What do 250 Million New Bank Accounts Teach Us About Financial Access?

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Overview

- The Pradhan Mantri Jan Dhan Yojna (JDY from now) launched in India on August 14, 2014, the world's largest financial inclusion program with the aim to provide universal access to banking services
- As of November 2016, approximately 250 million accounts have been opened under this program attracting total deposits approximately Rs 456,000 million ($7 billions), substantially expanding access to banking services
- Our empirical setting serves as a useful laboratory to study importance of access to basic financial products for the poor
  - Extensive Margin-Initial Uptake
  - Intensive Margin – Subsequent usage of banking services that includes a savings account, overdraft facilities, insurance benefits, debit card and mobile banking

Objective

- ***First***, we undertake a detailed micro-level evaluation exercise to assess the impact of the program on both the initial uptake (extensive margin) and subsequent usage (intensive margin) of banking services by the poor
- ***Second***, we exploit the regional variation in program exposure to evaluate the role of expanding access to financial services on broader macro-economic outcomes such as GDP growth, lending, consumption expenditure, retail commodity prices and house prices
- ***Third***, we want to shed some light on relative importance of various channels that could drive these effects
- **Finally** way forward

Contribution to existing literature

- Extant literature uses survey instruments to measure access, usage and household outcomes (Johnson, Parker & Souleles-2006)
  - This paper directly measures usage of banking services
- Extant literature has scant micro-level evidence on the usage of banking services by poor
  - Apart from Dupas (2016) –a RCT of 6000 accounts
  - Our study had additional evidence of poor households becoming more familiar with banking services over time and hence increased usage
- A large body of literature (King & Levine, 1995, Rajan & Zingales 1996 Black & Strahan 2002 etc) posits positive association between financial development & economic growth but at macro level
  - Our study at micro-level individual outcomes
  - Our study also evaluates policies aimed at stimulating household consumption and micro impacts

Data (1)

- **Our JDY group** opened between August 2014 and May 2015
- Second we obtain data **non-JDY accounts** opened during the same sample period.
- Third we obtain data on **pre-JDY accounts** opened between Jan 2014 to July 2014 (Pre-JDY period). These accounts are for individuals that closely resemble our JDY group
- For all individuals in our data set we have monthly information on the average monthly balance; cash deposit transactions, cash withdrawal transactions, remittances and access to debit cards among other things. The data also contains a rich set of demographics about each individual, including age, gender, marital status, mobile ownership, education, occupation and district of residence

Data (2)

- All our data is aggregate at the account-month level. For instance, Cash Deposit Amount (Cash Withdrawal amount) is computed by summing over all deposit (Withdrawal) transactions by an individual in a month. Likewise, we aggregate over all monthly inward and outward remittance transaction for each account. Average monthly balance is the average of daily account balance in a month
- We supplement this dataset with district level data on GDP from Indicus Analytics, literacy rate and population from the latest Census of India (2011), aggregate district level lending data from the Reserve Bank of India (RBI), consumer price indices from the Ministry of Statistics and House price index from the National Housing Bank of India

Summary Statistics (1)

Pre Jan-Dhan Yojana Statistics		
	USD	**INR**
Minimum wage in Currency/day	1.5	89
Average wage in Currency/day data	4.3	256.52
Poverty Line (Avg monthly per capita expenditure) - Rural*	18	816
Poverty Line (Avg monthly per capita expenditure) - Urban*	22	1000
Balance of payments in Billions	15.5	1,000
Aggregate household deposits in the Indian Banking sector in Billions	115	7,500
Overall Banking assets In Trillion	1.8	115
India GDP per capita	1,499	97,500
Jan-Dhan Yojana Progress Statistics		
Number of accounts opened under JDY in Millions	260	-
Number of Debit Cards issues in Millions	190	-
Number of Individuals Provided Accident Insurance in Millions	93	-
Number of Individuals Provided Health Insurance in Millions	29	-
Total Deposits in JDY Accounts in INR (Millions)	456,000	-

Summary Statistics (2)

- The average monthly balance is INR 482 for the JDY sample, INR 2729 for the non-JDY sample and INR 715 for the pre-JDY group. The low balances for the JDY and pre-JDY sample are not surprising given that these accounts cater to individual below poverty line or just above the line.

