ONLINE APPENDIX

The Pledging Puzzle:
How Can Revocable Promises Increase Charitable Giving?

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This file contains Online Appendices A (Model Extensions and Additional Results), B (Experimental Instructions) and C (Additional Data Analysis) for the paper. The raw data and analysis files can be found under the supplementary material provided with the paper.

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Appendix A. Model Extensions and Additional Results

A.1. Proof of Proposition 1

Proposition 1: *The Bayesian equilibrium of the game in which all four actions are used is characterized by the numbers v^*_{gn} and v^*_{pc}, such that all individuals with $v > v^*_{gn}$ give now, individuals with $v^*_{pc} < v < v^*_{gn}$ choose to pledge and confirm, and those with $v < v^*_{pc}$ choose not to give, where v^*_{gn}, v^*_{pc} solve the following conditions:*

$$U_{gn}(v^*_{gn}, \mu_{gn}) = U_{pc}(v^*_{gn}, \mu_{pc}) \tag{1}$$

$$U_{pc}(v^*_{pc}, \mu_{pc}) = \int_{\tilde{r}_\ell}^{\tilde{r}_h} U_{pr}(v^*_{pc}, \mu_n, \tilde{r}) h(\tilde{r}) d\tilde{r} \tag{2}$$

$$\int_{\tilde{r}_\ell}^{\tilde{r}_h} U_{pr}(\mu_n, \tilde{r}) h(\tilde{r}) d\tilde{r} = \int_{\tilde{s}_\ell}^{\tilde{s}_h} U_{nn}(\mu_n, \tilde{s}) h(\tilde{s}) d\tilde{s} \tag{3}$$

where $\mu_{gn} = \int_{v^*_{gn}}^{\bar{v}} v f(v) dv$, $\mu_{pc} = \int_{v^*_{pc}}^{v^*_{gn}} v f(v) dv$ and $\mu_n = \int_0^{v^*_{pc}} v f(v) dv$.

Proof: Given the equilibrium conditions, those with $v > v^{PGN}_{gn}$ prefer to give now, those with $v^{PGN}_{pc} < v < v^{PGN}_{gn}$ prefer to pledge and confirm, and those with $v < v^{PGN}_{pc}$ prefer not to give. Individuals who are, in expectation, indifferent between pledge and renege and not now, will not give. Once their actions are observed, they obtain the same social image. However, they have different costs of declining the ask. Those who renege incur a higher cost in expectation, but enjoy pooling with those who pledge and confirm initially. While those who pledge and confirm and those who give now all give eventually, their image utilities and costs of giving are different. By the conditions above, we obtain the indifferent type between giving now and pledging and confirming implicitly, through the image utilities. For example, in the case in which $M(\mu_a) = \mu_a$, and the distribution of $v \sim U[0, \bar{v}]$, we have:

$$v^*_{gn} - 1 + \frac{v^*_{gn} + \bar{v}}{2} = (\gamma + \delta(1-\gamma))v^*_{gn} - \delta + \frac{v^*_{gn}}{2} + \delta(\frac{v^*_{pc} + v^*_{gn}}{2}).$$

The Effect of Thank-You Messages in Pledge-or-Give-Now

Next, we consider the effect of thank-you messages in Pledge-or-Give-Now. Thank-you messages are received the same day the first giving decision is made, a week in advance of the confirmation of pledges. A donor who pledged with the intention to confirm had $v \geq v^*_{pc}$, and a donor who pledged with the intention to renege had $v < v^*_{pc}$.

Assume thank-you emails increase the cost of reneging. How? An individual who previously had reneging cost $\tilde{r}$, now has $\alpha\tilde{r}$ where $\alpha > 1$. This lowers the utility of pledging and reneging and increases the incentive of people to confirm their pledge. Therefore more pledgers confirm their pledges. The new cutoff value for those who are indifferent between reneging and confirming lowers to v^{TY}_{pc}, and is given by,

$$U_{pc}(v^{TY}_{pc}, \mu^{TY}_{pc}) = \int_{\alpha\tilde{r}_\ell}^{\alpha\tilde{r}_h} U_{pr}(v^{TY}_{pc}, \mu^{TY}_{n}, \alpha\tilde{r}) h(\alpha\tilde{r}) d\tilde{r},$$

where $\mu_{pc}^{TY} = \int_{v_{pc}^{TY}}^{v_{gn}^*} vf(v)dv$ and $\mu_n^{TY} = \int_0^{v_{pc}^{TY}} vf(v)dv$. Since reneging costs have increased, it follows that $v_{pc}^{TY} < v_{pc}^*$.

