



The Evasion Gamble

Behavioural Insights on Tax Compliance

Nadina Bouhlou

Supervisor: Bertil Tungodden

Master thesis, Master of Science (MSc) in Economics and
Business Administration, Strategy and Management

NORWEGIAN SCHOOL OF ECONOMICS

This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

Abstract

The thesis explores the insights from behavioural economic research for tax compliance. The theoretical model of tax evasion by Allingham and Sandmo (1972) is reviewed and then enriched with findings from research on bounded rationality and unbounded motivation for human behaviour.

In specific implications for tax compliance of loss aversion, overweighting of low probabilities, small sample bias and procrastination are discussed. It is suggested that the perception of probabilities and the tendency to procrastinate affect the decision on whether or not to comply taxes. Further, implications for tax compliance of moral motivation, conditional cooperation and the threat of intrinsic motivation being crowded out are discussed. The act of complying, even when the risk of getting caught is low, indicate that people do not behave entirely self-interested.

To explore the evasion decision further, and look in depth at some of the phenomena discussed, a survey-experiment is conducted. The objective is to study whether peoples' tendency to overweigh low probabilities and their propensity to conform to social norms affect their willingness to consider hiring black labour. The results from the experiment are reported at the end of the thesis. The main finding is that people overweigh low probabilities and that it affects their decision on considering hiring black labour.

Preface

This thesis is written as part of the master degree at the Norwegian School of Economics (NHH) in cooperation with The Choice Lab, which is devoted to learning more about how people make economic and moral choices, and how governments, corporations and non-governmental institutions can use these insights to improve their decision-making. Most importantly, I would like to express my gratitude to Professor Bertil Tungodden for great guidance and support throughout this process. Secondly, I would like to thank Professor Alexander W. Cappelen, Professor Agnar Sandmo, Kristina Bott and Ingar Haaland for tips and tricks on the way.

Nadina Bouhlou, 2013

Contents

1	Introduction	6
1.1	The optimal tax system	7
1.2	The challenge of tax evasion	8
1.3	Measuring evasion	10
2	Theoretical approach	11
2.1	The classical approach to tax evasion	12
2.2	Comparative statics	14
2.2.1	A change in the penalty rate	15
2.2.2	A change in the probability of detection	16
2.2.3	A change in actual income	16
2.3	Main insights	17
2.4	A challenge	18
3	Behavioural approach	20
4	Rationality	23
4.1	Loss aversion	23
4.1.1	Implications for tax compliance	26
4.2	Overweighting of low probabilities and small sample bias	28
4.2.1	Implications for tax compliance	31
4.3	Procrastination	34
4.3.1	Implications for tax compliance	36
5	Moral motivation	38
5.1	People are not only self-interested	38
5.1.1	Implications for tax compliance	40
5.2	Conditional cooperation	42
5.2.1	Implications for tax compliance	44
5.3	Extrinsic vs. intrinsic motivation	50
5.3.1	Implications for tax compliance	52
6	Testing theories	55
6.1	Identification	55
6.1.1	A common challenge	56
6.2	The sample	56
6.3	The design	57
6.4	Procedures	60
6.5	Results	61
6.6	Discussion of the treatment effects	65
7	Conclusion	67
8	References	68
9	Appendix	75
9.1	Results	75
9.2	Questions posed to the participants in the experiment	85

1 Introduction

One of the great transformations in modern western European history was the transition from the domain state, where government activities were funded from surpluses derived from the monarch, to the tax state, in which finances were based on taxes (Musgrave, 1992). As war drove the demand for revenues in the 16th and 17th century up, it created a context in which the wealthy in society felt threatened enough to allow the centralization of authority at the level of the state (Di John, 2006). After The British Civil War the principle of no taxation without representation or extraction of revenue without the consent of parliament was established. Not only did that introduce the principle of political accountability, but it also was the beginning of the current Western political system. Schumpeter (1918), referred to by Musgrave (1992), points out that the growing expenses of warfare created the financial difficulties that in the end were the causes for building the modern state. The transition into the tax state still has consequences for both the private economy and for the society in general.

The public sector's share of the economy is now growing in most OECD countries. Measured as a share of GDP for mainland Norway, public expenditure increased from 25 percent in 1960 to over 50 percent in 2007. In the NOU Measures of Tax Evasion (2009) it is explicitly expressed that the work against tax evasion and the black economy is essential to maintain the balance of the welfare state. Higher income levels cause a higher demand for education, health and other public services that are currently funded through government budgets (Halvorsen, 2009). In this context it is becoming increasingly difficult to ignore the issue of tax evasion because the loss of tax revenue affects both the financing of the state and distorts the allocation of resources. Tax policies should thus be designed with the realities of evasion in mind (Slemrod, 2007).

The thesis is structured as follows. The first section explains the importance of the tax system and the challenge of tax evasion; the second section reviews the theoretical model of tax evasion by Allingham and Sandmo (1972) and discusses the main findings; the third section introduces the behavioural approach; the fourth section goes through implications for tax compliance of limited rationality; the fifth section looks at implications for tax compliance of moral motivation, the sixth section describes an experiment conducted to explore the evasion decision further and reports the results. The last section concludes.

1.1 The optimal tax system

The main issues concerning the optimality of the tax system are efficiency and fairness in the economy at large. An optimisation of the tax system is traditionally viewed as an attempt to minimize distortion and inequality in society (Slemrod and Yitzhaki, 1996). Sandmo (1975) defines the optimal tax system by three different parameters; administrative costs, fairness and efficiency.

First, he points to the use of resources. An optimal tax system should minimize the resource costs involved in assessing, collecting and paying taxes. In the simplest way one could look at taxes as a transfer of income from people to the state, which in turn is redistributed by the state back to the people (Ramsey, 1927; Ballard and Fullerton, 1992). It is the enforcement of the tax law that transfers the tax from individuals to the government (Slemrod and Yitzhaki, 1996). The enforcement of tax laws, the costs of taxpayers in complying with those laws and the costs associated with tax collections (Di John, 2006) should also be done with the objective of efficacy.

Secondly, the tax system must be evaluated in terms of justice and fairness (Sandmo, 1975). Taxes need to be predictable, transparent and administered by a fair judicial system (Di John, 2006). If the goal of tax policies is more equal distributions of utility, taxes should be set with the objective of distributing income from those with high utility to those with

low utility. In the Norwegian National Budget it explicitly stated that the tax policies are made with the objective of financing public spending and helping to bring about a just distribution of wealth. A dual income tax, first implemented in Norway in 1992, refers to a scheduler income tax in which capital income is taxed at a relatively low flat rate, while labour income is taxed at higher progressive rates (Kleinbard, 2010). Progressive tax rates increase the tax burden for those with high income and wealth relative to those with low income and wealth. This relates to the objective of vertical equity, which contributes to more equal distributions of wealth after taxes. People with unequal abilities to pay taxes are thus given unequal responsibilities for the tax burden. The tax system should also reflect a horizontal equity, which is ensuring that people with the same ability to pay taxes have to deal with the same share of the tax burden (Atkinson and Stiglitz, 1980; Slemrod, 2007).

Third, the tax system should also minimize the aggregated deadweight loss for any given tax revenue or level of public expenditure so that the system is economically efficient (Sandmo, 1975). Tax cuts and settlement subsidies in specific geographical regions are tools to obtain this goal. Industrial policy actions and tax benefits for specific industries are implemented with the objective of improving the functioning of the economy in general (National Budget, 2011). The Norwegian tax system brings in more than NOK 1200 billion per annum and these revenues are essential for the spending on public services like hospitals, education, public transportation and infrastructure (St. prp. 1 LS, 2012).

1.2 The challenge of tax evasion

Tax evasion refers specifically to efforts done by illegal means to avoid tax compliance. A variety of definitions of tax evasion have been suggested, but Alm (1999) narrows it down to *'illegal and intentional actions taken by individuals to reduce legally due tax obligations'*. One way to evade tax is by underreporting income or wealth. Another is to overstate deductions, exemptions or credits. Also, there is the possibility of people failing to file

the tax returns correctly and thereby evading taxes. The consequences of tax evasion are severe both for the state and for its citizens because it threatens the objective of optimality of the tax system. Tax evasion imposes administrative costs and disturbs both the efficiency of the tax system and the distribution of the tax burden.

First, evasion leads to a misallocation of resource use because it imposes costs. It demands resources to implement and camouflage noncompliance and costs for the tax authorities to detect and handle it (Slemrod, 2007). Occasionally evasion is associated with activities at the side of the law because unreported income may finance, or come from, criminal activities (NOU, 2009). Dealing with such illegalities imposes additional costs on society.

With reference to the objective of fairness, tax evasion leads to an unpredictable distribution of income. When equally well-off people relate to the tax system in unequal ways, they may end up with different tax burdens. Those who fail to pay taxes, intentionally or unintentionally, leave their burden with the compliant citizens. The paying group is thus forced to finance the portion of welfare benefits that really should have been paid by the evaders. This creates a horizontal inequity (Slemrod, 2007). If parts of society manage to systematically evade taxes, then the effective tax system is less equitable than the legislated one. The pay off from evasion provides a socially inefficient incentive to engage in activities where tax evasion is relatively easy (Slemrod, 2007). People who relatively easy can evade taxes end up with a smaller share of their tax burden (Andreoni et al, 1998). A consequence is higher and more distortionary taxes on reported income, while unreported income escapes taxes and its distortionary effects (Andreoni et al, 1998). Because of these alterations, tax evasion may contribute to a feeling of unfairness and disrespect for the law. Other negative side effects of evasion are coming from difficulties in protecting employees in the hidden economy from illegal treatment and lack of social security (NOU, 2009), which may be argued to be potential unfair treatment of employees.

As for the third goal, tax evasion disturbs the efficiency of the tax system because the state experiences large revenue losses. Consequently the provision of public goods is affected in unfavourable ways (Alm, 1999). Further, societal changes like distorted competition may occur because of evasion if those who are underreporting income are able to offer relatively lower prices for their goods and services (Andreoni et al, 1998).

1.3 Measuring evasion

The tax gap is a term commonly used to describe the difference between the taxes that theoretically should have been paid if each and everyone fulfilled their tax obligations, and the taxes actually paid voluntarily on a timely basis (Andreoni et al., 1998; Skatteverket, 2008; NOU, 2009). One of the challenges when it comes to tax evasion is to make an empirical estimation of its size because it is difficult to measure a phenomenon that by its very nature is hidden. However, calculations undertaken in Sweden show a theoretically tax gap of about five percent of GDP (Skatteverket, 2008). With a five percent evasion of total GDP, the tax gap in Norway is estimated to about NOK 136 billion (Økokrim, 2012). Given a tax gap at NOK 136 billion, taxed at 40 percent, the average yearly evasion is estimated to approximately NOK 54 billion. That corresponds to a daily evasion of about NOK 150 million. Compared with the all time largest robbery in Norway in 2004¹, when heavily armed men stole NOK 57,4 million from the NOKAS cash depot, tax evasion constitutes more than two times this robbery every day. Evasion is a size that matters.

¹ To place these numbers in a context, Per Ivar Gjørnum and Alexander Cappelen have provided this compelling comparison.

2 Theoretical approach

This chapter is structured as follows. Starting off with a clarification of key terms gives a lead in to the introduction of the model that the traditional analysis of tax evasion is build upon. That is in brief the general concept of economics of crime and the theory of rational behaviour under uncertainty. Next there is a review of the central issues in the theoretical model of tax evasion, as presented by Allingham and Sandmo (1972). Finally, the results of the model and its implications for further analysis of tax evasion are given. The objective of the theoretical review is to analyse the individual taxpayer's decision on whether and to what extent to avoid taxes by deliberately underreporting income.

The decision on whether to comply or evade taxes in this model is based on expected utility theory and theory of behaviour under uncertainty. The uncertainty lies in whether or not the tax authorities detect the underreported income. Only by a probability is the taxpayer audited. If detected for evasion, then there will be a penalty tax on the underreported fraction of income higher than the constant tax rate. The constant tax rate is known to the taxpayer and is paid based on the amount of income reported. The taxpayer has to choose between honesty, that is declare all actual income and dishonesty, that is declaring less than actual income. If the taxpayer chooses evasion, the gain from the gamble depends on whether or not there is an audit. If there is no audit, there is obviously a gain from evading. If there happens to be an audit, there are higher costs associated with evading than complying because of the penalty tax. Hence, the declared amount of actual income is the taxpayer's decision variable. If an audit occurs it will inform the authorities about the taxpayer's exact amount of actual income, then the taxpayer will have to pay tax on the undeclared amount of income at a penalty rate higher than the initial constant tax rate.

The model of Allingham and Sandmo (1972) can easily be seen as an adaption of a simple model of portfolio choice with two assets, one safe and one risky. The reported fraction of actual income corresponds to

investments in the safe asset. The underreported amount corresponds to investments in the risky asset. Evasion is risky because if the taxpayer is caught cheating he will be penalized, if he is not he will experience a gain in form of avoiding taxes, but he does not know which of these two situations he will face. Compliance, on the other hand, is not associated with uncertain outcomes. Given the expected tax rate and the degree of uncertainty, the taxpayer is assumed to behave in a way that maximizes the expected utility of the gamble between the benefits of successful evasion and the risky prospect of detection. Evasion and probability of getting audited are unrelated in the same way as investing in a risky asset and getting a random return are.

Allingham and Sandmo (1972) assume that the tax authorities do not use reported income as a basis for their procedures of detection, so that audits are assigned randomly at a constant rate. However, Alm (1999) points out that if the model included that the tax authorities used information on taxpayers' income to choose which ones to audit it would be more realistic and audits would be more efficient. This is in line with Andreoni, Erard, and Feinstein (1998) who argue that the chance of an audit should not be completely random because the probability of detection is expected to rely on the amount of income reported. However, in the present analysis I will stick to the original assumption of a constant, random audit rate, implying that the outcome of the evasion gamble is independent of how much income the taxpayer reports.

2.1 The classical approach to tax evasion

In the model of tax evasion by Allingham and Sandmo (1972), the taxpayer's behaviour is assumed to follow the Von Neumann-Morgenstern axioms for behaviour under uncertainty so that preferences are represented by the expected utility function $E[U]$. Income is the only argument in the cardinal utility function and marginal utility is assumed to be everywhere positive and strictly decreasing, so that the individual is risk averse. Actual income W is exogenously given and known only to the

taxpayer, whereas X represents declared income and p the probability of detection. If detected, the taxpayer will have to pay taxes on the undeclared fraction of income $W - X$ at a penalty rate π , which is higher than the constant tax rate θ . The taxpayer will choose declared income X with the objective of maximizing expected utility:

$$E[U] = (1 - p)U(W - \theta X) + pU(W - \theta X - \pi(W - X)). \quad (1)$$

The first term describes the situation in which detection is avoided, whereas the second term defines the situation in which the taxpayer is audited. Regardless of whether the taxpayer chooses a strategy of honesty or dishonesty, the expected utility function represents the two states the taxpayer may find himself in after making his decision. For notational convenience define

$$\begin{aligned} Y &= W - \theta X \text{ as the taxpayer's payoff without detection and} \\ Z &= W - \theta X - \pi(W - X) \text{ as the taxpayer's payoff after detection.} \end{aligned} \quad (2)$$

The expected utility equals one of these two extremes only if detection is avoided or the probability of detection is absolutely certain. For probabilities between 0 and 1, the expected utility remains somewhere in between these two extremes. Differentiate (1) with respect to declared income X to obtain the first-order condition for an interior maximum of the expected utility function. This can be written as

$$-\theta (1 - p) U'(Y) - (\theta - \pi) p U'(Z) = 0 \quad (3)$$

or

$$-\theta (1 - p) U'(Y) = (\theta - \pi) p U'(Z). \quad (4)$$

The optimal solution is characterized by a situation where the expected marginal cost of evading more income is equal to the expected marginal benefit of evading more income. Whether or not $0 < X < W$ depends on the

values of the parameters. To see under what conditions an interior solution is possible, expected utility is evaluated at $X = 0$ and $X = W$. Since expected marginal utility is decreasing with X ,

$$\left. \frac{dE(U)}{dX} \right|_{X=0} = -\theta(1-p)U'(W) - (\theta - \pi)pU'(W(1-\pi)) > 0 \quad (5)$$

and

$$\left. \frac{dE(U)}{dX} \right|_{X=W} = -\theta(1-p)U'(W(1-\theta)) - (\theta - \pi)pU'(W(1-\theta)) < 0. \quad (6)$$

These conditions can then be rewritten as $p\pi > \theta(p + (1-p)\frac{U'(W)}{U'(W(1-\theta))})$.

