How much does having a bank account help the poor? An investigation with instrumental variables

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March 31, 2016

Motivation

- Having a bank account is usually considered the first step toward financial inclusion for the poor.

- Money deposited in a bank account leads to higher savings (Chin, Karkoviata and Wilcox, 2011; Mullainathan and Shafir, 2009).

- This is an important argument for bank accounts for the poor, given that the economic literature on poverty reduction and welfare of the poor has been concerned with undersaving by the poor.

- Undersaving exposes the poor to variability in consumption, lack of resilience to economic shocks, and loss of productive opportunities (Karlan, Ratan and Zinman, 2014).

Research agenda

- Existing literature on the savings potential of new bank accounts for the poor stops short of investigating whether the savings are productively used.

- In this paper we attempt to fill this gap in the current state of knowledge.

- In our work, expenditure on education serves as a proxy for human capital development investment. Education is very important for getting out of the poverty trap. The available data in India does not track expenditure on preventive health care, the other candidate for human capital investment.

- **We investigate whether the mode of payment of NREGA wages, bank account payment as opposed to cash payment, leads to an observed difference in expenditure on education between the treated households (bank account payment recipients) and the control households (cash payment recipients). If yes, we should also investigate why.**

NREGA

- NREG wages present a unique testing platform for our study.
- NREG ACT 2005, guarantees 100 days of unskilled work to at least a member of rural household seeking work.
- First phase of implementation in 2006-07 (200 districts), second phase in 2007-08 (130 districts), third phase in 2008-09 (295 districts).
- Average wage in 2009-10: Rs 100 per day app. (varied between states).
- Payment through different modes.
- Started paying through bank account in 2006, with the aim of all bank payment by 2008.
- The program budget was 3.8% of GDP in 2009-10 (8.8 billion dollars).
- In 2009, 50 million (32% of) rural households were engaged in the program.

Result highlights

- The treated group (those having a bank account and paid in that account) spend differently on human capital development from the control group (those who get cash payment). Educational expenditure in our analysis is a proxy for human capital development investment.
- Interestingly, educational expenditure of the households who get NREGS wage payment directly in their bank account is *less* than that of the households who get cash payment.
- This finding is significant statistically as well as economically. The observed difference is 2.1% of the annual consumption expenditure of the treated.
- The result is robust to different model specifications and supported by placebo tests.

Result highlights

- Our findings are new contributions to the literature. No existing work has examined the use of savings by the poor.
- The findings will be surprising to the proponents of bank account expansion for the poor.
- Our explanation for the finding is two-fold: (1) the poor face constraints in using a bank account; (2) the constraints affect discretionary spending more than other types of spending. Education is a discretionary expense for the very poor (less important than food and other necessities): Tables 3 and 4
- This explanation is supported by our supplementary test results;

  (1) the treated group spend less also on other discretionary items such as entertainment and toiletries: Table 5,

  (2) but, both groups spend similarly on necessary items: Table 7

Constraints

- Can we identify the constraints that hinder productive use of savings by the poor?
- In the existing literature, five types of constraints are suggested to hinder use of financial products and services by the poor (Karlan, Ratan, and Zinman, 2014): (1) financial illiteracy; (2) transactions costs including non-pecuniary transactions costs such as distance to the nearest bank branch in rural areas; (3) lack of trust and regulatory barriers; (4) social constraints; and (5) behavioral biases.
- The last three are relevant for opening new accounts rather than utilizing existing accounts as in the present case. However, physical distance to the bank branch and financial illiteracy (compounded by general illiteracy) can be serious problems.

Contributions

- Our findings contribute to several strands of the literature.

- The first study on use of savings by the poor. Suggests that savings potential of new accounts may be just due to constraints on savings.

- A strikingly large proportion of the new accounts tend to be unused. Vast gaps between take-up and usage rates of new accounts even when usage is very leniently defined (Dupas et al 2012, Dupas and Robinson 2013a). "No-frills" accounts in India created since 2005-6 have largely remained dormant (Ramji, 2008). Our findings offer an explanation for the gap.