Cash Amounts									
	JDY Accounts			Non-JDY Accounts			Pre-JDY Accounts		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Average Monthly Balance	6656783	482	4913	216937	2729	13717	13239990	715	3832
Cash Deposit Amount		136	2049		1707	13448		164	2145
Cash Withdrawal Amount		141	2591		4666	24373		233	2828
Inward Remittance Amount		258	4046		4413	32234		443	3939
Outward Remittance Amount		145	3862		1320	23999		325	3138

Empirical Methodology (1)

- Our first objective in this study is to provide micro-level evidence on the usage patterns of the bank accounts by the poor. However, **the biggest obstacle in evaluating the impact of the PMJDY on outcome variables is to get an estimate of the counterfactual level in the absence of the program**
- Moreover, given our experimental setup, we have banking transactions data for the treatment sample only after they are treated (account is opened)
- To circumvent this issue, we use a database of Non-JDY accounts opened since the commencement of the JDY program as our control sample
- Specifically, in these baseline tests, we focus on the periods up to 10 months after the commencement of Jan Dhan Yojna (JDY) (August (2014) to May (2015))
- Essentially, our test relies on comparing over time savings and usage patterns of our treatment sample relative to the control group

Empirical Methodology (2)

- We use the following regression specification to examine the usage patterns of JDY account holders:

$$Y_{it} = \beta_0 + \beta_1 \, JDY_{it} + \beta_2 \, Age_{it} + \beta_3 \, JDY_{it} \times Age + X_{i,t} + Account\ Opening\ Month_t + \varepsilon_{it}$$

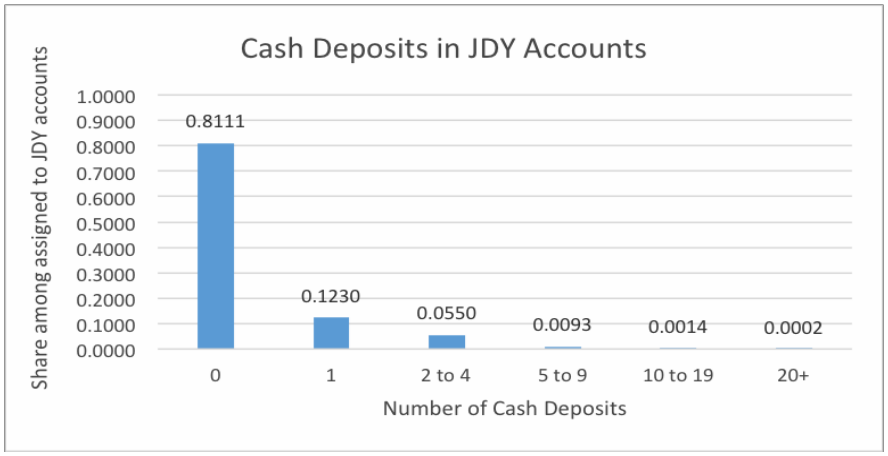
- where the dependent variable, **Yit, is a bank account related outcome variable** for individual i at time t (year-month). **JDY is a dummy variable** that identifies accounts opened under the JDY program. So, β1 captures the baseline time-invariant difference between JDY and non-JDY individuals. **Age is the number of months since account opening**. β2 captures the differences in account usage over time. The coefficient of interest is β3, which captures the monthly change in outcome variables for the treatment group relative to the control group. **Xit is a vector of control variables** that includes account holder's age, sex, marital status and per capita GDP in the region. We also include account opening month fixed effects to control for potential seasonality

