

Behavioural prompts to increase early filing of tax returns: a population-level randomised controlled trial of 11.2 million taxpayers in Indonesia

Supplementary material

Appendix A - Treatment emails

Control Email

Subjek: Mari sampaikan SPT Tahunan 2017 Saudara sekarang

Yth. Bapak/Ibu [nama]
[NPWP]
di tempat

Sesuai ketentuan Pasal 3 ayat (3) huruf b dan c Undang-Undang Nomor 6 Tahun 1983 tentang Ketentuan Umum dan Tata Cara Perpajakan sebagaimana telah beberapa kali diubah terakhir dengan Undang-Undang Nomor 16 Tahun 2009, batas waktu penyampaian SPT Tahunan PPh Wajib Pajak Orang Pribadi adalah paling lama 3 (tiga) bulan setelah akhir Tahun Pajak dan untuk SPT Tahunan PPh Wajib Pajak Badan adalah paling lama 4 (empat) bulan setelah akhir Tahun Pajak. SPT Tahunan PPh dapat disampaikan secara langsung ke KPP/KP2KP, selain itu Wajib Pajak juga dapat menyampaikan SPT Tahunan dengan cara:

1. Dikirim melalui pos tercatat dengan bukti pengiriman surat ke KPP tempat Wajib Pajak terdaftar;
2. Dikirim melalui perusahaan jasa ekspedisi atau jasa kurir dengan bukti pengiriman surat ke KPP tempat Wajib Pajak terdaftar; atau
3. e-Filing melalui laman DJP online (<https://djponline.pajak.go.id>) atau Penyedia Layanan SPT Elektronik yang telah ditunjuk Direktorat Jenderal Pajak.

Apabila Saudara membutuhkan informasi perpajakan lebih lanjut, Saudara dapat menghubungi:

1. Kantor Pelayanan Pajak;
2. Kantor Pelayanan, Penyuluhan dan Konsultasi Perpajakan;
3. Kring Pajak (021) 1500200; atau
4. Laman www.pajak.go.id.

Atas peran serta Saudara dalam pembayaran dan pelaporan pajak, kami sampaikan terima kasih.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



Kementerian Keuangan Republik Indonesia
Direktorat Jenderal Pajak



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English translation

Subject: Submit your 2017 Annual Tax Return now

Dear Mr/Ms **[name]**

[taxpayer number]

According to the provisions of Article 3 paragraph (3) b and c of Law No. 6 of 1983 on General Provisions and Tax Procedures that has been amended numerous times, lastly by Act No. 16 of 2009, deadline for submission of Annual Income Tax Return for personal taxpayer is a maximum of 3 (three) months after the end of the Tax Year, and for the Annual Income Tax Return for corporate taxpayer is a maximum of 4 (four) months after the end of the Tax Year. Annual Income Tax Return can be submitted in person to the KPP/KP2KP. In addition, taxpayers may also submit the Annual SPT by:

1. Sending by registered mail with delivery receipt to KPP where the taxpayer is registered;
2. Sending by a courier company or courier service with delivery receipt to KPP where the taxpayer is registered; or
3. e-Filing through the online DGT webpage (<https://djponline.pajak.go.id>) or an SPT Electronic Service Provider designated by the Directorate General of Taxation.

If you require any further tax information, you may contact:

1. Tax Services Office;
2. Office of Tax Services, Counselling and Consultation;
3. Tax Call Centre (021) 1500200; or
4. Webpage www.pajak.go.id.

We would like to extend our thanks for your role in paying and reporting your taxes.

Best regards,

Robert Pakpahan

Director General of Taxation



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Treatment 1 – Simplification

Subjek: Sampaikan SPT Tahunan 2017 Saudara sekarang

Yth. Bapak/Ibu **[nama]**

NPWP **[NPWP]**

Sudah waktunya melaporkan Surat Pemberitahuan (SPT) Tahunan Pajak Penghasilan (PPh) 2017 Saudara.

Terdapat 4 pilihan:

e-Filing melalui laman DJP online (<https://djponline.pajak.go.id>) atau Penyedia Layanan SPT Elektronik yang telah ditunjuk oleh Direktorat Jenderal Pajak;

Datang langsung ke Kantor Pelayanan Pajak (KPP) atau Kantor Pelayanan Penyuluhan dan Konsultasi Perpajakan (KP2KP) tempat Saudara akan menyampaikan SPT;

Dikirim melalui pos tercatat ke KPP tempat Saudara terdaftar; atau

Dikirim melalui jasa ekspedisi/kurir ke KPP tempat Saudara terdaftar.

Jangan tunggu sampai batas waktu berakhir. Saat ini semakin banyak masyarakat Indonesia yang telah patuh melaporkan SPT.

Laporkan SPT Saudara sekarang.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



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English translation

Subject: Submit your 2017 Annual Tax Return now

Dear Mr/Ms **[name]**

TIN **[NPWP]**

It's time to submit your 2017 Annual Income Tax Return. There are four options:

e-Filing through the online DGT webpage (<https://djponline.pajak.go.id>) or an SPT Electronic Service Provider designated by the Directorate General of Taxation;

In person at the Tax Services Office (KPP) or Office of Tax Services, Counselling and Consultation (KP2KP) where you will submit the SPT;

Sent by registered mail to the KPP where you are registered; or

Sent by a courier service to the KPP where you are registered.

Do not wait until the deadline expires. Nowadays, more Indonesians than ever are dutifully filing SPT.

Report your SPT now.

Best regards,

Robert Pakpahan

Director General of Taxation



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Treatment 2 – Link to guidance

Subjek: Sampaikan SPT Tahunan 2017 Saudara dalam 15 menit

Yth. Bapak/Ibu **[nama]**

NPWP **[NPWP]**

Sudah waktunya melaporkan Surat Pemberitahuan (SPT) Tahunan Pajak Penghasilan (PPh) 2017 Saudara. Saudara hanya membutuhkan waktu sekitar 15 menit apabila dokumen yang dibutuhkan telah dipersiapkan sebelumnya.

Panduan kelengkapan pengisian SPT 2017 menggunakan formulir 1770 SS, 1770 S atau 1770. Klik di sini

Pertanyaan yang sering diajukan mengenai Formulir 1770. Klik di sini

Jangan tunggu sampai batas waktu berakhir. Saat ini semakin banyak masyarakat Indonesia yang telah patuh melaporkan SPT.

Hindari berbagai permasalahan bila melaporkan SPT pada akhir bulan Maret:

Penolakan karena menyampaikan SPT secara tidak lengkap akibat tergesa-gesa;

Pelambatan laman web untuk penyampaian e-Filing;

Antrean panjang untuk penyampaian secara manual;

Pengenaan denda jika melewati batas waktu penyampaian (31 Maret).

Laporkan SPT Saudara sekarang.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



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English translation

Subject: Submit your 2017 Annual Tax Return in 15 minutes

Dear Mr/Ms **[name]**

TIN **[NPWP]**

It's time to submit your 2017 Annual Income Tax Return. You will only need around 15 minutes if all the required documents have been prepared in advance.

Checklist for filing SPT 2017 with a 1770 SS, 1770 S or 1770 form. Click here

Frequently asked questions about Form 1770. Click here

Do not wait until the deadline expires. Nowadays, more Indonesians than ever are dutifully filing SPT.

Avoid problems when reporting tax return at the end of March:

Rejections because of submitting SPT incompletely due to haste;

Website slowdown for e-Filing;

Long queues for manual submission;

Imposition of fines if it passes the deadline of submission (31 March).

