Experimental Testing of Electronic Filing

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Introduction

- Revenue agencies have been cautious in exploiting online technology
- Reluctance understandable given costs of errors
  - Risk to revenue
  - Damage to reputation
  - Reduction of tax morale
- Online systems are in use for reporting information to the agency
- And for communicating outcomes to taxpayers
- But much more is possible by exploiting technology

Introduction

- HM Revenue and Customs (HMRC) is pursuing the “Making Tax Digital” agenda
- Unveiled in 2015 with an intention to move taxation as close to real-time as possible
- By 2020 every individual and small business in the UK should have a digital tax account
- One major difficulty: the number of sole traders and small businesses who do not use digital accounting systems
- To discover the impacts of digitisation HMRC funded experimental research at the Tax Administration Research Centre

Introduction

- Technology can be an aid that eases tax compliance and tax collection costs
- But behavioural economics has shown that small changes, or “nudges”, can have significant impacts
- The behavioural implications of any digitization have to be understood
- Taxation is complex and individuals filing online may make unintentional errors
- Research is needed to avoid unintended nudges and to determine the potential for error

Introduction

- This talk reports on two experiments that investigate different aspects of Making Tax Digital
- The first considers pre-population of online tax returns
  - What is the response to incorrect or incomplete pre-population?
- The second considers the impact of providing online assistance relative to paper or phone assistance
  - Does the online environment change behaviour?
- Before this we give a brief introduction to experimental methodology
- The talk concludes with some speculation about how technology will impact on tax policy

Experiments

- Experimental methods have become a standard tool in economic and psychological research
- Experiments permit investigation of complex behavioural phenomena
- Laboratory experiments can be used when field experiments are too costly or prohibited by legal restrictions
- Control and replication are central to experiments
  - Simplicity of setup is the greatest strength
  - But it is also a potential weakness
- External validity requires results that hold for the general population

Fundamental Principles

- Experimental economists are generally agreed on a set of fundamental principles
- Salient *financial incentives* to encourage considered participation
- An *absence of deception* in the design and execution of the experiment
- *Random assignment* of subjects to treatment conditions

Logistics of Experiments

- Duration: typically 30 minutes to 2 hours
- Sample size: 60-300 participants depending on the nature of the task and the number of treatments
- Cost: subject payments = opportunity cost of the time spent in the session (approx. $10/hour for students, more for non-students)
- Exchange rate of experimental currency unit (ECU) to $ is set according to duration and number of repetitions/rounds

External Validity

- There are methods of improving external validity
- Take the field into the laboratory
  - More relevant subject pool, complete control, context light
- Take the lab into the field (framed field experiment)
  - More relevant subject pool, some control but context heavy
- Abandon the lab entirely (natural field experiment)
  - Very realistic settings but context heavy and little control

Pre-Population

- An important part of Making Tax Digital is HMRC use of third party data
- UK taxpayers currently enter data obtained from third-parties
- E.g. employment income, income from property, expenses such as private pension contributions
- For the digital tax accounts HMRC will use information it already possesses to pre-populate the taxpayer’s return

Pre-Population

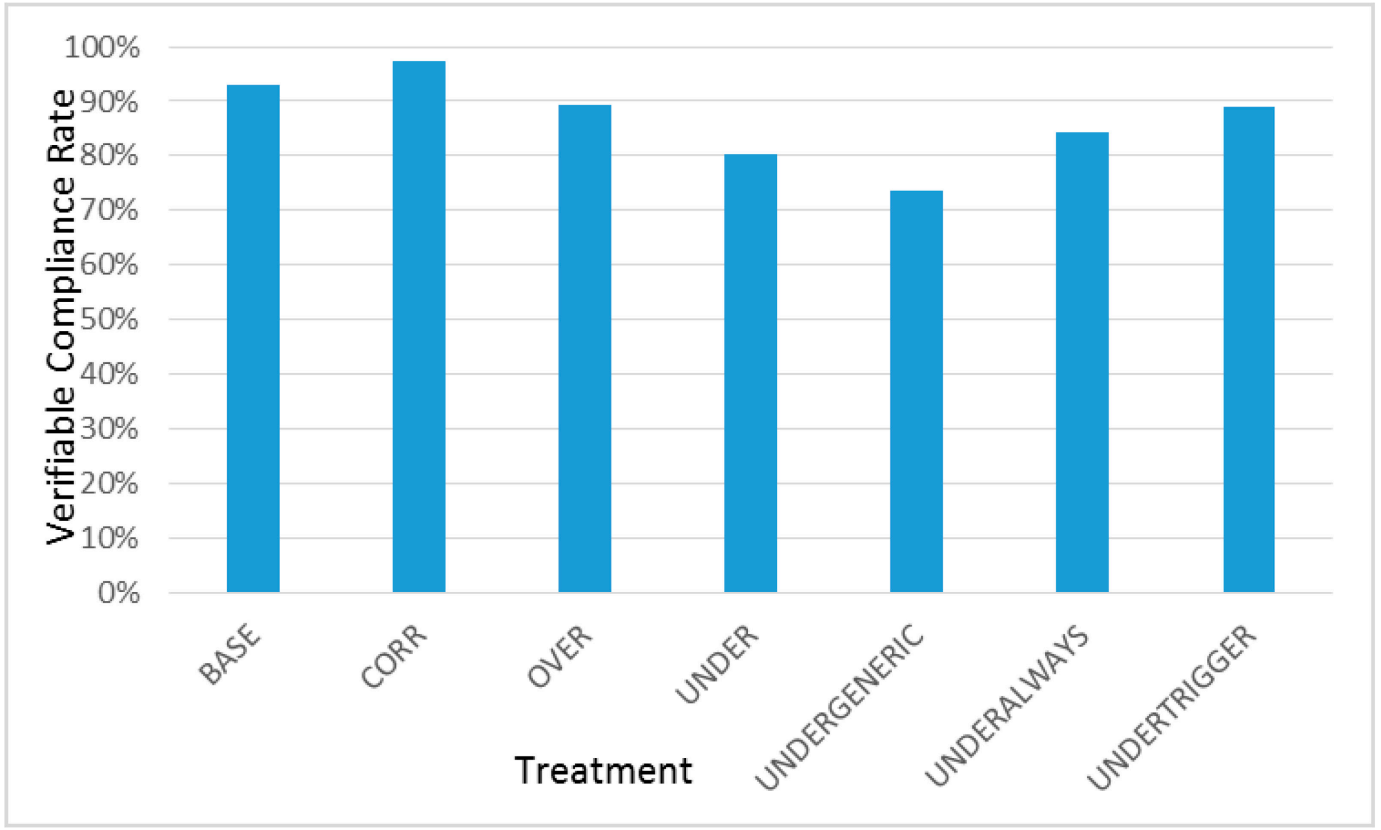
- A concern with pre-population is the possibility of incorrect information being inserted into the return by the revenue service
- There are two potential negative reactions to this
- Taxpayers may accept the pre-populated values so incorrect information becomes established
- This is a form of status quo bias or behavioural inertia
- Pre-populating the tax return reveals what the tax agency knows and suggests what it does not know
- An indication of limited information can encourage deliberate evasion

