The effect of tax systems on tax compliance – experimental evidence with earned income

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September 2014

Abstract

This paper examines the question whether a progressive or a proportional tax system leads to more tax compliance. In the experiment, participants earned their own income and were then required to declare and pay taxes. Even though a descriptive analysis implies a negative effect of the proportional system on tax compliance, the results are not significant as this effect cannot be supported by a Mann-Whitney test or a regression analysis. Even when combined with the level of income, no significant effects can be found for the tax system. However, gender as well as the field of study seems to have a large effect on tax honesty. In this experiment, men evaded taxes significantly more often than women and students of economics and business were significantly less honest in declaring their taxes than students of other fields.

Content

1. Research motivation and previous literature

Tax evasion and the underlying reasons and motivations for such behaviour are topics that are discussed regularly and have gained new impetus in Germany ever since several prominent tax-defraud cases have become public. The question what influences peoples' decision to evade taxes is interesting for policy makers and researchers alike. The literature offers a wide range of experimental evidence on this topic. For example, Anderhub et al. (2001) examine the effect the level of earned income has on tax evasion and find out that subjects with higher income in the experiment are more likely to evade taxes than those with lower incomes. Alm, Deskins and McKee (2004), on the other hand, show that tax compliance increases with higher audit rates and lower tax rates.

The idea of my experiment was to find out what influence the tax system has on the quantity and quality of tax evasion. In the experiment, I compared a progressive tax system with a proportional tax system and also aimed at finding out which effects the two systems would have in different income brackets. Heinemann and Kocher (2010) also examine the effect of the two tax systems in their experiment. They come to the conclusion that tax evasion is higher in a proportional tax system than in a progressive system. My experiment differs from Heinemann and Kocher in regard to the way in which participants obtained their income. In Heinemann and Kocher's experiment, players solved questions and were then ranked in regard to their performance and had a higher probability of being endowed with a higher income by solving more questions correctly, whereas in my experiment participants gained a certain amount of money for each correctly answered question. Each player's income was therefore directly linked to their performance. This approach can be found in Anderhub et al. (2001), too.

The literature also offers evidence for gender effects. For example Bühren and Kundt (2013), as well as Giese and Hoffmann (2000), show that women are more honest in regard to tax compliance than men. Anderhub et al. (2001) find no evidence for this but suggest that women cheat to a lesser extent than men if they cheat. These effects as well as the role of subjects' academic major will also be addressed in the analysis of this experiment.

2. Experimental Design and hypotheses

The experiment consisted of two phases. In the first phase, participants earned income by solving questions in a limited amount of time. There were 20 questions altogether and subjects had 30 seconds per question for the first three questions and 15 seconds per question for the rest. An overview of all questions can be found in appendix A. For each correctly answered question,

participants earned 10 monetary units called *Taler*. Hence, the maximum income was 200 *Taler*. Participants had to earn their income and were not endowed with it in order to create a situation in which they really felt that they had worked for and deserved their income and that something that was theirs was taken off them by the tax.

In the second phase of the experiment, participants were required to produce a tax declaration. For this, subjects were provided with information on the amount of *Taler* they had earned in the first part and were shown a tax table (see table C.1 and table C.2 in appendix C). The tax table was divided into five income groups with four levels of income each. The lowest income group ranged from 10 to 40 earned *Taler*, the second from 50 to 80 and so on. Furthermore, the table provided the according tax rate and the amount of tax due for each level of income. Hence, participants not only saw their own tax burden but were also provided with information on how the tax burden increased for higher incomes and decreased for lower incomes. To highlight this more clearly, additional graphics were provided (see figure C.1 and figure C.2 in appendix C).

However, not all participants were shown the same tax table and graphics; these differed according to the treatments. In the first treatment, a proportional tax system was implemented. The tax rate was 25% for all levels of income. The second treatment was a progressive tax system. Here, the tax rate ranged from 6% for the lowest possible income of 10 *Taler* to 44% for the maximum income of 200 *Taler*.

My first hypothesis concerning the expected results was that tax fraud would occur mainly in lower income groups in the proportional tax system as the tax rate was equal for all levels of income in this treatment. I expected players with lower incomes to regard this as unfair and be more inclined to evade taxes.

H1: Tax evasion is more frequent for lower income groups in the proportional tax system

Regarding the progressive tax system, I expected higher income groups to be less honest when declaring their taxes. Players with a high income could see in the tax table that a far larger part was deducted from their earned income than for lower income groups. Therefore, a higher gross income leads to an only slightly increased net income. I expected participants with high incomes to regard this as unfair and be more inclined to evade taxes.

H2: Tax evasion is more frequent for higher income groups in the progressive tax system

Players were required to declare their tax in the provided field and send off their tax declaration by clicking on the corresponding button on the same page (see screenshot of the tax declaration in appendix E).

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The amount of tax that had been declared was deducted from the participants' earned income and used for a public good that provided the same level of utility for all participants, i.e. the total amount of drawn-in taxes was divided by the number of players and distributed evenly. This information was given to the subjects before the start of the game and was provided again on the page with the tax declaration.

