The limits of self-commitment and private paternalism
Preliminary –comments welcome

Craig McIntosh Isaac Meza Joyce Sadka Enrique Seira Francis J. DiTraglia

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Motivation: Private paternalism

- Many institutions —firms, schools, financial contracts— restrict choice using built-in commitment mechanisms which help workers, students, borrowers overcome self-control problems
  - Loans with fixed repayment schemes, homework due dates, etc.
- At the same time these firms hide these forcing mechanisms and don't market their commitment features, potentially because demand for them is low.
- Laibson (2018) argues that clients that benefit from commitment may underestimate its value, and that in such cases private paternalism could be beneficial.
- We study the benefits of imposing a structured repayment contract, whether there is demand for it, and whether non-takers of such a commitment product would benefit from taking it.

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Context - **Pawn**shops

- Pawn loans involve borrowers leaving valuable liquid assets as collateral in exchange for an immediate cash loan
- The loan is overcollateralized (loan is 70% of appraised value) and collateral is liquid.
  - The lender approve loans in a few minutes without income or credit history check → used for emergencies.
- Controversial: interest rates and default rates are high, and used by people in distress.
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Context

Figure: Pawnshop

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Figure: Appraiser/tellers inside a pawnshop

Figure: Lost pawns which are for sale

Pawn contract

Status-quo Contract **Pay when you want (before 3 months)**
✓**Term**: loan must be paid **before 3 months**. ✓**Amount owed**: Loan + Accumulated interest before loan term ends**.** Interest accumulates daily on outstanding amount. ✓**Flexibility**: you can pay any quantity at any time before 90 days **with no prepayment penalty.**

Structured payments contract

- We designed a new contract that is identical to the status quo contract except that it enhances the regularity and salience of payments as a way to encourage repayment.

Forced-commitment Contract

3 mandatory monthly payments

✓**Term**: loan must be paid **before 3 months**.

✓**Amount owed**: Loan + Accumulated interest before loan term ends. Interest accumulates daily on outstanding amount.

✓**Commitment**: to give you structure, each month you must pay at least 1/3 of the loan; that is: 3 equal sized payments. By missing it you incur in a **penalty fee of 2%** of the monthly payment due.

Methodological Contribution

- A context of particular interest to behavioral literature: the demand for commitment in financial contracts (Laibson 1997, Bryan et al. 2010).

- How do treatment effects relate to selection? Key question in many literatures:
  - HTEs, MTE, LATEs, what is learned from IV regressions (Heckman & Vytlacil, 2005).
  - Health effects of universal versus elective interventions
  - Optimal targeting (Alatas et al. 2012)

- Three-arm design: Control, Choice (voluntary takeup=ITT), Forcing (universal=ATE). We illustrate how to use standard exclusion restrictions for point identification:
  - Treatment on the Treated (ToT) and
  - Treatment on the Untreated (TUT), also
  - Average Selection on Gains, Average Selection Bias, and Average Selection on Levels

- Key quantity in debate about paternalism: impacts on those who wouldn't elect to take the program versus impacts on those that do.

- Consider winners and losers from paternalism

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Main outcomes: financial cost and default

- We are interested in measuring the financial cost of borrowing, which very saliently includes the cost of defaulting on the loan and losing the pawn.

$$\text{Financial Cost}_i = \underbrace{\sum_t P_{it}^i}_{\text{Pay to Interest}} + \underbrace{\sum_t P_{it}^f}_{\text{Pay to Fees}} + \mathbb{1}(\text{Default}_i) \times \left[\text{Pawn Val}_i + \underbrace{\sum_t P_{it}^c}_{\text{Pay to Capital}} \right]$$

Treatment arms

- Randomization at the branch-day level.
  - Control arm
  - Forced Commitment arm
  - Choice Commitment arm
- The existence of a choice arm allows us not only to measure if there is demand for such a contract, but who demands it, not only in demographic terms, but in terms of potential treatment effects.
- This design is innovative and critical for our purposes, as it enables us to explore whether or not forcing people into a structured payment contract could be more beneficial than allowing choice for a significant fraction of them.

