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The Impact of Shocks on Gender-differentiated Asset Dynamics in Bangladesh

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Abstract

Assets are an important means of coping with adverse events in developing countries but the role of gendered ownership is not yet fully understood. This paper investigates changes in assets owned by the household head, his spouse, or jointly by both of them in response to shocks in rural agricultural households in Bangladesh with the help of detailed household survey panel data. Land is owned mostly by men, who are wealthier than their spouses with respect to almost all types of assets, but relative ownership varies by type of asset. Controlling for unobserved heterogeneity across households and looking at changes within, rather than between, households, we find that weather shocks such as cyclones adversely affect the asset holdings of household heads in general, while predicted external events lead to assets of both spouses being drawn down. The results, furthermore, suggest that jointly owned assets are not sold in response to shocks, either due to these assets being actively protected or due to the difficulty of agreeing on this coping strategy, and that women's asset holdings and associated coping strategies are shaped by their lower involvement in agriculture.

Keywords: shocks, assets, gender, ownership, coping strategies, Bangladesh

JEL classification: D13, J16, O12

1. Introduction

An analysis of asset holdings is a crucial part of investigating household welfare as assets can be converted into cash for consumption if necessary, for example, to cope with shocks or as collateral in the credit market. Selling assets in response to shocks may push individuals into poverty in the long run, however, which is why exogenous shocks to assets may have long-lasting and even intergenerational effects for poor families (Dercon 2004). When financial assets such as credit, which are an important instrument to cope with severe covariate shocks, are limited, individuals sell their physical or natural assets (Dercon 2010). A good number of studies examine the interplay of asset dynamics and poverty traps in developing countries (for example, Dercon and Krishnan 2000; Carter and May 2001; Jalan and Ravallion 2002; Duflo and Udry 2004; Lybbert et al. 2004; Adato, Carter, and May 2006; Barrett et al. 2006; Carter and Barrett 2006; Carter et al. 2007; Quisumbing and Baulch 2009), but empirical research using longitudinal data on asset ownership at the intrahousehold level and the impact of shocks on asset holdings is limited (Quisumbing 2011; Quisumbing, Kumar, and Behrman 2011; Dillon and Quinones 2011), which is what this paper contributes to with panel data from Bangladesh.

Men and women own and accumulate assets either individually or jointly, also when married (Antonopoulos and Floro 2005; Quisumbing 2011; Quisumbing, Kumar, and Behrman 2011), and draw down assets in different ways in response to shocks. Quisumbing, Kumar, and Behrman (2011), for example, find that floods have negative impacts on the land holdings of husbands, while droughts negatively affect their consumer and agricultural durable goods and the livestock of wives. Furthermore, women's assets in general are drawn down to cope with illnesses within the household. This is of particular importance as female control over assets and income positively affects household well-being, especially that of children (Duflo 2003; Qian 2008; Quisumbing and Maluccio 2003; Smith et al. 2003). Besides studying differentiated ownership of assets, an investigation of all types of assets, that is, financial, land, and nonland assets, is important to understand the comprehensive impact of shocks on assets, including possible substitution effects (Deere and Doss 2006).

Building on existing studies, our paper adds to the understanding of the responsiveness of asset holdings to adverse external events by using unique panel data from Bangladesh, one of the countries most vulnerable to climate change due to its densely populated coastal

areas and half of the population living below the poverty line. We use data that is unique in that it is representative of the agroecological zones in Bangladesh, includes detailed information about shocks as well as ownership of assets, and allows us to control for unobserved heterogeneity across households; that is, we focus on investigating effects within rather than between households, which is particularly important in intrahousehold studies where bargaining power is a crucial factor, for example.

Furthermore, we apply a relatively broad definition of assets and also investigate financial assets such as credit and construct a comprehensive index including asset holdings of all types to see the overall effect on wealth, which is a contribution to the existing literature. The focus of the paper, however, lies in identifying changes in disaggregated asset holdings, broken down by ownership in rural Bangladesh. We are thus able to study the impact on specific types of assets such as jewelry by ownership, which enables the identification of substitution effects within households.

Our results suggest that men's and women's asset holdings respond differently depending on the type of shock. Shocks that occur due to climatic variability reduce the asset base of husbands in general, while negative nonweather shocks adversely affect both husbands' and wives' assets. In general, spouses aim to keep their jointly owned assets intact and draw them down only in response to predicted shocks such as seasonal droughts and dowry payments, which are classified as shocks in this paper not because their occurrence is unexpected but because their timing and severity are. Livestock is used as a tool of coping, whereas land, husbands' vehicles, and agricultural tools appear important to agricultural production, which in turn determines livelihoods of agriculture-dependent households, as households try to keep these goods in functioning condition.

The structure of the paper is as follows: The next section outlines the existing literature that this study relates to. Section 3 describes the data and the construction of the comprehensive asset index and presents descriptive statistics. The empirical approach and the results are discussed in section 4, and section 5 concludes.

2. Literature Review

As implied by the definition of poor people as those having low wealth and thus limited possibilities to smooth consumption or expenses, poor people are especially vulnerable to external events. Such an event, also called a shock, is defined as "a realization of the state of the world whose risk may or may not have been recognized beforehand" (Dercon 2010, 16), which means that it is an unanticipated event that may have positive or negative implications. To cope with negative shocks, especially the poor are often forced to sell tangible assets, which in turn leads to less investment in nontangible assets such as health, nutrition, and education, thereby possibly leading to long-term poverty (Hoddinott 2006; Hoddinott and Quisumbing 2003). Shocks may be covariate—that is, affecting a large number of individuals in a given locality at the same time, such as climatic shocks—or idiosyncratic—that is, affecting only a few individuals or households at a given time, such as an illness or death of a family member (Dercon 2010). An example of a positive idiosyncratic shock is the receipt of a dowry, an inheritance, or a remittance (Davis 2007; Quisumbing 2011; Quisumbing, Kumar, and Behrman 2011). Carter et al. (2007) divide shocks into asset and income shocks, depending on which of the two they affect. As examples of specific shocks that studies look at, Giesbert and Schindler (2010) investigate the effect of only droughts on short-term asset accumulation, and Kumar and Quisumbing (2011) study the effects of food price shocks on the consumption and poverty of female-headed households.

We investigate a large array of shocks in this paper—weather shocks such as floods, droughts, and cyclones; nonclimatic negative shocks such as death, illness, dowry, and wedding expenses; and positive shocks such as the receipt of an inheritance, a remittance, or a dowry—as qualitative studies on rural Bangladesh find that dowry payments, illness, and large household size are the three most important factors associated with poverty (Davis 2007, 2011b). While some of these negative shocks are anticipated, their timing and severity are unknown in advance, which still qualifies them as shocks. Take the example of dowry payments: even though parents in Bangladesh, as soon as a daughter is born, know that they will at some point have to pay a dowry, the timing and the amount of the dowry payment is unknown *ex ante.* Davis (2011b) also specifically argues that life-cycle events are crucial to be included when studying the interplay of asset dynamics and the economic well-

being of households, and Quisumbing (2011) argues that wedding and dowry expenses are a type of shock due to the large amount of income lost at one point in time.[1]

With similar reasoning, one could claim that remittances, which are often large enough to affect the wealth of poor households, are to be expected when a child, especially a son, is born. However, only 18 percent of the households in our sample receive remittances, in most cases from children and from the Middle East. A possible explanation for the low incidence of remittances being sent is that the rural poor are unaware of the legal provisions related to international labor migration (Davis 2007). In addition, migrating is costly, difficult, and often illegal, which lowers the chances of the migrant being able to support his or her family on top of providing for him- or herself. It should also be noted that the households in the sample are in large part agricultural subsistence farmers for whom saving to pay for migration or weddings is unusual.

