). Branche gegevens ZZP-ers.

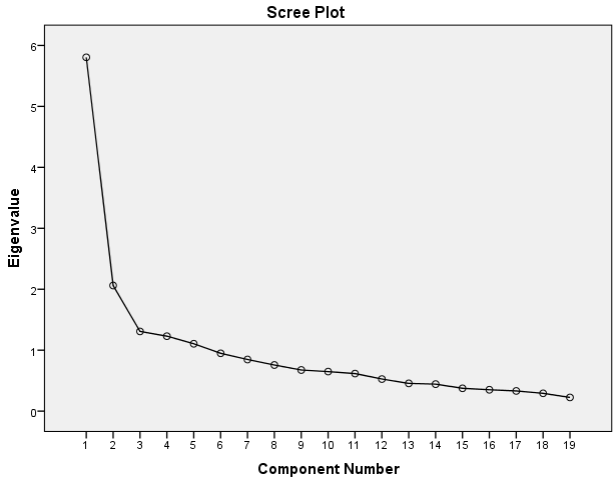

Figure A5.2 Scree Plot of Initial Mental Budgeting Factors.

The number of factors could be seen as 3,4 or 5 as the line breakpoints are at several points.

Table A5.3 Eigenvalues of Initial Mental Budgeting Factor Analysis.

	Total	% of Variance	Cumulative %
1	5.805	30.55	30.55
2	2.062	10.85	41.40
3	1.308	6.88	48.29
4	1.230	6.47	54.76
5	1.105	5.82	60.58
6	.949	4.99	65.57

This table shows 5 factors as the eigenvalues are all >1.

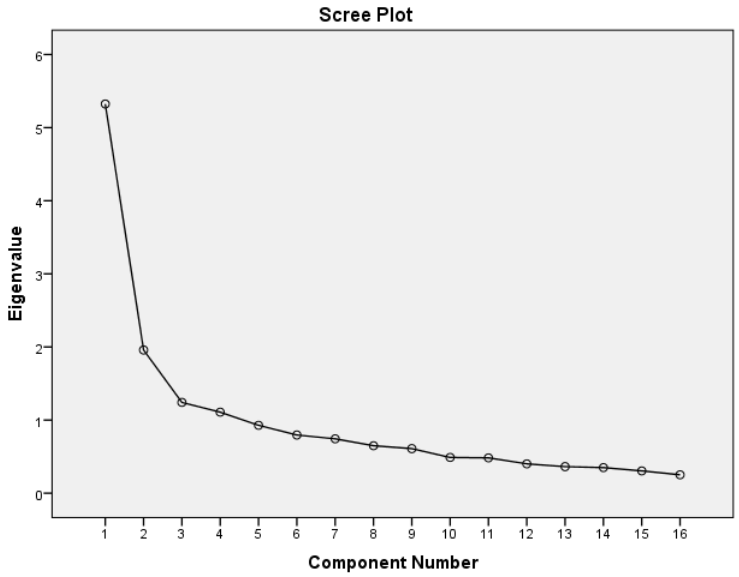

Figure A5.4 Scree Plot of Mental Budgeting Factors*
*The eigenvalues of mental budgeting are shown after deletion of items Q80003_2, Q80003_11 and Q80003_18 which gives 4 factors.

Table A5.5 Eigenvalues after Factor Analysis on Mental Budgeting

	Total	% of Variance	Cumulative %
1	5.324	33.27	33.27
2	1.958	12.24	45.51
3	1.241	7.76	53.27
4	1.108	6.93	60.20
5	.928	5.82	66.00

These eigenvalues are after factor analysis on mental budgeting without item Q80003_2, Q80003_11 and Q80003_18. Finally given four factors with an eigenvalue>1.

