

Nudging Businesses to Pay Their Taxes: Does Timing Matter?

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Introduction

- Timing is an important aspect of policy design that is often overlooked by policymakers (BIT 2014)
- Imperfect memory means that prompting people at different times can have different effects (Ericson 2017)
- Early reminders may be forgotten, or may cause people to overestimate the frequency of reminders, but late reminders reduce the time available to act
- Little empirical evidence on the effect of reminder timing on policy outcomes
- We study the implications of the timing of reminder letters for tax debt payment

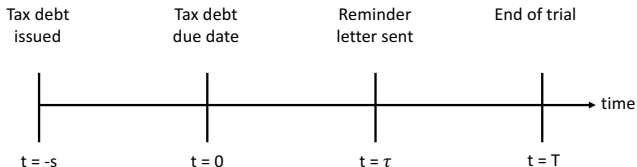
Background

- Tax non-compliance takes the form of both unreported income and unpaid debts to the tax office
- There is comparatively little research on the timely payment of tax debts (Hallsworth, 2014)
- Tax gap estimates for the US show average underpayment of \$39bn in 2008-2010
- The bulk of unpaid debt is owed by individual taxpayers and unincorporated businesses
- In Australia, 30 per cent of small businesses did not pay their tax liabilities on time during the financial year 2016-17 and together owed around 67 per cent of total collectible tax debt

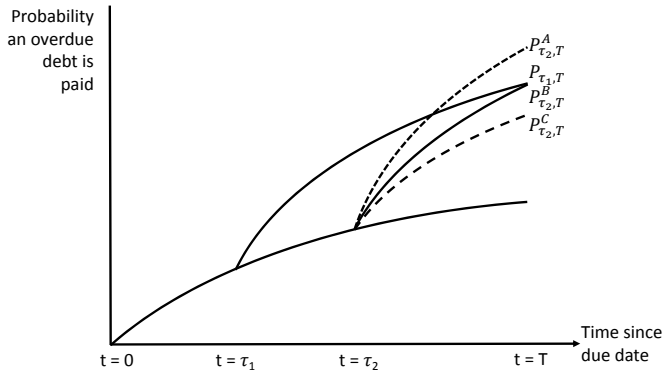
Aim of the trial

- We study the effect of the timing of reminder letters on the payment behaviour of small businesses
 - Target population: businesses with a history of compliant payment behavior
 - Cases were randomly allocated to receive a reminder letter about one, two or three weeks after their missed tax debt due date
 - A control group did not receive a letter for the seven week duration of the trial

Experimental setup



Hypothetical Repayment Rates



Mechanisms through which reminders can affect payment behavior

1. Imperfect memory
 - Full repayment of debt upon receipt of reminder
2. Payment constraints
 - Businesses enter a payment plan
3. Procrastination
 - Reminder has no effect
4. Interaction between imperfect memory, payment constraints and procrastination

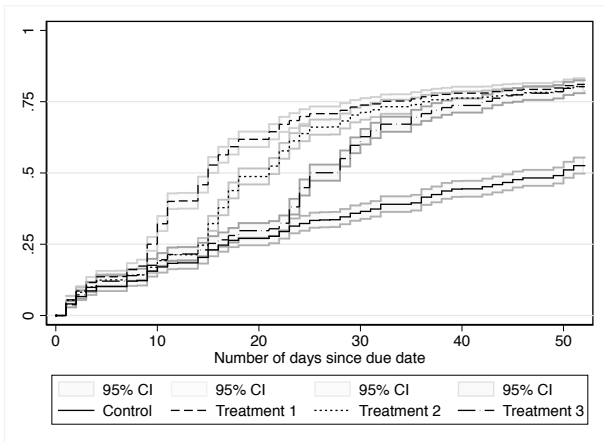
Mechanisms and expected behaviors

Case	Imperfect memory	Payment constraint	Procrastination	Expected behavior
1	✓	X	X	Debt paid in full upon receipt of the reminder.
2	✓	✓	X	Payment plan entered upon receipt of the reminder if the business can meet the minimum initial payment. Late reminders more effective than early reminders.
3	✓	X	✓	Late reminders may be more effective at prompting in-full payment than early letters because there is less time for procrastination.
4	✓	✓	✓	As in Case 3, except with the outcome being entry into a payment plan rather than payment in full if the business can meet the minimum payment requirement.
5	X	X	X	The debt is paid on time. These cases are not observed in our sample.
6	X	✓	X	Business enters a payment plan if it can meet the minimum payment requirement; the reminder has no effect on the likelihood or timing of entry into a payment plan.
7	X	X	✓	No effect of reminder.
8	X	✓	✓	No effect of reminder.

