

Supplement

Appendix A

Sample selection in Study 1

When selecting interviewees, we aimed to create a cross-section of the employers and employees in the construction industry in terms of gender, age, tenure, size of company, status, and mother tongue. According to the Estonian Association of Construction Entrepreneurs, most (94%) employers in the construction industry are micro enterprises (1-4 employees, with an average of 2.3 employees). Therefore, most of the interviewees were from small companies. At the same time, we thought it important to include some main contractors to capture the influence of power dynamics in the industry.

Although focusing on nudging employers' behaviour we also aimed to have a proportion of interviews with employees (somewhere between a fourth and a third), to introduce their perspective in salary negotiations. To represent views across Estonia, we chose to interview in Tallinn (the capital) as well as Tartu, Narva and Pärnu (other larger towns) where bigger construction projects were underway at the time and thus several sub-contractors are employed. In addition, we also interviewed people from the rural areas. Since a third of Estonia's population is Russian speaking, we sought a similar balance among our interviewees. Finally, the construction industry is male dominated, so most (but not all) of our participants were male.

The potential participants were contacted by the interviewers, who having had conducted other research projects in the industry, had some contacts. Then a snowball method was used to find interviewees to match the criteria outlined above.

Appendix B¹

Study 1 interview schedule

In semi-structured interviews, the interview schedule is not intended to be followed closely. Rather, it serves as a supporting material, a source of inspiration for the interviewer to guide the conversation. The interviewer adjusts their questions and prompts based on the participant's willingness and readiness to talk. If needed, vignettes are used (see below). The order of the questions and topics depends on the themes and ideas emerging in the conversation. In addition, the choice of which words or wording to use (whether more lay or more official) depends on the participant's own choice of words including slang they may introduce.

Background and warm-up

- ◆ What is your experience in the construction industry?
- ◆ Have you been in the role of an employer/employee? How long, in which situation? How many employees are there in your organisation?
- ◆ How is the business? Is it easy to find work/employees?
- ◆ Have you also worked abroad? (Where? When? Why? When did you return?)
- ◆ Are you a member of the Estonian Association of Construction Entrepreneurs?
- ◆ What does the Estonian Association of Construction Entrepreneurs do?

¹ The transcriptions were analysed to identify major narrative themes (Braun & Clarke, 2006) characterising the target group's decision-making (see Appendix B for details).

Construction industry and its image

- ◆ How would you describe work in the construction industry? What do you like about working in the construction industry? What don't you like about it? Does the construction industry differ from other industries? Do you know what people say about the construction industry?
- ◆ How is the competition in the construction industry and what is good and bad about it? Has the situation improved or worsened in time?
- ◆ What are employees' salary expectations? Are salaries fair?
- ◆ What are the biggest problems in the construction industry? *If the conversation does not move to salaries and taxes after this question, the interviewer could tell a story in the lines of "I read in the papers that almost always, some of the salary is paid in cash" or "Kaupo Kolsar, the Head of Management Board at the Estonian Association of Construction Entrepreneurs, resigned from his position after being suspected in fraud (but he remained in the Board of Management)"*
- ◆ Why is the topic of taxes and salaries such an issue in the construction industry? Where does it come from and what causes it? *(Rules of the game!)*

Taxes

- ◆ What do you think about our tax system? Is it fair/just? Why? Now that the system will be changed again: how does it seem? *If that does not make the conversation flow, try: "They say that the new and complicated tax system increases the number of people who receive their salaries in cash. Why do they say so? Could it be the same in the construction industry? For which side – either the one who pays or the one who receives the salary – would it be more convenient to overlook the tax system? Who would win or lose out in the new system?"*
- ◆ How have the recent measures affected the employment market? *(I.e., the registry for employees and the fact that any invoices above 1000€ need to be declared, including the new conditions for public works contracts. Who will they benefit/hinder?*
- ◆ Are undeclared salaries common among Estonian construction businesses? Why? How many employers in your industry do you think pay taxes to the amount prescribed by law? To what extent people know what is happening in other businesses? I wonder if there are really "clean" businesses? Are there any or is that just PR (public relations)? To what extent do sub-contractors demand official contracts and salaries? Is there a difference between big and small businesses?
- ◆ Who benefits from "scheming"? Who benefits most from cash-in-hand salaries?
- ◆ Describe the world in which you'd pay all tax in full?