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Main results

Table: Main treatment effects

		Components of FC				
	FC	Int. pymnt	Fee pymnt	Princ. pymnt	Lost pawn val	Default
	(1)	(2)	(3)	(4)	(5)	(6)
Forced cmit	-379.7***	-157.3***	32.1***	-0.57	-254.5**	-0.065***
	(111.4)	(34.9)	(1.43)	(3.03)	(104.8)	(0.023)
Choice cmit	-84.9	-24.9	1.34**	-3.98	-61.4	-0.025
	(114.6)	(38.4)	(0.54)	(2.47)	(109.2)	(0.021)
Observations	6304	6304	6304	6304	6304	6304
R-squared	0.007	0.022	0.151	0.003	0.007	0.013
Control Mean	1851.0	545.9	0	5.82	1305.1	0.44

Mechanisms

- Borrowers in the Forced commitment contract pay earlier (-13.8 days), make larger payment in their first visit (+7.9%), and a larger fraction (+7.9%) pay in full.
- Decreases probability of making a payment and not recovering by 7pp.

Details

Choice and Heterogeneous Treatment Effects

- Commitment works. In spite of this, given the opportunity, only 11% of borrowers chose commitment.
  - If the effect of commitment were homogeneous, this would be enough to conclude that the 89% who did not choose it would have been financially better-off if they had.
- We test and reject the null hypothesis of homogeneous treatment effects (Chernozhuvok et. al. (2018).
- The borrowers who did not choose commitment could simply be those who don't need it?
  - At least 30% of individual borrowers benefit from commitment Fan & Park bounds
  - Commitment increases average financial benefit even for the subset of borrowers who would not choose to commit voluntarily : $\text{TUT} = \mathbb{E}[Y_1 - Y_0 \mid T = 0] > 0$
    The 'Randomized Choice' Design
  - Despite substantial treatment effect heterogeneity, most borrowers would experience higher financial benefits under a commitment contract : $F^{-1}_{\text{TUT}}(0.72) > 0$

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If commitment works, why don't people choose it?

- Discounting
- Hyperbolicity
- Overconfidence

Details

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Details

Conclusion

- Financial cost reduced in 20% in the Forced arm
- Results suggest selection on gains, but still large effects of imposing commitment on non-compliers.
- Mystery of low takeup combined with large TUT seems best explained by over-confidence among pawnshop customers.
- Laibson has spoken of 'veiled paternalism' in contexts where principals desire reliability; here we have a case of 'veiled non-paternalism' where features encouraging default are embedded.
- Suggests mandated commitment-based contract structures in payday/pawnshop loans as a form of pro-poor regulation?

