

WIDER Working Paper 2021/46

The impact of the COVID-19 pandemic on the poor

Insights from the Hrishipara diaries

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March 2021

Abstract: In this paper, we examine the economic impact of the COVID-19 pandemic on the livelihoods of the poor. We use an unusually rich data set from a ‘financial diaries’ study known as the Hrishipara Daily Diaries Project. The data set tracks the economic and financial transactions of 60 individuals and their families in a semi-rural setting in Bangladesh on a real-time basis from October 2019 to September 2020. We document individual diarists’ behavioural responses to COVID-19, which reveal the varied experiences of the poor during the pandemic. We find that the pandemic and associated government lockdowns had significant negative effects on the livelihoods of the poor in our study, with financial inflows and outflows, incomes, and household expenditures below pre-pandemic levels during the pandemic period. To cope with the pandemic, households drew down on their cash reserves at home, as well as cutting down on non-food expenditures to protect their spending on food.

Key words: COVID-19 pandemic, lockdowns, diaries, livelihoods, Bangladesh

JEL classification: B40, I15, I32, O12

Acknowledgements: The authors acknowledge the insightful comments received from Mushfiq Mobarak and Jonathan Morduch.

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This study has been prepared within the UNU-WIDER project [Transforming informal work and livelihoods](#).

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ISSN 1798-7237 ISBN 978-92-9256-984-6

<https://doi.org/10.35188/UNU-WIDER/2021/984-6>

Typescript prepared by Merl Storr.

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The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

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The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

1 Introduction

Poor households in low-income agrarian societies face a variety of shocks to their livelihoods, from economywide shocks such as increases in food prices to village-level climatic shocks such as droughts and floods, and idiosyncratic shocks such as illness or death within the household (Dercon 2002, 2004; Krishna 2010). Typically, poor rural households adjust to these shocks by using a variety of coping mechanisms such as self-insurance through savings and informal risk-minimization strategies, and borrowing from banks and microfinance institutions (MFIs), moneylenders, and friends and family (Townsend 1994). However, rarely have poor households in low-income societies faced generalized shutdowns of economic activity such as occurred during the COVID-19 pandemic. The pandemic affected the economic life of poor households in low-income rural societies through the direct route of the increased risk of falling ill with the virus if households went about their normal lives working on their farms and in the non-farm economy. The pandemic also affected poor households' livelihoods indirectly through the introduction of draconian lockdown policies by national governments in developing economies, which shut down economic activity for prolonged periods. Not only did lockdown policies lead to a cessation of market and non-market economic activities, but they also led to the temporary closure of MFIs, which effectively meant that households could not use the coping mechanisms to which they would normally resort in times of crisis, such as loans and savings withdrawals. Furthermore, the ban on movement within and outside the villages where they resided also meant that households could not visit their extended families in search of financial support.¹ What was the effect of the pandemic and associated lockdown policies on the livelihoods of poor rural households, and how did these households cope during the pandemic? In this paper we examine the impact of the pandemic on the livelihoods, incomes, expenditures, and financial transactions of 60 poor and very poor households in a semi-rural setting in Bangladesh.

An emerging literature has begun to examine the effects of the COVID-19 pandemic on the economic lives of the poor in developing societies (Ceballos et al. 2020; Egger et al. 2021; Kansime et al. 2021; Mahmud and Riley 2021; Malik et al. 2021; Schotte et al. 2021). These studies have been able to provide a quantitative assessment of the effects of the pandemic, by asking households retrospective questions on earnings and other economic data using phone surveys, notwithstanding the well-known problems with recall methods in household surveys (Brzozowski et al. 2017; Deaton 2003).² In this paper, we use an unusually rich data set that tracks the economic and financial transactions of 60 individuals and their families in a rural setting in Bangladesh on a *daily* real-time basis for 12 months, from 1 October 2019 to 30 September 2020. For the previous five years these households had volunteered as respondents in a 'financial diaries' study known as the Hrishipara Daily Diaries Project (HDDP 2021). The advantage of this data set is that it allows

¹ While mobile banking is becoming increasingly popular in Bangladesh (see Lee et al. 2021), and most of the respondents in the study on which this paper draws owned phones, the use of mobile banking to transfer money was extremely limited among the 60 respondents, accounting for only 3.6 per cent of all inflow transactions, and a mere 0.2 per cent of all outflow transactions. The only cases where mobile banking was commonly used were for the receipt of overseas remittances.

² Exceptions are Gupta et al. (2021) and Janssens et al. (2021), who use weekly transactions data from rural households in India and rural Kenya respectively to examine the economic impact of the COVID-19 lockdowns. They consider the periods October 2019 to April 2020 and December 2019 to April 2020, which cover the pre-lockdown and lockdown periods in India and Kenya respectively. In contrast to these studies, we use daily data, and we have a longer period of analysis, extending into the post-lockdown months. See also Rahman et al. (2021) for a discussion of rapid phone surveys as a means to collect data in the context of the COVID-19 pandemic in Bangladesh.

us to examine individual diarists' behavioural responses to the pandemic with a granularity that is not possible with large-scale phone surveys.

Our paper uses a mixed methods approach: we combine qualitative case studies of five diarists with a quantitative analysis of the daily data extracted from the diaries. We use detailed transactions data on incomes, expenditures, loans, savings, gifts received and given, and remittances to analyse the impact of the pandemic (until September 2020), and in particular the government lockdowns, on the economic and financial transactions of the 60 diarists. Our period of analysis covers six months of the pre-pandemic period (October 2019 to March 2020), the two months when the government of Bangladesh enforced a lockdown (April and May 2020), and four months after the lockdown was lifted (June to September 2020). Therefore, our analysis covers both the pre-pandemic and pandemic periods, allowing us to ascertain how the economic lives of the poor evolved during the pandemic by comparing their incomes, expenditures, and financial transactions in the pandemic period with the immediate pre-pandemic period.

We document the behavioural responses to COVID-19 by individual diarists, which reveals the varied experiences of the poor during the pandemic. The case studies highlight the financial hardship to which the pandemic contributed among the poor, as well as the different coping strategies followed by the diarists. Further, we find from the quantitative analysis that the pandemic had a significant negative impact on the livelihoods of the poor in our study, with financial inflows and outflows, incomes, and household expenditures far below pre-pandemic levels in the pandemic period, although expenditures did not decline as much as incomes. Exploring the coping mechanisms that households used to adjust to declines in income and their lack of access to formal and informal sources of finance, we find that households drew down on their cash reserves at home, as well as cutting down on non-food expenditures to protect their spending on food.

The rest of the paper is in six sections. Section 2 describes the context of our study as well as the history of the evolution of the pandemic in Hrishipara. Section 3 discusses the diary method used to gather the data used in the study. Section 4 provides five case studies showing how individual diarists coped with the pandemic. Section 5 introduces the quantitative data and provides an empirical analysis of the impact of the pandemic on livelihoods in Hrishipara. Section 6 discusses the coping mechanisms used by the diarists. Section 7 concludes.

2 Context

In this section, we describe the local context of our study and the evolution of the pandemic in our study area.

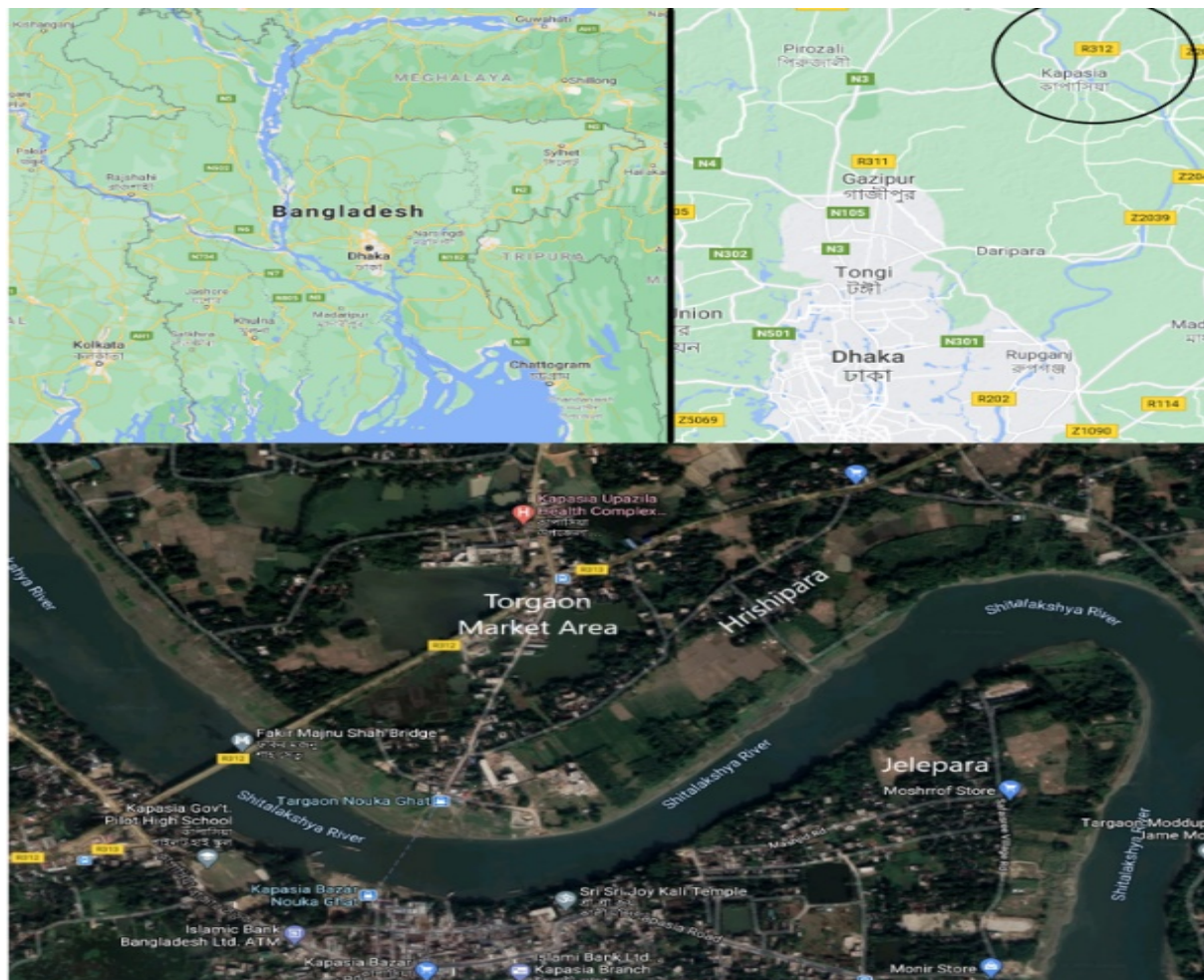
2.1 Kapasia market town

Hrishipara is in Kapasia, Gazipur District, central Bangladesh. Kapasia is a moderately prosperous market town of around 350,000³ people lying some 50 kilometres north-east of Dhaka, the capital (Figure 1). Hrishipara itself, where the diary project started, is a low-caste Hindu settlement of about 3,500 people; 12 of our 60 respondent households live there. There is another cluster of 15 respondents, some Muslim and some Hindu, in Jelepura on the opposite bank of the river. The remaining households live in or around Torgaon market and are mostly Muslim. Two households

³ Projected from 342,162 in the 2011 Bangladesh census.

have left the Kapasia area and settled elsewhere, but the project continues to track their fortunes, interviewing them by phone each day.

Figure 1: Location of the study



Note: clockwise from top left: Bangladesh, at the head of the Bay of Bengal; the location of Kapasia relative to the capital, Dhaka; Kapasia, showing Hrishipara, Jelepara, and the Torgaon market area.

Source: Google Maps data © 2020.

Kapasias enjoys good road communications with the capital and other regional towns in central Bangladesh. It stands on the Shitalokha River, which also links it to the capital, and which was once—though is no longer—busy with barges. River flooding sometimes damages Hrishipara (it did so again in August 2020), but the surrounding land is slightly elevated and escapes the flooding that regularly affects about a third of Bangladesh each year. The town has government offices, well-organized covered markets, a large government hospital, and several training institutions, schools, and colleges—it has always had a good reputation for education. There are branches of nationalized and private banks, and of insurance companies and their agents. All the national MFIs work in the Kapasia area, alongside local MFIs and cooperatives. Shohoz Shonchoy, a small pro-poor MFI cooperative whose staff run the daily diaries, is situated in Hrishipara. Politically, Kapasia tends to vote for the Awami League, the party currently in power. In 1971, newly independent Bangladesh’s first prime minister was from Kapasia.

Under the influence of local leaders, who say they wish to safeguard the environment, Kapasia has not industrialized, and it lacks the garment factories that are changing many other towns on main roads out of Dhaka, although some residents commute by bus to factories elsewhere. There are

some small-scale workshops, but only eight per cent of Kapasia's people work in industry—about half the national average. However, for many years Kapasia has exported workers overseas, especially to Singapore and Malaysia, but also to the Gulf countries and even Europe. The money that these workers send back, which is often invested in new homes, is changing the look of the area, while the ideas and skills they bring with them when they return home are making the place more worldly.

These features mean that, relative to other subdistricts in the country, Kapasia is doing moderately well on economic measures and better than average on some social measures. Twenty-seven per cent of its people are officially counted as 'poor', putting it in 229th place out of 554 subdistricts; but two thirds of the poor are 'extremely poor', a higher proportion than in most other subdistricts. On access to services such as electricity, water, and sanitation, its record is average. Mobile phone connectivity is good and cheap, as it is in most of Bangladesh. Fifty-five per cent of the population are literate, well above the national average; 86 per cent of its six-to-ten-years-olds are in school, and the rate of secondary-level school completions is high. This mixed picture is well represented by the project's 60 respondents, of whom about a quarter are in 'extreme poverty' by international standards.