After participants had sent off their tax declaration, these were audited with a probability of 0,01%. Due to this extremely low detection probability, players could be quite sure they would not be detected if they chose to evade taxes. Choosing such a low detection probability allowed me to test participants' intrinsic motivation to pay taxes honestly. With a higher detection probability, subjects might have chosen to pay taxes honestly due to risk aversion which was not the object of investigation in this experiment.

As was to be expected, none of the tax declarations was audited. If tax fraud had been detected, players would have had to pay the double amount of the tax due according to the tax table and would have been excluded from the payoff from the public good. This information was also provided again on the page with the tax declaration.

In the next step, participants were informed on whether their tax declarations had been audited or not and furthermore provided with the final amount of their payoff after they had received the payoff from the public good.

Finally, participants were asked for their opinion on different tax systems in a short questionnaire (see appendix B).

3. Data and experimental procedure

The experiment was programmed with the software *z-Tree: Zurich toolbox for ready-made economic experiments* (Fischbacher, 2007) and conducted in 12 sessions[1] on 16th and 17th of June 2014. It took place in one of the pc-pools in the economics building at the University of Passau. Between 6 and 15 players participated in each session and anonymity was ensured throughout all sessions as screens were set up between all players.

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[1] After the first session a few questions in the first part of the experiment were altered because they proved to be too difficult as participants' incomes were all very low. After the fourth session, an error in the instructions was found. The instructions had said that it was not necessary to click on "OK" to make the answer count. This turned out to be wrong, hence after the fourth round it was changed to say that it was necessary to click "OK".

Altogether, 137 people participated in this experiment. The analysis of the results, however, only includes data of 128 participants[2]. This leaves 66 subjects for the proportional tax system and 62 subjects for the progressive tax system. Slightly over two thirds of the participants were female and the age ranged between 18 and 31 years. Nearly half of the subjects (48%) were students of economics or business studies and another 23% studied European Studies or International Cultural and Business Studies[3]. The other participants were students of law, governance, media, literature or teaching.

The experiments had been advertised in lectures, seminars, social media and with posters beforehand, however, the major part of players participated spontaneously after being asked just before the start of each session.

In every session, two experiments were conducted straight after each other and we alternated the order of the experiments in each session. In the first session, we started with this experiment which was succeeded by another experiment that was in no way related to this one. At the end of both experiments, participants answered some demographic questions regarding their age, gender and field of studies.

At the beginning of every session we read some general instructions to the participants after which the experiment started. All instructions regarding the experiment were given only in written form on the first two screens. Instructions can be found in appendix D. Then the first phase of the experiment started in which participants answered 20 questions in order to earn income. Every participant could start this phase independently by clicking on the start button, but as soon as they had entered this phase, there was no possibility to pause in between the questions and if the time for one question ran out they were shown the next question straight away. After all questions had been answered or the time had run out, participants declared their taxes. When everyone had done so, subjects could enter the next screen where they were informed about whether or not their tax declaration had been audited. Following this, they were provided with information on their payoff from the public good and their final payoff. At the end, the questionnaire on tax systems followed and the last screen thanked the players for their participation.

Payoffs were not paid out in Euros, but we offered sweets as an incentive for participation and all players could enter a draw and had the chance to win a cinema voucher worth 20€.

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[2] Data of subjects who had paid too many taxes were excluded from the analysis as it must be presumed that these players had misread the instructions or mistakenly entered the wrong value.
[3] From now on referred to as cultural studies for abbreviation purposes.

4. Results

Participants earned between 20 and 180 *Taler* during the first phase of the experiment and the mean income equalled 103.1 *Taler*. Most participants (44%) belonged to the medium income group with incomes between 90 and 120 *Taler*. Only eight participants can be found in the bottommost income group with an income of 40 *Taler* or less and only two players reached the topmost income group with an income of over 170 *Taler*.

Altogether, 28 players evaded their taxes which equals 21.9% of all participants. Of these, a quarter evaded 100% of their taxes, hence the other three quarters of subjects who cheated only did this to a certain extent. Mazar, Amir and Ariely (2008) provide evidence for the fact that subjects try to maintain a positive self-image whilst gaining financially through cheating and therefore seek a balance between the two. This could be a possible explanation for why three quarters of the participants who cheated did not evade 100% of taxes. They seem to have tried to gain to a certain extend but only so much that they could still appear at least partly honest.

4.1 Treatment effects

In total, the proportional system is marked by more tax evasion than the progressive system which implies that the tax system could have an influence on participants' willingness to commit tax fraud. Figure 1 illustrates the percentage of tax defrauders in total and by income groups. A total of 26.9%

