Effects of Demonetization: Evidence from 28 Slum Neighborhoods in Mumbai

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This version: January 7, 2017

Abstract

We survey about 200 families living in 28 slum or lower-income neighbourhoods in Mumbai in early December of 2016 to document and examine the immediate and short-term impact of the November 8, 2016, demonetization decision by the Indian government. The survey elicits changes in families' income, expenditure, and savings following the policy announcement as well as possible longer-run effects and a subjective assessment of the policy at the beginning of December 2016. We find that the policy led to a drop in income, with an average drop in income during the month of November of about 10% of families' monthly income. The effect varies significantly across different groups, in particular between those receiving a regular salary and those not. The income drop is associated with a drop in consumption as well as changes in families' savings in November. We document a significant difference between past savings behaviour and expected future savings behaviour, with the expected use of bank accounts increasing and the expected use of cash as a storage of value decreasing substantially. Finally, we find that the majority of respondents view the policy overall as positive, including the majority of those that experienced some loss of income in November.

Introduction

On the night of Nov 8, 2016, the Indian government made a surprise announcement on television: currency notes of Rs 500 and Rs 1000 denominations were to be withdrawn from the market with immediate effect (Reserve Bank of India [RBI], 2016; Bhatt, 2016). The scheme, popularly called 'notebandi', was championed by Indian Prime Minister Narendra Modi as a way to end the menace of black money, counterfeiting and corruption. The government stated that honest citizens had nothing to fear. People holding the two withdrawn denominations could either deposit them in banks, or exchange them at the bank for new currency notes.

Following the announcement, there was a rush at banks and ATMs, to exchange old notes and withdraw new currency (Debayan Roy, 2016; Press Trust of India [PTI], 2016). The two withdrawn denominations represented 86% of the currency in circulation (Reserve Bank of India [RBI], 2016). As the lines at banks grew, reports appeared in the press about the suffering experienced by people, especially among the poor, who had no access to credit cards or mobile wallets. (Soutik Biswas, 2016; Times News Network [TNN], 2016). As more days went by, the press reported that in both urban and rural India, the country's large informal economy (Muna Kalyani, 2016) had been disrupted, and that notebandi would have negative impact on GDP. (Renu Kohli, 2016; Asit Ranjan Mishra, 2016; Press Trust of India [PTI], 2016)

SPJIMR-Abhyudaya, an educational non-profit working in slums in the K-West ward of Mumbai, decided to assess the impact of notebandi on the families they were working with. The objective was to get a first-hand picture of how these families were coping with notebandi; in order to offer quick and timely help if required.

About the study

SPJIMR is a leading school of management in Mumbai, located at Andheri, in the K-West Ward of the city. SPJIMR runs a non-profit initiative called Abhyudaya, where business students at SPJIMR mentor children from the slums in the K-West ward of Mumbai. The children are called 'Sitaras'. There are currently 238 business students enrolled in the 2-year full time PGDM program at SPJIMR, which is equivalent to an MBA program.

Each business student is paired with one Sitara. The students visit the Sitara's home in the slum and provide 1-to-1 mentoring through the year.

As part of the Abhyudaya initiative, SPJIMR also has full-time staff, who provide academic as well as other developmental inputs to the Sitaras.

To study the effects of notebandi on the families of the Sitaras, the SPJIMR-Abhyudaya team designed a questionnaire in the last week of November.

It was decided that each business student would interview the family of the Sitara whom they were mentoring, and obtain responses to the questions. The responses would be collected using Google Forms, on smart phones.

On Dec 3, the questionnaire was uploaded on Google Forms, and the business students were given a link to the questionnaire, to be filled online on the phone.

For slum locations without data access, the MBA students were instructed to fill out the form on paper and then upload it on Google Forms when they returned to the campus.

From Dec 3 to Dec 9, the students visited their Sitara's family, and obtained the answers to the questionnaire. The data collected via the questionnaire was then merged with the existing socio-economic data about each family, already held with Abhyudaya.

