

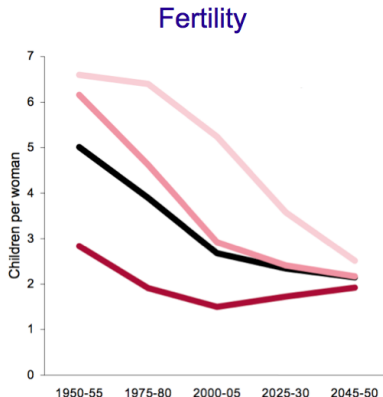
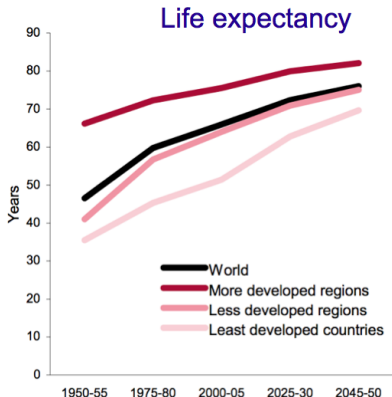
Micropensions: Helping the Poor Save for Old Age

Anita Mukherjee

Project funded by Innovations for Poverty Action at Yale University



Global aging due to longer lives and lower birth rates



Source: United Nations, World Population Aging Report (2012)

The poor stand to be especially vulnerable in old age

- Socio-demographic transitions
 - ▶ Longer life expectancies
 - ▶ Reduced fertility
 - ▶ Erosion of joint family
 - ▶ Children's migration; only partly offset by remittances
- Limited poverty alleviation programs
- Few ways to accumulate assets in long-term
 - ▶ Saving through land, livestock, gold, etc.
 - ▶ **Scope for micropensions**

Micropensions provide a vehicle for old age saving

- Defined contribution plans with small, frequent contributions
- Targeted to low-income, informal sector workers
- Addresses longevity, inflation, and investment risks

Micropensions provide a vehicle for old age saving

- Defined contribution plans with small, frequent contributions
- Targeted to low-income, informal sector workers
- Addresses longevity, inflation, and investment risks
- Introduced in 2002 with Grameen Pension Savings in Bangladesh
 - ▶ Over 8 million enrolled in India (as of 2012)
 - ▶ Mixed success in Peru, Brazil, South Africa, Ghana
- Typically follows partner-agent model
 - ▶ Funds are managed by an insurance company (partner)
 - ▶ Serviced by an MFI or NGO (agent)
 - ▶ Provides average 10% annual return

Related literature

- Household saving among the poor
 - ▶ Anderson and Baland (2002); Ashraf, Karlan, and Yin (2006); Banerjee and Duflo (2006); Ashraf (2009); Karlan, McConnell, Mullainathan, and Zinman (2010); Dupas and Robinson (2013)
 - ▶ Micropensions: Todd (1996); Rutherford (2008); Asher (2009); Shankar and Asher (2011)
 - ▶ Review article by Karlan, Ratan, and Zinman (2013)
 - ▶ → Saving can be large relative to income, and be sustained
- Demand for microinsurance
 - ▶ Review article by Eling, Pradhan and Schmit (2013)
 - ▶ Giné, Townsend, and Vickery (2008); Cao and Zhang (2011); Giesbert, Steiner, and Bendig (2011); Mobarak and Rosenzweig (2012); Cole, Giné, Tobacman, et al. (2013)
 - ▶ Discussion of regulatory issues by Biener, Eling, and Schmit (2013)
 - ▶ → Price, financial literacy, risk preferences, trust, etc., predict demand

India facing elderly population time bomb

India is facing an elderly population 'time bomb' according to a United Nations report which revealed its number of old people will triple by 2050.

