Match Rates, Individual Development Accounts, and Saving by the Poor

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Abstract

Individual Development Accounts (IDAs) provide poor people with matches for savings used for home purchase, post-secondary education, or microenterprise. Match rates for IDAs in the American Dream Demonstration (ADD) were typically 1:1 or 2:1 but ranged as high as 7:1. How did the match rate affect IDA savings? The analysis here controls for a number of confounding factors often ignored in similar studies of 401(k) plans. In ADD, higher match rates were generally associated on the extensive margin with a greater likelihood of saving something in IDAs and—on the intensive margin for those who saved something—a lower level of IDA savings.

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1. Introduction

Development—that is, sustainable improvement in well-being—requires saving to build assets in the form of human, physical, financial, and social capital. To subsidize asset-building by the non-poor, the United States foregoes more than $300 billion annually in tax breaks and tax deferrals (Woo, Schweke, and Buchholz, 2004; Howard, 1997; Sherraden, 1991). Tax-based incentives, however, are weak for people in low tax brackets. Furthermore, poor people may rationally choose not to save if they expect that it might disqualify them from means-tested public assistance (Ziliak, 2003; Powers, 1998; Hubbard, Skinner, and Zeldes, 1995). These two factors suggest that the poor may be left behind as social policy shifts away from relief-based cash transfers toward development-based asset-building (Sherraden, 1997).

Unlike tax-based asset-building subsidies, Individual Development Accounts (IDAs) provide matches for savings by the poor used for home purchase, post-secondary education, or microenterprise (Sherraden, 1988). Matching in IDAs has three goals. First, because matching is not tax-based, it can include the poor. Second, matching increases the return to saving and so helps the poor bear the greater sacrifice they face when reducing their (already low) consumption. Third, matching increases the assets that result from a given level of saving, perhaps enough to acquire a "transformative asset" (Shapiro, 2004) such as a house or a college degree.

How do match rates affect savings outcomes in IDAs? Matching is central to IDAs, yet little is known about match-rate effects. Their assessment—whether for the poor in IDAs or the non-poor in 401(k) plans—is complex for several reasons.

First, matching sharpens a kink in the budget constraint, so match-rate effects may differ on the extensive margin (whether something is saved) versus the intensive margin (level of savings, see Moffitt, 1990). Economic theory unambiguously predicts that higher match rates will increase the likelihood of saving something, and this is reflected in most participant-level evidence in the 401(k) literature (Clark, *et al.*, 2000; Bassett, Fleming, and Rodrigues, 1998; Clark and Schieber, 1998; General Accounting Office, 1997). For the level of saving, however, theory is ambiguous. Higher match rates increase the return to saving and so increase the cost of current consumption in terms of future consumption. This "substitution effect" tends to increase IDA saving. At the same time, higher match rates increase wealth and so decrease the cost of current consumption in terms of future consumption. This "wealth effect" (also called an "income effect") tends to decrease IDA saving. This can also be seen as a "fixed-target effect"; matching allows building a given level of assets with less IDA saving. For example, an IDA participant who wants to make a $3,000 down payment on a house must save $1,500 if the match rate is 1:1 but only $1,000 if the match rate is 2:1.

The second complication in the assessment of match-rate effects is that IDA savings are capped. Thus, desired IDA savings are observed only if they are less than the cap. Furthermore, higher match rates in IDAs—as in 401(k) plans (VanDerhei and

Copeland, 2001)—are associated with lower caps. Thus, even if higher match rates increase *desired* IDA savings, *observed* IDA savings may be lower because higher match rates are associated with lower caps. Failure to adjust for censoring at the cap biases estimates of match-rate effects downwards. Most participant-level studies of match rates in 401(k) plans do not adjust for censoring, and they usually find (perhaps spuriously) that higher match rates are linked with lower contribution rates (Munnell, Sundén, and Taylor, 2002; VanDerhei and Copeland, 2001; Clark *et al.*, 2000; GAO, 1997; Andrews, 1992). In contrast, most specifications in the only papers that adjust for censoring (Engelhardt and Kumar, 2004; Cunningham and Engelhardt, 2002) find that higher match rates are associated with higher 401(k) contributions.

Third, unobserved participant characteristics may confound match-rate effects. For example, if people with high "propensities to save" respond more strongly to higher match rates, then estimates of match-rate effects would be biased upwards. In the literature on match rates in 401(k) plans, only Engelhardt and Kumar (2004) and Cunningham and Engelhardt (2002) control for participant heterogeneity.

Fourth, IDA programs who expect participants to find it particularly difficult to save may try to compensate by setting higher match rates. (In the context of 401(k) plans, Engelhardt and Kumar [2004] and Even and Macpherson [2003] find that firms tend to increase match rates when they want to increase contributions among non-highly compensated employees.) In other words, IDA programs may set the match rate based on participant characteristics that they observe but that the researcher does not

observe. Failure to account for this program-level heterogeneity biases estimates of match-rate effects downwards. Only Engelhardt and Kumar (2004) control for this.

The analysis here is unique in the match-rate literature (except for Engelhardt and Kumar, 2004) in that it accounts for these four sources of bias. It estimates distinct match-rate effects on both the extensive and intensive margins. It uses a Tobit to control for censoring, and it uses program dummies (fixed effects) to control for program heterogeneity. Finally, it controls for participant heterogeneity with a Heckman-type specification and—more importantly—by controlling for an unusually wide range of participant characteristics.