Report your SPT now.

Best regards,
Robert Pakpahan
Director General of Taxation



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Treatment 3 – Planning prompt & reminders

Subjek: Hindari masalah dalam menyampaikan SPT Tahunan 2017

Yth. Bapak/Ibu **[nama]**

NPWP **[NPWP]**

Sudah waktunya melaporkan Surat Pemberitahuan (SPT) Tahunan Pajak Penghasilan (PPh) 2017 Saudara. Kami akan mengirimkan pesan pengingat yang dapat membantu Saudara. Pilih tanggal **sebelum 16 Maret 2018**.

YA; saya akan memilih tanggal yang cocok untuk melaporkan SPT sebelum tanggal 16 Maret 2018 agar lebih mudah. [Klik di sini](#)

TIDAK; saya tidak akan memilih tanggal untuk melaporkan SPT sebelum tanggal 16 Maret 2018, bahkan bila hal ini dapat mempersulit saya. [Klik di sini](#)

Perencanaan yang baik dalam mempersiapkan SPT, akan membuat pelaporannya menjadi lebih mudah. Saat ini semakin banyak masyarakat Indonesia yang telah patuh melaporkan SPT.

Hindari berbagai permasalahan bila melaporkan SPT pada akhir bulan Maret:

Penolakan karena menyampaikan SPT secara tidak lengkap akibat tergesa-gesa;

Pelambatan laman web untuk penyampaian e-Filing;

Antrean panjang untuk penyampaian secara manual;

Pengenaan denda jika melewati batas waktu penyampaian (31 Maret).

Mulailah mempersiapkan pelaporan SPT Saudara dari sekarang.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



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Reminder (sent two days before and on chosen date)

Subjek: Pesan pengingat untuk menyampaikan SPT Saudara

Yth. [name], Saudara telah memilih untuk melaporkan SPT pada tanggal 12/02/2018.

Melaporkan SPT hanya membutuhkan waktu 15 menit jika Saudara telah mempersiapkannya. Akan sangat membantu bila Saudara dapat merencanakan langkah-langkah berikut:

| | |
|---|--|
| Penyampaian SPT secara manual | Penyampaian SPT secara online |
| Di mana alamat Kantor Pelayanan Pajak (KPP) tempat Saudara akan menyampaikan dokumen SPT? | Di mana Saudara akan mendapatkan koneksi internet? |

| | |
|--|---|
| Bagaimana cara menyampaikan dokumen SPT Saudara ke sana: dengan datang langsung, melalui layanan pos atau kurir? | Bagaimana Saudara akan mengurangi gangguan, misalnya dari televisi dan media sosial? |
| Jam berapa Saudara akan menyampaikan dokumen SPT? | Jam berapa Saudara akan memulai? |
| Apakah Saudara sudah menyiapkan semua dokumen yang benar? Gunakan panduan kami klik di sini | Apakah Saudara sudah memiliki semua dokumen yang benar? Gunakan panduan kami klik di sini |

Laporkan SPT Saudara sekarang.

Salam hormat,
Robert Pakpahan
Direktur Jenderal Pajak



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English translation

Subject: Avoid problems in submitting the 2017 Annual Tax Return

Dear Mr/Ms [name]
TIN [NPWP]

It's time to submit your 2017 Annual Income Tax Return. We will send a reminder to help you. Choose a date **prior to 16 March, 2018**.

YES; I will choose a suitable date to report the SPT before 16 March 2018 to make it easier. [Click here](#)
NO; I will not choose a date to report the SPT before 16 March, even if this makes it more difficult for me. [Click here](#)

Good planning in preparing the SPT will make reporting easier. Nowadays, more Indonesians than ever are dutifully filing SPT.

Avoid problems when reporting tax return at the end of March:
Rejections because of submitting SPT incompletely due to haste;
Website slowdown for e-Filing;
Long queues for manual submission;
Imposition of fines if it passes the deadline of submission (31 March).
Start preparing your SPT report now.

Best regards,
Robert Pakpahan
Director General of Taxation



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Subject: A reminder message to submit your SPT

Hi [name], you have chosen to report the SPT on 12/02/2018.

Reporting an SPT can take as little as 15 minutes if you have prepared. It helps if you can plan the following steps:

| Manual filing of SPT | Online filing of SPT |
|---|--|
| What is the address of the Tax Services Office (KPP) where you will submit the SPT? | Where will you get internet connection? |
| How will your documents get there: visit, post or courier service? | How will you reduce distractions, e.g., television and social media? |
| What time will you submit the SPT? | What time will you start? |
| Have you got all the correct documents? Use our checklist click here | Have you got all the correct documents? Use our checklist click here |

Report your SPT now.

Best regards,

Robert Pakpahan

Director General of Taxation



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Treatment 4 – Combined guidance & planning prompt

Subjek: Sampaikan SPT Tahunan 2017 Saudara dalam 15 menit

Yth. Bapak/Ibu **[nama]**

NPWP **[NPWP]**

Sudah waktunya melaporkan Surat Pemberitahuan (SPT) Tahunan Pajak Penghasilan (PPh) 2017 Saudara. Saudara hanya membutuhkan waktu sekitar 15 menit apabila dokumen yang dibutuhkan telah dipersiapkan sebelumnya.

Panduan kelengkapan pengisian SPT 2017 menggunakan formulir 1770 SS, 1770 S atau 1770. Klik di sini

Pertanyaan yang sering diajukan mengenai Formulir 1770. Klik di sini

Jangan tunggu sampai batas waktu berakhir. Saat ini semakin banyak masyarakat Indonesia yang telah patuh melaporkan SPT.

Kami akan mengirimkan pesan pengingat yang dapat membantu Saudara. Pilih tanggal **sebelum 16 Maret 2018**.

YA; saya akan memilih tanggal yang cocok untuk melaporkan SPT sebelum tanggal 16 Maret 2018 agar lebih mudah. Klik di sini

TIDAK; saya tidak akan memilih tanggal untuk melaporkan SPT sebelum tanggal 16 Maret 2018, bahkan bila hal ini dapat mempersulit saya. Klik di sini

Mulailah mempersiapkan pelaporan SPT Saudara dari sekarang.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



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Berhenti Berlangganan Silahkan Klik Disini

English translation

Subject: Submit your 2017 Annual Tax Return in 15 minutes

Dear Mr/Ms **[name]**

TIN **[NPWP]**

It's time to submit your 2017 Annual Income Tax Return. You will only need around 15 minutes if all the required documents have been prepared in advance.

Checklist for filing SPT 2017 with a 1770 SS, 1770 S or 1770 form. Click here

Frequently asked questions about Form 1770. Click here

Do not wait until the deadline expires. Nowadays, more Indonesians than ever are dutifully filing SPT.

We will send a reminder to help you. Choose a date **prior to March 16, 2018**.

YES; I will choose a suitable date to report the SPT before March 16, 2018 to make it easier. Click here

NO; I will not choose a date to report the SPT before March 16, even if this makes it more difficult for me. Click here

Start preparing your SPT report now.

Best regards,

Robert Pakpahan

Director General of Taxation



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Treatment 5 – National pride

Subjek: Pajak Saudara, Bangun Negeri

Yth. Bapak/Ibu **[nama]**

NPWP **[NPWP]**

Selamat tahun baru 2018. Semoga Saudara senantiasa dalam keadaan sehat dan dimudahkan dalam segala urusan.

