Accepted version for publication at *Economics Letters*

Short-term Effects of India's Demonetization on the Rural Poor*

May 28, 2018

Heng Zhu and Anubhab Gupta
University of California Davis, United States

Binoy Majumder
The Researcher, West Bengal, India

Sandro Steinbach
Swiss Federal Institute of Technology in Zurich, Switzerland

Abstract

This paper analyzes the short-run responses of poor rural households to India's demonetization in 2016. We estimate an economic loss of 15.5% over the two months post demonetization and discuss a range of strategies that the households adopted to exchange their banned currency-denominations.

Keywords: Demonetization, loss, currency shock, financial diaries, India

JEL codes: E6, I3, O2, D10

Highlights:

- We estimate the short-term effects of India's demonetization on the rural poor.
- Household income reduced by about USD 20.6 over the two months post demonetization.
- Local incomes and remittances were affected heterogeneously by the shock.
- Households with female heads and higher levels of unemployment were hit harder.

---

* The data collection was funded from UC Davis Henry A. Jastro Research Funds. This paper has benefitted from comments and suggestions from Miki Khanh Doan, Lovell Jarvis, Travis Lybbert, Aaron Smith and J. Edward Taylor, and from initial discussions with Michael Carter and Justin Kagin. We thank Soma Majumder and Mousumi Das for their excellent field assistance. The field-team received much support from the Gram Panchayat Offices, and we are thankful to all the officials for their help. The authors thank the editor and an anonymous referee for their valuable comments. All errors are the sole responsibility of the authors.
Corresponding Author: 2162, Social Sciences and Humanities Bldg., Department of Agricultural and Resource Economics, One Shields Avenue, Davis, CA 95616, United States.
Email address: angupta@ucdavis.edu (A. Gupta).

Citation: Zhu, Heng, Anubhab Gupta, Binoy Majumder, and Sandro Steinbach. "Short-term effects of India's demonetization on the rural poor." *Economics Letters* 170 (2018): 117-121.

Short-term Effects of India's Demonetization on the Rural Poor

1. Introduction

On November 8, 2016, the Government of India declared a ban on all 500 and 1000-rupee notes. The Prime Minister described this as a "surgical strike" on the black economy, aiming to restrain counterfeit currency and bring a larger fraction of the population into a cashless economy. This unexpected announcement, referred to as demonetization, affected 86% of all currency (by value) in circulation. People had seven weeks, until end of 2016, to exchange old currency for newer 500- and 2000- rupee notes. The resulting exchange process was chaotic, leaving the population with insufficient cash for their daily activities (BBC, 2016). Particularly stricken were the poor households for whom cash is the primary mode of transaction.

Research on transitions into cashless economies and their short-term impacts is rare. Existing empirical research into the effects of large-scale macroeconomic shocks on the livelihoods of households (Alem & Söderbom, 2012; Glewwe & Hall, 1998) often use annual aggregate data, which masks short-term time-sensitive responses. In a similar paper, Krishnan & Siegel (2017) surveyed households in urban slums in Mumbai, one month after demonetization, and found that household incomes fell by about 10%.

This paper adds to our understanding of the impacts demonetization had on household behavior in a rural region of India where households rely on subsistence agriculture, have poor access to banks and transact exclusively in cash. We utilize a high-frequency dataset, collecting data from one month before and two months after demonetization, to estimate its effects on households' expenditure patterns. The data come from a survey, originally intended for auxiliary reasons, which had already been in the field for a month prior to demonetization. Demonetization came as a complete surprise. Taking advantage of this situation, we extended data collection to create a panel dataset, pre- and post- demonetization. By analyzing household daily expenditures and livelihood activities, we estimate economic losses incurred during a two-month window after demonetization to be roughly 15.5% of household income over this period.[1]

2. Data

We originally collected data from four villages in the Sundarbans region of West Bengal to study the relationship between migrant income flows and household consumption. We gave weekly financial diaries to 90 households to collect information on income flows, consumption patterns, expenditures and financial activities, obtaining 782 household-week entries. [2, 3]

Households were randomly selected subject to having a literate member in the household and having a migrant.[4] Our survey periods spanned roughly 2-4 weeks before and 5-7 weeks after the demonetization announcement.