Balance and Summary statistics

Table: Summary statistics and Balance

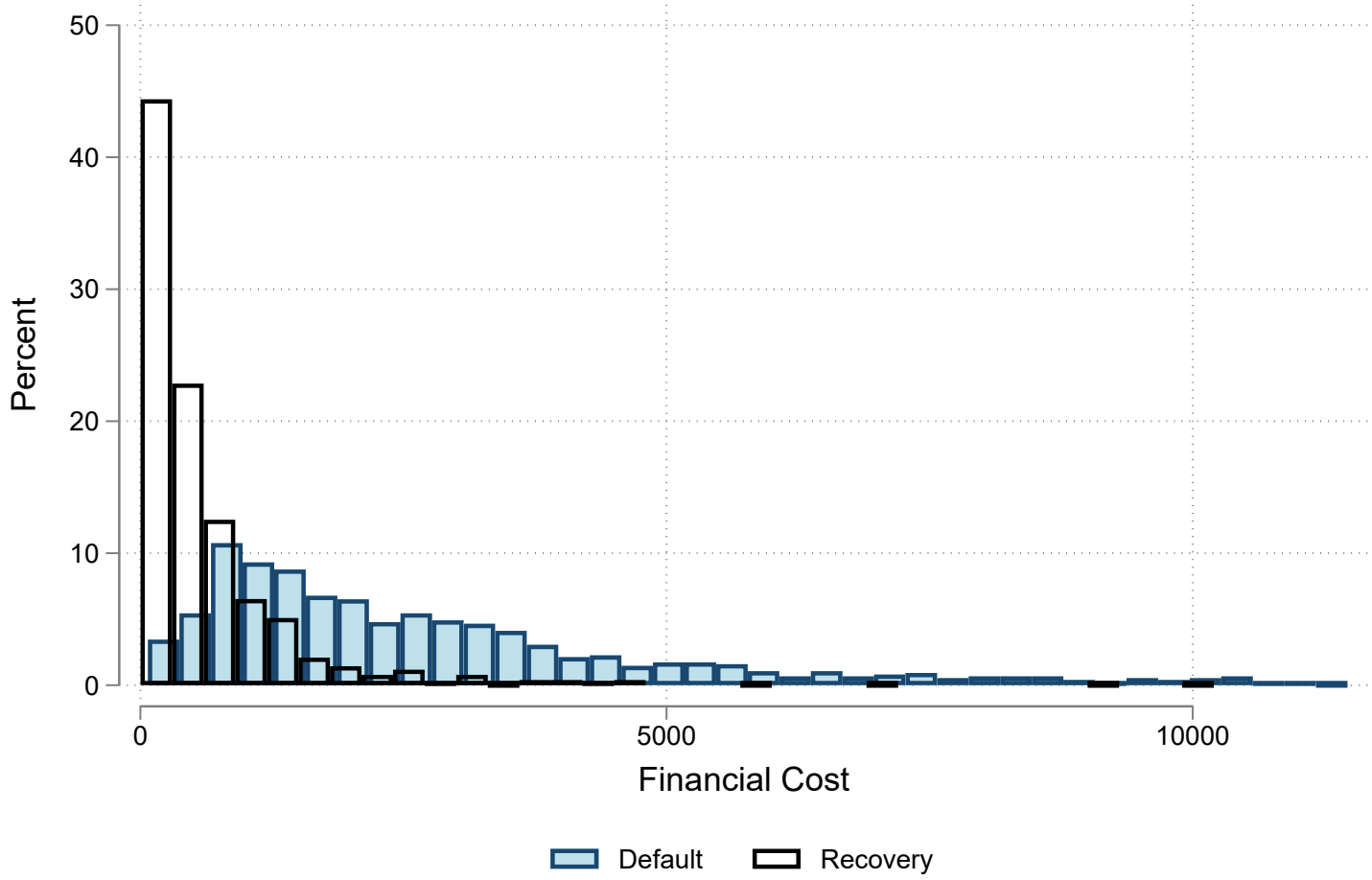
		Commitment arms		
	Control	Forced	Choice	p-value
	Panel A : Administrative Data			
Loan amount	2267	2162	2223	0.65
	(76)	(83)	(66)	
Weekday	0.88	0.89	0.83	0.56
	(0.044)	(0.035)	(0.048)	
Obs	1770	1954	2580	
	Panel B : Survey Data			
Subjective value	4084	3877	4173	0.51
	(186)	(193)	(172)	
Income index	0.19	0.21	0.18	0.67
	(0.024)	(0.023)	(0.02)	
Present bias	0.14	0.13	0.13	0.89
	(0.02)	(0.01)	(0.01)	
Makes budget	0.62	0.59	0.65	0.29
	(0.028)	(0.036)	(0.021)	
Subj. pr. of recovery	91.89	91.65	93.61	0.09
	(0.721)	(1.031)	(0.582)	
Pawn before	0.87	0.89	0.9	0.25
	0.02	(0.013)	(0.011)	
Age	43.32	42.85	43.82	0.73
	(0.688)	(0.949)	(0.792)	
Woman	0.73	0.72	0.71	0.88
	(0.023)	(0.019)	(0.02)	
+ High-school	0.66	0.67	0.65	0.84
	(0.027)	(0.022)	(0.018)	
Obs	1386	1469	1982	

Experimental integrity

Table: Attrition table

		Commitment arms		
	Control	Forced	Choice	p-value
Number of branch-day pawns	34	34	36	0.52
	(3)	(2.9)	(1.8)	
Ended up pawning	0.98	0.97	0.97	0.62
	(0.01)	(0.01)	(0.01)	
Survey response rate	0.79	0.76	0.77	0.62
	(0.02)	(0.02)	(0.01)	
Obs	1770	1954	2580	

Distribution of financial cost ($MXN)