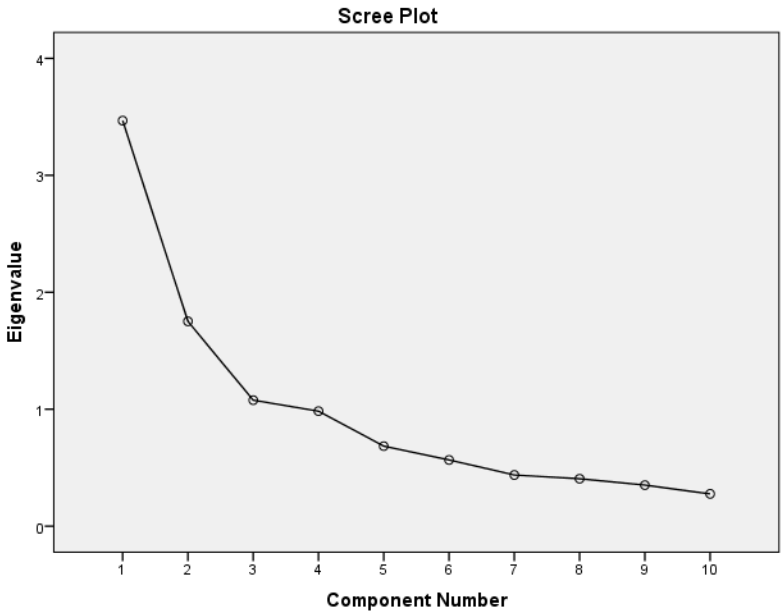

Figure A5.6 Scree Plot of Mental Budgeting Factors

Table A5.7 Correlation Matrix of Mental Budgeting Factors

	Making reservations	Non-fungibility	Budgeting	Compensate
Making Reservations	1.000			
Non-fungibliity	.170	1.000		
Budgeting	.384	.087	1.000	
Compensate	.225	-.100	.309	1.000

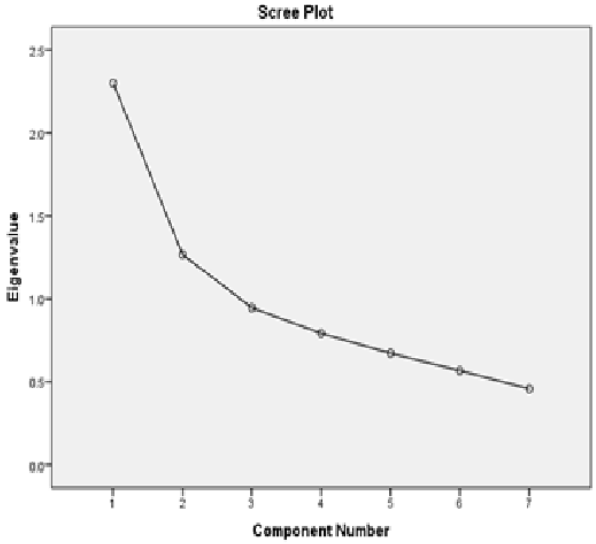

Figure A5.8 Scree Plot of Time Orientation Factors

Table A5.9 Pattern Matrix of Time Orientation Factors

	Long-term time orientation	Short-term time orientation
Question E7: I think it is important to put money aside for later.	.792	
Question E8: Regarding the future, you should always take into account that it could always be worse.	.727	
Question E9: When I make a decision, I think about its influence on the future.	.590	-.314
Question E1: Concerning my future, I leave to put as less as possible to chance.	.535	
Question E4: I think the future will show.		.784
Question E5: I often ignore warnings about future problems, because I think they will be solved.		.717
Question E3: I mainly focus on the short term.		.603

Table A5.10 Initial Factor Analysis on all Items of Time Orientation

	Long-term time orientation	Short-term time orientation
Question E7: I think it is important to put money aside for later.	.792	
Question E8: Regarding the future, you should always take into account that it could always be worse.	.727	
Question E9: When I make a decision, I think about its influence on the future.	.590	-.314
Question E6: I usually think about the immediate consequences of my acting.	.640	
Question E1: Concerning my future, I leave to put as less as possible to fate.	.535	
Question E4: I think the future will show.		.784
Question E5: I often ignore warnings about future problems, because I think they will be solved.		.717
Question E2: I often act to achieve something which is visible in many years.		.516
Question E3: I mainly focus on the short term.		.603