Trust, negotiations, experiences

- ◆ Do you generally trust your employer/employees? Have you ever had problems receiving your earned wage/getting the work done?
- ◆ How do the salary negotiations look like usually? Do you speak in terms of gross or net salary or something else (is there a specific slang in the industry)? What is the importance of contracts? Do you always sign a contract? *The idea is to try to understand whether written agreements are considered important and whether the justice system is trusted.* What is usually written in the contracts? Who decides the protocol per which salary is paid?
- ◆ Have you had a situation in which you received a part of your salary in cash? Who made the offer for such a transaction (you or the employer)? Did you seek for another solution? Why not? Did you consider leaving the job/not accepting the job? Why? What would have to change so that employers would declare a bigger share of the salary? What would have to change for you, so you could demand a bigger share of declared salary?
- ◆ *If the interviewee is not willing to talk about their experience:* Do you know anyone who has not taken a job because some of the salary would be paid cash-in-hand? *Will not ask for names nor other identifiable specifics.*

- ◆ What happens with the construction workers who decline to receive cash-in-hand salary and demands their salary to be declared in full?
- ◆ What happens to an employer who would start paying their salaries fully declared? Or the other way around: if the employee would start demanding fully declared salary? Would that be unusual?
- ◆ Who benefits from cash-in-hand salaries? Who benefits from declaring it and paying the full tax?
- ◆ To what extent has the situation with undeclared salaries changed in time? Are there more official contracts, the salary received in full amount, health insurance coverage guaranteed?
- ◆ Do you know anyone caught with paying cash-in-hand salaries? What happened? What is the likely punishment in such case? What would be the fair solution? *To understand if there are stories being told about this and later to figure out if they are true.* Have you heard of situations where the employee threatens to tell on the employer (for example, if the salary does not get paid when it is due)?
- ◆ Does the chance of getting caught seem worrying to you? Is it likely at all? Why?
- ◆ Do you have any experiences with working abroad? Why did you go there? How was it there? In which way does an Estonian employer differ from the ones in Finland or Norway? Is paying tax somehow different there? In which way? Have you paid tax in another country? Do you know what did you get in return? *The idea is to figure out to which extent do employees' experience in working in Finland (or stories about that) influence the working culture (including the way salaries are paid) here.*

Questions regarding ideology

- ◆ What do you think, do cash-in-hand salaries contribute to some problems in the society? To which problems?
- ◆ Why should one pay payroll taxes in full? Why not? *As a response, the participants are likely to speak about optimising and maintaining a competitive edge. The question is to encourage people to think and reason.*
- ◆ Do you think paying taxes somehow profits/benefits you or those you care about? What do you or they gain?
- ◆ What do you think, what is or should be the task for the state of Estonia? How should the state be or how should it behave so that employers could declare their salaries fully? Would you do anything different if the state would be different? What could the state do, to improve life in the construction industry? *(Including representative organisations for employers and employees, employers themselves, etc)*
- ◆ How many employers use public goods/services/support systems? Which of the public services are important to you? *Ask this question rather broadly initially to understand what is considered as state support. If they cannot suggest anything specific, make specific suggestions, for example children's school, health insurance, job centres and see how they react.*
- ◆ To what extent do people think about occupational hazards and pension? Do you know any stories where someone has had something bad happen at work? How did they solve the situation? Did the worker have health insurance? Was the damage somehow compensated?
- ◆ Do you feel responsibility towards the state of Estonia that you should support the elderly and children?

Vignettes

- ◆ Scheming entrepreneurs
There are construction companies who win procurements because their offer is very low. Later however, they get into financial trouble because they cannot manage to complete work in that low budget. They then change the name of the company and participate in other

procurements. The timeline for work is often overrun because they lack the money to pay for subcontractors. Have you been in this situation where moneys get “stuck”, so salaries are not paid or cannot be paid?