Saudara menerima email ini karena alamat email Saudara terdaftar pada basis data email wajib pajak Direktorat Jenderal Pajak. Kami berencana untuk menggunakan email tersebut sebagai salah satu alternatif penyaluran informasi perpajakan kepada wajib pajak. Kami berharap penyampaian informasi perpajakan tersebut dapat memberi manfaat dalam pemenuhan hak dan kewajiban perpajakan Saudara sebagai wajib pajak.

Sehubungan dengan batas waktu penyampaian SPT Tahunan 2017 yang semakin dekat, kami sangat mengharapkan agar Saudara segera menyampaikan SPT Tahunan 2017. Apabila Saudara membutuhkan informasi perpajakan lebih lanjut, Saudara dapat menghubungi:

Kantor Pelayanan Pajak;

Kantor Pelayanan, Penyuluhan dan Konsultasi Perpajakan;

Kring Pajak (021) 1500200; atau

Laman www.pajak.go.id.

Pajak yang Saudara bayarkan sangat bermanfaat untuk menjamin tersedianya barang dan jasa publik/umum di negara kita. Bersama ini kami lampirkan ilustrasi mengenai penggunaan uang pajak, sebagai gambaran peranan Saudara sebagai pahlawan pembangunan negara melalui pembayaran pajak.

Terima kasih atas perhatiannya, kami berharap Saudara selalu sukses dalam hidup dan karir.

Salam hormat,

Robert Pakpahan

Direktur Jenderal Pajak



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Tiap 1 Juta Uang Pajak Untuk Apa .

Jumlah Pendapatan Negara

APBN 2017

1.750,3 Triliun

85,6%

bersumber dari

Penerimaan Perpajakan



Kementerian Keuangan Republik Indonesia
Direktorat Jenderal Pajak

Subject: Your Taxes, Build the Nation

Dear Mr/Ms **[name]**

TIN **[NPWP]**

Happy New Year 2018. May you always stay healthy and we hope everything is going well (literal translation: be facilitated in all affairs).

You have received this email because your email address is registered in the Directorate General of Taxation's email database on taxpayers. We plan to use the email as one of the alternatives in distributing the tax-related information to the taxpayer. We hope that the dissemination of the tax information will provide benefits in the fulfilment of your rights and responsibilities as a taxpayer.

As the deadline for submission of Annual Tax Return 2017 draws near, we really hope that you submit your Annual Tax Return 2017 soon. If you require any further tax information, you may contact:

Tax Services Office;

Office of Tax Services, Counselling and Consultation;

Tax Call Center (021) 1500200; or

Webpage www.pajak.go.id.

Taxes that you pay are very helpful to ensure the availability of public goods and services in our country.

We attach illustration of the use of taxpayers' money to show your role as a hero of the country's development through paying taxes.

Thank you for your attention, (and) we wish you success in life and career.

Best regards,

Robert Pakpahan

Director General of Taxation



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Appendix B - Baseline characteristics and balance checks

This Appendix contains balance checks on the two stratification variables (self-employed/employee status and the regional tax office where the taxpayer is registered) as well as three additional characteristics related to taxpayer behaviour (age in decade bands, whether the taxpayer had registered within the three years before trial launch, and whether the taxpayer had filed a 2016 tax return). Table B1 presents these checks for the three variables that are proportions (self-employed status, whether the taxpayer had registered recently and whether they had filed a 2016 return) in which there were very small differences between groups. Table B2 presents checks for regional tax offices and Table B3 presents checks for age in decade bands. Here again, the differences are very small. For all five variables, pairwise chi-squared tests were not significant at any conventional level of significance.

Table B1. Balance Checks for Proportions Variables

| Variable | Control 1 | Control 2 | Treatment 1 | Treatment 2 | Treatment 3 | Treatment 4 | Treatment 5 |
|---|-----------|-----------|-------------|-------------|-------------|-------------|-------------|
| Self-employed status (binary) | 5.4% | 5.4% | 5.4% | 5.4% | 5.4% | 5.4% | 5.4% |
| Whether taxpayer had registered recently (within 3 years of trial launch, binary) | 5.2% | 5.2% | 5.2% | 5.2% | 5.2% | 5.2% | 5.2% |
| Whether the taxpayer had filed a 2016 return | 19.8% | 19.9% | 19.8% | 19.8% | 19.9% | 19.8% | 19.9% |

Table B2. Balance Checks for Regional Tax Office - sample size by treatment condition

| Tax Office | Control 1 | Control 2 | Treatment 1 | Treatment 2 | Treatment 3 | Treatment4 | Treatment 5 |
|--------------------------|-----------|-----------|-------------|-------------|-------------|------------|-------------|
| Aceh | 34,307 | 34,308 | 34,307 | 34,308 | 34,307 | 34,308 | 34,309 |
| Sumatera Utara I | 36,506 | 36,507 | 36,507 | 36,506 | 36,507 | 36,507 | 36,508 |
| Sumatera Utara II | 45,316 | 45,316 | 45,317 | 45,316 | 45,317 | 45,316 | 45,318 |
| Riau dan Kepri | 62,779 | 62,781 | 62,779 | 62,781 | 62,779 | 62,781 | 62,781 |
| Sumatera Barat dan Jambi | 55,284 | 55,284 | 55,284 | 55,284 | 55,284 | 55,284 | 55,285 |
| Sumsel dan Kep. Babel | 54,324 | 54,326 | 54,325 | 54,325 | 54,325 | 54,326 | 54,326 |
| Bengkulu dan Lampung | 44,962 | 44,964 | 44,963 | 44,963 | 44,963 | 44,964 | 44,964 |
| Jakarta Pusat | 17,425 | 17,426 | 17,427 | 17,425 | 17,427 | 17,426 | 17,427 |
| Jakarta Barat | 36,224 | 36,224 | 36,225 | 36,224 | 36,225 | 36,224 | 36,226 |
| Jakarta Selatan I | 11,582 | 11,584 | 11,583 | 11,583 | 11,583 | 11,584 | 11,584 |
| Jakarta Timur | 50,983 | 50,985 | 50,985 | 50,984 | 50,985 | 50,985 | 50,985 |
| Jakarta Utara | 26,771 | 26,771 | 26,771 | 26,772 | 26,771 | 26,771 | 26,773 |
| Banten | 89,676 | 89,677 | 89,676 | 89,677 | 89,676 | 89,677 | 89,677 |
| Jawa Barat I | 118,669 | 118,671 | 118,671 | 118,671 | 118,671 | 118,671 | 118,671 |
| Jawa Barat II | 73,910 | 73,911 | 73,910 | 73,911 | 73,911 | 73,910 | 73,911 |
| Jawa Tengah I | 86,262 | 86,262 | 86,262 | 86,262 | 86,262 | 86,262 | 86,263 |
| Jawa Tengah II | 85,093 | 85,093 | 85,094 | 85,093 | 85,094 | 85,093 | 85,095 |
| DI Yogyakarta | 28,413 | 28,415 | 28,415 | 28,414 | 28,415 | 28,415 | 28,415 |