2.2 The arrival of COVID-19 and lockdown

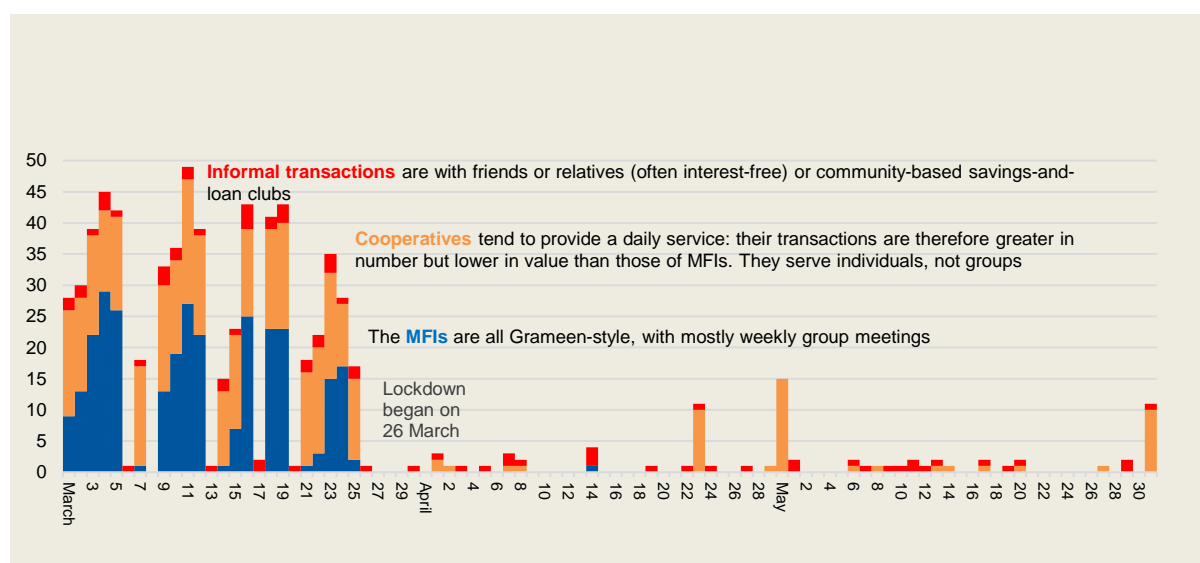
Bangladesh's first confirmed cases of COVID-19—two returnees from Italy—were found on 8 March 2020.⁴ Events then moved quickly. On 20 March 2020, the government revealed it was considering a lockdown of selected areas; on 24 March, it declared that all shops, offices, and schools nationwide would be closed from 26 March. In the diary project area, this 'lockdown' (*bhondo ghosona*) was quickly and harshly enforced by police, helped by the army. Newspapers ran stories about 'police excesses', and most of the 348 arrests in Kapasia for disobeying the lockdown (of which 270 resulted in fines) happened during this first period of strict enforcement, which continued until the end of April. Most local people, already frightened by media stories of the ferocity of the disease, reacted by staying indoors. They had initially been told that the lockdown would end on 14 April, and were prepared to sit it out for some days. In any case, all transport, including buses and trucks, was halted. Prices of goods that normally came from outside the area began to rise, while local produce usually exported to Dhaka lost value, creating opportunities for some local entrepreneurs, who set up ad hoc market stalls.

Banks and some other institutions could open with restricted hours, but these exemptions did not apply to MFIs. The abrupt and strict effect of this lockdown on our diarists' savings and loans transactions is immediately clear in our records, as Figure 2 shows.

The MFIs simply closed their doors. Some, notably Brac, tried to service clients through mobile money transfers, but there were no such transactions in our area, and in any case throughout April's strict lockdown the mobile money agents were partly closed. The leading cooperative kept operating covertly, but it made only a few transactions, mostly savings withdrawals. Diarists transacted with their informal partners, although not as frequently as before the lockdown. The MFIs did not reopen until after the formal declaration of the end of lockdown at the end of May, and in terms of the amount of money flowing through savings and loans, May's total was even lower than April's. Even when they did finally reopen their doors, regulators restrained MFIs from pressing their clients too hard for loan repayments, and as a result the MFIs lent less.

⁴ The source for the dates in this section is the national English-language daily newspaper *The Daily Star*, whose archives are available at www.thedailystar.net/newspaper.

Figure 2: Daily count of diarists' savings and loans transactions with MFIs, cooperatives, and informal partners, March to May 2020, transactions per day



Source: authors' calculations based on data from HDDP.

On 31 March, the lockdown was extended by a week, the first of several such extensions. Although there were still no confirmed cases in the diary area, April was a period of intense fear. On 17 April, local youths in Hrishipara barricaded all entrances into the settlement. Hospitals, clinics, and doctors, in almost total disarray, refused to see patients with COVID-like symptoms. Rumours spread of people dying in their homes from COVID-19. The diary project ran a survey among our diarists that showed they feared both the disease and its economic consequences, with a small majority saying they feared the disease more. In mid-April the government announced relief measures in both rice and cash that were to be targeted to the poor, but in the project area little of this got through. Instead, better-off households gave baskets of essentials to their poorer neighbours, and were joined by some non-governmental organizations, private companies, political parties, and religious groups; but enthusiasm for this quickly waned. On 19 April, two members of one diarist household—a couple with jobs at the local hospital—were confirmed to have the virus, along with several colleagues. They self-isolated at home and recovered. No other diarist tested positive for the disease during the period of study.

2.3 Easing of the lockdown

The beginning of May saw a second, milder version of the lockdown in force. The army had withdrawn. The police too, having initially frightened people into staying at home, started to relax. A public mood of 'OK, we have to live with this' took over. The government, announcing yet another extension of the lockdown, was forced to appeal to the police to resume enforcement. Nonetheless, people found ways round the lockdown: rickshaw drivers helped people to get about in the early morning, before the police were on the streets; building sites away from main roads resumed work.⁵ Shops became more adept at judging when they could open without attracting the attention of the police. Trucks reappeared on the roads. The barricades round Hrishipara were dismantled on the last day of May because, as one of the young men involved said, 'we thought

⁵ As Ali et al. (2021) note, by mid-May 2020, citizens in Bangladesh were beginning to return to normal life, rejecting the lockdown as unworkable given its effects on their livelihoods and the relative lack of government support.

things were improving and in any case, people need to move around to earn money'. The lockdown was officially lifted on 1 June.

The post-lockdown period in our study can be broken down into two subperiods. The first subperiod, 1 June to 30 July 2020, ended with the Islamic holiday of Eid al-Adha, the 'sacrifice' festival, which fell on the last day of July. Remittances from family members working overseas, which had all but dried up as workers were furloughed, started flowing in large amounts, as many of the overseas workers started earning again in July. Clothes shops had reopened by late May, and people bought their Eid finery in the run-up to Eid al-Adha. In the second subperiod, 1 August to 30 September, the increased spending levels witnessed during the festival season came to an end. However, by August, life for most people had settled into a new normal.⁶ The pandemic remained an ever-present reality in Hrishipara and Bangladesh, with an average of around 1,500 new COVID-19 cases a day during the month of September.

3 The Hrishipara diaries

Diaries have long been used as a research method in the social sciences, but it was not until the close of the 20th century that they were adapted to look into how people manage their money (Collins 2008; Collins et al. 2009; Kamath et al. 2008; Morduch and Schneider 2017). The diary method used in this study was originally used to experiment with novel ways of delivering microfinance. One of these experiments, Shohoz Shonchoy ('easy savings'), registered as a cooperative MFI, began in the Hrishipara settlement in 2002. Starting in May 2015, daily diaries were used to track the fortunes of a handful of Shohoz Shonchoy's clients. The number of diarists was later expanded to 60. Of these 60 households, 36 are Muslim and 24 are Hindu. Fewer than half are clients of Shohoz Shonchoy.

The diarist households were selected not in any statistically representative manner, but to provide a range of extremely poor, poor, and near-poor (but not rich) households, with a wide variety of occupations (see Table A1 in the Appendix). The poorest is an illiterate widow who does odd jobs for market stallholders; the richest include a farming household with about a hectare of land, and a couple who earn government salaries as low-grade hospital staff. Despite the consequent differences in income, all 60 households share many similarities: they eat the same kind of food, shop in the same markets, ride in the same rickshaws, go to the same mosques or temples, and take part in the same Muslim or Hindu festivals. Among the principal occupations of our 60 diarists (many of whom have multiple jobs), 34 are self-employed, and 26 are wage employed. Most self-employed diarists run shops or restaurants, and most wage employed diarists are casual labourers.

Households are invited to enrol as diarists, and are paid BDT100 (about US\$1.17) a week as a reward. In each household the project selects one person, male or female, as the 'diarist'. The diarist is usually the household's 'money manager' through whose hands most or even all of the household's money passes. Having one respondent per household simplifies the data collection, and collecting data every day, seven days a week, cuts out reliance on recall and hugely improves data accuracy. Weekly resolutions that compare how much money the diarist has at home with his or her money flow during the week provide a further check on quality.

⁶ In mid-November 2020, official records showed that 426 people in Kapasia had been confirmed to have had the virus, of whom eight had died and all but five had recovered. Actual numbers may have been higher, but we did not find clear evidence of that: for example, the priests in Hrishipara did not see a rise in the number of cremations.

Shohoz Shonchoy staff manage the diary data collection. They are modestly educated local people who share the culture and language of the diarists and have come to know them well over many years. A team of four such collectors (three women and one man) visit each diarist daily, at a convenient time but usually in the evening. There is no interview instrument. The collectors ask just one question: ‘what money came into your hands today, and what went out?’ They record the answers—the amount and description of each transaction—on a single page in a notebook with ‘inflow’ and ‘outflow’ sections, adding explanatory notes if needed (see Figure A1 in the Appendix). They also add details about the household, which helps the project to build up its understanding of the social and personal drivers of money management behaviour. We provide further details of how the HDDP data is collected and a profile of the diarists in the Appendix.

4 The many lives of the poor during the pandemic

In this section, we present five case studies of the experiences of individual diarists during the pandemic.

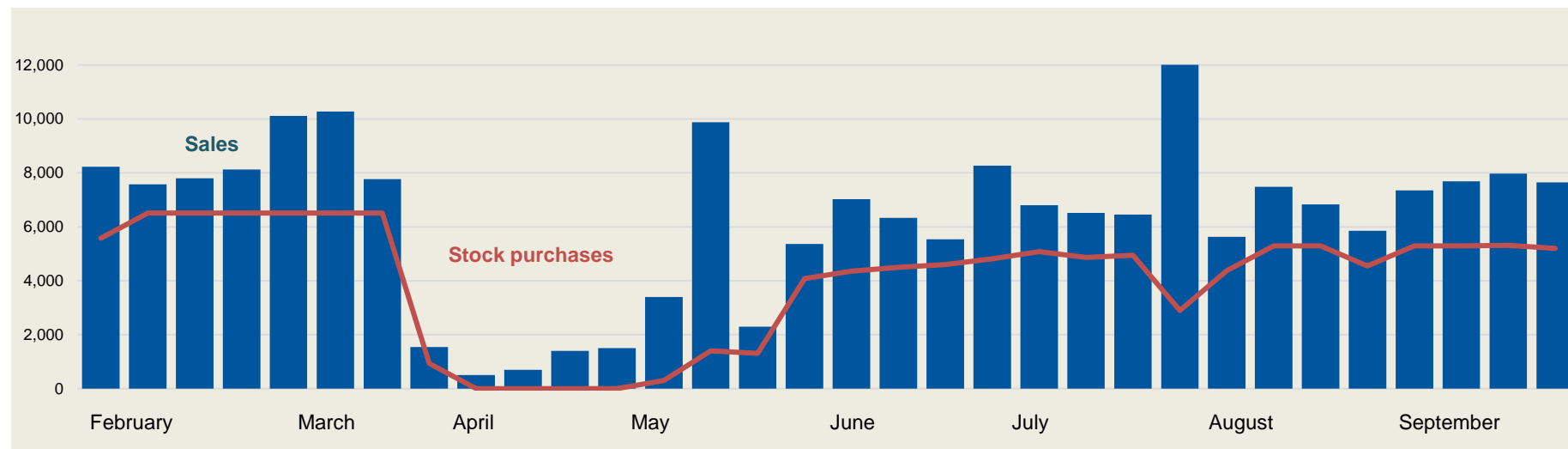
4.1 Case study 1: Liaqat, a self-employed newspaper vendor

Liaqat has been selling newspapers for more than 25 years. He is a person of habit, following the same daily routine since before the HDDP started tracking him in August 2015. Early each morning, seven days a week, he bought 220 newspapers for BDT930 from a local wholesaler. He sold about half of them on the street for cash; he delivered the rest to regular customers, who paid him in arrears. Averaged out over the years, his sales exceeded his stock purchases by just over 40 per cent. As Figure 3 shows, this pattern ended abruptly on 25 March 2020, the last day before the lockdown started.

At the beginning of March, the papers Liaqat sold were treating the COVID-19 outbreak largely as an overseas story. But soon they reported the first confirmed cases in Bangladesh, and on 18 March the first death. On 23 March there were rumours of a cluster of cases in a nearby village. On the morning of 26 March, Liaqat stayed at home. He could have bought papers to sell, but there were too few people on the streets to sell them to, and he was frightened of catching the virus. Throughout April he sold no papers, but received some arrears payments from credit customers.

On 18 May, Liaqat was confident enough to buy stock again, albeit at a much-reduced volume. By early June he was buying at about two thirds of his pre-pandemic rate; by mid-August he had settled on a new normal of BDT750 per day—80 per cent of his former rate. He enjoyed a few good weeks in late May and early August, when he persuaded some more of his credit customers to pay their bills.

Figure 3: Liaquat's newspaper vending business: weekly stock purchases and sales, February to September 2020, BDT



Source: authors' calculations based on data from HDDP.

What was the impact of the pandemic on Liaqat's household expenditures? The family's first response was to cut back on all spending other than food. In April they spent BDT2,940 on food, and less than that on all other purchases combined; in previous months they had spent about the same amount on food, but three times that amount on other goods. By May, when the Eid al-Fitr festival occurred, their food costs rose to BDT4,000; in July they spent over BDT21,000 on food, because of the Eid al-Adha festival at the end of the month. This rebound was largely funded by the BDT36,000 sale of a cow they had been rearing, which they had always intended to sell ahead of Eid, when prices are high. To celebrate Eid in the customary way, they bought a BDT18,000 share in another cow.