The survey consists of 37 questions, which address families' initial response to the demonetization announcement, the economic consequences for their income, expenditure, and savings, changes in payment choices following demonetization as well as a subjective assessment of the policy.
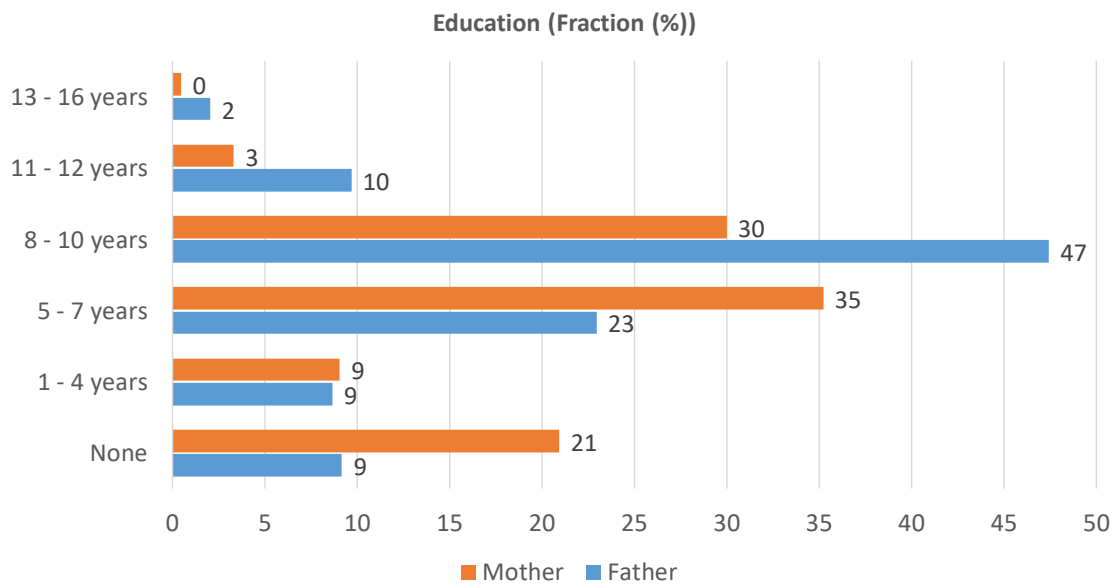
Surveyed families

The sample of surveyed families includes 214 families living in 28 slum or lower-income neighbourhoods of Mumbai. 27 of the 28 neighbourhoods are located in Mumbai's K-West Ward, two families reside in the neighbouring K-East Ward. Appendix Table A1 lists all neighbourhoods included in the study as well as the number of families per neighbourhood.

The families interviewed for the purposes of this study have not been randomly selected (as their children were previously selected to participate in the SPJIMR-Abhyudaya initiative) and are not necessarily representative of slum communities in Mumbai. However, the following socio-economic characteristics of the interviewed families show that the vast majority belong to India's lower middle class. For example, Figure 1 reveals that 41% of fathers have at most seven years of schooling, while 30% of mothers are either illiterate or have only completed elementary school. The occupational profiles of fathers and mothers

included in the sample, see Figures 2A and B, show that some receive regular salaries as they work in "service jobs" as domestic helpers, cooks, and drivers, while many face substantial uncertainty as their wage income or customer volume will fluctuate from day to day. Finally, Table 1 and Figure 3 provide information about monthly incomes in 2016 before demonetization and the distribution of income across the families in the sample. The mean (median) monthly total family income is INR 12,777 (12,000) or approximately USD 190 (USD 179) at an exchange rate of INR/USD 67. For two thirds of the families, the monthly total income is between INR 8,000 and 18,000. Based on the recently completed ICE 360° Survey,[1] 2016, the average monthly household income is INR 16,840 across all Indian households and INR 29,690 across families living in metro areas such as Mumbai.

