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Educational Status and Savings Performance in Individual Development Accounts

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Abstract

This study examines the relationship between education and savings performance in Individual Development Accounts (IDAs), a matched savings program for the poor. We also investigate whether the relationship between education and savings is mediated by income, intended uses of IDAs, and program (or institutional) factors. The data of this study is from the American Dream Demonstration (N = 2,150), the first national demonstration of IDAs. The results indicate that, compared to the participants without a high school degree, those with some college education, especially those with a 4-year college degree, had higher savings, after controlling for program factors and other individual factors in the model. Household income, intended uses of IDAs, and program characteristics were related to savings outcomes; income and two program factors, monthly savings target and financial education, also partially mediated the relationship between education and savings outcomes. These findings may help design and implement more effective savings programs for the low-income population and its varying segments.

Key words: Savings, educational status, IDAs, welfare reform

Educational Status and Savings Performance in Individual Development Accounts

Both theory and empirical evidence suggest that education has a variety of positive economic and social effects on individuals, families and society as a whole (Becker, 1993; Beverly & Sherraden, 1997). While numerous studies have indicated the positive effects of education on labor market outcomes, the impact of education on savings behaviors, especially among low-income people, has not been adequately examined. Furthermore, although theories suggest different potential pathways (e.g., income, motivations) through which education may enhance savings, empirical research has not yet examined these possible mechanisms.

To address these issues, this study examines the association between education and savings performances of low-income people in a matched savings program for the poor—Individual Development Accounts (IDAs). IDAs are saving programs targeted to low-income people and provide incentives and an institutional structure for saving. Account holders receive matching funds as they save and make a purchase for assets, such as a home, post-secondary education, or microenterprise, that can help promote their long-term well-being. The design of IDAs is based on the institutional framework of savings, which posits that institutional factors, in addition to income, preferences, and other individual factors, may play an important role in promoting savings (Sherraden, Schreiner, & Beverly, 2003).

Using economic theory and institutional theory of savings as frameworks, we aim to investigate the following research questions. First, what is the relationship between education of low-income people and their savings in IDAs? Second, do income and different intended uses (a proxy for different goals of savings) of IDAs mediate the

associations between education and savings? Third, do programs (or institutional) factors mediate the relationships between education and savings?

Background

Theory

Economic theory. Economic theory predicts that savings is a result of individual characteristics such as income and personal preferences (see a review of Beverly, 1997; Deaton, 1992). Specifically, this theory suggests that the most important determinant of savings is income (Deaton, 1992). Therefore, the low savings of low-income people is primarily due to their limited income and economic resources. Since education is strongly associated with income, alleged income-related differences in savings may be explained in part by differences in education (Beverly, 1997).

Within the economic framework, studies further identified several possible pathways through which education may affect savings (i.e., indirect effects of education) (Solomon, 1975; Yamokoski & Keister, 2004). First, as mentioned, because education is highly related to income, part of the relationship between education and savings may be through income. Second, better educated people may be more future oriented and are more likely to have other positive savings attitudes, which may lead to stronger savings motives. Third, due to the following reasons, education may help improve financial decision-making that increases the returns on investment: more educated people tend to be more efficient investors; educated individuals are more likely to have access to financial education, thus to have higher financial literacy levels; education can provide key social contacts to those who are likely to offer important information, assistance, and referral for more efficient investments.

Institutional theory. The institutional model of savings, on the other hand, posits that institutional factors may play an important role in promoting savings (Beverly & Sherraden, 1999; Sherraden, Schreiner, & Beverly, 2003). This theory suggests that asset accumulation is structured and often subsidized through institutional arrangements (e.g., retirement savings). Specifically, these studies propose four major institutional determinants of savings: institutionalized saving mechanisms (e.g., employer-provided pension plans), targeted financial education, attractive saving incentives (e.g., matched savings), and facilitation (e.g., payroll deduction).

