How to improve tax compliance?
Evidence from countrywide experiments in Belgium

Teodora Tsankova (Warwick)

with Jan-Emmanuel De Neve (Oxford), Clement Imbert (Warwick), Maarten Luts (FOD Finance) and Johannes Spinnewijn (LSE)

TTPI Conference on Behavioural Economics and Public Policy
9 August 2018

Motivation

Why do people file and pay taxes (on time)?

Motivation

Why do people file and pay taxes (on time)?

- ▶ Deterrence (e.g. Allingham and Sandmo 1972),
    - ▶ Probability of being audited,
    - ▶ Penalties for misreporting and late payment,

Motivation

Why do people file and pay taxes (on time)?

- Deterrence (e.g. Allingham and Sandmo 1972),

  - Probability of being audited,
  - Penalties for misreporting and late payment,

- Tax Morale (e.g. Luttmer and Singhal 2014),

  - Reciprocity (tax versus public goods),
  - Social norms,

Motivation

Why do people file and pay taxes (on time)?

- ▶ Deterrence (e.g. Allingham and Sandmo 1972),

    - ▶ Probability of being audited,
    - ▶ Penalties for misreporting and late payment,

- ▶ Tax Morale (e.g. Luttmer and Singhal 2014),

    - ▶ Reciprocity (tax versus public goods),
    - ▶ Social norms,

- ▶ Complexity (e.g. Kleven and Kopzcuk 2011),

Motivation

Why do people file and pay taxes (on time)?

- Deterrence (e.g. Allingham and Sandmo 1972),

    - Probability of being audited,
    - Penalties for misreporting and late payment,

- Tax Morale (e.g. Luttmer and Singhal 2014),

    - Reciprocity (tax versus public goods),
    - Social norms,

- Complexity (e.g. Kleven and Kopzcuk 2011),

What is their relative importance?

Can they be used as "nudges" (Sunstein and Thaler 2008)?

Our project

- ▶ Six experiments on the universe of taxpayers in Belgium.

Our project

- Six experiments on the universe of taxpayers in Belgium.

- Interventions at different stages of tax process:
  - Filing and payment
  - Invitation and reminder letters

Our project

- ▶ Six experiments on the universe of taxpayers in Belgium.

- ▶ Interventions at different stages of tax process:
    - ▶ Filing and payment
    - ▶ Invitation and reminder letters

- ▶ Different treatment arms to test the effect of:
    1. Simplification
    2. Deterrence
    3. Tax Morale

Our project

- Six experiments on the universe of taxpayers in Belgium.

- Interventions at different stages of tax process:
    - Filing and payment
    - Invitation and reminder letters

- Different treatment arms to test the effect of:
    1. Simplification
    2. Deterrence
    3. Tax Morale

- Three fiscal years: measure long-term effects and repetition.

Our project

- Six experiments on the universe of taxpayers in Belgium.

- Interventions at different stages of tax process:
    - Filing and payment
    - Invitation and reminder letters

- Different treatment arms to test the effect of:
    1. Simplification
    2. Deterrence
    3. Tax Morale

- Three fiscal years: measure long-term effects and repetition.

- Complete cost-benefit analysis: compare with alternatives.

Our project

- Six experiments on the universe of taxpayers in Belgium.

- Interventions at different stages of tax process:
  - Filing and payment
  - Invitation and reminder letters

- Different treatment arms to test the effect of:
  1. Simplification
  2. Deterrence
  3. Tax Morale

- Three fiscal years: measure long-term effects and repetition.

- Complete cost-benefit analysis: compare with alternatives.

- Explore tax morale: beliefs / knowledge / preferences.

Results Summary

- Simplification incentivizes compliance at the filing and payment stage of the tax process.
  - Deterrence messages have an additional positive effect.
  - Tax morale messages do not.

Results Summary

- Simplification incentivizes compliance at the filing and payment stage of the tax process.
  - Deterrence messages have an additional positive effect.
  - Tax morale messages do not.

- Long-term effects show that simplified letter recipients are more likely to pay on time in the next fiscal year.

Results Summary

- Simplification incentivizes compliance at the filing and payment stage of the tax process.
  - Deterrence messages have an additional positive effect.
  - Tax morale messages do not.

- Long-term effects show that simplified letter recipients are more likely to pay on time in the next fiscal year.

- Net benefits are substantial
  - Come from reduced expenditure on enforcement actions.
  - Simplification is approximately 32 times more cost-effective than traditional enforcement mechanisms.

Results Summary

- Simplification incentivizes compliance at the filing and payment stage of the tax process.
  - Deterrence messages have an additional positive effect.
  - Tax morale messages do not.

- Long-term effects show that simplified letter recipients are more likely to pay on time in the next fiscal year.

- Net benefits are substantial
  - Come from reduced expenditure on enforcement actions.
  - Simplification is approximately 32 times more cost-effective than traditional enforcement mechanisms.

- Providing information about public spending affects knowledge and preferences but not reported income and expenses

Related literature - tax trials

- Complexity - Abeler and Jaeger (2015), Bhargava and Manoli (2015)

- Deterrence - Fellner et al. (2013), Castro et al. (2015), Brockmeyer et al. (2016), Dwenger et al. (2016), Kettle et al. (2016), Bott et al. (2017) || Ariel (2011)

- Tax Morale - Del Carpio (2014), Kettle et al. (2016), Bott et al. (2017), Hallsworth et al. (2017) || Blumenthal et al. (2001), Ariel (2011), Fellner et al. (2013), Castro et al. (2015)

Related literature - tax trials

- **Complexity** - Abeler and Jaeger (2015), Bhargava and Manoli (2015)
- **Deterrence** - Fellner et al. (2013), Castro et al. (2015), Brockmeyer et al. (2016), Dwenger et al. (2016), Kettle et al. (2016), Bott et al. (2017) || Ariel (2011)
- **Tax Morale** - Del Carpio (2014), Kettle et al. (2016), Bott et al. (2017), Hallsworth et al. (2017) || Blumenthal et al. (2001), Ariel (2011), Fellner et al. (2013), Castro et al. (2015)

Our contribution: test them

- in the same experimental framework
- at different stages of the tax process
- against alternative enforcement tools

Outline

Design
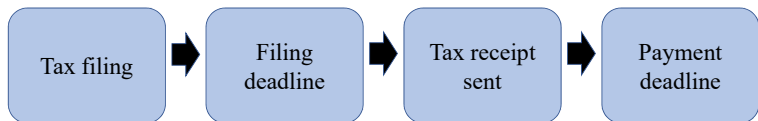
Tax process:

- ► We have experiments at each step of the tax process:
    - ► Online filing: Tax on Web,
    - ► Filing reminders,
    - ► Tax payment,
    - ► Payment reminders.

Filing Reminders Experiment
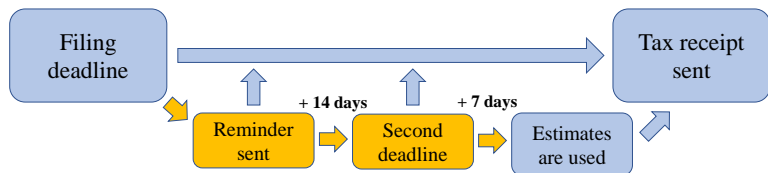
Filing reminders FY 2014
(N=162,682)

- Control (old)
- + Public goods
- + Social norms

Filing reminders FY 2015
(N=148,925)

- Control (old)
- Simplified
- + Deterrence Message

Filing Reminders: Old Letter

Service Public Fédéral FINANCES

Administration générale de la Fiscalité

Exp. : Mentionnez l'adresse de votre service

votre courrier du   vos références   nos références   annexe(s)

Rappel : Avez-vous oublié de rentrer votre déclaration à l'impôt des personnes physiques pour l'exercice d'imposition 2016 (revenus 2015) ?

