Field Experiments in Economics

-- RCT / Randomized Control Trials / Randomize Experiments --

BPV_IEBE_2021

April 29, 2021

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Main References

--- Methodology ---

• List, J. A. (2007). Field experiments: a bridge between lab and naturally occurring data. *The BE Journal of Economic Analysis & Policy*, 6(2).

• List, J. A. (2011). Why economists should conduct field experiments and 14 tips for pulling one off. *Journal of Economic Perspectives*, 25(3), 3-16.

--- application: Labour Economics ---

• Falk, A., & Ichino, A. (2006). Clean evidence on peer effects. *Journal of Labor Economics*, 24(1), 39-57.

• Heinz, M., Jeworrek, S., Mertins, V., Schumacher, H., & Sutter, M. (2020). Measuring the Indirect Effects of Adverse Employer Behaviour on Worker Productivity: a field Experiment. *The Economic Journal*, 130(632), 2546-2568.

--- application: Public Policy ---

• Giulietti, C., Tonin, M., & Vlassopoulos, M. (2019). Racial discrimination in local public services: A field experiment in the United States. *Journal of the European Economic Association*, 17(1), 165-204.

• Bott, K. M., Cappelen, A. W., Sørensen, E. Ø., & Tungodden, B. (2020). You've got mail: A randomized field experiment on tax evasion. *Management Science*, 66(7), 2801-2819.

Experimental Research

→ **Medicine**

→ **Economics / Behavioral Science**

- Lab research

- Lab Experiments

- Clinical Trials

- Field Experiments

Social
Incentives
in the
Workplace

- Confirmatory Studies

- "Natural" Experiment

→ Causality

- Diff-in-Diff

- IV

- Matching

Lab "style" experiments

- **lab-lab** (e.g. dictator game) / **online-exp**
- **framed** (e.g. taxation experiments)
- **artefactual** (salient pool of subjects)
- **lab in the field** (conflict areas)

→ Incentive compatible settings

Subjects know they are involved in a study
(experimental demand effect)

→Standard informed consent form

Field experiments

- **large scale** (thousands of participants)
- **small scale** (hundreds of participants)

- **organisations** (e.g. uni) / **firms** / **communities**

Subjects are not aware they are involved in a study
("ecological" behaviour)

→IRB ethical approval & pre-registration
→ research partner from the "real world"

- **John LIST (U. Chicago)** - reading list -

Control ←→ External Validity

- **Methodological trade-off**

  Control: lab experiments **>** field experiments **>** "natural" experiments
  External validity: "natural" experiments **>(=)** field exp **>** lab exp

  →The specific <u>research question</u> remains the most crucial factor

- **Costs**
- **Temporal dimension**
- **Practical feasibility / Data availability**
- **Research partnerships**

"A/B" *between*- vs *within*- subject design

between-

    different subjects/groups are exposed to different treatments

within-

    <u>same subjects are exposed to different treatment (temporal dimension)</u>

→ increase in "efficiency": statistical power, reduced heterogeneity on unobservable, budget optimization, ordering concerns

case #1: Peer-Effects

- ***Do we exert more effort when our colleagues are highly productive?***

Lab:

Van Veldhuizen, R., Oosterbeek, H., & Sonnemans, J. (2018).
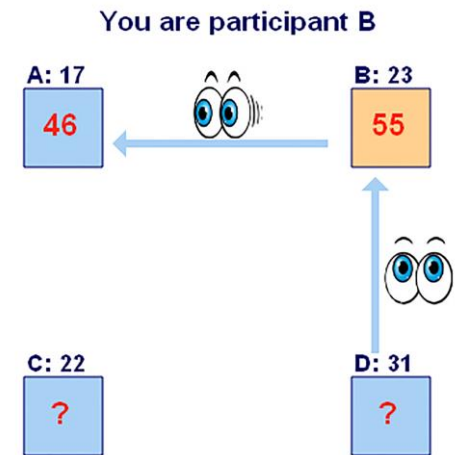"Peers at work: Evidence from the lab". *PloS one*, *13*(2), e0192038.

Task: solving problems
Treatments: different peer-monitoring settings

→**result:** positive effect of peer-effect on performance
→**positive aspect:** full control over context variables
→**limitation:** very (!) unnatural setting - limited external validity –

"Natural":

Mas, A., & Moretti, E. (2009). "Peers at work". *American Economic Review*, 99(1), 112-45.

Treatments: "pseudo" treatments

→**result:** positive effect of peer-effect
→**positive aspect:** long micro-panel dataset
→**limitation:** strong statistical assumptions
                  mix of advanced methods
                  demanding data scouting

Falk, A., & Ichino, A. (2006). "Clean evidence on peer effects".
Journal of Labor Economics,24(1), 39-57.