Table A5.11 Cronbach's Alpha of Long-Term Time Orientation and Short-Term Time Orientation

	Cronbach's Alpha	# items
Long term	.628	4
Short term	.557	3

Table A5.12 Cronbach's Alpha of Long-Term Time Orientation when Items Would Be Deleted

	Cronbach's Alpha if Item Deleted
Question E1: Concerning my future, I leave to put as less as possible to fate.	.567
Question E7: I think it is important to put money aside for later.	.508
Question E8: Regarding the future, you should always take into account that it could always be worse.	.624
Question E9: When I make a decision, I think about its influence on the future.	.526

The Cronbach's alpha of Long term orientation is .63. Looking at the last column it can be seen what the reliability would be when that particular item would be deleted. None of the resulting Cronbach's Alphas would be higher than .63 when deleting an item. Therefore deleting an item would not improve the reliability of the scale.

Table A5.13 Cronbach's Alpha of Short-Term Time Orientation when Items Would Be Deleted

	Cronbach's Alpha if Item Deleted
Question E3: I mainly focus on the short term.	.548
Question E4: I think the future will show.	.417
Question E5: I often ignore warnings about future problems, because I think they will be solved.	.398

The Cronbach's alpha of short term orientation is .56. Looking at the last column it can be seen what the reliability would be when that particular item would be deleted. None of the resulting Cronbach's Alphas would be higher than .56 when deleting an item. Therefore deleting an item would not improve the reliability of the scale.

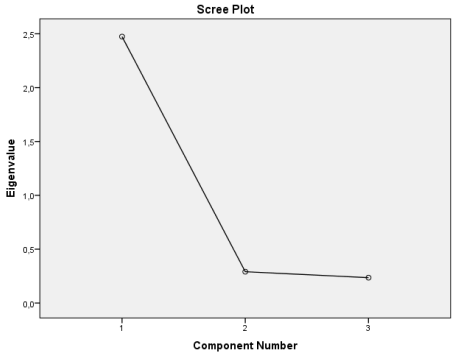

Figure A5.14 Scree Plot of Worry Factors

Table A5.15 Cronbach's Alpha when Items Were Deleted for Escalation of Commitment to Invest

	Cronbach's Alpha if Item Deleted
Question F1: It often occurs that I spend more money than I planned to.	.105
Question F2: I find it hard to stop investing in something I'm not sure about the gains.	.108
Question F3: I rarely end up in company's financial problems due to high costs.	.006
Question F4: When I invest, I ex ante determine a maximum total amount.	.186
Question F5: When deciding to invest. I always take related previous investments into account.	.014

The Cronbach's alpha of escalation of commitment to invest is .54. Looking at the last column it can be seen what the reliability would be when that particular item would be deleted. None of the remaining Cronbach's Alphas would be higher than .54 when deleting an item. Therefore deleting an item would not improve the reliability of the scale.

Table A5.16 KMO of Several Tax Compliance Factors

	KMO
Tax compliance (voluntary and enforced) Muehlbacher	.644
Tax compliance DTA	.724
New tax compliance factors	.761

Figure A5.17 Scree Plot Tax Compliance Factors DTA

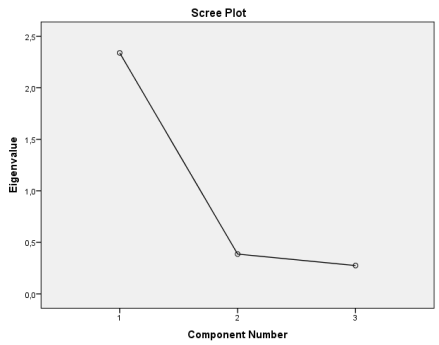

Table A5.18 Cronbach's Alphas of Several Tax Compliance Scales

	Cronbach's Alpha	# items
Voluntary tax compliance Muehlbacher	.595	2
Enforced tax compliance Muehlbacher	.412	2
Tax compliance DTA	.851	3
New enforced compliance DTA	.800	4
New enforced tax compliance Muelhbacher	.538	3