Madame, Monsieur,

Au 01.09.2016, nous n'avons **pas encore reçu votre déclaration** à l'impôt des personnes physiques pour l'exercice d'imposition 2016 (revenus 2015). La date limite de rentrée dans les délais était le 30.06.2016.

Le non-dépôt ou le dépôt tardif de la déclaration constitue une infraction. Les sanctions qui peuvent vous être appliquées sont reprises au verso de cette lettre.

Vous pouvez éviter ces sanctions en rentrant encore **votre déclaration dans un délai de 14 jours** à partir de l'envoi de cette lettre. Vous trouverez la procédure pour le faire au verso.

Votre déclaration reste néanmoins tardive. Ce rappel ne modifie en rien le délai de rentrée légal initial. Si des motifs ou circonstances graves vous ont empêché de rentrer la déclaration au plus tard le 30.06.2016, vous devez les communiquer par écrit à votre bureau de taxation.

Vous ne devez pas réagir à cette lettre si :
- vous avez entretemps rentré votre déclaration ;
- vous avez obtenu un délai supplémentaire valable pour rentrer votre déclaration après le 01.09.2016 ;
- vous passez par un mandataire pour rentrer votre déclaration. Votre mandataire peut encore rentrer votre déclaration jusqu'au 29.10.2016 inclus.

Veuillez agréer, Madame, Monsieur, nos salutations distinguées,

Le chef de service

Comment pouvez-vous encore rentrer votre déclaration ?

Deux possibilités :

- via **www.taxonweb.be**.
  A cet effet, vous avez besoin de votre carte d'identité électronique et d'un lecteur de carte ou d'un token (pour chaque partenaire dans le cas d'une déclaration commune).

- en envoyant le formulaire de déclaration papier au :

  SPF Finances - Centre de scanning
  BP 51000
  5100 Jambes

N'oubliez pas de dater et de signer le formulaire de déclaration (par les deux partenaires dans le cas d'une déclaration commune).
Si vous n'avez pas reçu votre formulaire de déclaration ou si vous l'avez perdu, vous pouvez demander un exemplaire auprès de votre bureau de taxation.

AdminName1 – Phone – Email

Quelles sanctions risquez-vous ?

Si vous ne rentrez pas ou tardivement votre déclaration à l'impôt des personnes physiques, le SPF Finances peut :

- appliquer des **sanctions administratives** comme :

  - une amende administrative de 50 à 1.250 euros (article 445, CIR 92) ;
  - un accroissement d'impôt de 10 % à 200 % (article 444, CIR 92) ;

- établir l'impôt durant un **délai d'imposition de 3 ans** (article 354, alinéa premier, CIR 92) ;

- appliquer la procédure de **taxation d'office** (article 351, CIR 92) ;

- pour les entreprises et les titulaires de profession libérale, appliquer le « **montant minimum des bénéfices ou profits imposables** » (article 342, § 3, CIR 92).

Avez-vous encore des questions ?

Pour plus d'informations sur votre dossier, vous pouvez prendre contact avec votre bureau de taxation :

AdminName1 – Phone – Email

Filing Reminders: Simplified Letter

Service Public Fédéral FINANCES

Administration générale de la Fiscalité

Exp. : Mentionnez l'adresse de votre service

M. JAN PEETERS
Mme. PETRA JANSENS
KERKSTRAAT 1
1000 BRUSSEL

votre courrier du	vos références	nos références	annexe(s)

Madame Jansens,
Monsieur Peeters,

Nous n'avons pas encore reçu votre déclaration à l'impôt des personnes physiques pour l'exercice d'imposition 2016 (revenus 2015). Cependant, vous deviez la rentrer pour le 30.06.2016.

Veuillez rentrer votre déclaration dans un délai de 14 jours.

Sinon, vous risquez **une amende et un accroissement d'impôt**.

Comment rentrer votre déclaration?
- via **taxonweb.be**, ou
- en envoyant **le formulaire de déclaration papier** au:
  SPF Finances - Centre de scanning
  BP 51000
  5100 Jambes
  N'oubliez pas de dater et de signer ce formulaire de déclaration (par les deux partenaires dans le cas d'une déclaration commune).

Vous ne devez pas réagir à cette lettre si :
- vous avez entretemps rentré votre déclaration ;
- vous avez obtenu un délai supplémentaire ;
- vous passez par un mandataire pour rentrer votre déclaration.

Encore des questions?
AdminName1 – Phone – Email

Cordialement,

Le chef de service

Filing Reminders: Messages

Social Norms (FY 2014):

> *(...) You belong to a minority as 94% of Belgians file their tax declarations on time. Why not follow this example?*

Public Goods (FY 2014):

> *(...) Paying taxes guarantees the provision of essential services by the government, such as public health, education, and public safety.*

Social Norms+Public Goods (FY 2014)

Explicit Penalty (FY 2015):

> *(...) You risk a penalty of 50 to 1,250 euro and a tax increase of 10 to 200%.*

Tax Payment Experiment
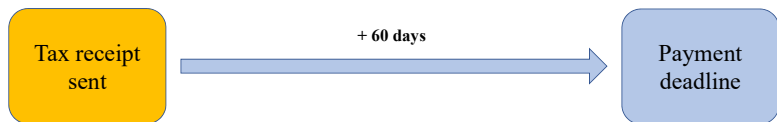
Tax Receipt FY 2016 (N=1,009,171)

- Control (not so old)
- Simplified: Personalised or not.
- + Deterrence messages: Explicit Penalty or Immediacy
- + Tax Morale messages: Social Norms or Public Goods.

Payment Reminders Experiment
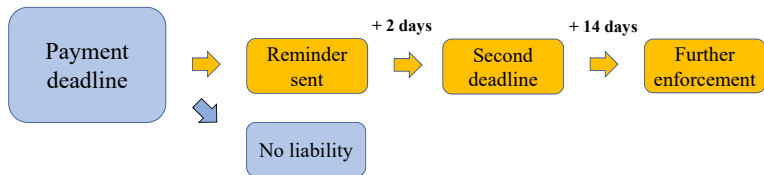
Payment reminders FY 2014
(N=229,751)

- Control (old)
- Simplified
- + Deterrence message
- + Tax Morale messages

Payment reminders FY 2015
(N=188,180)

- Control (old)
- Simplified
- + Deterrence messages
- + Tax Morale messages

Main Results

Specification

- Outcome dynamics by days after letter receipt by letter type
  - probability of filing / partial payment - extensive margin

- Treatment effects by days after letter receipt
  - probability of filing / partial payment - extensive margin
  - conditional fraction paid - intensive margin

$$Y_i = \alpha + \beta_0 S_i + \sum_{t=1}^{T} \beta_t 1\{T_i = t\} + \gamma X_i + \delta_w + \epsilon_i$$