Pre-Population

- The effects of pre-population were tested using a one-shot decision artefactual field experiment using UK taxpayers
- Subjects played the role of a fictitious taxpayer with several income streams and tax-deductible expenses
- Various forms of pre-population were assessed against a baseline condition without pre-population
- Pre-population was also combined with onscreen prompts intended to create barriers to non-compliance
- These included the need to click on a check box in order to unlock entries and warning messages about audit probability

Pre-Population

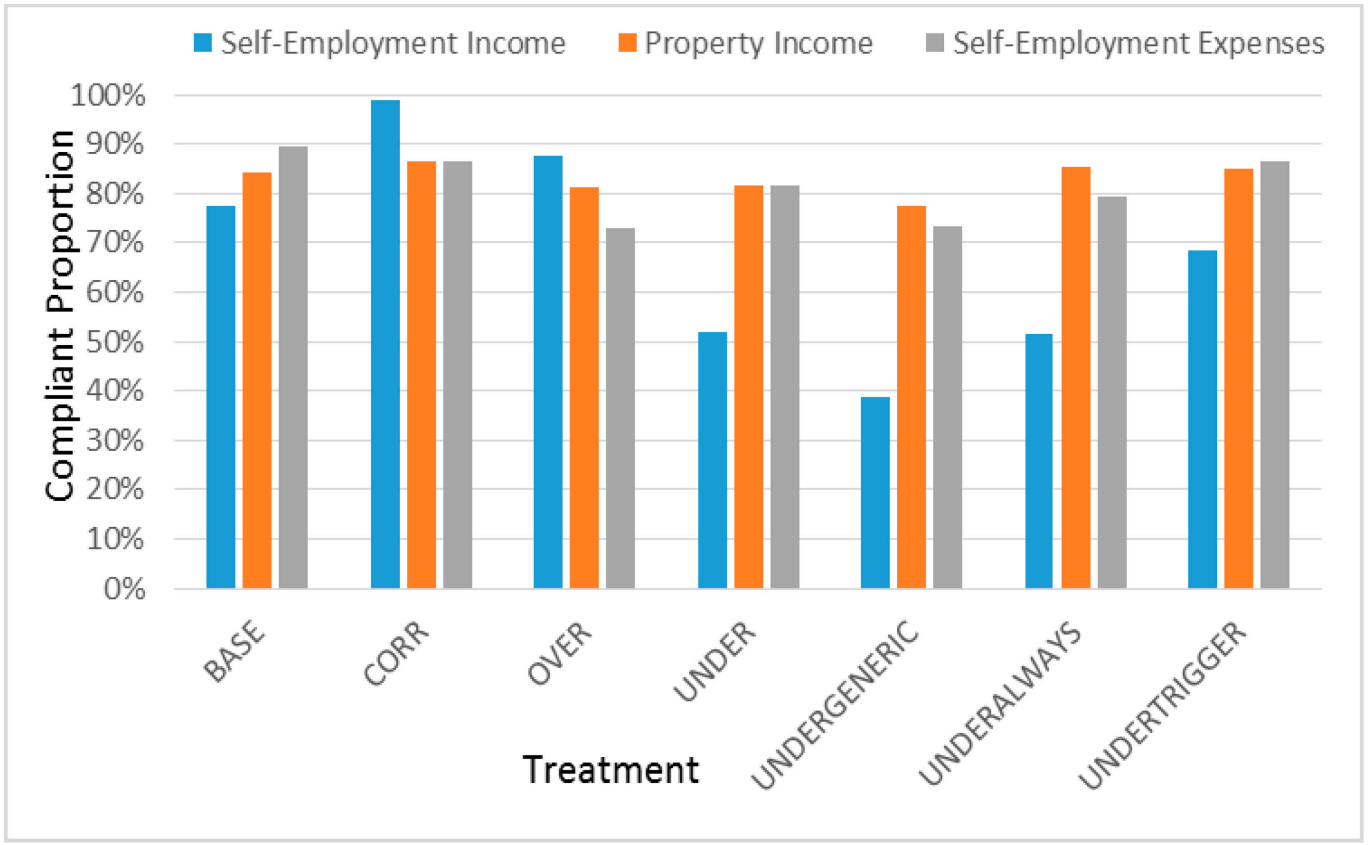
- Pre-population with over estimates has little effect
- Some accepted the values
- Under estimating has a significant impact
- Individuals were happy to accept incorrect low values