[1] Economic losses include loss of savings in demonetized currency, imputed losses due to wait time in bank ques, loss of employment post demonetization and losses in income due to receiving old currency notes (which required exchange at a discounted rate). We do not account for any non-economic channels of losses for households like those from a social or psychological point of view. We convert losses into a percentage of the total income households earned in the two months after demonetization was announced.

[2] Enumerators performed at least two rounds of training for each household and followed up with weekly phone call assistance and reminders.

[3] Detailed description of data collection and summary statistics appear in Appendix A1.

[4] More than 80 percent of the households in this region have a migrant worker and few households do not have a literate member.

Table 1. Descriptive Statistics

Panel (a): Household Characteristics

Number of Households-weeks	Household Size	Education of HH Head	Female Headed Households	Dependency Ratio (<17)	Annual HH Income Per Capita (INR)	
					Remittances	Local Income
782	5.16 (1.69)	4.21 (3.76)	0.08 (0.27)	0.25 (0.19)	7,186 (5,494)	21,315 (14,625)

Panel (b): Extent of Shock

Impacted Savings (in INR)	Proportion of Households with Impacted Savings	Proportion of Savings Exchanged Through Bank	Proportion Lost job	Proportion working unpaid
3,459.8 (6,344.7)	0.70 (0.46)	0.35 (0.48)	0.12 (0.33)	0.27 (0.45)

Panel (a) in Table 1 gives household characteristics, while panel (b) summarizes the extent of the shock from demonetization. The average household has about five members, with a quarter of them being less than 17 years old. On a person-day basis, average income is around INR 80 (USD 1.2), well below India's poverty line of USD 1.90. In our sample, 88% of households fall below the poverty line, with 66% below the extreme poverty line of USD 1.25 per-person-per-day. We estimate that an average household held around INR 3,460 (USD 50.6) in demonetized notes. Three weeks after the ban, 35% of households had exchanged their demonetized notes through formal channels, while another 43% exchanged them through informal channels, often paying a fee or penalty of approximately 10%.[5] Around 12% of households reported that a member had become unemployed as a direct consequence of demonetization and another 27% reported working for credit without any immediate financial compensation.