Filing Reminder Results: Filing Probability

Filing Reminders: Probability of filing by days since letter receipt for fiscal year 2015
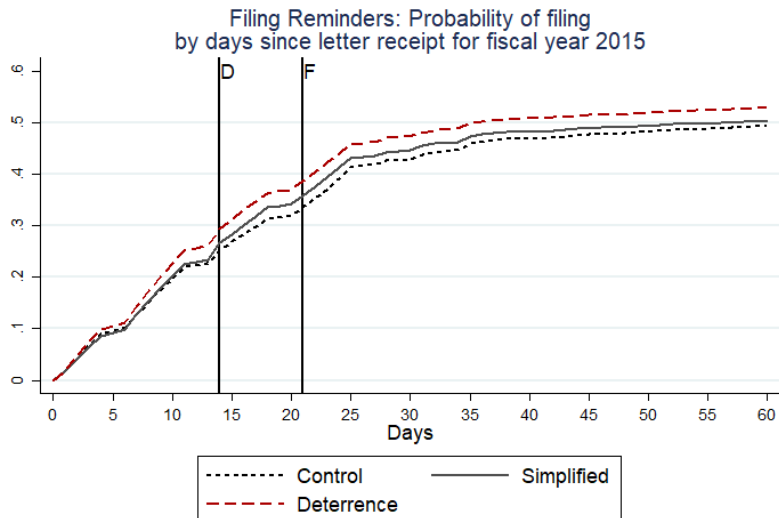
D - Deadline; F - Follow-up

Filing Reminder Results: Treatment Effects

Filing Reminders: Treatment effects on the probability of filing for fiscal year 2015
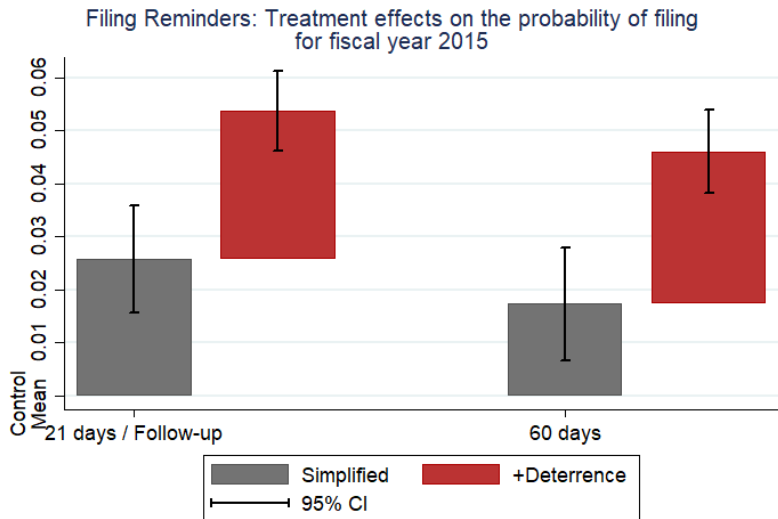
Control mean is .34 for 21 days and .49 for 60 days after letter receipt

Tax Receipt Results: Payment Probability

Tax Payment: Probability of partial payment
by days since letter receipt for fiscal year 2016
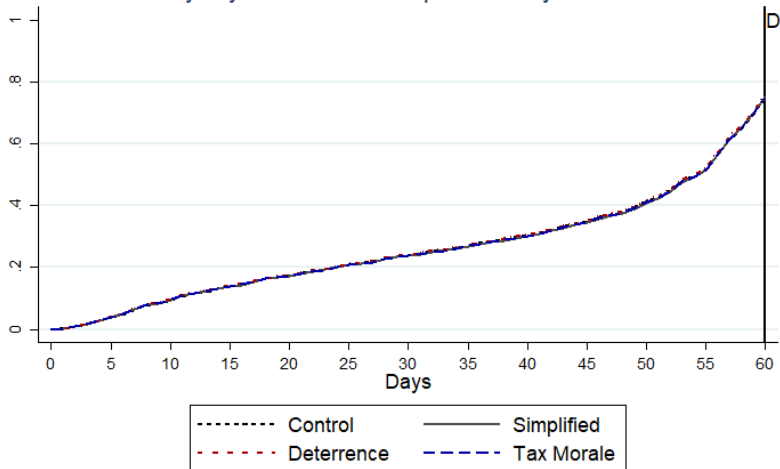
D - Deadline

Tax Receipt Results: Treatment Effects

Tax Payment: Treatment effects on the probability of partial payment for fiscal year 2016
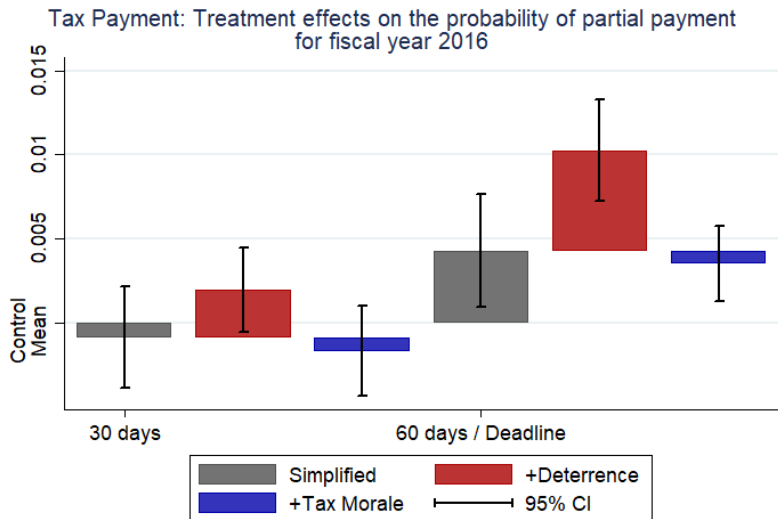
Control mean is .24 for 30 days and .74 for 60 days after letter receipt

Legend:
- Simplified
- +Deterrence
- +Tax Morale
- 95% CI

Individual Nudges Conditional Fraction

Payment Reminder Results: Payment Probability

Payment Reminders: Probability of partial payment
by days since letter receipt for fiscal year 2014

Legend:
- Control (dotted)
- Deterrence (red dashed)
- Simplified (solid)
- Tax Morale (blue dashed)
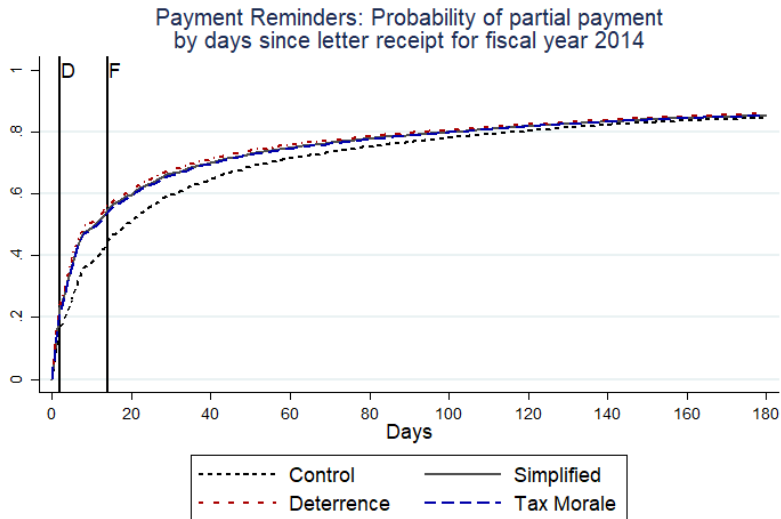
D - Deadline; F - Follow-up