Task: filling envelops
Treatments: different peer-monitoring settings

Treatments: Individual / Multiple / Peer

→**result:** positive effect of peer-effect
→**positive aspect:** easy and clean / small
→**limitation:** no employment "relationship'

Fig. 1.—One of the desks used for the experiments

case #2: Lay-off

- *Do workers decrease their effort when their colleagues have been dismissed?*

Lab:

Drzensky, F., & Heinz, M. (2016). "The hidden costs of downsizing"
The Economic Journal, 126(598), 2324-2341.

Treatments: control vs lay-off option

→**result:** negative effect of lay-off policies (-43%)
→**limitation:** very stylised setting and task

"Natural"

Akerlof, R., Ashraf, A., Macchiavello, R., & Rabbani, A. (2020).
Layoffs and productivity at a Bangladeshi sweater factory.
CESifo WP 8492

Treatments: "pseudo" treatments

→**result: sizable** negative effect of lay-off measures
→**positive aspects:** more than 400 workers
                    daily data > 1 year
→**downsides:** data scouting
            statistical assumptions
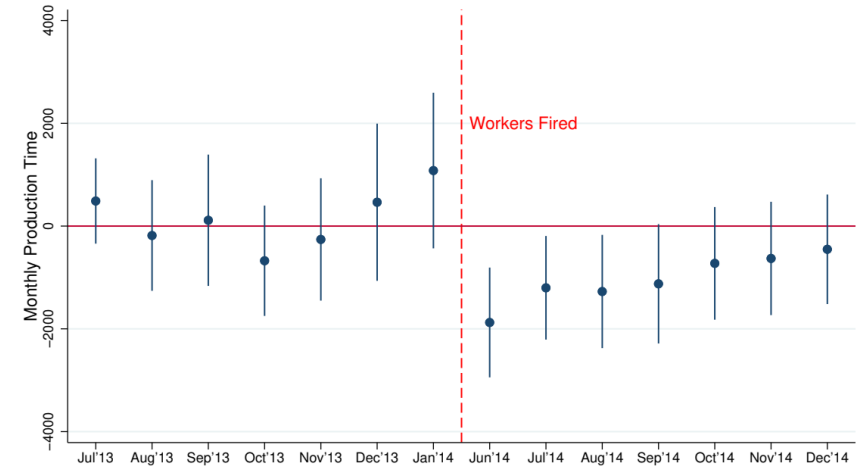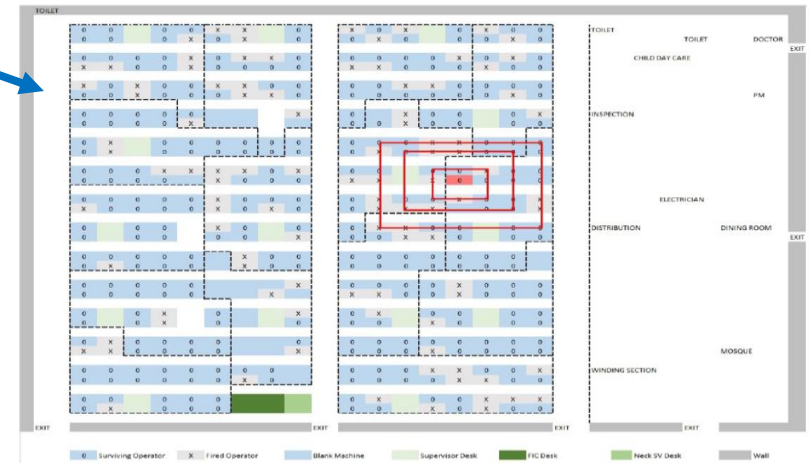   data quality

Figure 2: Test of Pre-Trend

Figure A4: Floor Map

Field:

Heinz, M., et al. (2020). "Measuring the Indirect Effects of Adverse Employer Behaviour on Worker Productivity: a field Experiment".

The Economic Journal, 130(632), 2546-2568.

Treatments: control vs lay-off round

→**result:** negative effect of lay-off policies (-12%)

→**positive aspects:** easy and clean / realistic

→**downsides:** expensive, organizational costs

2-day job contract

Telefonstudio Saar

As part of a **representative nationwide demographic survey**, to be conducted in our telephone studio in Saarbrücken/Saarterrassen, we are looking with immediate effect for several

Telephone interviewers (m/f)
(expense allowance of 2 x 40 €)

As part of a large-scale scientific study, the *Telefonstudio Saar* is investigating the subjective opinions of the German population on the current refugee debate, in particular on the topics of integration and voluntary work. They are in no way meant as sales talks or customer recruitment; rather, they are exclusively about the opinions of the population. You telephone via a headset and tick the answers on a questionnaire. The interview partners are selected at random.