- ◆ Conflicts between the employer and the employees
It is widely discussed that Estonian builders have gone to work in Finland or elsewhere abroad. I once read a piece where an Estonian construction entrepreneur complained that Estonian builders expect an average pay as it is in Norway [rather than here in Estonia] but if an Estonian builder is taken to Norway for a project, they expect the employer to cover the bed and board on top of the high Norwegian salary. How frequent are conflicts between the employer and the employee and what are the main sources of conflicts? Are there also disagreements regarding the salary?
- ◆ Shoulder to shoulder principle
I live in Latvia (*or* a friend of mine lives in Latvia and said, that...). we recently needed to do some repairs. We found someone who agreed to do it. When it came to buying the materials, the builder recommended me to go to a shop where an acquaintance of theirs was working. They said I should buy everything from that acquaintance since that would get me up to a 25% discount. It turned out that this acquaintance could add private purchases to a business’s order and I could thus circumvent the VAT. I haven’t heard of anything similar in Estonia: that a builder and a trader have an agreement whereby certain trustworthy clients’ purchases are invoiced to an unknown company.
- ◆ Special agreements
I’ve heard of a case where a builder wanted to take out a loan from a bank and would not be able to do so with their usual minimum wage. To help, the employer raised their salary for a certain period until the application for the loan was approved. Have such things happened elsewhere?

Appendix C

Study 1 analysis

The transcriptions were thematically analysed (Braun & Clarke, 2006) using a mix of deductive and inductive approaches. The aim of the analysis was to identify major narrative themes characterising the target groups decision-making. While we let ourselves to be guided by the themes emerging from the data, we also sought to integrate these with existing literature on tax avoidance and field interventions. The initial node-structure was created based on the behavioural targets used in existing literature. During coding, nodes were adding and collapsed as necessary. The final coding structure with themes from the literature and the interviews combined, is displayed in Table A1. Once the coding was done, the results were discussed among co-authors, including the interviewers. Based on the discussion, we decided to further merge some nodes because either we found them overlapping or they held very little information. This rearrangement lead us to the final feature set, also show in it Table A1.

Table A1. The final coding structure mapped on the final feature set

Final coding structure	Final feature set
1. Deterrence	
1.1. Gain vs loss model	Expected outcomes

1.1.1. It's more profitable to avoid paying taxes	Expected outcomes
1.1.2. It's more profitable to pay taxes	Expected outcomes
1.2. Monitoring others' behaviour	Identity
1.2.1. The main contractor ensuring taxes are paid	Identity
1.2.2. Whistleblowing	Identity
2. Non-deterrence	
2.1. Social norm	Identity
2.1.1. Taxes are generally not paid	Identity
2.1.2. Taxes are generally paid	Identity
2.2. Attitude towards the state	Construal of tax authority
2.2.1. Distrust towards the state	Construal of tax authority
2.2.2. The state does not spend money wisely/I don't want to give away my money	Construal of tax authority
2.3. Tax morale. Sense of justice	Construal of tax authority
2.3.1. Paying tax is the responsibility of the employer not the employee	Construal of tax authority
2.3.2. I rather don't pay taxes	Construal of tax authority
2.3.3. One should pay taxes	Construal of tax authority
2.4. Accessibility of public goods	Construal of tax authority
2.4.1. One should generally pay tax to support the state	Construal of tax authority
2.4.2. Public goods are not accessible to me	Construal of tax authority
2.5. Habits	Tax procedures
2.6. Bureaucracy and red tape	Tax procedures

Appendix D

The tailored combined intervention

E-mail text	Primary intervention target
Dear, [Full Name]! Our aim is to assure that you and other entrepreneurs in the Estonian construction sector could compete on a fair market. That is why we will now be paying more attention to undeclared payroll taxes.	Weaken adversarial construal of tax authority
We are deploying new initiatives to combat payroll tax evasion. In addition, from 10th of July we will start thoroughly auditing a random selection of companies.	Strengthen perceived risk
The audits will concern entrepreneurs whose employees earn less than 70% of the industry average. Our selection may include [recipients' company name]. In that case we will analyse your tax data and together with you, we will figure out whether all this year's wages have been declared and payroll taxes payed.	Strengthen perceived risk