The model is applied to the 2,350 IDA participants in the 14 programs of the American Dream Demonstration. Match rates were typically 1:1 or 2:1 but could be as high as 7:1, and match rates varied both between programs and within programs.

While the estimates sometimes fell a little short of statistical significance at conventional levels, the broad patterns were clear. In accord with theory, higher match rates were associated with a greater likelihood of saving something in IDAs. For participants who did save something, the "fixed-goal" effect dominated the "substitution effect", as higher match rates were associated with a lower level of IDA savings.

What does this mean for the three policy goals of IDAs? First, higher match rates apparently do help include poor people in asset-building policies. Second, match rates above 1:1 may decrease IDA savings among those who save something in IDAs. Third, higher match rates increase asset accumulation, as the higher match rate and

the greater likelihood of saving something in IDAs more than compensates for the decrease in the level of IDA savings for those who save something.

Part 2 below describes IDAs and participants in ADD. It also presents simple cross-tabs between match rates and IDA savings outcomes in ADD. Part 3 describes the model and its results. Part 4 discusses some implications for policy.

2. IDAs and the American Dream Demonstration

2.1 Assets and the poor

IDAs aim to include poor people in asset-building policy and to help them save and build assets (Sherraden, 1991). Instead of tax incentives, IDAs provide matches for savings used to build human capital (via post-secondary education), physical capital (via home purchase), or business capital (via microenterprise). IDA programs also build human capital (via financial education) and social capital (via support from peers and program staff).

Although the field of development economics has long seen saving as central to sustainable improvement in well-being, U.S. public policy somehow overlooked its importance for the poor. Public assistance provided cash for subsistence, but it stopped short of transfers in amounts and forms that might help improve long-term well-being.

In 1988, a movement started to include the poor in asset-building policies. Friedman's *The Safety Net as Ladder* said that public assistance could encourage development beyond mere subsistence. Haveman's *Starting Even* argued that "transfer payments are necessary but not sufficient" (p. 149). And Sherraden's "Rethinking Social Policy: Towards Assets" proposed matched savings in IDAs as a step towards a development-based policy paradigm. The movement has since gained intellectual momentum (Sherraden and Morris, forthcoming; Shapiro and Wolff, 2001; Ackerman and Alstott, 1999; Conley, 1999; Oliver and Shapiro, 1995).

Matched savings as part of a development-based policy paradigm has also attracted broad political support. Bill Clinton—who as governor of Arkansas wrote the foreword to *The Safety Net as Ladder*—supported IDAs in his 1992 campaign and later proposed a large matched-savings program (Wayne, 1999). In 2000, both George W. Bush and Al Gore had billion-dollar IDA proposals in their platforms (Bush, 2000; Kessler, 2000). Bush has continued to call for expanding IDAs, and John Kerry (2002) has proposed matched savings in "Empowerment Accounts". About 34 states have IDA legislation (Edwards and Mason, 2003), and the Assets for Independence Act of 1998 authorized $250 million for IDAs over 1999–2009. In addition, the Savings for Working Families Act—if passed—would provide $450 million for 300,000 IDAs over 10 years.

Abroad, Taiwan has an IDA demonstration, and Canada has a randomized IDA experiment. There are IDAs programs for poor, rural women in Peru and Colombia (Moury, 2004). The United Kingdom has an IDA-like project (Kempson, McKay, and Collard, 2003), and the new Child Trust Fund gives each newborn an account and a deposit, with larger deposits for the poor (H.M. Treasury, 2003).

2.2 The American Dream Demonstration

The first large-scale IDA project was the American Dream Demonstration. From 1997 to 2003, ADD had 2,350 participants at 14 IDA programs across the United States. All programs provided matches for home purchase, post-secondary education, and microenterprise, and some also provided matches for job training, home repair, and retirement savings. Unmatched withdrawals were allowed for other purposes. Most

programs were run by non-profit community-development organizations. Program staff collected data with administrative software designed for IDAs (Johnson, Hinterlong, and Sherraden, 2001). Schreiner *et al.* (2001) give more programmatic detail for ADD.

ADD participants held their IDAs as passbook accounts in banks or credit unions. Deposits received no special tax treatment, but the IRS counted matches as gifts. IDA balances and (potential) matches were not counted toward asset tests for public assistance. Match monies were kept apart from participant IDA savings, and matches were disbursed directly to vendors. Participants had to attend financial-education classes.

2.2.1 Participants in ADD

People with household income under 200 percent of the poverty line were eligible to participate in ADD. At enrollment, about 49 percent of participants were under the poverty line, and 20 percent were under half the poverty line. Passbook and checking balances together averaged about $500. About 16 percent of participants owned a home, 60 percent owned a car, and 19 percent were involved in self-employment. Almost half (48 percent) of participants planned to make a matched withdrawal for home purchase, 19 percent planned for microenterprise, 16 percent planned for post-secondary education, and 17 percent planned for home repair, retirement savings, or job training.

Compared with low-income people in general (Sherraden *et al.*, 2000), ADD participants were more disadvantaged in that they were disproportionately female (80 percent), African-American (47 percent), and/or not married (77 percent). About 44

percent were single mothers, and 50 percent had received means-tested public assistance. Participants were also disproportionately advantaged in that they were more likely to be employed or to be students (90 percent), to have a college degree (24 percent), and/or to own a bank account (77 percent).