We are looking with immediate effect for several interviewers (m/f) who would like to help us out, in return for an allowance of **2 x 40 €**. No specific previous knowledge is required. For instance, students, pupils aged 18 and over, housewives, pensioners, job seekers or employees who would like to earn some extra money can register. The day and time of the assignment can be chosen flexibly. Two shifts of four hours each are envisaged (no further employment is possible in our organization). Our shift system allows a starting time at 8.00 am, 12.00 pm, or 4.00 pm. We work Mondays to Saturdays. The location is the CallCenter Akademie Saarland GmbH, a modern telephone studio in the Saarterrassen, at Hochstraße 59 – Vitrina II, 66115 Saarbrücken. The studio can be easily reached by public transport (Burbach train station is directly opposite) and by car (parking is available at Hela).

Do you have a pleasant telephone manner, are you reliable, and do you speak German well? Then we look forward to receiving your application at www.telefonstudio-saar.de

Scan this QR code to get to the application form!

Figure P.2: Floor to Offices in the Call-Center

Figure P.1: Workplace in the Call-Center
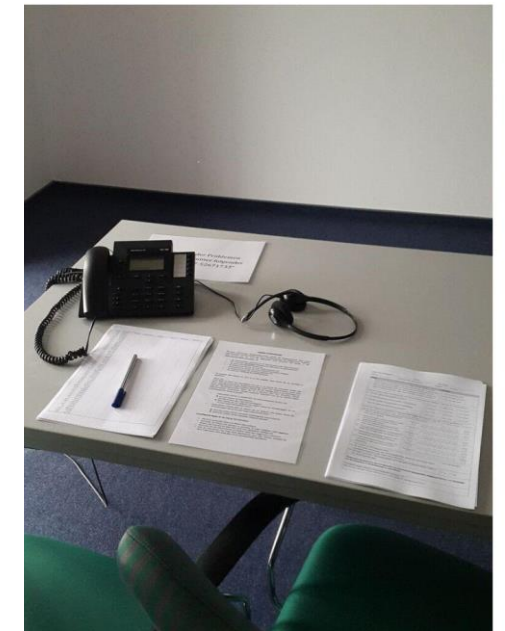
RACIAL DISCRIMINATION IN LOCAL PUBLIC SERVICES: A FIELD EXPERIMENT IN THE UNITED STATES

Giuglietti C., Tonin M., Vlassopoulos M. (2019)

Research question

- Do <u>public officials</u> discriminate (<u>by race</u>) when providing an <u>online public service</u>?

  - Field experiment (correspondence / audit study)

  - USA, 2015

TABLE 1. Emails by type of service.

Recipient	Number	Percentage
School district	9,873	51.75
Library	4,894	25.65
Sheriff	1,836	9.62
Treasurer	1,129	5.92
Job center	731	3.83
County clerk	616	3.23
Total	19,079	100

Notes: Figures refer to the number of emails sent to each type of service.

TABLE A.1. Data Sources of Email addresses.

Recipient	Source of email addresses	Accessed/obtained
School district	http://schoolinformation.com/	November 3, 2014
Libraries	http://www.americanlibrarydirectory.com	October 7, 2014
Sheriffs	http://www.sheriffs.org	October 7, 2014
Treasurers	http://www.uscounties.org	October 8, 2014
Job centers	http://www.servicelocator.org	November 18, 2014
County clerks	http://www.uscounties.org	October 8, 2014

- **Control group:**
White citizens

- **Treatment group:**
Black citizens

```
*****************************************
From: [Black/White Name]
Subject: [Opening Hours] or [Inquiry]

Hi,
My name is [Black/White Name] and I live in [City Name].
[Simple Query/Complex Query]
Thank you,
[Black/White Name]
*****************************************
*****************************************
[Black/White Name]
Real Estate Agent
Buy - Sell - Rent
*****************************************
```

TABLE A.2. Email queries by recipient.