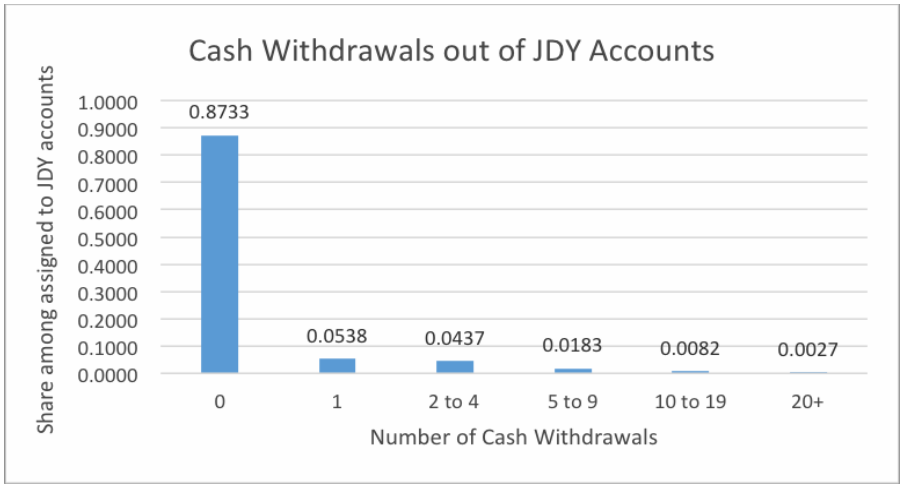
Key Results

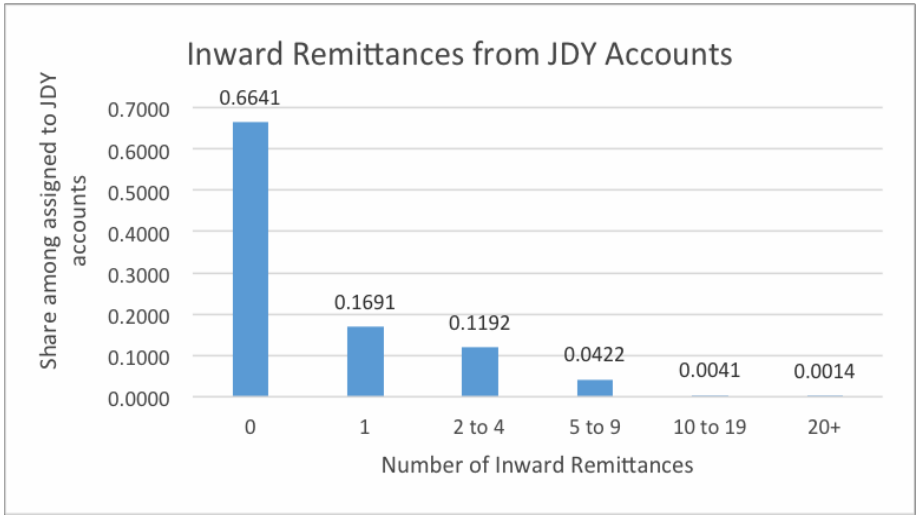
Program Reach (Extensive Margin)

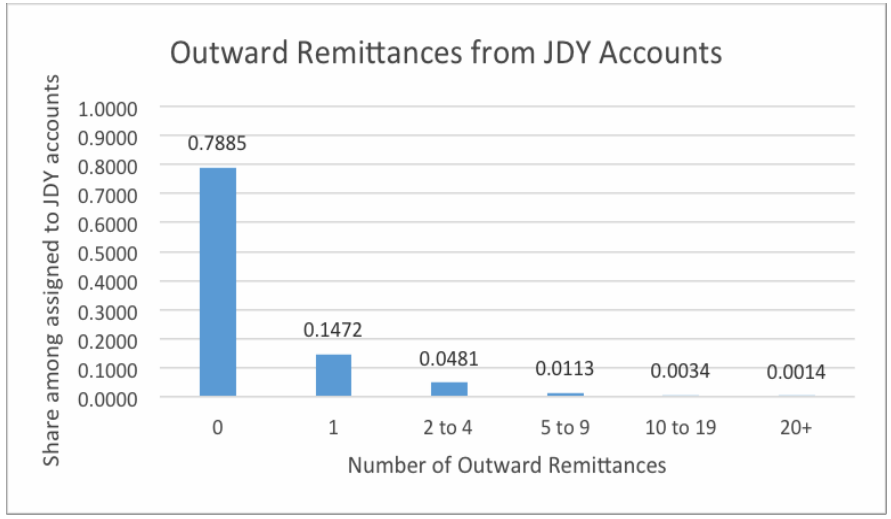
- Total no of accounts expanding at a monthly rate of 14%
- Total no of debit cards expanding at a monthly rate of 35%
- Positive Balance accounts at 77%
  - Highest for rural banks followed by state-owned banks and private banks

Program Reach (Intensive Margin)