The ADD data cover *participants* (those who opened an IDA) but not *eligibles* (those who could have opened an IDA but did not). Because participants were self-selected, they probably differed from eligibles in unobserved ways that were positively correlated with IDA savings outcomes. Thus, this paper's results for participants cannot be extrapolated to eligibles.

Furthermore, ADD participants were not only self-selected but also program-selected. Programs usually targeted specific groups such as the working poor, women, and/or people of color. Also, host organizations often promoted IDAs among clients of their other services. The characteristics associated with program selection could have been positively or negatively associated with IDA savings outcomes.

2.2.2 IDA savings outcomes in ADD, by match rates

Figure 1 relates match rates in ADD with IDA savings outcomes. Match rates were not linked with the likelihood of being a "saver", defined as those who made a matched withdrawal or who had at least $100 of net IDA deposits. About 56 percent of participants were "savers". "Non-savers" had some IDA savings for a time but then made unmatched withdrawals and/or ended up with net IDA savings of less than $100.

For “savers”, higher match rates were associated with lower IDA savings. Across match rates of 1:1, 2:1, and more than 2:1, matchable savings were $1,352, $895, and $731. The percentage of income saved in IDAs was 3.4, 2.4, and 2.3. Likewise, net IDA savings per month was $37, $27, and $22.

Censoring may explain the negative match-rate effect in Figure 1. Programs in ADD tended to couple higher match rates with lower match caps. Looking at “savers” across match rates, the average match cap was $2,050, $1,341, and $915. Furthermore, IDA savings were more likely to be censored for participants with higher match rates (and lower match caps). While 28 percent of “savers” with match rates of 1:1 had IDA savings at the match cap, the figure was 45 percent for match rates of 2:1 and 56 percent for match rates of more than 2:1. (To allow for what the literature on kinked budget constraints calls “optimization error”, participants were counted as censored if they were within 95 percent of the match cap.) The model below controls for censoring.

3. Results

3.1 Tobit model with selection

The econometric problem has four aspects. First, match rates may have a different effect on the likelihood of being a "saver" than on the level of IDA savings. Second, desired IDA savings may be censored at the match cap. Third and fourth, match rates may interact with unobserved characteristics of programs and participants.

A Tobit model with selection accounts for these issues. For all 2,350 participants, the selection equation is a Probit predicting the likelihood of being a "saver". For the 1,314 "savers", the Tobit predicts desired net IDA savings per month. Each equation allows for a distinct, non-linear match-rate effect. The Tobit controls for censoring, and both equations include fixed effects (14 program dummies) to control for program heterogeneity.

To control for participant heterogeneity, the two equations' errors are allowed to be correlated. Identification comes not only from the assumed functional form but also from excluding from the Probit the set of regressors concerned with hours of required financial education. This variable is omitted from the Probit because it is endogenous with "saver" status; "non-savers" often left ADD before they had a chance to complete financial-education requirements. In contrast, virtually all "savers" completed all hours of required financial education, so this variable is exogenous to their level of savings. The estimated correlation coefficient in the two step regression was –0.45 with a p-value

of 0.02, suggesting that unobserved factors that increased the likelihood of saving something in an IDA also decreased the amount of IDA savings.

More importantly, both steps control for participant heterogeneity by including an unusually wide range of regressors, many of them correlated with unobserved factors related to saving. After all, a straightforward way to reduce the importance of omitted factors is to include many factors. Included factors are generally correlated with omitted factors and thus help control for them (Benjamin, 2003). The model here includes all participant and program characteristics in the data expected to be related to saving:

- Program characteristics (Figure 4):
    - Match rate
    - Match cap
    - Match-cap structure
    - Use of automatic transfer to IDA
    - Months to make matchable deposits
    - Hours of required general financial education
    - Funding status under the Assets for Independent Act
    - Enrollment during the final six months of availability
- Participant demographics (Figure 5):
    - Gender
    - Race/ethnicity
    - Age

- Marital status
- Number of adults and children in household
- Location of residence
- Education
- Employment
- Planned use of matched withdrawal

- Income and receipt of public assistance (Figure 6):
  - Aid for Families with Dependent Children or Temporary Assistance for Needy Families at or before enrollment
  - Supplemental Security Income/Disability Insurance
  - Food Stamps
  - Recurrent income (wages, retirement benefits, and public assistance)
  - Intermittent income (self-employment, child support, gifts, investments, and "other")
- Assets and liabilities (Figure 7):
  - Passbook and checking accounts
  - Home ownership and mortgage debt
  - Car ownership and car loan
  - Land or property ownership and mortgage
  - Financial investments
  - Microenterprise

- Student loans
- Informal loans
- Overdue household bills
- Overdue medical bills
- Credit-card debt

- Fixed effects and other minor regressors (available on request)
  - Program dummies
  - Zero-order dummies for items with missing values (Greene, 1993)

To allow for non-linearities, continuous variables such as age, income, and bank-account balances were specified as two-piece splines (Suits, Mason, and Chan, 1978). In all, 218 coefficients were estimated. Figures 4 through 7 report results for the most important regressors. All four figures pertain to the same two-equation model. The discussion in the text focuses on the match-rate effects.