Liaqat's case illustrates the pattern that we will explore in more detail with the aggregate quantitative data in the next section: a collapse in economic activity when the lockdown began, followed by a revival in stages starting in May, with a recovery in net income, but not enough to return to pre-pandemic levels by September.

4.2 Case study 2: Radhu, a casual wage labourer

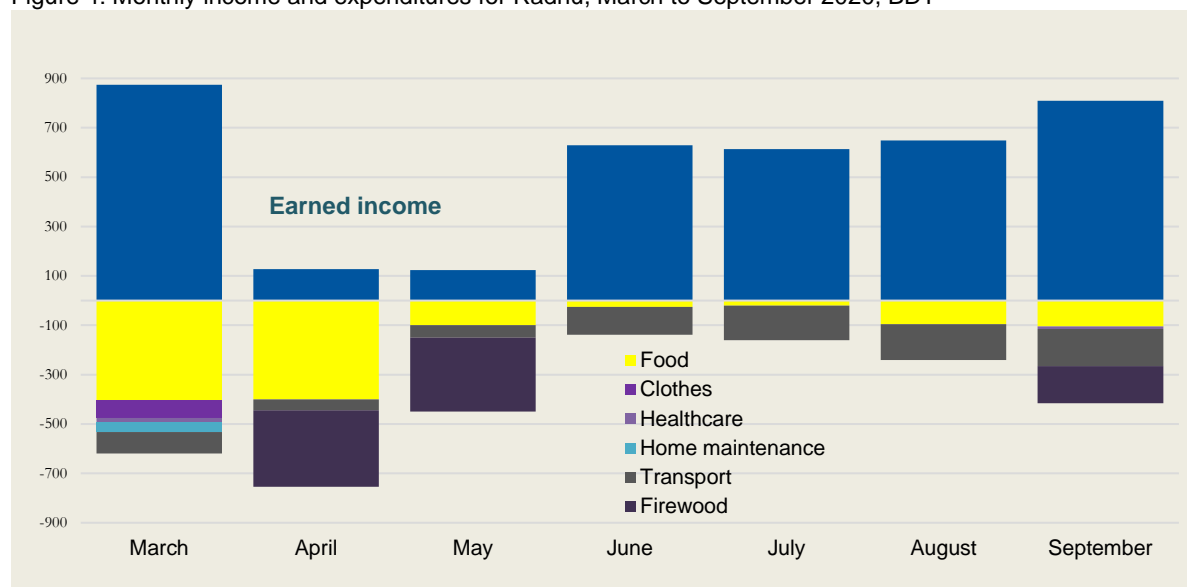
Radhu, now aged about 50, became HDDP's first diarist in May 2015, and she is possibly the poorest. She lives on less than a dollar a day, and she works in the local market—carrying water for stallholders, sorting onions, or helping to load goods for the *bizru*, a transgender group who survive by taking gifts from stallholders in return for not disrupting the market.

Radhu's total income for February to September 2020 was less than BDT5,000, and her expenditure was even less, since despite her poverty she saves almost every day, including all of the US\$1 per week she receives for being a diarist. Because she never drew on her savings, she had built up a large savings balance of BDT58,000, all of which she regarded as belonging to her as-yet unmarried daughter and therefore as not to be touched. In April and May, with the lockdown enforced, she was blocked from the market by fear and by the police, and her earnings fell sharply. Several items that she bought in March she went without in April. In May she drastically cut spending on food but bought a stock of firewood (Figure 4).

Although her income recovered from June onwards, her spending—especially on food—did not, remaining flat throughout September (Figure 4). Only her ferry fares across the river to the market returned to their former level. A reason for this was that in April and May, while unable to go to work, Radhu started doing housework for her sisters-in-law, in whose compound she lives, in return for food; indeed, she still does so, although it is too early to say whether this marks a permanent shift in her lifestyle. She also received a little food relief from public and private sources. Another reason was that a marriage possibility for her daughter emerged, driving Radhu to save more than ever. In September, for example, she saved BDT290 over and above her participation reward from the diary project.

Radhu's case shows that the pandemic had persistent negative effects on the food expenditures of the poorest households, even though incomes showed a recovery in the post-lockdown period.

Figure 4: Monthly income and expenditures for Radhu, March to September 2020, BDT



Source: authors' calculations based on data from HDDP.

4.2 Case study 3: Rezia, a cake shop owner

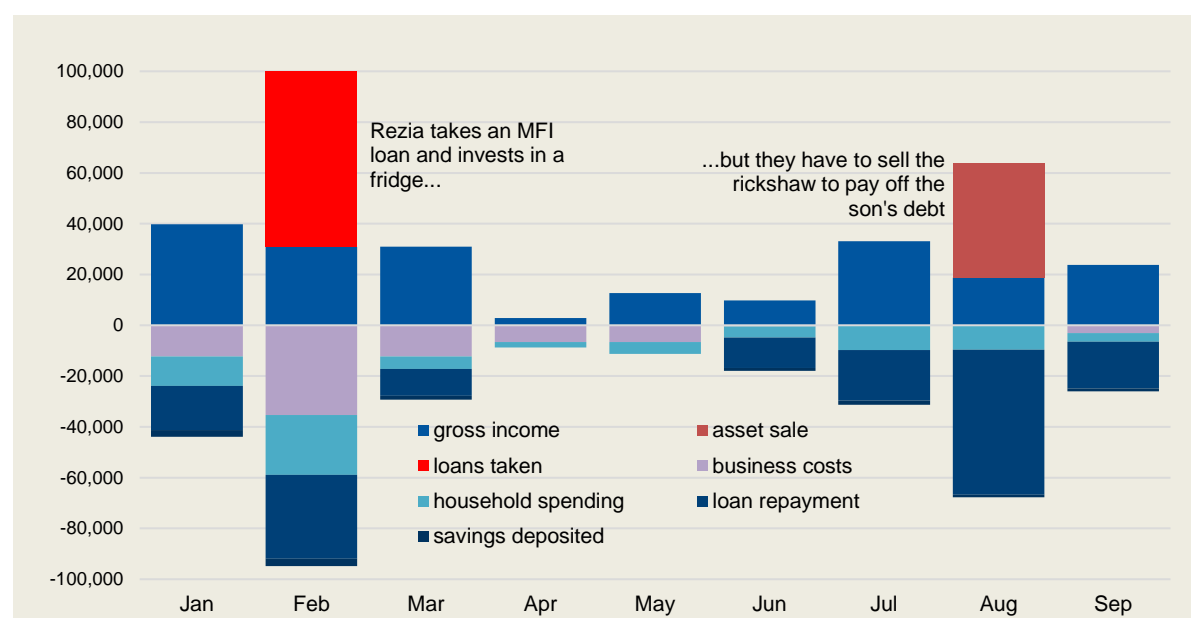
Some households entered the pandemic period with their lives already in turmoil. Such was the case for Rezia, her husband, and their two adult sons. In 2017 Rezia started a small shop selling hot cakes. Her husband disapproved, they quarrelled, and she spent a few unsuccessful months working in Saudi Arabia. When she returned, a reconciliation with her family took place. She restarted the cake shop and made her first sales in November 2019. Other sources of income in the family were her husband's work as a rickshaw puller and her two sons' semi-skilled manual jobs.

January 2020 was a good month: Rezia grossed BDT14,000 from her shop, her husband earned BDT11,000 with the rickshaw, and the sons contributed BDT13,000 from their jobs. That was more than enough for their business costs and household spending, and they repaid BDT15,000 to two MFIs. In February 2020, the elder son lost his job, and the husband's earnings shrank, but Rezia plunged ahead: she took a fresh loan of BDT60,000 from one of the MFIs and bought a refrigerator for the shop and furniture for the home. More money passed through their hands in February than in any subsequent month. In March takings at the cake shop reached BDT26,000, but the rickshaw income fell.

Then the pandemic dealt them another blow. In April the lockdown closed the cake shop and the younger son's metal workshop, and halted rickshaws. Household expenditure collapsed to BDT2,000, paid out of cash reserves that Rezia had been keeping at home (Figure 5). Fortunately, the MFIs were closed, so Rezia did not have to make any loan repayments. July saw a recovery, with good cake sales in the run-up to the Eid al-Adha festival. The elder son got his job back, and both sons contributed earnings to the household. But August was another bad month. The elder son had a debt from a failed business venture the year before, and the creditor was pressing for payment. It had to be paid, and seeing no other way, they sold the husband's rickshaw. The MFIs also started looking for repayments again, and Rezia paid them, eager to keep this line of credit open. These shocks may have helped Rezia to impose more discipline on her unruly family: for the remainder of the research period, Rezia ran her shop, and her husband (using a hired rickshaw) and elder son brought in regular, if modest, incomes. They did not borrow again, but they kept up

with their MFI loan repayments. Their expenditure remained much lower than at the beginning of the year, but the household economy now looked more stable.

Figure 5: Main transactions by category for Rezia, monthly, January to September 2020, BDT



Source: authors' calculations based on data from HDDP.

Rezia's case illustrates how the pandemic interacted with the diarists' pre-existing vulnerabilities, leading to a calamitous decline in incomes during the lockdown period. At the same time, the case study shows the resilience of the poor, even in the most difficult of circumstances.

4.4 Case study 4: Samarth, a small farmer turned trader

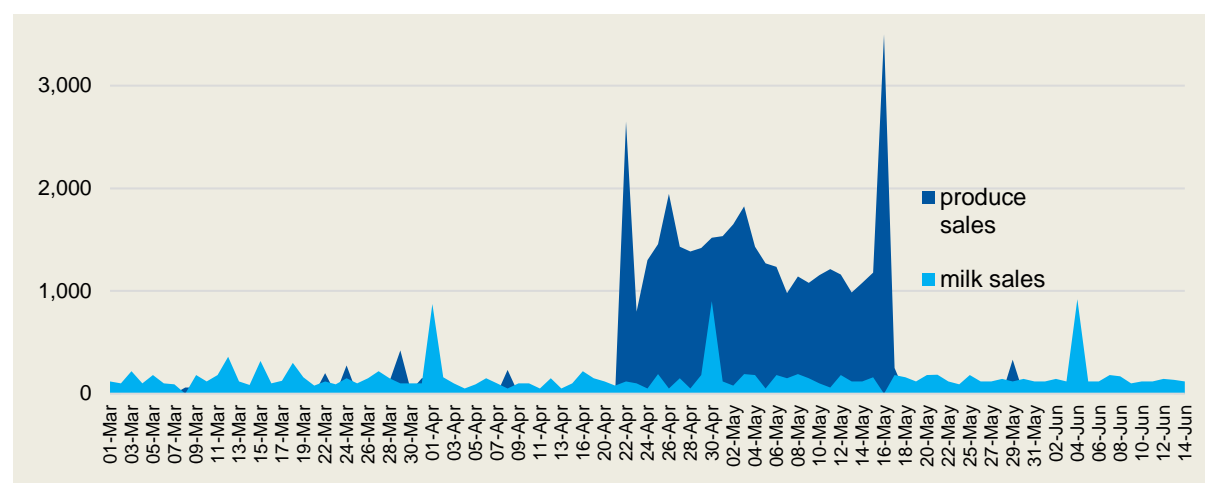
At first glance, Samarth is a typical small farmer. He owns about a tenth of a hectare of farmland, and he sharecrops other land, growing rice and vegetables. His small home is on the edge of the Hrishipara settlement; on the open land stretching down to the river he grazes one, two, or sometimes three cows.

However, Samarth's path through the COVID-10 pandemic proved unusual. He exploited the closure of the transport system after the lockdown started. Local farmers, desperate to offload produce they would otherwise have exported to Dhaka, let him buy at low prices, and he sold them on the street inside Hrishipara, which had barricaded itself off from the outside world. As Figure 6 shows, he did this for a month from 21 April. It boosted his income, but it was not profitable: his outlay exceeded his sales. His family ended up eating much of the remaining stocks that he had bought.

He was already immersed in a grand scheme for his son, who had graduated from a vocational school. In late 2019 Samarth sold a cow for BDT109,000, and in January 2020 he borrowed BDT100,000 interest-free from a friend (a bus owner with whom he had done business previously). On 11 February he paid a Dhaka-based consultancy BDT100,000 to procure the son a Canadian student visa. Two weeks later, a BDT51,000 bank savings plan matured, Samarth sold much of the family's gold jewellery for BDT108,000, and he borrowed BDT150,000 interest-free from a nephew who had an office job. On 1 March Samarth paid the consultancy a further BDT300,000. Then the pandemic struck, and the visa-processing ground to a halt. Samarth went to see the agent several times, and he reported that he was confident that all would be well. But in

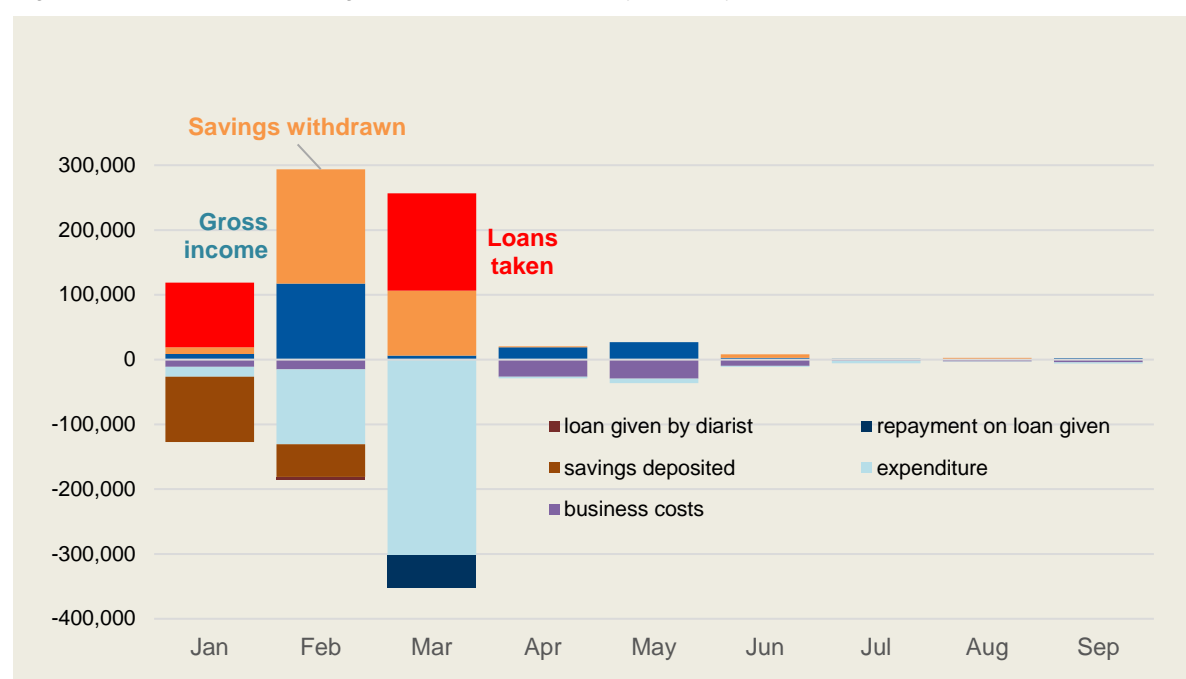
the monthly surveys the project runs, when we ask each diarist how things have been that month, Samarth was gloomy, especially during the July and August monsoon, when his grazing land and vegetable plots were under water. The family did not go hungry because they could consume their own produce. As Figure 7 shows, the big transactions related to his son's visa dominated Samarth's accounts in 2020. After a frantic start to the year, things went ominously quiet in the second half of 2020, with income flows from produce sales drying up in the post-pandemic period.