Average verifiable compliance ratio by treatment

Pre-Population

- When Self-Employment Income is correctly pre-populated compliance is high
- When Over, compliance with expenses falls
- This seems a form of compensation behaviour
- Under shows major fall in compliance



Propensity for verifiable compliance by treatment

Pre-Population

- The correct pre-population of values in tax forms has no effect on compliance
- Incorrect pre-population of the tax form reduces compliance
- The introduction of barriers to editing pre-populated fields can worsen noncompliance if the pre-populated values are incorrect
- Behavioural prompts concerning descriptive norms of compliance mitigate the negative impact of incorrect pre-population of tax returns only if they are responsive to behaviour in the filing process
- A proportion of subjects overpaid taxes when the tax form was populated with a value above the true income.

Customer Service*

- Tax guidance is the starting point of the taxpayer journey
- The content and the form of delivery of tax guidance:
  - Determines the demand for further contact and services
  - Influences the overall tax compliance level and tax morale
- A recent UK NAO report reviewed the impact of HMRC customer service on personal taxpayers
  - 17.5 million tax payers used HMRC's information and advice services in 2015
  - The reduced quality of HMRC customer service resulted in considerable cost to taxpayers as well as to HMRC

*The experiment was conducted under contract to the UK NAO. The results have been cleared for presentation but not yet for publication. Please do not cite or quote.

Assistance and Compliance

- The “willing and able” and the “willing but need help” taxpayers are amongst those most affected by poor service
- Unintentional non-compliance will occur if cost of seeking help from HMRC exceeds the benefit of a fully compliant tax return
- Improving the quality of the tax guidance should encourage voluntary compliance
- And reduce unintentional non-compliance
- The purpose of the experiment was to test these claims

Experimental Setup

- All subjects received the same profile of a self-employed taxpayer responsible for filing
- Most relevant case, and very likely that subjects will require guidance
- Vary exogenously:
  - Contents – taken from either the paper guidance or the online guidance provided by HMRC
  - Form of delivery – as paper guidance or as a pop-up box accessible online
- All the guidance contents are directly from HMRC self-assessment forms and help sheets
- The contents of online guidance and paper guidance are different

Treatments

	Contents		
		Paper Guidance	*Online Guidance*
Delivery Form	*Printed on Paper*	PAPER_PAPER	PAPER_ONLINE
	Pop-up Box	X	ONLINE_ONLINE

Tax Profile

Your profile for the experiment

In this experiment you will take the role of Tom, a self-employed fitness instructor. During this tax year, you have earned **ECU 25,200** of income from running fitness classes. You are in the process of completing your tax return form, and need to decide what expenses to claim as tax allowances.

Your files show the following for this tax year.

1. You bought a second-hand car to help you get to and from your classes.

   Here is the receipt for the purchase of your car and a summary of mileage, fuel, servicing expenses, and insurance costs.

Second hand car sales receipt	
	06-Apr-2014
XXX	xxx
XXX	xxx
XXX	xxx
XXX	xxx
CO^2 emission	165g/km
Total	**ECU 1,500**

Year 2014-15

Personal journeys	2,000 miles
Travel between home and classes	8,000 miles
Total	**10,000 miles**

***

Total fuel, car servicing, and insurance cost **ECU 2,500**

2. You run your fitness classes every evening in a local church hall, which you paid **ECU 5,760** to hire.
3. You paid **ECU 175** for printing flyers to advertise your fitness classes.
4. You paid **ECU 1,200** for a gym membership to stay fit.
5. Your household bills amounted to **ECU 7,500** for annual rent, gas, electricity, water rates and council tax. You spend about 1 day a month (12 days a year) working from your home (a studio flat) designing posters and leaflets about the classes, calling new members and dealing with the finances and administration.
6. Your mobile phone bills were **ECU 420**, only 15% of total usage was for business purposes.

Experimental Procedure

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Instructions

Experiment Overview

Thank you for taking the time to join us today. You will be participating in a **tax reporting simulation** exercise. Please read these instructions carefully, as part of your payment will depend on the decisions you make.

You will take the role of a **self-employed** individual. You will be given information on the **income** you have earned during the tax year, and records of all **expenses** relating to your self-employment activities. The tax year being used in the experiment runs from 6 April 2014 to 5 April 2015.

Your cash balance at the start of the experiment can be calculated as the difference between your income and your expenses:

- **Your Initial Cash Balance = Your Income - Your Expenses**

You will then face a tax reporting decision. On the tax return form, you will decide which items of expenditure, and the amount to which, to claim as **tax allowances**. Tax allowances are expenses that can be deduced from your income to calculate you **taxable profit**:

- **Your Taxable Profit = Your Income - Your Tax Allowances**

You will not be told what the correct amount of tax allowances is. Instead, you will be given a set of **guidance notes** to help you work out which items of your expenditure can be claimed as tax allowances.