Back

Histogram of payments

Figure: Status-quo

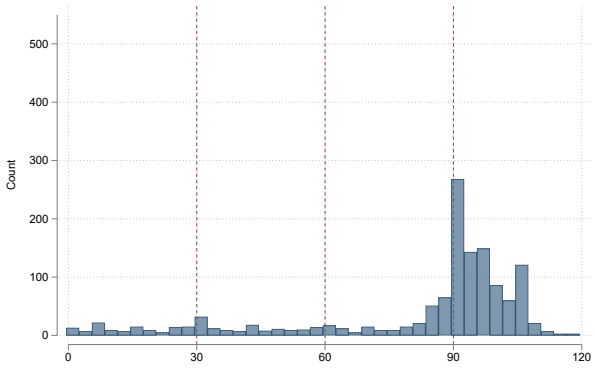


Figure: Forced commitment

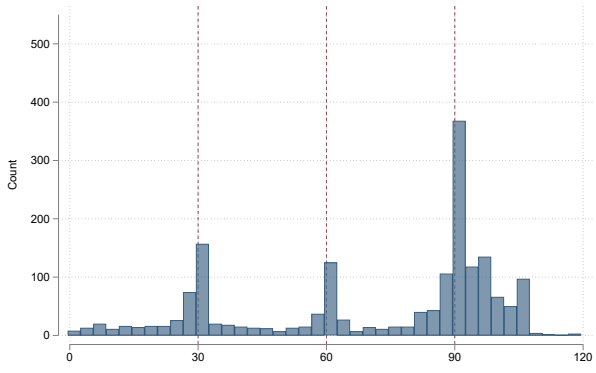
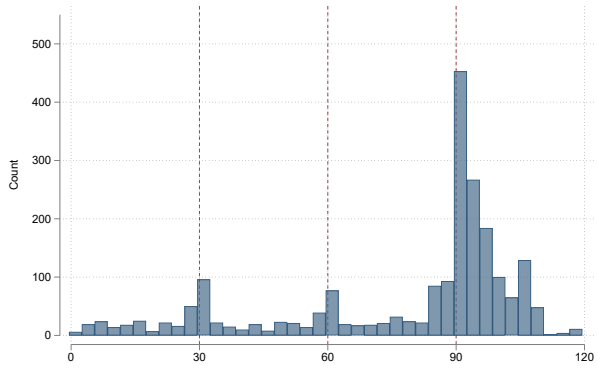


Figure: Choice commitment



Mechanism

Table: Intermediate outcomes

	Panel A : Speed of payment	
	Days to 1st payment	% of payment in 1st visit
	(1)	(2)
Forced cmit	-13.8***	7.70***
	(1.61)	(2.78)
Choice cmit	-3.51**	-0.85
	(1.57)	(2.19)
Observations	4412	6304
R-squared	0.055	0.014
Control Mean	82.8	44.7

	Pr(Recovery in 1st visit)	Loan duration (days)
	(3)	(4)
Forced cmit	0.079***	-27.9***
	(0.026)	(4.35)
Choice cmit	-0.010	-0.18
	(0.022)	(4.33)
Observations	6304	6304
R-squared	0.016	0.054
Control Mean	0.30	136.6

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Mechanisms

Table: Intermediate outcomes

	Panel B : Variables related to default		
	Pr(+ payment & default)	% of pay | def	Pr(Selling pawn | def)
	(5)	(6)	(7)
Forced cmit	-0.070***	-3.96***	0.14***
	(0.015)	(1.27)	(0.034)
Choice cmit	-0.028**	-2.11**	0.053*
	(0.014)	(1.04)	(0.029)
Observations	6304	2486	2486
R-squared	0.011	0.023	0.033
Control Mean	0.12	9.59	0.71

Back

Mechanisms

Table: Intermediate outcomes

	Panel C : Visit variables	
	# of visits	# of visits | def
	(8)	(9)
Forced cmit	-0.031	-0.19***
	(0.049)	(0.049)
Choice cmit	0.085	-0.090**
	(0.053)	(0.042)
Observations	6304	2486
R-squared	0.022	0.026
Control Mean	1.14	0.39