Assets are not only a measure of wealth but a more general indicator of well-being, according to Babbington (1999), and are categorized in different ways. Sherraden (1991), for instance, defines tangible assets as those that are owned legally while intangible assets are nonphysical in nature and relate to social relationships. Among legally owned assets he includes financial assets, durable goods, property, production inputs, natural assets, copyrights, and patent rights (Nam, Huang, and Sherraden 2008; Kim and Kim 2013; Lau 2012). What this distinction misses is that tangible, or physical, assets may also be controlled without legal ownership, for example, in cases where land cannot be owned but use rights are issued. Examples of tangible assets are jewelry, appliances, shops, and vehicles, while net savings are nontangible and are classified as a financial asset according to Antonopoulos and Floro (2005). Further distinctions are made between productive assets, consumer durables, and assets that are used to secure livelihoods. Haveman and Wolff (2001, 2004) argue that vehicles should be excluded from an analysis of asset holdings as they constitute an essential source of income to owners.

Existing studies on intrahousehold asset accumulation and the dynamics of these asset holdings often use livestock and household capital (Dillon and Quinones 2011) or, more generally, land and nonland assets (Quisumbing 2011; Quisumbing, Kumar, and Behrman

[1] Classifying dowry payments and other life-cycle events as shocks is disputable. Note that our results do not hinge on the inclusion of these shocks.

2011). In a qualitative study on poverty dynamics, Davis (2011b) uses an even broader definition of assets. He includes productive assets, defined as nontradeable but income-generating assets and protective assets, which can be sold in times of distress. He further argues that some assets need investment and cannot be traded in a conventional way—for example, human and social capital—but that they are necessary to generate income and provide protection in times of need. We follow Meinzen-Dick et al. (2011) and categorize assets into natural capital, that is, land holdings; physical capital, which we measure either directly or with the help of an index made up of nonland assets and housing conditions; livestock holdings; and financial capital measured by outstanding credit, which allows us to investigate a comprehensive picture of asset holdings. A disaggregated investigation of assets by gender of the owner is important as assets are not equally distributed between men and women, who also differ in their ability to accumulate assets. The asset base of an individual depends on assets brought to marriage (Quisumbing and Maluccio 2003), and the ability to accumulate more assets further depends on marital status, religion, ethnicity, and inheritance and property rights. In more general terms, individuals with more assets are better able to accumulate further assets, which exacerbates existing inequalities (Lybbert et al. 2004). On the other hand, asset accumulation of the initially rich may slow down due to diminishing returns, and the poor have a chance to catch up by initially forgoing some consumption and reinvesting (Zimmerman and Carter 2003; Deaton 1989). Especially for women the accumulation of assets is also context dependent; that is, social and traditional rules with respect to their participation in the labor force or inheritance are important determinants of women's wealth-generating potential.

Women store their wealth in the form of jewelry and shop assets in Thailand rather than in formal financial assets due to their lack of control over the latter, and men hold higher values of transportation assets (Antonopoulos and Floro 2005). Similarly and with the help of panel data covering a 10-year period in Bangladesh (1996–2006), Quisumbing (2011), comparing changes in asset portfolios between husband and wife, finds that the asset composition changes from poultry and livestock to other nonagricultural assets for wives, while jewelry remains their most important storage of value, and initial endowments of assets affect the ability to accumulate further assets and to cope with shocks according to Quisumbing and Baulch (2009). The impact of initial endowments is larger for men in the accumulation of livestock and household capital than for women, whose assets also grow

less quickly in Nigeria. These differences were further exacerbated as livestock, a typically male asset, faced a high price rise, whereas household goods and jewelry, typically female assets, were subject to lower price increases (Dillon and Quinones 2011).

In one of the few empirical studies on intrahousehold gender-differentiated asset accumulation, Quisumbing (2011) finds complementarities between wives' human capital and husbands' natural capital when investigating longitudinal data including groups that were or were not subject to an intervention related to microcredit, allowances to support education, and the adoption of innovative agricultural technologies in Bangladesh. Possibly due to the involvement of nongovernmental organizations, female land ownership increased during the study period. The author, furthermore, finds that weather shocks reduce jointly owned assets, while death and illness reduce wives' agricultural tools, and dowries appear to be paid for with husbands' agricultural assets. Interesting to note, remittances lead to an increase in jointly owned consumer assets, whereas the receipt of dowry payments leads to a reduction in jointly owned agricultural assets (Quisumbing 2011). In a related study, Quisumbing, Kumar, and Behrman (2011) find that remittances entail a diversification from agricultural to nonagricultural assets and that husbands' land holdings are negatively affected by floods, whereas those of wives suffer when dowries have to be paid. While these two studies are similar to ours, we add to the findings by using data that are representative of Bangladesh's agroecological zones, leading to our results being more generalizable. Specifically, these studies use data that were purposively collected to evaluate "microfinance, agricultural technologies, and educational transfers programs" (Quisumbing, Kumar, and Behrman 2011, 10) in a limited number of districts. Furthermore, the results cannot easily be extended to agricultural households without program interventions. Last, neither of the other papers covers cyclones, which have been the most devastating weather event in Bangladesh in recent decades and therefore deserve attention as well.

Ownership of one type of asset may facilitate access to another. For example, land is necessary as collateral for credit markets, which in turn opens up the market for inputs (Quisumbing 2011). Credit from commercial sources, however, also may lead to a loss of collateral due to high interest rates, while off-farm employment may generate income and thereby encourage land accumulation (Quisumbing and Baulch 2009). Thakur, Arnold, and Johnson (2009) find that credit encourages women to save, which enables coping with

adverse effects of shocks and allows investment in income-generating activities. Family allowances, for example, old age pensions, allowances for children, food for education, and school stipends for female students, also have a positive effect on female economic well-being. Nevertheless, the fact that women take out credit does not necessarily imply that they are the ones controlling it. Microcredit programs in Bangladesh have been found to improve women's use of credit, which positively correlates with the occurrence of male-managed, rather than female-managed, microenterprises (Chowdhury 2009).

3. Data and Descriptive Statistics

We employ a short-term representative household survey panel dataset including various types of assets and shocks collected in 31 of Bangladesh's 64 districts, covering all divisions and all of the seven agroecological zones (AEZ).[2] The International Food Policy Research Institute (IFPRI), and Data Analysis and Technical Assistance Limited (DATA), collected the first round of data in 2010 for their project, "Economics of Adaptation to Climate Change," to study whether agricultural practices had changed due to climate change.[3] In 2012, the Center for Development Research (ZEF) of the University of Bonn joined IFPRI and DATA to build on the initial round of the survey, known as the Bangladesh Climate Change Adaptation Survey, with a greater focus on gender and asset dynamics.

Bangladesh's AEZs are characterized by different climates, which makes employing data from all over Bangladesh necessary when investigating the ability of households to deal with weather shocks in a representative manner. The Barind tract in the northwestern part of the country, for example, experiences seasonal droughts, which are less common in other AEZs, while the Flood plain and the Bill and haor basin are more prone to floods and the Tidal flood plain sees cyclones often relative to the rest of the country.

The 2012 questionnaire was specifically designed to capture the gender dimension of asset ownership. The 2010 questionnaire did not include this module, so this information for the

[2] The names of the seven AEZs categorized by the Bangladesh Center for Advanced Studies are Barind tract, Flood plain, Bill and haor basin, Modhupur tract, Northern and eastern hill, Tidal flood plain, and Himalayan Piedmont Plain (Thomas et al. 2013).

[3] DATA is a consultancy firm for large-scale household surveys and other research-related activities located in Dhaka, Bangladesh.

first round of the survey had to be collected retrospectively in 2012. To be specific, besides asking about the current owner of an asset in 2012, the questionnaire asked whether ownership had changed since 2010 and who was responsible if assets had been sold or consumed. Besides information about natural capital such as land, physical capital such as nonland assets and housing characteristics, and livestock, information about intangible assets such as social capital and the use of credit was gathered.

Regarding data on shocks, households were asked whether they had been affected (positively or negatively) by any weather shocks or other external events and to what extent. Furthermore, households as well as community leaders were interviewed about the extent of, for example, weather shocks in terms of what share of households in the community were affected. To ensure that idiosyncratic shocks were mentioned, households were asked whether they had experienced any surprises that led to sudden financial losses or gains, out of which we consider the two with the highest absolute amounts. Often-mentioned events leading to losses are dowry payments and wedding expenses as well as illnesses or deaths of family members, while typically mentioned gains occur from the receipt of a remittance or inheritance.[4] Similar to gender-disaggregated asset ownership, data on idiosyncratic shocks were not gathered in the first round of the survey, so the 2012 round included questions about the past two years, that is, between the two rounds, and about the two years prior to the baseline interview.