The model can be seen as a variant of Greene's (2002) Tobit with selection, Amemiya's (1984) "Type II Tobit", or Cragg's (1971) two-step Tobit. In the first step, a participant is a "saver" ($z = 1$) if the (unobserved) desired "saver" status z^* is positive:

$$\begin{aligned} z &= 1 \text{ if } z^* = \alpha' W + u > 0, \\ z &= 0 \text{ if } z^* = \alpha' W + u \leq 0. \end{aligned} \tag{1}$$

For "savers" in the second step, the level of observed IDA savings y equals desired IDA savings y^* if y^* is less than the match cap m. Otherwise, observed IDA savings y equals the match cap m:

$$y = y^* \text{ if } y^* = \beta' X + \varepsilon < m,$$
$$y = m \text{ if } y^* = \beta' X + \varepsilon \geq m. \tag{2}$$

The errors u and ε are joint-normal with parameters (0, 0, 1, σ^2, ρ). The system of (1) and (2) were estimated by full-information maximum likelihood (FIML).

3.2 Exogenous variation in match rates

Before presenting the econometric results, this section addresses two questions central to the identification of match-rate effects: Was there sufficient variation in match rates? And if so, was this variation plausibly exogenous?

With program dummies controlling for program heterogeneity, identification comes from within-program variation in match rates.

In ADD, match rates varied both between and within programs (Figure 2). Looking between programs with 30 or more participants (or "savers") with a given match rate, there were 5 (5) programs at 1:1, 10 (8) programs at 2:1, and 5 (5) programs at more than 2:1. Looking within programs, there were 4 (3) programs with 30 or more participants with 1:1 match rates and 30 or more participants to 2:1 match rates, and there were 2 (1) programs with 30 or more participants with 2:1 match rates and 30 or more participants with more than 2:1. Thus, there probably was sufficient between-program and within-program variation in match rates for comparing 1:1 to 2:1, but perhaps not for comparing 2:1 with more than 2:1 and for comparing 1:1 with more than 2:1.

Were match rates exogenous? In most cases, programs set match rates independently of their beliefs about how participants would save, and the model controls for other cases.

First, match rates were (sub-)program-wide, not participant-specific. Still, if a program expected its participants as a group to save less, then it may have set higher match rates from the outset (Sherraden *et al.*, 2000). Program fixed effects control for this. Furthermore, program staff said that they set match rates based on constraints in enrollment and funding, not expectations about how much participants would save.

Second, later cohorts at three programs were assigned higher match rates than earlier cohorts. If later cohorts had unobserved characteristics negatively related with saving, this could bias estimated match-rate effects downwards. (One program assigned later cohorts lower match rates.) Staff said again that changes in match rates through time were driven by funding constraints rather than beliefs about how later cohorts would save. Looking at all 14 programs, match rates and cohort had no obvious pattern (Figure 3). If anything, later cohorts were assigned lower match rates. In any case, the model controls for cohort in three ways. First, it includes the number of months eligible to make matchable deposits, as later cohorts generally had fewer months to save. Second, the model includes a dummy for participants funded under the Assets for Independence Act, as these participants were mostly in later cohorts. Third, the model includes a dummy for participants who enrolled in the final six months before ADD's

enrollment deadline. If match rates were correlated with cohort, the regression should control for it.

Third, a pair of ADD programs offered a 2:1 match rate for home purchase and a 1:1 match rate for all other uses. The model controls for planned use as reported at enrollment.

In sum, most within-program variation in match rates was driven by funding constraints. The regression controls for variation related with omitted characteristics (such as cohort or planned use) that might be correlated with IDA saving. With program fixed effects controlling for any endogeneity that might be driving between-program differences, the remaining variation in match rates can be taken as plausibly exogenous. Identification comes from comparing IDA savings outcomes between programs with different match rates (for a given planned use) and between participants with different match rates (for a given program).

3.3 Estimated match-rate effects

The FIML estimates of match-rate effects appear at the top of Figure 4. In accord with theory, higher match rates in the Probit were associated with a greater likelihood of being a "saver". Compared with a 1:1 match rate, a 2:1 match rate was associated with an increase of 5.3 percentage points, the "marginal effect" associated with the estimated coefficient of 18.0 (p-value 0.14) that appears in Figure 4. Likewise, a match rate of more than 2:1 was associated with an increase of 9.2 percentage points (coefficient of 31.2 with a p-value 0.09). About 56 percent of participants were "savers",

so these are huge effects. Although one coefficient was not quite significant at conventional levels, the pattern is that the likelihood of saving something in IDAs increased with the match rate.

For "savers", the theoretical effect of higher match rates on the level of IDA savings is ambiguous; either the "substitution effect" or the "fixed-goal effect" could win out. In the Tobit, the move from a match rate of 1:1 to 2:1 was associated with a decrease in net IDA savings per month of $3.87 (p-value 0.12). Give that net IDA savings per month for "savers" in ADD was $29, this is a large effect. IDA savings with match rates of more than 2:1 were not significantly different than with match rates of 1:1 or 2:1, perhaps because of sparse within-program variation.

Broadly, the "fixed-goal effect" dominated the "substitution effect", as match rates of 2:1—compared with 1:1—were associated with lower IDA savings. For poor people saving for a "lumpy" purchase (as in IDAs), this is plausible. Even though the opportunity cost of lost matches of not saving an additional $100 is the same at $2,000 as at $2,100, if the minimum down payment on a home is $2,000, then participants may stop saving once they can buy the house, either because they need cash for closing costs or because the marginal utility of consumption now exceeds the cost of lost matches.