Figure 6: Samarth's daily gross income, March to June 2020, BDT



Source: authors' calculations based on data from HDDP.

Figure 7: Main transaction categories for Samarth, monthly, January to September 2020, BDT



Source: authors' calculations based on data from HDDP.

Samarth's case shows how individual diarists responded to the pandemic in ingenious ways—in Samarth's case, transforming himself from a small farmer to a trader overnight when he spotted a profit opportunity during the lockdown. However, the profit-making opportunity was short-lived, and Samarth's income all but disappeared in the later part of our study period.

4.5 Case study 5: Shobhona, a breaker of bricks

Shobhona, now in her mid-30s, is another of our very poor diarists, but a supportive family, public welfare payments, and a habit of keeping cash reserves at home helped her to survive the lockdown. Her situation is unusual, as she is the breadwinner for her widowed younger sister and the sister's two children, both in primary school. The four of them live in a hut in the homestead of Shobhona's late brother-in-law. The hut was purpose-built—and still serves—as a weekly meeting place for a Grameen Bank borrowers' group, but the group is a male one, and male attendance at MFI meetings these days is sparse, so no one finds it inconvenient.

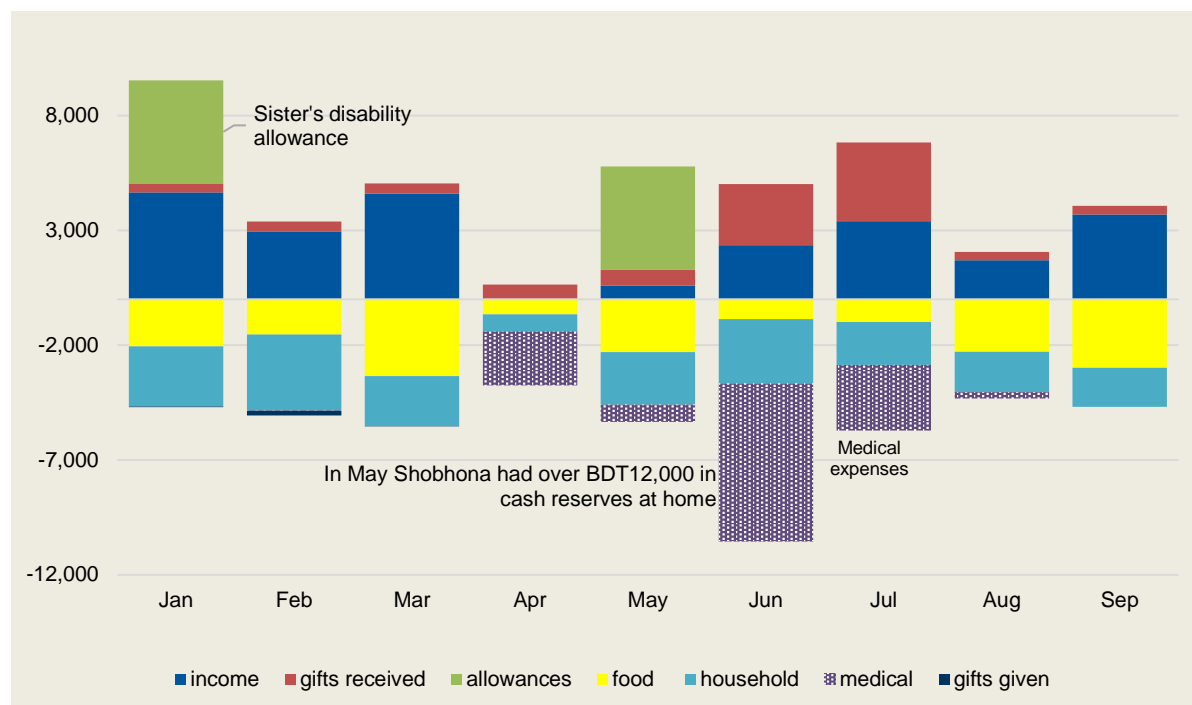
Shobhona breaks bricks for a living. Bricks are broken in Bangladesh to provide aggregate for concrete in a country that lacks stone. She goes to building sites to squat on the ground with a hammer and a thick leather glove and bashes the bricks into small pieces, on a self-employed basis paid by quantity. On average this brings in BDT4,000 each month, but she often gets paid in arrears. There is no other earned income, but the sister is partially blind and receives a government disability allowance of BDT700 a month, paid half-yearly. The household has no MFI accounts, but Shobhona, thinking of her niece's eventual marriage, has signed up for a ten-year commitment savings account, at BDT7,000 a year, with an insurance company. They occasionally borrow interest-free from neighbours and relatives, and keep a little money with 'money guards'—older family members who can be trusted to keep money safe for them. Shobhona also keeps cash reserves at home: in May 2020, for example, she had more than BDT12,000 hidden away, about three times her monthly income. Despite being entirely without schooling, Shobhona is shrewd and thoughtful about money matters.

The two women have older siblings and receive both affection and financial help from them. Their brother is a dried-fish seller living nearby, and he gives them a little cash almost every day to ensure that the children get milk regularly. As the children have grown, he has gradually increased the amount, from BDT5 to BDT10, then to BDT20 and sometimes BDT50 a day. An older sister, who is married and lives a little way off, gives regularly although less frequently. Several neighbours also occasionally give cash. Shobhona is liked and respected in the neighbourhood.

In April this year, just after the lockdown started, Shobhona contracted typhoid. She spent money on tests and a lot of medicine. She could hardly have chosen a worse time to fall ill, but her circumstances meant that her household survived the lockdown better than most. As Figure 8 shows, disability grants helped a lot: in the first quarter of the year they made a surplus, and the second payment came just as they were trying to recover from a workless April. Shobhona's sickness then drew generous support from her relatives. Shobhona went back to work as soon as she was able.

Shobhona's case is an example of how government disability payments combined with gifts received from relatives—an informal insurance mechanism—can provide an important safety net for the poor during a period of economic crisis. It also illustrates that uneducated people can be good at managing money.

Figure 8: Inflows and outflows for Shobhona, January to September 2020, BDT



Source: authors' calculations based on data from HDDP.

The five case studies illustrate the varied experiences of the diarists during the pandemic. In all five cases, large income losses, along with the uncertainty regarding how long the pandemic would last, led to significant financial hardship and heightened anxieties about the future. In all these cases, incomes and financial inflows remained below pre-pandemic levels several months after lockdown was lifted. The cases also show that the pandemic exacerbated existing economic vulnerabilities for the poor in Hrishipara, who had precarious livelihoods from before the onset of the pandemic.

5 The impact of the pandemic on livelihoods of the poor in Hrishipara

In this section, we examine the impact of the pandemic on household incomes, expenditures, and financial transactions until September 2020, differentiating between pre-lockdown, lockdown, and post-lockdown periods. We first discuss the data we use in our empirical analysis. We next present some descriptive statistics regarding the behaviour of incomes, expenditures, and financial flows over the course of the pandemic. We then undertake an econometric analysis of the impact of the pandemic on livelihoods, focusing on the lockdown and post-lockdown periods. Finally, we assess whether the effects of the pandemic on the livelihoods of the 60 diarists differed according to the diarists' nature of employment and poverty status.

5.1 Data

We use daily data on incomes, expenditures, business costs, loans taken and repaid, savings deposits and withdrawals, gifts received and given, and overseas remittances received. The list of variables, along with short descriptions used in the empirical analysis, is provided in Table 1. The data begins on 1 October 2019 and ends on 30 September 2020. We note that the official lockdown period was from 26 March to 31 May 2020. However, as we discussed previously, the lockdown was strictly enforced from 26 March to 30 April 2020, and was weakly enforced from 1 to 30 May

2020. Therefore, we split the lockdown period to two subperiods: ‘strict lockdown’ (26 March to 30 April) and ‘weak lockdown’ (1 to 31 May). The post-lockdown period also had two clear subperiods: the Muslim festive season from 1 June to 31 July, which we denote by ‘post-lockdown 1’, and the subsequent subperiod from 1 August to 30 September, which we denote by ‘post-lockdown 2’.

Table 1: Description of variables used in empirical analysis

Variable name	Description
Total inflow	All money from all sources recorded as coming into the diarist's household. These are gross income, savings withdrawals, borrowing, gifts in, participation reward, repayments received on loans given to others, savings accepted from others, inward savings account transfers, third-party transactions in, and overseas remittances.
Total outflow	All money going to all destinations recorded as leaving the diarist's household. These are household expenditures, costs, savings deposits, loan repayments, gifts out, loans given to others, savings repaid to others, outward savings account transfers, and third-party transactions out.
Gross income	All earned income, including remittances and all revenue from sales.
Costs	All outflows that are costs of doing business, including stock purchases, travel expenses to get to work, wages paid out, and consumption of work-related products and services such as battery-charging, food packaging, etc.
Net income	Gross income - costs.
Expenditures	All household and personal expenditure on food and other essentials and non-essentials.
Savings deposit	All deposits into savings made at all sorts of partners: banks, MFIs, cooperatives, insurance companies, relatives, friends (i.e. money guards), or savings clubs.
Savings withdrawal	All withdrawals from savings at all sorts of partners: banks, MFIs, cooperatives, insurance companies, relatives, friends (i.e. money guards), or savings clubs.
Loans repayment	All repayments on loans taken from all sources: banks, MFIs, cooperatives, insurance companies, relatives, friends, moneylenders, or savings clubs.
Borrowing	All loans taken from all sources: banks, MFIs, cooperatives, insurance companies, relatives, friends, moneylenders, or savings clubs.
Gifts received	Unearned inflows from relatives, friends, and well-wishers outside the diarist's household.
Gifts given	All outflows given to others outside the diarist's household as a gift.
Overseas remittances	That part of gross income that flows in from members of the household working overseas (it is always part of net income).

Note: ‘Third-party transactions’ is a category we use when the diarist is simply a conduit for transactions between two other parties. One case involves mobile money (when someone living outside our area sends money to a relative inside our area using our diarist's mobile money account); another involves savings (a Grameen client who does not attend the weekly Grameen meeting hands her Grameen savings to a diarist who does). In each case there are usually matching inward and outward flows within a short period. The overall sums involved are not large.

Source: authors' compilation.

As large asset sales by one diarist can significantly affect the average values for all diarists, and tend to occur very infrequently, we drop them from the sample. Specifically, we drop all asset sales greater than or equal to BDT30,000 (approximately US\$950 at 2019 purchasing power parity exchange rates according to the World Bank's World Development Indicators). This removes nine observations, leaving us with a total sample of 19,400 observations.⁷

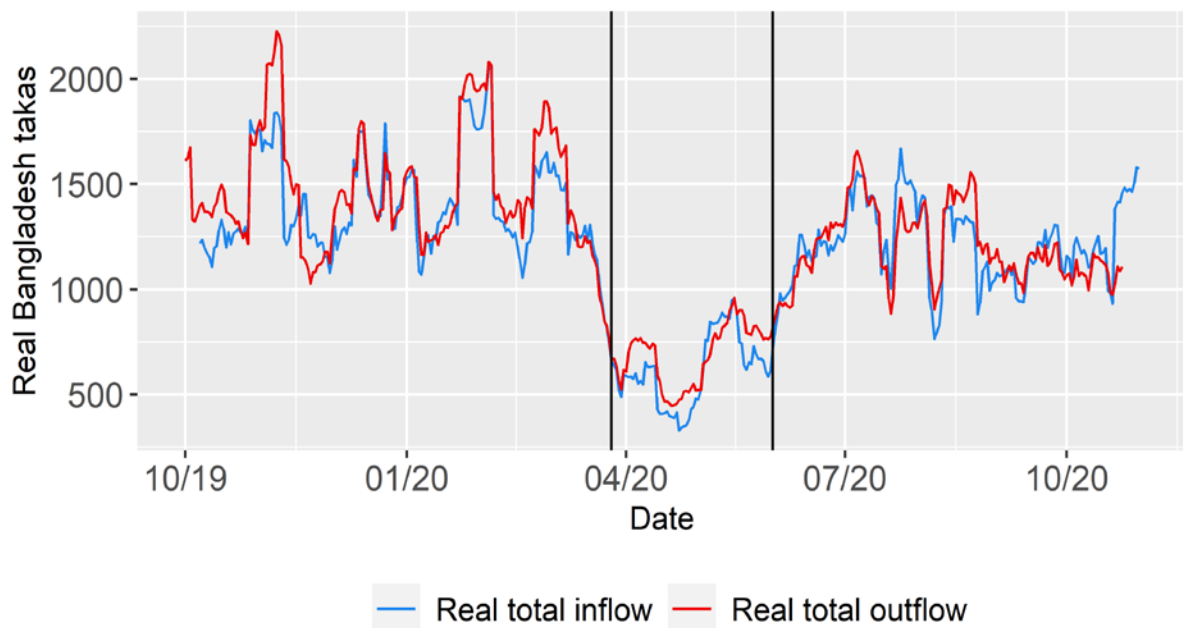
⁷ We also drop a specific set of outlier transactions in our sample, which involves a case where a household sold a plot of land co-owned with another household to pay off a large debt. In addition to the repayment of the debt, money generated from this land sale was deposited into a bank account and granted as a gift for the building of a school. We also drop 11 observations that involve purely moving funds from one savings account to another.