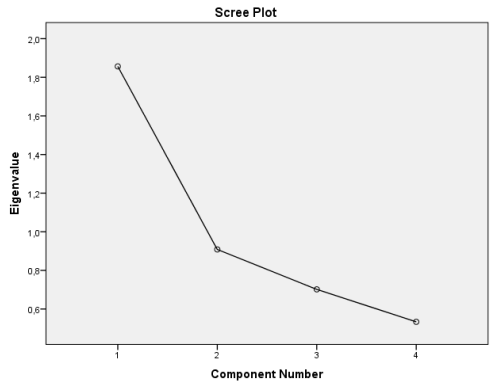

Figure A5.19 Scree Plot Tax Compliance Factors Muehlbacher

Table A5.20 Pattern Matrix Tax Compliance Muehlbacher

	Voluntary tax compliance	Enforced tax compliance
Question G1: Paying tax: I would also pay tax when there were no controls.	.909	
Question G2: Paying tax: I see paying taxes as something natural	.728	
Question G4: Paying tax: I pay taxes because the risk to get checked is too high.	.504	.376
Question G3: Paying tax: I feel forced to pay taxes.		.945

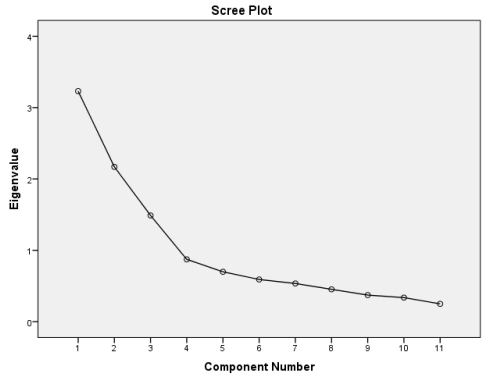

Figure A5.21 Scree Plot New Tax Compliance Factors

Table A5.22 Eigenvalues of New Tax Compliance Factors

	Total	% of Variance	Cumulative %
1	3.052	30.52	30.52
2	2.056	20.56	51.08
3	1.432	14.32	65.41
4	0.781	7.81	73.22

Table A5.23 Mean of Reported Measures (Taken by DTA) by Self-Employed People

	Mean	N
Question D4: Demand notice	.14	204
Question D5: Warrant	.05	204
Question D6: Seizure	.01	204
Question D7: Other measures, namely	.01	204

Mainly 'demand notice' is mentioned (14% of the answers).

Table A5.24 Regression of Making Reservations on Socio-economic and Psychological Factors

		Step 1	Step 2
		B	
1 Socio-economic factors			
	Constant	1.416**	.975*
	Turnover	.060**	.018
	Gender	.264*	.179
	Education	.064*	.030
	Age	.009	.004
	Age business	-.003	-.003
2 Psychological factors	Long-term time orientation		.253**
	Promotion focus		.106
	Prevention focus		.186
	Worry		.096
	# of saving goals		.104
	Financial situation		-.090
	Fiscal knowledge		-.089
	Financial knowledge		.172*
	Entrepreneurial upbringing		-.038
	Adjusted R^2	.031	.251
	F	3.869**	11.775**

* significant at the 0.05 level (2-tailed)

** significant on at a 0.01 level (2-tailed)

Table A5.25 Regression of Non-Fungibility on Socio-economic and Psychological Factors

		Step 1	Step 2
		B	
1 Socio-economic factors			
	Constant	.749*	-.757
	Turnover	.006	.036*
	Gender	-.151	.003
	Education	.012	.068*
	Age	-.015**	-.006
	Age business	.009	.007
2 Psychological factors	Long-term time orientation		-.089*
	Promotion focus		.229
	Prevention focus		-.086
	Worry		.249**
	# of saving goals		-.081
	Financial situation		.266**
	Fiscal knowledge		-.021
	Financial knowledge		.182*
	Entrepreneurial upbringing		-.007
	Adjusted R^2	.015	.277
	F	2.323*	13.294**