In both equation, the two match-rate effects were not significantly different from each other, and the p-value for their joint significance was 0.16. This is probably due to the weak identification of the effect of match rates of more than 2:1.

4. Discussion

Higher match rates were associated with a greater likelihood of saving something in IDAs but—for "savers"—a lower level of IDA savings. The model here estimates two distinct match-rate effects and controls not only for censoring but also for unobserved heterogeneity in both programs and participants. These results have policy implications for 401(k) plans and as well as IDAs.

401(k) plans are not IDAs—401(k) participants have higher average incomes, and 401(k) match rates are lower, typically 0.5:1. Still, the results on IDAs here may be relevant for including the poor in 401(k) plans. In contrast to Engelhardt and Kumar's (2004) finding of positive match-rate effects on 401(k) contributions, the analysis here finds negative effects, perhaps because "fixed-target effects" are stronger for poorer people. Employers might increase participation among poor employees by increasing match rates, but with the side-effect of decreasing the level of contributions per poor participant (assuming they resemble IDA participants in ADD). Because regulations penalize top-heavy 401(k) plans that give too-high a share of deferrals to highly compensated employees, employers should take note of this side-effect. Higher match rates can increase 401(k) contributions from poor employees only if increased participation on the extensive margin more than compensates for decreased contributions for participants on the intensive margin.

For IDAs, the results here highlight possible conflicts among the three goals of inclusion, saving, and asset-building. Higher match rates encourage inclusion by making

participants more likely to save something. But higher match rates also decrease IDA savings per "saver". On net, asset accumulation could rise or fall, depending on the net effect of three forces. First, a higher match rate increases the likelihood of being a "saver" and so increases IDA asset accumulation. Second, a higher match rate decreases IDA savings per "saver" and so decreases IDA asset accumulation. Third, a higher match rate—given a level of IDA savings—increases IDA asset accumulation.

For ADD, simulations based on the FIML Tobit regression with selection predict that, if all ADD participants had a match rate of 1:1, 51.2 percent would be "savers" with (censored) net IDA savings per month per "saver" of $34.71 (Figure 8). With a match rate of 2:1, 56.5 percent would be "savers" (an increase of 5.3 percentage points) with net IDA savings per month per "saver" of $29.16 (a decrease of $2.41). Looking at all participants, average net IDA savings per month would increase by 48 cents; the increase in the likelihood of being a "saver" more than compensates for the decrease in the level of IDA savings for "savers". It follows that, compared with a 1:1 match rate, a 2:1 match rate increases asset accumulation per participant per month by $19.21, that is, from $35.54 to $54.75.

What does this mean for IDAs as a possible universal, lifelong, progressive asset-building policy? If participants in ADD do not resemble participants in a long-term, large-scale policy, then these results may mean little. If ADD is somewhat representative, however, then the results underline trade-offs among the basic goals of IDAs. Higher match rates are associated with greater inclusion and increased asset-

building but with decreased net IDA savings per "saver" and with slightly increased IDA savings per participant.

Greater inclusion, greater IDA saving, and increased asset-building on a per-participant basis probably matter more than decreased net IDA savings on a per-"saver" basis. After all, policy cares more about the average effect on those who enter treatment (participants) than about the average effect on those who successfully complete treatment ("savers"). In this case, match rates of 2:1 serve the goals of IDAs better than match rates of 1:1.

Of course, the match rate is just one policy lever in IDA design. In particular, the match cap also matters. Qualitative work in ADD suggests that participants see the match cap not as a limit but as a goal (Sherraden *et al.*, 2004). In the quantitative analysis here, a $1 increase in the match cap was associated with a 46-cent increase in net IDA savings per month for "savers" (Figure 4), even after controlling for censoring. (Milligan [2003, p. 278] finds a similar effect for subsidized retirement savings in Canada.) This accords with work in behavioral economics that finds that people often believe—without bothering to see if it is true in their own case—that subsidized savings opportunities should be "maxed out" (Choi, Laibson, and Madrian, 2004; Thaler and Sunstein, 2003). Indeed, program staff in ADD exhorted IDA participants to save up to the match cap, explicitly presenting the cap as a "target" and informing participants of the monthly deposit required to reach it.

Adjustments to match rates that require concurrent adjustments to match caps (for example, to accommodate a fixed budget) should take both effects into account. If the most important goal is not inclusion nor asset accumulation for all IDA participants but rather the stimulation of "new"—not "reshuffled"—saving among "savers", increasing match caps (which may end up being coupled with decreases in match rates) would likely be more effective than increasing match rates (and decreasing match caps), given that higher match rates decrease IDA savings per "saver" and that the match-cap effect probably works mostly through increased saving effort.