Recipient	Simple Query	Complex Query
School district	I would like to enroll my son in a school in this district and I have some questions. Could you please tell me what your opening hours are?	I would like to enroll my son in a school in this district. Could you please let me know the documents I would need to do this? Do I also need an immunization record?
Library	I would like to become a member of the library. Could you please tell me what your opening hours are?	I would like to become a member of the library. Could you please explain what I need to do for this? Do I need proof of address?
Sheriff[a]	I am performing a background check on a local individual. Could you please tell me what your opening hours are?	I am performing a background check on a local individual. Could you please tell me what the procedure is for a criminal record search and how much it would cost?
Treasurer	I am about to purchase a house and I have some questions about property taxes. Could you please tell me what your opening hours are?	I am about to purchase a house. Could you please explain how I can check whether there are unpaid taxes on the house? If there are unpaid taxes, who would be liable for them?
Job center	I am recently unemployed and have some questions about benefits. Could you please tell me what your opening hours are?	I am recently unemployed. Could you tell me what conditions I need to meet to be eligible for benefits and how would I apply to receive them?
County clerk	My partner and I would like a marriage license. Could you please tell me what your opening hours are?	My partner and I would like a marriage license. Could you please let me know the procedure for applying for one? Also would such a license only be valid in this county, or would it be recognized elsewhere?

[a]Background checks are used, for instance, by prospective employers and landlords.

TABLE 3. Difference in response rates.

	1	2	3	4	5
Black	-0.038^{***}	-0.038^{***}	-0.037^{***}	-0.038^{***}	-0.032^{***}
	(0.006)	(0.006)	(0.009)	(0.006)	(0.005)
Complex		0.018^{***}	0.019^{**}	0.018^{***}	0.029^{***}
		(0.007)	(0.009)	(0.007)	(0.004)
Black $\times$ Complex			-0.002		
			(0.013)		
$\bar{Y}$	0.698	0.698	0.698	0.698	0.665
R^2	0.045	0.045	0.045	0.049	0.023
N	19,079	19,079	19,079	19,079	38,168
State/service/date F.E.	Y	Y	Y	Y	Y
County controls	N	N	N	Y	N
Office F.E.	N	N	N	N	Y

Notes: Robust standard errors in parentheses clustered at the state/public service type level. $^{**}p < 0.05$; $^{***}p < 0.01$. Dependent variable is a binary variable indicating whether a response to the email was provided (linear probability model). County controls are: unemployment rate, average wage, share of Hispanic in the population, crime rate, share of votes to democrats in presidential elections, and a dummy for rural/urban counties. Office fixed-effects refer to a regression that uses data from the two waves. In the model in column (5), R^2 represents the within R^2.

TABLE 4. Type of public service.

	School district	Library	Sheriff	Treasurer	Job center	County clerk
Black	−0.035***	−0.041***	−0.074***	−0.040	0.008	−0.016
	(0.009)	(0.010)	(0.021)	(0.029)	(0.031)	(0.048)
$\bar{Y}$	0.748	0.670	0.498	0.718	0.725	0.649
R^2	0.040	0.047	0.108	0.082	0.164	0.092
N	9,873	4,894	1,836	1,129	731	616

Notes: Robust standard errors in parentheses clustered at the state level. ***$p < 0.01$. Dependent variable is a binary variable indicating whether a response to the email was provided (linear probability model). $\bar{Y}$ refers to the average response rate. All regressions include controls of column (4), Table 3.

TABLE 5. Heterogeneity by geographical areas.

	Regions				Counties	
	North-East	Mid-West	South	West	Rural	Urban
Black	-0.026^{**}	-0.049^{***}	-0.031^{**}	-0.039^{**}	-0.058^{***}	-0.030^{***}
	(0.010)	(0.010)	(0.013)	(0.017)	(0.011)	(0.007)
$\bar{Y}$	0.728	0.722	0.635	0.708	0.660	0.714
R^2	0.036	0.049	0.075	0.036	0.087	0.038
N	3,666	7,346	4,975	3,092	5,488	13,591

Notes: Robust standard errors in parentheses clustered at the state/public service type level. $^{**}p < 0.05$; $^{***}p < 0.01$. Dependent variable is a binary variable indicating whether a response to the email was provided (linear probability model). $\bar{Y}$ refers to the average response rate. All regressions include controls of column (4), Table 3.

TABLE 6. Other outcomes.

	Number	Length	Cordial	Delay
Black	−0.001	−0.114	−0.062***	−0.918
	(0.003)	(1.847)	(0.007)	(1.147)
$\bar{Y}$	1.029	171.041	0.708	24.684
R^2	0.015	0.055	0.114	0.031
N	13,321	13,321	13,321	13,321

Notes: Robust standard errors in parentheses clustered at the state/public service type level. ***$p < 0.01$. Dependent variables are, respectively: number of replies obtained, length of replies (number of words), whether the sender was addressed by name or with salutations, and delay in obtaining a reply (number of hours). $\bar{Y}$ refers to the average of the outcome variable reported in each column header. All regressions include controls of column (4), Table 3.