Payment Reminder Results: Treatment Effects

Payment Reminders: Treatment effects on the probability of partial payment for fiscal year 2014
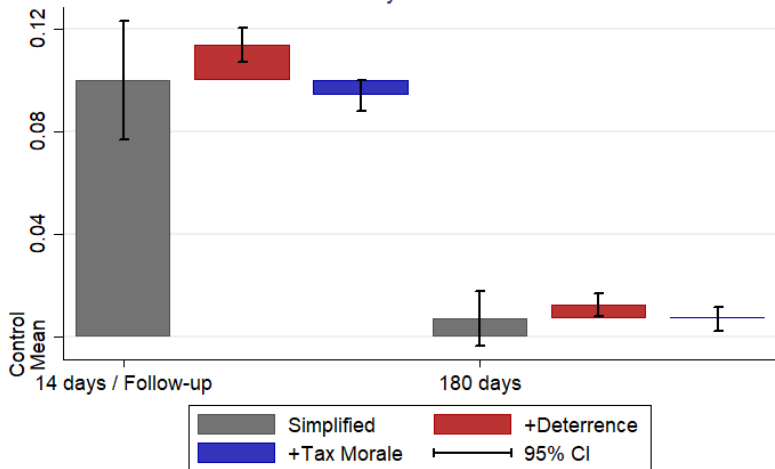
Control mean is .45 for 14 days and .85 for 180 days after letter receipt

Individual Nudges   Conditional Fraction

Long-term effects

Long-term Effects & Repeated Interventions

Payment reminder experiments were run two fiscal years in a row (FY 2014 and 2015), which allows us to:

Long-term Effects & Repeated Interventions

Payment reminder experiments were run two fiscal years in a row
(FY 2014 and 2015), which allows us to:

- Test whether our findings replicate:
  - The effects for FY 2014 and FY 2015 are identical. FY 2015

Long-term Effects & Repeated Interventions

Payment reminder experiments were run two fiscal years in a row (FY 2014 and 2015), which allows us to:

- ▶ Test whether our findings replicate:
    - ▶ The effects for FY 2014 and FY 2015 are identical. FY 2015

- ▶ Estimate long-term effects:
    - ▶ Late payers who received a simplified letter for FY 2014 were less likely to be late for FY 2015. Long-term effects

Long-term Effects & Repeated Interventions

Payment reminder experiments were run two fiscal years in a row (FY 2014 and 2015), which allows us to:

- ▶ Test whether our findings replicate:
  - ▶ The effects for FY 2014 and FY 2015 are identical. `FY 2015`

- ▶ Estimate long-term effects:
  - ▶ Late payers who received a simplified letter for FY 2014 were less likely to be late for FY 2015. `Long-term effects`

- ▶ Measure the impact of repeated nudges on recidivists:
  - ▶ Simplification is no less effective the second time around. `Cumulative - Any Payment`
  - ▶ Caveat: recidivists treated in FY 2014 are a selected group.

Cost-benefit analysis

Cost Benefit Analysis

We focus on the Payment Reminders experiment (FY 2014)

Cost Benefit Analysis
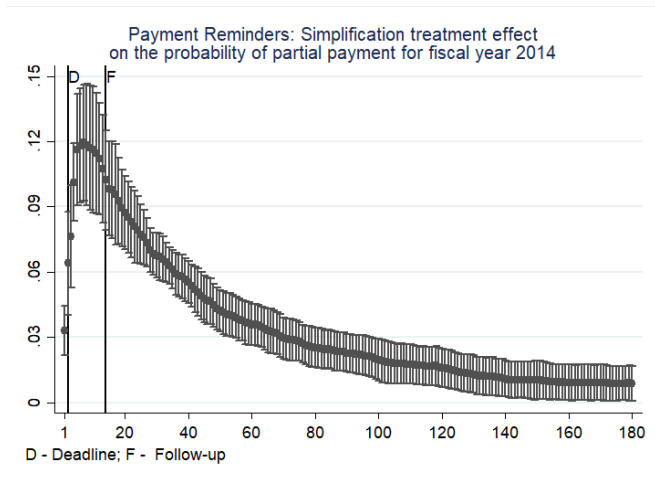
We focus on the Payment Reminders experiment (FY 2014)

Payment Reminders: Simplification treatment effect on the probability of partial payment for fiscal year 2014

Cost Benefit Analysis: Building Blocks

We focus on the payment reminder experiment (FY 2014)

- Administrative costs (ΔA)
  - New letter is more expensive to print (variable cost).
  - It needs to be designed the first time (fixed cost).

Cost Benefit Analysis: Building Blocks

We focus on the payment reminder experiment (FY 2014)

- Administrative costs (ΔA)
  - New letter is more expensive to print (variable cost).
  - It needs to be designed the first time (fixed cost).

- Taxes collected (ΔT)
  - Take 180 days after letter receipt as a long-term definition.

Cost Benefit Analysis: Building Blocks

We focus on the payment reminder experiment (FY 2014)

- Administrative costs (ΔA)
  - New letter is more expensive to print (variable cost).
  - It needs to be designed the first time (fixed cost).

- Taxes collected (ΔT)
  - Take 180 days after letter receipt as a long-term definition.

- Savings on the interests charged (ΔI)
  - Treatment group pays earlier: do not pay interest.

Cost Benefit Analysis: Building Blocks

We focus on the payment reminder experiment (FY 2014)

- Administrative costs (ΔA)
  - New letter is more expensive to print (variable cost).
  - It needs to be designed the first time (fixed cost).

- Taxes collected (ΔT)
  - Take 180 days after letter receipt as a long-term definition.

- Savings on the interests charged (ΔI)
  - Treatment group pays earlier: do not pay interest.

- Savings on the cost of enforcement (ΔE)
  - Control catches up due to costly enforcement: registered letters, garnishments, bailiff fees.
  - Treated tax payers require less enforcement measures: they will not have to pay for them.

Cost Benefit Analysis: Numbers

- Administrative costs (ΔA)
    - New letter is more expensive: €0.05 per letter.
    - It needs to be designed: €69,300 fixed HR cost.
    - Total $\Delta A = $ **€82,590**

Cost Benefit Analysis: Numbers

- Administrative costs (ΔA)
  - New letter is more expensive: €0.05 per letter.
  - It needs to be designed: €69,300 fixed HR cost.
  - Total $\Delta A = $ **€82,590**

- Taxes collected after 180 days (ΔT)
  - Probability of payment $+0.9$p.p * average payment €1615
  - Total $\Delta T = $ **€3.8m**

Cost Benefit Analysis: Numbers

- Administrative costs (ΔA)
  - New letter is more expensive: €0.05 per letter.
  - It needs to be designed: €69,300 fixed HR cost.
  - Total $\Delta A = $ **€82,590**

- Taxes collected after 180 days (ΔT)
  - Probability of payment $+0.9$p.p * average payment €1615
  - Total $\Delta T = $ **€3.8m**

- Savings on the interests charged (ΔI)
  - Compute amounts paid earlier due to treatment.
  - Interest rate charged to tax payers is 0.58% p.m.
  - Total $\Delta I = $ **€0.6m**

Cost Benefit Analysis: Numbers

- Administrative costs (ΔA)
  - New letter is more expensive: €0.05 per letter.
  - It needs to be designed: €69,300 fixed HR cost.
  - Total $\Delta A = $ **€82,590**

- Taxes collected after 180 days (ΔT)
  - Probability of payment $+0.9$p.p * average payment €1615
  - Total $\Delta T = $ **€3.8m**

- Savings on the interests charged (ΔI)
  - Compute amounts paid earlier due to treatment.
  - Interest rate charged to tax payers is 0.58% p.m.
  - Total $\Delta I = $ **€0.6m**

- Savings on the cost of enforcement (ΔE) Results
  - Treatment effects on enforcement actions * cost of each action
  - Total $\Delta E = $ **€0.9m**

Cost Benefit Analysis: Results

Government:

- $\Delta W_G = \Delta T - \Delta I - \Delta A = $ **€3m**
- Return on Investment $RoI = (\Delta T - \Delta I)/\Delta A = 3,800\%$!
- Next fiscal year fixed cost is sunk $RoI = 20,121\%$!