The bracketed factor is positive and less than one and $p\pi < \theta$, which implies that the taxpayer will declare less than his actual income if the expected costs associated with the regular rate are higher than the penalty tax on unreported income. The two conditions provide a set of positive parameter values, which guarantee an interior solution X^* . The second-order condition is satisfied by the assumption of concavity of the utility function.

2.2 Comparative statics

The optimum conditions can be used to derive hypotheses about the taxpayers' reactions to changes in the values of the exogenous parameters of the model. These are actual income, the tax rate, the probability of detection and the penalty rate. The changes are all thoroughly discussed in the original article. For this review it will be sufficient to go through the main findings, which are the effects of changes in the policy parameters penalty rate π and probability of detection p on the fraction of underreported income. There will also be a discussion of how changes in actual income W affect the share of underreported income because it is relevant for the characterisation of evaders.

The extent of underreported income depends on the expected payoff of the evasion gamble and the taxpayer's risk preferences. If the expected

payoff of evasion is positive, then a risk-averse taxpayer will choose to underreport a fraction of actual income. For the comparative statics, use the Arrow-Pratt risk aversion measures of the curvature of the utility function. The absolute risk aversion function is defined as $R_A(Y) = -\frac{U''(Y)}{U'(Y)}$ and the relative risk aversion function as $R_R(Y) = -\frac{U''(Y)Y}{U'(Y)}$. Absolute risk aversion expresses the actual amount of income the individual will choose to evade for a given level of wealth, while relative risk aversion defines the equivalent percentage of wealth invested. The general belief is that absolute risk aversion is decreasing with income. For relative risk aversion no definite hypothesis about its shape will be applied.²

2.2.1 A change in the penalty rate

First, to look at how reported income is affected by changes in the penalty rate π , we differentiate (3) with respect to π to obtain

$$\frac{dX}{d\pi} = -\frac{1}{D}(W - X)(\theta - n)pU''(Z) - \frac{1}{D}pU'(Z). \quad (7)$$

Both terms in this expression are positive because the second order condition D^3 is negative due to the concavity of the utility function, implying that the first term is positive. The same reasoning goes for the second term. This implies that the model predicts that an increase in the penalty rate unambiguously increases the fraction of declared income. The taxpayer's expected net income from evasion is reduced by stricter penalties therefore the income effect from the increase is negative. The substitution effect is also affecting evasion negatively because increased penalties makes evasion less profitable at the margin. The result from the model implies that more severe penalties will decrease tax evasion.

² See Allingham and Sandmo for details.

³ $D = \theta^2(1 - p)U'' + (\theta - \pi)^2U''(Z)$.

2.2.2 A change in the probability of detection

Secondly, the way a change in the probability of detection p will affect the fraction of reported income provides information on whether the likelihood of audits influences the taxpayer's decision. Differentiate (3) with respect to p to obtain

$$\frac{dX}{dp} = \frac{1}{D} (-\theta U'(Y) + (\theta - \pi)U'(Z)). \quad (8)$$

The first term inside the brackets is negative because $U'(Y) > 0$. The second term is also negative because $\theta < \pi$. As we know that $Z \leq Y$, the whole expression in brackets has to be negative. The second-order condition D is negative due to the concavity of the utility function, and therefore this derivative is positive. The model predicts that an increase in the probability of detection p also will increase the fraction of declared income. The taxpayer will prefer to evade less because the expected utility of evasion has been reduced. Since the taxpayer is assumed to be risk-averse, higher probabilities of being investigated will encourage compliance.

2.2.3 A change in actual income

The attempt to characterize the evaders is done by looking at how changes in the taxpayer's actual income affect the share of declared income. Differentiate (3) with respect to actual income W to obtain

$$\frac{dX}{dW} = \frac{1}{D} (\theta(1-p)U''(Y) + (\theta - \pi)(1-\pi)pU''(Z)) \quad (9)$$

Substitute from (3) and rewrite this as

$$\frac{dX}{dW} = -\frac{1}{D} \theta(1-p)U'(Y) \left(-\frac{U''(Y)}{U'(Y)} + (1-\pi) \frac{U''(Z)}{U'(Z)} \right).$$

As $\frac{d\left(\frac{X}{W}\right)}{dW} = \frac{1}{W^2} \left(\frac{dX}{dW} W - X \right)$, it is possible to substitute from (9) and the

second-order condition⁴ to obtain

$$\frac{d\left(\frac{X}{W}\right)}{dW} = \frac{1}{W^2} \frac{1}{D} (\theta(1-p)U''(Y)W + (\theta - \pi)pU''(Z)W - \theta^2(1-p)U''(Y)X - (\theta - \pi)^2pU''(Z)X).$$

Collect terms and substitute from (2) to see that

$$\frac{d\left(\frac{X}{W}\right)}{dW} = \frac{1}{W^2} \frac{1}{D} (0(1-p)U''(Y)Y + (\theta - \pi)p(U''(Z)Z)). \quad (10)$$

Substitute in this expression from the first-order condition (3) to obtain

$$\frac{d\left(\frac{X}{W}\right)}{dW} = \frac{1}{W^2} \frac{1}{D} \theta(1-p)U'(Y)(R_R(Y) - R_R(Z)). \quad (11)$$

When actual income changes, the fraction of declared income increases, stays constant or decreases according to whether relative risk aversion is an increasing, constant or decreasing function of income. There is thus no clear-cut hypothesis on how the share of reported income varies with actual income.

2.3 Main insights

The main insights from the model are that an increase in the probability of detection p and the penalty rate π unambiguously increase the fraction of declared income. The two policy tools can work as substitutes for each other (Allingham and Sandmo, 1972). If the penalty rate is decreased, then evasion increases and expected tax revenue falls. However, this loss can be balanced by an increase in the probability of detection through more frequent audits. An increase in actual income W has an ambiguous effect on the fraction of declared income, which depends on the individual's attitude toward risk.

⁴ The second order condition equals $D = \theta^2(1-p)U''(Y) + (\theta - \pi)^2pU''(Z)$. (Allingham and Sandmo, 1972)

2.4 A challenge

When comparing the model of Allingham and Sandmo (1972) to real life observations, we meet a challenge. The suggestion that the taxpayer underreports income if expected return per dollar evaded is strictly positive should imply a relatively high level of evasion because the tax systems in most countries typically indicate a positive return on evasion from 0.99 to 0.75 on every evaded dollar (Bernasconi, 1997). Nevertheless, estimates show that between 30% and 60% of taxpayers report, or attempt to report, their incomes correctly (Bernasconi, 1997) so the observed level of evasion rarely reaches the level predicted by the standard model (Alm, McClelland and Schulze, 1992; Alm, 1999). The results from the AS-model imply that rational individuals should underreport income or overstate deductions because chances are that they most likely will go unpunished (Alm, 1999). Yet, given the fiscal parameters in most countries, individuals have to show an aversion toward risk that far exceeds the conventional hypotheses for the model to be fully explanatory. (Torgler, 2002; Andreoni, Erard and Feinstein, 1998)

In the theoretical model of tax evasion, the individual choice between evasion and compliance is based upon a rational calculation between the costs and benefits of the gamble. The assumptions made are a simple, formalized and practical for analytical purposes, but when applying them to real life behaviour, they become too simple because the model is unable to explain what we actually see. Unambiguous results from changes in the policy parameters can only be derived in such simple models. When more complex dimensions of behaviour are introduced, the theoretical results generally become indefinite (Alm, 1999). It is clear that the probabilities of detection and penalties have effects on the fraction of reported income, but they are not necessarily fully explanatory for the actual level of tax compliance (Alm, McClelland, and Schulze, 1992). If the model were fully applicable to real life behaviour, then people are expected to pay taxes only because they fear detection and punishment. Yet, as an example, when taxpayers are asked about their reasons for complying

with the laws their answer is seldom fear. The most frequent answers on why people comply are actually ethical and moral concerns (NOU, 2009). This indicates that there is a moral motivation for tax compliance, but this is not taken into account in the classical model of evasion. To completely explain the behaviour of taxpayers, Alm (1998) suggests that one should recognize theories from outside the classic expected utility theory to add realism to the analysis of tax evasion.

3 Behavioural approach

Economic models typically apply some simplifying traits to human behaviour. In short, they assume that people have unbounded rationality, unbounded willpower, unbounded selfishness and well-defined preferences (Thaler and Mullainathan, 2008). Allingham and Sandmo (1972) also assume that the taxpayer's behaviour confirms to the Von Neumann-Morgenstern axioms for behaviour under uncertainty. These axioms impose specific constraints on the possible relationships between people's preferences (McDermott, 2001) and assume that preferences are consistent⁵. Reasoning based on these axioms implies that there are no differences between normative and descriptive characteristics: People behave in the way that maximizes their subjective expected utility and they all conform to the same normative axioms in this pursuit. So the theory of expected utility works well as a normative description of people's preferences in these situations, but as a descriptive theory of how they actually behave it has been criticised (Levin, 2006). The assumptions are primarily made for the control of the economic models, but they are not intended as accurate descriptions of behaviour in the real world (Congdom et al, 2009).

Combining insights from economics with insights from psychology on preference formation and choice makes it is possible to investigate what happens when human limitations and complications are integrated in traditional economic models of behaviour (Thaler and Mullainathan, 2001). By using behavioural economics researchers have identified several factors that most likely are closely related to taxpayers' behaviour, yet they are not given much attention in the model of Allingham and Sandmo (1972). The main findings are that people do not always act completely rational, they are not perfectly self-interested and their preferences are

⁵ Transitivity is the assumption that if alternative 1 is preferred to alternative 2, and 2 is preferred to 3, then 1 is preferred to 3 as well. Dominance is the assumption that if one option has at least one better feature, and is at least as good on all other aspects, it will be preferred to the others. Invariance is the assumption that a preference remains unchanged regardless of order or method or presentation (McDermott, 2001).

not always consistent (Alm and Jacobsen, 2007; Torgler, 2002; Kahneman, 2011). There is thus much evidence that people systematically behave differently than what the standard models predict.

The individual decision on whether to evade or comply taxes is potentially closely related to issues of limited rationality and internal motivation for economic choice. OECD (2010) points out that additional knowledge on the supplementary drivers of compliance are relevant for taxation strategies and interventions as well as the effectiveness of communication and enforcement of tax policies. As tax evasion includes problem solving, complex calculations and potentially also moral concerns, behavioural factors are essential elements of any complete theory (Congdon et al., 2009). The insights from behavioural economics do not only change the understanding of individual compliance behaviour, but also the understanding of the welfare consequences of taxation, the relative desirability of using the tax system as a platform for policy implementation, and the role of taxes as an element of policy design (Congdon et al., 2009).

As tax evasion by its very nature is a concealed activity, field data on the subject is limited both in quantity and quality. However, the experimental method has proven to be useful for the understanding of taxpayers' behaviour (Behavioural Insights Team, 2012; Torgler, 2002) because experiments provide a controlled environment in which predictions can be tested. There is also a possibility to examine both the mechanisms of interest and changes in the environments, in isolation from each other (Alm and Jacobsen, 2007). The implications of behavioural economics for tax evasion have yet to be systematically explored. Potentially they can explain some of the discrepancy between the observed level of evasion and the predictions from standard economic theory.

To shed new light over the decisions made in the evasion gamble, there follows a discussion of behavioural insights for tax compliance. First, there will be an introduction to the trait of limited rationality. In this section the implications of loss aversion, overweighting of low

probabilities, small sample bias and procrastination for tax compliance are discussed. Secondly, there will be an introduction to the trait of moral motivation. In this section the implications of moral motivation, conditional cooperation and crowding out intrinsic motivation are discussed⁶.

⁶ There are of course numerous behavioural phenomena that potentially are closely related to taxpayers' behaviour. The selection in this thesis is based on relevance, interest and existing research.

4 Rationality

One of the main insights from behavioural research is that individuals are imperfectly rational. This captures the general finding that individuals are relatively bad at choosing optimally because they find it hard to know what is optimal and they fail to do what is optimal (Congdon et al., 2009). Because people are bounded by both limited cognitive capacity and time, their abilities to solve problems and do complex calculations are constrained. A way to work around these limitations is to adapt rules of thumb that economize on the individual capacity (Thaler and Mullainathan, 2008). Unbounded rationality is therefore not a fully convincing description of how the human way of reasoning. Furthermore, people do not always consider their long-term interests when making choices. Even in situations where they know what is best for them, they often choose to do the opposite. It is thus inaccurate to treat willpower as an infinite human resource.

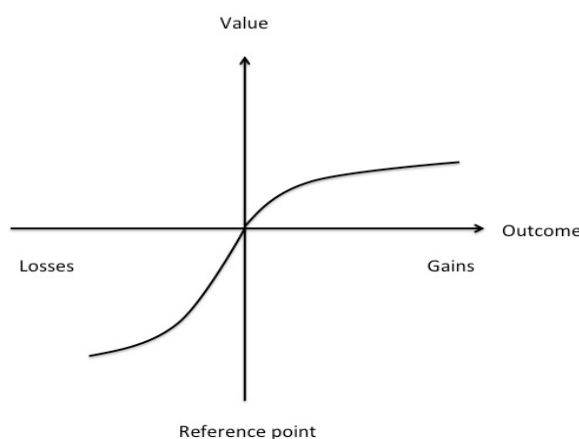
In the following there is first a summary of theoretical basics, and then implications of the theory for tax compliance are discussed. The first part focuses on loss aversion, the second part on overweighting of low probabilities and small sample bias, while the third part is devoted to the trait of procrastination.

4.1 Loss aversion

Allingham and Sandmo (1972) assume taxpayers' preferences to be independent of their current assets. They also analyse the evasion gamble based on the assumption that the presentation or order of choices are irrelevant to the decision. However, there is much evidence showing that people systematically violate these assumptions in actual behaviour and act inconsistent with the basic principles of the expected utility theory (Kahneman and Tversky, 1979). The expected utility theory as a model of behaviour under uncertainty is supplemented by introducing prospect theory, where a value function of choice replaces probabilities with decision weights as described in Figure 1. The reference-dependent theory

of consumer choice deriving from this model explains how the reference level may affect individual choice and this is the basis for understanding the trait of loss aversion (Kahneman and Tversky, 1991).

Figure 1: The Value Function



Note: The figure shows the psychological value of gains and losses to the right and left of a neutral reference point. In prospect theory, probabilities are replaced with decision weights and people's reactions to changes in income are experienced relative to a neutral reference point. (Kahneman and Tversky, 1979).

There are three distinct features to the value function. First, values are addressed to outcomes relative to a reference point rather than to final states of wealth or welfare. This is the characteristic of reference dependence and it captures the finding that people evaluate what they acquire or give up relative to their initial entitlements or what is commonly described as their status quo (Kahneman and Tversky, 1979).