A.2. Give Now and Pledge: Detailed Predictions

Consider the case in which there is only the option to give now (gn) or say no immediately (nn). We refer to this case as the Give-Now game, or GN. The utility of those who say yes is,

$$U_{gn}^{GN}(v, \mu_{gn}) = v - 1 + M(\mu_{gn}),$$

The utility of those who say no,

$$U_{nn}^{GN}(\mu_{nn}, \tilde{s}) = M(\mu_n) - \tilde{s}.$$

To rule out equilibria in which individual with no utility from giving ($v = 0$) give, we will make the assumption that, even with maximal social pressure costs, those with $v = 0$ always prefer to say no, i.e. $-\tilde{s}_h > \bar{v} - 1$. This delivers a unique Bayesian equilibrium, described in Proposition 2.

Proposition 2: *The unique Bayesian equilibrium of the Give-Now game is characterized by the number v_{GN} such that all individuals with $v > v_{GN}$ choose to give now, and all individuals with $v < v_{GN}$ choose not to give, and where v_{GN} solves the following conditions:*

$$U_{gn}^{GN}(v_{GN}, \mu_{gn}) = \int_{\tilde{s}_\ell}^{\tilde{s}_h} U_{nn}^{GN}(\mu_{nn}) h(\tilde{s}) d\tilde{s} \tag{4}$$

where

$$\mu_{gn} = \int_{v^{GN}}^{\bar{v}} vf(v)dv,$$
$$\mu_{nn} = \int_0^{v^{GN}} vf(v)dv.$$

Proof: *First, suppose that all individuals chose not to give. Those with $v > 1$ strictly prefer give now, ruling out equilibria in which no-one gives. Second, given the equilibrium and equation (4), those with $v > v_{GN}$ prefer give now, and those with $v < v_{GN}$ prefer not now. Third, consider an equilibrium in which all individuals give now. Consider an individual with $v = 0$. Deviating to saying no yields an image M of, at minimum, 0. The utility of saying no is at least $0 - \tilde{s}_h$. Even so $-\tilde{s}_h > -1 + M(\mu_{gn})$, since $-\tilde{s}_h > \bar{v} - 1$, upsetting the equilibrium with everyone choosing to give.*

Now suppose that people can only give by pledging first. Let us refer to action pledge as p, pledge and confirm as pc, pledge and renege as pr and No Now as nn. We refer to this case as the Pledge game. or P. The utility of those who plan to pledge and confirm is

$$U_{pc}^{P}(v, \mu_{pc}) = (\gamma + \delta(1 - \gamma))v - \delta + M(\mu_p) + \delta M(\mu_{pc}).$$

The utility of those who plan to pledge and renege is

$$U^P_{pr}(\mu_{pr}, \tilde{r}) = M(\mu_p) + \delta M(\mu_n) - \delta\tilde{r}.$$

The utility of those who say no,

$$U^P_{nn}(\mu_{nn}, \tilde{s}) = M(\mu_n) - \tilde{s}.$$

Proposition 3: *There exists a Bayesian equilibrium of the Pledge game characterized by the number v_P such that all individuals with $v > v_P$ plan to pledge and confirm, and all individuals with $v < v_P$ choose not to give, and where v_P solves the following conditions,*

$$U^P_{pc}(v_P, \mu_{pc}) = \int_{\tilde{r}_\ell}^{\tilde{r}_h} U^P_{pr}(v_P, \mu_{pr}, \tilde{r})h(\tilde{r})d\tilde{r}, \tag{5}$$

$$\int_{\tilde{r}_\ell}^{\tilde{r}_h} U^P_{pr}(\mu_n, \tilde{r})h(\tilde{r})d\tilde{r} = \int_{\tilde{s}_\ell}^{\tilde{s}_h} U^P_{nn}(\mu_n, \tilde{s})h(\tilde{s})d\tilde{s}, \tag{6}$$