Contributions

- According to human capital theory, education provides a vehicle for building stocks of human capital (Bryant 1990, Huston 1995).

- Strauss and Thomas (1995) discuss a wide range of literatures on positive association between education and labor market outcomes, and poverty.

- There is a large body of literature that relates educational expenditure to positive human development outcomes (Deaton 1989, 1997; Lancaster unpublished, Yameogo 2014).

- As the first study that explores the impact of mode of payment on human capital development expenditure, it adds a new dimension to that literature.

Policy contributions

- "*This Mission (PMJDY) would enable all households, urban and rural, to gain easy and universal access to financial services. Exclusion from the banking system excludes people from all benefits that come from a modern financial system. In this Mission, households will not only have bank accounts with indigenous RuPay Debit cards but will also gain access to credit for economic activity and to insurance and pension services for their social security.*"

- Narendra Modi, Prime Minister of India, 22nd August 2014 .

- This scheme has a target of 75 million new accounts, 60 million of them in rural areas.

- Our findings suggest that the poor may not utilize the benefits until the banking infrastructure improves and financial illiteracy declines.

Estimation

$$Ed_{hd} = \beta_0 + \beta_1.(BP_{hd}) + \delta_0.Exp_{hd} + \delta_1.X_{hd} + \delta_2 D_d + \varepsilon_{hd} \qquad \ldots\ldots (1)$$

Ed_{hd} -per capita annual expenditure on education of household *h*, in district *d*.

BP_{hd} is indicator for NREGS wages being paid through bank account (=1).

Exp_{hd} is a proxy for household income: four categories using rural poverty line.

X_{hd} is the vector of household level covariates: Number of children aged 7-18, Head's occupation, education, Female head, Household having PO savings account.

D_d is control for district level banking and educational infrastructures: Number NREG worker per district; district banking infrastructure; district school infrastructure

ε_{hd} is the error term with usual assumptions for OLS.

Selectivity bias adjustment and Identification

- The treatment variable may be endogenous due to omitted variable at household as well as district levels.

- The households that prefer future consumption over present consumption and invest more in education may also prefer bank accounts. An omitted variable in regression model (1) positively related to both the dependent variable and the treatment variable. Hence the OLS results are biased upward.

- To correct for the bias, we use a proxy variable: an indicator variable taking value 1 for the households that have post office savings accounts and 0 otherwise.

Selectivity bias adjustment and Identification

- Endogenous treatment due to a district level omitted variable.
- In NREGA implementation the districts have more authority on the mode of wage payment than households (GoI, 2009b; Adhikari and Bhatia, 2010).
- Due to historical and social factors, the households in some districts may prefer investment in education as well as bank accounts more than the other districts. A district level omitted variable positively related to both dependent variable and treatment variable, again leading to a positive bias in OLS results.
- To correct for the bias, we do 2SLS-IV estimation where the IV is a measure of district-level implementation of bank payment scheme.
- The first stage regression is: (see Table 3)

$$BP_{hd} = \rho_0 + \rho_1 Z_d + \rho_2 Exp_{hd} + \rho_3 X_{hd} + \rho_4 D_d + \epsilon_{hds}$$

Data

- Household level: **NSS 66th Round (2009-10)**- Employment - Unemployment

  Households surveyed: 100957 (**Rural: 59,129** , Urban: 41,828)

  Has job card (57,090): **Sought job: 23,691** , did not seek: 33,399

  Sought job (23,691): **Got job 14K+** : Did not get job: remaining

  Payment Mode (13,234) : Bank: **4620**, Cash: **4303**, PO: 3902, not paid: rest

- 38 days per NREGS work per year on average in 2009-10.