Secondly, the shape of an S demonstrates diminishing sensitivity to both gains and losses. The curve is concave above the reference point and convex below it, showing that the reactions to both gains and losses decrease with their size and that people are risk averse when they consider losses yet risk seeking when they consider corresponding gains (Kahneman and Tversky, 1979).

Third, the function is steeper for losses than for gains and the utility function is kinked at the reference point. This indicates that

reactions to losses are stronger than reactions to corresponding gains. This is the trait of loss aversion. It refers to the general finding that losses and disadvantages have a greater impact on preferences than gains and advantages. In practice this means that a change has a stronger effect when it is regarded as a loss than when that same change is experienced as a gain (Kahneman and Tversky, 1991). Contrary to what the expected utility theory predicts based on consistent preferences, the experienced difference between a loss and a gain may lead people to change their preferences, even though their final state of wealth remains unchanged (Kahneman, Tversky, 1991).

Loss aversion can explain why mutually acceptable trades in experiments often are very low. The measures of willingness to accept a trade for a good strongly exceed the measures of willingness to pay for the same good. (Thaler, 1980) This inconsistency reflects a reference dependence of preferences. Giving up a valued good has a stronger effect on people than the utility gain associated with receiving the same good because their reference point changes from nothing to something, therefore people want a higher compensation for giving up a good they own, than what they are willing to pay in order to get it if they do not own it. It shows that the evaluation of a good's value increases when the good becomes part of the individual's endowments. Kahneman, Knetsch, and Thaler (1990) tested this endowment effect (Thaler, 1980) in a series of experiments where participants were randomly given consumption objects of low value, e.g. a coffee mug, and then the number of accepted trades was measured. According to standard economic theory about half of the mugs should be subjects of trade after bargaining, because the allocation of resources should be independent of the assignment of property rights when costless transactions are possible.⁷ Initial entitlements and property rights should not affect final allocations, but the results show the opposite. The experiments show that the transaction rate is affected by whether goods are being acquired or given up, even when there are no transaction

⁷ This prediction is based on the Coase theorem.

costs or income effects associated with the trade (Kahneman and Tversky, 1991). The average demanded selling price was twice as high as the price buyers were willing to pay. Kahneman and Tversky (1991) explain this result with the value function and suggest that the reference level affects the participants' preferences. This result can also be related to the trait of status quo bias, which makes people reluctant to changes in their status quo or default settings. Even though there are minimal costs associated with such a change, people are highly averse towards it because giving up the status quo feels like a loss (Alm, 2012).

4.1.1 Implications for tax compliance

Now, consider the implications of loss aversion for tax compliance behaviour. Allingham and Sandmo (1972) regard the difference between being audited and avoiding auditing as two different states of wealth, where the utilities of these two states of wealth are the only concerns that matter to the taxpayer's decision. Tax evasion is not supposed to be affected by preliminary tax payments, as it is the final net of tax income that matters. Yet, as Yaniv (1999) points out, those who have paid too much tax in advance experience their refund taxes as a gain and this feeling may affect compliance. In fact, this has been shown to be the case in a Swedish study where taxpayers who paid too little in preliminary taxes were less likely to comply than those who paid too much (Engström et al, 2011). Further, they were more likely to claim deductions than those who had a preliminary surplus. The result is based on data from 3,6 million Swedish taxpayers for the income year 2006 and correspond to evidence from other experimental findings (Engström et al., 2011; Schepanski and Shearer, 1995). Engström et al. (2011) find a significant change at zero preliminary deficits and quote the study of Dhimi and al Nowaihi (2007) where it is found that evasion also increases with the degree of loss aversion. By using actual tax return data, Chang and Schultz (1990) find that compliance also depends on over- and under-withholding at the time of filing. Even though the taxpayers' final states of

wealth remain the same, their preferences change. The suggested explanation for these deviations from the standard theory is loss aversion: Those who have a tax deficit when filing their returns comply less than those who have refunds due because they experience it as a loss in arrears, but as a forgone gain in advance.

In 1995 a field experiment on tax evasion was carried out in Minnesota. (Slemrod et al., 1998) 1724 taxpayers got a message from the tax authorities that their tax returns would be subject to thoroughly audits that year and if there was found any irregularities, the tax authorities would go further into investigating earlier years' tax returns as well. The experiment led to a clear reduction in level of evasion for almost all groups (NOU, 2009). This relates to the effort people are willing to make if they are facing a potential loss relative to the effort they are willing to make if they are considering gains. Their reactions to losses seem to be stronger and the share of tax returns requiring correction actually increases with balance due (Cox and Plumley, 1988). People are apparently willing to make a stronger effort to make their returns flawless if they owe taxes than if they have refunds due.

A possible explanation for this may be that individuals with a preliminary tax deficit perceive a higher marginal value of extra income than an individual with a preliminary tax surplus of the same amount because their reference points are different. Taxpayers with taxes due may then be less willing to comply because the valuation of losses compared to the reference point would be higher than gains of the same amount. If the taxpayer pays too much in preliminary tax and correctly reports actual income to the tax authorities, it will result in a refund. With reference to the value function, this is experienced as a gain. However, if taxes paid in advance are lower than actual tax liabilities, then the taxpayer owe taxes, and faces a forthcoming loss. As the utility function in prospect theory is convex for losses, this taxpayer might be more willing to consider the risky option of tax evasion (Dharmi and al-Nowaihi, 2007). Bernasconi and Zanardi (2004) consider the people that owe taxes as being

in the loss domain. They suggest that these taxpayers will be expected to evade taxes until they enter the gain domain, given that they are not audited. Therefore advance tax payments or standard deductions may increase compliance because more people would be facing gains after preliminary taxes were paid (Dhami and al-Nowaihi, 2007). Correspondingly, less people would be placed in the loss domain where the risky decision of evasion is expected to be more tempting. Yet, if higher preliminary taxes make people feel that they are treated unfairly it is not certain that such initiatives would have an unambiguously positive effect.

Reference dependence may also affect how income differences influence the evasion decision. In a reference dependent model of choice under risk, Rablen (2010) replaces the enforcement regime with a relationship of exchange in which taxpayers care about the exchange equity between the value of taxes paid and the value of provided public goods. The perceived exchange equity is used as the taxpayers' reference level and it is found that evasion is affected by a measure of both relative income and earlier state of wealth (Rablen, 2010). If the tax rate increases and people perceive public goods to be undersupplied, evasion increases. However, if people perceive public goods to be oversupplied, evasion decreases with increases in the tax rates.

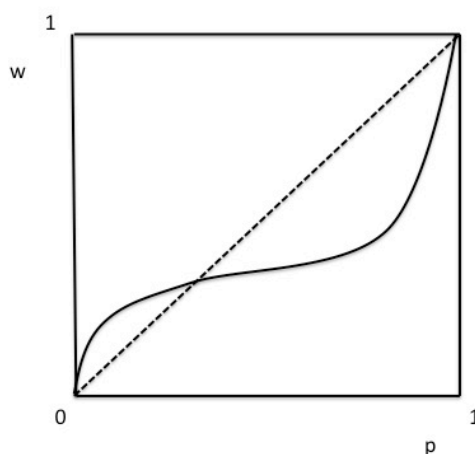
The policy implications deriving from these findings could be that a somewhat higher preliminary tax level would influence tax evasion and lead to higher compliance than correct preliminary taxes do because of loss aversion (Engström et al., 2011). If less people experienced a loss when filing their tax returns, higher compliance could be accomplished, but there is also a risk that a higher preliminary tax level based on 'false' premises could decrease the general trust in the tax system (Dhami and al-Nowaihi, 2007).

4.2 Overweighting of low probabilities and small sample bias

Allingham and Sandmo (1972) assume that the taxpayer's decision on evasion is based on the expected utility of a gamble where the risk of getting audited plays a fundamental part. Based on the probability of

detection and the corresponding penalty, the taxpayer is expected to make a rational choice between evasion and compliance. How will it affect the outcome of this gamble, if the taxpayer is unable to grasp the information that a given probability provides? Even though the probability of an event is low, people often act as if it was higher (Kahneman and Tversky, 1979). This phenomenon is quite common and it is often seen when people are asked to evaluate the probability of e.g. a plain crash or a natural disaster. They think that they are more likely to occur than what they actually are. The similarities between such events and the taxpayer's decision are that they involve some degree of uncertainty and are characterized by low probabilities, yet relatively high losses (Alm, 1992). From prospect theory we have that people are not always completely rational in their evaluation of probabilities and when it comes to low probabilities people often overweigh them (Kahneman and Tversky, 1979). Figure 2 shows the weighting function for gains as a function of the probability of a given event.

Figure 2: Weighting function for gains



Note: The figure shows that when probabilities are low people overweigh them and behave as if they were higher. They are not able to distinguish between differences in very low probabilities. Further, the figure shows that the impact from high probabilities generally is underweighted. The diagonal in the figure represents the rational evaluation of probabilities. The curve is steeper closer to

the extremes because people generally are more affected by changes from a state of certainty to a state of uncertainty than to changes inbetween uncertainties.

According to the prospect theory, there are two extremes related to probabilities: Impossibility and certainty. The impact from probabilities in between in between these extremes is described in a weighting function where low probabilities are overweighed and moderate to high probabilities are underweighted. The implication from diminishing sensitivity is an inverse S-shaped weighting function that is concave near impossibility and convex near certainty. The overweighting of low probabilities leads to risk seeking for gains and risk aversion for losses (Kahneman and Tversky, 1979). Further the function is steeper as it moves closer to the extremes, which explains why a minor adjustment in a probability of an event has a major impact when it changes the state of an event from impossible to possible or from possible to certain (Kahneman and Tversky, 1979). This is in opposition to changes in probabilities in between these extremes where the impact is weaker. The effect from a change in probabilities from zero to 0,02 is thus greater than a change from 0,02 to 0,04. On the contrary, for a rational individual, the weighting function would be expected to be the diagonal in the figure, implying that a change of 0,02 in probabilities would have the same impact regardless of the initial probability of the event.

In addition to the aversion to losses, people also seem to be ambiguity averse. If they find themselves in a situation of genuine uncertainty, that is when probabilities are not objectively known, it disturb their decision more than when they know the probabilities of the events. This phenomenon is shown by an experiment in which people preferred to bet on an urn containing an equal number of red and black balls, rather than on one in which there were an unknown proportion of each colour (Bernasconi, 1997).

We now turn from the discussion of how much probabilities affect people to a description of how people estimate what they think is the

probability of a given event. The small sample bias is not shown by the weighting function, but it is a bias that leads people to think that they know the probability that an event will occur, even though they have very limited information. People systematically behave according to what Kahneman and Tversky (1981) refer to as the law of small numbers. By doing this they overestimate the probability that a small sample has the same distribution as the one it is drawn from - even though this is rarely the case. Rabin (2000) shows that a person exaggerates the probability of a short sequence of signals to resemble the long-run rate of the same signals. This is in line with the common misperception known as the gambler's fallacy. People think early draws of one type of signal increases the odds of drawing the opposite signal in the next round. This is based on the belief that the second draw is negatively correlated with the first draw. When the rate of the signals is not objectively known, people just take their knowledge from a short sequence of signals and therefore believe that the rate is more extreme than it is.

4.2.1 Implications for tax compliance

The penalty on fraudulent evasion rarely exceeds the amount of unpaid taxes, and these penalties are seldom imposed. The percentage of individual income tax returns subject to in-depth tax investigation is less than one percent in almost all countries (Alm, 2011). The corresponding penalty on evasion in e.g. the US is only 75 percent of the unpaid taxes (Alm et al, 1991). A standard economic analysis of the evasion gamble then predicts most rational individuals to evade because it is highly improbable that they will be audited. It thus seem clear that most rational individuals facing the evasion gamble should underreport income not subject to source withholding or over-claim deductions not subject to independent verification because of the extremely low probabilities of audits and penalties. However, this prediction does not correspond to the observed level of evasion, which is much lower. Even in the least

compliant countries it is very rare that the level of evasion predicted by a purely economic analysis is reached (Alm, 2011).

Alm et al (1991) carried out an experiment where the participants were faced with a classic tax compliance decision. According to the standard model of evasion, the single-period dominant strategy for a risk-neutral individual is to underreport all income whenever the probability of detection is less than five percent (Alm, 1991). However, in an experiment carried out by Alm (1991) there was a substantial level of compliance (50,3%) even when the probability of detection is as low as two percent. Alm et al (1991) point out that the explanation for this may be overweighting of low probabilities (Kahneman and Tversky, 1979), but it should be noted that people might also be influenced by their extreme aversion toward risk at low probabilities (Machina, 1983).

Bernasconi (1997) discusses the suggestion that the compliant individuals overweigh the low probability of detection. There is an important difference between the actual probability of an audit and the taxpayer's estimation of that probability. If people behave consistent with a threat that is higher than the one they are exposed to it might explain some of the excess compliance observed. When taxpayers faced a situation where there is no objective knowledge of the actual audit probability, they may be even more reluctant to evade taxes because of ambiguity aversion because risk taking in such situations is experienced as much worse than in situations where probabilities are known.

When the following question was posed to people working in a diversity of businesses; "If a business in your industry fails to report all taxes how much chance do you think it is that the tax authorities will detect this?", 62% of the respondents answered very large or large⁸ (NOU, 2009; Krisino, 2011) The survey also reports that people find internal controls and institutional barriers to be more threatening than the controls from the tax authorities (Krisino, 2011). The institutional

⁸ The numbers are from 'NOU: Measures Against Tax Evasion' (2009). In 2007 27% answered very small or small and 62% answered very large or large on the same question.

obstacles are likely related to the use of third party information, which proved to be an important factor against evasion in the study of Kleven et al. (2010). The risk of getting detected can therefore be stressed by emphasising on the high degree of third party information available for the tax authorities (Cabinet Office Behavioural Insights Team, 2012). The responses people give in the Norwegian tax survey indicate that a high subjective perception of the probability of detection reduces evasion (NOU, 2009). To increase compliance in groups that are able, but not willing, to comply, it is therefore suggested that control measures that raise the perceived risk of detection may be beneficial for compliance. The objective is to make the risk of detection to appear high, and make the sanctions as deterrent as possible (NOU, 2009).

In the further we will look at the implications for tax compliance of the small sample bias. If people believe in the law of small numbers, they use small samples as their benchmark for the overall audit rates. This might lead them to exaggerate the extent to which the tax authorities are able to detect people. According to Krisino (2011) those who have been inspected the last three to five years, experience an average perceived risk of detection between five and nine percentage points higher than those who have not. This provides support for notion that controls from authorities raise the subjective probability of getting caught after being checked. The suggestion is that they simplify the estimation of audit rates by thinking that it is more frequent, because they have been investigated. However, this experienced frequency may not be representable for the overall, actual audit rates. This can be a favourable bias to the tax authorities because it may be used to their advantage. By focusing audits on small fractions of the population in a diversity of geographical and professional areas, the small sample bias may lead people to think that the chances of getting caught are higher than they really are. If the resources the tax authorities possess are limited it may be beneficial to focus on a relatively small, randomly chosen proportion of the population

to be carefully investigated, rather than trying to give the unrealistic impression that all taxpayers are in the loop.

4.3 Procrastination

Standard economic theory assumes that people have unbounded self-control. Consequently they follow their plans no matter what happens. When decisions are made based on expected utility they are unbiased, the discounting rate is the same no matter when a transaction takes place and it does not depend upon time.

Contrary to the standard economic assumptions, it is observed from actual behaviour that people have problems with behaving consistently because of limited self-control. To start exercise, to quit smoking, to pay debt, it is more tempting to postpone it until tomorrow, rather than just do it today. Regardless of whether people prefer a strategy of compliance or evasion, there is an implicit assumption in the model of Allingham and Sandmo (1972) that people manage to make a rational decision and implement the strategy they choose. The tendency to procrastinate is an example of people's lack of self-control and captures the general finding that people often overrate their own abilities to follow their plans and exaggerate their capacity to shape the future (Kahneman, 2011).