Figure 1: Education profile of respondents (fathers and mothers of Sitaras)

Education (Fraction (%))

Category	Mother	Father
13 - 16 years	0	2
11 - 12 years	3	10
8 - 10 years	30	47
5 - 7 years	35	23
1 - 4 years	9	9
None	21	9

■ Mother ■ Father

Figure 2: Occupation of respondents

Panel A: Father's Occupation
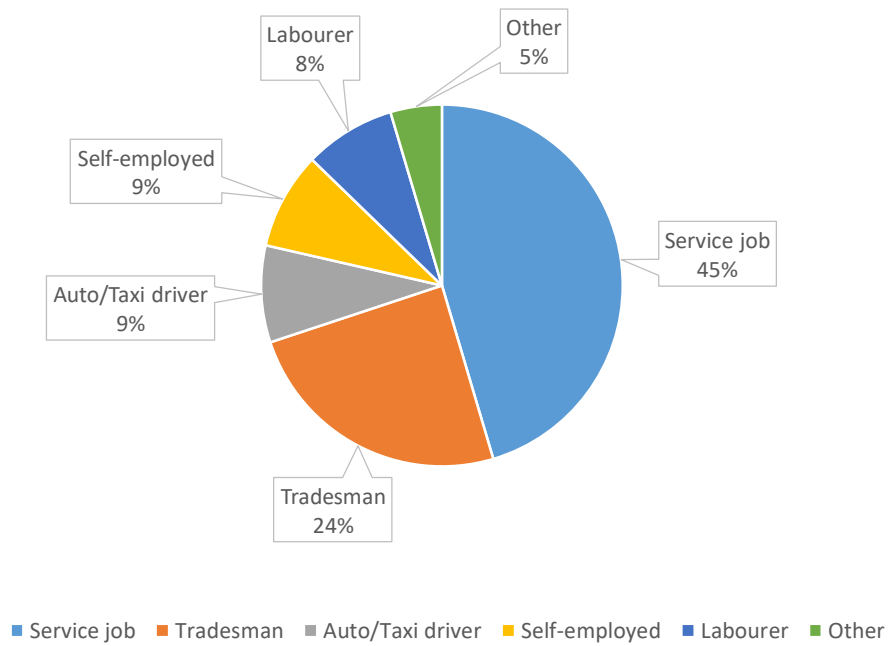
Panel B: Mother's Occupation
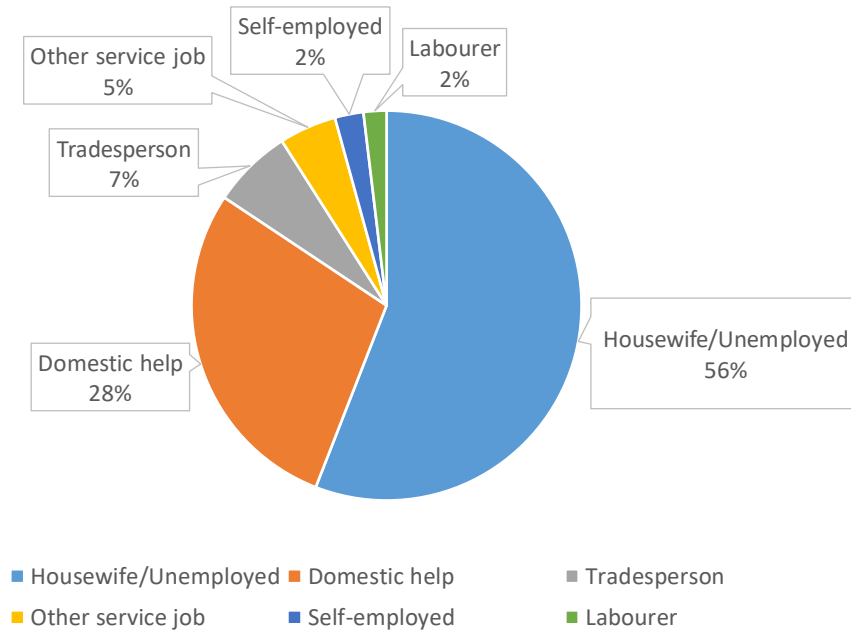
Figure 3: Histogram of Monthly Total Family Income before Demonetization (in INR) (Frequency expressed as absolute number of families, N=214)