Your level of tax payable will be calculated for you by the tax system, based on the amounts that you have declared on the tax return form:

- **Your Tax Payable = 20% * Your Taxable Profit**

Experimental Procedure

Audit and Penalty Regime

Audit is the process whereby the computer checks the values claimed for tax allowances after a tax return has been submitted. Any values submitted in the tax return that are found to be not allowable will be discovered by the audit process. The people chosen for audit will be selected randomly. You have a **50%** chance of your tax return being selected for audit. Audits are determined completely at random and do not depend on your decisions or decisions of others.

If you are **not audited**, your earnings are **your initial cash balance** minus the **tax payable**:

- **Your Final Cash Balance = Your Initial Cash Balance - Tax Payable**

If you are **audited**, your earnings are adjusted as follows:

- If the amount of deductions you claimed was **more** than what you were allowed, then you must pay taxes on the difference (**unpaid tax**). In addition, you must pay an additional **penalty** equal to 100% of the amount of **unpaid tax**.
- If you claimed **less** in deductions than what you were allowed, you will **not** be refunded. In other words, the audit will not help you.

If any unpaid tax is discovered, your final cash balance will be calculated as:

- **Your Final Cash Balance = Your Initial Cash Balance - Tax Payable - Unpaid Tax Due - Penalty on Unpaid Tax**

If your total liability after taxes and fines is greater than your initial cash balance then your final cash balance will be zero.

Post-Experiment Questionnaire

Upon completion of the experiment you will be presented with a short questionnaire. Please answer all questions to complete the experiment. The final screen after the questionnaire will state "You have now completed the experiment".

Calculation of Payment

All items in the profile you will be given will be denominated in Experimental Currency Units (ECU). All values should be entered in whole units, there is no need for decimals. For each 1,000 ECU you have as **Your Final Cash Balance** in the experiment, you will be paid £3.00. In addition, you will receive a fixed £5.00 for participating in today's session.

In the following screen we will go through an example.

Next

Please do not use the back button on your browser during the experiment

Logout

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Instructions - 2

Example

Let's assume you own a grocery store and your income for the last tax year was ECU 25,000. You have the following expenses:

1. Cost of goods bought for resale: ECU 5,000
2. Rent and utility bills for the shop: ECU 8,000
3. Legal cost for acquiring new premises: ECU 5,000

According to the tax rules, you are only allowed to claim tax allowances for items 1) and 2), but not item 3). The table below shows a few hypothetical examples of how you may choose to complete your tax return and how your final cash balance will be calculated.

The bottom line in the table shows the final payment you're left with, depending on whether you're randomly selected for an audit or not.

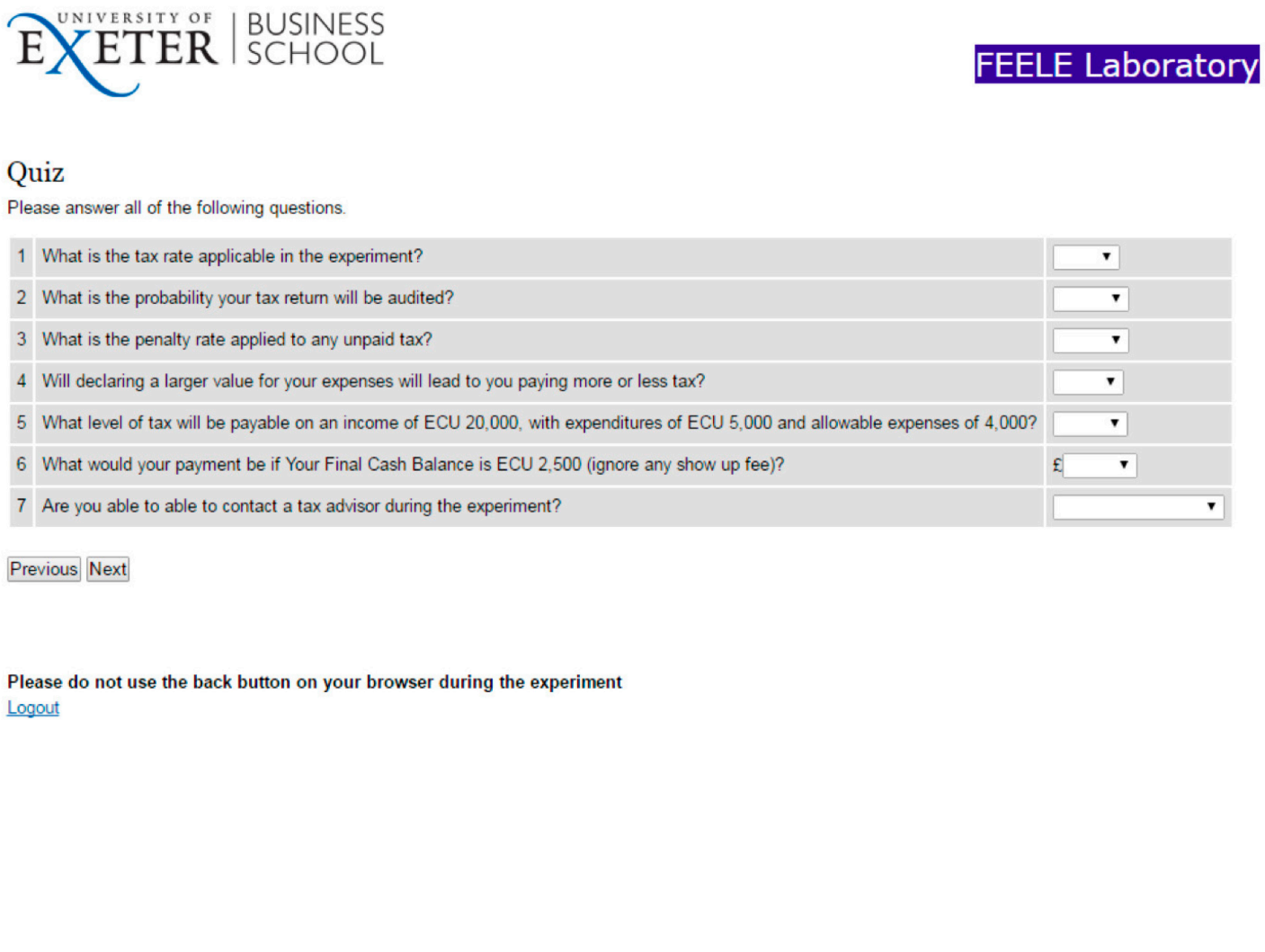
Income	25,000			
Allowable Expenses	13,000			
	Example 1 Under-Claim Tax Allowance	**Example 2 Declare Accurately**	**Example 3 Over-Claim Tax Allowance**	
Declared Expenses	5,000	13,000	18,000	
Taxable Profit	20,000	12,000	7,000	
Tax Paid	4,000	2,400	1,400	
Tax Return Audited?	Yes or No	Yes or No	Yes	No
Unpaid Tax Due	0	0	1,000	0
Penalty on Unpaid Tax	0	0	1,000	0
Payment (ECU)	3,000	4,600	3,600	5,600
Payment (£)	9.00	13.80	10.80	16.80