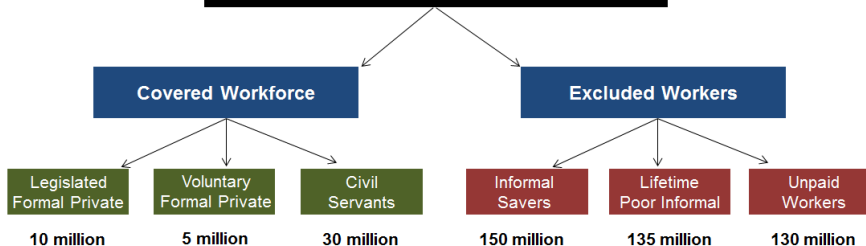


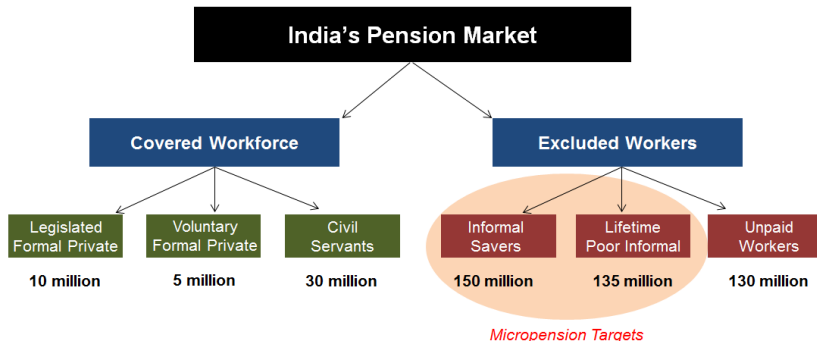
Asia's Aging Population Will Be a Topic at Davos

By BETTINA WASSENER JAN. 21, 2014

Indian population pyramids

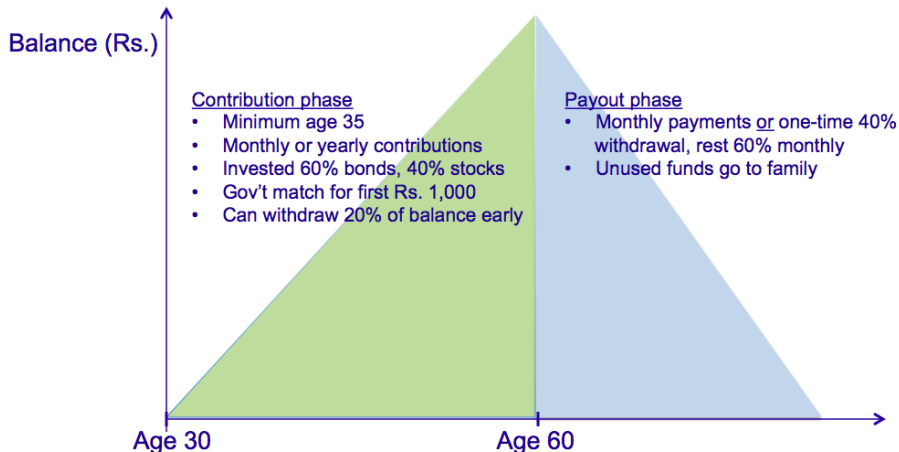
India's Pension Market





World Bank estimates that only 5% of these households currently save for old age; untapped saving potential of \$110 BN (2010)

Baseline micropension product



Indicative payouts

Member's Age at Time of Joining	No. of Years of Contribution	Corpus Value at Retirement (Aged 58)	Monthly Pension for 20 Years (Aged 78)	Life Long Monthly Pension With Corpus Paid Back
18	40	Rs. 12,64,816	Rs. 12,206	Rs. 10,540
20	38	Rs. 10,32,068	Rs. 9,960	Rs. 8,601
25	33	Rs. 6,17,866	Rs. 5,963	Rs. 5,149
30	28	Rs. 3,66,119	Rs. 3,533	Rs. 3,051
35	23	Rs. 2,13,110	Rs. 2,057	Rs. 1,776
40	18	Rs. 1,20,113	Rs. 1,159	Rs. 1,001
45	13	Rs. 63,590	Rs. 614	Rs. 530
50	8	Rs. 29,236	Rs. 282	Rs. 244
55	3	Rs. 8,356	Rs. 81	Rs. 70

Assumptions: 10% ROI, monthly contribution at Rs. 200

Source: Invest India Micro Pension Services (updated Feb 2012)

Research question: how do key micropension features affect demand?