To investigate the distribution of asset holdings between husband and wife, we restrict our sample to families in which both a household head and his spouse are present and unchanged in both survey rounds. Furthermore, we exclude female-headed households due to them possibly being very different from male-headed ones in terms of relative bargaining power, for example, leading to a final sample size of 678 households.

[4] Some households also mention scholarships given to girls, which come as a periodic inflow of cash from the government for the costs of school supplies, as positive income shocks. The monetary value of these grants is too small to affect a household's asset holdings, however, so we do not consider them as a shock for the purposes of this study.

Constructing the Asset Index

We construct an index as a comprehensive measure of all physical assets held. The types of assets included here are listed in Table A.1 in the Appendix. The index is computed using the following:

$$C_{it} = \sum_{k=1}^{K} w_t^k \, a_{it}^k \qquad (1)$$

for household *i* in time period *t* with capital *C* made up of type-*k* assets *a.* The choice of assets to be included is supported by both the Kaiser-Meyer-Olkin and Bartlett's test, and the weight *w* of each asset is based on a principal components analysis following Filmer and Pritchett (2001).[5] Note that we exclude assets that are owned by less than 3 percent or more than 97 percent of the sample. Furthermore, all indices are normalized, with larger values implying larger asset holdings. Besides this index for nonland physical assets including household durables and housing characteristics, we construct a comprehensive index of asset holdings for which livestock and land are included through simple indicators for ownership.

Shocks, Gender-differentiated Asset Ownership, and Household Characteristics in 2010 and 2012

Table 3.1 presents summary statistics on external events experienced by the households in our sample between the two survey rounds, grouped into weather shocks, other negative shocks, and positive shocks. Due to reporting bias possibly being a problem (Quisumbing, Kumar, and Behrman 2011), we compare the incidence of shocks based on information from household and community reports. We find that the difference in reporting is smaller the more severe a shock was and, generally, that the two are relatively similar. For example, 38 percent of households report that they had been affected by floods, while the percentage was 32 according to community officials. The bottom of Table 3.1 reports incidences of idiosyncratic shocks. Similar to the findings of Quisumbing (2011) and Quisumbing, Kumar,

[5] Bartlett's test of sphericity helps to identify the factors used in a factor analysis by choosing those with eigenvalues greater than 1 (Chang et al. 2007). The Kaiser-Meyer-Olkin criterion measures the adequacy of included variables, and a value of 70 percent is sufficient for inclusion according to Kaiser (1974). Our data yield a value of 75 percent.

and Behrman (2011), death and illness are more prevalent than wedding or dowry expenses. With respect to positive shocks, 20 percent of households mention benefitting from remittances, while 4 percent have received an inheritance or dowry.

Table 3.1 Reported shocks and external events between 2010 and 2012

Type of shock or external event	Mean	SD
Weather shocks according to household reports		
Proportion of households affected by flood	0.38	0.49
Proportion of households affected by drought	0.45	0.50
Proportion of households affected by cyclone or tornado	0.31	0.46
Severe weather shocks according to community reports		
Proportion of households affected by flood	0.32	0.47
Proportion of households affected by drought	0.52	0.50
Proportion of households affected by cyclone or tornado	0.29	0.46
Nonclimatic negative shocks		
Proportion of households experiencing death or illness of any members	0.26	0.44
Proportion of households incurring dowry or wedding expenses	0.05	0.22
Positive shocks or events		
Proportion of households receiving remittances	0.20	0.40
Proportion of households receiving a dowry or inheritance	0.04	0.21

Source: Authors' computations based on the survey data.

Summary statistics on land, livestock, credit, and physical asset (index) ownership by gender, on the other hand, are presented in Table 3.2, and descriptive statistics for specific types of nonland physical assets presented in Table A.2 in the Appendix. A general trend emanating from these tables is that households were able to accumulate land, livestock, and nonland physical assets as measured by the index between the two survey rounds. While women hold less livestock measured in tropical livestock units (TLU) and physical assets, the most noticeable difference in ownership is apparent with land holdings: land is in large part held by husbands in Bangladesh (96 percent of the total area of households' land). While Muslim law allows sons to inherit a larger share of land than daughters (Deere and Doss 2006), daughters often forgo even their smaller share to maintain a good relationship with their brothers (Quisumbing 2011). Furthermore, Hindu women are not allowed to inherit property from their fathers in Bangladesh (Jinnah 2013; Aktar and Abdullah 2007). And although

Hindu law has been reformed in neighboring countries (Deininger, Goyal, and Nagarajan 2013), Bangladesh is still a patrilineal society (Aktar and Abdullah 2007). Arens (2013), however, finds that there are incidences of Muslim women claiming land once both parents are deceased.

Another factor making land ownership difficult for women is that men are often reluctant to give inherited land to their sisters as they are afraid of the land being split and their privacy being impeded on if the land is sold subsequently. They therefore prefer paying their sisters a lump sum instead of transferring the actual land (Rahman and van Schendel 1997, cited in Arens 2013).

The difficulties of inheriting land for women also extend to the case of widow inheritance. Muslim law stipulates that widows should receive one-eighth of their deceased husbands' land and that the rest should be distributed among their children (Jinnah 2013). In practice, widows usually live in a son's household without owning land in their own names, however. Widows without offspring receive one-quarter of their husbands' land, and the rest is inherited by the brothers of the deceased (Jinnah 2013).

Physical assets are further disaggregated into consumer durables, vehicles, agricultural tools, jewelry, and other assets; mean monetary values and percentage changes between 2010 and 2012, differentiated by ownership, are presented in Table 3.3. Note that all monetary values used in this paper have been deflated to 2010 Bangladeshi taka.[6] Similar to the data in Table 3.2, there are clear differences with men generally holding more assets with the exception of jewelry, which is a female-owned asset traditionally. It should be noted that even though the value of women's nonland assets measured by the index has increased between the survey rounds as displayed in Table 3.2, a large part of the monetary value of physical assets is still in the hands of husbands. Overall, nonland assets are more equally distributed than land, however.

[6] To be specific, all monetary values are deflated on the basis of an inflation rate of food and nonfood items that is calculated with the help of the included information about expenditure from the survey data. Furthermore, 1 US dollar corresponded to 81 Bangladeshi taka in September 2012 (International Monetary Fund 2012).

Table 3.2 Summary statistics of asset ownership

Type of asset	*N*	Mean	SD	Minimum	Median	Maximum
2010						
Plot size in square meters (husband)	678	2,743	3,869.33	0	1,100	27,520
Plot size in square meters (wife)	678	34	306.39	0	0	4,640
Plot size in square meters (joint)	678	101	1,002.48	0	0	20,880
Livestock in TLU (husband)	678	0.61	0.85	0	.10	5.10
Livestock in TLU (wife)	678	0.34	0.72	0	0	7.90
Livestock in TLU (joint)	678	0.09	0.47	0	0	7.90
Physical asset index (husband)	678	0.19	0.12	0	.17	1.00
Physical asset index (wife)	678	0.09	0.07	0	.08	1.00
Physical asset index (joint)	678	0.13	0.09	0	.13	0.63
Credit (husband)	678	11,548	66,514.34	0	0	1,275,000
Credit (wife)	678	5,157	26,682.01	0	0	595,000
Credit (joint)	678	5,980	24,929.63	0	0	391,000
2012						
Plot size in square meters (husband)	678	3,060	4,598.02	0	1,340	37,620
Plot size in square meters (wife)	678	39	334.38	0	0	4,800
Plot size in square meters (joint)	678	56	515.47	0	0	11,400
Livestock in TLU (husband)	678	0.70	0.91	0	.22	6.20
Livestock in TLU (wife)	678	0.38	0.73	0	0	4.06
Livestock in TLU (joint)	678	0.09	0.38	0	0	2.86
Physical asset index (husband)	678	0.21	0.12	0	.18	0.83
Physical asset index (wife)	678	0.10	0.05	0	.09	0.47
Physical asset index (joint)	678	0.15	0.10	0	.13	0.73
Credit (husband)	678	4,913	15,037.25	0	0	148,750
Credit (wife)	678	6,096	26,037.77	0	0	425,000
Credit (joint)	678	6,792	25,835.53	0	0	382,500

Source: Authors' computations based on the survey data.
Note: TLU = tropical livestock units.