- District level banking infrastructure: **BSR 2009**
- District level educational infrastructure: **DISE 2009**
- District level NREGA data: Ministry of Rural Development, **GoI, 2010**.
- Final sample: Bank payment **4114**, Cash **3963;** Appendix Table 1

Table 1: **Summary of Variables** All expenditures are measured in annual amounts in INR.	Control Households (Cash Payment)		Treated Households (Bank payment)		Full sample Households		Diff in Means (Treated – Control) t-test results
	Obs	Mean	Obs	Mean	Obs	Mean	
Total Edu Expenditure	3963	2118.3	4114	1676.9	8077	1893.5	-441.4***
Total Expenditure	3963	51268.0	4114	50292.6	8077	50771.2	-975.4
Share in Edu Expenditure	3963	0.0	4114	0.0	8077	0.03	-0.00432***
Discretionary: a)Entertainment	3963	683.3	4114	286.7	8077	481.3	-396.6***
Discretionary: b)Toiletries	3963	1204.2	4114	1002.8	8077	1101.7	-201.4***
Discretionary: a) + b) + personal care	3963	2172.5	4114	1448.9	8077	1803.9	-723.5***
Discretionary: d) =a + b + personal care + consumer services	3963	4198.4	4114	3342.1	8077	3762.2	-856.3***
Durable	3963	1821.3	4114	2023.3	8077	1924.1	202.0
Necessary: a) Food	3963	27812	4114	27911	8077	27862	99.09
Necessary: b) Others (clothing foot wear not included)	3963	9372.9	4114	9516.5	8077	9446.0	143.6

Table 3: Impact of payment at bank on annual educational expenditures

Dependent Var in each column	OLS Edu exp Yr	Reduced form Edu exp Yr	2SLS-1st stage Pay at bank	2SLS (IV) 2nd stage Edu exp Yr
Pay at Bank (=1)	-116.5			-1066.6**
Dist. Bank Pay Implem				
Impl 25-50 pcentil		-464.12*	0.38***	
Impl 50-95 pcentil		-595.71**	0.54***	
Impl > 95pcentil		-610.06*	0.61***	
No of Child 7-18	870.01***	871.18***	0.003	874.61***
R^2	0.18	0.18	0.43	0.17
N	8071	8071	8071	8071

Other controls: Head's occupation, education, Household living standards, Female head, Household having PO savings account, Number NREG worker Dist., Dist. Banking facility, School facility.

Table 4: Impact of bank pay on educational expenditures: Check for Robustness

Dependent Var:	From 2nd Stage of IV-2SLS estimation: Covariates are different across columns						
Edu exp	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pay at Bank (=1)	-1593***	-1139***	-1187***	-1125***	-1121***	-1065**	-1066**
Living standards		Yes	Yes	Yes	Yes	Yes	Yes
Child7-18			Yes	Yes	Yes	Yes	Yes
Head's Edu			yes	Yes	yes	yes	yes
Female head			yes	Yes	yes	yes	yes
occupation				Yes	Yes	Yes	Yes
PO SavingsAc					Yes	Yes	Yes
Dist.School facility						Yes	Yes
No. of NREG worker						Yes	Yes
Dist Bank Facility							Yes
R^2	-0.01	0.07	0.16	0.16	0.16	0.17	0.17
N	8077	8077	8076	8071	8071	8071	8071

Table 5: Robustness: Dependent variables are components of discretionary expenditures

	Ent.	Ent.	Toil.	Toil.	Ent+ Toil + Pers	Ent+ Toil+ Pers	Ent+Toil+ Pers+Cons	Ent+Toil + Pers+ Cons
	OLS	(2) IV	OLS	(4) IV	OLS	(6) IV	OLS	(8) IV
Pay at Bank	**-137.1*** **	**-329.6*** **	**-119.1** **	**-519.8*** **	**-311.1*** **	**-1,039*** **	**-348.7** **	**-1,392*** **
L. S								
Veryp	-883.8***	-897.9***	-984.4***	-1,013***	-2,111***	-2,164***	-5,792***	-5,868***
Vulner	-836.4***	-836.4***	-740.3***	-740.4***	-1,772***	-1,772***	-4,923***	-4,923***
Midcl	-649.2***	-650.1***	-485.1***	-487.0***	-1,278***	-1,282***	-3,641***	-3,646***
chil7-18	51.7***	52.7***	106.7***	108.6***	186.7***	190.2***	432.9***	437.9***
HEduc								
Sec/less	30.12	39.04*	45.31**	63.9***	88.6**	122.3***	52.7	101.0
HS	150.56**	154.9**	76.7	85.8	291.0***	307.5***	689.5***	713.1***
Grad +	639.2***	632.9***	388.2***	375.2***	1,162.3***	1,138***	2,705***	2,672.0***
R2	0.22	0.22	0.25	0.20	0.3	0.27	0.35	0.34
N	8,071	8,071	8,071	8,071	8,071	8,071	8,071	8,071