Figure 1: Tax defrauders by income group and treatment
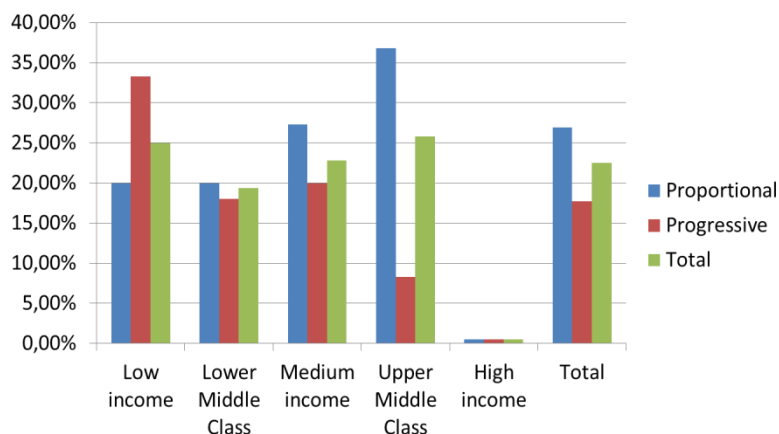
of players in the proportional treatment evaded taxes whereas only 17.7% of subjects did so in the progressive treatment. In addition to this, a higher percentage of tax was evaded in the proportional system. In this treatment, a mean of 68.1% of taxes were evaded by defrauders whereas this number equalled 63% in the progressive system.

Figure 1 exhibits clearly that the percentage of tax defrauders rises with income in the proportional system. Exactly the opposite is the case for the progressive system. Here, especially the lower income groups were marked by higher proportions of tax evasion. This is surprising as the low income group was confronted with tax rates between 6% and 12% only and completely contradicts my aforementioned hypotheses and expected results. Of the two participants, who reached the highest

income group, one played the proportional and one the progressive treatment. Both subjects declared their taxes honestly.

A Mann-Whitney test was conducted in order to test whether the result that tax compliance was lower in the proportional tax system is significant. The null hypothesis H_0 states that both treatments have the same distribution and the alternative hypothesis H_1 states that treatment 1 is stochastically different than treatment 2. The p-value obtained for this test equals 0.2748 and therefore the H_0 hypothesis cannot be rejected. Hence, there is no statistically significant difference between the two treatments regarding tax evasion, meaning that the tax system has no significant influence on participants' willingness to defraud taxes.

4.2 Gender effects

Figure 2 displays the proportion of players who evaded taxes by gender and treatment. It is striking that male participants evaded taxes much more frequently than female players in both treatments and in total. However, it is also interesting to note that the mean proportion of tax that was evaded by subjects who did not play honestly was slightly higher for women (69.2%) than for men (66.3%).

The observation that gender plays a role regarding the frequency of tax evasion can be confirmed by a Mann-Whitney test. The H_0 states that male and female have the same distribution whereas the H_1 says that male is significantly different than female. This test produces a p-value of 0.0059 which means that the H_0 needs to be rejected resulting in the conclusion that there is a significant difference between male and female participants' willingness to evade taxes. These findings are significant to a 1% level.

Figure 2: Proportion of participants who evaded taxes
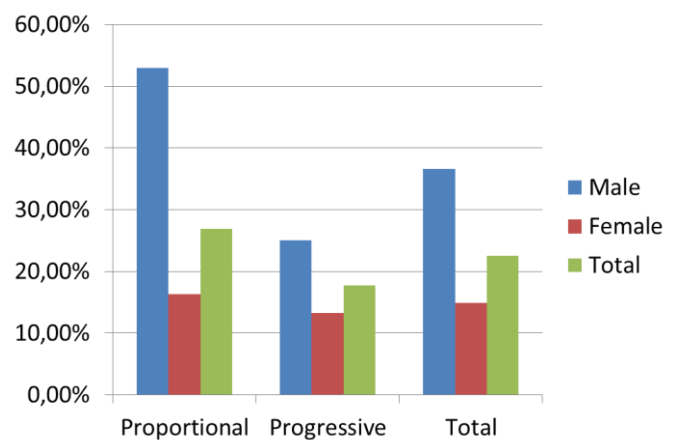
4.3 Effects of academic major

Striking differences in the frequency of tax compliance can also be found in regard to the field of study. Nearly 34% of all students of economics or business studies and 30% of governance students evaded taxes, whereas only 4% of students of cultural studies did not declare their taxes honestly. The other fields of study range in between, but it is worth noting that for all academic majors other than economics and cultural studies there were only ten or less participants in the experiment.

Similar results can be found in figure 3. This figure depicts the proportion of all tax defrauders represented by the different fields of study. Over two thirds (69%) of all tax defrauders in the

Figure 3: Proportion of defrauders represented by fields of study
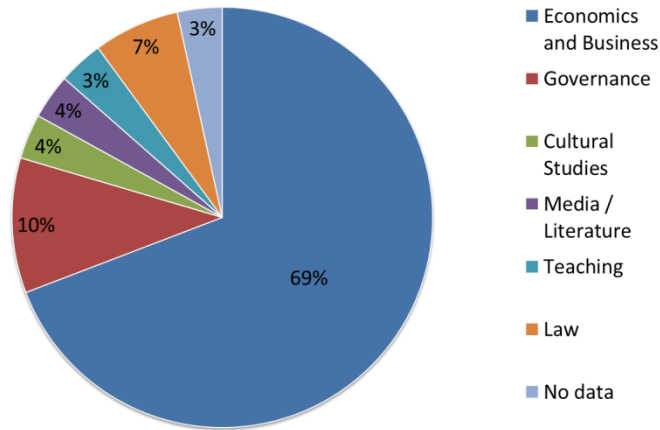
experiment were students of economics or business studies. Students of governance ranged second with 10% whereas students of cultural studies only represented 4% of all defrauders.