5.2 Descriptive statistics

We begin with plots of incomes, expenditures, business costs, loans borrowed and repaid, savings deposits and withdrawals, gifts received and given, and overseas remittances received. All graphs use 14-day centred moving averages, and we deflate the nominal values by the relevant monthly consumer price index (CPI) for rural areas, obtained from the Bangladesh Bureau of Statistics.

Total real inflows and total real outflows for all 60 diarists track each other closely over time, and show a clear decline during the first month of the lockdown period (strict lockdown) (Figure 9). They show some recovery in the second month of the lockdown period (weak lockdown), carrying on into the first two months of the post-lockdown period (post-lockdown 1). Interestingly, this recovery is not sustained as we move into the final two months of our period of analysis—August and September 2020 (post-lockdown 2).

Figure 9: Daily means of total inflows and outflows, 14-day centred moving average



Note: vertical lines mark start and end of lockdown. Nominal values deflated with monthly CPI.

Source: authors' illustration based on data from HDDP.

We see very similar patterns for gross income, business costs (costs), household expenditures (expenditures), and net income (Figure 10). Incomes, costs, and expenditures fall in the first month of the lockdown period, and recover somewhat in the second month of the lockdown period. A stronger recovery is seen in the first two months of the post-lockdown period, but this recovery is not sustained in August and September 2020. We see that gross income shows stronger recovery than business costs in the second month of the lockdown period, which is reflected in a strong recovery in net income in May 2020.

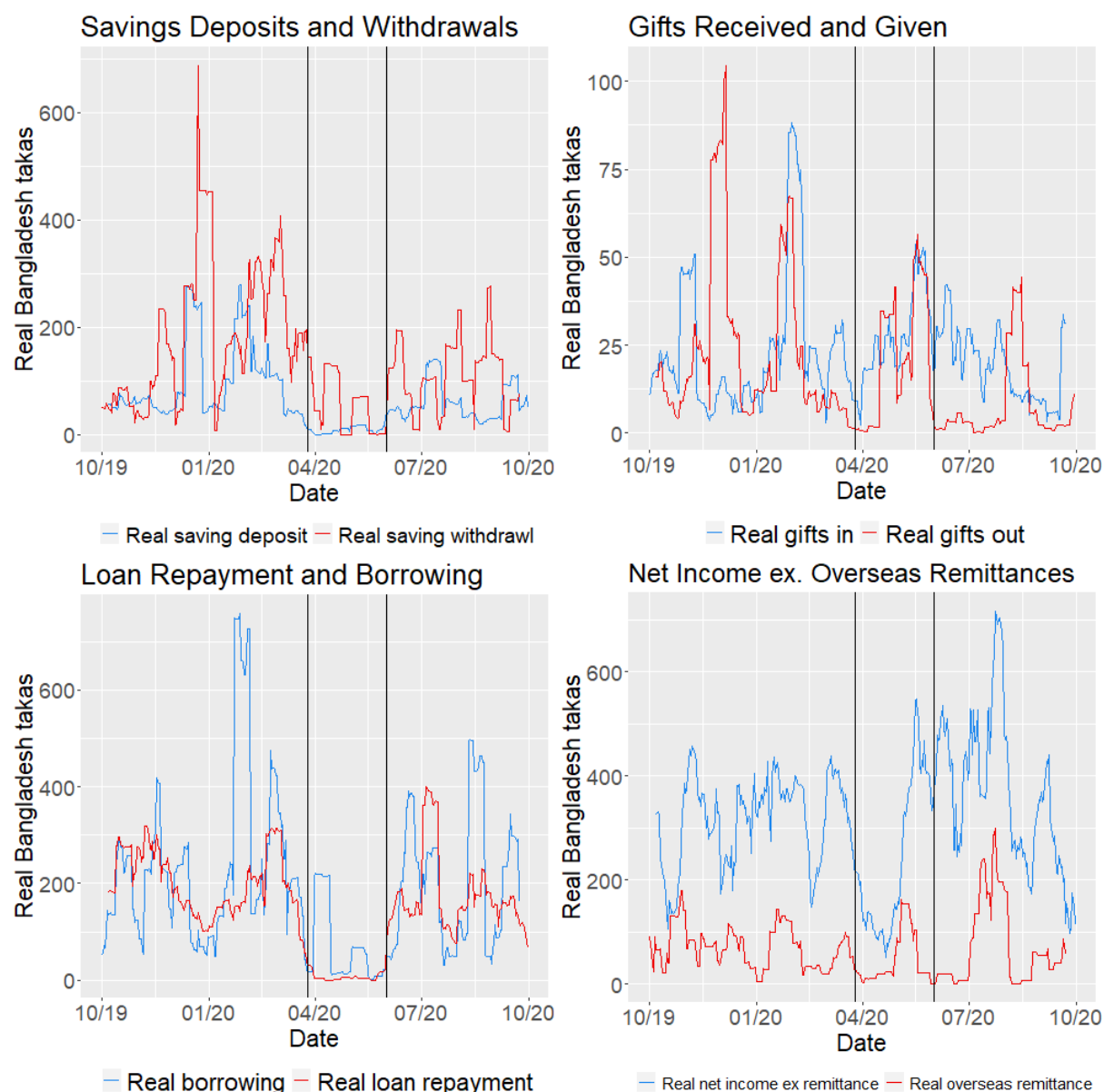
Figure 10: Gross income, net income, expenditures, and costs, 14-day centred moving average



Source: authors' illustration based on data from HDDP.

We now look at savings deposits and withdrawals, gifts received and given, loan repayments and borrowings, and overseas remittances. It is striking to see the near-shutdown in financial transactions during the lockdown period, with very limited savings deposits and withdrawals, loan repayments and borrowings, or gifts in and gifts out (Figure 11). All financial transactions show some recovery in the post-lockdown period. We also look at the behaviour of overseas remittances, as 11 of the diarist receive remittances from abroad, supplementing their earned income (these 11 diarists received total remittances of over BDT100,000 each between January and September 2020). We do not see very strong inflows of overseas remittances in the lockdown period, possibly related to the fact that migrants had stopped working due to lockdown policies in the regions and countries where most Bangladeshis from this area go for work—the Gulf region, Singapore, and Malaysia. However, there is a large inflow of remittances during the festival season just before or during Eid al-Adha (recall that 36 out of the 60 diarists are Muslims). Even without taking overseas remittances into account, net income shows a strong recovery in the weak lockdown and post-lockdown periods.

Figure 11: Savings, loans, gifts, and overseas remittances, 24-day centred moving average



Source: authors' illustration based on data from HDDP.

5.3 Econometric analysis

We now undertake an econometric analysis of the impact of the pandemic on the livelihoods of our 60 diarists. We use weekly data, which comprises the averages of the daily data in the corresponding week. We do this to take into account the fact that diarists do not make transactions in every category every day, which effectively means that a large number of our observations have the value zero. By converting our daily data to a weekly format, we reduce the number of observations with zero values in our data set. We have 3,153 week-diarist observations in our panel data set of weekly data.

We present the summary statistics for our main outcome variables—total real inflows, total real outflows, total real gross and net incomes, total costs, and total expenditures—in the Appendix in Table A2, with the summary statistics for the other variables presented in Table A3.

We find that the average values of all variables are significantly lower in the strict lockdown period compared with the pre-lockdown period. For example, total real inflows are 64 per cent less in the strict lockdown period compared with the pre-lockdown period, and total real outflows are 54 per cent less in the strict lockdown period compared with the pre-lockdown period. Real net income and real expenditures are 61 per cent and 21 per cent less in the strict lockdown period compared with the pre-lockdown period. These are dramatic declines in household incomes, expenditures, and financial transactions within the short window of a month. However, while household incomes, expenditures, and financial flows remain depressed during the weak lockdown period, the rate of decline is not as pronounced as in the earlier period. For example, total real inflows and outflows are respectively 43 and 44 per cent less in weak lockdown compared with pre-lockdown. Interestingly, real net income is 21 per cent higher in weak lockdown compared with pre-lockdown, driven mostly by a recovery in gross real income without a corresponding increase in business costs. Real expenditures also show a strong recovery, being only five per cent lower than the pre-lockdown level. After the lockdown is lifted, economic activity continues to recover. Nonetheless, in the first two months after the lockdown (post-lockdown 1), total inflows, outflows, and most financial transactions remain below pre-lockdown levels. However, income, expenditures, and overseas remittances exceed the pre-lockdown averages, which is in large part explained by the Eid al-Adha-related resumption of economic activity. In the second half of the post-lockdown period (post-lockdown 2), starting just after Eid al-Adha, incomes and expenditures decrease from the first part of the lockdown, and the averages of all the variables remain *below* pre-lockdown levels. By this time, at least two months have elapsed since the official lockdown was lifted. In part, weak economic activity can be explained by the fact that the markets had not recovered their normal functioning by August and September 2020, and also by the fact that people remained fearful of COVID-19 during the summer and early autumn, limiting their mobility and their willingness to seek work.

In our econometric analysis, we look at income and financial inflows, as well as expenditures and financial outflows. We are interested in examining whether there are discernible aggregate effects of the lockdown and post-lockdown periods on the diarists' incomes, expenditures, and financial inflows and outflows relative to the pre-lockdown period. We would also like to see whether these effects differ depending on the nature of the lockdown and post-lockdown periods. We estimate empirical specifications of the form:

$$Y_{it} = a_0 + a_1 \text{StrictLockdown}_t + a_2 \text{WeakLockdown}_t + a_3 \text{PostLockdown1}_t + a_4 \text{PostLockdown}_t + e_{it} \quad [1]$$

where Y is the outcome variable. In the econometric analysis, we look at total inflows, total outflows, net income, and total expenditures. Here total inflows comprise both income and financial inflows (such as savings withdrawals, gifts in, and borrowings), and total outflows comprise both household expenditures and financial outflows (savings deposits, gifts out, and loans repaid). The error term is denoted by e_{it} . The subscript i denotes the individual, and the subscript t denotes time.

We use the inverse hyperbolic sine transformation for all the variables, as the original variables are highly skewed to the left (with a mass of observations at value zero, where the household does not make any transaction on a particular day), and in the case of net income we also have negative values.

StrictLockdown, *Weaklockdown*, *Postlockdown1*, and *Postlockdown2* are dummy variables capturing the different lockdown and post-lockdown periods. Thus, the variable *StrictLockdown* takes the value one from 26 March to 30 April 2020, and zero otherwise. The variable

WeakLockdown takes the value one from 1 to 31 May 2020, and zero otherwise. The variable *Post-Lockdown1* takes the value one from 1 June to 31 July 2020, and zero otherwise. The variable *Post-Lockdown2* takes the value one from 1 August to 30 September 2020, and zero otherwise. The residual period is the pre-lockdown period.

We use both pooled ordinary least squares (OLS) and individual fixed effects (FE) models to estimate equation [1]. The panel structure of our sample allows us to use individual FE estimation methods to take into account any unobserved time-invariant heterogeneity.⁸

In Table 2, we present the regression results for total inflow, total outflow, net income, and expenditure for OLS and FE estimates in columns (1) to (8). For each of these outcome variables, we find that lockdown had a clear negative effect, with the coefficients on the strict lockdown and weak lockdown dummy variables negative and statistically significant at the five per cent level and below in most estimates. The results are qualitatively similar for OLS and FE estimates. The only exception to this is the lack of statistical significance for the OLS and FE estimates of weak lockdown on expenditure. We also find that the coefficient values for the strict lockdown dummy are systematically higher in absolute terms than the coefficient values for the weak lockdown dummy across all estimates, indicating that the effect of the lockdown period on incomes, expenditures, and financial flows differed across the two subperiods, and that the strict lockdown period had a more pronounced negative effect on the diarists' economic activity than the weak lockdown period. In columns (7) and (8), we also observe that the negative effects of the lockdown were more muted on expenditures than on incomes, suggesting that households found a way to smoothen their expenditures, even in the face of a sharp downturn in incomes. We return to this point, and to how households coped with the income loss due to the pandemic, in the next section.⁹

Table 2: Regression results, weekly data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Total inflow	Total inflow	Total outflow	Total outflow	Net income	Net income	Expenditures	Expenditures
Strict lockdown	-1.416*** (0.157)	-1.395*** (0.178)	-0.677*** (0.074)	-0.658*** (0.090)	-2.291** (0.252)	-2.283*** (0.294)	-0.270***	-0.260** (0.094)
Weak lockdown	-0.701*** (0.179)	-0.676*** (0.166)	-0.447*** (0.091)	-0.426*** (0.092)	-0.705** (0.284)	-0.709** (0.331)	0.013 (0.902)	0.023 (0.084)
Post-lockdown 1	-0.178** (0.123)	-0.189 (0.150)	-0.152*** (0.067)	-0.156*** (0.052)	-0.078 (0.209)	-0.097 (0.251)	-0.016 (0.067)	-0.017 (0.073)
Post-lockdown 2	-0.336** (0.121)	-0.344*** (0.124)	-0.227*** (0.067)	-0.225*** (0.062)	-0.572*** (0.215)	-0.578** (0.227)	-0.218*** (0.065)	-0.212*** (0.077)
Constant	6.329*** (0.061)	6.328*** (0.051)	6.965*** (0.034)	6.961*** (0.027)	4.531*** (0.106)	4.534*** (0.099)	6.123*** (0.031)	6.121*** (0.033)
F-stat	22.49***	17.42***	24.34***	13.85***	22.06***	16.39***	5.25**	4.41**
Estimation method	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Observations	3153	3153	3153	3153	3153	3153	3153	3153

Note: robust standard errors in parentheses. ***, **, and * indicate one, five, and ten per cent levels of significance.