Cost Benefit Analysis: Results

Government:

- $\Delta W_G = \Delta T - \Delta I - \Delta A =$ **€3m**
- Return on Investment $RoI = (\Delta T - \Delta I)/\Delta A = 3,800\%$!
- Next fiscal year fixed cost is sunk $RoI = 20,121\%$!

Tax Payers:

- $\Delta W_P = \Delta E + \Delta I - \Delta T =$ **- €2.2m**

Cost Benefit Analysis: Results

Government:
- $\Delta W_G = \Delta T - \Delta I - \Delta A = $ **€3m**
- Return on Investment $RoI = (\Delta T - \Delta I)/\Delta A = 3,800\%$!
- Next fiscal year fixed cost is sunk $RoI = 20,121\%$!

Tax Payers:
- $\Delta W_P = \Delta E + \Delta I - \Delta T = $ - **€2.2m**

Social Welfare (Keen and Slemrod 2017)
- $\Delta W = \Phi \Delta W_G + \Delta W_P$ with $\Phi \geq 1$ (otherwise no taxes)
- Value of ΔW depends on Φ, lower bound $\Delta W \geq$ **€0.8m**
- Smoother tax payment is better for everyone (except bailiffs!)

Cost Benefit: Simplification vs Enforcement

Analysis:

- ► Focus on population around enforcement threshold, `Graph`
- ► Estimate impact of enforcement at the cutoff,
  `Specification` `First Stage Results` `Second Stage Results`
- ► Estimate "true" effect of simplification around the cutoff,
  `Results`
- ► Compare cost of enforcement actions with cost of simplication per euro collected. `Details`

Cost Benefit: Simplification vs Enforcement

Analysis:

- Focus on population around enforcement threshold, `Graph`
- Estimate impact of enforcement at the cutoff,
  `Specification` `First Stage Results` `Second Stage Results`
- Estimate "true" effect of simplification around the cutoff,
  `Results`
- Compare cost of enforcement actions with cost of simplication per euro collected. `Details`

Results:

- Treatment letters are 32 times more cost effective than usual enforcement actions.

Exploring Tax Morale

Tax Filing Experiment: Design

- ▶ Population: all online tax filers in Belgium for the FY 2016.

Tax Filing Experiment: Design

- Population: all online tax filers in Belgium for the FY 2016.

- Treatment:
  - Pie chart provides break-down of public spending:
    ▸ Pie Chart
  - Similar to "Public goods" messages previously,
  - Randomly shown before or after tax filing page.

Tax Filing Experiment: Design

- ▶ Population: all online tax filers in Belgium for the FY 2016.

- ▶ Treatment:
  - ▶ Pie chart provides break-down of public spending:
    ▶ Pie Chart
  - ▶ Similar to "Public goods" messages previously,
  - ▶ Randomly shown before or after tax filing page.

- ▶ Online Survey:
  - ▶ Tax morale: satisfied with tax system, value public services.
  - ▶ Preferences: how would you allocate tax money?
  - ▶ Knowledge: how do you think tax money is allocated.
  - ▶ Low response rate: 79,334 from 1,541,796 tax payers.

Tax Filing Experiment: Design

- Population: all online tax filers in Belgium for the FY 2016.

- Treatment:
  - Pie chart provides break-down of public spending:
    [▸ Pie Chart]
  - Similar to "Public goods" messages previously,
  - Randomly shown before or after tax filing page.

- Online Survey:
  - Tax morale: satisfied with tax system, value public services.
  - Preferences: how would you allocate tax money?
  - Knowledge: how do you think tax money is allocated.
  - Low response rate: 79,334 from 1,541,796 tax payers.

- Fiscal data: income and expenses declared, exemptions.

Tax Filing Results: Tax Morale

Tax Filing: Treatment Effect on Survey Responses (fiscal year 2016)
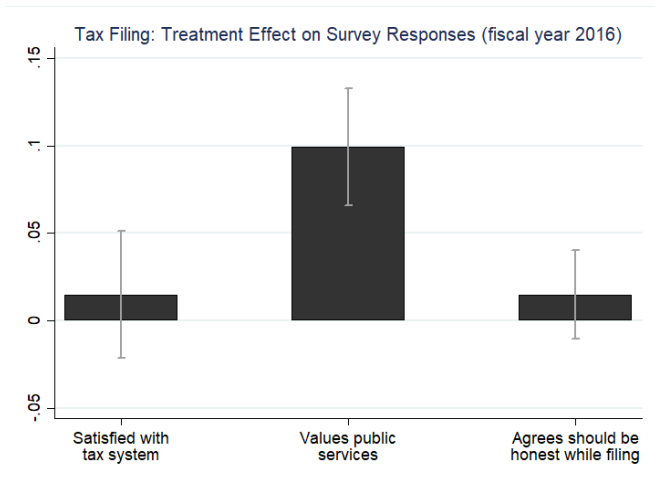
Tax Filing Results: Knowledge and Preferences

Tax Filing: Treatment Effect on Survey Responses (fiscal year 2016)
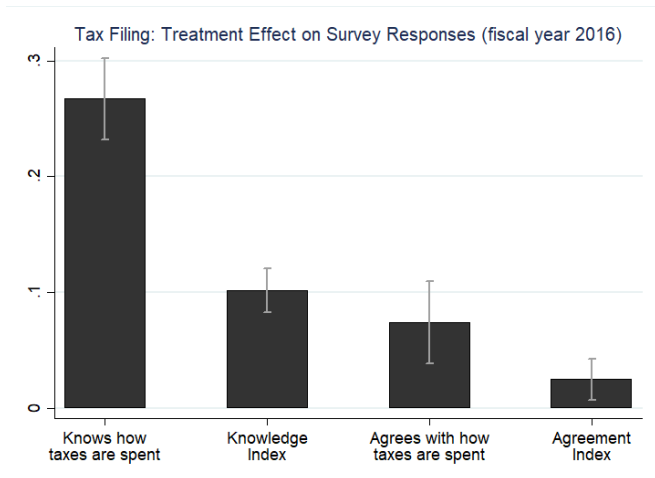
Tax Filing Results: Compliance

Tax Filing: Treatment Effect on Compliance (fiscal year 2016)
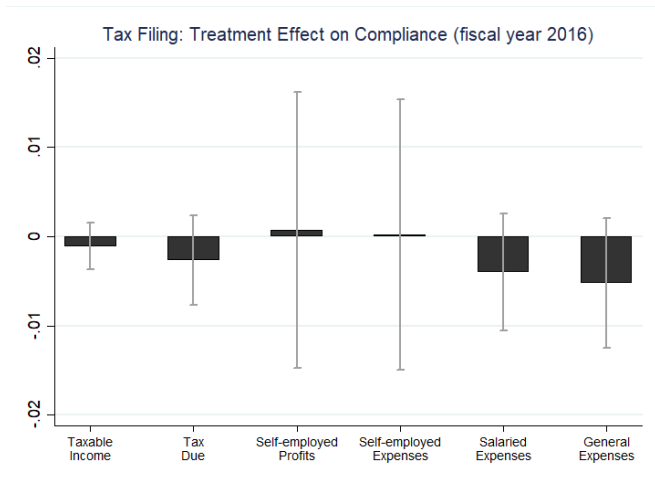
Conclusion

Conclusion

- Simplifying correspondence is a very cost effective way for the tax administration to encourage compliance.