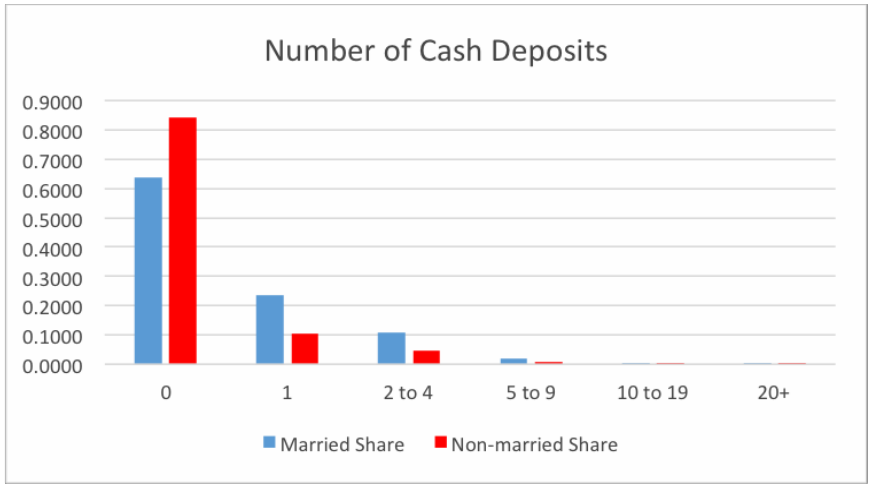


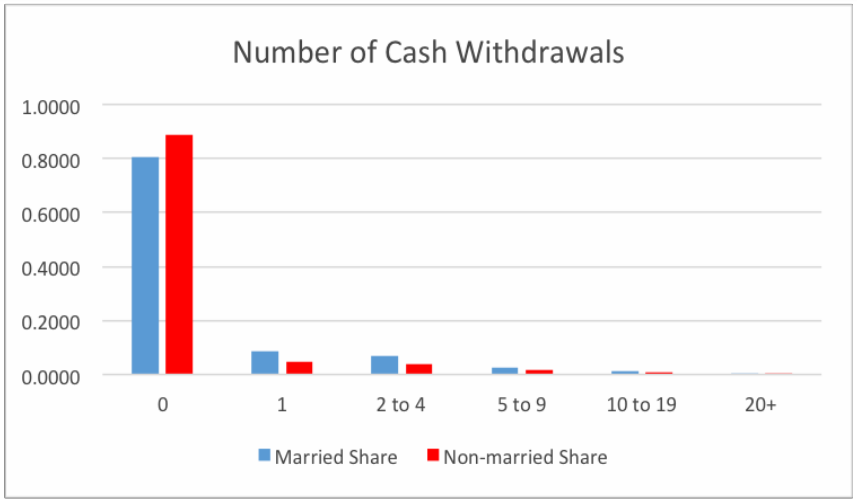


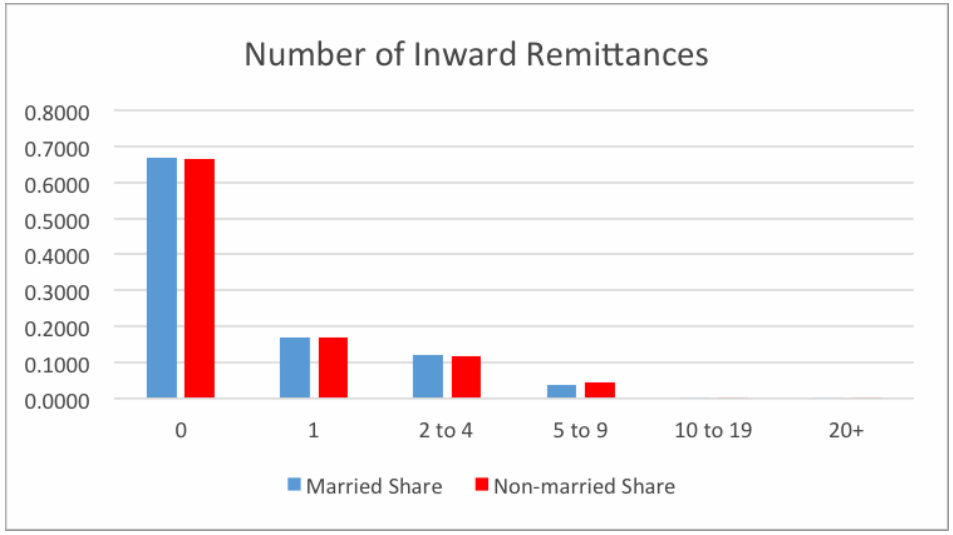


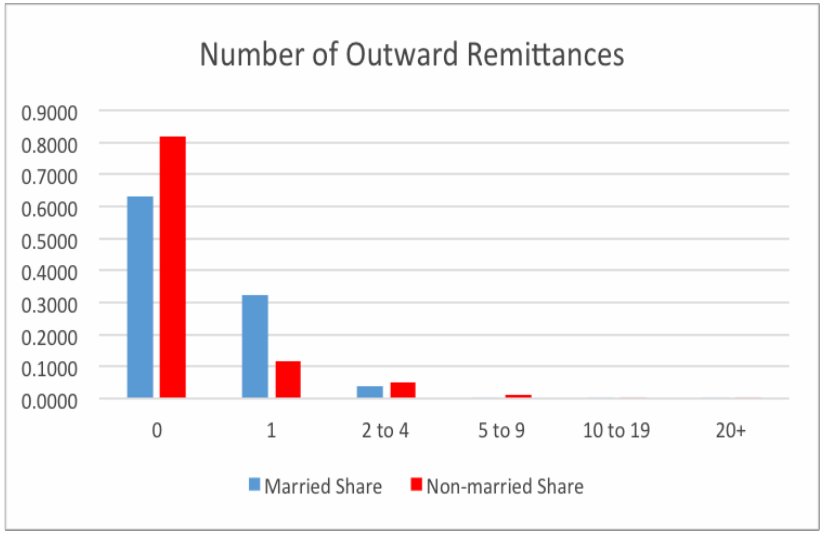
- Remittances are important for low-income individuals in India

Program Reach (Intensive Margin-Heterogeneity)