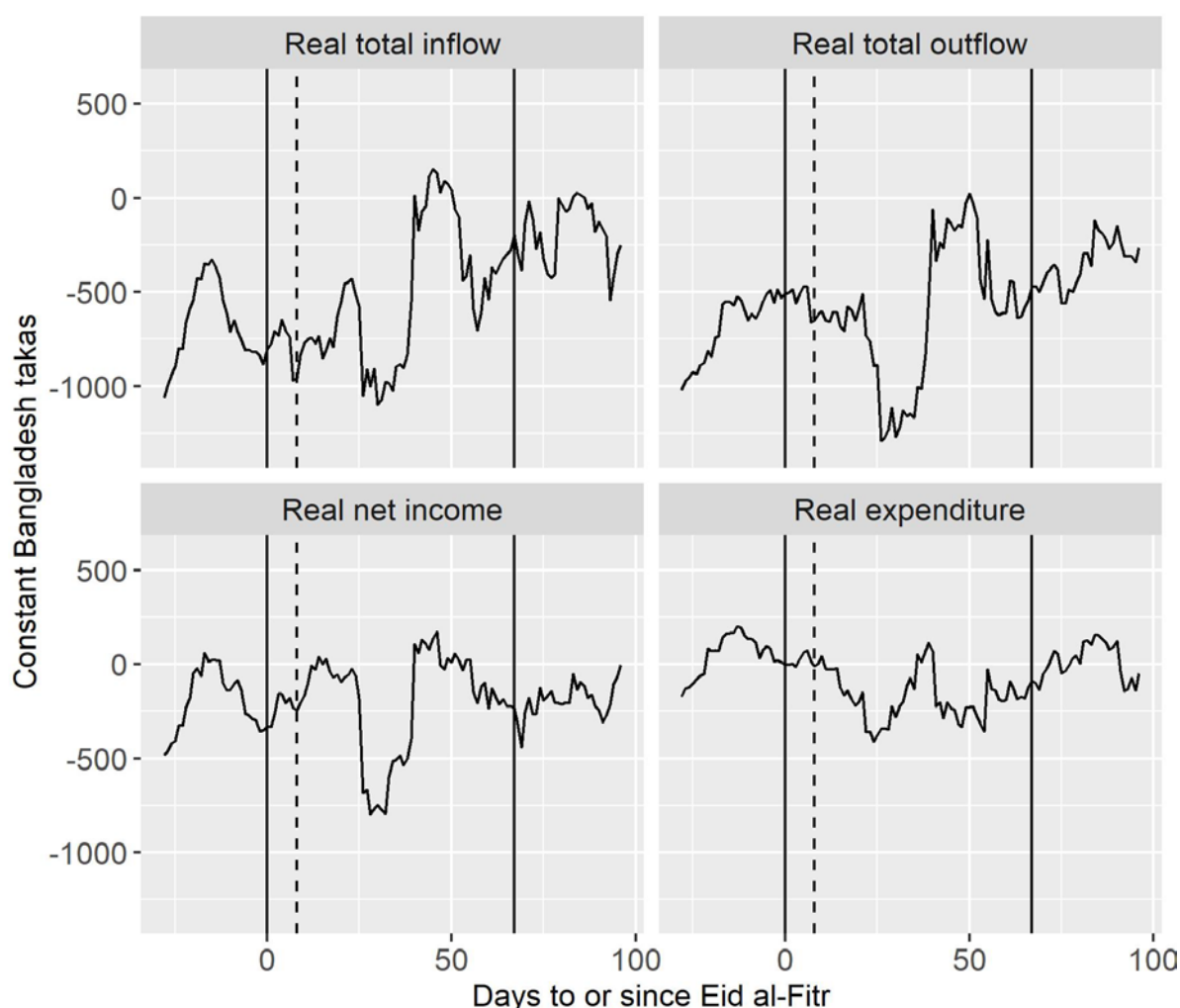
Source: authors' calculations based on data from HDDP.

⁸ We use robust standard errors in all our regressions.

⁹ Our finding that incomes fell more sharply than consumption expenditures during lockdown is similar to Gupta et al.'s (2021) findings for rural India.

If we look at the post-lockdown period, incomes, expenditures, total inflows, and total outflows remained below pre-pandemic levels, even with the recovery of economic activity. We also observe that the first of the two post-lockdown periods had less of a negative effect on household incomes, expenditures, and financial transactions compared with the second post-lockdown period. Indeed, for net incomes and expenditures, the coefficients for the post-lockdown 1 dummy variable are not statistically significant (although they are negative) in the OLS and FE estimates (columns (5) to (8)). We also find that the negative effect of the second post-lockdown period relative to the pre-lockdown period on household livelihoods was particularly pronounced: this is observed in the consistently negative and statistically significant coefficients on the post-lockdown 2 dummy, irrespective of the estimation method and of whether we look at incomes, expenditures, total inflows, or total outflows as outcome variables. As we noted previously, the onset of the festive season related to Eid al-Adha clearly led to a resumption of economic activity to some degree. However, this recovery in economic activity was not sustained, and household incomes and financial inflows did not pick up momentum over time, with the result that incomes, expenditures, and financial transactions were still below pre-pandemic levels four months after lockdown was lifted. Similarly to our findings for the lockdown period, household expenditures did not adjust downwards as much as incomes in the post-lockdown period.

Figure 12: Total real inflows, total real outflows, income, and expenditures: differences between 2020 and 2019 around Eid al-Fitr and Eid al-Adha, 14-day centred moving average



Note: Eid al-Fitr and Eid al-Adha on solid lines, lockdown lift on dashed line.

Source: authors' illustration based on data from HDDP.

How pronounced was the downturn in economic activity in the 2020 festive period compared with the 2019 festive period? According to the Islamic lunar calendar, the first of the two religious holidays, Eid al-Fitr, is at the end of Ramadan; the second religious holiday, Eid al-Adha, falls on the tenth day of Dhu al-Hijjah. In the international calendar, the dates vary from year to year. In order to compare like for like, we examine the difference in the behaviour of total inflows and outflows and net incomes and expenditures (Figure 12) from 30 days before the timing of Eid al-Fitr to 100 days afterwards in 2020 compared with 2019. We observe that total inflows, total outflows, incomes, and expenditures were all significantly lower in 2020 compared with 2019 during the festive season (the differences between the years are all negative, especially just after lockdown), with the decline in expenditures less pronounced than the declines in total inflows, total outflows, and net incomes. The differences in the levels of financial flows, incomes, and expenditures between 2020 and 2019 are not as large after the Eid al-Adha religious holiday, although they remain negative. This suggests that while economic activity recovered some ground after Eid al-Adha in 2020, it was not a complete return to normalcy.

6 How did households cope during the pandemic?

The COVID-19 pandemic and associated government lockdown measures led to a sharp fall in household incomes, as we observed in the previous section. In this section, we discuss the different coping mechanisms that our diarists used in the face of a large unanticipated negative shock to their incomes.

6.1 Drawing down on cash reserves

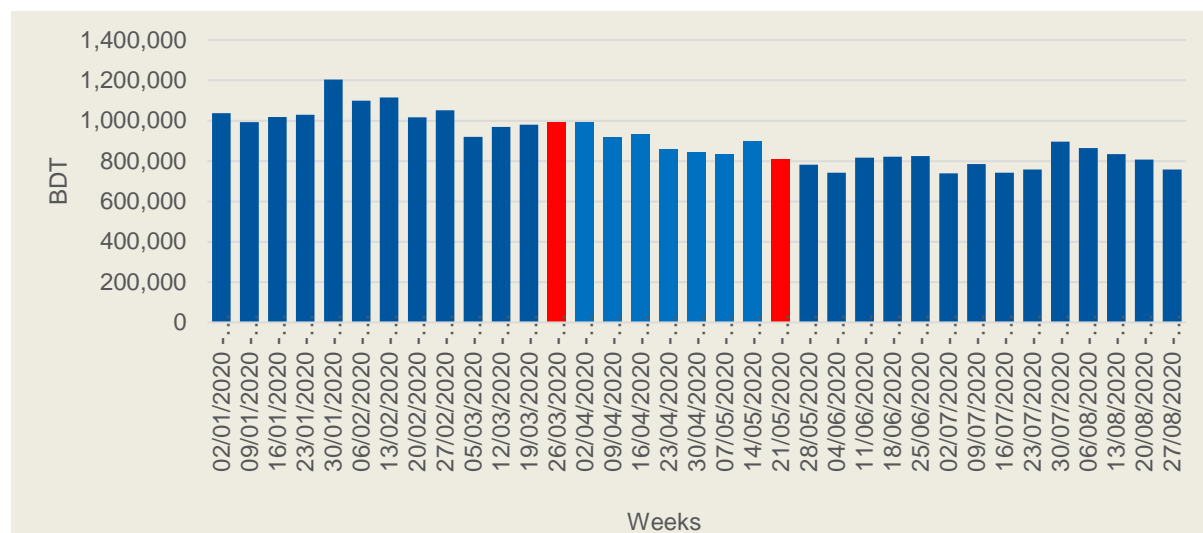
As we have seen in the previous section, expenditures did not fall as much as incomes in the lockdown period, indicating that households could find ways to smoothen expenditures in spite of the sharp unanticipated decline in incomes. Yet, as we described in Section 2, there was very limited possibility for our diarists to use the standard coping mechanisms that poor households use when faced with a generalized cessation of economic activity. With the closure of the MFIs where households held most of their savings, households could not borrow or draw down on their savings accounts. With the restrictions on mobility during lockdown, they could not visit friends and relatives or be visited by them, so they could not rely on the exchange of gifts, which is often customary in traditional societies as a way of coping with adversity. So how did the households manage to smoothen their expenditures in the face of income losses?

One important coping mechanism was to draw down on the cash balances that diarists kept at home, in order to finance critical food and non-food expenditures. Figure 13 shows the overall cash reserves that all 60 diarists kept at home between January and August 2020; Figures 14 and 15 show the overall cash reserves at home for the same period for the lowest and highest income quartiles. It is evident that cash reserves were being drawn down on for the entire lockdown period as well as the first part of the post-lockdown period, with some rebuilding of cash reserves in the second part of the post-lockdown period (Figure 13).¹⁰ However, the cash reserves for all 60 diarists did not return to pre-lockdown levels, even by the end of August 2020. For diarists in the lowest income quartile, who had very small cash reserves even before the pandemic hit Hrishipara,

¹⁰ The paired t-tests on means for cash balances show a statistically significant lower level of cash balances in post-lockdown compared with pre-lockdown (Table A4 in the Appendix).

cash at home had dangerously fallen to very low levels by July and August 2020 (Figure 14). In contrast, we see little change in the level of cash reserves held at home by the highest income quartile over January to August 2020, especially in the lockdown period (Figure 15).

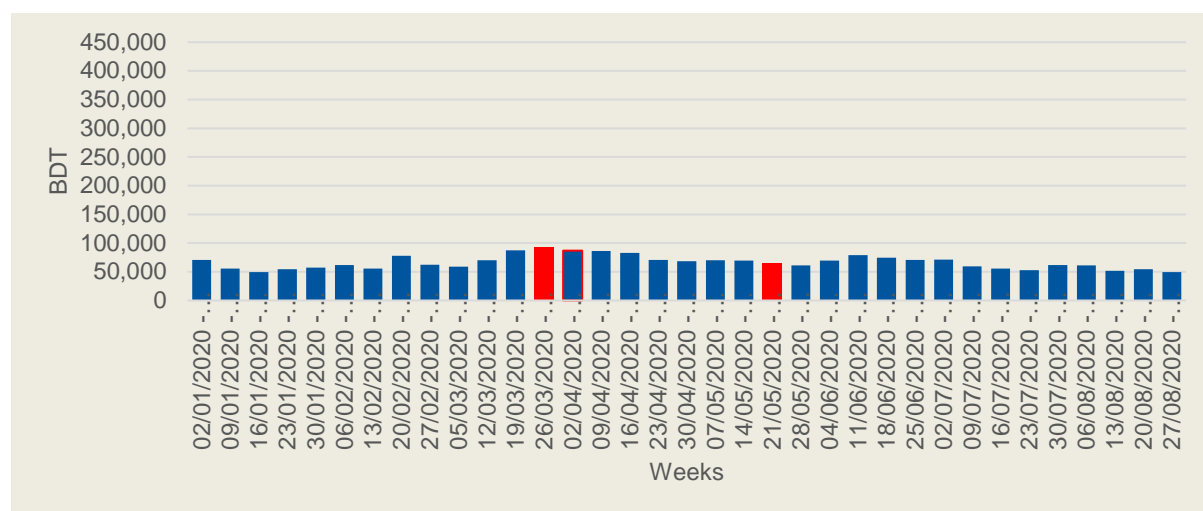
Figure 13: Total cash reserves at home for all 60 diarists



Note: red bars denote the start and end of the lockdown period.

Source: authors' calculations based on data from HDDP.