Table 1: Monthly Total Family Income before Demonetization (in INR)

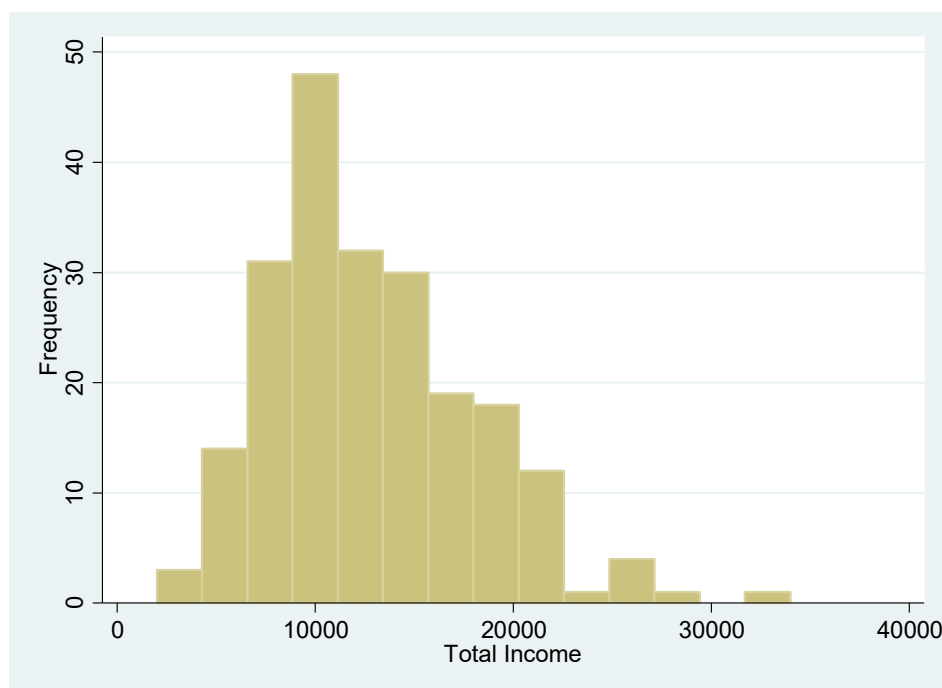|	N	Mean	Median	Std. Dev	Min	Max
Father's income	214	8,896	8,500	4,889	0	20,000
Mother's income	214	2,640	2,000	3,117	0	15,000
Other income	214	1,241	0	3,189	0	21,000
Total income	214	12,777	12,000	5,165	2,000	34,000

Results

Learning about and reacting to demonetization

The demonetization policy was announced in an unscheduled address by Prime Minister Modi on November 8, 2016, around 8 pm local time. The news quickly spread and dominated media coverage. Not surprisingly, therefore, 77% of families in our sample heard about the policy the evening of the announcement, and 97% had heard about it by the end of the following day. Following the announcement, between Nov. 9 and 18, 82% of respondents visited a bank branch or an ATM, to exchange old notes for new ones (52%), to deposit old notes (49%), and/or to withdraw new notes from the ATM (22%). The majority (63%) experienced average wait times of one to three hours during these visits (see Table 2).

About 11% of families report that they exchanged old for new notes outside the banking sector, while about 25% continued to use old notes.