The basic idea is that people assign special importance to today, beyond the general trait of being impatient and valuing the near future more than the far future. A plan reflects a rational evaluation of advantages and disadvantages, gains and losses, over time, but when facing the moment of acting according to the plan, the trait of self-control is seldom as unbounded as economic models assume it to be. The moment today is valued higher than any other day; consequently people procrastinate and postpone their plans although nothing unforeseen has happened. This type of behaviour is clearly seen in the consumption of unhealthy commodities, where future costs are large relative to present benefits. Never the less, people tend to behave according to present desire, rather than to the future consequences.

Take the preference change when people plan their savings. People may have a strategy for high savings next year, but when the next year actually is there they are tempted to postpone their plan for another year. Many people rather act according to the new preference, than to their original plan. This sort of behaviour is confirmed in a study on retirement saving policies. Chetty et al. (2013) study the differences in savings when people have to choose between tax subsidies and automatic saving policies. The first alternative changes behaviour through active choice because people have to choose to increase their savings deliberately. The latter change behaviour through passive choice because if they do not actively choose to avoid it, their default choice is increased savings. They find that the automatic saving plans or default policies are far more effective at increasing savings than when people have to make an active choice. One of the most widely used techniques to compensate for tendency to procrastinate is commitment and creation of binding constraints. Compulsory saving like Social Security or automatic pension plans have helped people to put away the amount of money they originally decided to save, and take away the opportunity alternate from the plan. Default investment options and deadlines on financial decisions are beneficial for procrastinators and they have few negative side effects for people who actually manage to stick to their plan (McCaffery and Slemrod, 2004).

The negative effect of time-inconsistent behaviour is relatively dependent on whether people are aware of the ways that they are influenced by time. If a person realizes that future preferences will change compared to the present, it is possible to implement strategies of self-commitment that limit future possibilities and make it impossible to deviate from the original plan. People are actually willing to pay a price to pre-commit to future actions and thereby avoid temptation (Laibson, 1997). To avoid procrastination there has to be excessively economical or social costs associated with an alteration of the original plan. In the epic *Odyssey*, Ulysses sails pass the island of the bewitched Sirens who are known for their alluring songs that lead ships to sink and sailors to die

(Elster, 2000). Ulysses avoids this destiny because he forces his men to tie him to the ship's mast before they reach the island. Similarly, strong ropes are needed to tie decision makers with bounded willpower and self-control to their plans (Kahneman, 2011).

4.3.1 Implications for tax compliance

It is suggested that the overall high level of compliance is explained by the fact that most people are unable to evade because of third party reporting. Procrastination may potentially explain the the opposite pattern seen among self-employed: Self-reported income represents only around five percent of total income reported to the tax authorities, but it is responsible for 87% of detected tax evasion in Denmark and the same tendency is observed in other countries (Kleven et al., 2010). It may be that it is not necessarily by ill will that self-employed tend to evade more than other taxpayers, but that failed planning puts a spanner in their works. If self-employed postpone to put money aside for taxes, as a result they have less money available for taxes at the end of the year and that might make them consider evasion as a possible way out. Note that this has not been thoroughly investigated, but it is possible to apply the reasoning from automatic savings plans to automatic tax returns to see the similarity (McCaffery and Slemrod, 2004).

As people actually are willing to pay a price for pre-commitment just to avoid temptation (Laibson, 1997), it might be that the suggestion from Engström et al. (2011) of slightly higher preliminary taxes could work as such a temporary price for commitment. In addition, automatic tax returns hinder people from making mistakes and third party reporting takes the responsibility for the individual tax return away from the taxpayer (Laibson, 1997). The policy implications deriving from these findings points to the importance of pre-filled tax returns. Pre-filled tax returns are based on previous years filing and all available third party information. They reduce the error rates in tax submissions, provide assistance and streamline processes. Overall the system has improved effectiveness substantially (OECD, 2008). For both taxpayers and the

authorities, pre-filled tax returns remove a considerable amount of work and make complying with the law a lot easier. In Denmark 72% of the personal taxpayers received a pre-filled return that fully and accurately reflected their tax liability for the fiscal year 2006 (OECD, 2008), but self-employed are not in this group. A study of tax administrations in 13 countries found that the most effective systems share a tendency to prepopulate all the fields in the tax forms to increase the accuracy of the taxpayer's initial tax returns (Dohrmann and Pinshaw, 2009). A more effective use of third party information and pre-filled returns may therefore decrease the burden of administrating the tax laws and complying within them.

5 Moral motivation

Traditional economic theory stresses self-interest as the only motivation for human behaviour, but the second main insight from behavioural economics is that the human motivation structure is more complex. There are a numerous examples of situations in which people are willing to sacrifice their own interests in favour of other people's welfare (Thaler and Mullainathan, 2008). Opposing to the self-interested motivation is the generosity people demonstrate when they give money to charities, do each other favours or vote for parties supporting policies that go against their own interest. It is not straight forward how moral motivation is to be identified, because these sorts of actions could also potentially be explained by a wish of social status or a hope that the favour will be returned, but there is now convincing evidence showing that people care about fairness and the welfare of others (Kahneman, Knetsch and Thaler, 1986).

In the following there is first a summary of theoretical basics, and then implications of the theory for tax compliance are discussed. The first part focuses on motivation beyond self-interest, the second part on conditional cooperation and why people are morally motivated, while the third part is devoted to the potential threat of crowding out intrinsic motivation.

5.1 People are not only self-interested

The act of complying, even though the risk of getting caught is low, tangent a fundamental question of why people would choose to act generously when it goes against their own self-interest (Dana et. al., 2006). If people are not only self-interested, to what degree are they influenced by motives that go beyond, and contradict, the objective of maximizing own material outcomes as in pure self-interest?

In the lab, the dictator game is used to identify whether people are morally motivated (Dana et al., 2006). It is designed with the purpose of measuring the degree of generosity among players and it removes

incentives for strategic behaviour. Imagine two players; one dictator and one receiver. The dictator is given an amount of money and chooses independently how much money to keep and how much to allocate to the receiver. The receivers are bounded to accept their offer and it is made clear to the dictators that they can allocate the money in whatever way they prefer. The game is not repeated which takes away any strategic element and both players are anonymous which eliminates the possibility of acting generously because of a self-interested motivation like a good reputation.

According to standard economic theory, the dictator will keep the money to himself because that is the rational strategy for a player who is motivated by self-interest alone. However, studies show that the dictators on average give away between 20 and 40 percent of the amount they are handed. When 161 anonymous students at Cornell University (Kahneman et al., 1986) participated in the dictator game, 76 % of the participants chose to give away 50 % of the money. More often than not, the dictators in these experiments allocate money to the receivers, consequently reducing their own amount of money. Overall, only about 20 percent of the dictators send away the Nash equilibrium, of a game with only selfish players, of a zero contribution (Rustichini, 2005).

Regardless of whether the game is played with large or small amounts of money at stake, it generates the same result: People are not acting entirely self-interested. They act as if they care about fairness and the welfare of others. When players act fairly in dictator games, they show a preference for sacrificing self-gains in order to change the distribution of material outcomes among others (Rustichini, 2005). There is a high degree of consistency across multiple versions of the dictator game in which the cost of giving varies (Andreoni and Miller, 2002). If the dictator game reflects individual preferences correctly the results demonstrate that people have altruistic concerns in addition to self-interested motivation. This would imply that the utility function should include factors besides own income, e.g. benefits received by others or moral concerns. When the

game is played with the possibility of punishing miserly dictators and rewarding generous dictator, the results show that people are willing to decrease their own pay-off just to punish those who treated them miserly (Kahneman et al., 1986). This result has been interpreted as people have a taste for fairness.

The ultimatum game is also designed to identify whether people genuinely care about fairness. The design features two people who split a specified amount of money through a one-time only, anonymous interaction (Camerer, 2003). The proposer makes an offer about how to divide the money, the receiver chooses whether to accept or reject this proposition. If the receiver rejects the offer, both players end up with nothing. If the receiver accepts, they both get the proposed amounts. The prediction from standard economic theory is that the receiver accepts any offer he gets because no matter how low it is it will still make him better off than by rejecting it. For the proposer, the rational behaviour is to offer nothing in order to maximize own pay-off. However, what happens in these experiments is that the majority of offers are of positive amounts and highly unequal proposals are rejected. People turn down offers with positive probability, especially if they are low. The explanation for this behaviour may be that people simply care about fairness, either in terms of the distribution of payoffs or by how the game is played (Rustichini, 2005). These results are in line with the results from the dictator game and show that people often act reciprocal and that they cannot be entirely self-interested.

5.1.1 Implications for tax compliance

The model of Allingham and Sandmo (1972) has been criticized for ignoring nonmonetary factors in the evasion gamble. However, they do have a brief discussion of factors besides the loss of income, e.g. social stigma, which may affect utility in a situation of detection. The nonmonetary factors are represented by the variable s in the utility function, which is rewritten as $E[U] = (1 - p) U(Y, S_0) + pU(Z, S_1)$. The new

variable's value depends on whether or not evasion is detected by the tax authorities. If the taxpayer is detected, reputation may be affected negatively and therefore it decreases the pay-off from the gamble. However, Allingham and Sandmo (1972) assume the effect of a change in nonmonetary factors to be trivial compared to the effect of a change in income. Therefore they continue the analysis without the stigma costs, based on the model in which the only argument in the taxpayer's utility function is net income.

The dictator game demonstrates that people also have moral constraints and experiments studying the interaction between people indicate that they work as disincentives to evade taxes (Torgler, 2002). This implies that other factors should be entered in the utility function. It would enrich the analysis of tax compliance to clarify the order and ranking of individuals' preferences rather than to start with the assumption that they are already well defined (Torgler, 2002).

If the motivation to comply is solitary driven by a calculation of benefits and costs of getting audited, the taxpayer's loyalty is best secured by high probabilities of detection and severe punishments (Allingham and Sandmo, 1972). However, if compliance is based on an evaluation of whether evasion is morally justifiable, that should be included in the utility function as well. Moral motivation may explain why people pay taxes even though the probability of detection and severity of penalties are relatively low. In a survey presented in 'NOU 2009:4' participants were asked to rank different arguments against evasion. The highest-ranking argument against involvement in tax evasion was ethics and moral. Slemrod (2007) sites a survey by IRS (2006) where American taxpayers were asked if they mostly or completely agreed that paying their share of taxes is a civic duty. 96 percent of the respondents agreed. However, 62 percent also said that they paid taxes because they feared an audit. It may be difficult to identify the motive that is dominating behaviour, but the actual rate of compliance cannot be explained without taking the

taxpayer's responsibilities as citizens into account (Graetz and Wilde, 1985).

People who have moral concerns may have a desire to act consistent with their self-image. The tax authorities may benefit from reminding people of their moral or honest codes. An experiment in the UK examined the impact of changing the location of signatures on tax returns. Simply moving the signature box from the end of the return to the beginning resulted in more honest information. Compliance also increased when moral reminders were used before people filled out their tax forms. (Behavioural Insights Team, 2012) The proposed explanation for the results is that a shift of focus from just signing the form to paying attention to honesty and morality, makes it relatively more difficult to act contrary to own beliefs.

5.2 Conditional cooperation

Tax compliance is essential for the production of public welfare goods. This is also the core of many cooperative relationships. What characterizes these relationships is that a group of people, or the overall population, harvest the reaping of the group's effort, while costs are carried individually. It is therefore for the common good that people choose to contribute, even though it might be in each individual's self-interest to avoid contributing. If people act upon their self-interest alone, the results would be evident in a drastic decrease of public goods. Experimental findings show that people are willing to cooperate with others and punish those who do not (Camerer, 2003). These results are relevant to the discussion of tax compliance, but before going into their implications, there will be a brief introduction to the theoretical basics.

For the common welfare it is essential to understand how one can make people contribute in situations where the society as a whole benefits from it. The public goods game identifies cooperation and freeriding among individuals (Fishbacher, Gächter and Fehr, 2001). In the game, players choose how much money to contribute to a common pool that in turn will be multiplied and redistributed equally to all group members.

Generally, everyone will be better off if all participants contribute. Yet, regardless of what everybody else does, it is in each individual's self-interest to contribute nothing. Assume that four individuals are given USD 20 and if they contribute a fraction of it, that fraction is multiplied by 0.4 and redistributed equally to the participants (Fehr and Gächter, 2000). In this one-shot game, the participants earn 20 USD if they keep the money to themselves and USD 32 if the whole group invest the full amount. As there is no possibility to arrange an agreement with the others or cooperate, the rational decision is to contribute nothing. Fehr and Gächter (1999) find free riding to be the dominant strategy in the game, but there are also people who are willing to contribute some of their earnings all of the time. If the game is played repeatedly, the contributions always decrease over time. The puzzle is therefore to find out how the contributions can be maintained even as time goes by.

When punishment is introduced in the public goods game, the results change. Fehr and Gächter (1999) provide the participants with a possibility of punishing free riders at a cost. They find that the more free-riders negatively deviate from the group standard, the more people are willing to punish them. Even though punishment is costly for the punisher, it is this feature that makes it possible to maintain contributions stable. In the treatment with no possibility of punishment, between 53 and 75 percent people choose to free-ride. With punishment the general contribution level maintained at 50 to 95 percent. If the participants had the possibility of punishment *and* could coordinate their contributions, the result was close to full cooperation. This is completely contrary to what the standard model of selfish individuals predicts, and may have implications for the importance of establishing a social norm. The existence of an opportunity for costly punishment causes a large increase in cooperation levels because potential free riders face a credible threat. It is also evident that free riding causes strong negative emotions in the rest of the group. A free rider problem occurs when people ignore the consequences of their own actions and rather benefit of the

contributions of others. A well-known negative side effect of this problem is the tragedy of the commons. When individuals behave strictly self-interested they end up with damaging a resource that is important for the common good.

5.2.1 Implications for tax compliance

Cooperation is central to tax compliance. Analysing the game of cooperation for public goods is easier done at a small scale; therefore game theory is used to formalize the taxpayer's dilemma. Choosing to comply requires individuals to take a personal cost for the benefit of the common good. It is not given that people should be willing to cooperate. Evaders free ride and depend on other taxpayers to carry the welfare costs. The taxpayer's concerns are two: What they get directly in return for their tax payments in form of public goods and services from the government, and their subjective perception of fairness.

As for the first argument, the public goods game shows that some people are co-operators that will contribute to the provision of welfare goods to the common benefit even though their own private return suffers. Taxation and the provision of public goods and services may be seen as a contractual relationship between taxpayers and the government (Fjeldstad et al., 2012). In a well-functioning tax system there will be sort of a quid pro quo, a favour for a favour, implicit agreement between the taxpayer and the tax authorities of mutual contributions. The taxpayer values the goods and services provided by the government and recognizes that the payments are necessary both to help finance the goods and to get others to contribute. Consequently, there is an experienced reason for paying taxes (Fjeldstad and Semboja, 2001).

If taxpayers perceive taxes as the price they pay for public goods and services, they prefer that there is exchange equity between what they pay and what they get in return (Rablen, 2010). In a reference dependent model of tax compliance behaviour, taxpayers act sensitive to perceived unfavourable inconsistencies between the value of taxes paid and the

value of the government services they get in return (Rablen, 2010). Compliance may be increased by more effective provision of public goods or focusing on the necessity of tax revenue for public goods and services (Alm et al., 1992). As it is likely that people do not fully understand the direct impact of evasion on public spending, in the UK they are currently investigating whether framing tax debts as a loss to a particular public service can increase compliance (Behavioural Insights Team, 2012). A survey from the Czech Republic (2002) suggests that people are more likely to evade taxes if they feel that the provisions from the government are insufficient (Slemrod, 2007). However, it is possible that these responses reflect a rationalization of evasion.