From this viewpoint, a major reason that low-income households save less is that they lack the access to incentives or institutions that promote and subsidize asset accumulation (Howard, 1997; Seidman, 2001; Sherraden, 1991, 2001). For example, the poor are much less likely to have jobs with pension benefits; thus, their savings opportunities for retirement are more limited. This theory implies that structured savings mechanisms maybe another mediator of the impact of education on savings. In other words, more educated people are more likely to have access to these incentives and information that facilitate savings, thus having more positive saving outcomes. Therefore, low-income people should be able to save better if they are provided with institutionalized structures for savings; and institutional factors in addition to individual characteristics may be important in explaining saving behaviors.

Evidence

Several studies indicate that savings increase with education, even after considering a variety of control variables (Bernheim & Garret, 1996; Diamond & Hausman, 1984; Haurin, Hendershott, & Wachter, 1996; Parrish, 2004; Solomon, 1975;

Wolff, 1998). Solomon (1975) found that more highly educated individuals tend to have higher average savings-income ratios, even when age, family income, and family size were controlled. Bernheim and Garrett (1996) found that education was related to household wealth, retirement wealth, and savings rate. Haurin, Hendershott and Wachter (1996) further found that household wealth increased with education for both males and females and for people with different marital status. Through the analysis of data from the Survey of Consumer Finances, Parrish (2004) found that education was positively related to bank account ownership, home ownership, investment, and retirement savings.

Several recent studies have specifically examined the positive impact of education on homeownership (e.g., Gyourko & Linneman, 1997; Masnick & Zhu, 2001). Gyourko and Linneman (1997) indicate that the gaps in homeownership rates between the least and most educated people widened in recent years, and the influence of education and income (or wealth) has partly usurped the role of marital status and children in determining home ownership. These effects held true for both Blacks and Whites, and for all household types. Masnick and Zhu (2001) further showed that a college education had stronger effects on homeownership of Blacks.

Other studies have also examined the effects of education on some possible mediating factors that could result in better savings outcomes. Solomon (1975) found that motives for savings varied with education: less educated individuals were more likely to report providing for emergencies as their primary savings goals, while those with more education cited the desire to provide for children's education and to help them set up households. Since educated individuals appear to have longer time horizons, he also suggests that education may alter individual preferences. Several studies also indicate the

positive relationship between education and financial knowledge. For example, through the analysis of the 1993 household survey by Merrill Lynch, Inc., Bernheim (1998) found that among the general population, education was positively related to financial literacy. Shelton and Hill's study (1995) also found that educational status and income were related to positive budgeting behavior among low-income people.

Purpose of the Study

As mentioned earlier, IDAs are structured savings programs for low-income people. This study aims to examine whether savings differ among IDA participants with different educational status and if the effects of education still holds after controlling for institutional factors. Based on the economic and institutional theories of savings, this study also investigates whether the effects of education are mediated by income, intended uses of IDAs, and program factors.

This study could contribute to the current literature from the following two perspectives. First, while theory and empirical evidence indicate that education is positively related to savings, it is interesting to know the effects of education in a structured savings program for the poor. Second, possible mechanisms by which education may affect savings have not been adequately examined. Exploring these mechanisms may help contribute to theoretical development in this area and to improve strategies to help the poor save. Answers to these questions may help guide modifications to IDA policy and program design in ways that might improve participation and savings outcomes for those participants with different educational status.

Data and Methods

Data and Sample

The data of this study are from the American Dream Demonstration (ADD). ADD was a national demonstration of IDAs for low-income people. The 14 IDA programs in ADD were run from 1997–2001 by 13 not-for-profit host organizations (one host had two programs) which include community development organizations, social-service agencies, credit unions, and housing organizations. A consortium of private foundations provided funding. All programs in ADD provided matches for home purchase, microenterprises, and post-secondary education, and some programs also provided matches for job training, home repair, or retirement savings.

ADD programs used a variety of ways to market IDAs to potential participants, and ADD participants chose to participate themselves. Enrollment began in July 1997. As of December 31, 2001, ADD had 2,353 participants. A *participant* is defined as an enrollee with at least one account statement, whether or not he or she later dropped out (Schreiner, Clancy & Sherraden, 2002). Compared to the general low-income population, ADD participants tended to be somewhat disadvantaged members of the "working poor" (Schreiner et al., 2001). Since students may have different savings patterns, the participants who were still attending school were deleted from the sample. The final sample in this study includes 2,150 participants.