Back

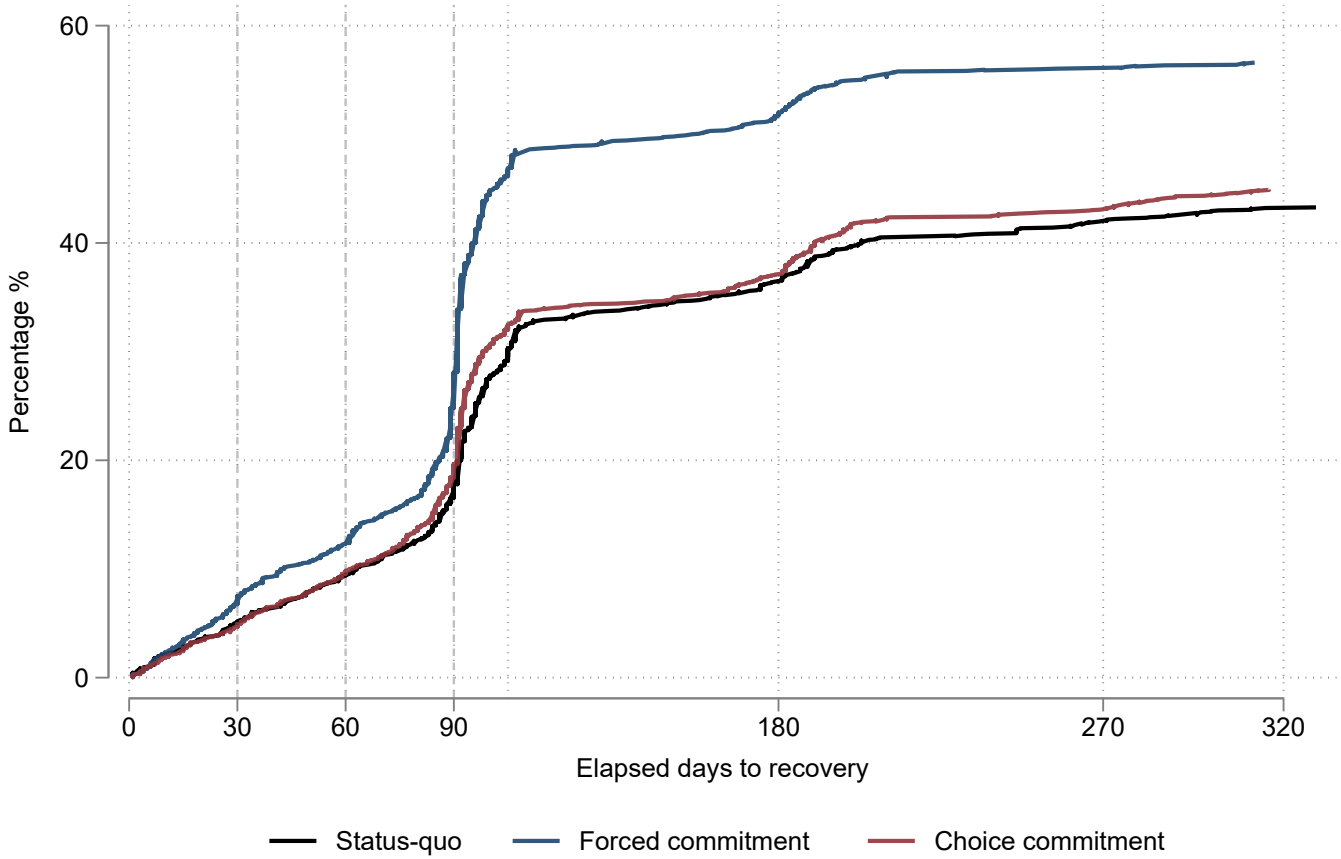
Effects of treatment on future pawning behavior

Table: Repeat Pawns

	Ever pawns again (ITT)				
		After 90 days	Within 90 days	Different collateral	Cond. on rec
	(1)	(2)	(3)	(4)	(5)
Forced commitment	0.067*	0.037***	0.032	0.048*	0.11**
	(0.035)	(0.013)	(0.027)	(0.029)	(0.046)
Choice commitment	0.040	0.0098	0.030	0.036	0.058
	(0.031)	(0.0087)	(0.026)	(0.026)	(0.041)
Observations	4441	4441	4441	4441	2173
R-squared	0.003	0.006	0.001	0.002	0.008
Control Mean	0.32	0.020	0.30	0.29	0.35