Increases in the payoff individuals receive in public goods, increase compliance regardless of whether people are free-riders or co-operators (Alm et al., 1992). The finding that compliance is positive and stable over time even when the probability of detection is zero supports the notion that some taxpayers comply because they understand that it is necessary in order to maintain the provision public goods. The increase in compliance with public goods is non-linear; therefore there are limits to how much compliance can be affected by increasing the payoff to taxpayers. People are more likely to cooperate if they believe that they will benefit from the government's spending and that their trust in the government and other citizens is reciprocated (Levi, 1998). So, a fraction of actual compliance can be explained by the taxpayers' valuation of the goods provided by government, and therefore why compliance is higher than predicted by the standard model. Cross-country studies show that differences in tax compliance behaviour can further be explained by differences in social and institutional factors.

It is assumed that people's idea of a fair income distribution affects their behaviour and therefore tax evasion decisions may depend on perceptions of the fairness of the tax system. If both economic and fairness considerations affect the compliance decision, it is likely that a person who sees the gain from evading still pay taxes if it is hard to justify a non-

compliant behaviour. A high level of income tax evasion decreases the redistributive effect of the progressive income tax. If the general public perceive tax evasion to be common acceptable behaviour, it may harm the legitimacy of the whole system upon which the welfare state is build. If, on the other hand, the distributional effects from taxation are considered unfair, that is a common idea of it being ineffective or managed in the wrong way, tax evasion may be considered morally justifiable. So the acceptance of the redistributive effects and fairness considerations are of obvious importance for the outcome of tax policies. From surveys and economic experiments it is known that people are willing to sacrifice monetary awards in order to avoid large deviations from what they consider to be fair (Barth et al., 2012). Experiments have also showed how people care about whether or not income inequality is a result of factors beyond individual control or not (Cappelen, et al., 2007). If they find that their economical situation is due to a tax system that is unfair, and they are unable to control this situation, then they might be more willing to consider evasion. If people do not feel as if they are taken seriously into account, tax moral suffers and, as a consequence, tax compliance (Torgler, 2002; Frey, 2001). A greater possibility for democratic participation increases tax compliance because it supports the intrinsic motivation of civic duty (Frey, 2001). Regulations preventing free riding and establishing fairness and equity help to preserve tax moral (Torgler, 2002).

People's idea of how they are treated by the tax authorities directly affects their motivation for cooperation with them (Frey 2001). Barth et al. (2012) refers to the theoretical framework of Bordignon (1993) in which taxpayers tend to evade taxes if they have to pay a tax rate that is higher than what they believe is a fair price for what they get in return. Some people may evade taxes just because they do not agree with the current tax strategies (Andreoni, Erard and Feinstein, 1998). Public spending on warfare is an example where one might suspect to find different degrees of acceptance among taxpayers (Slemrod, 2007). In line with the standard

model, Torgler (2002) finds that tax morale increases if public goods are provided, but public projects often affect individuals in ways that are difficult for the authorities to foresee. Reforms and new projects often mean changes, both favourable and unfavourable, in people's access to public goods and therefore also in individual welfare. Society's welfare will not only depend on the total quantity of goods and services provided, but also on how they are distributed. Projects that are meant to be beneficial to society as a whole sometimes stir local controversies.

By using data from the Norwegian "Hidden Labour Market Survey", Barth et al. (2012) analyse how fairness considerations, in particular of just income distribution, affect whether or not people find tax evasion justifiable and their willingness to evade taxes. The results are consistent with a model where taxpayers make a comparison between economic gains and fairness considerations when they make decisions on whether or not to report their income. When individuals with the same monthly wages are compared, it is found that individuals with low wages and long working hours more likely support tax evasion than individuals with high wages and shorter working hours (Barth et al., 2012). The individuals with low wages and long working hours are also more willing to underreport. The proposed explanation for the discrepancy is differences in people's experienced degree of fair treatment by the authorities. The group with low wages and long working hours have a stronger belief than other groups that they are treated unfairly. If taxes are based on principles that can be understood and accepted as fair by as many people as possible they may influence law-abiding people who otherwise abstain from crime, to avoid tax evasion. In order to reach a level of full compliance it is important that people do not perceive the tax system to be improper or unfair because it is easier to break a law that seems unfair than a law that seems fair (NOU, 2009).

It is therefore of great importance for the legitimacy of the tax system that it is built on trust. The OECD Forum on Tax Administration (2010) advises tax authorities to directly respond to information that

might be harmful to the reliance in the tax system. If there are inaccuracies or public misconceptions in media about the detection rates, unfair treatment by the tax administration or exaggerated numbers on evasion, it should be corrected with factual evidence to avoid interference with social norms and thereby negative impact on compliance rates (OECD, 2010). The reduction of tax moral and the increased evasion rates in the US have been explained by distrust in public laws (Frey, 2001). The feeling of being treated less fairly than others may drive people toward evasion, yet social norms and fairness considerations may also increase compliance because individuals pay taxes because they relate to compliance as a social obligation (Alm et al, 1991).

Punishment and compensations are tools in the hands of the tax authorities. However, social condemnation and support are effective tools in the hands of the public. The decision to evade taxes is affected by a sort of morally contagious effect (Eide, 2000) and this implies that the temptation to evade taxes grows with the proportion of evaders you see or hear about. If evasion is common in the taxpayer's social circle, and this is widely known, there is reason to believe that guilt and shame associated with evasion decreases (NOU, 2009). The perceived gains from evading taxes are therefore dependent on how common evasion is. This is partly confirmed in a study by Geeroms and Wilmots (1985) that shows how the probability of a taxpayer evading taxes increases with degree to which he or she believes that others evade taxes. From the UK we know that there is a strong social norm against committing acts of fraud and avoiding paying debts. People avoid it because they feel a sense of moral obligation to contribute. (Behavioural Insights Team, 2012) Taking advantage of social norms has been an efficient way to decrease tax evasion and was studied in a field experiment in Minnesota. By informing people of the actually low rate of tax evasion, taxpayers' mistaken idea of a high number of cheaters were corrected, and it helped to increase voluntary tax compliance (Behavioural Insights Team, 2012). A follow-up study in the UK shows the same tendency. When a message to 140.000 taxpayers was

send out to inform them on the fact that 9 out of 10 people in their area had already paid their tax, tax compliance increased with 15 percentage points compared to the control group that received a letter with no reference to a social norm.

The reason for the change in behaviour after being provided with such information could be that the tax evader avoids the personal cost of a negative social stigma when evasion is common, relative to in a country where evasion rates are low. The nonmonetary disutility of detected evasion might be small if it is perceived that many others evade taxes. If the perception of the frequency of evasion increases, the taxpayer might decide to evade more because there is less social stigma associated with it (Sandmo, 2004). This could in turn trigger more evasion. This mechanism relates to the analysis of corruption by Andvig and Moene (1990), where it is argued that it is more costly to be an honest person in a country where corruption is common. Likewise, it may be acceptable to evade when evasion is widespread and more risky to evade in a country characterized by a high degree of compliance.

For tax authorities these findings suggest that it should be of importance to establish or stimulate a social norm of evasion being unacceptable, but not by giving an idea that it is a frequent habitude. So, the way the probability of detection is communicated is of significance to how tax policies are perceived by the public (OECD, 2010). It is not enough to make it clear that evaders are detected; taxpayers must also be assured that honesty is the most usual strategy among them. This may establish a social norm that encourages compliance, which the tax authorities can benefit from. Providing people with the information on what most people are doing is often effective to stimulate the desired behaviour. On the other hand, if the information from the authorities is too focused on evasion; it might give the impression that most people are evaders and establish an unfavourable norm of non-compliance. If there is a strong incentive to free-ride on the private purchases of others, Samuelson (1954) claims that the private provision of public goods will

remain inadequate. However, if the taxpayers' decision on whether to free ride or not, is contingent on the behaviour they expect from others, full voluntary compliance can be a dominant strategy. (Alm et al., 1992) An understanding of how own actions can set a leading example for others may explain the excess compliance not predicted by the standard theory (Alm et al, 1992).

5.3 Extrinsic vs. intrinsic motivation

In standard economic theory, where intrinsic motivation is assumed to be constant or absent, external intervention will be the only explanatory factor for behaviour. Allingham and Sandmo (1972) suggest that motivation for compliance is driven by the probability of detection and the severity of the punishment, but if we accept the view that moral motivation is a supplementary factor for behaviour, it is of interest to take a closer look at the interaction between the extrinsic and intrinsic motivation. Gneezy and Rustichini (1998) argue that people are intrinsically motivated when they perform without an externally given reward. There are situations where people are genuinely motivated by, as Frey (1997) describes it, their inner obligations, because the activity they put an effort in is motivating by itself.

Gneezy and Rustichini (1998) discuss a set of experiments designed to test the effect of monetary incentives on performance. Among other studies, they did a case study at a day care centre in Israel. The problem they wanted to solve was that parents arrived too late to pick up their children and this forced employees to work longer hours. In order to change the parent's behaviour a monetary disincentive in form of a penalty fine for arriving late was introduced. The relative price effect predicts that levitating monetary incentives increases supply (Frey, 2001). As the demanded service in this case was more disciplined parents, one would suspect the number of them to increase with the fine because it became relatively inexpensive to arrive on time. The actual result of the fine however cannot be explained by the standard theory. Instead of having more parents coming on time, the number of parents arriving late

increased substantially (Gneezy and Rustichini, 1998). It seemed as though the parent's intrinsic motivation to arrive on time was reduced when they could pay a price to deviate from the rules.

The economic approach to human behaviour, based upon the relative price effect, is entirely focused on extrinsic motivation. Incentives that are not externally given have been completely ignored. Contrary to the standard theory, the crowding-out theory by Frey (2001) suggests that intervention via monetary incentives or punishments may reduce, rather than increase supply because it undermines the intrinsic motivation. In certain situations it might therefore be ineffective to use the price mechanism to stimulate behaviour (Frey, 2001). If people are intrinsically motivated, there is no clear-cut effect of monetary compensation on performance, but whenever money is offered, large enough amounts always induce higher performances (Gneezy and Rustichini, 1998).

External intervention can raise performance because it creates a higher marginal cost on cheating (Gneezy and Rustichini, 1998). Alternatively, it increases the marginal benefit of not cheating. A disciplining effect may come from enforcement, which rewards or commands can provide. If external intervention raises intrinsic motivation, the behaviour will be as anticipated by the principal because the marginal benefit of behaving accordingly is increased. In these situations the disciplining effect pulls in the same direction as the crowding effect. Hence, the relative price effect corresponds to the crowding effect and both external incentives and increased intrinsic motivation will raise the motivation to perform. Conversely, if external intervention undermines intrinsic motivation, the agent's marginal benefit from performing will be affected negatively and the result will be the opposite. Given no disciplining effect, external intervention will unambiguously decrease performance. The resulting behaviour will not be as anticipated by the agent (Frey, 2001).

The crowding-out effect can be triggered not only by monetary incentives, but also by commands (Frey, 1997). The effect from rewards

and punishments may therefore depend on whether people perceive the intervention to be controlling. If they do, intrinsic motivation decreases and self-determination and self-esteem are affected negatively. When individuals perceive external intervention to be controlling, that is reducing the level of control they have over their own actions, intrinsic motivation is replaced by extrinsic control. So the loss of self-determination transfers control from inside of the person affected, to the outside. External interventions may drive people whose default preferences are the concerns of others or a group, to more selfish preferences and behaviour (Frey 1997). Further, Frey (2012) points out that being forced by an external intervention reduces the possibility of showing both interest and involvement in other people. As a result of impaired self-esteem, intrinsic motivation will suffer and eventually the will person act according to external motives alone.

5.3.1 Implications for tax compliance

As Torgler (2002) points out, many taxpayers seem to have a more complex motivation structure than the one assumed by standard economic theory. Standard economic theory assumes intrinsic motivation to be an exogenously given constant and sometimes it is even left completely out of the theoretical argument (Frey, 2001). This is the case in the model of Allingham and Sandmo (1972) where internalised values are taken as exogenously given and not influenced by monetary incentives. This type of reasoning does not capture the complex motivation structure of taxpayer behaviour (Torgler, 2002). Addressing the right source of intrinsic motivation for behaviour is complicated. Compared to controlling and analysing extrinsic motivators as monetary rewards and penalties, moral motivation is a difficult size to measure and hold constant. Therefore, although it is problematic, it is also understandable, that the standard theory does not differentiate between the different sources of motivation, but interpret them as manifestations of underlying preferences for the performance or reward associated with it.

Penalties and audits work as incentives for perfectly rational and self-interested individuals, but they might be inappropriate when it comes to motivate people with high tax moral. Frey (2001) defines tax morale as a particular kind of intrinsic motivation and if the goal of tax policies is to make it less attractive to evade taxes, the effects from punishments is less straightforward than the standard theory assumes. A very small fraction of the population actually evades taxes (Kleven et al., 2010), but based on the focus tax evasion is given; the problem looks huge. There is thus a risk that a marginal problem is given more attention than appropriate. The results from focusing too much on monetary incentives to decrease evasion might generate the results completely on the contrary of what was originally anticipated. This means that stricter policies may crowd out the intrinsic motivation for compliance and thus increase evasion. If intrinsic motivation is not recognised by the tax authorities, taxpayers may to a higher degree accept opportunistic behaviour. If monetary disincentives are weak, they may damage intrinsic motivation and work in undesirable ways, but as Gneezy and Rustichini (1998) point out, strong enough external interventions will always affect behaviour in the anticipated way. If penalties for evasion are high enough, people will obey the law. But, the observed detection rates and penalties are not sufficiently high to explain the actual level of compliance.

If taxpayers who are intrinsically motivated perceive the policies to be directed at dishonest taxpayers only, they do not necessarily have to be negatively affected by them (Frey, 1997). Such policies pull morally motivated individuals in the same direction as their initial intrinsic motivation. Generally when penalties for non-compliance are enforced, individuals notice that extrinsic motivation has increased and they comply because they are controlled - not because they feel a moral obligation (Frey, 1997). The net effect of stricter tax policies is therefore not as clear as the model of Allingham and Sandmo (1972) suggests because they may end up crowding out civic duty (Frey, 2001).

People have a genuine need to show their interest and involvement in both other people and the society in which they are a part (Frey, 2001). If taxes are paid because it simply feels right these taxpayers may wish to be recognized for their behaviour. The enforcement regime reduces the opportunity to expose genuine involvement. If taxpayers become less intrinsically motivated and shift to behaviour based on extrinsic motivation, given low probability detection, they may to a greater extent consider the rational alternative of tax evasion. Based on the knowledge that extrinsic interference can affect people simply by being controlling or demanding, harsher penalties or just a focus on it through media or direct communication from the authorities may diminish tax morale. The implication for tax policies may be that the parameters used in the AS-model are not the solitary drivers of tax compliance. The complex structure of human behaviour should be considered when implementing new policies because stronger enforcement may have unexpected consequences for the behaviour of taxpayers.

6 Testing theories

In the exploration of behavioural insights for tax compliance several potential explanations for the discrepancy between the predicted levels of evasion from the standard model and the observed level have been found. The objective in this part of the thesis is to build on these insights and study two of the factors in particular through a survey-experiment. In specific a treatment analysis is used to study the effect of social norms and small changes in the probability of detection on the preferences for hiring black labour, which is a common way of evading taxes.

The next section describes the experimental method; following is a presentation of the sample, a description of the design and further the procedures of the experiment. Finally the descriptive statistics and results are reported and discussed.