Previous Next

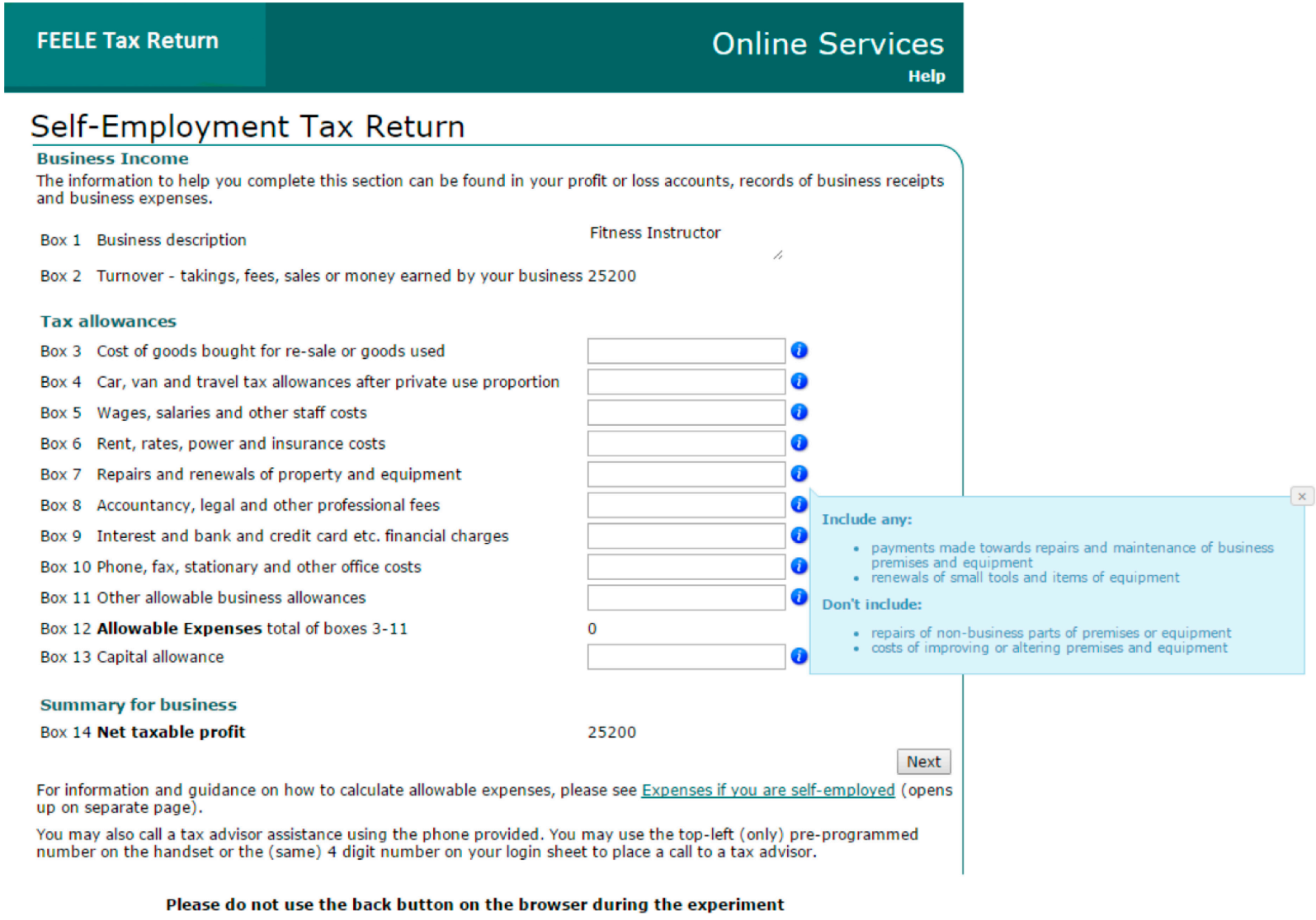
Please do not use the back button on your browser during the experiment