Survival Graph

Figure: Recovery



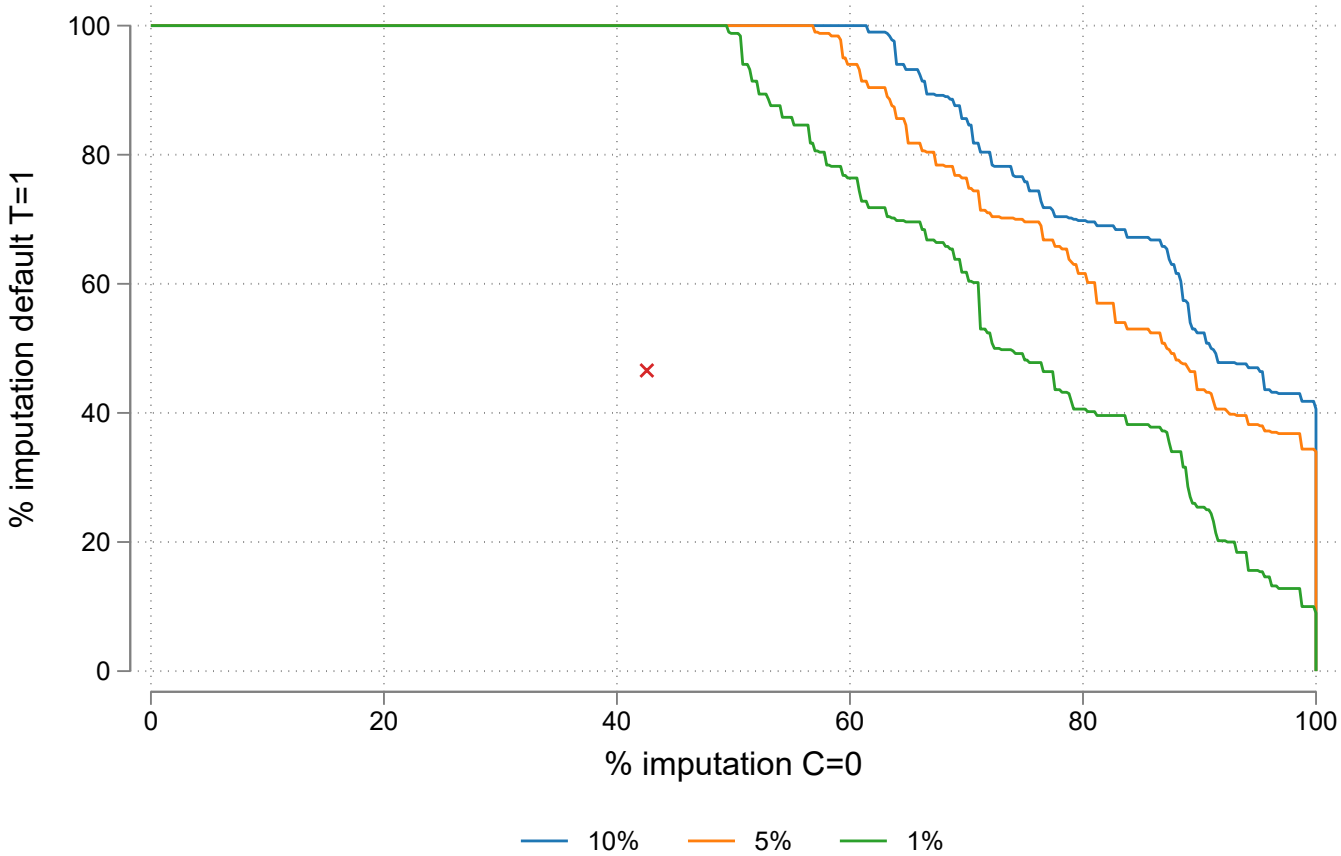
Censoring

Table: Bounding censoring

	Control = 0 Forced arm = 0	Control = 0 Forced arm = 1	Control = 1 Forced arm = 0	Control = 1 Forced arm = 1	Prediction model
			Financial Cost		
	(1)	(2)	(3)	(4)	(5)
Forced commitment	-408.7***	-226.5**	-804.2***	-622.0***	-525.3***
	(107.1)	(110.8)	(113.3)	(117.3)	(122.0)
Observations	3724	3724	3724	3724	3724
R-sq	0.012	0.009	0.022	0.015	0.012
Control Mean	1898.5	1898.5	2272.4	2272.4	2073.6
			Default		
	(6)	(7)	(8)	(9)	(10)
Forced commitment	-0.063***	0.0089	-0.21***	-0.13***	-0.12***
	(0.023)	(0.024)	(0.023)	(0.024)	(0.025)
Observations	3724	3724	3724	3724	6304
R-sq	0.019	0.014	0.053	0.028	0.016
Control Mean	0.44	0.44	0.57	0.57	0.51