Measurements

The measures in this study draw on those that were used in ADD reports (Schreiner et al., 2001; Schreiner et al., 2002).

Savings outcome. The savings performance of ADD participants is measured with Average Monthly Net Deposits (AMND). AMND is calculated as deposit plus interest minus unmatched withdrawals, divided by the number of months of participation. Thus, AMND controls for the length of participation in the program. All else constant, greater AMND implies greater savings and asset accumulation in IDAs.

Independent variable. Participants' education was coded as a nominal variable with four categories: less than high school degree (<12 years of education, 14%), high school degree (12 years of education, 26%), some college education but no bachelor's degree (>12 years and less than 16 years of education, 52%) and completed 4-year degree or above education (>16 years of education, 8%). This variable was dummy-coded in multiple regressions, with less than a high school degree being the reference group.

Possible mediating factors. Household income included both recurrent income (wages, government benefits, pensions, and investments) and intermittent income (self-employed, child support, gifts, and other sources).

Intended use of IDAs was coded as a nominal variable with four categories: savings for home purchase, for microenterprises, for postsecondary education, or for other purposes (for retirement, home repair, car purchases, etc.). This variable was dummy-coded in multiple regressions, with "savings for home purchase" being the reference group.

Institutional variables (also known as program-related factors) include match rates, monthly savings target, hours of financial education that participants received, and whether participants were offered direct deposit into their IDAs (1=yes, 0=no). Match rates offered to ADD participants range from 1:1 to 7:1. In regression analysis, it is

measured with a categorical variable with 4 groups: 1:1, 2:1, 3:1, and 4:1 to 7:1 (reference group). The monthly savings target is the total match cap divided by the time cap. The match cap is the limit on the amount of matchable deposits, and time cap is defined as the number of months after opening an account in which participants may make matchable deposits. ADD has both a match cap and a time cap because funds are limited in time and amount.

Control variables. Because of their potential influence on the outcome of interest, several demographic, social and economic characteristics of participants are included in the analysis as control variables. Participants' demographic information includes their gender, age, marital status, race/ethnicity, number of children and adults in the household, and whether they lived in urban or rural areas. The socioeconomic characteristics include participants' employment status, bank-account ownership, home ownership, and receipt of AFDC/TANF. These individual characteristics were recorded at their enrollment in ADD.

Analysis

In order to examine the effects of education on savings and the possible mediating effects of income, intended uses of IDAs, and program factors, a series of regression models were estimated. Following the recommendation of Baron and Kenny (1986), four assumptions need to be met to establish mediation. First, the independent variable must directly affect the dependent variable. Second, the mediator must affect the dependent variable. Third, after controlling for the mediator, the relationship between independent and dependent variables must be removed or reduced. And finally, the independent variable must directly affect the mediator.

Thus, the following data analyses were used to test these assumptions. First, AMND was regressed on education and other participant factors (to test assumption 1). Second, each group of mediators was entered sequentially into the regression model on AMND that was conducted in the first step (to test assumptions 2 & 3). Third, based on the analyses from the first two steps, potential mediator(s) were regressed on education and control variables (to test assumption 4). For a variable to mediate the relation between education and AMND, education must be related significantly to the mediator and to AMND. Mediator must be also related to AMND. When the mediator is added to the model, the relationship between education and AMND must be eliminated or reduced significantly.

Results

Sample Characteristics

Important characteristics of the sample are presented in Table 1. Because these host organizations usually target the "working poor" (people who work and who are at or below 200% of the poverty line) and ADD participants are self-selected, ADD participants somewhat differ from the general low-income population. Comparison statistics were obtained through the analysis of the Survey of Income and Program Participation (SIPP) from the U.S. Census Bureau, and the sample included individuals 18-years-old and older in households with income at or below 200% of the family-size adjusted poverty threshold (Sherraden et al., 2000). Compared with the SIPP sample, ADD participants were more highly educated and more likely to be employed. A higher percentage of ADD participants had completed high school, and a high percentage had graduated from college. The ADD population also has a much higher proportion of

people who were employed full-time or part-time. Also, a higher proportion of ADD participants were women, African American, and never-married. Therefore, when compared to overall low-income population, ADD participants tend to be "working poor" but more likely to be demographically disadvantaged.