Descriptive statistics of other household characteristics are presented in Table A.3 in the Appendix. Heads of households have a mean age of 46 years during baseline data collection and less than 4 years of schooling. Households have, on average, five members and own 3,193 square meters of land with a value of 598,938 taka in 2012 and nonland assets of 33,763 taka. The size of land owned increased by 282 square meters, which is equivalent to

7 decimals, between survey rounds.[7] Livestock holdings are relatively small with a mean worth of 19,857 taka or less than 1 tropical livestock unit, which is surprising considering that approximately two-thirds of male household members older than 15 years of age in our sample report agriculture as their main occupation in 2010. Women, on the other hand, are focused on domestic work even though their involvement in off-farm activities increased between 2010 and 2012.

Table 3.3 Mean values of nonland assets by ownership in 2010 and 2012

Value of nonland assets	2010			2012			Percentage Change		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
Consumer durables	4,056	382	914	4,034	264	918	–0.54	–30.89	0.44
Jewelry	5,147	4,566	4,398	5,814	6,519	5,858	12.96	43	33.20
Vehicles	4,542	180	154	2,604	495	265	–42.67	175	72.08
Agricultural tools	5,084	264	211	4,136	128	112	–18.65	–51.51	–46.92
Other assets	1,879	45	177	2,172	9	435	15.59	–80	145.76

Source: Author's computations based on survey data.
Note: Values in 2010 taka.

Table 3.4 presents gender-differentiated mean values of the comprehensive asset index including land, nonland, and livestock assets, by whether a shock has been experienced, by education, and by age of the household head. Negative shocks affect mainly the assets of husbands, while those of wives and those that are jointly owned appear to be protected.

Experiencing positive shocks is associated with larger values of the index for both husbands and wives, however. It is interesting that more educated heads have more assets across all categories of ownership, while this association begins only above primary schooling. The picture is not as clear with respect to age of the household head. The data suggest that assets need to be accumulated first as very young households do not hold many assets but also suggest that assets appear to be disposed of after a certain age, possibly due to sale or early bequests and older individuals living with their children rather than working with the assets themselves.

[7] Decimal is the common measurement of land size in Bangladesh; 1 decimal is equal to 40.46 square meters.

Table 3.4 Distribution of the comprehensive asset index by shock experience, household head's education level, and age

Shock, education, and age		Husband		Wife		Joint	
	N	Mean	SD	Mean	SD	Mean	SD
Experience of shocks							
Experienced weather shocks	1,272	0.27	0.12	0.24	0.08	0.14	0.11
Not experienced weather shocks	84	0.28	0.12	0.24	0.07	0.14	0.13
Experienced negative shocks	413	0.26	0.12	0.24	0.06	0.14	0.11
Not experienced negative shocks	943	0.27	0.13	0.24	0.08	0.14	0.11
Experienced positive shocks	267	0.28	0.13	0.25	0.07	0.14	0.10
Not experienced positive shocks	1,089	0.26	0.12	0.24	0.08	0.14	0.11
Years of schooling of household head							
No education	582	0.25	0.11	0.23	0.06	0.12	0.10
Lower primary level (1 to 3 years)	157	0.25	0.11	0.23	0.06	0.14	0.10
Primary level (4 or 5 years)	233	0.25	0.12	0.24	0.08	0.14	0.09
Junior level (6 to 8 years)	149	0.29	0.14	0.25	0.06	0.15	0.12
Secondary level (9 or 10 years)	166	0.30	0.14	0.27	0.12	0.17	0.14
Higher secondary level (11 or 12 years)	31	0.34	0.13	0.25	0.05	0.17	0.13
More than 12 years	38	0.38	0.12	0.27	0.06	0.17	0.10
Age of household head							
Less than 25 years	26	0.22	0.10	0.22	0.09	0.13	0.09
26 to 35 years	273	0.26	0.12	0.25	0.08	0.15	0.13
36 to 45 years	353	0.26	0.13	0.24	0.09	0.13	0.10
46 to 55 years	333	0.27	0.12	0.24	0.07	0.14	0.11
56 to 65 years	245	0.28	0.12	0.25	0.09	0.14	0.11
66 to 70 years	61	0.28	0.15	0.22	0.06	0.14	0.09
More than 70 years	65	0.25	0.12	0.23	0.05	0.13	0.07

Source: Author's computations based on survey data.

4. Empirical Approach

In this section we investigate the effects of different external events on the asset holdings of household heads, those of their wives, and those owned jointly. We move from a general measure to more specific measures of assets to exploit intrahousehold dynamics and substitution effects. Let us first consider a simple regression equation to be estimated with ordinary least squares:

$$A_{it} = \beta_0 + \boldsymbol{S'_{it}}\boldsymbol{\alpha} + \boldsymbol{X'}_{it}\boldsymbol{\delta} + \beta_1 Year2010_t + \mu_{it} \qquad (2)$$

where *A* denotes different measures of assets of household *i* at time *t.* To be specific, asset holdings are first measured by the comprehensive index of land, nonland, and livestock assets to get an overall picture of the impact of shocks. Subsequently, we investigate the impact on land, the index of nonland physical assets, and livestock separately. In addition, physical assets and livestock are further disaggregated. As a final measure, we look at financial assets, which we measure as the amount of outstanding credit.

S denotes a vector of shocks including binary variables for having experienced weather shocks and other negative or positive shocks. *Year2010* is a binary variable that takes a value of 1 for observations from the 2010 survey and 0 otherwise, and μ is an error term. Note that we run separate regressions for assets owned by the household head, by his wife, or jointly, and use heteroskedasticity-robust standard errors.

X is a vector of household characteristics including the age of the household head, household size, the male-to-female ratio, the dependency ratio, and education of the household head.[8] However, it may also be that there are unobserved characteristics of households that go hand in hand with both the exposure to shocks and asset holdings. The big advantage of having panel data is that we are able to control for this time-invariant unobserved heterogeneity across households by including household fixed effects:

$$A_{it} = \boldsymbol{S'_{it}}\boldsymbol{\alpha} + \boldsymbol{X'}_{it}\boldsymbol{\delta} + \theta_i + \mu_{it} \qquad (3)$$

which yields our main empirical strategy. θ represents the inclusion of household fixed effects which take account of everything specific to a household that does not change over time, i.e. we investigate changes within households over time, rather than computing average effects generated by differences between households and μ is the error term. It should be noted, however, that we can no longer estimate the effect of time-invariant household characteristics such as the education of the household head in this case. Furthermore, due to the possibility of the error variances not being independent within households, we estimate all our results with heteroskedasticity-robust standard errors clustered at the household level.

[8] We do not include binary measures for the use of credit or extension agents due to the possibility of simultaneity bias. Note that the results are robust to the inclusion of these variables, however.

The Impact of Shocks on Comprehensive Asset Holdings

The results of estimating equation 3 for the comprehensive asset index including land, nonland, and livestock assets are presented in Table 4.1. The effect on the assets of household heads is displayed in column 1, the effect on those of spouses in column 2, and the effect on the index of jointly owned assets in column 3. Surprisingly, having experienced a flood is not associated with overall asset holdings in a statistically significant way, and experiencing a drought is related to the asset holdings of wives in a positive way. The latter is partly explained with the low involvement of women in agriculture, which leads to their owning assets that are not affected by weather events. A cyclone and dowry payments reduce the asset holdings of household heads, while death and illness lead to both spouses disposing of their individually owned assets, their jointly owned ones not being affected, however.

The fact that dowry payments affect the asset base of only the household head is not surprising and in line with Quisumbing (2011), considering that the payment of wedding costs is the obligation of the father of the bride traditionally. Davis (2011a) states that poor people in Bangladesh may need to put a mortgage on their land or sell livestock to pay for dowries and wedding expenses, and Quisumbing, Kumar, and Behrman (2011) also find that land and livestock of wives are drawn down to meet these expenses, which illustrates the immense financial burden of the tradition.