Table 2: Average Wait Time when Visiting at Bank or ATM between Nov. 9 and 18

Average bank/ATM wait time	Frequency (%)
Less than 1 hour	12
1-3 hours	63
4-5 hours	17
More than 5 hours	8

Losing income due to demonetization

About 31% of families report that they lost at least some income by the end of November. Table 3 Panel A and Figure 4 show that the fraction of those reporting lost income following demonetization varies significantly as a function of the father's occupation. Families with fathers that are self-employed were hit the hardest: 59% lost some income in November. Similarly, 47% of auto rickshaw and taxi drivers who typically accept only cash payments report some income loss. The frequency of lost income is much lower (15%) for those with service jobs, such as domestic help, employed drivers, or cooks, who receive a regular salary.

To assess the magnitude of the income losses, we ask those that report lost income for November to provide an estimate of the lost income. After scaling this estimate by the family's monthly total income before demonetization, we tabulate the median relative amount of income that was lost in Table 2 Panel B. Across all families that reported some income loss for November, the median loss relative to their total income is about 21%.[2] Families with self-employed fathers experience the biggest relative drop in income (44%), while the median loss for families with fathers working as auto rickshaw and taxi drivers report, labourers, tradesmen or in service jobs ranges between 14 and 24%).[3]

Across all families, independently of whether they reported any lost income, the equally-weighted average relative income loss is 12%, while the income-weighted average is about 9%. While it is too early to establish the full income effect of demonetization on the families in our sample, the initial evidence presented here suggests that for the month of November 2016 their family income was on average about 10% lower than in other months in 2016.

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[2] The median relative loss is 23% when including families with missing information on father's occupation (N=61).
[3] Note that these subsamples are small and reported statistics are therefore imprecise.

Table 3: Lost Income in November

Panel A: Fraction of those that Lost some Income

Father's occupation	N	Fraction (%)	
		Loss	No Loss
Self-employed	17	59	41
Other	8	50	50
Auto/Taxi driver	17	47	53
Tradesman	46	39	61
Labourer	14	36	64
Service job	79	15	85
Total	181	31	69

Pearson chi2(5) = 20.1570   Pr = 0.1%

Panel B: Median Relative Amount of Income Lost

Father's occupation	N	Relative amount of income lost (%)
Self-employed	10	44
Other	4	41
Auto/Taxi driver	8	14
Tradesman	18	19
Labourer	5	24
Service job	12	20
Total	57	21

Figure 4: Fraction of Families Reporting some Lost Income

Fraction that lost some income by father's occupation
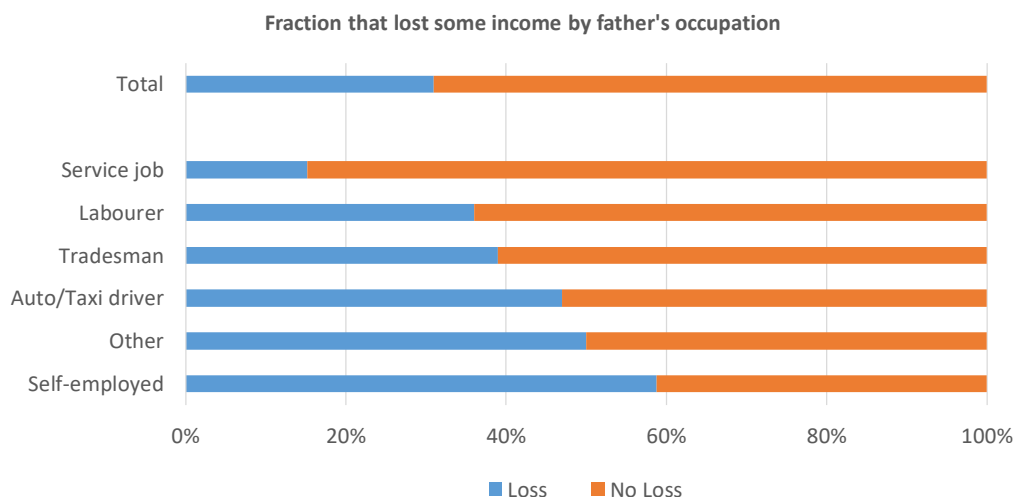
Changing expenditure