| | | | | | | | |
|--------------------|--------|--------|--------|--------|--------|--------|--------|
| Jawa Timur I | 26,507 | 26,507 | 26,508 | 26,508 | 26,508 | 26,507 | 26,509 |
| Jawa Timur II | 83,445 | 83,446 | 83,446 | 83,445 | 83,446 | 83,446 | 83,446 |
| Jawa Timur III | 79,648 | 79,649 | 79,650 | 79,648 | 79,650 | 79,649 | 79,650 |
| Kalimantan Barat | 22,736 | 22,738 | 22,737 | 22,737 | 22,737 | 22,738 | 22,738 |
| Kalimantan Selatan | 38,667 | 38,667 | 38,667 | 38,668 | 38,667 | 38,667 | 38,668 |
| Kalimantan Timur | 32,165 | 32,167 | 32,166 | 32,167 | 32,166 | 32,167 | 32,167 |
| Sultanbatara | 76,544 | 76,544 | 76,544 | 76,544 | 76,544 | 76,544 | 76,546 |
| Sulutenggo Malut | 50,358 | 50,358 | 50,360 | 50,358 | 50,360 | 50,358 | 50,360 |
| Bali | 39,772 | 39,772 | 39,772 | 39,774 | 39,772 | 39,772 | 39,774 |
| Nusa Tenggara | 38,807 | 38,808 | 38,808 | 38,808 | 38,808 | 38,808 | 38,808 |
| Papua dan Maluku | 31,020 | 31,020 | 31,022 | 31,020 | 31,022 | 31,021 | 31,021 |
| Wajib Pajak Besar | 116 | 117 | 117 | 117 | 117 | 117 | 118 |
| Jakarta Selatan II | 25,210 | 25,210 | 25,211 | 25,210 | 25,211 | 25,210 | 25,211 |
| Jawa Barat III | 90,359 | 90,359 | 90,360 | 90,359 | 90,360 | 90,359 | 90,361 |

Table B3. Balance Checks for Age in Decade Bands - sample size by treatment condition

| Age in 10 Year Brackets | Control 1 | Control 2 | Treatment 1 | Treatment 2 | Treatment 3 | Treatment4 | Treatment 5 |
|-------------------------|-----------|-----------|-------------|-------------|-------------|------------|-------------|
| <20 | 1,859 | 1,908 | 1,882 | 1,816 | 1,845 | 1,838 | 1,847 |
| 20-29 | 260,268 | 259,904 | 259,744 | 260,518 | 260,635 | 260,943 | 261,213 |
| 30-39 | 459,982 | 459,921 | 460,299 | 459,110 | 459,927 | 459,504 | 459,257 |

| | | | | | | | |
|-------------|---------|---------|---------|---------|---------|---------|---------|
| 40-49 | 373,705 | 374,165 | 373,679 | 373,657 | 373,962 | 374,091 | 374,519 |
| 50-59 | 324,954 | 324,747 | 325,169 | 325,508 | 324,750 | 324,364 | 324,840 |
| 60-69 | 102,732 | 103,435 | 103,096 | 103,403 | 103,190 | 103,741 | 102,475 |
| 70-79 | 37,390 | 36,815 | 37,134 | 36,880 | 36,736 | 36,613 | 36,875 |
| 80+ | 10,266 | 10,265 | 10,202 | 10,229 | 10,336 | 10,218 | 10,184 |
| Invalid Age | 22,684 | 22,687 | 22,663 | 22,742 | 22,488 | 22,555 | 22,685 |

Appendix C - Implementation challenges

The size of the sample as well as the complexity of the commitment website led to a number of challenges during the implementation on Day 1 of roll-out (19 February 2018). All problems, outlined in the below table, were resolved before the emails were sent out to the Day 2 sample, which necessitated moving Day 2 of the roll-out to 26 February, instead of 20 February as previously planned. All issues and the measures taken as well as the adaptation of analysis are reported in table C.1.

Table C.1: Implementation issues and adaptation

| Issue | Measure taken | Adaptation of analysis |
|--|---|--|
| Major email provider blocked/ delayed delivery of emails to this provider's addresses since they suspect it might be spam. | DJP contacted provider and was able to have DJP's server 'whitelisted' on 22 February 2018. | We were not able to identify which emails were delayed; furthermore we can expect the issue to have affected all treatment arms equally. Robustness checks: analysis by day. |
| Planning website send reminder emails at high frequency. DJP's IT estimates that around 1,000 email addresses in Treatment 3 and 4 were affected. This was due to incorrect time settings in DJP's server. | The time settings were updated. DJP also sent an apology email to the email addresses believed to have been affected. | Robustness checks: analysis by day |
| 2,806 taxpayers in the status quo email group (Control 1) accidentally received Treatment 1 emails on Day 1. These individuals subsequently also were sent Control emails. We could not identify which email addresses were affected. | n/a | Robustness checks: analysis by day |
| ~240,000 individuals in the status quo email group (Control 1)/ Day 1 (1/2 of the treatment arm across both days) were not sent the emails, as the uploading process was not completed before the emails were launched. DJP staff only discovered this issue later and was not able to identify which email addresses were affected. | n/a | Robustness checks: analysis by day |
| Some taxpayers (exact number unknown) in Treatment 5/ Day 1 received the treatment email without personalisation (name and NPWP). | The email was changed as soon as this was discovered. | Robustness checks: analysis by day |

Appendix D - Sample and engagement with emails

Table D.1. shows that by mid-April 2018, we recorded that between 71% to 84% of emails had been opened across different treatment conditions (these are lower bounds, since not all email providers generate read-receipts), and were substantially higher on Day 1 than Day 2. We do not know why this is the case. One possibility is that more taxpayers had already filed their tax return if they were in the Day 2 group and thus did not open the email. The national pride email (Treatment 5) had substantially lower open rates. This might be related to the subject line being less effective at engaging taxpayers or the picture contained in this mail making it more likely that the email ended up in recipients' spam folders.

Table D.1: Summary of sample, emails sent and opened (as of mid April 2018)

| Day | Group | Sample size | Emails sent | Emails delivered | Emails not delivered | Emails opened | Open rate |
|-----|--|-------------|-------------|------------------|----------------------|---------------|-----------|
| 1 | Control 1 - <i>No email</i> | 797,390 | n/a | n/a | n/a | n/a | n/a |
| | Control 2 - Status quo email | 795,710 | 505,493 | 437,329 | 68,164 | 355,502 | 81.29% |
| | Treatment 1 - Simplified email | 798,209 | 744,526 | 649,890 | 94,636 | 547,876 | 84.30 % |
| | Treatment 2 - Simplified & guidance email | 796,599 | 742,757 | 647,621 | 95,136 | 531,595 | 82.08 % |
| | Treatment 3 - Simplified & planning email | 795,707 | 742,231 | 647,793 | 94,438 | 539,403 | 83.27% |
| | Treatment 4 - Combined simplified, guidance & planning | 797,444 | 743,830 | 648,599 | 95,231 | 533,664 | 82.28% |
| | Treatment 5 - National pride email | 797,461 | 744,053 | 649,341 | 94,712 | 460,997 | 70.99% |
| 2 | Control 1 - No email | 796,450 | n/a | n/a | n/a | n/a | n/a |
| | Control 2 - Status quo email | 798,157 | 744,216 | 648,618 | 95,598 | 459,930 | 70.91% |

| | | | | | | |
|--|------------|-----------|-----------|-----------|-----------|--------|
| Treatment 1 - Simplified email | 795,659 | 741,808 | 646,923 | 94,885 | 488,299 | 75.48% |
| Treatment 2 - Simplified & guidance email | 797,264 | 744,030 | 649,333 | 94,697 | 502,834 | 77.44% |
| Treatment 3 - Simplified & planning email | 798,162 | 744,737 | 649,887 | 94,850 | 483,366 | 74.38% |
| Treatment 4 - Combined simplified, guidance & planning | 796,423 | 742,853 | 647,741 | 95,112 | 501,198 | 77.38% |
| Treatment 5 - National pride email | 796,434 | 743,170 | 648,609 | 94,561 | 475,682 | 73.34% |
| Total number /average share | 11,157,069 | 8,683,704 | 7,571,684 | 1,112,020 | 5,880,346 | 76.68% |