Boot et al. (2019)

"You've got mail:
A randomized field experiment on tax evasion"

Management Science
https://pubsonline.informs.org/doi/abs/10.1287/mnsc.2019.3390

Issue

- **How can policymakers fight tax evasion?**

- **Hard policy ("rational approach")**→ detection, inspections, penalties
    ...for politicians, it's an expensive and unpopular option

- **Soft policy ("moral/psychological approach")**→ stressing moral concerns related to public contributions
    ...cost-free intervention, it does not hurt the electorate

→**Which strategy is more effective?**
    ...standard economics would tell us that economic agents are more reactive
      to detection and penalties than to moral (cheap) appeals.

Empirical test / field experiment

- country: Norway, 2013

- more than 15,000 sampled taxpayers

- goal: increase the volume of -foreign- income declarations

- randomly selected into 4 main groups (see Tab 5.)
  - **No Letter** – no tax reminder was sent to taxpayers in this group
  - **Base** – a very plain tax reminder was sent to taxpayers in this group
  - **Moral** – a tax reminder with a moral appeal was sent to taxpayers in this group
  - **Detection** – a tax reminder with penalty threat was sent to taxpayers in this group

The Norwegian Tax Administration

Our date 08.04.2013

Our reference 2013/XXXXX-X

Information about the tax return for the income year 2012

The Norwegian economy is becoming more internationalised, and an increasing number of Norwegian taxpayers receive income and have assets abroad. You are receiving this letter because The Norwegian Tax Administration would like to inform you about how this type of income is taxed and how it should be reported.

If you are a tax resident of Norway, you are liable to pay taxes to Norway even on foreign income and foreign assets, unless otherwise specified in the tax treaties Norway has entered into with other countries. Information about tax treaties and the rules that apply for taxation of foreign income and foreign assets is available at the homepage of The Norwegian Tax Administration www.skatteetaten.no. You can also contact us by telephone 21 49 73 94 (opening hours: 08.00 - 15.30).

When you receive the pre-completed tax return, you must check the information that it contains. If all information is correct and complete, you do not need to make any changes. The pre-completed tax return will typically not contain information about foreign income and foreign assets. You therefore need to report all income, all assets and all taxes paid in foreign countries. More information is available on www.skatteetaten.no/A-rettledninger.

Regards

The Norwegian Tax Administration

::: *MORAL* ::::

The Norwegian Tax Administration

Our date 08.04.2013

Our reference 2013/XXXXX-X

Information about the tax return for the income year 2012

The Norwegian economy is becoming more internationalised, and an increasing number of Norwegian taxpayers receive income and have assets abroad. You are receiving this letter because The Norwegian Tax Administration would like to inform you about how this type of income is taxed and how it should be reported. The great majority report information about their income and assets in Norway correctly and completely. In order to treat all taxpayers fairly, it is therefore important that foreign income and foreign assets are reported in the same manner.

If you are a tax resident of Norway, you are liable to pay taxes to Norway even on foreign income and foreign assets, unless otherwise specified in the tax treaties Norway has entered into with other countries. Information about tax treaties and the rules that apply for taxation of foreign income and foreign assets is available at the homepage of The Norwegian Tax Administration www.skatteetaten.no. You can also contact us by telephone 21 49 73 94 (opening hours: 08.00 - 15.30).

When you receive the pre-completed tax return, you must check the information that it contains. If all information is correct and complete, you do not need to make any changes. The pre-completed tax return will typically not contain information about foreign income and foreign assets. You therefore need to report all income, all assets and all taxes paid in foreign countries. More information is available on www.skatteetaten.no/C-rettledninger.

Regards

The Norwegian Tax Administration

The Norwegian Tax Administration

Our date 08.04.2013

Our reference 2013/XXXXX-X

Information about the tax return for the income year 2012

The Norwegian Tax Administration received information that you have had income and/or assets abroad in previous years. You are receiving this letter because The Norwegian Tax Administration would like to inform you about how this type of income is taxed and how it should be reported.

If you are a tax resident of Norway, you are liable to pay taxes to Norway even on foreign income and foreign assets, unless otherwise specified in the tax treaties Norway has entered into with other countries. Information about tax treaties and the rules that apply for taxation of foreign income and foreign assets is available at the homepage of The Norwegian Tax Administration www.skatteetaten.no. You can also contact us by telephone 21 49 73 94 (opening hours: 08.00 - 15.30).