We next examine the impact of demonetization on household's expenditures between November 8 and 30. Expenditures might be lower either because income dropped, because transactions could not be completed due to lacking new currency notes, or because of increased precautionary savings. Table 4 shows that across all families 54% report that they purchased less groceries between November 8 and 30 than usually, while 43% report no change. Whether a family lost income is significantly associated with whether a family reduced grocery purchases in November, with 70% of those reporting lost income also reporting lower grocery purchases.

In Table 5, we investigate households' postponing purchase decisions in November. Panel A reports the fraction of those households that report that they postponed at least one purchase decision in November. Across all households, 39% delayed a purchase decision. The fraction is higher for those that experienced income losses (46%), even though the association between postponed purchases and lost income is not statistically significant. Panel B shows that for 46% of those that did postpone a purchase in November the postponed amount was at most INR 2,000, for 34% the amount was between INR 2,001 and 5,000, and only for 20% the amount was larger than INR 5,000.

Table 4: Grocery Purchases in November

Income Lost	N	Amount of groceries purchased Fraction (%)		
		Less	Same	More
Yes	60	70	28	2
No	135	47	50	4
Total	195	54	43	3

Pearson chi2(2) = 9.1335 Pr = 1.0%

Table 5: Postponed Purchases

Panel A: Fraction of Households Reporting Postponing Purchase Decision in November

Income Lost	N	Postponed purchase Fraction (%)	
		Yes	No
Yes	61	46	54
No	136	35	65
Total	197	39	61

Pearson chi2(1) = 1.9997 Pr = 15.7%

Panel B: Amount postponed

Amount	N	Fraction (%)
Below INR 2,000	37	46
INR 2,001 - 5,000	27	34
INR 5,001 - 10,000	9	11
INR 10,001 - 20,000	3	4
INR 20,001 - 50,000	2	3
More than INR 50,000	2	3
Total	80	100

Savings

Having investigated the impact of demonetization on household income and expenditure, we analyse the policy's impact of households' savings in November as well as on the way households expect to save money in the future.

According to Table 6, only 10% of all households experienced a decline in their savings. The fraction is much higher (25%) for those households that experienced a loss in income. About 30% of households report that their savings increased in November, possibly due to precautionary motives or due to "forced" savings as new currency notes were not available.

Table 7 Panel A reports how families in our sample used to save before demonetization and how they plan to save in the future. Before demonetization, 80% of households held some of their savings in bank accounts, while 51% of households also used to store some of their savings in cash, only very small fractions used to save by lending money to others or by investing in gold or real estate. In the future, 92% of households expect to save at least some money in a bank account, while only 17% expect to store their savings in cash. The substantial changes for bank accounts (+12 percentage points (pp)) and cash (-34 pp) are economically as well as statistically significant. In Panels B and C, we examine how the adoption of a bank account as a way to store the family's savings varies across different sub-samples. Panel B reveals that those that were negatively affected by demonetization in terms of lost income are more likely to report using a bank account for their savings in the future relative to those that did not experience a drop in their income. Similarly, in Panel C, we observe that the planned adoption of a bank account is particularly pronounced among families whose father is a labourer, self-employed, or an auto riskshaw or taxi driver.