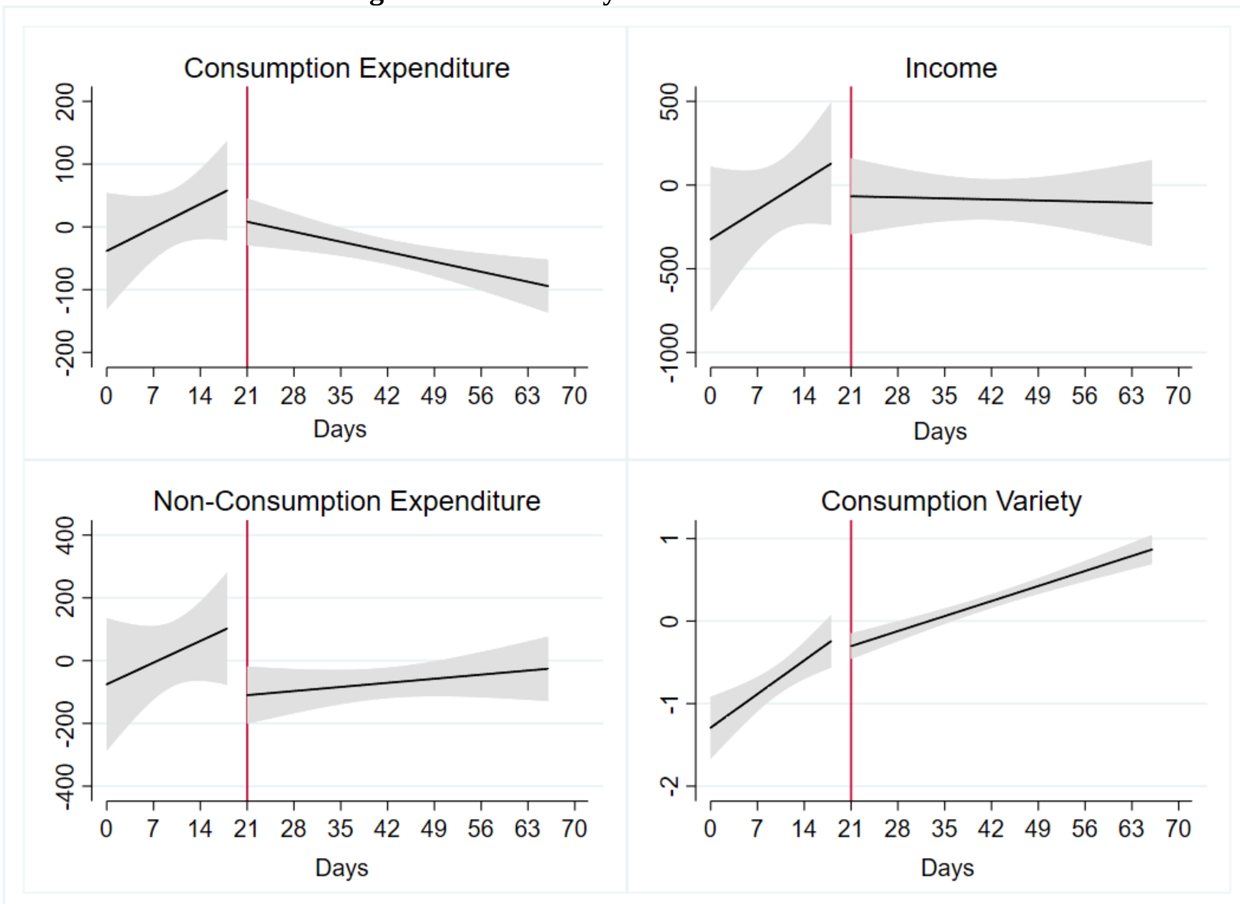
Table 2. Exposure to Shock

Exposure Value	Impacted Savings in Old Currency (INR)	% in each group
0	0	30.4
1	<1000	12.5
2	1000-2500	23.8
3	2500-5000	16.5
4	5000-10,000	9.0
5	>10,000	7.8

After demonetization, a follow-up survey gathered information on households' exposure to the shock and pathways they used to exchange old currency following demonetization. We constructed "exposure to shock" as a categorical variable, by asking households to indicate which bracket reflected the amount they possessed of household savings in demonetized currency (Table 2).

[5] The 10% figure is a rough estimate at the average exchange costs, enumerators reported fees ranging anywhere between 6-15% of the exchanged sum, with 10% being the reported median.

Figure 1. Event Study of Demonetization



Note: Dependent variables have been demeaned and trimmed to fit the graph. 95% CI included in the grey area.

Figure 1 presents an event study of household outcomes. Both consumption and non-consumption expenditures fell immediately post demonetization. Consumption expenditures gradually declined, while non-consumption expenditures increased slightly post shock. Somewhat contradicting the consumption expenditures results, a count of food varieties consumed weekly indicated an increase in consumption diversity. Income remained largely unchanged post demonetization. Results from a difference in means test are presented in Appendix Table A2 (a). While informative, the event study does not account for the presence of two major festivals, *Diwali* and *Bhai-Phonta* happening a week prior to demonetization, which potentially bias pre-announcement outcomes upwards. To address the potential bias due to festivals, an econometric approach is adopted in the next section.

3. Impacts of Demonetization

To control for the festivals a week before demonetization, we constructed a dummy variable for any financial diary-entry whose last seven days include a celebration-day as a control.[6] The following specification is used to estimate the impact of demonetization on household outcomes.

$$Outcome_{it} = \beta_0 + \beta_1 hhinc_{it} + \beta_2 shock_{it} + \beta_3 shock_t \times unemp_i + \beta_3 shock_t \times FemaleHead_i + \beta_4\, shock_t \times BankAcc_i + \beta_5\, shock_t \times Exposure_i + \delta weeks_t + \rho festival_t + \gamma_i + \varepsilon_{it}$$

The variable $hhinc_{it}$ contains household income and remittances, $BankAcc_i$ is a binary variable for having a bank account and $unemp_i$ is a dummy taking the value of one if a household reported unemployment due to demonetization. The variable $shock_t$ takes the value zero prior to demonetization and one afterwards, while $weeks_{it}$, measuring the number of weeks since demonetization, takes a value of zero prior to the announcement.