Our results on death and illness are partly in line with Quisumbing (2011), who finds that death and illness affect land and nonland assets of household heads negatively and that there are mixed effects for land and nonland assets of their spouses, and with Quisumbing, Kumar, and Behrman (2011), who find that the consumer durables and nonagricultural assets of household heads, and the land and jewelry of their wives, are drawn down to cope with death and illness. Remittances increase only male assets, and the receipt of dowries or an inheritance does not yield a statistically significant coefficient.

Table 4.1—Impact of shocks on the comprehensive asset index (fixed effects estimates)

Explanatory variables	Comprehensive Asset Index		
	Husband	Wife	Joint
	(1)	(2)	(3)
Flood	–0.007	0.005	–0.001
	(0.010)	(0.005)	(0.008)
Drought	0.012	0.017***	0.011
	(0.009)	(0.006)	(0.007)
Cyclone	–0.032***	0.005	0.003
	(0.006)	(0.006)	(0.009)
Death/illness	–0.010*	–0.007*	0.001
	(0.006)	(0.004)	(0.005)
Dowry payment	–0.018*	0.008	–0.003
	(0.011)	(0.010)	(0.016)
Remittance	0.022***	0.004	–0.003
	(0.007)	(0.005)	(0.006)
Inheritance/dowry	0.006	–0.001	0.001
receipt	(0.014)	(0.009)	(0.009)
Age of household head	0.001**	0.000	–0.000
	(0.000)	(0.000)	(0.001)
Household size	–0.002	0.001	0.002
	(0.004)	(0.002)	(0.003)
Male-to-female ratio	–0.011	–0.005	0.004
	(0.007)	(0.005)	(0.006)
Dependency ratio	–0.081***	–0.003	–0.001
	(0.030)	(0.021)	(0.025)
Household fixed effects	Yes	Yes	Yes
R-squared	0.084	0.025	0.008
N	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: Standard errors are clustered at the household level and are given in parentheses.
*$p < .10$. **$p < .05$. ***$p < .01$.

The Impact of Shocks on Natural, Physical, and Livestock Assets

Let us investigate asset holdings in more detail. Table 4.2 presents the results of our main results, that is, of estimating equation 3 separately for land, nonland physical, and livestock assets by ownership. Land holdings, the dependent variable in columns 1 through 3, are measured as the logarithmic value of plot size in square meters. Nonland physical assets in columns 4 through 6 are represented by an index, and livestock in columns 7 through 9 are measured in TLUs.

While floods appear to reduce female-owned livestock and droughts, which can be predicted to negatively affect jointly held nonland physical assets due to seasonality, cyclones are associated with larger husband-owned and jointly owned land holdings, which is surprising, and with a reduction in the physical assets of household heads. While nonland physical assets are likely to be drawn down to cope with unexpected weather shocks, land is an asset with low liquidity that is also difficult to re-accumulate once sold, which may explain that land holdings are not negatively associated with the experience of unexpected and adverse weather events, in contrast to Quisumbing, Kumar, and Behrman (2011).

Table 4.2—Impact of shocks on natural, physical, and livestock assets (fixed effects estimates)

Explanatory variables	Land			Physical			Livestock		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	–0.025	–0.096	0.266	–0.013	–0.001	–0.003	–0.089	–0.142*	–0.043
	(0.343)	(0.074)	(0.170)	(0.010)	(0.004)	(0.006)	(0.067)	(0.085)	(0.042)
Drought	0.229	–0.039	0.154	–0.012	–0.005	–0.012**	–0.086	0.079	0.045
	(0.297)	(0.081)	(0.187)	(0.010)	(0.004)	(0.005)	(0.072)	(0.067)	(0.035)
Cyclone	0.598**	–0.132	0.352*	–0.021**	–0.001	0.003	0.065	0.010	–0.040
	(0.278)	(0.089)	(0.183)	(0.009)	(0.004)	(0.005)	(0.069)	(0.072)	(0.040)
Death/illness	–0.019	0.058	0.054	–0.001	0.009***	0.005	–0.003	–0.011	–0.006
	(0.239)	(0.075)	(0.100)	(0.005)	(0.003)	(0.003)	(0.042)	(0.041)	(0.023)
Dowry payment	–0.403	–0.007	–0.005	–0.005	0.008	0.003	–0.166	–0.053	–0.121**
	(0.592)	(0.042)	(0.183)	(0.013)	(0.007)	(0.008)	(0.110)	(0.125)	(0.057)
Remittance	–0.918***	0.013	–0.283**	0.009	0.006*	0.003	0.052	0.141**	0.024
	(0.278)	(0.083)	(0.126)	(0.008)	(0.004)	(0.004)	(0.061)	(0.067)	(0.025)
Inheritance/dowry	1.121**	–0.174	0.018	–0.023*	–0.002	0.012*	0.122	0.004	0.023
receipt	(0.524)	(0.218)	(0.182)	(0.013)	(0.006)	(0.007)	(0.104)	(0.113)	(0.023)
Age of household	–0.014	0.005	0.004	0.001***	0.001**	0.000	0.007**	–0.001	–0.002
head	(0.022)	(0.012)	(0.009)	(0.001)	(0.000)	(0.000)	(0.003)	(0.003)	(0.002)
Household size	–0.108	0.043	–0.019	0.003	0.000	0.001	0.007	–0.009	0.000
	(0.133)	(0.039)	(0.078)	(0.003)	(0.001)	(0.002)	(0.030)	(0.033)	(0.019)
Male-to-female ratio	0.223	–0.069	0.237	–0.002	0.002	0.004	0.040	–0.048	0.027
	(0.280)	(0.053)	(0.198)	(0.007)	(0.004)	(0.004)	(0.070)	(0.071)	(0.032)
Dependency ratio	0.787	–0.043	0.010	–0.042	0.012	–0.006	–0.441*	–0.369*	–0.055
	(1.230)	(0.286)	(0.482)	(0.027)	(0.013)	(0.016)	(0.230)	(0.192)	(0.131)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.031	0.011	0.026	0.033	0.021	0.020	0.023	0.030	0.018
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: Standard errors are clustered at the household level and are given in parentheses.
*$p < .10$. **$p < .05$. ***$p < .01$

Interesting to note, the receipt of remittances yields a statistically significant and negative coefficient for land holdings of household heads. An explanation lies in the high costs of migration: household heads may sell part of their land to facilitate migration of themselves or one of their children, for which the household receives remittances in return as argued by Davis (2007). The positive effect of remittances on livestock and other physical assets of spouses is likely to be driven by cases wherein remittances are specifically sent to the wife of the household head, who invests in exclusively owned assets.

Having to pay for a dowry reduces jointly owned livestock, which is traditionally acquired in advance specifically for the purpose of selling it to pay for the wedding expenses of daughters. Deere and Doss (2006) argue that livestock is relatively easy to sell and, furthermore, that livestock is a profitable investment in many cases due to animals probably growing, also in value, with time. In a qualitative study in the same survey area, Davis and Ali (2014) also find supportive results of livestock asset liquidation in response to adverse external events.

The receipt of an inheritance or dowry yields mixed results: the positive effect on the land holdings of household heads is reasonable due to the practice of sons inheriting land, as explained above. A similar reasoning applies to the positive association with jointly owned other physical assets, but the negative coefficient on other physical assets owned by the husband is surprising at first sight. However, it may well be the case that fathers support sons when starting their own household by transferring part of their physical capital (Quisumbing, Kumar, and Behrman 2011). Also initially surprising but in line with Quisumbing (2011), we find that death/illness within the household is positively and statistically significantly associated with nonland physical assets owned by the spouse of the household head. An explanation may be that some of the deceased's wealth is transferred to the woman of the household without being captured in the receipt of an inheritance.

In general, it should be noted that jointly held assets are less affected by unexpected events than individually owned assets and rather used to cope with predicted shocks such as seasonal droughts and paying for dowries. It may be that assets owned by both the household head and his wife are protected compared to individually owned ones or that it is simply difficult for spouses to agree on selling jointly owned assets.