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Figure 1: IDA savings outcomes in ADD, by match rate

		Match rate		
Measure	**All**	**1:1**	**2:1**	**>2:1**
Participants:				
All (number)	2,350	654	1,137	559
All (% across match rates)	100	28	48	24
"Savers" (Net IDA savings =>$100):				
"Savers" (number)	1,314	390	616	308
"Savers" (% of participants within a match rate)	56	60	54	55
For "Savers" only:				
Net IDA savings ($)	992	1,352	895	731
Share of income saved in IDAs (%)	2.7	3.4	2.4	2.3
Net IDA savings per month ($)	29	37	27	22
Match cap	1,451	2,050	1,341	915
Months eligible to make matchable deposits	34	36	33	33
Share censored at =>95% of match cap (%)	42	28	45	56

Note: T-tests for differences in means between all pairs have p<0.10, except 2:1 versus >2:1 for share of "Savers", months eligible, and saving rate.

Figure 2: Participants in IDA, by program and match rate, for all participants and for "savers"

	All participants				"Savers"			
Program	**All**	**1:1**	**2:1**	**>2:1**	**All**	**1:1**	**2:1**	**>2:1**
ADVOCAP	82	0	82	0	59	0	59	0
Alternatives FCU	91	0	0	91	74	0	0	74
Bay Area	239	0	239	0	156	0	156	0
CAAB	142	1	37	104	73	1	16	56
CAPTC Large-scale	456	216	240	0	238	153	85	0
CAPTC Small-scale	163	105	58	0	102	85	17	0
CVCAC	154	61	69	24	105	38	49	18
Foundation Communities	125	1	119	5	54	0	54	0
Heart of America	91	0	90	1	68	0	68	0
MACED	65	16	15	34	42	0	11	31
Mercy Corps	118	118	0	0	55	55	0	0
Near Eastside	190	6	3	181	89	1	1	87
Shorebank	203	129	74	0	96	57	39	0
WSEP	231	1	111	119	103	0	61	42
All ADD:	2,350	654	1,137	559	1,314	390	616	308

Figure 3: Match rates by ranked date of enrollment in ADD

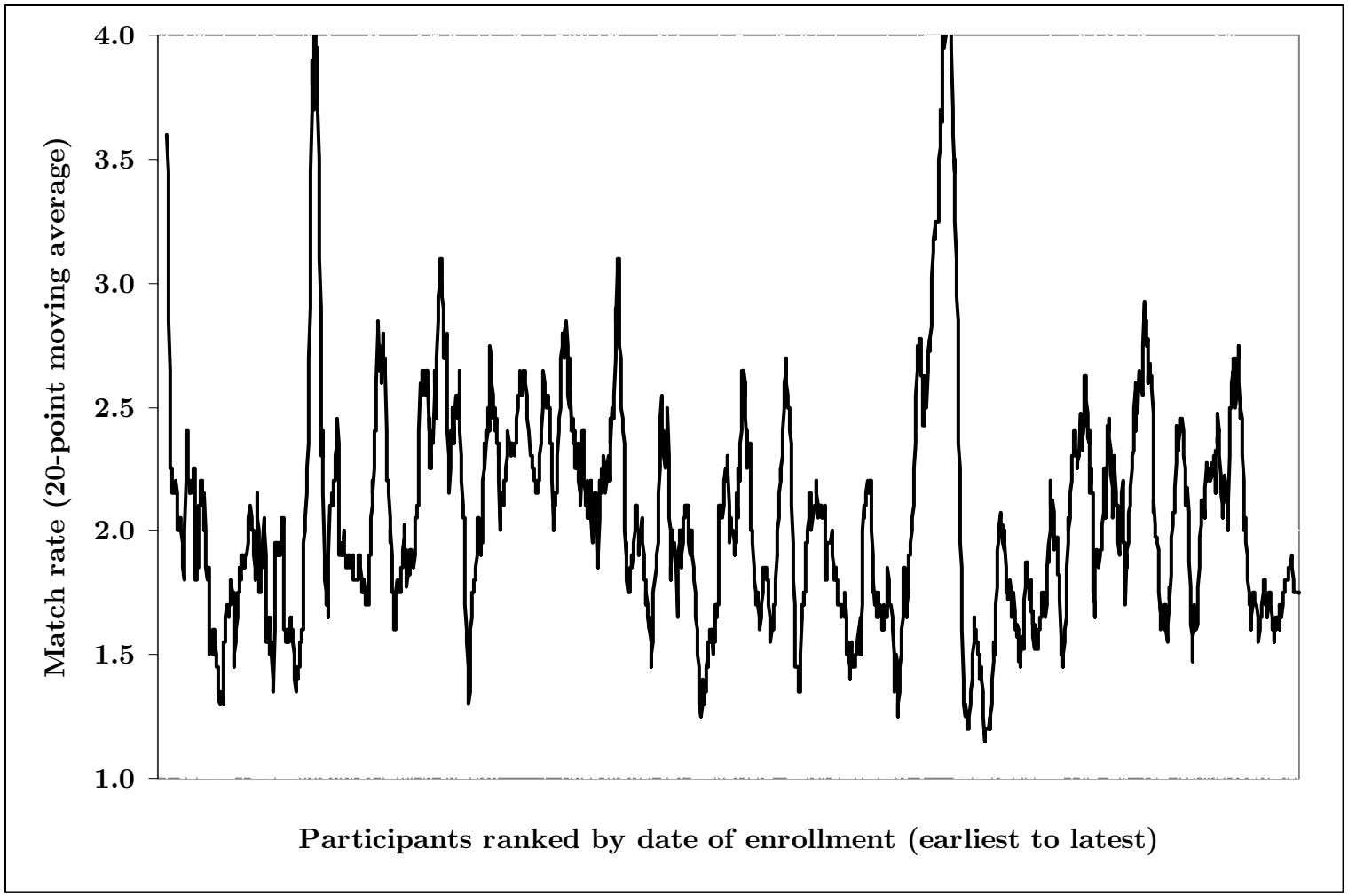

Figure 4: FIML Tobit with selection, independent variables for aspects of IDA design, institutional structure, and enrollment