6.1 Identification

Experimental studies make it possible to extract and isolate effects on preferences and attitudes in controlled surroundings. The benefits are particularly high degrees of control, the possibility of perfect randomisation and therefore precise information and identification of causal relationships (Cappelen and Tungodden, 2012). This is important because it is often challenging to interpret behavioural data. There may be a diversity of possible explanations for the observed behaviour and difficulties exist in distinguishing between causality and correlation (Cappelen and Tungodden, 2012). Correlation between variables does not necessarily mean that a change in one variable causes the changes in another. Causation means that one variable causes a change in the other; that the cause is the reason for the observation of the effect and consequently the cause must always be followed by that effect (Stock and Watson, 2007).

The experimental method ensures that causal relationships are identified because it allows for randomization. By allocating people randomly in groups, it is possible to look at the effect from manipulating

the independent variable, e.g. if a change in the probability of detection, causes a change in the dependent variable, that is the probability of considering hiring black labour. Thus, in a randomized experiment, statistical significant evidence for different outcomes in the treatment groups and the control group, implies that the effect is coming from the treatment (Stock and Watson, 2007). Potential differences in outcomes between the treatment and control groups must then be assigned to the treatment and represents the mean causal effect in the population (Stock and Watson, 2007), that is the average treatment effect.

6.1.1. A common challenge

A challenge with experiments is just the fact that people are under observation may lead them to change their behaviour. This is often referred to as the Hawthorne-effect (Stock and Watson, 2007; Haynes et al., 2012; Cappelen and Tungodden, 2012). The anonymity of the questionnaire should reduce this effect, however it cannot be excluded that people are affected by the combination of observation and the relatively sensitive information they are asked to provide. They might answer what they think is the right thing to do, rather than be honest and tell what they actually would choose in the situation described to them. However, if the answers are biased due to such an experimenter demand effect, but not correlated with the treatments, the causality of the study is unaffected due to randomization (Stock and Watson, 2007).

6.2 The sample

The experiment was conducted online and the participants were recruited through Norstat, a leading European collector of survey data. The sample consists of 1000 nationally representative Norwegian respondents aged 18 to 87 years. It is drawn randomly from a pool of 83 000 Norwegians who are registered respondents and proportionate with the geographical areas' population, quoted on gender and county of residence. It is confirmed that the individuals were recruited to the study before the randomisation of treatments was assigned and that anonymity of the respondents was

ensured. Because of the randomization it is known that the groups are not systematically different with respect to observable or unobservable characteristics.

As these people have agreed to be part of pool of respondents, one could argue that there is a risk of selection bias (Haynes et al., 2012; Saunders et al., 2009). That is, the people who are part of this experiment may systematically differ from the rest of the population. If people volunteering for a survey to a higher degree than people in general find it useful to do volunteering work, they might have a stronger tendency to be morally motivated. If that is the case, then they are not representative for the overall population. However, because of the randomization of respondents into treatment groups, selection bias does not threaten the possibility to identify causal effects, even though it raises the question about the representativeness of any observed treatment effect.

6.3 The design

The experiment was conducted online and the questions posed to the participants were based on this structure: *“Imagine this situation: You are renovation your house. You know that half of the Norwegian population use black labour for this sort of work. You also know that it is easy to get hand on black labourers who are willing to this sort of work and that it is in practice not detected by the tax authorities. How probable is it that you would consider using black labour in this situation?”*⁹. This particular question was given to what will be considered as the control group in the analysis and their answers are reported on a scale from 1 to 7, where 1 represents “highly improbable that I would consider using black labour” and 7 represents “highly probable that I would consider using black labour”.

The responses in the control group allow a study of the effect of a zero probability of detection regardless of treatments. Allingham and Sandmo (1972) would predict a high willingness to hire black labour in

⁹ See appendix for specifics on all questions.

this situation because there is no chance that people are detected. However, as has been thoroughly discussed in earlier sections, numerous studies show that there is a high degree of compliance even when there is low or no probability of detection. The present design allows us to investigate this issue in more detail.

To observe effects on the probability that people would consider using black labour two different interventions are used. In a similar way, the effect of the social norm is inspected. In all, four separate manipulations of the question are introduced and descriptions of them follow.

The first intervention is designed to study whether social norms matter to the decision. In the baseline, the respondents are told that *half of the Norwegian population* use black labour. This allows a comparison of the effects of manipulating the information in the treatment groups and the responses from the control group. In one treatment variation the respondents are told that they should think of a situation were *most people* use black labour and decide whether they would consider hiring black labour themselves, given that the probability of detection is zero. In the other treatment respondents are informed that *very few other people* use black labour in this sort of situation, and they are asked to decide whether they would consider hiring black labour themselves given that the probability of detection was zero.

The model of Allingham and Sandmo (1972) predicts that people's preferences are independent of others' behaviour because the utility function does not include any factor representing e.g. social stigma and the act of evading is solitary driven by a calculation of own monetary reward and risk of detection. As there are no differences in pay-off between the groups, the prediction from this model is that a rational individual should be unaffected by the treatment variation because their only concerns are their final states of wealth.

However, we have from the earlier discussions on social norms that people in fact are affected by the behaviour of others. If they know that

many others evade, they are more likely to evade taxes themselves. If they think that most others are compliant taxpayers, the social costs of being detected for tax evasion is higher, and it is therefore less likely that they will choose to evade themselves. Based on these insights, the basic idea of the treatments is that informing the participants of the habitude of other people when hiring construction workers, will affect their consideration of hiring black labour. A priori I expected that people would be affected by information on what other people do. The theory of social norms predicts that the group informed that most others hire black labour will be more willing to consider hiring black labour than the control group where the information given is that half of the population use black labour. Further it would be suspected that the group informed that very few other people use black labour for this type of work would be willing to consider black labour than the control group. In short, I expected that the two treatments should yield opposite results.

The second intervention is based on the same structure, but rather than manipulating the occurrence of hiring black labour among other people, the probability of detection is changed. In order to study whether people overweigh small probabilities and if this affect the probability of considering black labour, the general use of it was set to half of the population in both treatments. In other words the same information on occurrence was given to all groups. However, the probability of detection was manipulated to 1 of 1000 and to 1 of 100 people in two separate treatments. This allows a comparison of outcomes in the treatment groups compared to the control group where there is a zero probability of detection.

The standard model predicts that people consider probabilities accurately and behave rational with the objective of maximizing own expected utility (Allingham and Sandmo, 1972). As people are assumed to be risk averse it would be suspected that the willingness to hire black labour should decrease with increases in probability of detection and that the size of the changes in willingness to consider hiring black labour

should correspond to the changes in probabilities of detection. In specific, a classic economic prediction is that the reluctance towards hiring black labour should be higher in the group where 1 of 100 people is detected than in the group where 1 of 1000 is detected. Also, the change from 1 of 1000 people to 1 of 100 people should be expected to generate a greater effect than the change from zero to 1 of 100.

However, it is known from the earlier discussion of prospect theory that people generally overweigh low probabilities and react stronger to changes from a state of certainty to uncertainty than in between uncertainties. The prediction building on the discussion of overweighting low probabilities is that the outcome in the group informed that 1 of 100 people are detected and the group informed that 1 of 100 people are detected, will be merely the same. Accordingly, the theory predicts that the change from 1 of 1000 people to 1 of 100 people detected and the change from zero to 1 of 100 would generate about the same effect. This is because people often have difficulties with differentiating between very low probabilities.

6.4 Procedures

The questions were set up as a separate module in a survey with different topics sent out through a web-based omnibus. It was ensured that all other questions in the survey were exactly the same, so that the context of the question posed did not differ between participants. In practice this means that in each survey the respondents received, there was one posed from this experiment. Treatments were assigned randomly and in each group there were 200 respondents. For each hypothetical situation described to the respondent, in other words the different treatments and the control treatment, there is a measurable outcome on the scale from 1 to 7.¹⁰

¹⁰ There were 48 observations of 'do not know', which was reported as 8 on the scale. These observations were evenly distributed between the groups and therefore they are excluded from the final dataset.

6.5 Results

Table 1 gives an overview of the descriptive statistics according to treatments. Characteristics are based on self-reported data given by the respondents in the survey. The groups are, as expected due to randomization, evenly balanced with respect to age and gender. As the scale runs from 1 to 7, where 1 represents highly improbable and 7 represents highly probable, the mean score of 2.75, indicates that respondents on average are negative to considering using black labour in this situation regardless of treatments. The responses from the questionnaire are presented in Figure 1-5. The final dataset is based on the answers from 952 of 1000 participants because the 48 observations of ‘do not know’ are excluded.

[Table 1: Summary Statistics.]

[Figure 1-5: Reported answers in all treatments.]

The effects from the treatments are analysed by comparing differences in means by regressions including the treatment indicator and variables of interest. The differences estimator is the difference in the sample averages for the treatment groups and the control group. This is computed by regressing the outcome variables for the different treatments on a binary treatment indicator.

According to the standard theory (Allingham and Sandmo, 1972), the treatments should not yield any effects, but this is not what we observe. Even though the probability of detection is zero, people are highly reluctant towards considering black labour. The mean score in the control group, where people were told that half of the population use black labour, is 3.05. 30 percent of the respondents in this group reported that it was highly improbable that they would consider hiring black labour in this situation.

The first results presented are from the first intervention where the occurrence of using black labour was manipulated. Table 2 reports the

results from a regression on scores in the treatment where people were told that most others use black labour and the treatment where people were told that very few others use black labour in this situation. The results are compared to the control group, reported as a constant in the regression, where people were told that half of the population use black labour in this situation. The efficiency of the differences estimator is improved by including control variables of interest in the regression. Table 2 shows the average treatment effect of introducing a description of what other people do in this situation compared to the baseline treatment, when controlling for background characteristics of the participants.

[Table 2: Average treatment effects of the first intervention.]

The coefficient for the results from the treatment where people were told that most others use black labour is negative. The results imply that the group receiving this treatment scored -0.391 ($p < 0,05$) lower on the scale than the control group. The provided information thus decreased the respondents' probability of considering black labour. The coefficient for the result of the treatment where people were told that very few others use black labour is also negative, -0.397 ($p < 0,05$). Providing people with this information therefore decreased the respondents' willingness to consider hiring black labour.

It is surprising that these two treatments generated the same results and it is difficult to explain why. According to the theory of social norms, one would suspect that people who know that very few others use black labour are less willing to consider hiring black labours, which is what I found. Yet, when providing people with the exact opposite information, that is if most others use black labour, the same negative effect on probability of considering black labour is observed, and that is not as expected. According to the theory of social norms, it should be more probable that people would consider hiring black labour when they know that it is a very common thing to do. Remember that the probability of

detection is set to zero in all these treatments.

Overall, we observe that controlling for background variables has little effect on the estimated average treatment effects. Table 2 also reports how the probability of considering hiring black labour depends on personal characteristics. Observe that the regression reports a strong significant, but rather small negative effect of age. The coefficient of $-0,03$ ($p < 0,001$) imply that older people are less willing to use black labour. The coefficient of 0.368 ($p < 0,05$) on male indicates that men on average are more likely to consider hiring black labour than women. As the background variables help to explain the variation on the scale of probability of considering black labour, the standard errors are reduced. However, the coefficients on the control variables reports just correlation and have no causal interpretation.

We now turn to a discussion of whether there are heterogeneous treatment effects in the sample. Extensive literature shows that males and females often respond differently to experimental manipulations (Cappelen et al., 2012), therefore an interaction variable of gender and treatment is included in the regression. Variation in causal effects that depends on observable variables is estimated by including interaction with the treatments. As there is a binary indicator representing gender, the distinct causal effects for men and women can be estimated by including interaction variables in the regression. The dummy variable representing gender is therefore multiplied with the treatment where people were told that most others use black labour, and the same goes for the interaction variable where the variable representing gender is multiplied with the treatment where people were told that very few others use black labour. The interaction of age and treatments is inspected in the same manner and the results are reported in Table 3.

[Table 3: Heterogenous treatment effects of the first intervention.]

From the regression it is observed a significant negative effect of the

treatment where people were told that very few other people use black labour. The distinct effect on men can be found by adding the coefficient on male and the coefficient on the interaction variable with the treatment effect. This is the only significant result from the regression with interaction variables on background characteristics. The total effect for men is $-0,0955$ implying that the treatment where people were informed that very few other people hire black labour made men less willing to consider hiring black labour. This is as expected. However, the treatment effect on women of telling them that most others use black labour is $0,0825$. The probability of women considering hiring black labour increases when they are told that very few others use black labour. Thus, they become more positive towards hiring black labour when they know that very few other people do this, indicating that the responses from women are causing the confusing results.

We now turn to a discussion of the treatment effects of the second intervention. Remember that in these treatments the probability of detection has been manipulated and they are compared to the control group, where the probability of detection is zero. In one treatment it is stated that 1 of 1000 people are detected if they use black labour and in the other people are informed that 1 of 100 people are detected. Table 4 reports a regression with the results.

[Table 4: Average treatment effects of the second intervention.]

The results indicate negative effects of both the treatment in which people are told that 1 of 1000 are detected for using black labour ($-0,342$, $p < 0,10$) and the treatment where they are told that 1 of 100 people are detected for using black labour ($-0,332$, $p < 0,10$). These results imply that the two treatments have the same effect on the respondents when compared to the results from the control group. This is in line with the predictions from prospect theory and the result will be further discussed.

Table 5 also reports the effects of the treatments when controlling

for the background variables age and gender and the regression reports the same tendencies as discussed for the first intervention: Men are more likely to consider hiring black labour than women are and older people are less likely to consider hiring black labour. These are correlations between the variables and they cannot be interpreted as causal effects.

When controlling for interaction between background variables and the treatments in the second intervention, there are not found any significant effects, see Table 5.

[Table 5: Heterogeneous treatment effects of the second intervention]

6.6 Discussion of the treatment effects

We will start by discussing the results of the intervention trying to manipulate a social norm before we move on to discuss the effects of changes in the probability of detection.

Informing participants that very few people use black labour decreased their willingness to consider hiring black labour. This corresponds to existing research on social norms and suggests that the decision to engage in an evading activity is affected by factors beyond the standard theory of purely self-interested motivation. Even though the probability of detection was zero, most people did not want to consider black labour for renovation work, and when they knew that most people did not hire this type of construction workers they were even more reluctant towards it.

However, the results of this intervention are confusing because of the effect of the treatment where participants were told that most others use black labour. When provided with this information, the probability that people would consider it also decreased. It seems as if the responses from women cause this result and it is not in line with existing research on social norms. It has been argued that social norms have an effect on individual behaviour so it is difficult to explain how the treatment stating a social norm against black labour and a treatment with the exact

opposite statement should generate the same results. One possible explanation for this result could be if people are affected by their belief in the efficiency of the tax system. If they are told that most other people use black labour, they might find it more important that they use legal firms, as it is beneficial for society as a whole. This is in line with efficiency arguments for moral motivation. However, this explanation has not been tested and is just an informal attempt of an explanation for the surprising treatment effect.

We now consider the results of the second intervention. According to the standard model of evasion (Allingham and Sandmo, 1972), the strategy for a risk-neutral individual is to underreport income whenever the probability of detection is as low as in this experiment (Alm et al., 1991) However, the results show that even when the probability of detection is zero, people are highly reluctant towards hiring black labour. The results from the treatments where the probabilities of detection were manipulated are in line with the prediction from prospect theory and the phenomenon of overweighting low probabilities. Telling people that 1 of 100 is detected for using black labour and that 1 of 1000 people is detected for it, have the exact same effect on the probability of considering hiring black labour. It is generally found that people overweigh small probabilities in situations of risk. When comparing the outcomes from the two treatments, we observe this tendency. The effect of the small change in probabilities on the willingness to consider hiring black labour, when it is compared to the base group where it is certain that people will not be detected by the tax authorities, confirms that people have difficulties when evaluating low probabilities. The participants overweigh the small changes in probabilities and behave exactly as predicted by prospect theory. They are unable to differentiate between the situation that may happen with a 0.01 percent probability, and the situation that may happen with a 0.001 percent probability, even though the first situation is ten times as likely to occur. People systematically behave like the probability of detection is the same in the two situations.