Appendix E - Details of analysis

Creation of variables

We created the outcome variables as follows:

- **‘Early filing’** (before 16 March 2018) and **‘filed at any time’** (cut off date: 4 November 2018): binary indicators based on filing dates.
- **Amount of taxes collected**: amount of taxes paid (underpayment) or claimed (overpayment, negative value used to calculate net taxes collected) at point of submission of tax return using data from the tax return receipt.
- **Paid any taxes**: binary variable equal to one if taxpayer made any additional payment at point of submission (i.e. overpayments claimed were not included). Most taxpayers submit and don’t pay because their employers have already withheld their taxes.
- **Sign up to the commitment website (for Treatment 3 and 4)**: created by pulling data directly off the commitment website; duplicates were deleted.

We created the following covariates using data in DJP’s system in addition to the outcomes:

- **Registered recently**: registered in 2016, 2017 or 2018,
- **Age**: bracketed into under 20, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-109, invalid age (missing, over 109 or under 16 as we expect these birth dates are data errors),
- Filed for 2016 tax year,
- **Regional tax office**: binary indicators for each of the 33 regional tax offices,
- **Self-employment indicator (based on 2016 data)**: binary, using information either from the point of registration or the last tax return filed, using the fact that self-employed individuals have to file a different tax return.

Primary analysis

We used linear regressions with heteroskedasticity-robust standard errors to analyse the impact of treatment allocation on the primary outcomes. The outcomes used were (1) whether an individual files early (i.e. by 16 April 2018); and (2) whether they filed at all. The coefficients of interest were those on the dummies for the assigned treatment group (with the no-email control as the base category).

We included the following covariates:

- the day the emails were sent (dummy variables),
- the regional tax office (dummy variables),
- whether individuals had registered within the three years prior to the trial (binary),
- whether the taxpayer had filed a tax return for the 2016 tax year (binary),
- and the taxpayer age in decade bands (dummy variables).

We used robust standard errors fit via Feasible Generalised Least Squares to account for possible heteroskedasticity. We could have clustered standard errors at the level of the local office, as local offices conduct their own, independent communication with taxpayers. However, we expected this to affect the mean of the outcome in each office (which can be adjusted for by including tax office fixed effects in the regression), rather than the variance (which would require clustered standard errors to be used). We therefore deemed it unnecessary to cluster standard errors as it is unlikely there would be much social discussion about the interventions on a large scale, or any other mechanism for reducing the variance in the outcome measure in a local area.

The regression results from this analysis can be found in Table 4 in the main article.

We were also interested in ranking the 7 arms (two controls and five treatments) against each other, resulting in a total of 21 comparisons per outcome and $k = 42$ in total. We used the Hochberg step-up procedure (Benjamini and Hochberg, 1995) to correct for multiple comparisons as follows:

1. Rank the p-values from smallest to largest.
2. Compare them with a sequence increasing uniformly from $0.05/k$ to 0.05 for the 5% significance level, from $0.01/k$ to 0.01 for the 1% significance level and $0.1/k$ to 0.1 for the 10% significance level, respectively. In our case, $k=42$.

Table E.1 below shows the significance levels for each pairwise comparison. A + means that the treatment in the relevant row was more effective than the treatment in the column and vice versa for a - This allows us to conclude that Treatment 3 (simplification and guidance) was the most effective treatment.

Table E.1. Comparison Table for Early Filing

| | C1 | C2 | T1 | T2 | T3 | T4 | T5 |
|----|-------|-------|-------|-------|-------|-------|-------|
| C1 | X | 1%, - | 1%, - | 1%, - | 1%, - | 1%, - | 1%, - |
| C2 | 1%, + | X | 1%, - | 1%, - | 1%, - | 1%, - | N.S. |
| T1 | 1%, + | 1%, + | X | 1%, - | 1%, - | 1%, - | 1%, + |
| T2 | 1%, + | 1%, + | 1%, + | X | 1%, - | 1%, - | 1%, + |
| T3 | 1%, + | 1%, + | 1%, + | 1%, + | X | 1%, + | 1%, + |
| T4 | 1%, + | 1%, + | 1%, + | 1%, + | 1%, - | X | 1%, + |
| T5 | 1%, + | N.S. | 1%, - | 1%, - | 1%, - | 1%, - | X |

The percentages indicate the significance level and the signs indicate the direction of the effect and N.S means not significant at even a 10% level. P-values were adjusted for multiple comparisons using a Benjamini-Hochberg step-up procedure with k=42.

Likewise, Table E.2 below allows us to conclude that there is no statistically significant difference for filing overall between Treatments 2 (simplification and guidance) and 3 (planning), but they both outperform all the other arms.

Table E.2 Comparison Table for Filing Overall

| | C1 | C2 | T1 | T2 | T3 | T4 | T5 |
|----|-------|-------|-------|-------|-------|-------|-------|
| C1 | X | 1%, - | 1%, - | 1%, - | 1%, - | 1%, - | 1%, - |
| C2 | 1%, + | X | 1%, - | 1%, - | 1%, - | 1%, - | N.S. |
| T1 | 1%, + | 1%, + | X | 1%, - | 1%, - | N.S. | 1%, + |
| T2 | 1%, + | 1%, + | 1%, + | X | N.S. | 1%, + | 1%, + |
| T3 | 1%, + | 1%, + | 1%, + | N.S. | X | 1%, + | 1%, + |
| T4 | 1%, + | 1%, + | N.S. | 1%, - | 1%, - | X | 1%, + |
| T5 | 1%, + | N.S. | 1%, - | 1%, - | 1%, - | 1%, - | X |

The percentages indicate the significance level and the signs indicate the direction of the effect and N.S means not significant at even a 10% level. P-values were adjusted for multiple comparisons using a Benjamini-Hochberg step-up procedure with k=42.

Additional results

Impact on tax payments: While increasing tax payments was not the primary aim of the trial, we also evaluated the effect of the interventions on the tax paid overall and the likelihood of making any payment at the point of filing. We analysed the impact of treatment allocation on the amount of tax paid in Indonesian rupiah using a linear regression, again with heteroskedasticity-robust standard errors and using the same covariates as in our primary analysis (see above). We also evaluated the impact of the emails on the likelihood of paying any taxes due. We used the same model specification as above for primary outcomes, substituting the outcome to payment of any taxes.

None of the treatments had statistically significant effects on taxes collected (see Table E.3) We believe that this is driven by the fact that (1) our intervention did not aim at changing payment behaviour, (2) most employed taxpayers have their taxes paid directly by their employers. Only Treatment 4 (simplification, planning and guidance) had a statistically significant, albeit very modest effect (0.04 percentage points) on the probability of making at least one underpayment on the tax return.