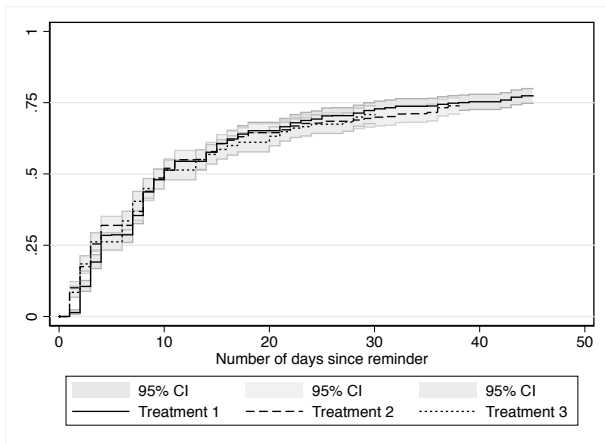
Trial design

- The trial was conducted based on the 26 March 2017 due date
- A total of 4,787 unpaid debt cases were quarantined from the usual ATO treatment pathways
- Cases were randomly allocated to receive a reminder letter either 10, 17 or 25 days following the due date (stratified randomization)
- A control group did not receive a letter for the duration of the trial
- About the same number of observations were allocated to each of the four groups

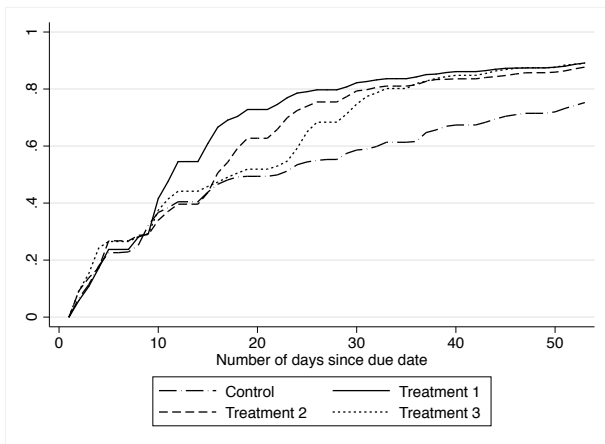
Actual Repayment Rates (Kaplan-Meier Failure Estimates)



Comparison of Payment Profiles



Share of Debt Paid



Treatment Effects on Payment Made by End of Trial

	Treatment 1	Treatment 2	Treatment 3
Panel A: Unconditional linear probability model			
Payment Made by End of Trial	0.248** (0.017) [2,401]	0.238** (0.017) [2,402]	0.234** (0.017) [2,388]
By Initial Debt Level			
\$0 - \$7,499	0.289** (0.019) [2,034]	0.279** (0.019) [2,033]	0.282** (0.019) [2,025]
\$7,500+	0.025 (0.029) [367]	0.015 (0.030) [369]	-0.028 (0.033) [363]

Note: Robust standard errors in parentheses. Number of observations in brackets.
 * $p < 0.05$, ** $p < 0.01$.

Treatment Effects on Payment Made by End of Trial

	Treatment 1	Treatment 2	Treatment 3
Panel B: Conditional linear probability model			
Payment Made by End of Trial	0.248** (0.017) [2,305]	0.235** (0.017) [2,323]	0.229** (0.017) [2,303]
By Initial Debt Level			
\$0 - \$7,499	0.290** (0.019) [1,947]	0.278** (0.019) [1,959]	0.278** (0.019) [1,949]
\$7,500+	0.009 (0.030) [358]	0.000 (0.030) [364]	-0.028 (0.033) [354]

Note: Robust standard errors in parentheses. Number of observations in brackets.
 * $p < 0.05$, ** $p < 0.01$.