- Measures of demand (hypothetical)
 - ▶ Take-up
 - ▶ Annual WTC
- Experimental variants
 - ▶ Eligibility age
 - ▶ Options for lump sum withdrawal
 - ▶ Government match rate
- Also, how do demographics, assets, and human capital affect demand?

Study location: Uttar Pradesh, India



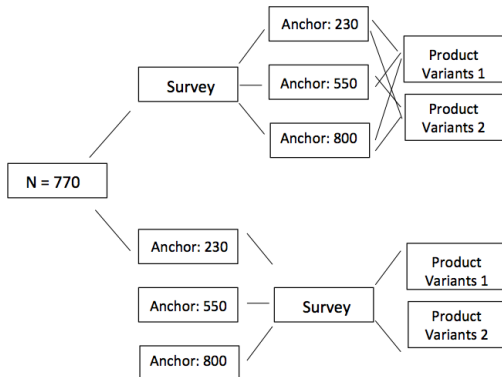
- Most populated state (200 MN)
- Large, agricultural economy
- (+ home of the Taj Mahal)

Study location: Uttar Pradesh, India



- Most populated state (200 MN)
- Large, agricultural economy
- (+ home of the Taj Mahal)
- Sample households
 - ▶ Drawn from 2 districts, 15 villages
 - ▶ Below poverty line ($\leq$ Rs. 1,000 monthly consumption/ capita)
 - ▶ Under age 60
 - ▶ $N = 770$ (about 60 HHs/ village)

Experimental design



Price anchors are suggested prices for a bundled health, pension, and life insurance product that was asked about in the survey.

Experimental product variants

	Baseline	Group 1	Group 2
Eligibility age	Age 60	Age 55	Age 65

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Allowable amount of lump sum early withdrawal	20%	None (0%)	Full (100%)

Experimental product variants

	Baseline	Group 1	Group 2
Eligibility age	Age 60	Age 55 1B	Age 65 2B
Match rate	100%	50% 1C	150% 2C
Allowable amount of lump sum early withdrawal	20%	None (0%) 1D	Full (100%) 2D

Measurement of financial literacy and numeracy

- **Financial Literacy** (Lusardi and Mitchell, 2011)

- ▶ What is 8% of 100?
- ▶ Suppose you invest Rs. 100 in an account that pays 2% interest.
→ At year-end, do you have less than, exactly, or more than Rs. 102?
- ▶ Suppose you need to borrow Rs. 1,000. Two loan options:
(A) Pay Rs. 1,200 in one month
(B) Pay Rs. 1,000 plus 15% interest in one month
→ Which do you prefer?

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- **Numeracy** (Health and Retirement Survey 2011)

- ▶ 100 minus 7 equals what?
- ▶ ... and 7 from that amount? [Repeat 4X]

For each measure, calculate fraction of correct responses.