Logout

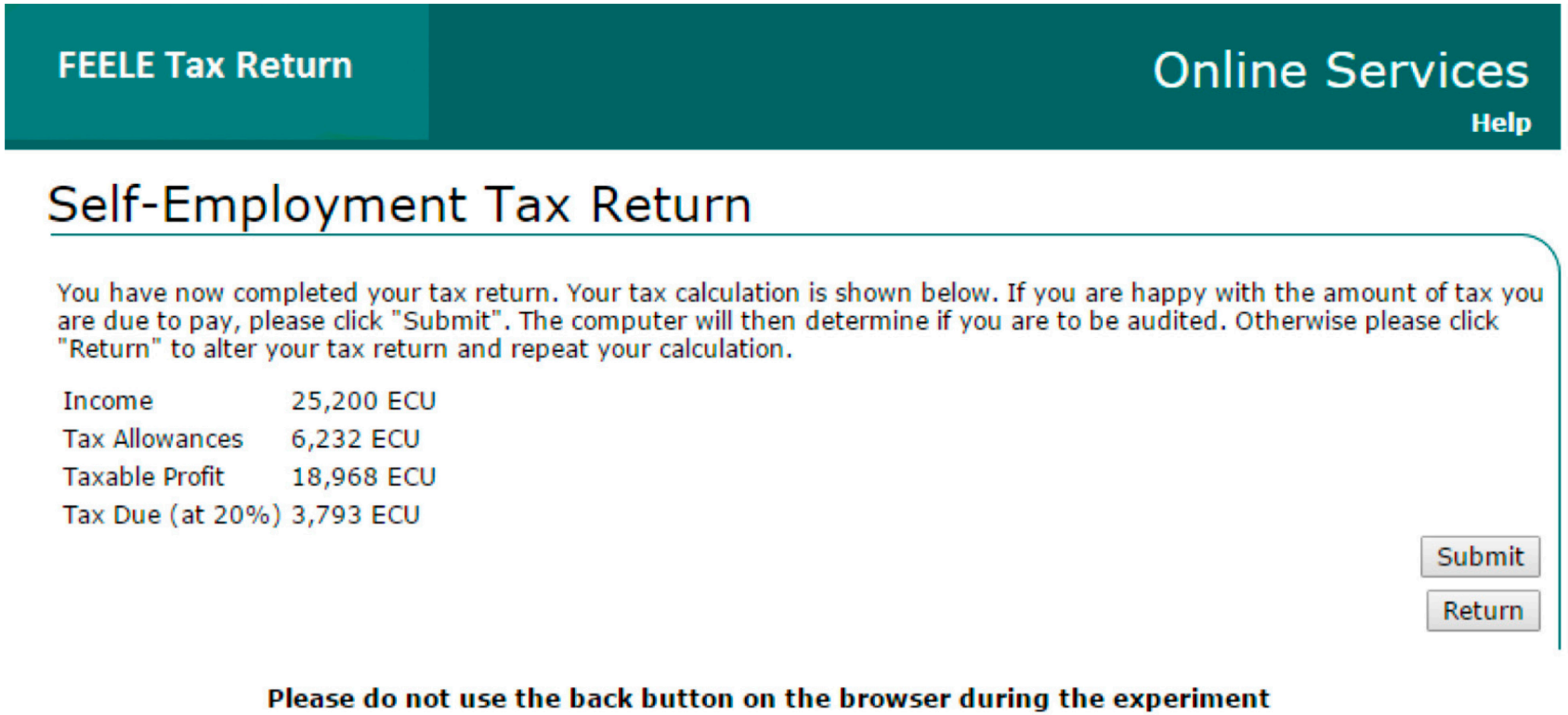
Experimental Procedure



Pop-up Box


FEELE Tax Return
Online Services
Help
Self-Employment Tax Return
Business Income
The information to help you complete this section can be found in your profit or loss accounts, records of business receipts and business expenses.
Box 1 Business description
Fitness Instructor
Box 2 Turnover - takings, fees, sales or money earned by your business 25200
Tax allowances
Box 3 Cost of goods bought for re-sale or goods used
Box 4 Car, van and travel tax allowances after private use proportion
Box 5 Wages, salaries and other staff costs
Box 6 Rent, rates, power and insurance costs
Box 7 Repairs and renewals of property and equipment
Box 8 Accountancy, legal and other professional fees
Box 9 Interest and bank and credit card etc. financial charges
Box 10 Phone, fax, stationary and other office costs
Box 11 Other allowable business allowances
Box 12 Allowable Expenses total of boxes 3-11
0
Box 13 Capital allowance
Include any:
payments made towards repairs and maintenance of business premises and equipment
renewals of small tools and items of equipment
Don't include:
repairs of non-business parts of premises or equipment
costs of improving or altering premises and equipment
Summary for business
Box 14 Net taxable profit
25200
Next
For information and guidance on how to calculate allowable expenses, please see Expenses if you are self-employed (opens up on separate page).
You may also call a tax advisor assistance using the phone provided. You may use the top-left (only) pre-programmed number on the handset or the (same) 4 digit number on your login sheet to place a call to a tax advisor.
Please do not use the back button on the browser during the experiment