- Deterrence messages have an additional positive effect.

- Tax morale messages do not increase tax compliance but improve knowledge and appreciation of public services.

- Simplification has long-term effects:
  - Reduced the probability of being late again one year later.
  - No diminishing returns to repeat treatments on recidivists.

- Results are replicated across years and at different stages of the tax process (tax filing as well as tax payment).

Appendix

Tax Payment: Old Letter

Tax Payment: Simplified Letter

Back

Tax Payment: Simplified Letter (Not Personalised)

Tax Payment: Messages

Simplified Letter:

> *Warning: pay on time to avoid future actions to recover this amount. In case of delay, you will be liable for debt charges (7%) and recovery costs.*

+Deterrence Message:

> *(...) These costs amount to 209 euros on average and can go up depending on the circumstances.*

+Immediacy Message:

> *(...) Warning: do not wait until the deadline to pay, you run the risk of being late. If you do not pay on time, we will start actions to recover this amount.*

+Tax Morale Message (Social Norms):

> *(...) In Belgium 95% of taxes are payed on time.*

+Tax Morale Message (Public Goods):

> *(...) Tax revenues allow basic public services such as health care, education and law and order, to function.*

Late Payers: Simplification

Control letter (old) — **Simplified letter**

Deterrence Messages

- Explicit penalty

  (...) These costs amount to 209.00 euro on average and may, depending on the situation, rise further.

- Active choice (FY 2014)

  (...) Not paying your taxes will be seen as an active choice.

- Explicit penalty + Active choice (FY 2014)

- Explicit penalty reframed (FY 2015 only)

  (...) By paying now you may still avoid these costs.

- Explicit penalty extra (FY 2015 only)

  (...) We will undertake actions to claim tax dues that may involve seizing your income or your assets.

Tax Morale Messages

- Social norm

  (...) You belong to a minority of taxpayers who did not pay their taxes within the legal period: 95% of taxes in Belgium are paid on time. Why not follow this example?

- Public goods positive (FY 2014)

  (...) Paying taxes guarantees the provision of essential services by the government, such as public health, education, and public safety.

- Public goods negative (loss aversion)

  (...) Not paying taxes puts at risk the provision of essential services by the government, such as public health, education, and public safety.

- Social norm + Public goods positive (FY 2014)

Tax Filing Experiment: Pie Chart

A quoi servent vos impôts et cotisations sociales?

1. Protection sociale (maladie et invalidité, vieillesse, famille et enfants, chômage,…) 37,5%
2. Enseignement 11,9%
3. Santé 14,2%
4. Ordre et sécurité publics 3,3%
5. Affaires économiques 12,0%
6. Logements et équipements collectifs 0,6%
7. Opérations concernant la dette publique 5,7%
8. Services généraux des administrations publiques (recherche fondamentale, aide économique extérieure,…) 9,4%
9. Défense 1,6%
10. Protection de l'environnement 1,6%
11. Loisirs, culture et culte 2,2%

"The above pie chart illustrates how your taxes and social security contributions are spent in terms of public services."

Tax Filing Experiment: Additional Nudge Messages

- Public Goods Negative, NN 13-24

  + Incorrect and untimely completion of the tax declaration puts the essential services provided by the government at risk.

- Social Norm, NN 25-36

  + The vast majority of people complete their declaration correctly and in a timely manner. Please follow this example.

- Explicit Penalty, NN 37-48

  + By completing your declaration correctly and in a timely fashion, you avoid further measures such as fines and tax increases.

Filing Reminder Results 2014: Treatment Effects

Filing Reminders: Treatment effects on the probability of filing for fiscal year 2014

Legend:
- Public Goods
- PG & SN
- Social Norm
- 95% CI
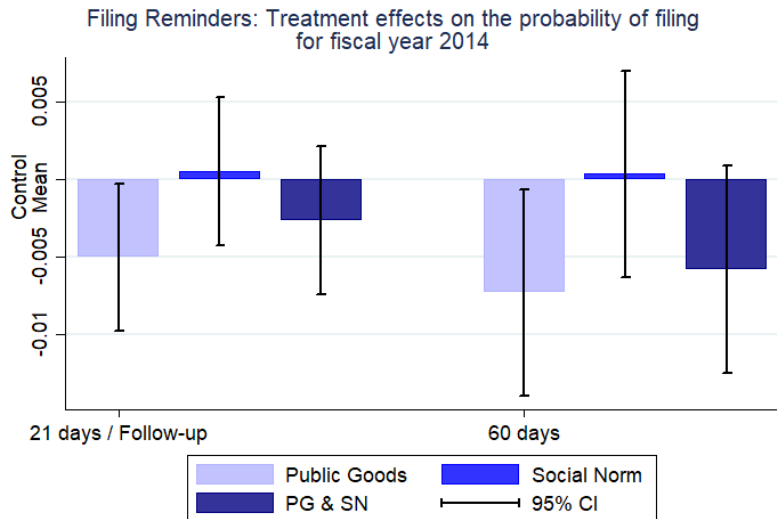
Control mean is .15 for 21 days and .47 for 60 days after letter receipt

Back

Tax Payment Results: Treatment Effects

| | Probability of some payment by day x | | |
| | Day 2 | Day 30 | Deadline |
	(1)	(2)	(3)
New Letter	0.000294	-0.000790	0.00379**
	(0.000220)	(0.00170)	(0.00147)
+ Explicity Penality	0.000277	0.00195	0.00415***
	(0.000158)	(0.00134)	(0.00109)
+ Immediacy	0.0000326	0.00358*	0.00883***
	(0.000453)	(0.00155)	(0.00111)
+ Public Goods	-0.000232	-0.00217	-0.00176
	(0.000236)	(0.00134)	(0.00158)
+ Social Norm	-0.00000663	0.000406	0.00122
	(0.000296)	(0.00168)	(0.00113)
+ No names	0.0000918	-0.000179	0.00127
	(0.000330)	(0.00174)	(0.00215)
Wave dummies and controls	Yes	Yes	Yes
N	1009171	1009171	1009171