Summary statistics/ randomization check

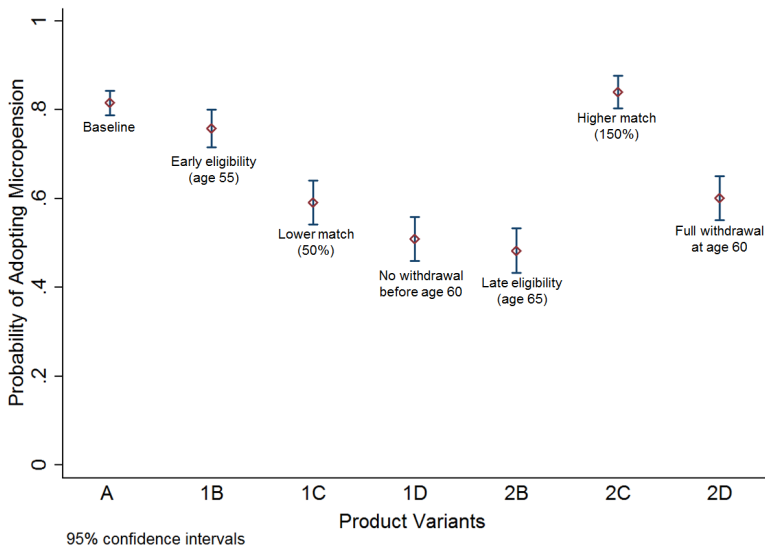
	Group 1	Group 2	t-test
<i>Demographics</i>			
Male	0.67	0.64	(0.66)
Age ÷ 100	0.42	0.43	(-0.38)
Number of children	2.77	2.98	(-1.61)
Landowner	0.95	0.94	(0.38)
Farmer	0.42	0.38	*(2.54)
<i>Consumption and Assets</i>			
Consumption-30 days (Rs. 000)	5.05	4.91	(0.44)
Has saving account	0.55	0.59	*(-2.14)
Formal saving (000)	3.17	3.18	(-0.02)
Has any insurance	0.21	0.18	(1.02)
Observations	389	381	770

By district

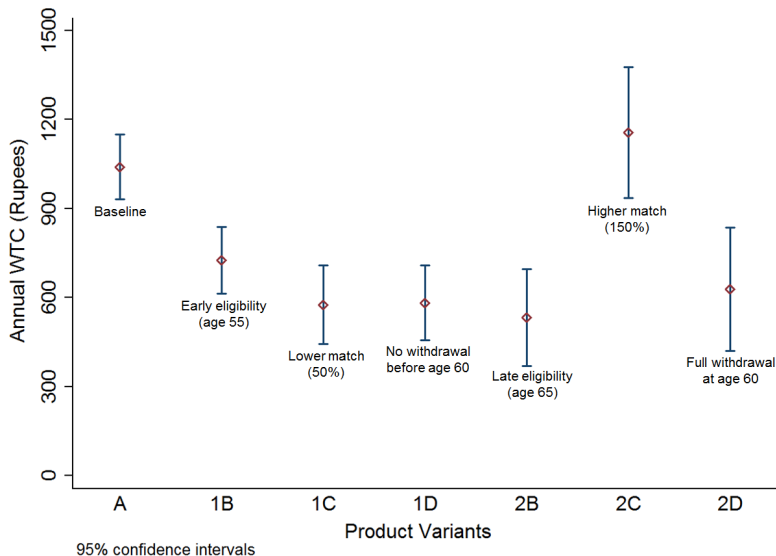
Summary statistics/ randomization check cont'd

	Group 1	Group 2	t-test
<i>Human Capital</i>			
Financial literacy	0.25	0.24	(0.14)
Numeracy	0.38	0.36	(0.60)
Can Read and Write	0.40	0.36	(0.96)
Schooling: None	0.59	0.62	(-0.80)
Schooling: ≤ 5 years	0.15	0.12	(1.36)
Schooling: 5-10 years	0.21	0.22	(-0.41)
Schooling: ≥ 10 years	0.05	0.05	(0.43)
Observations	389	381	770