Return


FEELE Tax Return
Online Services
Help
Self-Employment Tax Return
You have now completed your tax return. Your tax calculation is shown below. If you are happy with the amount of tax you are due to pay, please click "Submit". The computer will then determine if you are to be audited. Otherwise please click "Return" to alter your tax return and repeat your calculation.
Income 25,200 ECU
Tax Allowances 6,232 ECU
Taxable Profit 18,968 ECU
Tax Due (at 20%) 3,793 ECU
Submit
Return
Please do not use the back button on the browser during the experiment

Data Overview

Table 1. Overall error rate by treatment

Treatment	Obs	Overall error rate	% of population - *Overpay Taxes*
ONLINE_ONLINE	79	97%	10%
PAPER_PAPER	78	100%	12%
PAPER_ONLINE	79	97%	6%

- Almost all subjects make mistakes when filing
- Some overpay tax but the majority underpay
- High rate of apparent tax non-compliance

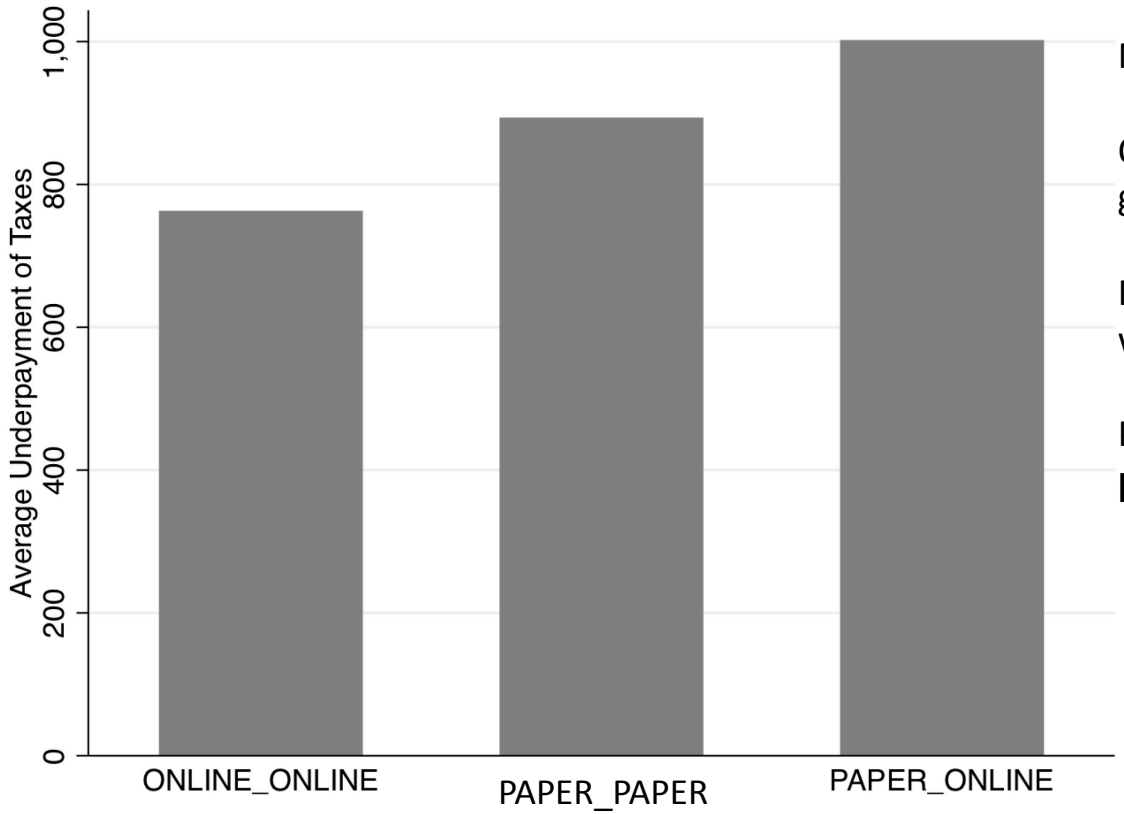
Data Overview

Table 2. Underpayment By Treatment

Treatment	Obs.	Average amount of underpayment	As a percentage of taxes to pay
ONLINE_ONLINE	69	937.9	24.7%
PAPER_PAPER	69	1113.9	29.4%
PAPER_ONLINE	72	1138.6	30%

- Underpayment (tax non-compliance) is prevalent and is a significant proportion of correct tax payment
- This is true for all treatments

Main Findings



Note:

ONLINE_ONLINE: **pop up box** with **online** guidance.

PAPER_PAPER: **paper printed** guidance with **paper** guidance

PAPER_ONLINE: **pop up box** with **paper** guidance.