	Prob.("Saver")			Net IDA savings/month		
Independent variable	**Mean**	**Coef.**	**p-value**	**Mean**	**Δ$**	**p-value**
Match rate						
1:1	0.28			0.30		
2:1	0.48	+18.0	0.14	0.46	–3.87	0.12
>2:1	0.24	+31.2	0.09	0.24	+0.18	0.97
Match cap						
Limit on matchable deposits ($/month)	41	+0.7	0.01	42	+0.46	0.01
Match-cap structure						
Lifetime	0.48			0.50		
Annual	0.52	+37.4	0.14	0.50	–19.93	0.01
Use of automatic transfer to IDA						
No	0.94			0.93		
Yes	0.06	+39.2	0.01	0.07	+1.29	0.59
Months to make matchable deposits						
24 or less	0.25			0.22		
25 to 35	0.19	+19.1	0.30	0.20	–5.78	0.11
36	0.28	+7.0	0.77	0.25	–7.21	0.14
37 or more	0.28	+32.9	0.10	0.33	–9.72	0.02
Hours of required general financial education						
Zero				0.09		
More than zero				0.91	+2.10	0.72
1 to 10 (spline)				9.0	+1.53	0.01
10 to 20 (spline)				2.3	–0.27	0.38
20 to 30 (spline)				0.4	+0.43	0.36
AFIA status						
Not AFIA	0.83			0.83		
AFIA	0.17	+32.4	0.02	0.17	+0.52	0.86
Enrolled in last six months possible						
No	0.58					
Yes	0.42	–19.6	0.03	0.39	–2.76	0.13

Note: All tables derived from a single two-step Tobit model with selection.
The first step was a Probit (n=2,350, k=104) for the likelihood of being a "saver".
The second step was a Tobit (n=1,314, k=111) for net IDA savings per month for "savers".
Means taken over non-missing observations.

Figure 5: FIML Tobit with selection, independent variables for participant demographics and planned use of matched withdrawals

	Prob.("Saver")			Net IDA savings/month		
Independent variable	**Mean**	**Coef.**	**p-value**	**Mean**	**Δ$**	**p-value**
Gender						
Male	0.20			0.21		
Female	0.80	+12.9	0.12	0.79	–1.49	0.37
Race/Ethnicity						
Caucasian	0.37			0.43		
African American	0.47	–5.1	0.56	0.39	–8.39	0.01
Asian American	0.02	+60.8	0.02	0.03	+5.58	0.20
Hispanic	0.09	+16.0	0.22	0.10	–1.31	0.62
Native American	0.03	–13.8	0.47	0.02	–9.23	0.01
Other race/ethnicity	0.03	+39.3	0.05	0.03	–2.01	0.58
Age						
14 to 20 (spline)	5.9	–20.0	0.01	5.9	–1.18	0.32
20 to 70 (spline)	16	+1.3	0.01	17	+0.13	0.08
Marital status						
Never-married	0.49			0.39		
Married	0.23	+20.2	0.04	0.27	–0.85	0.68
Divorced or separated	0.28	+3.6	0.65	0.30	–0.21	0.89
Widowed	0.03	+14.7	0.52	0.04	–8.40	0.03
Household composition						
Adults (18 or older)	1.5	+4.6	0.38	1.5	–0.36	0.74
Children (17 or younger)	1.7	–1.5	0.53	1.7	–0.23	0.63
Location of residence						
Urban (pop. 2,500 or more)	0.87			0.84		
Rural (pop. 2,500 or less)	0.13	–20.1	0.17	0.16	–1.01	0.70
Education						
Did not complete high school	0.16			0.13		
Completed high school or GEI	0.23	+5.6	0.58	0.21	–0.83	0.72
Attended college but did not g	0.39	+10.8	0.28	0.38	+0.41	0.86
Graduated 2-year college	0.04	+16.3	0.39	0.03	–7.94	0.03
Graduated college, 2-year/4-y	0.11	+40.9	0.01	0.14	+3.40	0.21
Graduated 4-year college	0.07	+54.0	0.01	0.10	+2.76	0.36
Employment						
Unemployed	0.05			0.05		
Homemaker, retired, or disabl	0.04	+5.5	0.78	0.05	–7.03	0.08
Student, not working	0.06	–10.3	0.59	0.04	+0.93	0.84
Student, also working	0.03	+38.8	0.08	0.03	+2.16	0.63
Employed part-time	0.23	+17.9	0.22	0.23	–0.88	0.78
Employed full-time	0.59	+19.5	0.18	0.60	–4.18	0.18
Planned use of matched withdrawal						
Home purchase	0.48			0.37		
Home repair	0.09	+92.3	0.01	0.13	+0.27	0.93
Post-secondary education	0.16	+39.0	0.01	0.18	–3.54	0.10
Job training	0.02	+9.3	0.67	0.02	–6.23	0.21
Retirement	0.06	+56.2	0.01	0.07	–0.27	0.93
Microenterprise ownership	0.19	+39.6	0.01	0.22	–4.98	0.01

Note: All tables derived from a single two-step Tobit model with selection.
The first step was a Probit (n=2,350, k=104) for the likelihood of being a "saver".
The second step was a Tobit (n=1,314, k=111) for net IDA savings per month for "savers".
Means taken over non-missing observations.