where

$$\mu_{pc} = \int_{v_P}^{\bar{v}} vf(v)dv,$$
$$\mu_n = \int_0^{v_P} vf(v)dv.$$

Proof: *Following the same reasoning as in Proposition 2, equilibria in which all types choose not to give are ruled out. Given the equilibrium and equation (5), those with $v > v_P$ prefer pledge and confirm, and those with $v < v_P$ prefer pledge and renege. Both those who choose pledge and renege, and those who choose not now, will not give. Hence, once their actions are observed, they obtain the same social image. However, they have different costs of declining the ask. Those who renege incur a higher cost in expectation, since $E(\tilde{r}) > E(\tilde{s})$, but they initially pool with those who pledge and confirm. If $M(\mu_p) + \delta M(\mu_n) - \delta\tilde{r} \geq M(\mu_n) - \tilde{s}$, they pledge and renege, and otherwise they choose not now. In expectation, both ways of not giving yield the same utility.*

Giving across Give Now, Pledge and Pledge-or-Give-Now:
If subjects do not discount a 1-week delay, and reneging costs are the same as the cost of saying no, pledges will not increase giving, but may decrease it. Specifically, the level of giving will be the same in the Give-Now game as in the Pledge game. The cutoffs that determine giving are v_{GN} and v_P are (4) and (5). If $\delta = 1$ and $\tilde{r} = \tilde{s}$, then $v_{GN} = v_{PC}$.

Does adding the option to give now increase donations with pledges? Those who pledge and confirm in Pledge have a high image utility because pledging is the only form of giving. By contrast, those who pledge and confirm in Pledge-or-Give-Now chose not to give now. This yields a lower image utility, which decreases the value of pledging and confirming. Compare (2) and (5) to see that $v_P < v^*_{pc}$. This difference between the Pledge and the Pledge-or-Give-Now game implies that those who pledge and renege in Pledge have a lower v than those who pledge and renege in Pledge-or-Give-Now.

The Effect of Thank-You Messages in Pledge
As in Pledge-or-Give-Now, the thank-you note decreases reneging in Pledge. The thank-you note increases the cost of reneging, to $\alpha\tilde{r}$, which decreases the utility from reneging. The new value is given by

$$U_{pc}^{P}(v_{PC}^{TY}, \mu_{pc}^{TY}) = \int_{\alpha\tilde{r}_\ell}^{\alpha\tilde{r}_h} U_{pr}^{P}(\mu_{pr}^{TY}, \alpha\tilde{r})h(\alpha\tilde{r})d\tilde{r},$$

and it follows that $v_P^{TY} < v_P$.

The last question is whether the effect of thank-you notes differs in Pledge, relative to Pledge-or-Give-Now. When giving now is possible, the overall fraction of individuals who (plan to) pledge and renege is higher, since $v_P < v_{pc}^*$. Those with $v < v_P$ in Pledge, and those with $v < v_{pc}^*$ in Pledge-or-Give-Now are the group that can be affected by the thank-you note. Since this group is larger in the Pledge-or-Give-Now treatment, thank-you notes affect more people. If, additionally, the costs of reneging are positively correlated with v, the effect of the thank-you note is even stronger in Pledge-or-Give-Now. The reason is that individuals who chose to pledge and confirm in Pledge-or-Give-Now have a higher v, and thus higher reneging costs.

A.3. Model Extensions: Revisiting Giving Decisions in $t = 2$

In our main model we assumed that individuals who pledge with the intention to give later do not revisit their decisions when the pledge is due. Alternatively, one could assume that individuals revise their plans, and two cases arise: (a) individuals are naïve and do not anticipate these revisions, or (b) individuals are sophisticated and anticipate revising their choices. We consider each case in turn below. It will be important to make assumptions about the strength of reneging costs, relative to the utility of giving. Throughout, we assume that reneging costs are such that some donors with $v < 1$ but close to 1, will prefer to confirm their gifts. Specifically, $\gamma < \tilde{r}$.

Naïve Case:
Under naiveté decisions to pledge are unchanged vis a vis the models in Section 3. However, when there is an option to pledge, giving will be lower, because some potential donors will revisit their decision to give when the gift is due and, since its cost will no longer be discounted, it will lead to more reneging.

First, consider the model with decision utility (section 3.2). We refer to the time when the decision to pledge is made as $t = 1$, and the time when the pledge is confirmed or reneged upon as $t = 2$. If people revisit their plans and make a new decision in $t = 2$, for a substantial share the net utility from giving will now be negative. Only those with $v > \frac{1}{1-\gamma} > 1$ confirm, and pledges actually decrease giving.