This pattern could explain why people are law-abiding even when the rational decision would be to break the law. The result contradicts the prediction from standard economic theory. If people give more weight to the probability of an audit than they ought to relative to an expected utility model, then compliance will be greater than the level suggested by expected utility theory (Alm et al., 1991).

7 Conclusion

Through the exploration of behavioural insights for tax compliance it is found that there are several potential explanations for the discrepancy between the observed level of compliance and the level predicted by the theoretical model of tax evasion by Allingham and Sandmo (1972).

First, people do not perceive the evasion gamble as it is set, but as they construe it. Because of loss aversion, there is an experienced difference between having paid too much in preliminary taxes and having refunds due. People who owe taxes may therefore more likely consider evading taxes. The overweighting of low probabilities makes it difficult for people to grasp how likely it is that they are detected for evasion. This may explain some of the excess compliance observed. The tendency is observed in the results from the conducted experiment on willingness to consider black labour. The highest level of evasion is found among self-employed. This may be explained by procrastination, as failed planning for taxes put this group in an unfavourable situation that might lead them to consider evasion.

Secondly, people are not only motivated by their self-interest. Moral motivation and preferences for fairness may explain why some people choose to comply even though the rational choice would be evasion. Tax morale is a favourable trait to the tax system because it increases compliance, but intrinsic motivation can be crowded out by a strong focus on the penalties for tax evasion.

Ignoring the implications of behavioural economics for tax policy may lead to both mistaken policies and missed opportunities.

8 References

- Allingham, M. G. and Sandmo, A. (1972) 'Income Tax Evasion: A Theoretical Analysis', *Journal of Public Economics*, 1, 323-338.
- Alm, J. (1999) 'Tax compliance and Administration' in Dekker M. (ed.) *Handbook on Taxation*, New York.
- Alm, J. and Jacobsen, S. (2007) 'Using Laboratory Experiments in Public Economics', *National Tax Journal*, 60, 129-52.
- Alm, J., McClelland G. H. and Schulze W. D. (1990) 'Why do people pay taxes?', *Journal of Public Economics*, 48.
- Alm, J. (2011) 'Measuring, explaining, and controlling tax evasion: Lessons from theory, experiments, and field studies' *International Tax and Public Finance*, 19(1), 54-77.
- Andreoni, J., Erard, B. and Feinstein, J. (1998) 'Tax Compliance', *Journal of Economic Literature*, 36(2), 818-860
- Andreoni, J. and Miller, J. (2002) 'Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism', *Econometrica*, 70 (2), 737-753.
- Barth, E., Cappelen, A. W. and Ognedal, T. (2012) 'Fair Tax Evasion', *Norwegian School of Economics and Business Administration Department of Economics Discussion Paper*, 11.
- Becker, G. S. (1968) 'Crime and Punishment: An economic approach', *Journal of Political Economy*, 76(2), 169-217.
- Bernasconi, M., (1998) 'Tax Evasion and orders of risk aversion' *Journal of Public Economics*, 67(1), 123-134.
- Bernasconi, M. and Zanardi, A. (2004) 'Tax Evasion, Tax Rates and Reference Dependence' *Public Finance Analysis*, 60(3), 422-445.
- Blumenthal, M., Charles, C. and Slemrod J. (1998) 'The Determinants of Income Tax Compliance: Evidence from a Controlled Experiment in Minnesota', *National Bureau of Economic Research Working Paper*, 6575.

- Cabinet Office Behavioural Insights Team (2012) *Applying behavioural insights to reduce fraud, error and debt*. London: Cabinet Office Behavioural Insights Team. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachmet_data/file/60539/BIT_FraudErrorDebt_accessible.pdf. (Viewed January 15, 2013)
- Camerer, C. F. (2003) 'Behavioral game theory: Plausible formal models that predict accurately' *Behavioral and Brain Sciences*, 26(2), 157-158.
- Cappelen A. W. and Tungodden, B. (2012) 'Adferdsøkonomi og Økonomiske Eksperimenter', *Magma – Econas Tidsskrift for Økonomi og Ledelse*, 5, 26-30.
- Chetty, R., Friedman, J. N., Leth-Petersen, S., Nielsen, T. H., Olsen, T. (2013) 'Active vs. Passive Decisions and Crowd-Out in Retirement Savings Accounts: Evidence from Denmark', *The National Bureau of Economic Research*, 18565.
- Congdon, W., Kling, J. R. and Mullainathan, S. (2009) 'Behavioral Economics and Tax Policy', *National Tax Journal*, 62 (3), 375-386.
- Cox, D. and Plumley, A. (1988) 'Analyses of voluntary compliance rates for different income source classes' *Research Division, IRS*.
- Dana J., Cane, D. M. and Dawes R. M., (2006) 'What you don't know won't hurt me: Costly (but quiet) exit in dictator games' *Organizational Behavior and Human Decision Processes*, 100, 193-201.
- Dharmi, S. and al-Nowaihi, A. (2007) 'Why Do People Pay Taxes? Prospect Theory Versus Expected Utility Theory', *Journal of Economic Behavior and Organization*, 64, 171–192.
- Di John, J. (2006) 'The political Economy of Taxation and Tax Reform in Developing Countries', *Research Paper*.
- Dohrmann, T. and Pinshaw, G. (2009) 'The Road to Improved Compliance - a McKinsey Benchmarking Study Of Tax Administrations', *McKinsey Report*.
- Eide, E. (2000) 'Oversikt over litteratur om svart arbeid og skatteunndragelser' *UiO Frischsenteret Report*, 6.
- Elster, J. (2000) *Ulysses Unbound Studies in Rationality, Precommitment, and Constraints*. Cambridge, UK: The Press Syndicate of The University of Cambridge.

- Engström P., Nordblom K., Ohlsson H. and Persson A. (2011) 'Loss evasion and tax aversion' *Working Papers in Economics University of Gothenburg*, 518.
- Fehr G. and Gächter S. (1998) 'Cooperation and Punishment in Public Goods Experiments' *The American Economic Review*, 90 (4), 980-994.
- Fischbacher, U., Gächter, S. And Fehr, E. (2001) 'Are People Conditionally Cooperative? Evidence from a Public Goods Experiment', *Economic Letters*, 71, 397-404.
- Fjeldstad, O. and Semboja, J. (2001) 'Why People Pay Taxes: The Case of the Development Levy in Tanzania' *World Development*, Elsevier, 29 (12), 2059-2074
- Fjeldstad, O., Schultz-Herzenberg, C. and Sjursen, I. H. (2012) 'Peoples views of taxation in Africa: A review of research on determinants of tax compliance', *ICTD Working Paper*, 8.
- Forum on Tax Administration: SME Compliance Subgroup. (2010) *Information Note: Understanding and Influencing Taxpayers' Compliance Behaviour*. Paris: OECD. Retrieved from: <http://www.oecd.org/tax/administration/46274793.pdf> (Viewed February 26, 2013)
- Frey, B. S. (2012) 'Crowding Effects on Intrinsic Motivation', *Renewal*, 20 (2-3).
- Frey, B. S. (1997) *Not Just for the Money. An Economic Theory of Personal Motivation*. Cheltenham, UK: Edward Elgar Publishing.
- Frey, B. S. and Jegen, R. (2001) 'Motivation crowding theory' *Journal of Economic Surveys*, 15(5), 589–611.
- Frey, B. S. (2012) 'Crowding Out and Crowding In of Intrinsic Preferences', Brousseau, E., Dedeurwaerdere, T. and Siebenhünder, B. (red.) *Reflexive Governance for Global Public Goods*. Massachusetts: Institute of Technology.
- Geeroms, H. and Wilmots, H. (1985) 'An Empirical Model of Tax Evasion and Tax Avoidance', *Public Finance*, 40(2), 190-209.
- Gneezy, U. And Rustichini, A. (2000) 'Pay Enough or Don't Pay at All', *The Quarterly Journal of Economics*, 115(3), 791-810.

- Graetz, M. J. and Wilde, L. L. 'The Economics of Tax Compliance: Fact and Fantasy' *National Tax Journal*, 38(3), 355–63.
- Halvorsen, K. (2009) *Perspektiver på velferdsstaten*. Retrieved at http://www.regjeringen.no/nb/dep/fin/aktuelt/taler_artikler/minister/en/finansminister_kristin_halvorsen/2009/perspektvier-pa-velferdsstaten.html?id=544814 (Viewed December 20, 2012)
- Hicks, J. R. (1939) 'The Foundations of Welfare Economics', *The Economic Journal*, 49(196), 696-712
- Kahneman, D. (2011) *Thinking Fast and Slow*. New York, US: Farrar, Straus and Giroux.
- Kahneman D., Knetsch J. L. and Thaler R. H. (1990) 'Experimental tests of the Endowment Effect and the Coase Theorem' *The Journal of Political Economy*, 98(6), 1325-48.
- Kahneman, D., Knetsch, J. L. and Thaler, R. H. (1986) 'Fairness and the Assumptions of Economics' *The Journal of Business*, 59 (4), 285-300.
- Kahneman D. and Tversky A. (1991) 'Loss Aversion in Riskless Choice: A Reference-Dependent Model', *The Quarterly Journal of Economics*, 106 (4), 1039-1061
- Kahneman, D. and Tversky, A. (1979) 'Prospect Theory: An Analysis of Decisions under Risk', *Econometrica*, 47, 313–27.
- Kleinbard, E. (2010) 'An American Dual Income Tax: Nordic Precedents', *Northwestern Journal of Law and Social Policy* (41).
- Kleven, H. J., Knudsen M. B., Kreiner, C. T., Pedersen, S. and Saez, E. (2010) 'Unwilling or Unable to Cheat? Evidence from a Randomized Tax Audit Experiment in Denmark', *Econometrica*, 79(3), 651–692.
- Levi, M. (1998) 'A State of Trust' in *Trust and Governance*, Valerie Braithwaite and Margaret Levi (ed.), New York: Russell Sage Foundation, 77–101.
- Laibson, D. (1997) 'Golden Eggs and Hyperbolic Discounting', *The Quarterly Journal of Economics*, 112(2), 443-478.
- Levin, J. (2006) 'Choice under uncertainty' Retrieved at <http://www.stanford.edu/~jdlevin/Econ%20202/Uncertainty.pdf> (Viewed February 16, 2013)
- McCaffery, E. J. and Slemrod, J. (2004) 'Toward an Agenda for Behavioral

- Public Finance' *USC Law and Economics Research Paper*, 04(25).
- Moore, M. (2004) 'Revenues, State Formation, and the Quality of Governance in Developing Countries', *International Political Science Review*, 25 (3), 297–319
- Morgenstern, O. and Von Neumann, J. (1944) *Theory of Games and Economic Behavior*, Princeton, NJ: Princeton University Press.
- Musgrave R. A. (1992) 'Schumpeter's Crisis of the Tax State: An Essay in fiscal sociology', *Journal of Evolutionary Economics*, 2(2), 89-113.
- Norwegian Ministry of Finance (1997) *Nytte-kostnadsanalyser. Prinsipper for lønnsomhetsvurderinger i offentlig sektor*. Oslo: Government Administration Services (NOU 1997: 27)
- Norwegian Ministry of Finance (2009) *Tiltak mot skatteunndragelser*. Skatteunndragelsesutvalget. Oslo: Government Administration Services (NOU 2009: 4)
- Norwegian Ministry of Finance (2010) *National Budget 2011*. Oslo: Government Administration Services (Report no. 1 2010-2011)
- Norwegian Ministry of Finance (2013) *Skatter, avgifter og toll 2013*. Oslo: Government Administration Services (Prop. 1 LS 2012-2013)
- O'Gorman, M. J. (1997) 'More than NIMBY: The Not-In-My-Backyard syndrome and community responses to controversial and opposed scientific and technological (COST) facility siting attempts in New York State', *Political Science Dissertations*, 82.
- Rablen M. D. (2010) 'Tax Evasion and Exchange Equity: A Reference Dependent Approach' *Public Finance Review*, 38(3), 282-305.
- Thaler, R. (1980) 'Toward a positive theory of consumer choice', *Journal of Economic Behavior and Organization*, 1, 39-60.
- Samuelson, P. A. (1954) 'The Pure Theory of Public Expenditure', *The Review of Economics and Statistics*, 36(4), 387-389.
- Sandmo, A. (1976) 'Optimal Taxation: An introduction to the literature', *Journal of Public Economics*, 6 (1-2), 37-54.
- Sandmo, A. (2004) 'The Theory of Tax Evasion: A Retrospective View',

*Norwegian School of Economics and Business Administration
Department of Economics Discussion Paper, 31.*

- Schepanski, A. and Shearer, T. (1995) 'A Prospect Theory Account of the Income Tax Withholding Phenomenon' *Organizational Behavior and Human Decision Processes*, 63(2), 174–186.
- Slemrod, J. (2007) 'Cheating Ourselves: The Economics of Tax Evasion', *Journal of Economic Perspectives*, 21(1), 25–48.
- Slemrod, J. and Yitzhaki S. (1996) 'The Costs of Taxation and the Marginal Efficiency Cost of Funds', *IMF Staff Papers*, 43 (1), 172-198
- Torgler, (2002) 'Speaking to Theorists and Searching for Facts: Tax Morale and Tax Compliance in Experiments' *Journal of Economic Surveys*, 16 (5).
- Thaler, R. H. and Mullainathan S. (2008) 'Behavioral Economics'
Retrieved from
<http://www.econlib.org/library/Enc/BehavioralEconomics.html>
(viewed December 21, 2012)
- The Swedish Tax Agency (2008) *Skatteföreläsningskarta för Sverige*. Solna: Skatteverket (Rapport 2008: 1)
- Yaniv, G. (1999) 'Tax Compliance and Advance Tax Payments: A Prospect Theory Analysis', *National Tax Journal*, 52(4), 753-764.
- Økokrim (2010) *Trusselvurdering Økonomisk kriminalitet og miljøkriminalitet 2011-2012*. Oslo: Økokrim
- Økokrim (2012) *Trusselvurdering Økonomisk kriminalitet og miljøkriminalitet 2012-2013*. Oslo: Økokrim

9 Appendix

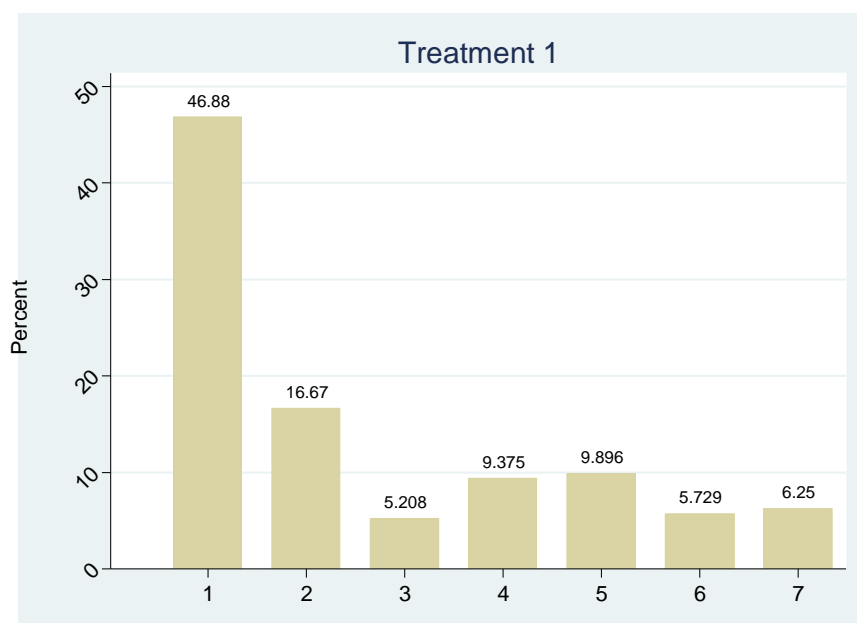
9.1 Results

Table 1: Summary statistics

	Mean	Std. Dev.
Age	49.5997	15.7529
Male	0.49894	0.50026
Treatment 1	2.60938	1.97855
Treatment 2	3.05236	1.92965
Treatment 3	2.68817	1.84818
Treatment 4	2.6875	1.94862
Treatment 5	2.73298	1.94853
Observations	952	