<p>Implicit outcomes: If not, then we will discuss together with you whether these problems are temporary or more permanent and how can we help you so that in the future, [company name]'s pays all tax due.</p> <p>Explicit outcomes: If not, then you have to: (1) pay any tax unpaid; (2) pay interest on any tax unpaid; (3) pay a fine for keeping tax you owe to yourself; (4) take into account that you may have restrictions to participate in state-commissioned projects.</p>	<p>Strengthen perceived risk</p>
<p>We are glad to see that evasion of payroll taxes has become steadily rarer in Estonia over the recent year – 92% of all workers in Estonia earn wages for which payroll taxes have been paid in full.</p>	<p>Weaken descriptive norm</p>
<p>Every year, Estonia loses out on 100 million euros in unpaid payroll taxes. This is the equivalent of the annual budgets of ambulance and fire services combined.</p>	<p>Strengthen collaborative construal of tax authority</p>
<p>We kindly ask that you review [company name] upcoming payroll declarations to be sure that taxes are paid in full from June onwards.</p>	<p>Given that the e-mails were sent on 29th May, the July 10th date implied that improving behaviour in the next monthly declaration might lessen the risk of auditing and punishment.</p>
<p>By doing this, you contribute to fair competition as well as maintaining crucial public services in Estonia.</p> <p>We thank you if you have paid your payroll taxes in full.</p>	<p>Strengthen collaborative construal of tax authority</p>
<p>Tax and Customs Board</p>	

Appendix E

Pilot study

To test the procedures of randomization and sending out the e-mails and to be able to fix any technical issues that may arise from sending the intervention e-mails to over 4000 employers, we ran a small pilot study of 150 employers randomly selected from the pool of employers included in the trial. We randomized the 150 employers using the same procedure described in Study 2 on page 11. We found that the procedure for randomization and sending out the letters worked smoothly and that the call center did not receive a disproportionate amount of calls that could be attributable to the e-mails. We thus chose to run the trial but excluded the employers in the pilot from the data analysis.

Appendix F

Baseline characteristics of employers (May 2018) included in the trial

	Implicit outcomes	Explicit outcomes	BAU
Number of employers	1354	1352	1348
Number of employees			
Mean	3.17	3.16	3.36
Standard deviation	3.71	4.05	4.34
Range	1 – 30.00	1 – 68.00	1 – 49.00
Number of FTE employees			
Mean	2.98	3.02	3.17
Standard deviation	3.56	4.38	4.07
Range	0.03 – 27.00	0.04 – 84.00	0.1 – 45.50

Appendix G

Average monthly payroll taxes per FTE, €

	BAU			Implicit outcomes group			Explicit outcomes group		
	N	M	SE	N	M	SE	N	M	SE
April	1307	233.30	3.37	1314	237.45	3.26	1298	238.86	3.54
May	1308	246.27	3.78	1320	251.32	3.63	1314	256.11	4.06
June	1271	255.54	3.93	1297	267.75	3.72	1279	277.61	4.47
July	1289	259.86	4.36	1312	274.34	4.44	1285	279.85	4.40
August	1265	260.55	4.41	1270	281.98	4.31	1252	286.64	4.54

Appendix H

Estimation results for fixed-effects panel model

	Coef.	SE	z	p	95% CI	
					Lower	Upper
Intercept	235.83	1.36	173.26	<0.0001	233.16	238.50
Implicit outcomes group	-	-	-	-	-	-
Explicit outcomes group	-	-	-	-	-	-
Pre-intervention April-May	15.70	1.91	8.20	<0.0001	11.95	19.45

Post-intervention	June	21.41	2.63	8.14	<0.0001	16.26	26.56
	July	26.17	2.63	9.96	<0.0001	21.02	31.31
	August	32.21	2.64	12.21	<0.0001	27.03	37.38
Implicit outcomes group interacted with the treatment		12.30	3.07	4.00	<0.0001	6.27	18.32
Explicit outcomes group interacted with the treatment		15.54	3.08	5.05	<0.0001	9.51	21.58