Table 3 reports regression results of demonetization on the outcome variables: consumption expenditure, variety of consumption goods, non-consumption expenditure, a dummy variable for borrowing and loans, household income and remittances received. In comparison to the event study figures, the results show that, controlling for festivals, the announcement of demonetization initially led to an increase in consumption expenditures by 163 INR (USD 2.4). This initial increase in consumption expenditures was followed by a reduction over time as evidenced by the *Weeks since shock* variable. While an increase in consumption purchases may reflect rising prices due to uncertainty, an increase in consumption variety (by more than 1 food item) lends evidence that the increase in consumption expenditure is not purely price driven. Reports from data collectors suggest that immediately after the announcement of demonetization, household's utilized small businesses (primarily grocery shops) to exchange their soon to be phased out currency through consumption purchases.

A negative estimate for *exposure×shock* in consumption expenditures indicates that households that had more savings in old currency notes (hence, hit harder by demonetization) saw less of an increase in initial consumption expenditure despite larger holdings of affected currencies. We take this as evidence these households were hit harder by the shock, which caused them to taper back consumption as compared to households that held fewer old currency notes. We find that consumption variety actually increased over time, though the magnitude of the effect is small. We posit this is driven by the storage of previous purchases made by the household in a bid to exchange old currency notes for consumption goods.[7] Households with bank accounts also did not increase their initial consumption as much; since having an account facilitated currency conversion and reduced the need to use consumption purchases as a means of exchange.[8] In contrast, expenditure on non-consumption goods such as durable goods and utility bills, were not significantly affected by the shock.

Households responded to demonetization through reductions in borrowing and increases in loans. Prior to the shock, households in our sample did not lend at all (most of the credit households reported was given by local grocery shops and businesses). The likelihood of a household extending (borrowing) a loan increased (decreased) by 2% weekly, post currency-ban. Impacts on local income and remittances were heterogeneous in household characteristics (see columns (6) and (7) of Table 3). Households with a member

---

[6] Two distinct celebrations occurred one right after the other, so the dummies were combined in the case of two festivals. Separating the two celebration dummies does not significantly alter the regression results.

[7] The consumption variety measure was constructed using questions regarding the types of goods consumed in a week and not the types of goods purchased.

[8] While the point estimate of bank account access is only significant in consumption variety regression, the net effect of demonetization is still positive in both cases.

who became unemployed due to the shock experienced a large reduction in local income, but remittances largely compensated for this. Demonetization reduced income more for female-headed households (by INR 228.6) and for households experiencing unemployment due to demonetization (by INR 387.1). Neither demonetization nor time passed since the shock (measured in weeks) significantly affected local income or remittances in the two months after the shock. We estimate economic losses up to two months after demonetization by calculating the estimated difference pre- and post-shock. Detailed results are given in Appendix A3.

The three sources of possible losses (this is not supposed to be exhaustive) are; one, savings lost in demonetized currency either by informal exchange or time lost in bank queues for those employed (opportunity cost), *two*, earnings lost due to a household member losing employment, and *three*, income received post-ban in old currency that needed to be exchanged.[9, 10] Table 4 gives the estimated loss from the different sources.[11] The average household held about INR 3,388 in old currency as savings at the time of the demonetization announcement, of which INR 1447.4 was exchanged informally (in grocery shops, moneylenders etc.). There are substantial opportunity costs to exchanging currency through banks due to the time lost from waiting in lines, which averaged 7 hours each time. Assuming that spending more than 5 hours in a bank queue causes an employed family member to miss a day's wage work, we estimate that households lost 1.43 person-days of work on average over the course of two months.

The estimated average loss to income from bank lines is INR 106.9 (1.6 USD) per household, accounting for the proportion of individuals working in our sample. Households with a member who become unemployed due to demonetization lost around INR 383.2 (5.6 USD) over two months. The largest source of economic loss in the short-run is from income earned in old currency, which averaged about INR 7744.4 (USD 113.2) per households over our time horizon. Totaling all losses, we estimate that the average household lost about INR 1409.2 (15.5% of total household income over this two-month period).

[9] The estimated economic losses are adding up the estimated income losses from different sources. A formal analysis of household welfare loss that accounts for lack of consumption smoothing in a dynamic model is beyond the scope of this paper.

[10] We use 10% as market transactions-cost of converting to new currency. While reported transactions costs ranged from 5-20%, we take the most commonly reported 10% as the market exchange cost.

[11] Details of loss calculation from each source is in Appendix A4.