Next, suppose individuals suffer from social pressure (section 3.3). After having pledged, a person who reconsiders their decision in $t = 2$ chooses to renege if $v > v_R^*$, where

$$v_R^* = \frac{1-\tilde{r}}{1-\gamma}. \tag{7}$$

Reneging costs thus decrease the rate of reneging in $t = 2$. Since $\gamma < \tilde{r}$, even if people reconsider their giving decisions, pledges could increase giving.

For the social image model (section 3.4), the reneging decision is very similar. Some of those who pledge with the intention of giving later will renege. Conditional on pledging, a higher fraction of potential donors will do so when there is an option to give now (Pledge-or-Give-Now), than when pledging is the only option.

Sophisticated Case:
If individuals are sophisticated, they start by evaluating their decision to confirm or renege the pledge, if they choose to pledge. They anticipate that they will only confirm the pledge if their $t = 2$ utility from doing so is high enough.

Consider first the model with decision utility. Only those with $v > \frac{1}{1-\gamma}$ pledge with the intention of confirming. Those with $\frac{1}{1-\gamma} > v > 1$, choose to give now since they anticipate that if they pledge, they will not confirm. For these, giving now is akin to a commitment device, and those with the highest levels of altruism are those who pledge. The remainder, with $v < 1$, say no. In this model pledging and confirming coexist with giving now. But, there is no role for pledging and reneging.

To explain pledging and reneging, consider the case in which potential donors suffer from social pressure costs. Since they anticipate the costs of reneging, all those with $v > \frac{1-\tilde{r}}{1-\gamma}$, pledge and confirm. In fact, all gifts come from pledges. The remainder pledge and renege, or say no.

In a model in which individuals exhibit image concerns, all behaviors may also be observed in equilibrium. Some donors give now, others pledge and confirm, while the remainder choose not to give, either by saying no immediately or by pledging and reneging.

We refer to the decision to confirm, having pledged, as pc, and the decision to renege as pr. We add $t = 2$ to indicate that these decisions are now being made when the gift is due. When the decision to confirm is due, the utility from doing so is:

$$U_{pc}^{t=2} = (1-\gamma)v - 1 + M_{pc},$$

The utility from reneging on the pledge is,

$$U_{pr}^{t=2} = -\tilde{r} + M_{pr},$$

The utilities of each action in $t = 1$ are as defined in Section 3.4. Then, we characterize an equilibrium of the game in which all four actions are chosen as follows.

Proposition 4 *There exist distributions of reneging costs $\tilde{r}$ and numbers v'_{gn} and v'_{pc}, such that in a Bayesian Equilibrium of the game all individuals with $v > v'_{gn}$ give now, individuals with $v'_{pc} < v < v'_{gn}$ choose to pledge and renege, and those with $v < v'_{pc}$ choose not to give, where v'_{gn}, v'_{pc} solve the following conditions:*

$$U_{pc}^{t=2}(v'_{pc}, \mu_{pc}) = \int_{\tilde{r}_\ell}^{\tilde{r}_h} U_{pr}^{t=2}(v'_{pc}, \mu_n, \tilde{r}) h(\tilde{r}) d\tilde{r} \tag{8}$$

$$U_{gn}(v'_{gn}, \mu_{gn}) = U_{pc}(v'_{gn}, \mu_{pc}) \tag{9}$$

$$\int_{\tilde{r}_\ell}^{\tilde{r}_h} U_{pr}(\mu_n, \tilde{r}) h(\tilde{r}) d\tilde{r} = \int_{\tilde{s}_\ell}^{\tilde{s}_h} U_{nn}(\mu_n, \tilde{s}) h(\tilde{s}) d\tilde{s} \tag{10}$$

where $\mu_{gn} = \int_{v'_{gn}}^{\bar{v}} vf(v)dv$, $\mu_{PC} = \int_{v'_{pc}}^{v'_{gn}} vf(v)dv$, $\mu_n = \int_0^{v'_{pc}} vf(v)dv$, *and* $0 \leq v \leq \bar{v}$.