* significant at the 0.05 level (2-tailed)
** significant on at a 0.01 level (2-tailed)

Table A5.26 Regression of Budgeting on Socio-economic and Psychological Factors

		Step 1	Step 2
		B	
1 Socio-economic factors			
	Constant	.466	1.392**
	Turnover	.027	-.005
	Gender	.010	.025
	Education	-.011	-.041
	Age	.010*	.005*
	Age business	-.011	-.011
2 Psychological factors	Long-term time orientation		.288**
	Promotion focus		.009
	Prevention focus		.007
	Worry		.158**
	# of saving goals		.117
	Financial situation		.109*
	Fiscal knowledge		.052
	Financial knowledge		.244**
	Entrepreneurial upbringing		-.015
	Adjusted R^2	.004	.207
	F	1.398	9.374**

* significant at the 0.05 level (2-tailed)
** significant on at a 0.01 level (2-tailed)

Table A5.27 Regression of Compensate on Socio-economic and Psychological Factors

		Step 1	Step 2
		B	
1 Socio-economic factors			
	Constant	.258	1.040*
	Turnover	-.030	-.042*
	Gender	-.069	.116
	Education	.007	.007
	Age	.005	.002
	Age business	.002	.001
2 Psychological factors	Long-term time orientation		.225**
	Promotion focus		- .081
	Prevention focus		-.058
	Worry		.047
	# of saving goals		.067
	Financial situation		.129*
	Fiscal knowledge		-.021
	Financial knowledge		.182*
	Entrepreneurial upbringing		-.048
	Adjusted R^2	.000	.071
	F	1.008	3.436**

* significant at the 0.05 level (2-tailed)
** significant on at a 0.01 level (2-tailed)

Table A5.28 Correlations Between Promotion and Prevention Focus, and Mental Budgeting

	Making reservations	Non-fungibility	Budgeting	Compensate
Promotion focus	.321**	.143**	.188**	.015
Prevention focus	.349**	.188**	.198**	.022

Table A5.29 Regression of Mental Budgeting on Promotion and Prevention Focus

	Making reservations			Non-fungibility			Budgeting			Compensate		
	Adjusted R^2	F	B	Adjusted R^2	F	B	Adjusted R^2	F	B	Adjusted R^2	F	B
Promotion focus	.101	51.565**	.667**	.018	9.406**	.298**	.033	16.393**	-.390**	-.002	.101	-.031
Prevention focus	.120	62.242**	.725**	.033	16.496**	.391**	.037	18.334**	-.412**	-.002	.208	-.045

* significant at the 0.05 level (2-tailed)
** significant on at a 0.01 level (2-tailed)

Entrepreneurs

Besides the quantitative pre-test a qualitative test was conducted amongst seven self-employed people or entrepreneurs. The respondents for the qualitative test were a convenience sample found in the private network. The qualitative research was mainly done to test the questionnaire on comprehension and wording of the items. Six out of seven respondents indicated that the questionnaire was clear, although the answer categories were sometimes needed to fully understand the questionnaire.

Table A5.30 Socio-economic background of respondents

Respondent	Age	Gender	Education Level	Financial situation	Years of having a business	Comments
1	Mid forty	Male	Medium level	Fully depending	20 (but is a family company)	Has a Disco
2	24	Female	Medium level	Fully depending	2 years	Exploits a francise beauty salon
3	Mid thirty	Female	Medium level	Partly depending	1 year	Make-up artist
4	26	Male	High level	Fully depending	8 years	Owner of a ICT company
5	22	Male	Medium level	Not depending	2 years	Music composer
6	49	Female	Medium level	Partly depending	15 (but is a family company)	Hairdresser
7	26	Male	High level	Not depending	6 years	Owner of second hand clothes shop