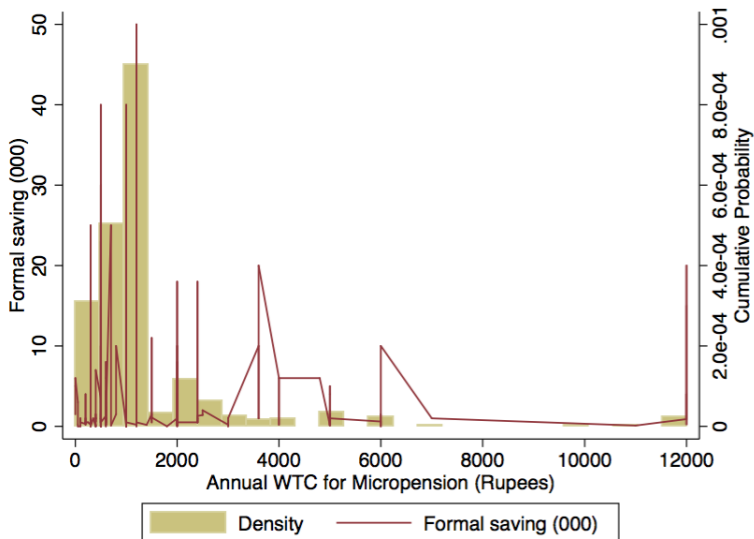
Descriptive statistics: take-up



Descriptive statistics: annual WTC



Descriptive statistics: formal saving and annual WTC



Regression specifications

$$Takeup_i \text{ or } WTC_i = \alpha + \sum_j \beta_j Variant_{ij} + \delta X_i + \omega X'_i + \epsilon_i$$

Covariates X:

- Demographics: age, male, occupation, number of children
- Assets: consumption, amount of land owned, has saving/insurance
- Human capital: education, financial literacy, numeracy
- Trust in institutions [Show distribution](#)

Covariates X':

- Whether survey before marketing
- Contribution anchors

Fixed effect: $Takeup_i \text{ or } WTC_i = \sum_j \beta_j Variant_{ij} + \eta_i$

Fixed effect OLS estimates

	Take-Up
1B: Early Eligibility	-0.05 * * (0.02)
2B: Late Eligibility	-0.33 * ** (0.02)
1C: Lower Match	-0.22 * ** (0.02)
2C: Higher Match	0.01 (0.02)
1D: No Early Withdrawal	-0.31 * ** (0.02)
2D: Full Early Withdrawal	-0.20 * ** (0.02)
Constant	0.82 * ** (0.01)
Observations	3,080

Fixed effect OLS estimates

	Take-Up	Annual WTC
1B: Early Eligibility	-0.05 * * (0.02)	-170*** (25)
2B: Late Eligibility	-0.33 * * * (0.02)	-327*** (25)
1C: Lower Match	-0.22 * * * (0.02)	-333*** (25)
2C: Higher Match	0.01 (0.02)	169*** (25)
1D: No Early Withdrawal	-0.31 * * * (0.02)	-299*** (25)
2D: Full Early Withdrawal	-0.20 * * * (0.02)	-279*** (25)
Constant	0.82 * * * (0.01)	686*** (13)
Observations	3,080	3,080

OLS estimates: selected covariates

	Take-Up
Age $\div$ 100	-0.24 * * (0.10)
Male	-0.01 (0.02)
Number of children	-0.01* (0.01)
Farmer	0.09 * ** (0.02)
Financial literacy	0.03 * ** (0.01)
Numeracy	-0.01 * * (0.00)
Has saving account	0.13 * ** (0.02)
Observations	3,080

OLS estimates: selected covariates

	Take-Up	Annual WTC
Age $\div$ 100	-0.24 * * (0.10)	-349*** (101)
Male	-0.01 (0.02)	-35** (21)
Number of children	-0.01* (0.01)	-25*** (8)
Farmer	0.09 * * * (0.02)	104*** (19)
Financial literacy	0.03 * * * (0.01)	50*** (12)
Numeracy	-0.01 * * (0.00)	4 (5)
Has saving account	0.13 * * * (0.02)	120*** (18)
Observations	3,080	3,080

Heterogeneity and anchoring

- Possible that intra-HH bargaining confounds commitment
 - ▶ Ashraf 2009; Schaner 2011; Anderson and Baland 2002
 - ▶ Expect women to have more problems with intra-HH bargaining
 - ▶ Gender and variants only interact for the government match [Show](#)
- Large effects of anchoring
 - ▶ Hogarth and Kunreuther 1985; Kahneman 1992
 - ▶ Rs. 550 (800) anchor leads to 5% (8%) increase in annual WTC

Quotes from household surveys

"I thought my children could care for me, but they are also poor. I tell them to buy assets or save money for their own old age." – Woman, age 48