When you receive the pre-completed tax return, you must check the information that it contains. If all information is correct and complete, you do not need to make any changes. The pre-completed tax return will typically not contain information about foreign income and foreign assets. You therefore need to report all income, all assets and all taxes paid in foreign countries. More information is available on www.skatteetaten.no/E-rettledninger.

Regards

The Norwegian Tax Administration

Treatment variations

Table 4. Overview of Treatments

Treatment	Description
No letter	Did not receive a letter
Base	General information letter
Fairness	Base letter + the following sentence added to the first paragraph:
→ **"Moral"**	"The great majority report information about their income and assets in Norway correctly and completely. In order to treat all taxpayers fairly, it is therefore important that foreign income and foreign assets are reported in the same manner."
Societal benefits	Base letter + the following sentence added to the first paragraph:
	"Your tax payment contributes to the funding of publicly financed services in education, health and other important sectors of society."
	Two additional treatments included an attachment visualizing public services financed through taxes (without the base letter/in combination with the base letter).
Detection	Base letter, but the first sentence ("The Norwegian economy is becoming more internationalized and an increasing number of Norwegian taxpayers receive income and have assets abroad") is replaced by the following sentence:
	"The tax administration has received information that you in previous years have had income and/or assets abroad."

# Treatment groups were comparable on salient characteristics (randomization)

Table 5. Baseline Characteristics by Treatment

Treatment	n	Positive amount self-reported for 2011	Amount self-reported for 2011	Amount in ACA-reports for 2011	Amount in ACA-reports for 2012	Share female	Share above 60 years old	Share Norwegian citizen	High socioeconomic status
No letter	1,968	0.393	30,287	83,995	43,303	0.460	0.544	0.553	0.441
		(0.011)	(4,356)	(33,390)	(6,761)	(0.011)	(0.011)	(0.011)	(0.011)
Base	3,947	0.402	27,427	55,211	44,104	0.450	0.551	0.553	0.454
		(0.008)	(3,278)	(3,935)	(5,632)	(0.006)	(0.008)	0.008	(0.008)
Moral	7,821	0.405	28,040	51,971	38,097	0.459	0.561	0.548	0.454
		(0.006)	(2,784)	(2,070)	(2,637)	(0.06)	(0.006)	(0.005)	(0.006)
Detection	1,972	0.417	24,689	47,855	58,313	0.446	0.542	0.548	0.452
		(0.011)	(3,436)	(2,777)	(20,441)	(0.011)	(0.011)	(0.011)	(0.011)
Total	15,708	0.404	27,747	56,280	42,796	0.455	0.554	0.550	0.452
		(0.004)	(1,756)	(4,434)	(3,321)	(0.004)	(0.004)	(0.004)	(0.004)

Notes. The table reports the baseline characteristics used as controls in the main regression specifications, by treatment. Standard errors of the means are in parentheses.
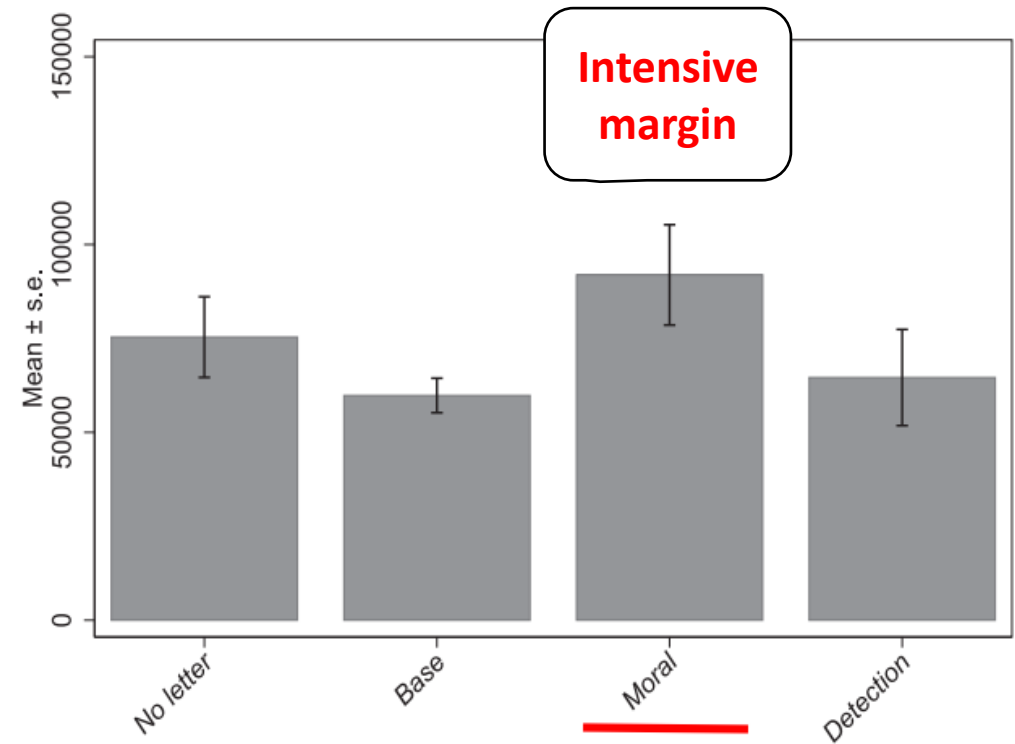
Results (Extensive margin VS Intensive margin)