Table 6: Savings in November

| | | Change in savings in November | | |
| | | Fraction (%) | | |
Income Lost	N	Decrease	No change	Increase
Yes	55	25	42	33
No	129	4	67	29
Total	184	10	60	30

Pearson chi2(2) = 21.8338 Pr = 0.0%

Table 7: Changes in Ways to Save – past and future

Panel A: Asset Classes Used to Store Savings before and after demonetization

	Used to store savings (Fraction (%))		
Asset Class	Before	After	Difference
Bank account	80	92	12 ***
Cash	51	17	-34 ***
Gold	4	8	3 *
Lending	2	2	0
Real estate	0	3	2 *

*N = 204. Significance levels: 1%: *** / 5%: ** / 10%: ***

Panel B: Bank Account Adoption by Income Lost

		Use of bank account (Fraction (%))		
Income Lost	N	Stop using	Unchanged	Start using
Yes	57	4	70	26
No	133	2	88	10
Total	190	3	83	15

Pearson chi2(2) = 21.8338 Pr = 0.0%

Panel C: Bank Account Adoption by Father's Occupation

		Use of bank account (Fraction (%))		
Income Lost	N	Stop using	Unchanged	Start using
Labourer	16	0	63	38
Self-employed	16	0	75	25
Auto/Taxi driver	16	0	75	25
Tradesman	44	5	80	16
Other	9	11	78	11
Service job	85	4	89	7
Total	186	3	82	15

Pearson chi2(10) = 16.2844 Pr = 9.2%

Payment tools

Families also answered several questions related to cashless forms of payments they use or that they are aware about. 8% of families report a difference in the mode of payments they have used in November. Out of those 8%, 54% have used debit cards, 29% have relied on credit (udhar), and 12% have used cheques.

Several families (12%) also report that at least one vendor in their neighbourhood has adopted a cashless payment method. In 28% of those cases, the adopted method is PayTM.

Finally, 80% of families report that they are aware of at least one cashless payment method, with debit cards being mentioned most frequently (50%), followed by PayTM which is mentioned by 21% of respondents.

Policy assessment – What respondents think of demonetization

A large majority of families (73%) confirm that as of the first week of December there is a significant shortage of cash in their neighbourhood. About one third (36%) of respondents expect the shortage to last until the end of December, 22% until the end of January, 7% until the end of February, and 9% beyond three months. The remaining 25% of families do not know how long the shortage will last.

When asked how respondents feel about demonetization, 56% provide a positive assessment of the policy, while about 24% provide a negative assessment (see Figure 5).

In Table 8, we show that the policy assessment varies by families' experiences (Panel A) as well as their level of education (Panel B). Families that lost some income in November are more likely to view the policy negatively than families that did not experience a loss in income (31% vs. 16%), even though a majority in both subsamples (51% and 62%) view the policy positively. Families in which both parents have less than 8 years of schooling are more likely uncertain, undecided, or neutral about their assessment of the policy than families with at least one parent with 8 years or more of education (34% vs. 13%). Among families with at least 8 years of education, 63% view the policy as positive, while 25% of them view the policy negatively.

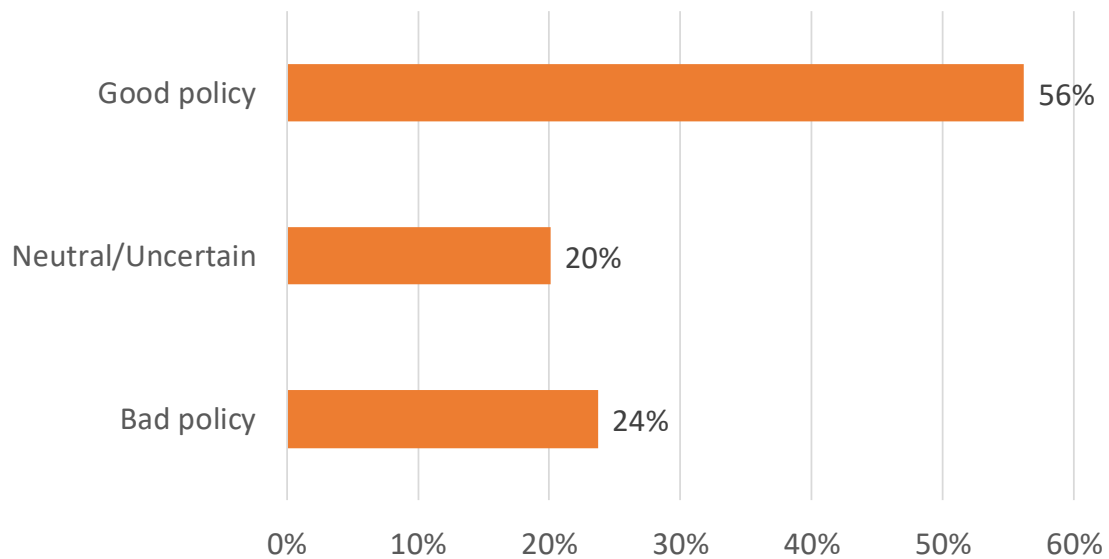**Figure 5: Subjective Policy Assessment (in %)**
(N = 194)