"Being able to give the money to my family is important to me. If there is money left, they can use it for my funeral." – Man, age 43

"I am 12 years younger than my husband. I worry about growing old and I buy small bits of gold when I can, but it will not be enough."
– Woman, age 33

Concluding remarks

- Enormous interest in micropensions
 - ▶ 80% report interest in the baseline product
 - ▶ Amount willing to save is about 30% of old age consumption
 - ▶ Appropriate anchors and match rates may increase WTC
 - ▶ Households appear to value a certain degree of illiquidity

Concluding remarks

- Enormous interest in micropensions
 - ▶ 80% report interest in the baseline product
 - ▶ Amount willing to save is about 30% of old age consumption
 - ▶ Appropriate anchors and match rates may increase WTC
 - ▶ Households appear to value a certain degree of illiquidity
- Fertile area for future work
 - ▶ Bundling with health and life insurance (field study completed)
 - ▶ Correlates of demand: risk aversion, life expectancy
 - ▶ Product development: commitment, frequency/ease of contributions
 - ▶ Marketing: agent incentives, framing

Ongoing work

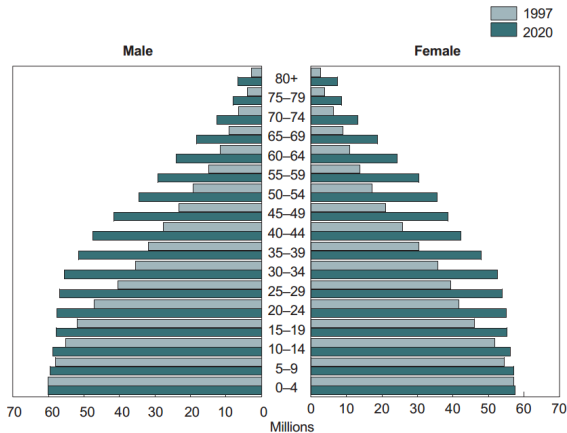
- Rainfall indexed insurance
(with Shawn Cole and Jeremy Tobacman)
- Social pressure in financial decision-making
(pilot in field)
- Health-income poverty traps
(with Cynthia Kinnan and Joanne Yoong)

Summary statistics by district

	1	2	3	4
	Combined	Fatehpur	Siddharthnagar	t-statistic
<i>Demographics</i>				
Male	0.65	0.70	0.61	*(2.49)
Age (HH Head)	42.67	42.85	42.54	(0.44)
Household head	0.78	0.84	0.72	*** (3.61)
Number of Children	2.87	2.75	2.98	(-1.71)
Landowner	0.95	0.93	0.98	** (-3.04)
<i>Occupation</i>				
Farmer	0.37	0.25	0.49	*** (-6.84)
Agricultural Laborer	0.34	0.42	0.26	*** (4.59)
Non-Agricultural laborer	0.15	0.20	0.10	*** (3.71)
<i>Consumption and Assets</i>				
Consumption-30 Days (000)	4.97	4.77	5.13	(-1.08)
Has Saving Account	0.55	0.48	0.60	** (-3.23)
Formal Saving (000)	3.18	3.62	2.94	(1.05)
Has Any Insurance	0.19	0.19	0.20	(-0.63)
<i>Human Capital</i>				
Numeracy	0.37	0.39	0.36	(1.16)
Financial Literacy	0.24	0.26	0.23	(1.18)
Can Read and Write	0.38	0.41	0.36	(1.46)
No Schooling	0.60	0.56	0.63	* (-2.04)
Schooling: ≤ 5 years	0.13	0.15	0.13	(0.60)
Schooling: 5-10 years	0.21	0.23	0.20	(1.21)
Schooling: ≥ 10 years	0.05	0.06	0.04	(1.36)
Observations	770	378	392	770