Proof: *Since people are sophisticated, those who pledge anticipate their decision in* $t = 2$. *The cutoff value* v'_{pc} *characterizes the type that is indifferent between reneging and confirming. When making the decision to pledge, those with* $v > v'_{pc}$ *may choose to pledge and confirm or give now. Equation (9) defines the type that is indifferent between pledging and confirming and giving now. By (8), the solution* v'_{pc} *is decreasing in the expected value of* $\tilde{r}$. *Hence, there exist distributions of* $\tilde{r}$ *such that* $v'_{gn} > v'_{pc}$. *Then, those with the highest* v *choose give now, and those with* $v'_{gn} > v > v'_{pc}$ *pledge and confirm. Any person with* $v < v'_{pc}$ *will not give. As in Proposition 1, equation (10) characterizes the utility of those who do not give, which must be equal in expectation, whether they say no immediately or pledge and renege.*

Appendix B. Instructions

Note: Below we present first the Welcome sheet, which was shown to participants and read aloud upon arrival. Afterwards, the GiveDirectly pitch was made, at the end of which the experimenter read aloud the text shown in brackets. Participants entered their decisions on the computers. The decision screens are shown below.

[Welcome Sheet]

Welcome

Thank you for participating in this experiment. During the experiment you and the other participants are asked to answer a series of questions. Please do not communicate with other participants. If you have any questions please raise your hand and an experimenter will approach you and answer your question in private.

This experiment consists of two parts.

- Part 1: Today we will ask you to answer a series of questionnaires.
- Part 2: A follow up survey that you will be asked to fill out a week from today.

Payment

You receive for the participation in this experiment $26. Please note that in order to obtain you all payments you need to answer both parts of the experiment.

- Today you receive $6 for showing up to the experiment and answering the first part of the experiment. You can collect the $6 from the experimenter after the session is finished.
- The remaining $20 you will receive at the end of the next week's session.

[GiveDirectly Pitch (by the experimenter)

Slides of GiveDirectly are shown on the screen. Experimenter reads the slides]

[At the end of the pitch:]

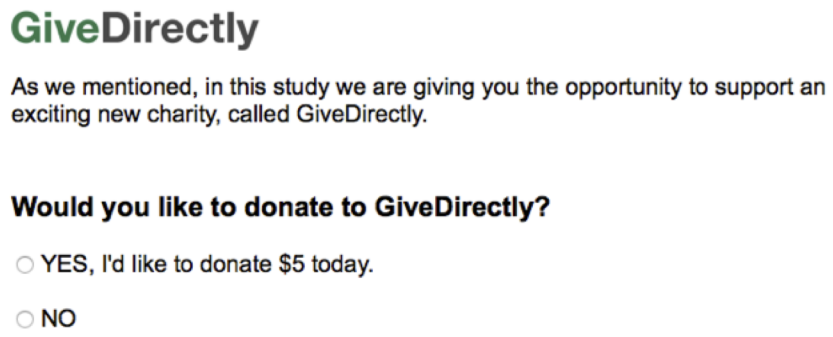
- [Treatment Give-Now]: We would like to ask you whether you would like to donate $5 of your show up fee for today's session to GiveDirectly. You will be asked to answer this question on your screens in a minute. If you answer "YES, I'd like to donate $5 today," $5 of your show up fee today will be donated. If you say "NO," no donation will be made. Your decisions are final today.

- [Treatment Pledge-or-Give-Now]: We would like to ask you whether you would like to donate $5 of your show up fee to GiveDirectly. You will be asked to answer this question on your screens in a minute. If you answer "YES, I'd like to donate $5 today," $5 of your show up fee today will be donated. This decision will be final. If you answer "YES, I'd like to donate $5 next week," we will ask you again next week and you can make your decision final at that time, then $5 of your show up fee next week will be donated. If you say "NO," no donation will be made, and that decision will be final today.

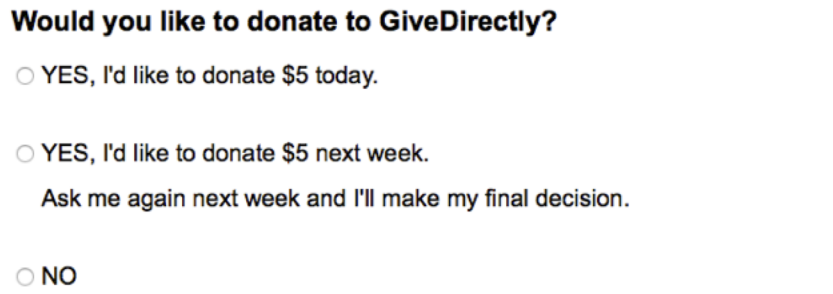
- [Treatment Pledge]: We would like to ask you whether you would like to donate $5 of your show up fee for next week's session to GiveDirectly. You will be asked to answer this question on your screens in a minute. If you answer "YES, I'd like to donate $5 next week," we will ask you again next week and you can make your decision final at that time, then $5 of your show up fee next week will be donated. If you say "NO," no donation will be made, and that decision will be final today.