Table 3. Estimation Results

Variables	(1) Consumption Expenditures	(2) Consumption Variety	(3) Non-consumption Expenditures	(4) Borrowed Money	(5) Loaned Money	(6) Income	(7) Remittances
Shock	162.5*	1.672***	8.054	-0.033	-0.011	-149.6	63.76
	(92.09)	(0.412)	(171.3)	(0.158)	(0.035)	(252.5)	(329.4)
Exposure × Shock	-54.65*	0.0447	-95.20	0.052**	0.001		
	(28.92)	(0.089)	(71.05)	(0.022)	(0.006)		
Weeks since shock	-11.54*	0.165***	3.843	-0.027***	0.017***	12.38	3.666
	(6.663)	(0.03)	(15.31)	(0.01)	(0.005)	(15.39)	(42.82)
Local Unemployment × Shock						-387.1*	1067.3*
						(227.7)	(625.9)
Female Headed Household × Shock						-228.6***	-668.8**
						(80.48)	(332.7)
Bank Account dummy × Shock	-55.71	-1.03**	81.71	-0.083	0.006	225.1	-23.17
	(85.21)	(0.443)	(139.7)	(0.158)	(0.03)	(244.9)	(256.2)
Remittance (1000 INR)	23.67**	-0.02	117.26***	-0.02**	0.0001	-12.79	
	(9.96)	(0.02)	(32.51)	(0.01)	(0.004)	(7.86)	
Household income (1000 INR)	25.02	0.10***	79.97	-0.05***	0.01		-68.92
	(20.96)	(0.03)	(57.06)	(0.01)	(0.01)		(53.32)
Festival dummy	177.1**	0.771***	106.2	0.127	0.005	34.80	228.0
	(75.46)	(0.180)	(165.7)	(0.083)	(0.006)	(67.44)	(264.5)
Observations	768	768	768	768	768	768	768
R-Squared	0.078	0.235	0.061	0.076	0.050	0.009	0.009

Notes: Shock is an indicator variable that takes a value of 0 from the initial period up to three days after the announcement of demonetization, 11th November. Household income is weekly sum of total local and remittance income of a household. Borrowed money uses a panel logit model. All regressions contain household fixed effects and all non-logit models use White's cluster robust SE's. Within R-squared and household-week-observations are in bottom row. Intercept estimates not reported.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0$.

Table 4: Estimated Loss due to Demonetization

Sources	Welfare Loss (INR)
Savings in demonetized currency	144.7
Bank Ques	106.9
Loss of employment	383.2
Income in demonetized currency	774.4
Total	1409.2

Notes: A transaction cost of 10% is used to estimate the loss from informal exchange.

4. Concluding Remarks

India's demonetization resulted in economic losses for rural poor households that averaged about 15.5% (of the income they did earn) over the two months after the policy change. Income losses were due to unemployment caused by demonetization and the transactions cost of converting old currency to new. We learned from focus-group discussions that farming households faced difficulty in procuring inputs or selling their produce, and local laborers received wages in IOU's. We do not account for such loses in our analysis, which can have potential longer-run implications. To get rid of demonetized notes, households utilized an array of strategies, including borrowing less, lending out more, and spending more on consumption expenditures.

While there could be long-run benefits from forcing more informal sector financial activity into the formal the banking system, the short-run impacts of demonetization are detrimental for the poor. Our findings highlight the importance of local credit markets as a tool that households leveraged to make short-term adjustments to this macroeconomic shock. From a policy perspective, an improved understanding of micro-level household behavior in response to macro shocks could guide policy makers to better anticipate and forecast the impacts of various national policies.

References:

Alem, Y. and Söderbom, M., 2012. “Household-level consumption in urban Ethiopia: the effects of a large food price shock.” *World Development*, *40*(1), pp.146-162.

Glewwe, P. and Hall, G., 1998. Are some groups more vulnerable to macroeconomic shocks than others? Hypothesis tests based on panel data from Peru. *Journal of development economics*, *56*(1), pp.181-206.

Krishnan, D., & Siegel, S. (2017): “Effects of Demonetization: Evidence from 28 Slum Neighbourhoods in Mumbai.” *Economic and Political Weekly*, 52(3), 21 Jan, 2017. http://www.epw.in/node/148264/pdf

Rowlatt, J. “Why India wiped out 86% of its cash overnight.” in BBC News on 14th November, 2016. http://www.bbc.com/news/world-asia-india-37974423 (retrieved on 01/23/2018).