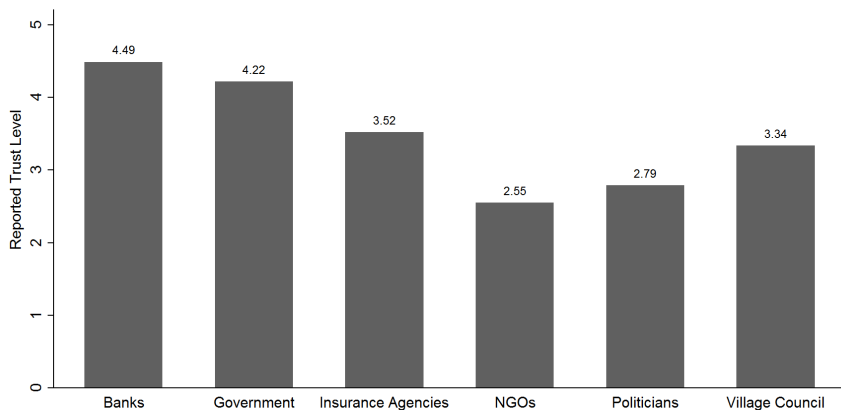
[Back](#)

India's population pyramid



Source: U.S. Bureau of the Census, UPC, International Database (accessed 8/1/2013).

Trust level by institution (1 = low, 5 = high)



Trust in banks, gov't, and insurance agencies aids micropension demand

	Dependent Variable: Adoption			Dependent Variable: WTC		
	(1)	(2)	(3)	(4)	(5)	(6)
1B: Early Eligibility	-0.06* (0.03)	-0.06* (0.03)	-0.06* (0.03)	-188.26*** (36.56)	-191.85*** (36.19)	-188.72*** (35.74)
1C: Lower Match Rate	-0.25*** (0.03)	-0.26*** (0.03)	-0.25*** (0.03)	-362.84*** (36.56)	-366.44*** (36.19)	-363.30*** (35.74)
1D: No Early Withdrawal	-0.32*** (0.03)	-0.32*** (0.03)	-0.32*** (0.03)	-317.07*** (36.56)	-320.66*** (36.19)	-317.52*** (35.74)
2B: Late Eligibility	-0.31*** (0.03)	-0.31*** (0.03)	-0.31*** (0.03)	-330.78*** (37.25)	-326.98*** (36.86)	-330.29*** (36.41)
2C: Higher Match Rate	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)	123.30*** (37.25)	127.10*** (36.86)	123.78*** (36.41)
2D: Early Withdrawal	-0.20*** (0.03)	-0.20*** (0.03)	-0.20*** (0.03)	-285.31*** (37.25)	-281.51*** (36.86)	-284.83*** (36.41)
1BxFemale	0.01 (0.06)	0.01 (0.06)	0.01 (0.06)	71.96 (62.90)	69.48 (62.23)	69.65 (61.46)
1CxFemale	0.08 (0.06)	0.08 (0.06)	0.08 (0.06)	107.35* (62.90)	104.86* (62.23)	105.03* (61.46)
1DxFemale	0.03 (0.06)	0.03 (0.06)	0.04 (0.06)	73.76 (62.90)	71.28 (62.23)	71.45 (61.46)
2BxFemale	-0.05 (0.06)	-0.05 (0.06)	-0.06 (0.06)	-4.23 (62.68)	-2.22 (62.02)	-2.07 (61.25)
2CxFemale	0.04 (0.06)	0.04 (0.06)	0.03 (0.06)	110.66* (62.68)	112.68* (62.02)	112.83* (61.25)
2DxFemale	0.00 (0.06)	0.00 (0.06)	-0.00 (0.06)	2.29 (62.68)	4.30 (62.02)	4.45 (61.25)
Female	-0.05 (0.03)	-0.02 (0.04)	-0.03 (0.03)	-107.63*** (36.24)	-72.27* (37.40)	-74.76** (37.01)
R-squared	0.086	0.100	0.117	0.123	0.144	0.167
Observations	3,080	3,080	3,080	3,080	3,080	3,080
Additional Controls		✓	✓		✓	✓