These findings suggest that the field of study plays a major role in determining whether a participant would be willing to evade taxes or not and that the difference is especially prominent between students of economics and business and those of cultural studies.

A Mann-Whitney test was conducted to examine whether the differences between students of economics and business and those of other fields of study are significant. The H_0 states that both groups have the same distribution whereas the H_1 says that the group of economics and business students is stochastically different than the other group. This test results in a p-value of 0.0024 meaning that the H_0 needs to be rejected. This leads to the conclusion that differences between students of economics and business and other students in regard to tax evasion are significant to the 1%-level.

4.4 Regression analyses

As a next step, several regression analyses were conducted. Table 1 shows the results of the regressions. All regressions were conducted with Stata 11. In the first two regressions, the binary variable *cheat* was used as the dependent variable. This variable took the value 1 if tax evasion had occurred and otherwise took the value 0. These two regressions were run as logistic regressions and included all 128 subjects. The last two regressions used the variable *Anteilhinterzogen* as dependent variable. This variable displays the proportion of tax that was evaded by subjects. These two regressions were run as linear regressions and only included data of the 28 players that had in fact evaded taxes.

In the following paragraph, the employed independent variables will be explained. *Payofffragen* denotes the income participants earned from answering the questions in the first phase of the experiment. *T1* is a binary variable taking the value 1 if subjects were confronted with the

proportional treatment and 0 otherwise. *Mann* takes the value 1 for male and 0 for female players. Three binary variables for different fields of study were employed, *wiwi* taking the value 1 if the subject's field of study was economics or business studies, *stawi* taking the value 1 if the participant studied governance and *kuwi* taking the value 1 if the subject in question was a student of cultural studies. The variable *payoffT1* is an interaction term generated by multiplying *payofffragen* and *T1*. *Order1* takes the value 1 if this experiment was played as first of the two experiments; otherwise it takes the value 0.

Table 1: Results of the regression analyses

	(1) cheat	(2) cheat	(3) Anteil hinterzogen	(4) Anteil hinterzogen
main				
payofffragen	-0.0074	-0.015	-0.0027	-0.0032
	(0.01)	(0.01)	(0.00)	(0.00)
T1	0.61	-0.20	-0.022	-0.12
	(1.63)	(1.61)	(0.45)	(0.47)
mann	1.26*	1.02*	0.0071	-0.0068
	(0.53)	(0.52)	(0.16)	(0.17)
wiwi	1.56**		0.29	
	(0.58)		(0.18)	
stawi	1.63+		0.26	
	(0.90)		(0.25)	
payoffT1	0.0017	0.0098	0.0015	0.0018
	(0.01)	(0.01)	(0.00)	(0.00)
order1	1.19*	1.30*	-0.0084	-0.033
	(0.53)	(0.51)	(0.17)	(0.17)
kuwi		-2.24*		0.21
		(1.08)		(0.37)
_cons	-3.15*	-1.09	0.64	0.98*
	(1.42)	(1.30)	(0.41)	(0.37)
N	128	128	28	28
R^2			0.186	0.087
Pseudo R^2	0.2080	0.1941		

Standard errors in parentheses
$+ p<0.10$, $* p<0.05$, $** p<0.01$, $*** p<0.001$

First of all, the evidence found in the Mann-Whitney test concerning the non-significance of the treatments is supported by all regressions. The coefficients *T1* and *payoffT1* are not significant in any of the regressions leading to the conclusion that the tax system does not influence the frequency or the magnitude of tax evasion.

The coefficient for *payofffragen* is negative in the first two regressions, which implies that rising income might lead to declining tax honesty as found in e.g. Anderhub et al. (2001), but results are far from significant here. Hence, the level of income has no significant effect on tax compliance, either.

Regarding gender effects on the frequency of tax evasion, the results of the previous analyses are confirmed. In the first two regressions, the coefficient *mann* is positive and significant to the 5%

level. Hence, if a subject is male, this raises the probability of tax evasion significantly. However, regressions 3 or 4 do not provide any supporting evidence for the observation that women evade higher proportions of taxes than men.

Furthermore, the results regarding the fields of study are verified by the regression analyses, too. Regression 1 uses the coefficients *wiwi* and *stawi* as independent variables and all other fields of study as reference. *Wiwi* is positive and significant to the 1% level. If the participant was a student of economics or business studies this raised the probability of tax evasion significantly. The same conclusion applies to *stawi*, only that this variable is merely significant to the 10% level. Regression 2 utilises *kuwi* as an independent variable and all other studies as reference. This field of study is significant to the 5% level and produces a negative variable, meaning that studying cultural studies reduces the probability of tax evasion significantly. Regressions 2 and 4 reveal that the field of study has no effect on the proportion of taxes evaded.

Another interesting result is the fact that the order in which the experiment was conducted is significant to the 5% level in regressions 1 and 2. The coefficient of *order1* is positive, meaning that the probability of tax evasion increases if this experiment was conducted first or, in other words, if the other experiment was played first, subjects played more honestly in this experiment.