Assumption 1 of Mediating Effects: Educational Status and Savings

Bivariate analysis indicates that when other factors are not controlled, participants with higher educational status (especially those with a Bachelor's degree or above) had higher AMND, and the relationship is statistically significant. The AMND of those with a Bachelor's degree ($29.6) and those with some college education ($19.2) was significantly higher than AMND of those without a high school degree ($14.5). The average amount of AMND of all ADD participants was $18.4.

To further examine the relationships of education with AMND, an OLS regression analysis was executed in which AMND was regressed on the control variables and education. The results are presented in Table 2. Findings indicate that the model is statistically significant ($F=15.13$, $p<.0001$), and education and control variables explained about 12% of the variance in AMND. After controlling for other variables in the model, compared to those without a high school degree, those with some college education saved about $3.2 more, and those with at least a Bachelor's degree saved about $10.6 more in AMND.

Looking at the associations of control variables with savings, older participants and the participants with other adults in the household saved more. Rural residents saved less than urban residents, and African American participants saved less than White

participants. Finally, participants who had bank accounts and who owned a home also saved more than participants who did not have these assets.

Assumptions 2 & 3 of Mediating Effects: Income, Intended Uses, Program Factors, and Savings

In order to examine the associations between income, intended uses, and program factors of IDAs with AMND, regression analyses were executed with these variables added sequentially to the first model that is presented in Table 2. Table 3 shows the relationships between these variables and AMND, and possible changes in the associations between education and AMND after these variables were entered.

Income (Table 3, Model 2) was positively related to AMND. When income was added to the model, the savings of participants with some college education were not different anymore from those with less than a high school degree; those with a Bachelor's degree still saved more than those without a high school degree, but the coefficient of Bachelor's degree dropped by 1.19 (about 11%). These results indicate that income was a possible partial mediator in the links between education and savings in IDAs.

Model 3 in Table 3 indicates that intended use was related to savings outcomes. Specifically, participants who saved for other purposes (home repair, retirement, etc) had higher AMND (about $4.73 more) than home purchase savers. When this variable was added to the model, the coefficient for "Bachelor's degree" hardly changed. Thus, it seems that intended uses of IDAs is not a mediator on the links between education and savings.

After program factors were entered into the model (Model 4 in Table 3), the R^2 increased from about 12% of the original model to about 19%. It seems that program

factors substantially increased the explaining power of the model. All four program factors were related to AMND. Monthly savings target, financial education, and direct deposit were positively related to AMND, but match rate was negatively related to AMND. In other words, the participants with higher match rates saved less than those with lower match rates. After program variables were added to the model, the coefficient of education for AMND was further reduced by 0.53 (about 6%). Therefore, it seems that program factors may also partially mediate the effects of education on savings. Entering program factors into the model also reduced the coefficient for income by 0.001 (about 25%), indicating that about a quarter of the relation between income and savings outcomes is accounted for by the effects of program factors.

Assumption 4 of Mediating Effects: Educational Status and Household Income & Program Factors

The above analyses indicate that income and program factors may be potential mediators in the relationship between education and savings. Therefore, we conducted regression analyses in which income and program factors were regressed on education and control variables (Table 4). Since income, monthly savings target, and hours of financial education are continuous variables, OLS regression analyses were conducted on these variables. Logistic regression was conducted to examine the relationship between education and direct deposit, and ordinal regression analysis was conducted to examine the relationship between education and match rates.

Results in Table 4 indicate that after controlling for other participant factors, education was positively related to income. Specifically, compared with the participants without a high school degree, those with some college education had about $103 more

income, and those with a Bachelor's degree had about $209 more income. Thus, income partially mediates the effects of education on AMND.

Among program factors, results in Table 4 indicate that, compared to participants without a high school degree, participants having some college education or a Bachelor's degree had higher monthly savings target and received more hours of education. Thus, these two program factors partially mediate the links between education and AMND. Education was not related to direct deposit or match rates.