Treatment Effects on Payment Made by End of Trial

	Treatment 1	Treatment 2	Treatment 3
Panel C: Conditional Probit model (marginal effects)			
Payment Made by End of Trial	0.250** (0.017) [2,305]	0.235** (0.017) [2,323]	0.232** (0.017) [2,303]
By Initial Debt Level			
\$0 - \$7,499	0.296** (0.019) [1,947]	0.283** (0.019) [1,959]	0.284** (0.019) [1,949]
\$7,500+	0.021 (0.028) [260]	-0.002 (0.019) [325]	-0.035 (0.027) [298]

Note: Robust standard errors in parentheses. Number of observations in brackets.
 * $p < 0.05$, ** $p < 0.01$.

Treatment Effects on Amount Paid by End of Trial

	Treatment 1	Treatment 2	Treatment 3
Panel A: Unconditional linear regression model			
Amount Paid by End of Trial	590.94 (762.23) [2,401]	252.64 (530.19) [2,402]	634.77 (587.46) [2,388]
By Initial Debt Level			
\$0 - \$7,499	463.81** (70.44) [2,401]	389.48** (79.93) [2,402]	440.74** (81.02) [2,388]
\$7,500+	120.71 (768.00) [2,401]	-185.18 (537.66) [2,402]	157.06 (594.92) [2,388]

Note: Robust standard errors in parentheses. Number of observations in brackets.

* $p < 0.05$, ** $p < 0.01$.

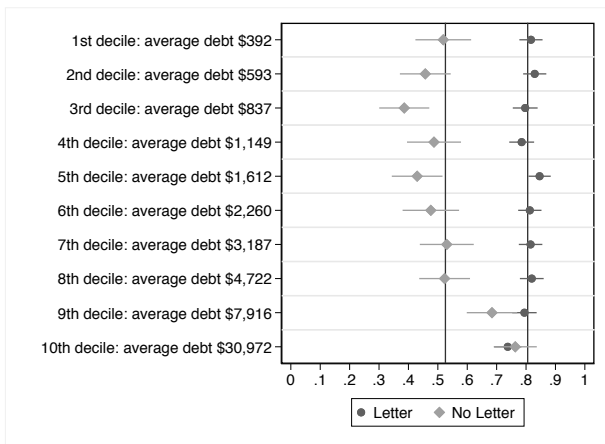
Treatment Effects on Amount Paid by End of Trial

	Treatment 1	Treatment 2	Treatment 3
Panel B: Conditional linear regression model			
Amount Paid by End of Trial	797.05 (802.71) [2,305]	135.41 (449.77) [2,323]	614.75 (515.95) [2,303]
By Initial Debt Level			
\$0 - \$7,499	470.50** (52.67) [2,305]	392.78** (66.56) [2,323]	458.77** (65.16) [2,303]
\$7,500+	320.98 (800.99) [2,305]	-305.79 (446.61) [2,323]	120.14 (513.36) [2,303]

Note: Robust standard errors in parentheses. Number of observations in brackets.

* $p < 0.05$, ** $p < 0.01$.

Treatment Effect by Initial Debt Level



Cost Calculations

Trial group	Total interest penalties by day 52	Number of letters sent	Cost of letters (at \$1.25 per letter)	Interest penalties less cost of letters	Share cases paid by day 52
No letter	\$23,742	0	\$0	\$23,742	0.53
Week 1	\$14,532	1,054	\$1,318	\$13,214	0.81
Week 2	\$16,561	926	\$1,158	\$15,403	0.80
Week 3	\$18,414	768	\$960	\$17,454	0.80

Conclusions

- There is little rigorous evidence on the effect of the timing of reminder letters on tax payment behavior
- We find that reminder letters increase the payment probability by 25 percentage points relative to the control group by the end of the seven week trial period
- Payment probabilities do not differ between treatment groups
- Sending reminder letters early accelerates tax debt collection
- The additional revenue collected relative to debt outstanding is modest
- The only meaningful heterogeneity in payment behavior is related to the level of debt