5. Limitations

Several limitations regarding the results need to be mentioned. Firstly, payoffs won during the experiment were not paid out to participants as the experiments were part of a seminar and all experimenters are students. Participants were informed about this before taking part. This could have led to two forms of distortion. On the one hand, subjects might have played more profit-maximising if there had been real monetary payoffs and on the other hand, there might have been a self-selection bias regarding the participants. As there was no monetary gain from participating, players probably took part because they were interested in experiments and wanted to learn something or in order to do the experimenter a favour. These kinds of non-monetary incentives might have attracted only a certain type of students.

Secondly, as already mentioned, the experiment was conducted after another experiment every second session. The fact that the order in which the experiments were played is significant leads to the conclusion that this is a further limitation and that playing another experiment first or knowing that there was another experiment to come might have influenced participants' behaviour. If this experiment had been played alone, the results might have been slightly different.

6. Discussion and conclusion

Both hypotheses concerning this experiment cannot be confirmed by the experimental data. Neither the Mann-Whitney tests nor the regressions produce any evidence for the validity of the hypotheses. The observation in the descriptive analysis that tax evasion is higher in the proportional system is in line with the literature (e.g. Heinemann and Kocher, 2010) but these findings cannot be confirmed by statistical tests in this experiment. Hence, the tax system seems to have no effect on tax compliance. Nevertheless, it is interesting to note that the observation found in the descriptive analysis harmonises with the answers given in the questionnaire at the end of the experiment to the question which tax system is regarded as fairer. Translated from German, the two possible answers were: 1. The tax rate is the same for all incomes; 2. High incomes have to pay a higher tax rate than low incomes. A large majority (72.1%) of all participants chose answer number 2, i.e. a progressive tax system. The fact that the majority of subjects regard a progressive tax system as fairer could possibly explain why more tax evasion occurred in the proportional system. However, as already stated, no statistical significance can be found here.

The results reveal that gender has a significant effect on tax compliance. In line with studies such as Bühren and Kundt (2013), men played significantly more profit-maximising than women in this experiment leading to the presumption that men seem to be more prone to tax evasion than women. It has also been argued (e.g. Heinemann and Kocher, 2010) that this could be due to the fact that women are more risk-averse than men. However, the effect of risk-aversion can be excluded in my experiment as the detection probability is so low. Therefore, women seem to have a higher intrinsic motivation to pay taxes honestly than men.

The field of study also has a significant effect as students of economics and business evade taxes more often than other students. This also applies to students of governance although the effect is not quite as strong as for economics and business studies. Students that are confronted with the concept of profit-maximisation in their studies therefore seem to be more inclined to follow this notion otherwise, too. However, it was not controlled for the semester, therefore it is not possible to say whether students played profit-maximising because of what they had learnt in their studies or whether economics and business studies attracts people that act more profit-maximising than others. Carter and Irons (1991) find evidence for the fact that economists self-select and play more profit-maximising than other students at the beginning and the end of their studies.

Finally, the order in which the experiments were played is important. If this experiment was played second, subjects evaded taxes significantly less. The experiment that was conducted before was a dictator game framed as a situation in which participants had to decide how much money they would

give certain waitresses and waiters as a tip. A regression analysis was conducted to find out whether the amount of tips given in the first experiment influenced the probability of cheating in this experiment, but no significant results were found. Possibly, subjects were merely tired of making decisions by the end of this experiment as they were required to make several decisions in the first experiment and then had to answer 20 questions in the first phase of this experiment. Therefore, they might have simply chosen to pay taxes as stated in the tax table instead of thinking about how much they were willing to pay.

As the tax system proved to have no significant effect on tax compliance, not even for certain income brackets, a conclusion that can be drawn from the experimental results is that when searching for the underlying causes and ways to prevent tax evasion, the tax system is not relevant. Or, in other words, when deciding on which tax system to implement, tax compliance is not a relevant factor for the decision. Furthermore, one could argue that the results suggest that tax declarations of men, business people and economists should be audited more thoroughly as these groups exhibit significantly lower rates of tax compliance than others.

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Appendix

A. Question set

1. Brigitte kauft ein rechteckiges Grundstück mit einer Fläche von 1700qm und einer Breite von 25m. Wie lang ist ihr Grundstück?

   * 34   * 47   * 52   *** 68**   * 78

2. Zwei Schafe grasen in zwei Stunden zwei Wiesen ab. Wie lange brauchen vier Schafe für vier Wiesen? Gehen Sie davon aus, dass alle Wiesen gleich groß sind und alle Schafe gleich schnell grasen.

   * 1   *** 2**   * 3   * 4   * 6

3. Bertha möchte einen Würfel mit einem Volumen von 8 Kubikzentimetern mit Klebeband bekleben. Wieviel Quadratzentimeter Klebeband braucht sie dafür?