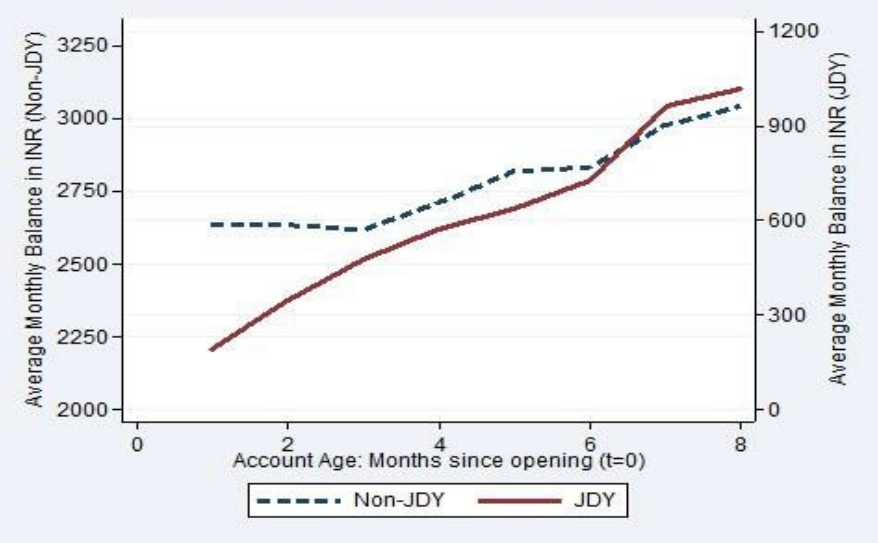


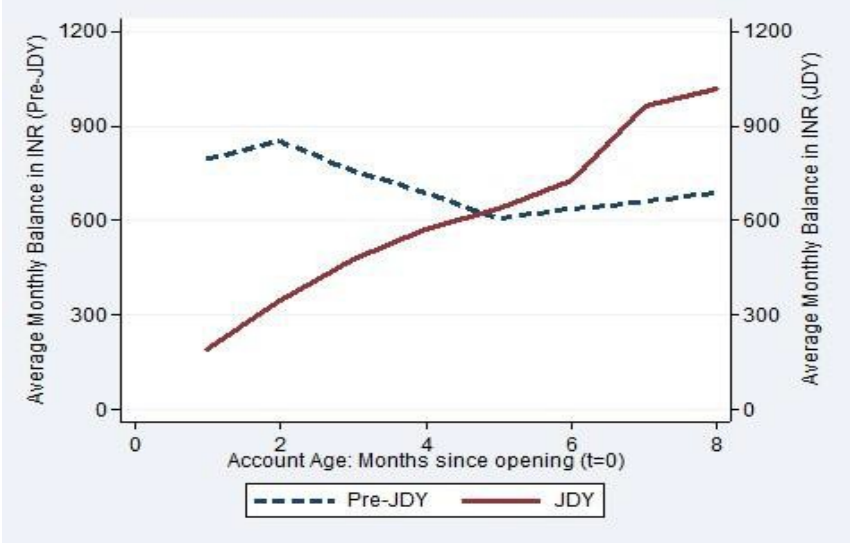


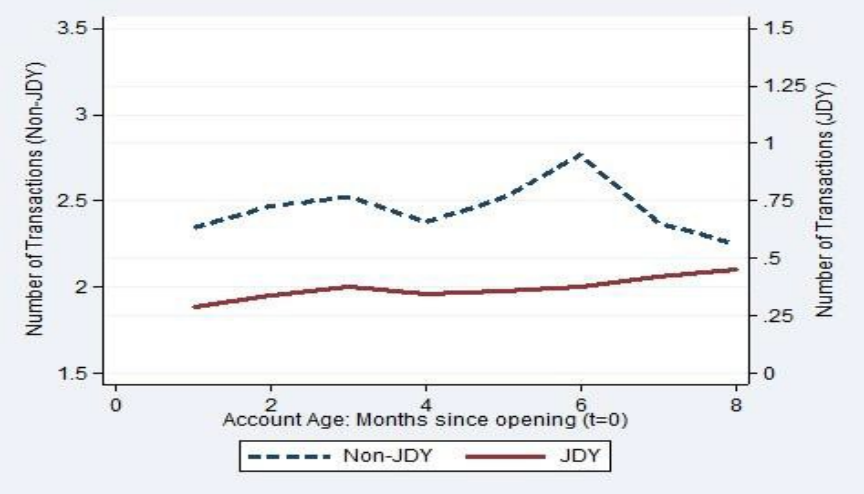


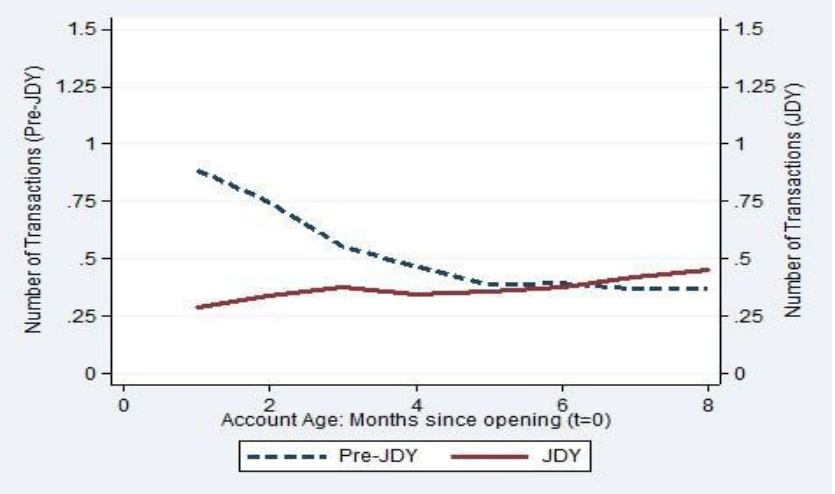
- Frequency higher for married individuals

Account Usage increases over time









- Usage initially infrequent but gradually converge with time to those of similar

JDY Account Level Analysis (1)

1. Average Balance & Usage relative to Non-JDY

$$Balance_{it} = \beta_0 + \beta_1 JDY_{it} + \beta_2 Age_{it} + \beta_3 JDY \times Age + X_{i,t} + Account\ Opening\ Date_t + \varepsilon_{it}$$

	Average Monthly Balance	Positive Balance Dummy	Positive Usage Dummy
	(1)	(2)	(3)
JDY	-2370.967***	-0.724***	-0.441***
	(91.073)	(0.002)	(0.002)
Age of Account	46.776**	0.005***	-0.008***
	(18.858)	0.000	(0.001)
Age of Account X JDY	57.791***	0.044***	0.011***
	(18.773)	0.000	(0.001)
N	6698136	6698136	6698136
R^2	0.007	0.079	0.046

- Relative to non-JDY sample, average monthly balance increases by INR 58 /12% mon

JDY Account Level Analysis (2)

2. Cash Deposits and Withdrawals relative to Non-JDY

$$Transaction_{it} = \beta 0 + \beta 1\ JDY_{it} + \beta 2\ Age_{it} + \beta 3\ JDY \times Age + X_{i,t} + Account\ Opening\ Date_t + \varepsilon_{it}$$