Appendix: Short-term Effects of India's Demonetization on the Poor

Heng Zhu, Anubhab Gupta, Binoy Majumder and Sandro Steinbach

Appendix A1: Data Description and Summary Statistics

Households in our sample are mostly representative of rural migrant households in a region that has extremely high internal migration. Climate change has heavily affected the Sundarbans delta, with rising sea levels encroaching land at up to 200 meters each year. In response to the frequent cyclones and salinization of fields, a majority of households in this region send migrants to work in suburbs and the city of Kolkata. The data used in this paper were originally collected to study the relationship between income flows and consumption using high frequency financial diaries as the survey instrument. Our sampling strategy randomly selected households from the four villages according to two criteria: first, the household has a migrant member; and second, the household has at least one literate member to fill out the weekly financial diary. A vast majority of the households in this region have a migrant worker and only few households do not have a literate member.[1] Information on key household characteristics were collected through an initial interview. After demonetization, we did a follow-up survey on households' exposure to the shock and pathways in which they chose to exchange old notes and to cope with the currency shock. Financial diaries were entered on a weekly basis throughout this process. The basic summary statistics on household income and demographics are in Table A1 (a).

Table A1 (a). Descriptive Statistics

Household Size	**Education of HH Head**	**Female Headed Households**	**Dependency Ratio (<17)**	**Annual HH Income Per Capita (INR)**		**Below Extreme poverty line**	**Owns Bank Account**
				Remittances	**Local Income**		
5.16	4.21	0.08	0.25	7,186	21,315	0.66	0.92
(1.69)	(3.76)	(0.27)	(0.19)	(5,494)	(14,625)	(0.475)	(0.28)

Notes: Household Income excludes remittance income. Standard errors in parentheses. The extreme poverty line is $1.25 USD per-person-per-day, not adjusted for CPI. Detailed summary statistics appear in Appendix Tables A1 and A2.

Local work is scant and unsteady in the Sundarbans. Only 31% of the individuals in our sample worked (mostly as casual labor) in the past year (Table A1 (b)). Conditional on working, the average individual worked just under 8 months a year with a monthly wage of around INR4,823 (USD 70.5). On average, households purchased INR 544 (USD 7.95) a week in food and spent INR 680 on utility bills, school fees and other non-consumption related expenses (Table A1 (c)). A substantial proportion of households have outstanding loans, with about 40% of households taking out a new loan from local grocery shops, which incidentally is where many households chose to exchange their currency. Most of the households in our sample held a negative loan balance, with more borrowing than paying back over this period. This is not necessarily a consequence of the timing of our survey, rather it reflects the fact that households took out loans from businesses (grocery shops or small lenders) and not from their neighbors. A second issue is the staggered nature of data collection. While households from the same village record information over the same two months, due to logistical challenges households in the final village started the financial diaries

[1] From pre-test information, over 80% of households in this region have at least one temporary migrant worker.

almost two weeks after the first village. To address potential concerns, we drop the last week of data from the last village since there are no other villages overlapping this period.[2]

Table A1 (b). Local wage work

Proportion Working	**Average months worked***	**Monthly Wage***
0.31	7.88	4823.4
(0.46)	(3.56)	(4821.9)

Notes: Variables "Average months worked" and "monthly wage" are calculated conditional on an individual working.

Table A1 (c). Consumption, Expenditures and Borrowing

Consumption		**Expenditure**	**Loan payback**	**Borrowed**	**Proportion Borrowing**
Staples	*Proteins*				
404.0	136.7	667.1	182.7	336.6	0.4
(376.8)	(206.0)	(1108.9)	(616.7)	(847.8)	(0.49)

Notes: Includes expenditures on school fees, utility bills, asset, clothing and agricultural input purchases.

Appendix A2: Mean Comparisons pre- and post-Demonetization

To assess the overall impact of demonetization, we calculate the full effect of the currency shock by evaluating the estimated difference pre- and post-shock at the average time horizon in our sample and at the end of our study (see Table A2 (a) and (b)).