   * 8   * 12   * 16   *** 24**   * 36

4. Was ergibt 1 * 2 * 3 * 4?

   Antwort: **24**

5. Welche Zahl kommt an Stelle des x?   1 8 2 7 3 x

   * 6   * 8   * 4   * 2   * 9

6. Welche Zahl kommt an Stelle des x?   1 3 6 8 16 x

   * 10   * 12   * 14   * 16   *** 18**

7. Welche Zahl kommt an Stelle des x?   2 4 7 11 x

   * 12   * 13   * 15   *** 16**   * 18

8. Welche Zahl kommt an Stelle des x?   1 5 4 8 7 x

   * 6   * 9   *** 11**   * 12   * 13

9. (90 / 9 - 5) * 4 - 4 = ?

   Antwort: **16**

10. 15 + 27 + 14 + 16 + 5 - 20 = ?

    Antwort: **57**

11. Was ergibt 2+2+2+2+2+2+2+2+2+2-2?

    Antwort: **20**

12. (39 + 11) - (24 - 12) = ?

    Antwort: **38**

13. 11 * 12 + 6 = ?

    Antwort: **138**

14. Wer gewann 2014 den Oscar als bester Hauptdarsteller?

    * Leonardo DiCaprio   *** Matthew McConaughey**   * Christian Bale

    * Daniel Day-Lewis   * Colin Firth

15. In welchem Jahr wurde Julius Caesar ermordet?

    * 68 v. Chr.   *** 44 v. Chr.**   * 23 n. Chr.   * 50 n. Chr.   * 54 n. Chr.

16. Wie heißt die Hauptstadt der Philippinen?

    *** Manila**   * Manama   * Vientiane   * Dili   * Bandar Seri Begawan

17. Welcher Planet ist der Sonne am Nächsten?

    * Mars   * Jupiter   * Venus   * Neptun   *** Merkur**

18. In welchem Jahr wurde Angela Merkel zum ersten Mal Bundeskanzlerin?

    * 1998   * 2002   *** 2005**   * 2007   * 2013

19. Wie oft wurde Deutschland bisher Fußball-Weltmeister der Herren?

    * 1 mal   * 2 mal   *** 3 mal**   * 4 mal   * noch nie

20. Wann führte die Schweiz das Frauen-Wahlrecht ein?

    * 1919   * 1937   * 1958   *** 1971**   * 1980

B. Tax questions

1. Wie gerecht ist Ihrer Meinung nach das deutsche Steuersystem?

   * sehr gerecht   * gerecht   * neutral   * ungerecht   * sehr ungerecht

2. Welche Steuerklassen werden ihrer Meinung nach durch das deutsche Steuersystem begünstigt?

   * eher hohe   * eher mittlere   * eher niedrige   * weiß nicht

3. Welches Steuersystem halten Sie für gerechter?

   * Jeder zahlt denselben proportionalen Anteil des Einkommens als Steuer

   * Höhere Einkommen werden mit einem höheren Satz besteuert als niedrigere

4. Werden Steuereinnahmen Ihrer Meinung nach in Deutschland sinnvoll verwendet?

   * sehr sinnvoll   * sinnvoll   * neutral   * nicht sinnvoll   * überhaupt nicht sinnvoll

C. Tables and figures

Table C.1 - Proportional tax table

Steuerklasse	Durch Lösen von Aufgaben generiertes Einkommen	Mit Einkommen korrespondierender Steuersatz	Zu entrichtende Steuerlast
Spitzenverdiener	200	25.00%	50
	190	25.00%	47.5
	180	25.00%	45
	170	25.00%	42.5
Obere Mittelschicht	160	25.00%	40
	150	25.00%	37.5
	140	25.00%	35
	130	25.00%	32.5
Normalverdiener	120	25.00%	30
	110	25.00%	27.5
	100	25.00%	25
	90	25.00%	22.5
Untere Mittelschicht	80	25.00%	20
	70	25.00%	17.5
	60	25.00%	15
	50	25.00%	12.5
Geringverdiener	40	25.00%	10
	30	25.00%	7.5
	20	25.00%	5
	10	25.00%	2.5
Durchschnitt	105	25.00%	26.25

Table C.2 - Progressive tax table

Steuerklasse	Durch Lösen von Aufgaben generiertes Einkommen	Mit Einkommen korrespondierender Steuersatz	Zu entrichtende Steuerlast
Spitzenverdiener	200	44.00%	88
	190	42.00%	79.8
	180	40.00%	72
	170	38.00%	64.6
Obere Mittelschicht	160	36.00%	57.6
	150	34.00%	51
	140	32.00%	44.8
	130	30.00%	39
Normalverdiener	120	28.00%	33.6
	110	26.00%	28.6
	100	24.00%	24
	90	22.00%	19.8
Untere Mittelschicht	80	20.00%	16
	70	18.00%	12.6
	60	16.00%	9.6
	50	14.00%	7
Geringverdiener	40	12.00%	4.8
	30	10.00%	3
	20	8.00%	1.6
	10	6.00%	0.6
Durchschnitt	105	25.00%	32.9