	Cash Deposit	# Cash Deposit	Cash Deposit	Cash Withdrawal	# Cash Withdrawal	Cash Withdrawal
	Amount	Transactions	Dummy	Amount	Transactions	Dummy
	(1)	(2)	(3)	(4)	(5)	(6)
JDY	-1667.757***	-0.186***	-0.115***	-4819.868***	-1.214***	-0.375***
	(72.667)	(0.004)	(0.002)	(135.149)	(0.015)	(0.003)
Age of Account	-32.856**	-0.013***	-0.010***	-77.230***	-0.005*	-0.005***
	(14.295)	(0.001)	0.000	(29.457)	(0.003)	(0.001)
Age of Account X JDY	38.371***	0.008***	0.005***	103.159***	0.018***	0.012***
	(14.411)	(0.001)	0.000	(29.452)	(0.003)	(0.001)
N	6698136	6698136	6698136	6698136	6698136	6698136
R^2	0.008	0.016	0.015	0.025	0.097	0.109

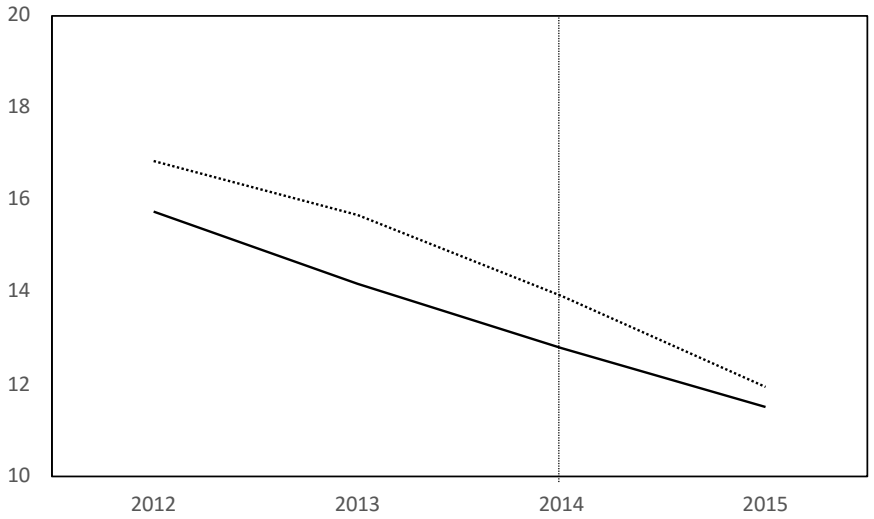
Regional Analysis (1)

- We explore the impact of the JDY program on regional outcome variables such as bank lending, GDP growth, consumer expenditure, investment and inflation
- The goal from this exercise is to inform on the effect of large-scale financial inclusion programs such as JDY, on broader set of economic outcomes
- The challenge in using JDY as an experiment to infer its effect on the larger economy is that the effect may be confounded by other contemporaneous macroeconomic policy changes or time trends
- We circumvent this challenge by exploiting regional heterogeneity in the level of financial inclusion just prior to the program

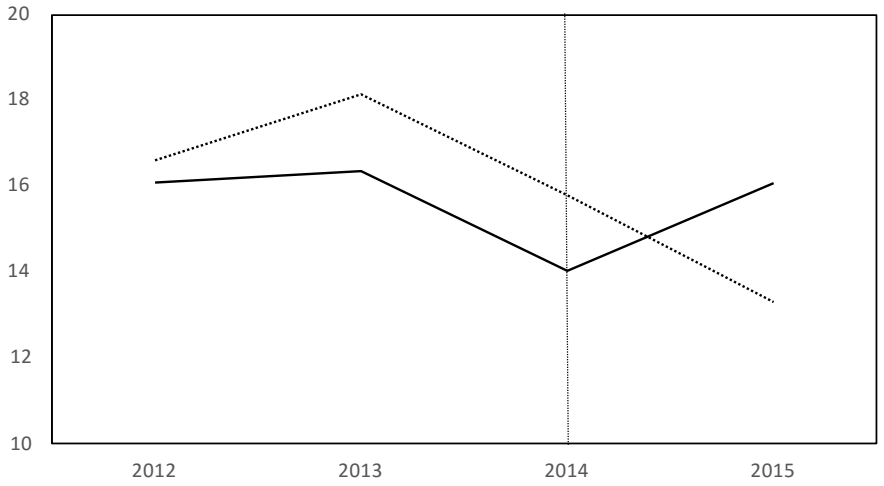
Regional Analysis (2)