Table 8: Policy Assessment

Panel A: Assessment by Income Lost

Income Lost	N	Assessment Fraction (%)		
		Bad policy	Neutral/Uncertain	Good policy
Yes	55	31	18	51
No	124	16	22	62
Total	179	21	21	59

Pearson chi2(2) = 5.0774   Pr = 7.9%

Panel B: Assessment by Education Level

Education	N	Assessment Fraction (%)		
		Bad policy	Neutral/Uncertain	Good policy
Less than 8 years	67	21	34	45
At least 8 years	126	25	13	63
Total	193	23	20	56

Pearson chi2(2) = 12.8729   Pr = 0.2%

Conclusion

Responses to our survey, conducted among selected families in several slum neighbourhoods of Mumbai, provide a first insight into how demonetization has affected some of the underserved communities in India. It is important to keep in mind that surveyed population is **not** representative of India's population as a whole nor of necessarily of those of low socio-economic status in India. Nevertheless, the results provide some initial understanding of the immediate and possibly longer-term effects of the demonetization policy onto the urban poor.

First, the policy led to a drop in income. Across all families in our sample, the average drop in income during the month of November was about 10% of their typical monthly income. However, the effect on income varies significantly across different groups, in particular between those receiving a regular salary and those not. The drop in income is associated with a drop in consumption as well as changes in families' savings in November. To assess the full impact of the policy on the economic conditions of the surveyed families, additional data will be needed in the future.

Based on respondents' expectations, how lower-income families store their savings in the future might differ significantly from the past. In particular, bank accounts are expected to increase in importance, while cash is expected to drop substantially as a storage choice. Whether or not such changes actually occur remains to be seen.

Similarly, while there are signs of changes of how payments can be made and are made by vendors and customers in slum communities, it is too early to tell how significant these changes might be.

The majority of respondents view the policy overall as positive, including the majority of those that experienced some loss of income in November.

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Appendix Table A1: Surveyed Families by Neighbourhood and Ward

Neighborhood	N	Ward
GILBERT HILL	25	K-West
BEHRAM BAUG	22	K-West
JUHU GALLI	22	K-West
NEHRU NAGAR	19	K-West
7 BUNGALOWS	17	K-West
VERSOVA	17	K-West
GAONDEVI DONGRI	10	K-West
VEERA DESAI ROAD	10	K-West
AMBOLI	8	K-West
4 BUNGALOWS	7	K-West
IRLA	6	K-West
JOGESHWARI	6	K-West
KAPASWADI	6	K-West
HMPS CAMPUS	5	K-West
JUNAID NAGAR	5	K-West
ANAND NAGAR	4	K-West
SAMATA NAGAR	4	K-West
TATA COMPOUND	4	K-West
D N NAGAR	3	K-West
OSHIWARA	3	K-West
ANDHERI EAST	2	K-East
BMC MARKET	2	K-West
JIVAN NAGAR	2	K-West
ADARSH NAGAR	1	K-West
BHAGAT SINGH NAGAR	1	K-West
HANUMAN NAGAR	1	K-West
INDIRA NAGAR	1	K-West
LAXMI INDUSTRY	1	K-West