Figure C.1 – Proportional tax
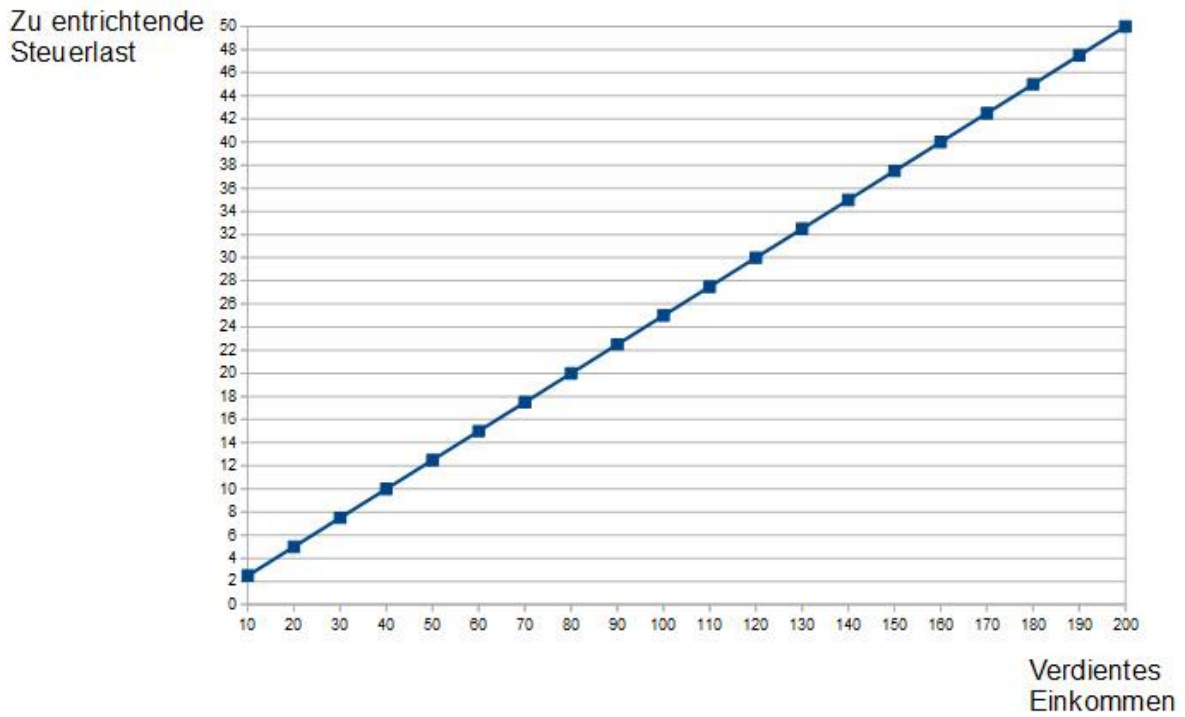
Figure C.2 – Progressive tax
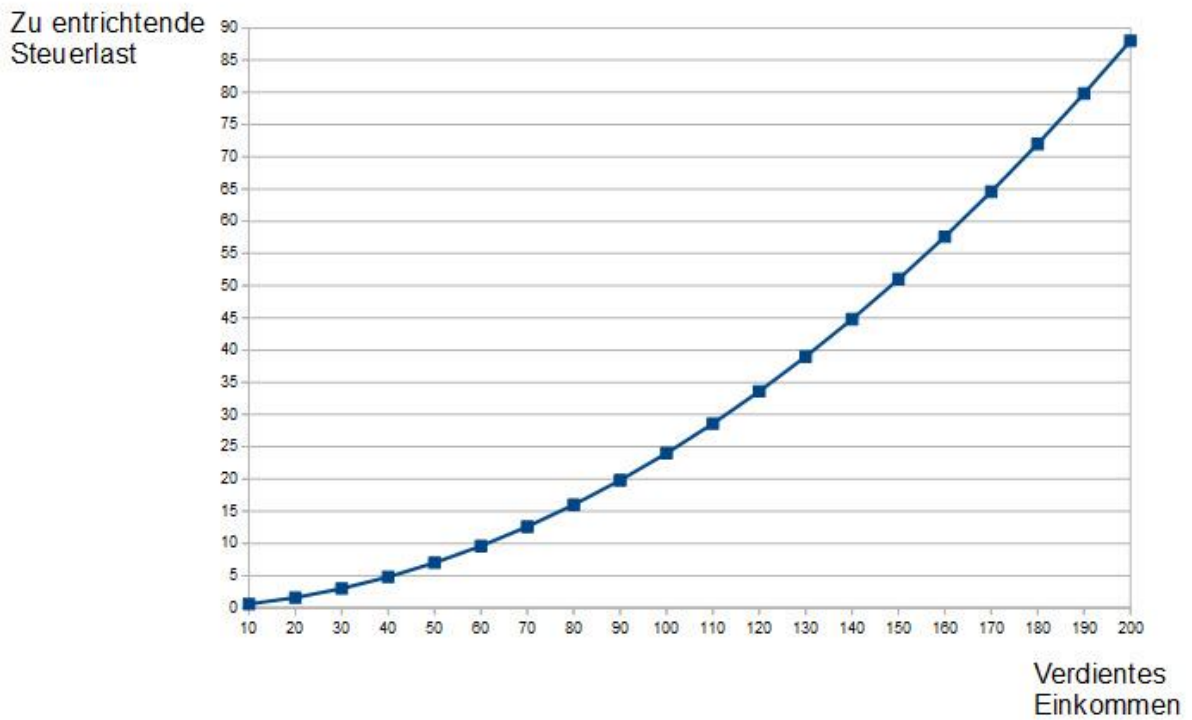
D. Instructions

D.1 Oral instructions

Herzlich Willkommen!