With respect to household characteristics, our main results in which we control for the unobserved heterogeneity across households suggest that age of the household head is positively related to and a high dependency ratio negatively related to asset holdings in general.

We verify the robustness of our main results in several sensitivity checks. First, we compare Table 4.2 to the results of estimating equation 2, that is, the ordinary least squares specification whose results are presented in Table A.4. They suggest that, if an external event yields a statistically significant coefficient, they are positive, even for shocks such as droughts, floods, and cyclones, which may be explained partly by emergency relief in the aftermath of severe covariate shocks. The inconsistency in coefficients in terms of sign and statistical significance compared to our main results suggests that unobserved heterogeneity across households may be an issue and that using household fixed effects is plausible.

Furthermore, while the variables for the exposure to external events are self-reported by households throughout the paper, we also use community reports on weather-related shocks. The results are presented in Table A.5 in the Appendix and support the main results with respect to the effects of idiosyncratic and still self-reported shocks such as death and illness, dowry payments, and positive events such as the receipt of remittances, an inheritance, or dowries. When it comes to covariate shocks, the effects of shocks reported by the community are stronger in terms of statistical significance, most likely due to community officials being aware only of events affecting a large number of households, which probably implies that the shocks and its consequences are severe.

Table A.6 presents another sensitivity check in which we use the monetary values of the three categories of assets as dependent variables rather than plot size for land, the index for physical nonland assets, and TLUs for livestock. The results are only partly supported and differ from the main ones in Table 4.2 especially for nonland assets and livestock, which may be due to the index and the measurement in TLUs being relatively crude compared to the values of assets.

Furthermore, we estimate equation 3 with village rather than household fixed effects as shocks often affect more than one household, and even the accumulation of assets may be characterized by unobserved heterogeneity across villages. The results of this exercise are presented in Table A.7 and, again, partly support the main ones.

The Impact of Shocks on Disaggregated Physical Assets

Let us now take a look at more specific types of nonland physical and livestock assets. Table 4.3 presents the results of estimating equation 3 separately for consumer durables (columns 1 through 3), agricultural tools (columns 4 through 6), and vehicles (columns 7 through 9) by ownership as dependent variables. Table 4.4 reports the results for jewelry in columns 1 through 3, for poultry in columns 4 through 6, and for cattle in columns 7 through 9.

Table 4.3 Impact of shocks on consumer durables, agricultural tools, and vehicles (fixed effects estimates)

Type of shock	Consumer Durables			Agricultural Tools			Vehicles		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	–0.319	–0.088	0.003	–0.383	0.325	0.191	0.417	0.068	–0.205
	(0.307)	(0.233)	(0.182)	(0.323)	(0.218)	(0.165)	(0.292)	(0.094)	(0.143)
Drought	0.219	–0.395**	0.168	0.263	–0.069	–0.055	0.252	–0.394***	–0.131
	(0.249)	(0.200)	(0.147)	(0.319)	(0.203)	(0.139)	(0.276)	(0.150)	(0.165)
Cyclone	–0.871***	0.236	–0.122	–0.187	0.597***	0.252*	–0.284	0.016	–0.236
	(0.289)	(0.195)	(0.166)	(0.285)	(0.220)	(0.145)	(0.288)	(0.123)	(0.156)
Death/illness	0.304	–0.061	0.121	–0.205	0.085	0.072	0.053	0.085	–0.104
	(0.192)	(0.158)	(0.124)	(0.214)	(0.141)	(0.092)	(0.220)	(0.103)	(0.086)
Dowry payment	–0.191	0.388	–0.091	0.283	–0.023	–0.119	0.400	–0.474*	0.219
	(0.395)	(0.330)	(0.328)	(0.474)	(0.389)	(0.214)	(0.480)	(0.264)	(0.251)
Remittance	0.681***	–0.650***	–0.080	1.487***	–0.389**	–0.201**	0.406	–0.023	–0.175*
	(0.205)	(0.193)	(0.165)	(0.267)	(0.184)	(0.094)	(0.278)	(0.122)	(0.096)
Inheritance/dowry	0.057	0.113	0.302	–0.579	0.430	0.042	0.762	0.217	–0.173
receipt	(0.368)	(0.374)	(0.322)	(0.501)	(0.375)	(0.126)	(0.500)	(0.142)	(0.166)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.057	0.041	0.017	0.075	0.032	0.038	0.023	0.031	0.026
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: The specification includes the same control variables as those reported in Tables 4.1 and 4.2. Standard errors are clustered at the household level and are given in parentheses.
*p < .10. **p < .05. ***p < .01.

The most interesting result is that the finding from Table 4.2 that cyclones are associated with a decrease in nonland physical assets of household heads is supported and enriched in Table 4.3: the reduction in physical assets is driven by drawing down consumer durables, while household heads keep their agricultural tools and vehicles, possibly due to their role in income generation of rural families. It should be noted, however, that vehicles owned by the spouse are drawn down to cope with droughts and dowry expenses, which is in line with

Davis (2011a, 2011b), who finds that dowry expenses in Bangladesh are often paid by parents selling (productive) assets such as livestock, rickshaws, land, household durables, and jewelry, which pushes them even deeper into poverty. The positive effects of covariate shocks found here are most likely due to aid programs as discussed above.

Table 4.4 Impact of shocks on jewelry, poultry, and livestock (fixed effects estimates)

	Jewelry			Poultry			Cattle		
Type of shock	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	–0.049	–0.063	–0.343	–0.149	–0.655*	–0.031	–1.488***	0.610**	0.198
	(0.410)	(0.385)	(0.334)	(0.398)	(0.365)	(0.137)	(0.454)	(0.276)	(0.228)
Drought	–0.961**	1.434***	0.101	–1.209***	0.833**	0.407***	0.206	0.427*	0.320
	(0.382)	(0.380)	(0.288)	(0.365)	(0.347)	(0.145)	(0.426)	(0.231)	(0.212)
Cyclone	0.256	–0.849**	–0.316	0.003	–0.976***	–0.274*	–0.264	–0.085	–0.224
	(0.356)	(0.364)	(0.308)	(0.377)	(0.333)	(0.154)	(0.410)	(0.243)	(0.184)
Death/illness	0.169	0.041	0.046	0.029	–0.265	0.099	–0.196	–0.097	–0.071
	(0.266)	(0.296)	(0.216)	(0.259)	(0.260)	(0.107)	(0.332)	(0.204)	(0.111)
Dowry payment	0.396	–0.896	–0.330	0.179	–0.146	–0.357*	–0.942	0.497	–0.094
	(0.584)	(0.598)	(0.568)	(0.529)	(0.611)	(0.198)	(0.749)	(0.472)	(0.249)
Remittance	–0.894***	1.824***	0.588**	–0.778**	1.468***	0.119	0.121	0.247	0.280**
	(0.334)	(0.349)	(0.257)	(0.307)	(0.316)	(0.127)	(0.382)	(0.236)	(0.130)
Inheritance/dowry	0.237	–1.260**	–0.123	–0.228	–0.702	0.082	0.808	–0.426	–0.014
receipt	(0.567)	(0.622)	(0.406)	(0.530)	(0.617)	(0.135)	(0.743)	(0.421)	(0.149)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.041	0.111	0.021	0.044	0.087	0.038	0.029	0.016	0.025
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: The specification includes the same control variables as those reported in Tables 4.1 and 4.2. Standard errors are clustered at the household level and are given in parentheses.
*$p < .10$. **$p < .05$. ***$p < .01$.

When looking at Tables 4.3 and 4.4 in conjunction, it is obvious that remittances impact positively and negatively depending on the specific type of asset. Spouses of household heads appear to accumulate jewelry and poultry instead of consumer goods and agricultural tools, while the case is reversed for household heads. The motivation for these different strategies may lie in differences of bargaining power: women prefer investing in assets that

obviously belong to them due to less control over other assets of the family, while men invest to improve the economic well-being of the whole family.