Discussions and Implications

Discussion

The results of this study suggest that education is positively associated with savings outcomes of low-income participants in a structured savings program. Furthermore, the relationship between education and savings were partially mediated by household income and two program factors – monthly savings target and financial education. The results provide some supportive evidence for the hypothesis that the impact of education on savings may be partially through its associations with participant income (economic theory) and institutional characteristics (institutional theory). Given the fact that IDAs are structured savings programs, in which all participants have access to institutional structures, the mediating effects of program factors may imply that more educated people benefit more from these factors, such as financial education and monthly savings target. For example, it is possible that participants with higher educational levels were better at being students and had better learning skills; thus, they could benefit more from financial education.

After controlling program factors and a variety of other individual characteristics, education, especially a bachelor's degree or above, was still positively related to savings outcomes. Income and two program factors only partially mediated the effects of education on savings. These findings imply that more educated people may have other attributes, for example future orientation or better financial decision-making, that help improve their savings. Due to the limitation of the ADD data, we can not examine these possible mediating factors suggested by theories. Future studies that utilize the data with these measures available could help examine the roles of these factors.

Intended uses of IDAs, a proxy of different savings goals or savings motives, did not mediate the effects of education on savings. This result is not consistent with some previous research (Solomon, 1975). Future studies that can utilize more accurate measures on savings motives or goals may help further elaborate how these factors explain the links between education and savings.

It is important to mention that in support of the institutional framework of savings, financial education (a proxy for savings information), monthly savings target (a proxy for savings goals and expectations), and direct deposit (a proxy for facilitation) were all positively related to AMND. The higher match rates, however, were negatively associated with AMND. Specifically, participants with match rates of 4:1 to 7:1 saved less than those who had match rates ranging from 1:1 to 3:1. This might be because IDA participants are saving for a specific purpose, and they generally have limited incomes, some participants could be "target savers". In other words, they may aim to save a fixed amount and stop saving more (for example, they may aim to save $2,000 for tuition, or to save $1,500 for the down payment of a house). For these participants, a higher match rate

allows them to reach a given asset-accumulation target with less savings (Schreiner, 2004).

It is also worth mentioning that program factors as a block substantially increase the variance explained in savings in IDAs. All individual factors in the model accounted for about 12% of the variance in savings; program factors increase the variance explained to 18%. This result indicates that models incorporating program factors may be more explanatory than models without them (Ssewamala & Sherraden, 2004).

When interpreting the above results, it should be noted that these findings on the relationship between education and savings pertain to structured savings programs and to low-income people. These relationships may be different in other contexts or when applied to other populations.

Implications

Two implications could be drawn from this study. First, the findings indicate IDA participants with lower educational status saved less than their better-educated counterparts. While this is partly due to their limited economic resources and some program factors, less-educated participants may face other personal, family and economic obstacles to saving. The design of IDA or similar savings programs need to consider their special needs and provide additional support to help them achieve their savings goals**.** For example, financial education in IDAs may need to further understand the life context and experiences of less-educated participants and to bring them into the teaching and learning process.

Second, consistent with the results from previous studies, this study shows that education, especially postsecondary education, is an important factor to help low-income

people save. Studies have shown that higher education is increasingly a necessity for individuals to build assets and to provide greater opportunities for their children; therefore, it is important that those people from families with few or no assets have access to higher education opportunities. IDA programs are a promising strategy to help the poor build assets through post-secondary education. As of 2002, 22 states include post-secondary education as a matchable use of their IDAs (Edwards & Mason, 2003). It may be helpful to include more low-income people in the college-finance toolkit. For example, teaming IDAs with State College Savings Plans ("529 plans") could be one way to promote more inclusive IDAs for post-secondary education (Clancy, 2003).

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Table 1: Sample Characteristics

Variables	ADD Participants (N=2,150)
Continuous Variables	**Mean**
Age	36
Number of adults	1.5
Number of children	1.7
Household monthly income	$1,406
Categorical Variables	**Percents**
Gender	
Female	80
Male	20
Race/ethnicity	
White	38
African-American	46
Others	16
Marital Status	
Never married	47
Divorced, Separated , or Widowed	30
Married	23
Residence	
Urban	86
Rural	14
Education	
Did not Complete High School	14
Completed High School or GED	26
Some College Education	52
Completed 4-year Degree or More	8
Employment	
Employed Full-time	64
Employed Part-time	25
Not working or Unemployed	11
Banked	79
Home Owner	17
Receipt of AFDC/TANF	
Formerly	36
Currently	8