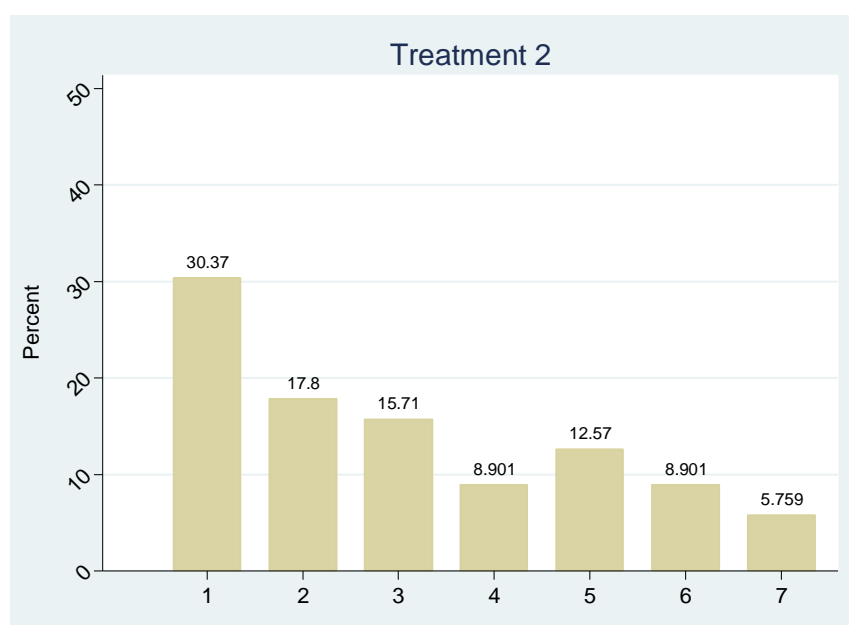
Note: “Age” (in years) and “Male” (an indicator variable taking the value 1 if the participant is a male) are self-reported by the participants in the experiment. “Treatment 1” is the treatment where participants are told that most others use black labour, “Treatment 2” (control group) is where they are told that half of the population use black labour and “Treatment 3” is where they are told that very few others use black labour. In these three treatments people are informed that the probability of detection is zero. In “Treatment 4” and “Treatment 5” the occurrence of using black labour is set to half of the population and the probability of detection is changed to 1 of 1000 and 1 of 100 people, respectively. The answers were reported on a scale that runs from 1 to 7, where 1 represents highly improbable and 7 represents highly probable.

Figure 2: Results from the questionnaire “Most people use black labour”



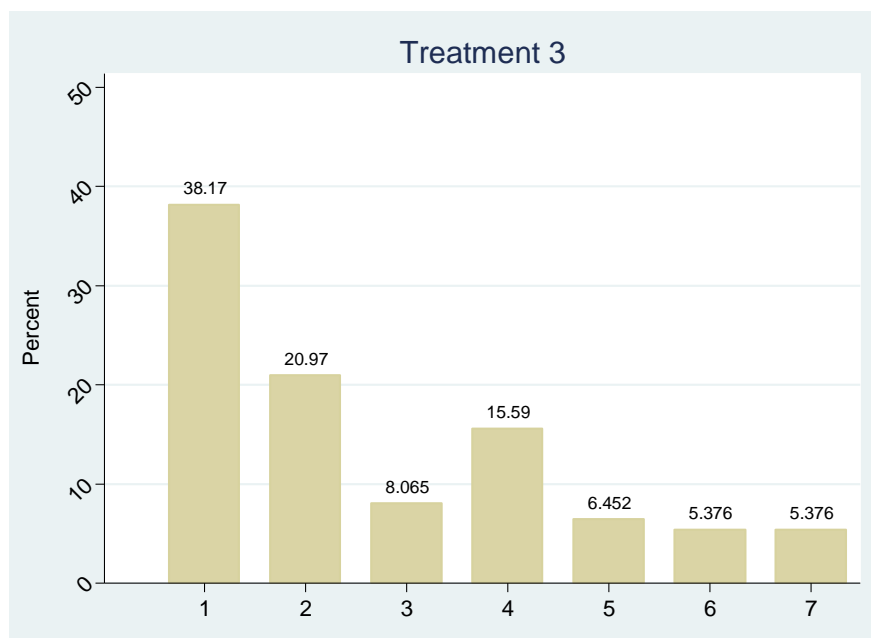
Note: The graph report the answers from the questionnaire given in “Treatment 1”, where participants were informed that most others use black labour and the probability of detection is zero. On the scale, 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Figure 3: Results from the questionnaire "Half the population use black labour"



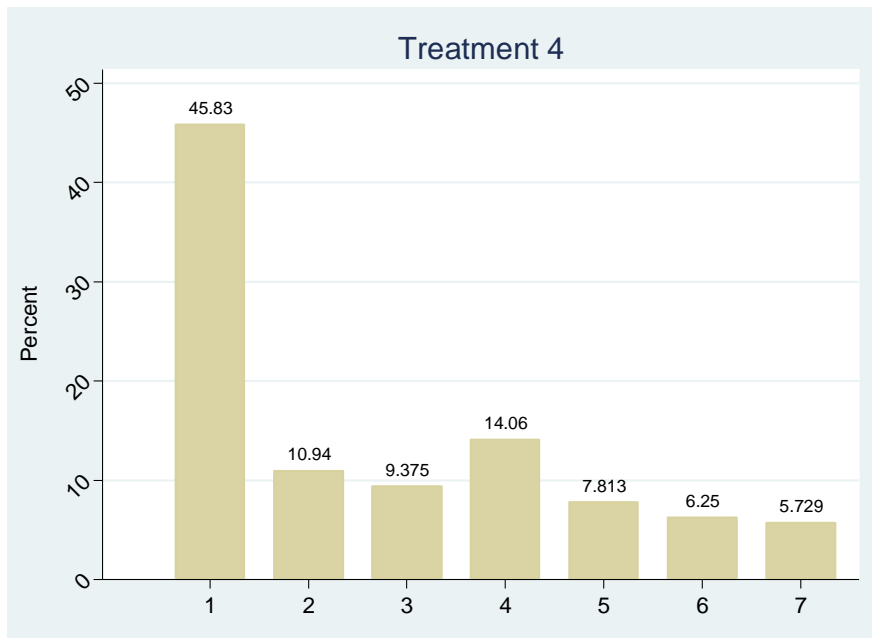
Note: The graph reports the answers from the questionnaire given in “Treatment 2” (control group), where participants were told that half of the population use black labour and the probability of detection is zero. On the scale, 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Figure 4: Results from the questionnaire "Very few people use black labour"



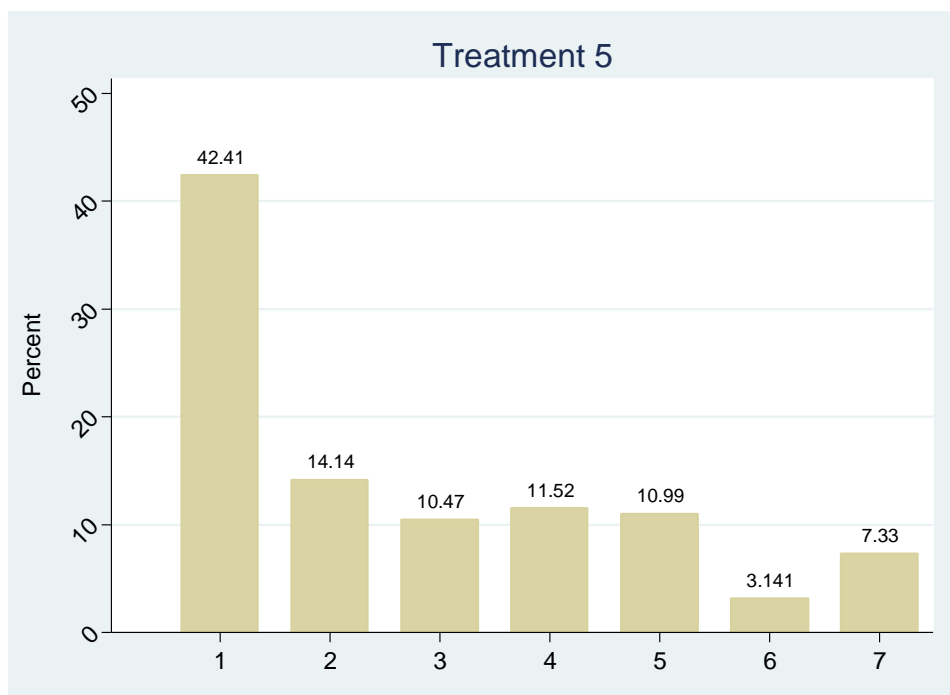
Note: The graph reports the answers from the questionnaire given in “Treatment 3”, where participants were told that very few people use black labour and the probability of detection is zero. On the scale, 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Figure 5: Results from the questionnaire "1 of 1000 people is detected"



Note: The graph reports the answers from the questionnaire given in “Treatment 4”, where participants were told that half of the population use black labour and that the tax authorities detect 1 of 1000 people. On the scale, 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Figure 6: Results from the questionnaire "1 of 100 people is detected"



Note: The graph reports the answers from the questionnaire given in “Treatment 5”, where participants were told that half of the population use black labour and the tax authorities detect that 1 of 100 people. On the scale, 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Table 2: Average treatments effects of the first intervention on probability of considering hiring black labour (relative to control group)

	(1) Subjective
Treatment 1	-0.391* (0.191)
Treatment 3	-0.397* (0.190)
Age	-0.0313*** (0.00509)
Male	0.368* (0.155)
_cons	4.411*** (0.302)
<i>N</i>	569

Standard errors in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The table reports average treatments effects on the probability of considering hiring black labour, where the dependent variable is reported on a scale from 1 to 7, where 1 represents highly improbable that you would consider hiring black labour and 7 represents highly probable that you would consider hiring black labour. “Treatment 1” is the treatment where people were told that most others use black labour, “Treatment 3” is the treatment where people were told that very few others use black labour. These are reported relative to the control group, where people were told that half of the population use black labour, which is reported in the regression as a constant. “Age” (in years) and “Male” (an indicator variable taking the value 1 if the participant is a male) are self-reported by the respondents.

Table 3: Heterogenous treatment effects of the first intervention on probability of considering hiring black labour.

	(1) Subjective
Treatment 1	0.303 (0.752)
Treatment 3	-0.516 (0.639)
T1_male	-0.412 (0.380)
T3_male	-0.939* (0.377)
T1_age	-0.00959 (0.0132)
T3_age	0.0119 (0.0114)
Male	0.803** (0.266)
Age	-0.0323*** (0.00809)
_cons	4.246*** (0.450)
<i>N</i>	569

Standard errors in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The table reports logit marginal effects of the first intervention on the reported probability of considering hiring black labour. “Treatment 1” is the treatment where participants are told that most others use black labour, “Treatment 3” is the treatment in which participants are told that very few others use black labour, and these are reported relative to the control group, reported as a constant in the regression, where people were told that half of the population use black labour. “T1_male” and “T3_male” are the interactions of “Treatment 1” and “Treatment 3” with “Male”, respectively. “Male” is an indicator variable taking the value 0 if the participant is female and the value 1 if the participant is male. The interactions of “Treatment 1” and “Treatment 3” with “Age” (in years) are reported with the variables “T1_age” and “T3_age”, respectively. The

answers from the respondents are reported on a scale from 1 to 7, where 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

Table 4: Average treatment effects of the second intervention on the probability of considering hiring black labour (relative to the control group)

	(1) Subjective
Treatment 4	-0.342 ⁺ (0.189)
Treatment 5	-0.332 ⁺ (0.190)
Age	-0.0311 ^{***} (0.00476)
Male	0.660 ^{***} (0.155)
_cons	4.260 ^{***} (0.282)
<i>N</i>	574

Standard errors in parentheses

⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The table reports average treatments effects on the probability of considering hiring black labour, where the dependent variable is reported on a scale from 1 to 7, where 1 represents highly improbable that you would consider hiring black labour and 7 represents highly probable that you would consider hiring black labour. “Treatment 4” is the treatment where people were told that 1 of 1000 people is detected for using black labour, “Treatment 5” is the treatment where people were told that 1 of 100 people is detected for using black labour. These are reported relative to the control group, where people were told that there is a zero probability of detection. “Age” (in years) and “Male” (an indicator variable taking the value 1 if the participant is a male) are self-reported by the respondents.

Table 5: Heterogenous treatment effects of the second intervention on the probability of considering hiring black labour

	(1) Subjective
Treatment 4	-0.329 (0.639)
Treatment 5	-0.284 (0.630)
T4_male	-0.0990 (0.380)
T5_male	-0.333 (0.381)
T4_age	0.000752 (0.0118)
T5_age	0.00256 (0.0114)
Male	0.803** (0.266)
Age	-0.0323*** (0.00809)
_cons	4.246*** (0.450)
<i>N</i>	574

Standard errors in parentheses

⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The table reports logit marginal effects of the second intervention on the reported probability of considering hiring black labour. “Treatment 4” is the treatment where participants are told that 1 of 1000 people is detected for the use of black labour, “Treatment 5” is the treatment in which participants are told that 1 of 100 people is detected for the use of black labour, and these are reported relative to the control group, reported as a constant in the regression, where people are told that the probability of detection is zero. “T4_male” and “T5_male” are the interactions of “Treatment 4” and “Treatment 5” with “Male”, respectively. “Male” is an indicator variable taking the value 0 if the participant is female and the value 1 if the participant is male. The interactions of “Treatment 4” and “Treatment 5” with “Age” (in years) are reported with the variables

“T4_age” and “T5_age”, respectively. The answers from the respondents are reported on a scale from 1 to 7, where 1 represents “highly improbable that I would consider hiring black labour” and 7 represents “highly probable that I would consider hiring black labour”.

9.2 Questions posed to the participants in the experiment

Treatment 1

Imagine the following situation. You are renovating your house. You know that most other people use black labour for this sort of work. You also know that it is easy to get hold of black labourers and that this type of work is not detected by the tax authorities.

How probable is it that you would consider using black labour in this situation?

Treatment 2

Imagine the following situation. You are renovating your house. You know that *half of the population* use black labour for this sort of work. You also know that it is easy to get hold of black labourers and that this type of work is not detected by the tax authorities.

How probable is it that you would consider using black labour in this situation?

Treatment 3

Imagine the following situation. You are renovating your house. You know that *very few other people* use black labour for this sort of work. You also know that it is easy to get hold of black labourers and that this type of work is not detected by the tax authorities.

How probable is it that you would consider using black labour in this situation?

Treatment 4

Imagine the following situation. You are renovating your house. You know that half of the population use black labour for this sort of work. You also know that it is easy to get hold of black labourers and for this type of work

the tax authorities detect 1 of 1000 people.

How probable is it that you would consider using black labour in this situation?

Treatment 5

Imagine the following situation. You are renovating your house. You know that half of the population use black labour for this sort of work. You also know that it is easy to get hold of black labourers and for this type of work the tax authorities detect 1 of 100 people.

How probable is it that you would consider using black labour in this situation?