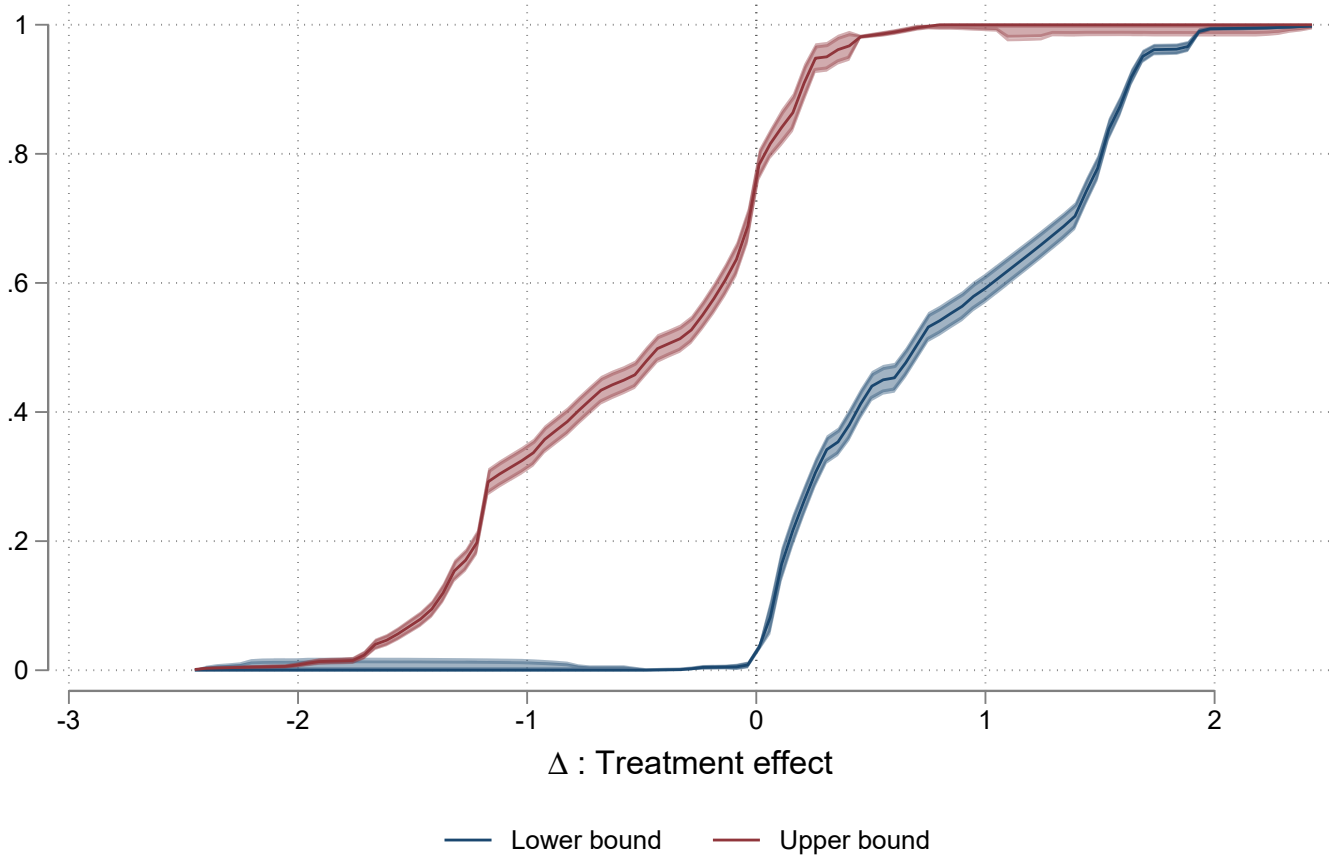
Interpolation on bounding censoring

Figure: Significance area for Default



Bounding Individual Treatment Effects

Figure: Fan & Park bounds for benefit in effective FC



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The 'Randomized Choice' Design

- Large literature estimating ToT and TuT to better understand who selects into treatment and why :
  - "LATE-and-reweight" : Aronow & Carnegie (2013); Angrist & Fernandez—Val (2013) - no selection on gains.
  - Cornelissen et. al. (2018); Walters (2018) - Modeling assumptions to extrapolate from the reduced-form quantities
  - Heckman & Vytlacil MTE - no parametric restrictions, but an instrumental variable Z with sufficiently rich support.
  - Brinch et. al. (2017) - discrete Z but under some additivity restrictions on the MTE curve
  - Mogstad, Santos & Torgovitsky (2018) - No parametric form assumption on MTE curve but only partial identification.

- Our "randomized choice design," point identifies a number of interesting and economically-relevant causal quantities without the need for additional structural restrictions. Identification Back

Causal Parameters

Table: Causal TE

	FC benefit	% (1-Default)
	(1)	(2)
ToT	668.3	38.7*
	(1085.4)	(21.5)
TuT	356.1***	3.98*
	(107.8)	(2.40)
ToT-TuT	312.2	34.7
	(1132.4)	(22.5)
ASB	-77.9	-40.6*
	(1127.5)	(22.2)
ASL	234.3	-5.90
	(154.4)	(4.29)
Observations	6304	6304

- Commitment is beneficial to people who would not choose it.
- The "right people" choose to commit: those who are most likely to benefit from it and those whose outcomes are most adverse under the status quo.