Table 2: Regression Analysis of AMND: Effects of Education and Other Participant Characteristics

	AMND	
	Coefficient	**p-value**
Age	0.21***	0.0001
Female	0.38	0.79
Race/Ethnicity		
(Caucasian)		
African-American	-7.39***	0.0001
Others	1.65	0.30
Marital Status		
(Never Married)		
Married	2.95	0.08
Divorced, separated or widowed	1.69	0.20
Number of children	0.23	0.55
Number of adults	1.83*	0.04
Residence		
(Urban)		
Rural resident	-5.59**	0.001
Employment		
(Unemployed or not working)		
Employed, full-time	2.87	1.10
Employed, part-time	3.45	0.07
Asset Ownership		
Home Owner	7.99***	0.0001
Bank Account Owner	6.83***	0.0001
Welfare Status		
(TANF or AFDC Never)		
TANF or AFDC formerly	-0.45	0.72
TANF or AFDC currently	-3.50	0.10
Education		
(Less than high school)		
High school graduates	0.78	0.65
Some college	3.24*	0.04
Bachelor's degree or above	10.57***	0.0001

*$p \leq .05$ **$p \leq .01$; ***$p \leq .001$.

Table 3: Regression Analysis of AMND: Effects of Income, Intended Uses, and Program Characteristics

	1	2	3	4
Education	Coefficients	Coefficients	Coefficients	Coefficient
(No High School Diploma)				
High School Graduates	0.78	0.31	0.36	0.46
Some College	3.24*	2.44	2.53	3.08
Bachelor's Degree or More	10.57***	9.38***	9.30***	8.77***
Household Income		0.004***	0.004***	0.003***
Intended Uses				
(Home Savers)				
Microenterprise savers			-0.88	0.94
Education savers			1.47	2.08
Other savers			4.73**	4.60*
Institutional Characteristics				
Match Rate				
(4:1 to 7:1)				
1:1				6.58**
2:1				6.57**
3:1				10.22***
Monthly Savings Target				0.18***
Use of Direct Deposits to IDAs				4.68*
Hours of Financial Education				0.60***
R^2	0.116	0.119	0.121	0.187

Table 4: Regression Analysis of Income and Program Factors: Effects of Education and Other Participant Characteristics

	Income	**Program Factors**			
		Monthly Savings Target	Financial Education	Direct Deposit	Match Rates
Age	-2.16	-0.06	0.09***	-0.01	-0.002
Female	41.83	-1.78	1.47**	0.31	0.37**
Race/Ethnicity					
(Caucasian)					
African-American	65.31*	-7.20***	1.09**	-0.34	0.50***
Others	13.49	-2.78*	0.12	-0.12	0.39**
Marital Status					
(Never Married)					
Married	270.69***	7.61***	0.78	0.16	-0.20
Divorced, separated or widowed	26.9	5.26***	0.008	0.12	-0.25*
Number of children	95.64***	0.98**	-0.28*	0.05	0.003
Number of adults	70.35**	-4.55***	0.38	-0.12	0.07
Residence					
(Urban)					
Rural resident	-169.43***	-12.30***	3.58***	-0.06	1.50***
Employment					
(Unemployed or not working)					
Employed, full-time	501.40***	10.94***	1.22*	0.09	-0.33*
Employed, part-time	100.07*	9.49***	0.63	-0.46	-0.51**
Asset Ownership					
Home Owner	63.72	-1.07	1.14*	0.09	-0.79***
Bank Account Owner	180.90***	2.33*	0.09	1.31**	0.07
Welfare Status					
(TANF or AFDC Never)					
TANF or AFDC formerly	-15.54	1.36	0.09	0.44*	-0.25*
TANF or AFDC currently	-184.52**	-6.50***	2.64***	-0.96	0.34
Education					
(Less than high school)					
High school graduates	27.52	2.36	0.88	0.13	0.14
Some college	102.52*	4.17**	1.01*	0.23	-0.25
Bachelor's degree or above	209.25***	6.90***	1.42*	0.37	-0.39

*$p \leq .05$ **$p \leq .01$; ***$p \leq .001$.