Figure 1. Self-Reported Foreign Income

Share reporting foreign income
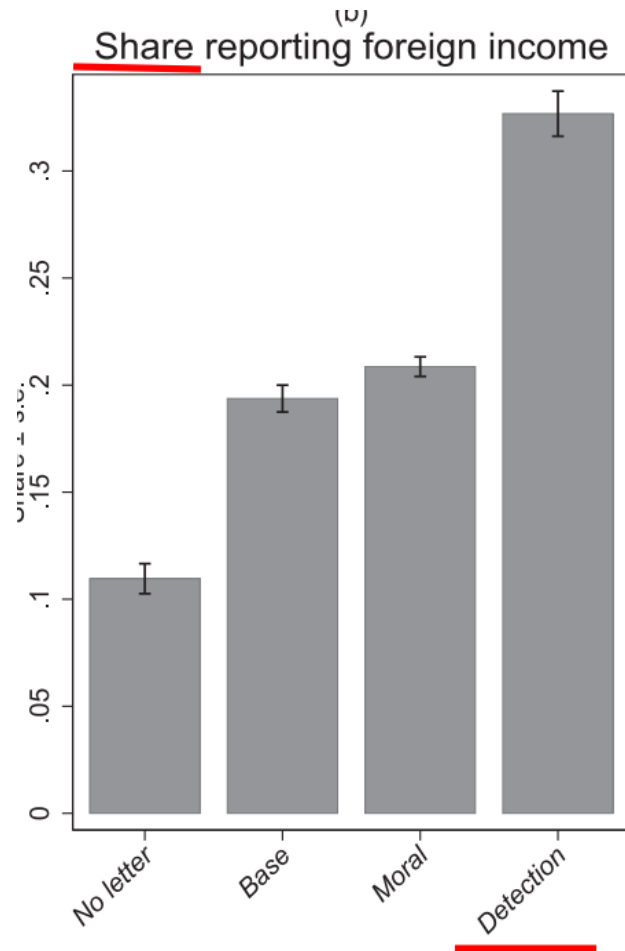
Extensive margin

Figure 3. Self-Reported Foreign Income, Conditional on It Being Positive

Intensive margin

More taxpayers submitted the tax forms under DETECTION   ...but taxpayers under MORAL reported on average higher income

Total Effect (extensive + intensive)

Table 6. Treatment Effects on Self-Reported Foreign Income

Treatment	(1)	(2)	(3)	(4)	(5)	(6)
No letter	−8,874.9***	−10,008.1***	−3,188.0*	−4,339.1	−3,188.0*	−4,339.6
	(2,184.5)	(2,767.4)	(1,643.1)	(2,734.8)	(1,643.1)	(2,735.2)
Fairness			15,158.5*	10,372.1**		
			(8,860.6)	(4,041.9)		
Societal benefits			5,180.9**	6,345.5**		
			(2,596.8)	(2,989.0)		
Detection			9,199.6**	10,351.3**	9,199.6**	10,351.6**
			(4,385.6)	(4,702.7)	(4,385.5)	(4,702.8)
Moral					7,671.1**	7,350.5***
					(3,010.7)	(2,772.9)
Foreign income baseline		0.42**		0.42**		0.42**
		(0.20)		(0.20)		(0.20)
ACA-report baseline		0.00089		0.00091		0.00091
		(0.0035)		(0.0035)		(0.0035)
ACA-report follow-up		0.010		0.010		0.010
		(0.0073)		(0.0073)		(0.0073)
Female		6,791.0*		6,782.8*		6,777.1*
		(3,640.9)		(3,634.1)		(3,633.9)
Age > 60 years		9,167.8*		9,148.3*		9,144.6*
		(5,207.1)		(5,209.7)		(5,207.6)
Norwegian citizen		2,702.2		2,733.2		2,741.5
		(3,294.8)		(3,307.6)		(3,306.1)
High SES		4,591.3		4,615.8		4,595.0
		(5,275.6)		(5,262.7)		(5,274.6)
Constant	17,029.8***	−6,706.3	11,342.9***	−12,387.4	11,342.9***	−12,380.8
	(1,752.6)	(6,673.8)	(999.6)	(7,537.0)	(999.6)	(7,535.5)
p-value from F-test on Moral treatments being equal:			0.27	0.32		
Observations	15,708	15,708	15,708	15,708	15,708	15,708
R^2	0.000	0.230	0.001	0.231	0.001	0.231