Table E.3 Impact on tax collection

| | Net taxes paid at point of filing (in million IDR) | Any underpayment in at least one tax return (binary) |
|--|---|---|
| Treatment arm (reference: no-email control) | | |
| Control 2 - Status quo | 0.0241 (0.0417) | 0.0001 (0.0001) |
| Treatment 1 - Simplification | 0.0230 (0.0519) | 0.0001 (0.0001) |
| Treatment 2 - Link to guidance | 0.0325 (0.0438) | 0.0002 (0.0001) |
| Treatment 3 - Planning prompt & reminders | 0.0211 (0.0662) | 0.0002 ⁺ (0.0001) |
| Treatment 4 - Combined link to guidance & planning prompts | 0.0858 (0.0577) | 0.0004 ^{***} (0.0001) |
| Treatment 5 - National pride | -0.0095 (0.0397) | 0.00004 (0.0001) |
| Email sent on Day 2 | 0.0271 (0.0292) | -0.0001 (0.0001) |
| Registered in 2016 or later | 0.0341 (0.0534) | 0.0005 ^{***} (0.0001) |
| Filed tax return for 2016 | 0.1758 ^{***} (0.0389) | 0.0078 ^{***} (0.0001) |
| Age (reference category: 30 - 39 yrs) | | |
| < 20 yrs | 0.3007 (0.2171) | 0.0101 ^{***} (0.0011) |
| 20 - 29 yrs | -0.0936 ^{***} (0.0139) | -0.0061 ^{***} (0.0001) |
| 40 - 49 yrs | 0.1470 ^{***} (0.0132) | 0.0054 ^{***} (0.0001) |
| 50 - 59 yrs | 0.2675 ^{***} (0.0222) | 0.0067 ^{***} (0.0001) |
| 60 - 69 yrs | 0.9124 ^{***} (0.1164) | 0.0158 ^{***} (0.000187) |
| 70 - 79 yrs | 1.3896 ^{***} (0.330) | 0.0116 ^{***} (0.0003) |
| 80 yrs + | 2.155 [*] (1.2192) | 0.0025 ^{***} (0.0004) |
| Invalid age | 0.5755 ^{***} (0.1788) | 0.0101 ^{***} (0.0004) |
| Intercept | -0.2657 ^{***} (0.0390) | -0.0042 ^{***} (0.0001) |
| Control group means | 0.2825 | 0.0122 |
| Observations | 11,157,069 | 11,157,069 |

Standard errors in parentheses. Model: FGLS with heteroskedasticity robust standard errors; coefficients for regional tax office omitted. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Correlation between signing up for reminders and outcome: For taxpayers in Treatment 3 and 4 we collected data on whether they had chosen a filing date via the website and would thus receive the reminder emails. We see a strong and significant correlation between having signed up and the likelihood of filing early in both treatments arms: taxpayers in Treatment 3 who signed up to the website and were sent reminder emails were 14.2 percentage points more likely to file early than those who didn't. This correlation is slightly smaller in Treatment 4.

Table E.4 Sign-up to website and early filing (Treatment 3 and 4 only)

| | Files early (by 16 March 2018, binary) |
|---|--|
| Treatment arm (reference: Treatment 3) | |
| Treatment 4 | -0.0029*** (0.0005) |
| Signed up to commitment website | 0.1416*** (0.0029) |
| Treatment 4 * Signed up to commitment website | -0.0193*** (0.0048) |
| Email sent on Day 2 | -0.0009* (0.0005) |
| Registered in 2016 or later | 0.0096*** (0.0012) |
| Filed tax return for 2016 | 0.3388*** (0.0007) |
| Age (reference category: 30 - 39 yrs) | |
| < 20 yrs | 0.0395*** (0.0076) |
| 20 - 29 yrs | -0.0261*** (0.0008) |
| 40 - 49 yrs | 0.0022*** (0.0007) |
| 50 - 59 yrs | -0.0277*** (0.0008) |
| 60 - 69 yrs | -0.2318*** (0.0009) |
| 70 - 79 yrs | -0.2685*** (0.0012) |
| 80 yrs + | -0.3013*** (0.0018) |
| Invalid age | -0.0656*** (0.0022) |
| Intercept | 0.3455*** (0.0018) |
| Control group means | 0.3677 |
| Observations | 3,187,736 |

Standard errors in parentheses; Model: FGLS with heteroskedasticity robust standard errors; coefficients for regional tax office omitted; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; subsample: Treatment 3 and 4 only.

Sub-group analysis

By employment status: We were also interested in how the treatment effects varied by employment status, as the filing process for self-employed and those that hold another job on the side (which we include in the group of self-employed individuals for analysis) is

significantly more complicated than for employed taxpayers. We therefore conducted regressions similar to those in Table 4 in the main paper, but including interactions between self-employed status and treatment arm.

As shown in Table E.5, Treatments 1, 2 and 3 are less effective among the self-employed in encouraging both early filing and overall filing than for non-self employed persons at the 5% significance level. Treatment 4 was less effective at promoting early filing only at the 5% level. The relative reduction in effectiveness on self-employed taxpayers is quite substantial - for example 36.5% for our most effective treatment (Treatment 3, simplification and guidance). However, the treatments still significantly, both statistically and practically, increased filing and early filing for self-employed persons compared to the pure control. Note that this analysis is based on the classification as of tax year 2017 and not on the type of tax return filed in 2018 (as this information would not be available/ updated for taxpayers who did not file a tax return this year).

Table E.5. Secondary Analysis - impact by employment analysis

| | Files early (by 16 March 2018, binary) | Files overall (binary) |
|--|---|---------------------------|
| Treatment arm (reference: no-email control) | | |
| Control 2 - Status quo | 0.0079*** (0.0005) | 0.0058*** (0.0005) |
| Treatment 1 - Simplification | 0.0124*** (0.0005) | 0.0087*** (0.0005) |
| Treatment 2 - Link to guidance | 0.0135*** (0.0005) | 0.0106*** (0.0005) |
| Treatment 3 - Planning prompt & reminders | 0.0211*** (0.0005) | 0.0113*** (0.0005) |
| Treatment 4 - Combined link to guidance & planning prompts | 0.0166*** (0.0005) | 0.00847*** (0.0005) |
| Treatment 5 - National pride | 0.0079*** (0.0005) | 0.0054*** (0.0005) |
| Self-employed | -0.0612*** (0.0016) | 0.0487*** (0.0016) |
| Control 2 * Self-employed | -0.0037* (0.0022) | -0.0043* (0.0022) |
| Treatment 1 * Self-employed | -0.0055** (0.0022) | -0.0046** (0.0022) |
| Treatment 2 * Self-employed | -0.0069*** (0.0022) | -0.0061*** (0.0022) |
| Treatment 3 * Self-employed | -0.0071*** (0.0022) | -0.0060*** (0.0022) |
| Treatment 4 * Self-employed | -0.0031 (0.0022) | -0.0006 (0.0022) |
| Treatment 5 * self-employed | -0.0045** (0.0022) | -0.0028 (0.0022) |
| Email sent on Day 2 | 0.0002 (0.0003) | 0.0001 (0.0003) |
| Registered in 2016 or later | 0.0101*** (0.0007) | 0.0055*** (0.0007) |
| Filed tax return for 2016 | 0.3420*** (0.0004) | 0.2290*** (0.0003) |
| Age (base category: 30-39 years) | | |

| | | |
|---------------------|------------------------|------------------------|
| < 20 yrs | 0.0554*** (0.0041) | 0.0213*** (0.0040) |
| 20 - 29 yrs | -0.0288*** (0.0004) | -0.0768*** (0.0004) |
| 40 - 49 yrs | 0.00413*** (0.0004) | 0.0286*** (0.0004) |
| 50 - 59 yrs | -0.0241*** (0.0004) | -0.0006 (0.0004) |
| 60 - 69 yrs | -0.2238*** (0.0005) | -0.3680*** (0.0006) |
| 70 - 79 yrs | -0.2555*** (0.0007) | -0.4534*** (0.0008) |
| 80 yrs + | -0.2888*** (0.0010) | -0.5287*** (0.0013) |
| Invalid age | -0.0606*** (0.0012) | -0.0684*** (0.0012) |
| Intercept | 0.3298*** (0.0010) | 0.6611*** (0.0010) |
| Control group means | 0.3491 | 0.6556 |
| Observations | 11,157,069 | 11,157,069 |