Identification of treatment parameters

$$Y_i = \mathbb{1}(Z_i = 0)Y_{i0} + \mathbb{1}(Z_i = 1)Y_{i1} + \mathbb{1}(Z_i = 2)\left[(1 - C_i)Y_{i0} + C_i Y_{i1}\right].$$

Viewing Z_i as an instrumental variable, the randomized choice design can be interpreted as a pair of RCTs, each subject to one-sided non-compliance.

- The first of these compares $Z_i = 0$ to $Z_i = 2$. This setting is identical to a "randomized encouragement" design in which treatment is only available to those who are encouraged: $Z_i = 2$. Under this interpretation, those with $C_i = 1$ are "the compliers" and it follows that

$$\frac{\mathbb{E}(Y_i|Z_i = 2) - \mathbb{E}(Y_i|Z_i = 0)}{\mathbb{E}(D_i|Z_i = 2) - \mathbb{E}(D_i|Z_i = 0)} = \mathbb{E}(Y_{i1} - Y_{i0}|C_i = 1)$$

- The second considers $Z_i = 1$ to be the "encouragement" and compare the outcomes for these individuals to those with $Z_i = 2$.

$$\frac{\mathbb{E}(Y_i|Z_i = 1) - \mathbb{E}(Y_i|Z_i = 2)}{\mathbb{E}(D_i|Z_i = 1) - \mathbb{E}(D_i|Z_i = 2)} = \mathbb{E}(Y_{i1} - Y_{i0}|C_i = 0)$$

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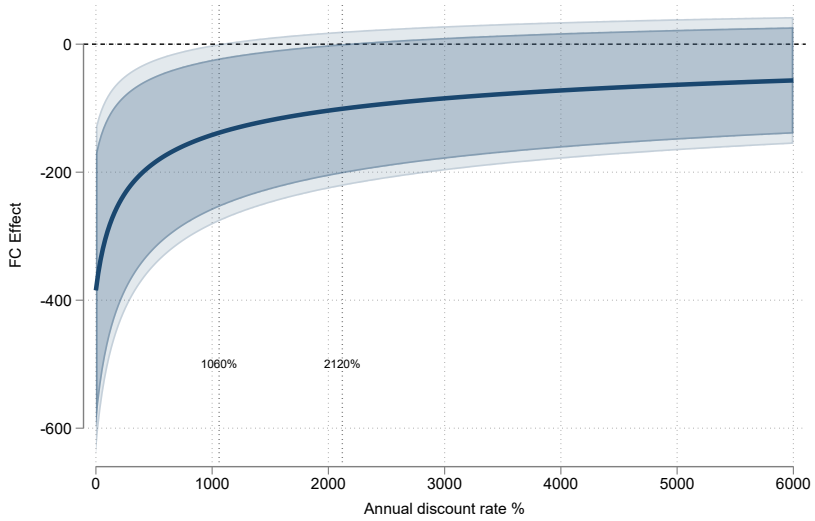
If commitment works, why don't people choose it?

- Discounting
- Hyperbolicity
- Overconfidence

Figure: Financial cost for different discount rates



- Commitment contract imposes up-front costs for later benefits (collateral recovery).
- Can impatience explain why not take up a contract that decreases overall cost?
- Requires a rate of 2,000% to make NPV cost effect insignificant.

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- Standard behavioral angle: compliers are sophisticated time-inconsistent, non-compliers are a mix of naifs and the time consistent (who don't need commitment).

- We have survey measure of time inconsistency taken at baseline.

- Effect of Forcing should be entirely among the time-inconsistent. Is this true?

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- Discounting
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- Asked question prior to assignment, borrowing about subjective probability of recovering.

- Mean of prior prediction is XX%, true recovery in control is YY%.

- Use prediction of default in control, subjective priors to measure overconfidence. Does this explain large TUT?

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Paternalism and learning

- Are those with a greater experience of pawning less over-confident?
  - Observational analysis of overconfidence by number of prior pawns.
- Do people learn from Forced exposure to the program that they benefit from it?
  - Subsequent to the experimental loan, those exposed to different treatments returned to branches where they were offered Choice. What did they do?