Surprisingly, the receipt of an inheritance or dowry is associated with decreases in jewelry owned by the wife of the household head as displayed in column 2 of Table 4.4, which is probably due to the spouse of the household head also transferring some of her jewelry to her daughters(-in-law). Another interesting finding from Table 4.4 is that the poultry of spouses is drawn down in response to floods and cyclones, while the poultry of household heads is reduced in association with droughts, which are positively related to the jewelry and cattle of wives, possibly due to the accumulation of these as an *ex ante* coping strategy as droughts are predicted. And even though the cattle of household heads diminishes in response to a flood, this is possibly not because of sale to cope with the shock but because of the animals not being able to survive such a covariate shock, which is partly in line with Quisumbing, Kumar, and Behrman (2011) who argue that the livestock of wives is relatively strongly affected by droughts and the associated lack of water and feedstuff in Bangladesh. In accordance with our main findings in Table 4.2, dowry and wedding expenses appear to be paid for with jointly owned poultry, and in general, households appear to prefer keeping larger livestock, which may also play a role in agriculture, and would rather sell smaller animals.

In conclusion, the picture emerging from Table 4.2 is supported: weather shocks are generally negatively associated with physical assets held by household heads, and other negative events draw down physical assets held by both.

The Impact of Shocks on Financial Capital

Financial capital is an important means of coping with unexpected external events, but measuring it is difficult. Even though the fact that credit has been taken out and the amount of outstanding credit depends on other assets serving as collateral and most likely a minimum level of education, it is the best measure we have for financial capital. Table 4.5 reports the results of estimating equation 3 for the amount of outstanding credit as the dependent variable.

Table 4.5—Impact of shocks on financial capital (outstanding credit, fixed effects estimates)

Explanatory variables	Husband	Wife	Joint
	(1)	(2)	(3)
Flood	–0.577	0.641	–0.729
	(0.523)	(0.490)	(0.492)
Drought	1.038**	0.252	1.374***
	(0.486)	(0.482)	(0.473)
Cyclone	–2.053***	–1.973***	–1.578***
	(0.525)	(0.464)	(0.518)
Death/illness	0.094	0.181	0.073
	(0.369)	(0.341)	(0.358)
Dowry payment	0.459	–0.743	1.190
	(0.879)	(0.781)	(0.904)
Remittance	1.854***	0.905**	2.522***
	(0.463)	(0.434)	(0.479)
Inheritance/dowry receipt	–0.708	0.811	0.271
	(0.773)	(0.884)	(0.752)
Age of household head	–0.016	0.020	0.042
	(0.025)	(0.024)	(0.034)
Household size	0.108	–0.461**	0.265
	(0.250)	(0.210)	(0.261)
Male-to-female ratio	–0.575	–0.987**	–0.580
	(0.429)	(0.394)	(0.450)
Dependency ratio	–2.427	–1.615	–1.070
	(1.679)	(1.546)	(1.627)
Household fixed effects	Yes	Yes	Yes
R-squared	0.087	0.082	0.113
N	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: Standard errors are clustered at the household level and are given in parentheses.
**$p < .05$. ***$p < .01$.

Due to, for example, nongovernmental organizations being active in encouraging adoption of formal financial means within villages, we substitute the household fixed effects for village fixed effects and report the results of this sensitivity check in Table A.8 in the Appendix, which yields less statistically significant coefficients than Table 4.5. The two most striking results of Table 4.5 are supported, however: cyclones are associated with lower outstanding credit, and the opposite is true for receiving remittances. Even though both of these findings appear surprising at first, they are possibly both rooted in less or more collateral being available when applying for a loan, respectively. An alternative explanation is that credit is used to finance migration associated with remittances and that disaster relief after severe covariate shocks is effective enough that borrowing is not necessary. Spouses of

household heads are found to borrow less in families that are bigger and have a relatively high share of male members, possibly due to income diversification.

5. Conclusions

Asset holdings as well as strategies to cope with external events differ depending on whether the household head or his wife is concerned, even when a shock affects the whole household. With respect to asset holdings and in line with the existing literature, men are found to hold more assets than their spouses in general and especially with respect to land, while jewelry is traditionally a female-owned asset.

To investigate the effects of external events, we initially look at a comprehensive measure of asset holdings differentiated by who owns them; subsequently disaggregate assets into land, nonland physical, and livestock assets; and finally disaggregate them into specific types of the latter two categories. The overall picture that emerges is that household heads' physical assets are negatively affected by unexpected weather events, particularly by cyclones, and that assets owned by heads and their spouses are drawn down to cope with the death or illness of family members. Expenses for weddings and dowries are found to be met by selling assets of household heads when measured crudely and smaller jointly owned livestock when investigating the specific types of assets.

The fact that the results change and complement each other when moving from the comprehensive index of asset holdings via categories of assets to specific types highlights the importance of substitution effects within a household's asset portfolio. One important finding emanating from this is that larger animals and other assets employed in the generation of income, for example agricultural tools, are protected when coping with unexpected events, and especially household heads sell their consumer durables as they are not so concerned with keeping assets that clearly belong to them (such as jewelry for women) but are able to focus on the economic well-being of the whole family. Interesting to note, we also find that jointly owned assets are not drawn down easily and mostly in response to expected shocks, possibly due to an ad hoc agreement on their sale being difficult.

As discussed above, assets in the hands of women are often found to be beneficial to the well-being of children with respect to health, education, and nutrition, which illustrates the importance of programs aimed at protecting these assets or even encouraging female ownership of assets that are not easily drawn down to cope with shocks, such as land, through reforming and enforcing inheritance laws. Land ownership, in turn, may also enable women to be more active in financial markets due to collateral being available. Female asset holdings, relative bargaining power within families, and the position of women in Bangladeshi society in general are interrelated, so the protection of female-owned assets may positively affect women's social and human capital and vice versa, possibly even extending to an abolition of the tradition of paying dowries. The payment of dowries constitutes a large financial burden for the poor, and laws against the practice have been passed but, unfortunately, with little success. Trainings and the provision of credit may furthermore enhance asset holdings of both household heads and their spouses, and the design of policies to protect assets when facing a shock needs to take into account the different accumulation and coping strategies of men and women.

Appendix: Supplementary Tables

Table A.1 Types of assets used in the construction of the physical asset index

Agricultural Goods	Consumer Goods		Housing Materials and Amenities
Tractor	Radio	Sewing machine	Toilet
Pump	Refrigerator	Jewelry	Walls
Deep tube well	TV	Tube well	Roof
Shallow tube well	Phone/cell phone	Cycle	Electricity
Fishing net	Iron	Rickshaw	Cooking fuel
Boat	Fan	Motorcycle	
Thresher	CD player	Other vehicles	
Plough		Other	

Source: Authors' computations based on the survey data.

Table A.2 Summary statistics of disaggregated physical asset ownership

Type of physical asset	*N*	Mean	Standard Deviation	Minimum	Median	Maximum
2010						
Consumer goods (husband)	678	4,056	11,600.29	0	1,263	179,945
Consumer goods (wife)	678	382	2,809.65	0	0	51,000
Consumer goods (joint)	678	914	5,127.86	0	0	116,450
Jewelry (husband)	678	5,147	22,030.71	0	0	297,500
Jewelry (wife)	678	4,566	14,475.67	0	0	180,000
Jewelry (joint)	678	4,398	17,423.64	0	0	150,000
Vehicle (husband)	678	4,542	31,071.29	0	0	510,000
Vehicle (wife)	678	180	2,427.46	0	0	42,500
Vehicle (joint)	678	154	1,946.26	0	0	38,250
Poultry (husband)	678	1,014	6,376.33	0	0	102,000
Poultry (wife)	678	571	2,101.33	0	0	42,500
Poultry (joint)	678	233	2,530.22	0	0	42,840
Cattle (husband)	678	14,346	29,511.31	0	0	455,000
Cattle (wife)	678	2,344	17,930.90	0	0	425,000
Cattle (joint)	678	1,044	6,953.63	0	0	80,000
Agricultural tools (husband)	678	5,084	33,431.38	0	200	608,600
Agricultural tools (wife)	678	264	2,908.59	0	0	59,585
Agricultural tools (joint)	678	211	2,657.68	0	0	51,000
2012						
Consumer goods (husband)	678	4,034	8,892.58	0	1,500	102,128
Consumer goods (wife)	678	264	1,515.05	0	0	27,455
Consumer goods (joint)	678	918	3,227.56	0	0	38,250
Jewelry (husband)	678	5,815	29,291.24	0	0	425,000
Jewelry (wife)	678	6,519	23,305.11	0	0	320,000
Jewelry (joint)	678	5,858	23,560.41	0	0	300,000
Vehicle (husband)	678	2,604	14,238.43	0	0	221,000
Vehicle (wife)	678	495	8,602.70	0	0	212,500
Vehicle (joint)	678	265	3,667.66	0	0	85,000
Poultry (husband)	678	973	6,438.21	0	0	120,000
Poultry (wife)	678	616	2,248.22	0	0	46,750
Poultry (joint)	678	179	1,884.25	0	0	47,000
Cattle (husband)	678	15,884	28,042.96	0	829	285,000
Cattle (wife)	678	1,248	6,465.13	0	0	77,000
Cattle (joint)	678	957	7,648.67	0	0	150,000
Agricultural tools (husband)	678	4,136	20,730.88	0	300	400,000
Agricultural tools (wife)	678	128	1,466.35	0	0	25,500
Agricultural tools (joint)	678	112	1,717.73	0	0	42,500