Standard errors in parentheses. Model: FGLS with heteroskedasticity robust standard errors; coefficients for regional tax office omitted. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

By region: To address concerns that the emails might have a different impact across regions, we evaluated how the impact differed by regional tax office (33 different tax offices, full results not shown). We decided to only compare all treatments to the main control (no email), rather than ranking the treatments. We are aware that the large number of comparisons ($33 \times 6 = 198$) conducted for the regional sub-group analysis made it highly likely that we would find at least some significant (albeit potentially spurious) results. However, as Indonesia is a culturally highly diverse country, we wanted to make sure that the interventions would not produce backfires in some of the regions. Furthermore, given the large sample size, this analysis was feasible (i.e. the subgroups were large enough). We found that for 14 regional offices all treatments were statistically significant compared to the no-Email control; for 16, some were significant and for 1 office (the very small “Large Taxpayers” office with a sample size of only 819) none were significant. Importantly, Treatment 3 had a statistically significant and positive impact also in those regional offices for which only some treatments were effective.

Robustness checks

Finally, we conducted robustness checks for the primary outcome measures (early and overall filing). First, Table E.6 presents the results when we exclude those individuals (roughly 9% of the sample) who filed before the intervention was implemented and whose filing behaviour could thus not be influenced by the intervention. While the coefficients on the treatment dummies are, as expected, slightly higher, the overall results do not change.

Table E.6: Robustness checks 1 - excluding individuals who filed before implementation of intervention

| | Files early (by 16 March 2018, binary) Coefficient (Standard error) | Files overall (binary) Coefficient (Standard error) |
|--|--|--|
| Treatment arm (reference: no-email control) | | |
| Control 2 - Status quo | 0.0084*** (0.0005) | 0.0062*** (0.0005) |
| Treatment 1 - Simplification | 0.0132*** (0.0005) | 0.0093*** (0.0005) |
| Treatment 2 - Link to guidance | 0.0142*** (0.0005) | 0.0113*** (0.0005) |
| Treatment 3 - Planning prompt & reminders | 0.0228*** (0.0005) | 0.0121*** (0.0005) |
| Treatment 4 - Combined link to guidance & planning prompts | 0.0182*** (0.0005) | 0.0094*** (0.0005) |
| Treatment 5 - National pride | 0.0084*** (0.0005) | 0.0058*** (0.0005) |
| | | |
| Email sent on Day 2 | -0.0244*** (0.0003) | -0.0112*** (0.0003) |
| Registered in 2016 or later | -0.0096*** (0.0007) | -0.0009 (0.0007) |
| Filed tax return for 2016 | 0.2631*** (0.0004) | 0.2104*** (0.0003) |
| Age (reference category: 30 - 39 yrs) | | |
| < 20 yrs | 0.0500*** (0.0042) | 0.0287*** (0.0042) |
| 20 - 29 yrs | -0.0205*** (0.0004) | -0.0813*** (0.0005) |
| 40 - 49 yrs | -0.0008** (0.0004) | 0.0309*** (0.0004) |
| 50 - 59 yrs | -0.0272*** (0.0004) | -0.00003 (0.0004) |
| 60 - 69 yrs | -0.2033*** (0.0005) | -0.3665*** (0.0006) |
| 70 - 79 yrs | -0.2342*** (0.0006) | -0.4464*** (0.0008) |
| 80 yrs + | -0.2582*** (0.0008) | -0.514*** (0.0013) |
| Invalid age | -0.0531*** (0.0012) | -0.0672*** (0.0012) |
| Intercept | 0.2843*** (0.0011) | 0.6425*** (0.0011) |
| Control group means | 0.2768 | 0.6173 |
| | | |
| Observations | 10,037,818 | 10,037,818 |

Standard errors in parentheses; Model: FGLS with heteroskedasticity robust standard errors; coefficients for regional tax office omitted * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table E.7, we present the results from conducting the analysis separately for each of the two days the emails were sent across to check whether the treatment effects differed by day, in view of the implementation challenges encountered on day one (see Appendix C above). Reassuringly, the differences in treatment effects across days are negligible and Treatment 3 remains the most effective intervention. We can thus conclude that the day the email was sent out did not matter for the effectiveness of the treatment. It should however be noted that both intervention days were Wednesdays, and that this analysis does thus not tell us

anything about differences in treatment effects across different days of the week or for weekdays compared to weekends.

Table E.7: Robustness checks 2 - Analysis by day

| | Files early (by 16 March 2018, binary) - Day 1 | Files early (by 16 March 2018, binary) - Day 2 | Files overall (binary) - Day 1 | Files overall (binary) - Day 2 |
|--|---|---|--------------------------------------|--------------------------------------|
| Treatment arm (reference: no-email control) | | | | |
| Control 2 - Status quo | 0.0070*** (0.0007) | 0.0084*** (0.0007) | 0.0051*** (0.0007) | 0.0060*** (0.0007) |
| Treatment 1 - Simplification | 0.0133*** (0.0007) | 0.0109*** (0.0007) | 0.0097*** (0.0007) | 0.0073*** (0.0007) |
| Treatment 2 - Link to guidance | 0.0128*** (0.0007) | 0.0134*** (0.0007) | 0.0101*** (0.0007) | 0.0104*** (0.0007) |
| Treatment 3 - Planning prompt & reminders | 0.0210*** (0.0007) | 0.0204*** (0.0007) | 0.0109*** (0.0007) | 0.0111*** (0.0007) |
| Treatment 4 - Combined link to guidance & planning prompts | 0.0175*** (0.0007) | 0.0154*** (0.0007) | 0.0092*** (0.0007) | 0.0077*** (0.0007) |
| Treatment 5 - National pride | 0.0068*** (0.0007) | 0.00859*** (0.0007) | 0.0049*** (0.0007) | 0.0057*** (0.0007) |
| Registered in 2016 or later | 0.0056*** (0.0009) | 0.0071*** (0.0009) | 0.0080*** (0.0009) | 0.0081*** (0.0009) |
| Filed tax return for 2016 | 0.3386*** (0.0005) | 0.3404*** (0.0005) | 0.2310*** (0.0004) | 0.2311*** (0.0004) |
| Age (reference category: 30 - 39 yrs) | | | | |
| < 20 yrs | 0.0509*** (0.0058) | 0.0423*** (0.0057) | 0.0340*** (0.0056) | 0.0207*** (0.0055) |
| 20 - 29 yrs | -0.0270*** (0.0006) | -0.0269*** (0.0006) | -0.0779*** (0.0006) | -0.0782*** (0.0006) |
| 40 - 49 yrs | 0.00382*** (0.0005) | 0.00328*** (0.0005) | 0.0291*** (0.0005) | 0.0290*** (0.0005) |
| 50 - 59 yrs | -0.0242*** (0.0006) | -0.0249*** (0.0006) | -0.00003 (0.0005) | -0.0006 (0.0005) |
| 60 - 69 yrs | -0.2281*** (0.0007) | -0.2274*** (0.0007) | -0.3655*** (0.0008) | -0.3652*** (0.0008) |
| 70 - 79 yrs | -0.2644*** (0.0009) | -0.2638*** (0.0009) | -0.4486*** (0.0012) | -0.4463*** (0.0012) |
| 80 yrs + | -0.2964*** (0.0014) | -0.2964*** (0.0013) | -0.5227*** (0.0019) | -0.5241*** (0.0019) |
| Invalid age | -0.0606*** (0.0017) | -0.0638*** (0.0017) | -0.0681*** (0.0017) | -0.0665*** (0.0017) |
| Intercept | 0.3286*** (0.0014) | 0.3278*** (0.0014) | 0.6631*** (0.0014) | 0.6623*** (0.0013) |
| Control group means | 0.3488 | 0.3494 | 0.6554 | 0.6558 |
| Observations | 5,578,520 | 5,578,549 | 5,578,520 | 5,578,549 |