- We construct four ex-ante measures that capture different dimensions of financial inclusion
- Our first main measure is a proxy for bank-branch penetration and captures the average number of adults serviced by one bank branch in an area (Adults per Unit Bank Branch)
- Our second measure is %age of state owned branches
- Our third measure is the percentage of households without bank account Households, which is simply the fraction of households without bank accounts
- We also use a comprehensive district level measure of financial inclusion annually released by CRISIL which combines three critical parameters of basic financial services: branch penetration, deposit penetration, and credit penetration into one single metric in the form of an index
- Higher value for all indicates lower degree of financial inclusion

JDY & Bank Lending (1)



Bank deposits



Bank lending

- The figure shows the bank deposit growth rates and bank lending growth rates in the more and less JDY exposed regions (based on the % of Households without Bank Accounts). The more exposed group is represented by the solid line, and the less exposed group is represented by the dashed line
- Relative increase in consumer expenditure, new investment and no significant changes in relative inflation rate

JDY & Bank Lending (2)

This table reports the coefficient estimates from the following regression model:

$y_i = \beta_0 + \beta_1 \text{Exposure Measure} + \varepsilon_i$

where i refers to unique district. yi is the difference in the log of average lending levels during the JDY period and the log of average lending levels in pre-JDY period. The exposure measure is one of the following: Adults per Unit Bank Branch, % State-Owned Branches, % Households With Bank Accounts and a comprehensive Financial Inclusion Index.

	(1)	(2)	(3)	(4)
Adults Per unit Bank Branch	0.012*			
	(0.007)			
% State-Owned Branches		0.001		
		(0.007)		
% Households Without Bank Accounts			0.001	
			(0.007)	
Financial Inclusion Index				0.019***
				(0.007)
N	614	614	614	613
R^2	0.005	0.000	0.000	0.013

Contribution of Our Paper (1)

- This paper has several contributions to the existing literature on financial inclusion:
- Unlike the prior literature, which relies on field experiments and financial inclusion interventions with limited breadth and scope, we study the largest financial inclusion program in the world that catered to over 250 million account holders. This allows us to document the implications of the program at the micro and macro level
- We rely on administrative data, which has no measurement error allowing us to precisely measure the effects of the program
- The panel nature of our data allows us to study the dynamics of household behaviour in response to such programs.
- Apart from being able to document regional externalities of such programs, we can shed light on the mechanisms through which the effects of such programs manifest – capital constraints vs. demand constraints channel

Contribution of Our Paper (2)

- One key contribution of our paper is to understand the savings and debit card usage patterns of low-income households following access to a zero-cost basic savings account
- Our work is related to the large macro level literature highlighting the positive link between financial development and economic growth

Concluding Remarks (1)

- Our micro level analysis shows that though there is a large uptick in population that is banked, the **intensive margin changes were very small**. The INR 460,000 million deposited in these accounts represent a small fraction (0.06%) of the pre-JDY deposits in the Indian banks
- Examining account level data, we find that the overall usage in terms of frequency of banking transactions remains small. The most common use of the bank accounts is for remittance transactions. Married individuals are the heaviest user of these accounts. This suggests that **the direct benefits of the program in the short run will accrue primarily to married customers**
- With regards to time-series dynamics of usage patterns, we find **evidence of learning behavior and increasing familiarity with banking services** as the use of banking services by the poor grows over time. For instance, the relative to the sample average, the fraction of individuals maintaining a positive balance increases by 18% every month. This suggests that the direct benefits of the programs to the consumers are small in the short run. However, real impact of these services would manifest over the long-term as more individuals gradually start using these services

Concluding Remarks (2)

- At the **regional level** we find an increase in risky lending by banks, an increase in consumption expenditure, and a jump in both new investments and revival of previously stalled investments in regions with greater ex-ante exposure to JDY.
- Our paper has implications for the growing body of work in financial inclusion and for policy makers. 40% of the world's population is still unbanked and governments around the world have been thinking of implementing such programs (Indonesia, Malaysia, Philippines, Brazil etc.). Based on or results, the policy makers in these countries should anticipate that the micro level benefits will accrue with a delay. However, such programs may incur substantial benefits even in the short run by relaxing the demand constraints


Thank You