Week-1 Decision Screens

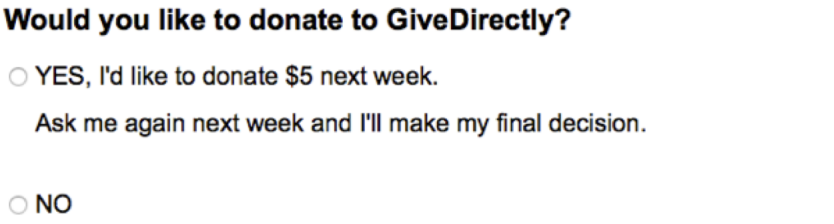
Give-Now:



Pledge-or-Give-Now:



Pledge:



Appendix C. Additional Data Analyses

C.1. Show-up rates

C.1. Determinants of no-show in week 2

	(1)	(2)	(3)
	No-show in week 2		
Pledge Treatment	-0.010	-0.005	-0.014
	(0.023)	(0.031)	(0.036)
Pledge-or-Give-Now Treatment	0.006	0.039	0.031
	(0.026)	(0.041)	(0.042)
Pledge		-0.008	-0.010
		(0.034)	(0.035)
Pledge X Pledge-or-Give-Now Treatment		-0.041	-0.036
		(0.059)	(0.060)
Give now X Pledge-or-Give-Now Treatment		-0.051	-0.052
		(0.032)	(0.032)
Female			-0.020
			(0.020)
Economics major			-0.019
			(0.026)
Cognitive Reflection Test Score			-0.016
			(0.013)
Constant	0.078***	0.078***	0.122***
	(0.017)	(0.017)	(0.038)
Observations	512	512	511
R-squared	0.001	0.004	0.010

Notes: This table presents the linear probability model results on the likelihood of a no-show in week 2. Column (1) presents the effect of the Pledge and Pledge-or-Give-Now treatments. Column (2) adds interactions with the decision made in week 1. Column (3) adds individual characteristics: female, which takes value one if the subject is a woman, zero otherwise; Economics major, which takes value one if the subject is majoring in economics, zero otherwise; and Cognitive Reflection Test score, which indicates the number of correct questions in the Cognitive Reflection Test (Frederick, 2002). Robust standard errors, clustered at the session level, were used in each individual regression. ***,**,* indicates significance at the 1%, 5% and 10% levels, respectively.

C.2. Reneging rates

Table C.2. Determinants of reneging

	(1)	(2)	(3)	(4)	(5)	(6)
	Likelihood of reneging					
Treatment:	Pledge-or-Give-Now		Pledge		Both	
Thank you	-0.231*	-0.270**	-0.044	-0.012	-0.234*	-0.232*
	(0.121)	(0.126)	(0.120)	(0.145)	(0.124)	(0.129)
Pledge					-0.244*	-0.244*
					(0.137)	(0.142)
Thank you X Pledge					0.191	0.192
					(0.167)	(0.174)
Individual controls	No	Yes	No	Yes	No	Yes
Observations	95	95	72	72	167	167
R-squared	0.0298	0.0456	0.0014	0.0901	0.0235	0.0288

Notes: This table presents marginal effects from probit regressions on the likelihood of reneging on a pledge in week 2. Columns (1)-(2) examine the effect of thank-you notes in the Pledge-or-Give-Now treatment, and columns (3)-(4) test the effect of thank-you notes in the Pledge treatment. Columns (5)-(6) pool both treatments and examine the effect of the Pledge treatment on reneging, as well as the effect of thank-you notes. Individual characteristics (female, economics major and Cognitive Reflection Test Score) are added as controls in columns (2), (4) and (6). ***,**,* indicates significance at the 1%, 5% and 10% levels, respectively.