Vielen Dank für Ihre Bereitschaft, an zwei kurzen Experimenten teilzunehmen. Bevor das erste Experiment startet, einige allgemeine Erläuterungen vorab: Mit den Experimenten wollen wir Erkenntnisse über menschliches Verhalten gewinnen. Die Teilnehmer an den Experimenten befinden sich alle hier im Raum und nehmen an denselben Experimenten teil. Alle Teilnehmer sind anonym und können sich nicht untereinander absprechen. Auch Ihre Entscheidungen und Angaben werden anonym ausgewertet. Bitte verhalten Sie sich während der Experimente ruhig und sprechen Sie nicht mit Ihrem Nachbarn. Beachten Sie, dass es während der Experimente zu Wartezeiten kommen kann. Haben Sie einen Bildschirm einmal verlassen, kann dieser nicht erneut aufgerufen werden. Die erzielten Gewinne können leider nicht ausbezahlt werden. Versuchen Sie dennoch sich vorzustellen und sich so zu verhalten, als würde um echtes Geld gespielt werden. Auf der folgenden Seite wird der Ablauf des ersten Experimentes erklärt. Bitte lesen Sie die Anleitung sorgfältig durch und heben Sie Ihre Hand im Falle noch offener Fragen. Ein Spielleiter kommt dann zu Ihnen. Sie können jetzt mit dem ersten Experiment beginnen: Klicken Sie dazu auf 'Experiment starten'.

D.2 Written instructions

First instruction screen:

Vielen Dank für Ihre Teilnahme an diesem Experiment!

Das Experiment besteht aus zwei Phasen. In der ersten Phase verdienen Sie hypothetisch Geld. Hierzu müssen sie verschiedene Aufgaben innerhalb einer bestimmten Zeit lösen. Es gibt insgesamt 20 Aufgaben und für jede richtig und fristgerecht beantwortete Aufgabe verdienen Sie 10 Taler. Ihr maximales Einkommen beträgt hier also 200 Taler.

Bitte beachten Sie, dass die Zeit, die Sie für das Lösen der Aufgaben haben, begrenzt ist. Sie haben pro Aufgabe entweder 15 oder 30 Sekunden Zeit. Die verbleibende Zeit steht jeweils oben links angegeben.

In der zweiten Phase müssen Sie eine Steuererklärung anfertigen und Ihr verdientes Einkommen versteuern. Dazu wird Ihnen eine Steuertabelle vorgelegt, in der Sie Ihre Steuerlast ablesen können. Ihre Steuer wird Ihnen vom Einkommen abgezogen und kommt einem öffentlichen Projekt zu Gute,

von dem Sie und Ihre Mitspieler gleichermaßen profitieren, d.h. die gesamte eingezogene Steuer wird am Ende des Spiels gleichermaßen auf alle Mitspieler aufgeteilt.

Mit einer Wahrscheinlichkeit von 0.01% wird geprüft, ob die von Ihnen auf der Steuererklärung eingetragene Steuerlast mit der zu Ihrem Einkommen gehörenden Steuerlast aus der Tabelle übereinstimmt. Sollten Sie der Steuerhinterziehung überführt werden, wird Ihnen die doppelte wahre Steuerlast abgezogen und Sie werden von der Auszahlung aus dem öffentlichen Projekt ausgeschlossen. Bereits abgeführte Steuern werden mit der Strafzahlung verrechnet.

Bitte klicken Sie auf "Weiter", wenn Sie diese Anleitung verstanden haben.

Second instruction screen:

Sie beginnen gleich mit dem Lösen der Aufgaben.

Bitte beachten Sie, dass Sie nur eine limitierte Zeit pro Aufgabe haben und dass Ihnen, sobald die Zeit einer Aufgabe abgelaufen ist, gleich die nächste Aufgabe angezeigt wird.

Bitte klicken Sie auf "OK" um ihre Antwort abzuschicken. Wenn Sie nicht auf "OK" klicken, wird ihre Antwort nicht gezählt.

Bis zum Ablauf der Bearbeitungszeit der jeweiligen Frage können Sie Ihre Eingaben jederzeit umändern.

Das Verwenden von Taschenrechnern und Handys ist verboten. Sie können jedoch die bereitgelegten Stifte und das Papier zu Hilfe nehmen.

WICHTIG: Geben Sie bitte vor Dezimalstellen einen Punkt ein, schreiben Sie also zum Beispiel "Zwei Komma Fünf" als 2.5

Sobald Sie bereit sind, klicken sie bitte auf "Start". Ihnen wird dann sofort die erste Aufgabe angezeigt.

E. Screenshots of tax declaration

E.1 Proportional treatment

E.2 Progressive treatment