Standard errors in parentheses. Model: FGLS with heteroskedasticity robust standard errors; coefficients for regional tax office not shown. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Exploratory analysis

Given the encouraging and consistent results of the pre-specified analysis, we decided to conduct additional, exploratory analysis that had not been pre-specified as follows:

- **Proportion of taxpayers that files on last day/ during last week (Table E.8):**
There is a roughly 6.4%/ 4.8 % decrease in the number of taxpayers filing on the last day/ during the last week between the pure control group and Treatment 3.
- **Impact on on-time filing (Table E.0):** As an additional outcome measure, we also looked at the impact of the treatments on the likelihood of filing on time (by 31 March) rather than early (by 16 March). We see very similar results - in terms of treatment ordering and relative effects - to the early outcome in the primary analysis.

Table E.8: Proportion of taxpayers filing on last day/ during last week

| Treatment arm | Files on 31st March | Files during last week |
|--|---------------------|------------------------|
| Control 1 - No email | 6.36 % | 31.38 % |
| Control 2 - Status quo | 6.24 % | 30.69 % |
| Treatment 1 - Simplification | 6.18 % | 30.46 % |
| Treatment 2 - Link to guidance | 6.11 % | 30.92 % |
| Treatment 3 - Planning prompts & reminders | 5.95 % | 29.41 % |
| Treatment 4 - Combined link to guidance & planning prompts | 6.07 % | 29.88 % |
| Treatment 5 - National pride | 6.26 % | 30.70 % |

Table E.9: On-time filing

| | Files by 31 March 2018 (binary) |
|--|------------------------------------|
| Treatment arm (reference: no-email control) | |
| Control 2 - Status quo | 0.0059*** (0.0005) |
| Treatment 1 - Simplification | 0.0093*** (0.0005) |
| Treatment 2 - Link to guidance | 0.0118*** (0.0005) |
| Treatment 3 - Planning prompt & reminders | 0.0128*** (0.0005) |
| Treatment 4 - Combined link to guidance & planning prompts | 0.0096*** (0.0005) |
| Treatment 5 - National pride | 0.0057*** (0.0005) |
| Email sent on Day 2 | 0.0002 (0.0003) |
| Registered in 2016 or later | 0.0064*** (0.0007) |
| Filed tax return for 2016 | 0.2496*** |

| | |
|---------------------------------------|------------------------|
| | (0.0003) |
| Age (reference category: 30 - 39 yrs) | |
| < 20 yrs | 0.0394*** (0.0040) |
| 20 - 29 yrs | -0.0678*** (0.0005) |
| 40 - 49 yrs | 0.0222*** (0.0004) |
| 50 - 59 yrs | -0.0119*** (0.0004) |
| 60 - 69 yrs | -0.3670*** (0.0006) |
| 70 - 79 yrs | -0.4495*** (0.0008) |
| 80 yrs + | -0.5177*** (0.0012) |
| Invalid age | -0.0668*** (0.0012) |
| Intercept | 0.6207*** (0.0001) |
| Control group means | 0.618 |
| Observations | 11,157,069 |

Standard errors in parentheses. Model: FGLS with heteroskedasticity robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix F – Effect sizes in tax trials

Table F.9 presents the effect sizes from the tax compliance trials presented in the paper. For comparison, the most effective email in this study achieved a 2.1 percentage point increase for early filing and 1.1 percentage point increase for overall filing. It is worth noting that the trials cover a wide range of interventions, outcome measures and contexts, which partly might explain the differences in effect sizes. Additionally, it is likely that many trials with non-significant results (and smaller effect sizes, all else equal) do not get published, leading to selection bias in the average effect sizes in publications.

Table F.9: Effect sizes in tax trials

| Paper | Context | Effect Size (vs. control arm) |
|-----------------------------|--|--|
| Hallsworth, 2014 | First experiment: N= 101,427 UK income taxpayers; interventions tested: a control, 3 kinds of social norms letters and 2 framings of public good arguments. Second experiment: N=119,527 UK income taxpayers, interventions tested: a control, 9 types of social norms letters and 4 other letters. | First experiment: 1.2 - 4.9 p.p. increase in filing by 23rd day Second experiment: 0.5 - 5.4 p.p. increase in filing by 23rd day |
| Brockmeyer et al., (2019) | N= 49,757 non-filing firms with emails in Costa Rica; intervention tested: a no-email control, a baseline enforcement-focussed email and third-party information email. Note: There were 115,000 firms originally but the authors dropped those without emails. | 22.7 p.p. increase in filing rate at 25 weeks for the third-party information arm and 21 p.p. for the baseline arm. 3.4 p.p increase in tax collected for the baseline arm and 4.1 for the third-party information arm. |
| Kettle et al., (2016) | N = 43,387 non-compliant taxpayers in Guatemala; interventions tested: control of no email, baseline email used by the tax authority and four letter variants adapted using behavioural design. | 3.6 p.p. - 5.4 p.p increase in tax filings at 11 weeks; 0.4 - 1.7 p.p. increase in rate of payment. |
| Gillitzer and Sinning, 2020 | N = 4,787 unpaid tax debtors in Australia; with control of no contact and treatments were the same reminder letter at 12, 19 or 27 days. | 23.4 - 24.8 p.p increase in likelihood of having made any payment at 5 weeks. |
| Guyton et al., 2016 | N = 360,352 lower-income non-filers in the United States across two experiments (pooled analysis); intervention tested: postcards and brochures. | 0.4 - 1.6 p.p. increase in rate of filing across the treatment arms, and an extra contact leading to a 0.3 p.p. increase. |
| Antinyan and Asatryan, 2020 | Meta-analysis, 45 RCTs on tax compliance nudges across 28 countries. | The average (median) deterrence nudge increased tax filing by 7.7 (4.6) p.p and the average (median) non-deterrence nudge increased tax filing by 3.1 (1.5) p.p. |
| DellaVigna and Linos, 2022 | Meta-analysis, 126 RCTs on nudges covering N= 23 million individuals, including trials run by BIT North America and the Office of Evaluation Sciences. | The average impact of a nudge in a meta-analysis is 1.4 p.p., which is statistically significant overall. |