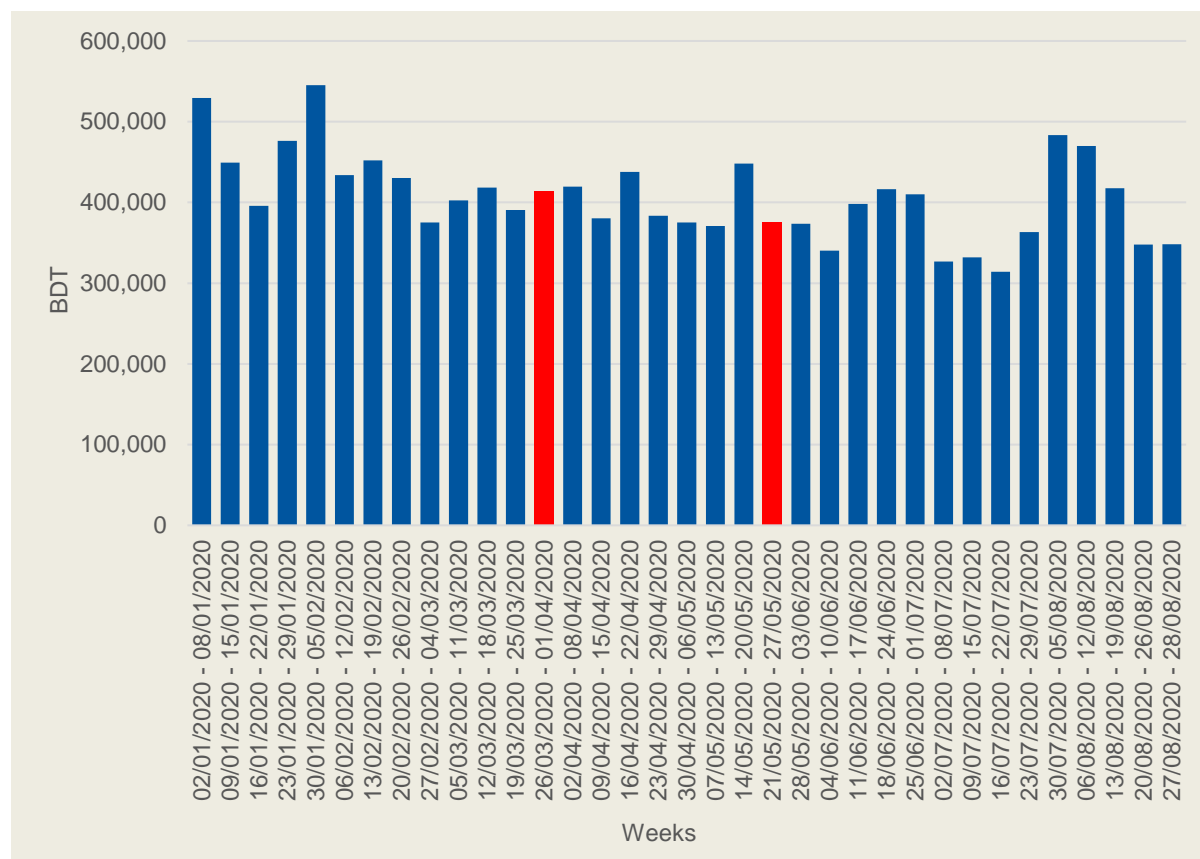
Figure 14: Total cash reserves at home for diarists in the lowest income quartile



Note: red bars denote the start and end of the lockdown period.

Source: authors' calculations based on data from HDDP.

Figure 15: Total cash reserves at home for diarists in the highest income quartile



Note: red bars denote the start and end of the lockdown period.

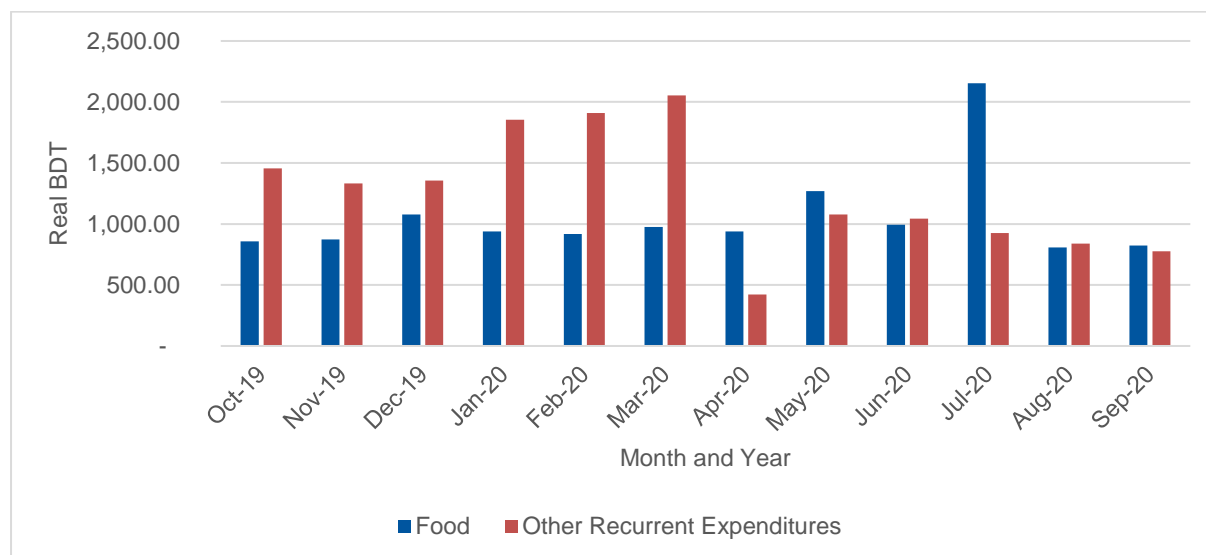
Source: authors' calculations based on data from HDDP.

6.2 Conserving expenditures on food

A second coping mechanism was to reduce the outlays on recurrent household non-food expenditures while trying to maintain expenditures on food. As is clear from Figure 16, while the level of spending on food generally remained stable for the 60 diarists, there was a sharp reduction in recurrent household expenditures in the first month of lockdown (April 2020), and the level of recurrent expenditures never returned to pre-pandemic levels even when lockdown was lifted on 1 June 2020 (we see a spike in food expenditures in the festival month of July 2020).¹¹ Interestingly, the real expenditures on food were maintained even with the increase in the retail price of rice (the most important food grain in Bangladesh) from BDT40 per kilo in March to BDT45 in April and a high of BDT53 in May 2020, thanks to disruptions in supply chains due to the pandemic and lockdown policies.

¹¹ The paired t-tests on means for food and non-food expenditures show a statistically significant higher level of food expenditure and lower level of non-food expenditure in lockdown compared with pre-lockdown (Table A4). The higher expenditure on food can be explained by the diarists' behaviour of hoarding food in anticipation of a prolonged lockdown.

Figure 16: Food and non-food real expenditures, October 2019 to September 2020



Source: authors' calculations based on data from HDDP.

7 Conclusions

This paper has examined the impact of the COVID-19 pandemic on the incomes, expenditures, and financial flows of 60 poor and very poor households in a semi-rural setting in a low-income country. We used a novel high-frequency daily data set that follows 60 households in Hrishipara in Bangladesh as part of the HDDP over one year, covering the pre-pandemic and pandemic periods. We used detailed transactions data on incomes, expenditures, loans, savings, gifts received and given, and remittances, to analyse the impact of the pandemic on the 60 diarists' economic and financial transactions.

We first documented the behavioural responses of the poor during the pandemic through case studies of five diarists. We showed that the common feature of the case studies was the large income losses during lockdown; incomes remained below pre-pandemic levels several months after lockdown had been lifted. The case studies also highlighted the different coping strategies followed by the diarists, ranging from selling livestock to starting a new business, receiving gifts from family, cutting back on food expenditures, and being reliant on limited government support.

In our empirical analysis, we found that there was a large negative effect of government lockdown policies on the 60 diarists' financial inflows, outflows, incomes, and expenditures. The decline in financial transactions, incomes, and expenditures was the most pronounced in the initial month of lockdown (April 2020), when the government strictly enforced mobility restrictions and workplace closures. In the second month of lockdown as well as the post-lockdown months, financial flows, incomes, and expenditures remained depressed, but not as much as in the initial month of lockdown. Interestingly, we found that while there was some recovery in financial transactions, incomes, and expenditures in first two months of the post-lockdown period, there was a further decline in incomes and expenditures in the last two months of the period of our analysis—August and September 2020. This suggests that the negative effect of the pandemic on the poor in our study area went far beyond the immediate lockdown period and may be long-lasting. We also found large declines during the lockdown period in borrowing, savings withdrawals, and the receipt of monetary gifts from friends and family. Unable to engage in conventional coping strategies due to the cessation of financial activity, households engaged in extreme coping

mechanisms such as running down cash balances at home and cutting back on non-food expenditures so as to maintain critical expenditures on food. Our case studies also illustrated the varied experiences of individual diarists during the pandemic.

Our study makes clear the very unusual circumstances in which the poor found themselves during the COVID-19 pandemic. Not only did all economic activity stop for over a month, but the normal coping mechanisms that rural households use when faced with unexpected negative shocks to income—such as liquidating savings deposits, or borrowing from MFIs and friends and family—were not possible, due to the closure of MFIs and the restrictions on mobility. This also suggests the importance of government safety nets that are accessible to all households and not just a few. There was relatively little evidence of such universal safety nets in our study area (see also Ali et al. 2021). The main reason why the poor in Hrishipara managed to survive the pandemic period was that they used their most precious resource—cash at home—as well as cutting back on any consumption items that it was possible to forego, maintaining critical expenditures on food to ensure survival.

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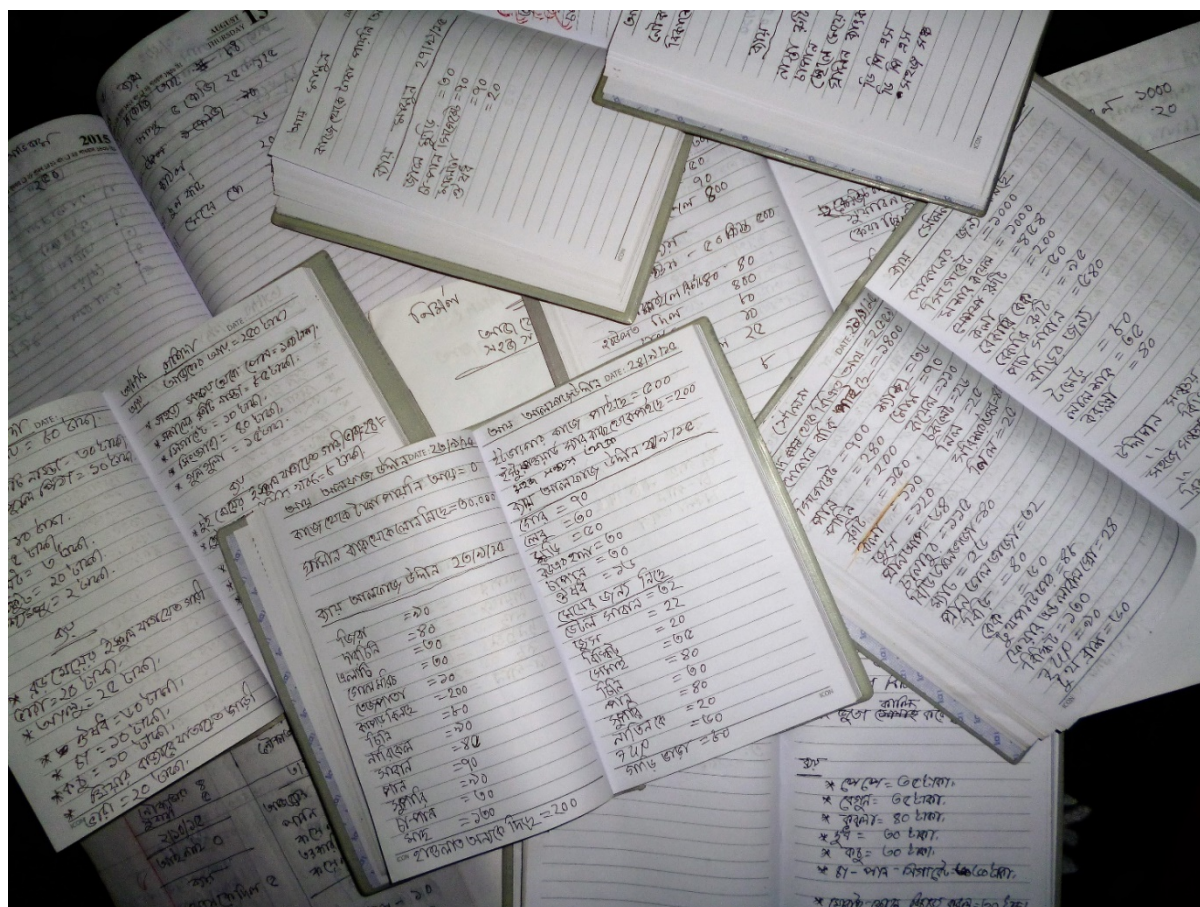
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Appendix

The HDDP has been running since mid-2015 and has collected almost a million records. This paper uses the data for the year from 1 October 2019 to 30 September 2020, which consists of just over 152,000 records of money transactions worth a total of just under BDT60 million (just over US\$1 million at the market exchange rate) made by the 60 diarist households. Each record shows the date of the transaction, the household making it, the amount transacted, and the mode of transaction (cash, electronic, or other), along with a description of the reason for the transaction. Where appropriate, there are supporting notes to explain the transaction more fully. To the best of our knowledge, these records show all transactions made by the households: in other words, they comprise a complete inventory of all the money that flowed into and out of the households during the research year. We provide a photograph of the actual diaries in Figure A1. The main types of transaction are explained in Box A1.

Figure A1: Hrishipara diaries



Source: HDDP, with permission.

Box A1: Main types of transaction recorded in the diaries

The following are the transaction numbers and BDT values of the main transaction types during the period covered by our analysis (October 2019 to September 2020). Note that during that time the US dollar was worth between BDT84 and BDT85 on the exchange markets. The purchasing parity in 2019 was BDT32 per international dollar.

Household expenditure

We have more records of household expenditure than any other type, which is not surprising given that most diarists buy their food and other household goods daily, in small quantities at local markets. They totalled 63,558 records. Vegetable purchases topped the list for frequency (over 12,000 records), followed by snacks, fish, and herbs and spices. Rice—the staple for all our households—was the foodstuff on which most money was spent (BDT633,000), with fish close behind. They spent BDT439,000 on healthcare, of which BDT326,000 went on over-the-counter medicines. BDT367,000 was spent on clothes, and a similar amount on utilities. Education accounted for BDT289,000, transport for BDT332,000, and home maintenance for BDT273,000. They bought BDT146,000 worth of jewellery, mostly gold. They spent BDT98,000 on mobile phones and airtime. Aside from these recurrent expenses there were large amounts spent on big family projects such as home construction (over BDT3.5 million), migration for work overseas (BDT457,000), marriages, and land purchases. Note that household expenditure is somewhat underestimated because we do not include interest paid on loans—see the section on savings and borrowings below.