Table 6: Placebo test 1- Impact of bank pay on different expenditure components

	Annual Edu Expenditure		Annual Durable Expenditure	
	(1) OLS	(2) IV	(3) OLS	(4) IV
Pay at Bank (=1)	**-116.5**	**-1,066.6****	**564.58***	**1,678.73****
Hh living standards				
Very poor	-5,043.9***	-5,113.3***	-6,583.87***	-6,502.6***
Vulnerable	-4,468.5***	-4,468.7***	-6,292.53***	-6,292.3***
Middle class	-3,315.3***	-3,319.9***	-5,491.3***	-5,485.8***
Child7-18	870.0***	874.61***	233.96***	228.57***
Head's Education				
Secondary & less	385.9***	429.89***	43.95	54.49
HS	2,110.9***	2,132.4***	353.8	278.16
Graduate & above	1,735.4***	1,704.7***	739.05	683.14
R^2	0.18	0.17	0.07	0.06
N	8,071	8,071	8,071	8,071

Table 7: Placebo test- Impact of payment at bank on Necessary expenditures

	Necessary Food expenses		Necessary Other expenses	
	OLS (1)	IV (2)	OLS (3)	IV (4)
Pay at Bank	**258.7**	**-225.9**	**546.7**	**-1007.1**
Liv st				
V Poor	-24548.55***	-24443.01***	-13928.31***	-13970.34***
Vulner	-17518.51***	-17473.75***	-11880.98***	-11898.81***
Mid cl	-10838.43***	-10808.70***	-8627.93***	-8639.77***
child7-18	3982.1***	3971.62***	1148.26***	1152.43***
R^2	0.36	0.36	0.17	0.17
N	8,872	8,872	8,872	8,872

Conclusions

- Financial inclusion through opening of bank accounts boosts households savings
- However, does having a bank account increase investment in human capital, helping the poor to come out of poverty?
- Using the mode of NREGS wage payment as a platform, and educational expenditure as proxy for human capital development investment, the paper finds that bank account payment leads to less expenditure on human capital development of the children.
- We address the concerns for omitted variable bias, using IV. The results are stronger for IV regressions.
- Our explanation for the finding is two-fold: (1) the poor face constraints in using a bank account; (2) the constraints affect discretionary spending more than other types of spending. Education is a discretionary expense for the very poor (less important than food and other necessities): This explanation is supported by our supplementary test results that the treated group spends less on other discretionary items as well, but both groups spend similarly on necessary items.

Thank You!

Appendix Table 1: Sample

Modes of NREGS payment to households: from NSS data	Total NREGS working households as available in NSS data		Sample of NREGS working Households after merging with other 3 district level databases		Final sample of people getting paid at bank or cash (any mode other than post office) after merging with all four district databases	
	N	Percent	N	Percent	N	Percent
PO	3902	29.48	3734	30.62	0	0
Bank	4620	34.9	4114	33.74	4114	50.93
gram sabha	1084	8.19	981	8.04	981	12.15
field assistant	1980	14.96	1862	15.27	1862	23.05
SHG member	159	1.2	157	1.29	157	1.94
smart card	67	0.51	65	0.53	65	0.8
not paid	413	3.12	383	3.14	0	0
other	1013	7.65	898	7.36	898	11.12
Total hh	13,238	100	12,194	100	8,077	100