Table A2 (a). Comparisons in Mean outcomes, before and after shock

Variables	**Before**	**After**	**Difference (After-Before)**
Consumption Purchases	627.8 (45.2)	511.3 (18.6)	-116.5*** (41.5)
Non-Consumption Expenditures	676.7 (88.9)	663.9 (43.8)	-12.7 (91.7)
Money Borrowed†	363.1 (54.1)	327.8 (36.2)	-35.3 (70.11)
Borrowed Money (dummy)	0.51 (0.04)	0.37 (0.02)	-0.14*** (0.04)
Local income	364.9 (44.2)	450.4 (41.1)	85.5 (75.8)
Remittances	524.1 (118.4)	594.5 (88.9)	70.4 (168.7)
Loaned out money (dummy)	0.0 (0.0)	0.06 (0.01)	0.06*** (0.02)

Notes: Naïve difference in means for outcomes before and after the shock. "Money Borrowed" refers to the average amount of money borrowed per week, including zeroes.

[2] In practice excluding the last week of information does not substantially change the estimates.

Table A2 (b). Mean Change over time

	Consumption	Borrowing	Loaning Money
One month after shock	116.4 (91.6)	-0.14 (0.16)	0.06* (0.03)
End of survey*	70.2 (98.5)	-0.25 (0.17)	0.13*** (0.04)

* End of survey is just under 2 months after demonetization. The results are imputed using the regression coefficients from Table 2.

Appendix A3: Economic Loss Calculation

On average, households held around INR 3388 in old currency notes as savings at the time of the demonetization announcement, of which about INR 1940 were exchanged through banks and the remaining balance of INR 1447 were exchanged informally (in grocery shops, money lenders etc.), see panel (a) of Table A3. Using a transaction fee of 10%, the estimated loss to savings totals INR 144.7 (2.1 USD). Although exchange through banks does not incur a monetary penalty, there are substantial opportunity costs to having a household member (usually, in most cases, the account holder) wait in line. We find that the average wait time was over 7 hours each time for the period when we have data on bank queue time (weeks 6-9 after demonetization). Assuming that spending more than 5 hours in a bank queue causes a member of the family to miss work, we estimate that households lost 1.43 person-days of work over the course of two months on average (panel (b) of Table A4). This number is likely to be a lower-bound estimate of actual time lost in lines, lacking queue time information for the first five weeks after demonetization we assumed that the weekly average remains the same over the entire two months. Our estimated average loss to income from bank lines is INR 106.9 (1.6 USD) per household, taking into account the proportion of individuals working in our sample.[3]

Table A3. Summary Description for Loss Calculation by Sources

	Panel (a): Savings and exchange	
Savings	Exchanged formally	Exchanged informally
3388.2	1940.8	1447.4
	Panel (b): Bank queues	
Daily wage (INR)	Proportion employed	Average Days in Que
241.2	0.31	1.43
	Panel (c): Loss of employment	
Estimated weekly loss (INR)	Proportion of households	Number of Weeks
387.1	0.11	9
	Panel (d): Income in old currency	
	Average Income in 2 months (INR)	
	7744.4	

Another key source of economic loss stems from the lost income due to unemployment experienced by the household. Using our data, we estimate that households that had a member become unemployed due

[3] While it is theoretically possible for households to have non-working members hold a place in line, exchange of currency required the account holder to be present. In practice, this is usually the head of household. Focus group discussions reinforce our assertion, as participants cited lost work opportunities as a primary concern following realization that exchanging their older notes through banks required lengthy wait times.

to demonetization saw a fall in weekly income of around INR 387. While we are unable to pin down the exact point in time in which a member of the household lost his or her employment (all questions regarding the shock were asked at roughly the same time), we do know that the event happened prior to the end of the first month, when additional questions where added. Assuming, then, that the member remained unemployed throughout the duration of our diaries (two months after demonetization), losses from employment are around INR 383.2 (USD 5.6) for an average household. This number takes into account the proportion of households reporting unemployment. Receipt of old currency notes in a household's income flow constitutes the third, and largest, source of loss in the short-run. On average, households received INR 7744.4 in dated currency over our time horizon.[4] At the market exchange rate, we estimate losses to be INR 774.4 per household (USD 11.4) over the two-month period. The calculated average loss to households, stemming from lost savings, unemployment, exchange time and income in old currencies totals 1409.2 (20.6 USD).

[4] Number constructed from a sub-sample of households through a follow-up phone interview. Households were chosen randomly from the master list.