Gross income

The gross income diarists earned to pay for this expenditure is the category with the highest total value (BDT15.4 million). At 59,000, the number of transactions is not much less than for household expenditure, reflecting the fact that many households earn on a frequent, often daily basis. Riding rickshaws, repairing rickshaws, selling snacks, and selling farm produce all account for large numbers of transactions. (Note that these incomes are aggregated daily, and are often made up of many smaller components, such as individual rickshaw rides.) Both the largest in number and the largest in value of transactions are the sales made by the several small shopkeepers in our sample: they sold BDT5.6 million worth of goods in 46,000 transactions (aggregated by type of item sold each day). Another large source of income is the remittances sent by family members working overseas: with BDT1.3 million arriving in just 92 transactions, this is one of the biggest single chunks of income that our diarists receive.

Note that we do not record in-kind income, since the project is an investigation into how our diarists manage money. For a few diarists, especially those that farm on some scale and consume some of the produce, this means that we understate their total real income. However, we ask our diarists for their own estimates of the value of any in-kind income, and we update this survey annually: we do this so that we can estimate total real income when we need it to rank diarists in terms of income and compare them with international averages, such as the World Bank's 'income per person per day' data. Incomes are also somewhat underreported because we do not account for interest earned on savings (see below).

Costs of doing business

Shopkeepers and the like must deduct their costs of doing business from their gross income to arrive at their net income. The biggest of these business costs was the stock purchases by the shopkeepers (BDT5 million). Other costs recorded include farm inputs, rent, fuel, wages, tools, and materials (for tailors, craftspeople, musicians, and fishers, among others). In all, the costs of doing business amounted to BDT7.56 million.

Saving and borrowing transactions

The next largest in number and value are the saving and borrowing transactions. Our diarists, like most Bangladeshis, are active users of loans and savings to manage their money flows. Between them during the year they took BDT3.9 million in loans and made repayments on them of BDT2.9 million. They deposited BDT2.3 million and withdrew BDT2.6 million in savings. Bangladesh is the historic home of microfinance, and 23 different MFIs serve our 60 diarists. Most diarists have one or more MFI accounts, and much of their saving and borrowing activity is done there, but they also use cooperatives, community clubs, friends, relatives, and employers. Altogether they made 4,700 individual savings deposits and 2,700 loan repayments. As well as borrowing, several of our diarists lend, mostly to family or friends, on a large scale to invest in land and other large assets, or on a small scale to help out with short-term shortfalls. We recorded them giving loans worth BDT298,000. Diarists also occasionally act as money guards, holding

savings belonging to others and returning them on request. We record these transactions separately from the diarists' own savings behaviour as 'savings accepted from others' and 'savings returned to others'. We do not collect details of interest earned on savings or paid on loans, so 'repayments on loans' comprises both principal repayments and interest. It is hard for our diarists and staff alike to discern details of interest from the documentation provided by most MFIs (where the majority of the saving and borrowing is done). We can of course estimate interest from transaction records, and we do so when investigating loans and savings in detail.

Gifts

The last transaction type of significance is gifts given to or received from people outside the diarist's own household. Some of these are large gifts, often for religious purposes, while most are small gifts designed to help friends or neighbours who fall into difficulties. Diarists received 500 money gifts worth BDT450,000 and gave 440 gifts to others worth BDT597,000.

As well as the daily collection of transaction data, the project keeps a profile sheet describing the household composition of each diarist along with a running commentary on events occurring in the household, and conducts periodic surveys of the loan and savings balances each household holds in formal financial institutions. Tailor-made surveys are conducted to find out more about specific matters, such as education and health. These lead to the publications listed on the project website (HDDP 2021). From time to time diarists are interviewed at length to allow them to tell their personal and family histories.

The project does its best to comply with good practice when conducting the surveys. Diarists' real names are hidden, and data is not shared between diarists. Consent is obtained for any use of data outside the locality where the data was collected, including photographs. No conditions are attached to the weekly participation reward, and diarists are free to quit the project at any time without giving a reason (only three have ever done so; one of these later returned). Diarists are offered access to their data, and if requested the project will deliver the data in an understandable format. Project staff try to make the daily interviews as quick and friendly as possible. To protect staff and diarists during the peak period of the COVID-19 scare, interviews were collected by phone, but the quality remained good because of the diarists' familiarity with our routines. Table A1 provides a profile of the diarists, categorizing them by income quartiles.

Table A1: Profile of the diarists

ID	Principal livelihood	Description of principal earner(s)
Lowest income quartile: mostly extremely poor by World Bank measures		
01	Unskilled daily casual wage employment	Illiterate widow who does odd jobs for market stallholders
05	Self-employed retailers (daughter nurses)	Elderly couple running a small tea and snack stand
56	Unskilled daily casual wage employment	Widow who helps in a vegetable and spice-grinding shop
12	Unskilled daily casual wage employment	Widow who works as a housemaid or sometimes as a shop assistant
42	Unskilled daily casual wage employment	Widow who cooks or cleans for offices or labour gangs
26	Unskilled regular monthly wage employment	Divorcee who cooks and cleans in an office (but recently lost that job)
71	Unskilled daily casual wage employment	Young man waiting tables and cleaning in a tea and snack shop
25	Semi-skilled regular monthly wage employment	Male fee collector for the market night-guard service
51	Unskilled daily casual wage employment	Younger woman who breaks bricks (to make aggregate for concrete)
60	Skilled self-employment	Divorcee who is a village midwife and raises goats
32	Unskilled daily casual wage employment	Widow who does various labouring jobs; son is a barber
35	Skilled casual wage employment	Male assistant mason on building sites; also rents out a room
23	Skilled self-employment	Male who runs his own barber's
52	Self-employed retailer	Older woman running a tea stall in a busy market
08	Unskilled daily casual wage employment	Middle-aged woman who breaks bricks
Third income quartile: poor—below the Bangladesh upper poverty line		
10	Unskilled daily casual wage employment	Male faith healer, but most income comes from brick-breaking
02	Unskilled self-employment	Rickshaw driver with his own rickshaw; also plays in the village band
53	Unskilled self-employment	Rickshaw driver with his own rickshaw; daughter makes dresses
15	Skilled self-employment	Male tailor using space in a clothes shop
58	Skilled casual wage employment	Couple who both work as masons' assistants on building sites
14	Skilled and unskilled self-employment	Male who runs a rickshaw repair shop and also drives a rickshaw
21	Unskilled regular monthly wage employment	ATM guard for a bank
46	Skilled self-employment	Boatman running a ferry on the river crossing
59	Skilled self-employment	Male village dressmaker; daughter teaches informal school
55	Skilled self-employment	Wife runs a hot cake stall, son is a mechanic
64	Semi-skilled daily wage employment	Female former cook who now labours on construction sites
11	Self-employed retailer	Recent widow who runs a small village shop inherited from her husband
17	Self-employed and casual wage employment	Family with mix of vegetable and milk sales, labour, and mechanic work
13	Unskilled daily casual wage employment	Labours in a teashop; daughter gets some overseas remittances
61	Skilled wage employment	Male bus driver; also does odd jobs
Second income quartile: medium poor		
57	Skilled and unskilled wage employment	Woman with an office job; other family members labour; ATM guard
45	Skilled and semi-skilled wage employment	Male former welder, lost that job, now doing farm labour
54	Skilled self-employment and remittances	Bamboo craftsman, recently started getting remittances from daughter
67	Regular wage employment	Young male student, works as itinerant tobacco salesman

66	Skilled wage employment and self-employment	Daughter is a medical lab assistant, son is a mechanic, father sings
31	Skilled self-employment and remittances	One daughter is a dressmaker, another remits from overseas
65	Skilled self-employment and wage employment	Boatman; wife is hospital cook/cleaner
03	Remittances from overseas	Older woman with daughters working as nurses overseas
43	Skilled regular monthly wage employment	Imam at village mosque; also teaches madrassa and runs a library
47	Skilled self-employment	Male wholesale rubbish recycler
24	Skilled self-employment	Banana farmer, owns land; wife is a dressmaker
30	Semi-skilled self-employment	Male newspaper vendor with some farm income
36	Skilled self-employment	Male who farms, rears cows, and lends money
22	Skilled self-employment	Male who runs a small laundry and farms
63	Skilled self-employment	Fisherman; son runs a clothes shop
Top income quartile: the near-poor		
72	Skilled self-employment and remittances	Runs a painting business; brother remits from overseas
07	Self-employed retailer and farmer	Shopkeeper; parents do some farming
18	Skilled self-employed and casual wage employed	Fisherman; whose wife breaks bricks
50	Skilled self-employment and remittances	Farming family with son remitting from Saudi Arabia
62	Skilled self-employment and wage employment	Mason who also owns and drives a rickshaw; wife embroiders
19	Skilled self-employed retailer and farmer	Runs a restaurant and has land which he farms
40	Skilled wage employment and remittances	Husband overseas, son has a job in an engineering office
33	Self-employed retail and casual wage employed	Couple do labouring work and run a small shop
16	Skilled self-employed retailer	Runs a school snack shop; he and son run snacks carts
34	Skilled self-employment and remittances	Couple who farm, earn rent, and have a son remitting from overseas
27	Semi-skilled regular monthly wage employment	Couple who both have low-grade jobs in a government-run hospital
38	Skilled regular wage employment overseas	Husband sends large remittances, and they earn rent
39	Skilled regular wage employment overseas	Widow has two sons remitting from Malaysia
20	Skilled self-employment	Very entrepreneurial woman who trades saris and farms
29	Skilled self-employment and remittances	Recent widow who runs a farm, earns rent, and has a son remitting from overseas

Source: authors' compilation based on data from HDDP.

Table A2: Summary statistics: total inflows, total outflows, income, costs, expenditures

Variable name	Period	Mean	Standard deviation	Variable name	Period	Mean	Standard deviation
Total real inflows	Pre-lockdown	1305.3	3296.2	Total real outflows	Pre-lockdown	1347.3	2986.4
	Strict lockdown	474.8	1336.6		Strict lockdown	622.9	1839.8
	Weak lockdown	748.3	1505.0		Weak lockdown	749.3	1296.0
	Post-lockdown 1	1215.6	2725.2		Post-lockdown 1	1189.5	2605.4
	Post-lockdown 2	1079.5	3482.7		Post-lockdown 2	1093.6	2447.4
Real gross income	Pre-lockdown	827.8	1705.4	Real costs	Pre-lockdown	441.2	1599.2
	Strict lockdown	285.2	581.8		Strict lockdown	135.8	532.5
	Weak lockdown	623.6	1298.2		Weak lockdown	152.2	461.1
	Post-lockdown 1	868.1	2032.3		Post-lockdown 1	313.0	1133.7
	Post-lockdown 2	657.4	1324.2		Post-lockdown 2	399.2	1585.3
Real net income	Pre-lockdown	386.6	1016.8	Real expenditures	Pre-lockdown	568.6	2017.5
	Strict lockdown	149.4	481.4		Strict lockdown	451.4	1768.3
	Weak lockdown	471.4	1209.4		Weak lockdown	539.6	1152.8
	Post-lockdown 1	555.0	1833.0		Post-lockdown 1	612.5	1538.4
	Post-lockdown 2	258.2	1179.8		Post-lockdown 2	464.7	1433.6

Note: all values in real BDT. Numbers of observations in pre-lockdown, strict lockdown, weak lockdown, post-lockdown 1, and post-lockdown 2 are 1,490, 355, 239, 474, and 595 respectively.

Source: authors' calculations based on data from HDDP.

Table A3: Summary statistics: savings, loans, and gifts

Variable	Period	Mean	Standard deviation	Variable	Period	Mean	Standard deviation
Savings deposits	Pre-lockdown	96.1	842.1	Savings withdrawals	Pre-lockdown	166.9	1433.9
	Strict lockdown	10.5	49.7		Strict lockdown	71.0	655.3
	Weak lockdown	12.3	102.1		Weak lockdown	27.6	415.7
	Post-lockdown 1	66.2	411.8		Post-lockdown 1	102.4	850.7
	Post-lockdown 2	53.0	432.1		Post-lockdown 2	107.1	973.4
Loan repayments	Pre-lockdown	191.3	667.7	Borrowing	Pre-lockdown	223.7	1931.6
	Strict lockdown	11.7	52.3		Strict lockdown	71.5	976.9
	Weak lockdown	4.8	53.7		Weak lockdown	39.2	319.9
	Post-lockdown 1	170.9	999.9		Post-lockdown 1	160.5	1128.1
	Post-lockdown 2	160.7	608.9		Post-lockdown 2	198.9	2067.4
Gifts out	Pre-lockdown	23.1	260.0	Gifts in	Pre-lockdown	23.0	208.1
	Strict lockdown	9.4	111.6		Strict lockdown	18.4	120.5
	Weak lockdown	30.1	229.9		Weak lockdown	38.0	207.9
	Post-lockdown 1	2.3	19.1		Post-lockdown 1	23.7	124.9
	Post-lockdown 2	10.1	138.5		Post-lockdown 2	15.9	210.6

Note: all values in real BDT. Numbers of observations in pre-lockdown, strict lockdown, weak lockdown, post-lockdown 1, and post-lockdown 2 are 1,490, 355, 239, 474, and 595 respectively.

Source: authors' calculations based on data from HDDP.

Table A4: Pairwise t-tests for average real cash balances, real food expenditures, and real non-food expenditures between pre-lockdown, lockdown, and post-lockdown periods

Variable	Sample	t-test statistics and p-values		
		Pre-lockdown/lockdown	Pre-lockdown/post-lockdown	Lockdown/post-lockdown
Cash balances	FS	t(58) = 1.0684 (0.290)	t(58) = 1.8044 (0.076)	t(58) = 1.3694 (0.176)
Food expenditures	FS	t(59) = -5.0642 (4.311e-06)	t(59) = -3.1807 (0.002343)	t(59) = 0.76738 (0.4459)
Non-food expenditure	FS	t(59) = 2.6504 (0.0103)	t(59) = 2.0348 (0.04637)	t(59) = -1.3834 (0.1717)

Note: p-values in parentheses. FS refers to full sample of diarists.

Source: authors' calculations based on data from HDDP.