Figure 6: FIML Tobit with selection, independent variables for income and receipt of public assistance

	Prob.("Saver")			Net IDA savings/month		
Independent variable	**Mean**	**Coef.**	**p-value**	**Mean**	**Δ$**	**p-value**
AFDC or TANF before enrollment						
No	0.62			0.64		
Yes	0.38	+4.1	0.58	0.36	–1.04	0.47
AFDC or TANF at enrollment						
No	0.90			0.93		
Yes	0.10	–6.2	0.62	0.07	+2.92	0.27
SSI/SSDI at enrollment						
No	0.89			0.89		
Yes	0.11	–4.3	0.74	0.11	+3.41	0.21
Food stamps at enrollment						
No	0.83			0.84		
Yes	0.17	+18.1	0.09	0.16	–4.74	0.04
Recurrent income (monthly $)						
0 to $1,500 (spline)	1,000	–0.00009	0.31	990	+0.0041	0.02
$1,500 to $3,000 (spline)	155	+0.00008	0.45	165	–0.0007	0.75
Intermittent income (monthly $)						
0 to $2,000 (spline)	210	+0.00014	0.17	250	+0.0048	0.01
$2,000 to $3,000 (spline)	6	+0.00033	0.55	8	–0.0092	0.27

Note: All tables derived from a single two-step Tobit model with selection.
The first step was a Probit (n=2,350, k=104) for the likelihood of being a "saver".
The second step was a Tobit (n=1,314, k=111) for net IDA savings per month for "savers".
Means taken over non-missing observations.

Figure 7: FIML Tobit with selection, independent variables for assets and liabilities at enrollment

	Prob.("Saver")			Net IDA savings/month		
Independent variable	**Mean**	**Coef.**	**p-value**	**Mean**	**Δ$**	**p-value**
Passbook and checking accounts						
Both passbook and checkbook	0.38			0.45		
Checking only	0.26	+7.5	0.44	0.30	+2.71	0.15
Passbook only	0.12	–43.4	0.01	0.10	–1.73	0.45
Unbanked (no passbook, no checking)	0.23	–22.5	0.04	0.15	+2.17	0.34
Passbook savings balance ($)						
0 to $400 (spline)	94	+0.00119	0.01	113	+0.0164	0.01
$400 to $3,000 (spline)	134	–0.00018	0.04	175	+0.0032	0.05
Checking balance ($)						
0 to $1,500 (spline)	198	+0.00026	0.04	260	–0.0015	0.49
$1,500 to $3,000 (spline)	21	–0.00018	0.49	29	+0.0041	0.34
Home ownership						
Renter	0.84			0.78		
Owned with mortgage	0.12	+19.8	0.10	0.17	+0.43	0.83
Owned free-and-clear	0.04	+25.7	0.16	0.05	+10.07	0.01
Car ownership						
None	0.36			0.26		
Owned with loan	0.24	+16.4	0.06	0.26	–1.82	0.33
Owned free-and-clear	0.40	+29.3	0.01	0.48	+0.56	0.74
Land or property ownership						
None	0.98			0.97		
Owned with mortgage	0.01	+117.0	0.12	0.01	–4.14	0.71
Owned free-and-clear	0.01	+198.8	0.01	0.02	–11.05	0.40
Financial investments						
No	0.87			0.84		
Yes	0.13	+34.0	0.01	0.16	–1.73	0.35
Microenterprise ownership						
No	0.89			0.86		
Yes	0.11	+7.5	0.55	0.14	+3.41	0.13
Student loans						
No	0.83			0.84		
Yes	0.17	+9.6	0.28	0.16	+1.56	0.39
Informal loans from family or friends						
No	0.82			0.82		
Yes	0.18	–10.0	0.23	0.18	+2.24	0.18
Debt as overdue household bills						
No	0.72			0.75		
Yes	0.28	–7.6	0.30	0.25	–2.45	0.09
Debt as overdue medical bills						
No	0.82			0.84		
Yes	0.18	–8.4	0.32	0.16	–2.16	0.21
Credit-card debt						
No	0.67			0.67		
Yes	0.33	–11.8	0.10	0.33	+0.92	0.52

Note: All tables derived from a single two-step Tobit model with selection.
The first step was a Probit (n=2,350, k=104) for the likelihood of being a "saver".
The second step was a Tobit (n=1,314, k=111) for net IDA savings per month for "savers".
Means taken over non-missing observations.

Figure 8: Simulated changes in inclusion, net IDA savings, and asset accumulation in ADD, match rates of 1:1 versus 2:1

	Match rate		Change
Measure	**1:1**	**2:1**	**1:1 to 2:1**
"Savers" (%)	51.2	56.5	+5.3
Net IDA savings per month for "savers" ($)	34.71	32.30	–2.41
Net IDA savings per month per participant ($)	17.77	18.25	+0.48
Asset accumulation per month per participant ($)	35.54	54.75	+19.21

Source: Simulations with ADD data and estimates from FIML Tobit with selection.