On the one hand, **DETECTION** and MORAL are able to sort similar positive effects in terms of total public income generation (approx. +8,000 NOK per taxpayer).

On the other hand, **MORAL** is the configuration that is **(i) more cost effective -no need to set up a detection system- (ii) more accepted by the electorate -no punishment measures/fines put in place by the policy makers-.**

While DETECTION generates a positive effect also on the long-run (subsequent year), that's not the case for the MORAL intervention [result #5].
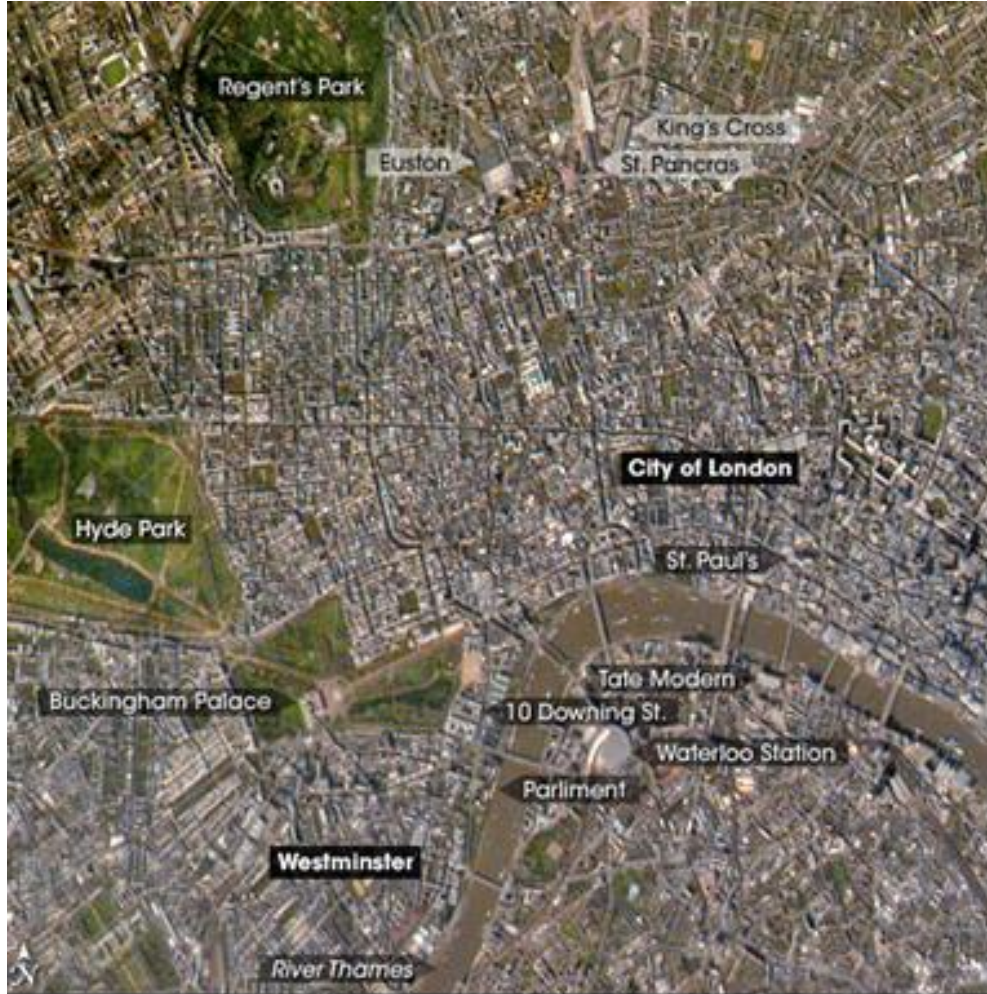
Why does MORAL work?

Possible explanations:

i) **Morality increases the <u>salience</u> of the call for contribution to the public good.**

ii) **Morality changes the <u>mood</u> of the tax payer inducing pro-sociality** (this could explain why MORAL generate effects only in the short run and not in the long run).

Real world

Experiment