Tax Payment Results: Treatment Effects

Tax Payment: Treatment effects on conditional fraction paid for fiscal year 2016

Legend:
- Simplified
- +Deterrence
- +Tax Morale
- 95% CI
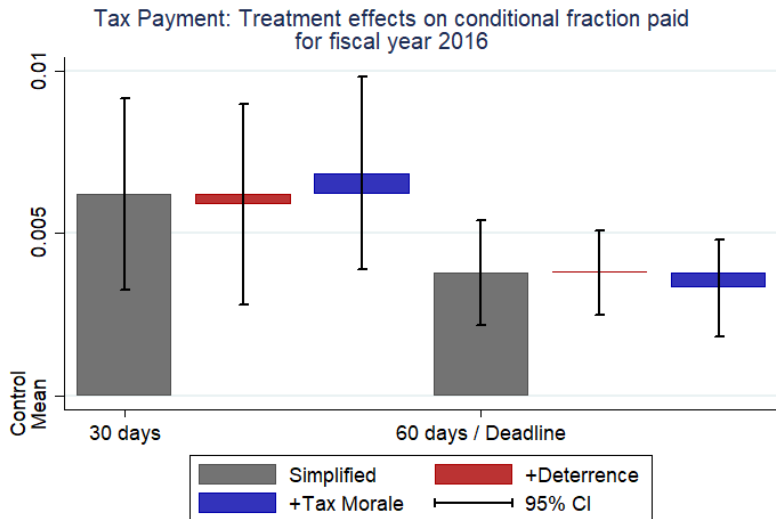
Control mean is .22 for 30 days and .94 for 60 days after letter receipt

Back

Payment Reminder Results: Treatment Effects

| | Probability of some payment by day x | | |
| | Day 2 | Day 14 | Day 180 |
	(1)	(2)	(3)
Simplified	0.0632***	0.0998***	0.00680
	(0.0109)	(0.0108)	(0.00489)
+ Explicit Penalty	0.0151***	0.0219***	0.00974***
	(0.00299)	(0.00295)	(0.00191)
+ Active Choice	-0.00113	0.00216	0.000447
	(0.00246)	(0.00371)	(0.00204)
+ EP & AC	0.0149***	0.0174**	0.00587
	(0.00447)	(0.00618)	(0.00350)
+ Public Goods -	-0.00536	-0.00515	-0.00240
	(0.00355)	(0.00429)	(0.00315)
+ Public Goods +	-0.0132***	-0.0128***	0.00141
	(0.00320)	(0.00367)	(0.00156)
+ Social Norm	-0.00190	-0.000846	0.00335
	(0.00305)	(0.00383)	(0.00322)
+ SN & PG+	-0.00386*	-0.00519	-0.00256
	(0.00192)	(0.00443)	(0.00281)
Wave dummies and controls	Yes	Yes	Yes
N	229751	229751	229751

Payment Reminder Results: Treatment Effects

Payment Reminders: Treatment effects on conditional fraction paid for fiscal year 2014

Legend:
- Simplified (gray)
- +Deterrence (red)
- +Tax Morale (blue)
- 95% CI
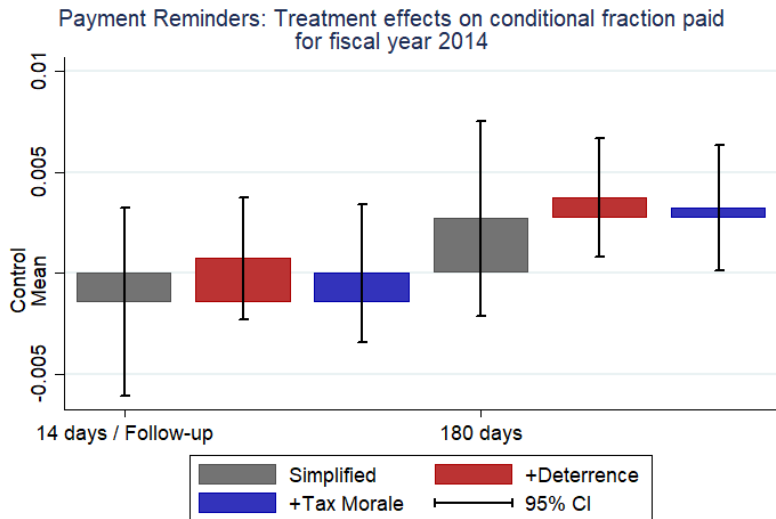
Control mean is .92 for 14 days and .93 for 180 days after letter receipt

Individual Nudges

Payment Reminder Results FY 2015: Treatment Effects

Payment Reminders: Treatment effects on the probability of partial payment for fiscal year 2015

Legend:
- Simplified
- +Tax Morale
- +Deterrence
- +Det & Tax Morale
- 95% CI

Control mean is .41 for 14 days and .87 for 180 days after letter receipt

Payment Reminder Results FY 2015: Treatment Effects

Payment Reminders: Treatment effects on conditional fraction paid for fiscal year 2015

Legend: Simplified, +Deterrence, +Tax Morale, +Det & Tax Morale, 95% CI
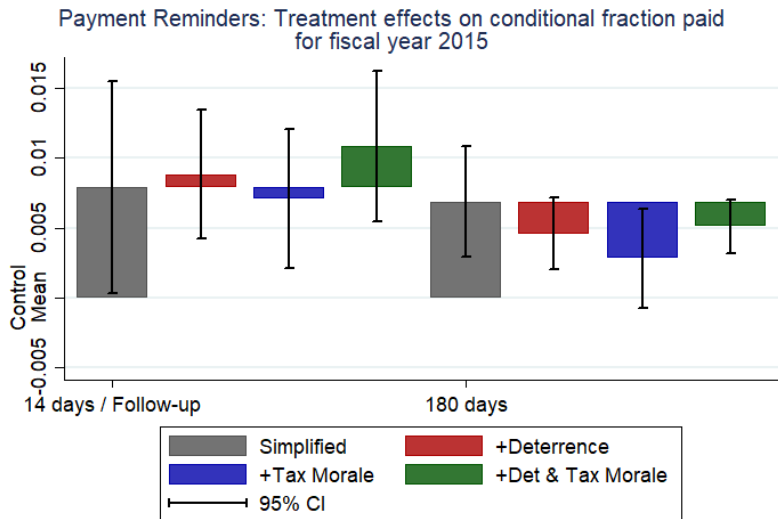
Control mean is .9 for 14 days and .92 for 180 days after letter receipt

Back

Payment Reminder Results: Long-term Effects

Payment Reminders: Treatment effects on the probability of being on time with payment in fiscal year 2015

Control mean is .69

Back
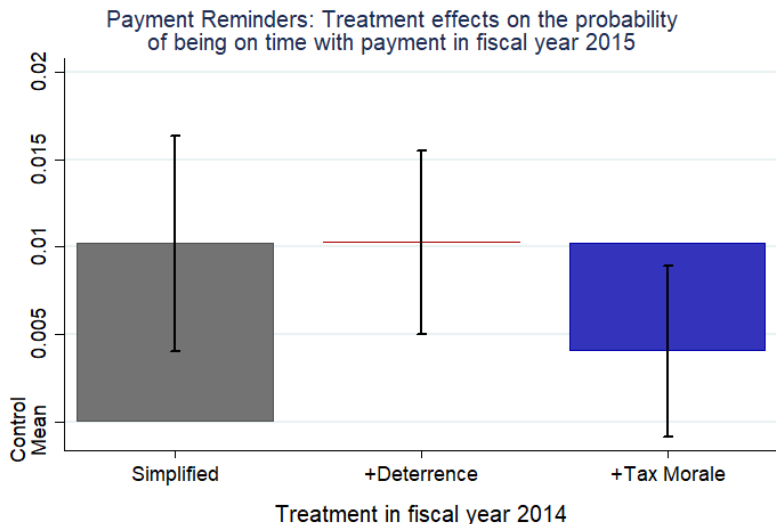
Payment Reminder Results: Cumulative Effects