Figure 1. Average Underpayment of Taxes by Treatment

Main Findings

- Holding content constant the difference between PAPER_PAPER and PAPER_ONLINE is insignificant
- The form of delivery does not matter for tax compliance
- Holding delivery form constant the difference between PAPER_ONLINE and ONLINE_ONLINE is large in magnitude (6% of total tax to pay) and significant at 10%
- The contents matter and to a significant degree

Table 3. OLS on Tax Filing Error

	(1)	(2)
ONLINE_ONLINE	239.177*	283.604**
	(140.63)	(140.96)
PAPER_PAPER	108.613	96.203
	(155.07)	(159.47)
male		-48.739
		(121.96)
age		42.485
		(30.35)
Constant	-1002.215***	-1819.429***
	(103.10)	(624.25)
Observations	236	229

Note: Robust standard errors are reported in parentheses. * indicates significance level at 10%, ** at 5%, *** at 1%

Intentions

- The non-compliance is unlikely to be intentional
- Subjects answered the question “Which of the following best describes your approach to this exercise?”
  - 58% chose “I want to get my return right.”
  - 30% chose “I don’t mind small errors”
  - 12% chose “I did not mind having errors on my form if it benefitted me financially”

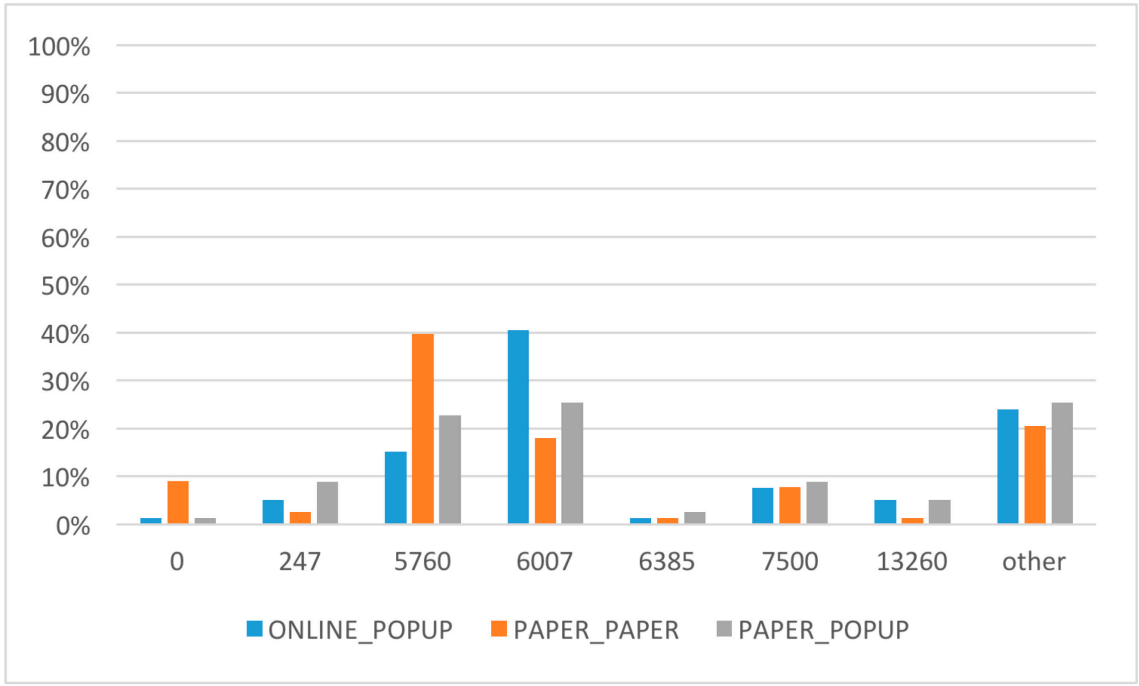
Intentions

- The non-compliance is unlikely to be caused by lack of effort
- For example, rent is the largest tax credit item and most responses match an incorrect calculation

Rent

Correct value is 6,007

247	Household only
5,760	Hall only
6,007	
6,385	Incorrect household 7500/12 + 5,760
7,500	Household
13,260	Household plus hall rental



Discussion

- Non-compliance due to experience in the lab?
  - 71% of our subjects participated in less than 3 previous experiments
  - They had never participated a tax related experiment before
- We further extended the experiment by introducing live tax advisor support
  - Live Skype call support and actual phone support
  - With student and administrative staff subjects
- Only 10% of the subjects called for help and the results were largely the same

Observations

- The form of delivery of the guidance does not matter
- What is in the guidance matters a lot more so content needs careful design
- Provided content is correct a move to digital guidance is advisable since it saves cost as well as the environment
- Mistakes are frequent and significant so there is much scope for guidance to be improved

Reflections

- Just going digital does not necessarily improve administration and compliance
- Switching from paper to digital is not in itself an advantage
- Systems must be designed and tested to ensure improvement
- Designs must take account of behavioural traits such as reluctance to change pre-populated values
- Mistakes seem endemic so smart systems have considerable potential for reducing unintentional non-compliance

Reflections

- Personal tax accounts will reduce compliance costs
- Moving to real-time can implement withholding for more taxpayers
- Reducing non-compliance can implement the intended tax system
- Automation of calculation permits more complexity in tax rates
- Linkage of data sets can be very powerful:
  - Identification of ghosts
  - Conditioning of tax on characteristics
  - Integration of taxes and benefits
- But no assistance with a consumption tax

Speculation

- The theory of taxation is based on unobservable characteristics that determine an individuals economic potential (e.g. “skill”)
- The ideal tax system would use these characteristics as the tax base
- If the characteristics are unchangeable the system is non-distortionary
- Scientific advance might identify these characteristics (e.g. genetics)
- But it might also make them changeable
- Taxation then becomes distortionary at a different margin