	Probability of some payment by day x in 2016		
	Day 2	Day 14	Day 180
Simplified 2015	-0.00527	-0.00990	-0.00331
	(0.00933)	(0.0122)	(0.0140)
Simplified 2016	0.0125*	0.0941***	0.0139
	(0.00582)	(0.0107)	(0.0129)
Simplified 2015 * Simplified 2016	0.00485	0.00471	0.00274
	(0.00904)	(0.0128)	(0.0139)
Wave dummies and controls	Yes	Yes	Yes
N	64736	64736	64055

Back

Payment Reminder Results: Enforcement

	Nr Letters	Nr Garnishments	Nr Bailiffs
Simplified	-0.0731***	-0.0282***	-0.0120***
	(0.00287)	(0.00226)	(0.00168)
N	229751	229751	229751

Late Payers RDD: Discontinuity

Share of prosecuted in bin (bin width 2 EUR)
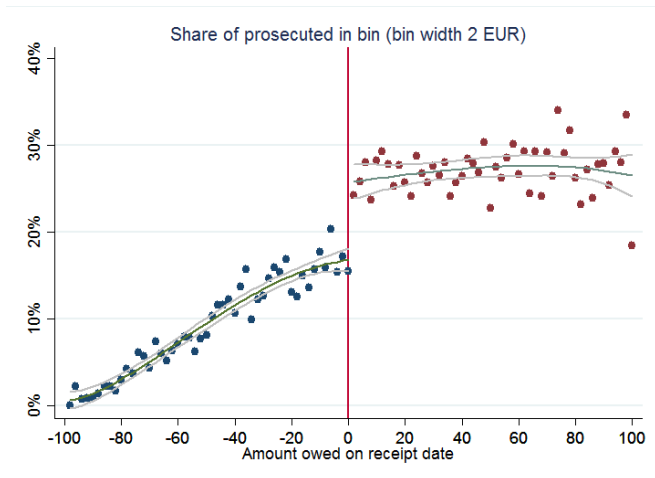
McCrary test   Predicted Compliance   Back

McCrary test

Manipulation tests:

Share of individuals with debt in bin
(debts btw 0-1000 EUR, bin width 5 EUR)
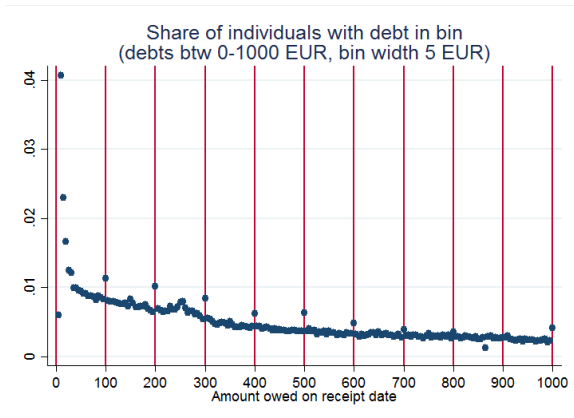
McCrary Test: Discontinuity estimate = -0.0323
Standard error = (0.0429) Back

Predicted Compliance

Average predicted compliance in bin (bin width 2 EUR)

Back
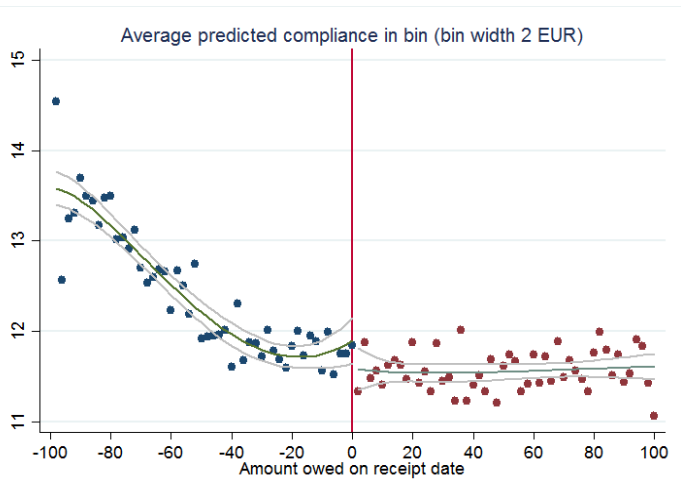
Specification

$$Y_i = \alpha + \beta_0 T_i + \beta_1 1\{Amt_i > c\} + \beta_2 T_i 1\{Amt_i > c\} + f(T_i, Amt_i, 1\{Amt_i > c\}) + \gamma X_i + \delta_w + \epsilon_i$$

where

- Y_i refers to the probability of being subject to enforcement actions and outcomes previously considered
- T_i is a dummy for being in one of the treatment groups
- Amt_i is the value of outstanding debt on the day of letter receipt (centred).
- c is the threshold value used to trigger enforcement actions
- f function specifies the polynomials on the two sides of the cut-off and is specific to the Treatment / Control group

Back

Late Payers RDD: First Stage

	Nr Letters	Nr Garnishments	Nr Bailiffs
Panel A: Enforcement			
Above cutoff owed on RD	0.0638***	0.0354***	0.00206
	(0.00967)	(0.00969)	(0.00209)
N	22576	12891	21804
Panel B: Enforcement vs Simplified			
Simplified	-0.0678***	-0.00665	0.00256
	(0.0203)	(0.0201)	(0.00438)
Above cutoff owed on RD	0.101***	0.104***	0.00385
	(0.0276)	(0.0273)	(0.00598)
Simplified * Above cutoff owed on RD	-0.0417	-0.0784***	-0.00206
	(0.0295)	(0.0292)	(0.00638)
N	22576	12891	21804

Late Payers RDD: Second Stage Results

| | Probability of some payment by day x | | |
	Day 2	Day 14	Day 180
Simplified	0.134***	0.154***	0.0482**
	(0.0259)	(0.0256)	(0.0196)
Above cutoff owed on RD	0.0336	0.0229	0.0713***
	(0.0354)	(0.0349)	(0.0268)
Simplified * Above cutoff owed on RD	-0.0652*	-0.0181	-0.0379
	(0.0378)	(0.0373)	(0.0286)
N	17575	23312	21894

Late Payers RDD: Simplification Results

| | Probability of some payment by day x | | |
	Day 2	Day 14	Day 180
Simplified	0.0901***	0.136***	0.0268***
	(0.0149)	(0.0168)	(0.00509)
N	52464	52464	52464

Late Payers RDD: Cost effectiveness

What is the most cost-effective way to raise 1 EUR of extra revenue 180 days after letter receipt?

- Behavioural treatment:
  - Cost - difference in cost between new and old letter.
  - Benefit - Treatment effect on revenue raised.

$$\frac{0.05}{4.69} = €0.01$$

- Enforcement:
  - Costs - Increase in probability of enforcement actions above cut-off * their cost .
  - Benefits - Increase in revenue raised above the cut-off

$$\frac{2.35}{6.93} = €0.34$$