Source: Authors' computations based on the survey data.

Table A.3 Summary statistics of household characteristics

Household characteristics	*N*	Mean	Standard Deviation	Minimum	Median	Maximum	2012–2010
Household size in 2010	678	4.99	1.94	2	5	15	
Household size in 2012	678	4.91	1.90	1	5	14	–0.081
Male-to-female ratio in 2010	678	1.20	0.85	0.14	1	5	
Male-to-female ratio in 2012	678	1.21	0.85	0.17	1	5	0.008
Age of the household head 2010	678	46.30	13.42	17	45	95	
Age of the household head 2012	678	48.70	13.22	21	48	97	2.40***
Years of schooling of household head in 2010	678	3.68	4.17	0	2	17	
Years of schooling of household head in 2012	678	3.67	4.19	0	2	17	–0.013
Household dependency ratio in 2010	678	0.67	0.15	0.2	.67	1	
Household dependency ratio in 2012	678	0.67	0.15	0.17	.7	1	–0.003
Use of credit in 2010	678	0.42	0.49	0	0	1	
Use of credit in 2012	678	0.47	0.50	0	0	1	0.053**
Use of extensions in 2010	678	0.27	0.44	0	0	1	
Use of extensions in 2012	678	0.28	0.45	0	0	1	0.012
Total plot size in 2010 (in square meters)	678	2,911	4,003.21	0	1,230	27,520	
Total plot size in 2012 (in square meter)	678	3,193	4,605.82	0	1,520	37,620	282
Total land value in taka in 2010	678	560,906	771,283.70	0	276,000	4,918,100	
Total land value in taka in 2012	678	598,938	797,277.60	0	321,000	4,471,000	38,032
Livestock value in taka in 2010	678	19,551	34,775.96	0	5,975	455,200	
Livestock value in taka in 2012	678	19,857	29,639.97	0	6,630	287,900	306
Livestock in TLU in 2010	678	0.77	0.94	0	.5	7.90	
Livestock in TLU in 2012	678	0.82	0.92	0	.6	6.20	0.054
Total nonland assets in taka in 2010	678	31,998	71,001.68	0	10,280	864,930	
Total nonland assets in taka in 2012	678	33,763	60,124.31	0	12,178	563,400	1765

Source: Authors' computations based on the survey data.

Note: Two-sample *t*-tests for equality of the means for paired data with unequal variances in all cases. TLU = tropical livestock units.

**$p < .05$. ***$p < .01$.

Table A.4—Impact of shocks on land, nonland physical, and livestock assets (ordinary least squares estimates)

Explanatory variables	Land			Physical			Livestock		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	0.199	0.005	0.204**	0.009	0.010***	0.012**	–0.005	–0.019	–0.031
	(0.199)	(0.079)	(0.092)	(0.008)	(0.003)	(0.006)	(0.057)	(0.047)	(0.027)
Drought	0.378*	0.040	0.268***	0.009	0.002	0.005	0.115**	–0.003	0.008
	(0.198)	(0.071)	(0.100)	(0.008)	(0.003)	(0.006)	(0.055)	(0.050)	(0.027)
Cyclone	0.514***	–0.011	0.264**	–0.004	–0.002	0.006	0.178***	0.091*	0.015
	(0.197)	(0.077)	(0.110)	(0.008)	(0.003)	(0.006)	(0.060)	(0.052)	(0.027)
Death/illness	–0.120	–0.030	–0.009	–0.008	–0.002	–0.003	–0.049	–0.029	–0.008
	(0.197)	(0.067)	(0.080)	(0.007)	(0.003)	(0.006)	(0.051)	(0.043)	(0.024)
Dowry payment	–0.239	–0.095	–0.140	0.016	0.011	0.007	–0.030	0.088	–0.007
	(0.457)	(0.095)	(0.123)	(0.018)	(0.008)	(0.013)	(0.110)	(0.093)	(0.057)
Remittance	–0.406*	0.062	0.011	0.006	0.009**	–0.001	0.102	0.202***	0.046
	(0.243)	(0.084)	(0.098)	(0.010)	(0.004)	(0.007)	(0.066)	(0.058)	(0.036)
Inheritance/dowry receipt	–0.105	–0.118	–0.189*	0.010	–0.007	0.009	–0.087	–0.088	–0.051
	(0.418)	(0.119)	(0.109)	(0.017)	(0.006)	(0.013)	(0.109)	(0.090)	(0.059)
Age of household head	0.024***	0.001	–0.006**	0.000	0.000	0.000	0.002	–0.001	–0.002***
	(0.007)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)
Household size	0.047	–0.021	0.011	0.007***	–0.001	0.011***	0.013**	–0.001	0.006
	(0.047)	(0.014)	(0.019)	(0.002)	(0.001)	(0.002)	(0.006)	(0.005)	(0.004)
Male-to-female ratio	0.115	–0.100***	–0.036	0.000	0.003*	–0.002	0.067***	0.021	0.029***
	(0.096)	(0.024)	(0.053)	(0.004)	(0.002)	(0.003)	(0.016)	(0.012)	(0.008)
Dependency ratio	1.051	0.223	0.044	0.006	0.028**	–0.019	0.033	0.037	–0.013
	(0.643)	(0.200)	(0.263)	(0.024)	(0.012)	(0.018)	(0.028)	(0.024)	(0.010)
Years of schooling of	0.110***	0.007	0.007	0.008***	0.002***	0.007***	–0.038	–0.101	–0.125
household	(0.023)	(0.007)	(0.009)	(0.001)	(0.000)	(0.001)	(0.165)	(0.133)	(0.079)
Year2010	–0.155	–0.034	–0.020	–0.019***	–0.008***	–0.015***	–0.085*	–0.045	–0.007
	(0.172)	(0.057)	(0.074)	(0.007)	(0.003)	(0.005)	(0.047)	(0.039)	(0.023)
Constant	3.168***	0.165	0.228	0.122***	0.075***	0.061***	0.078	0.321**	0.128*
	(0.663)	(0.202)	(0.302)	(0.024)	(0.012)	(0.018)	(0.163)	(0.128)	(0.072)
Household fixed effects	No	No	No	No	No	No	No	No	No
R-squared	0.035	0.011	0.017	0.095	0.053	0.014	0.041	0.140	0.024
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.

Note: Robust standard errors are given in parentheses. *$p < .10$. **$p < .05$. ***$p < .01$.

Table A.5 Impact of shocks on physical assets (weather shocks reported by community, fixed effects estimates)

Explanatory variables	Land			Physical			Livestock		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	0.130	–0.082	0.023	–0.003	–0.008***	–0.006**	–0.087**	–0.049	0.005
	(0.215)	(0.069)	(0.080)	(0.006)	(0.003)	(0.003)	(0.041)	(0.046)	(0.024)
Flood	–0.048	–0.020	–0.021	–0.002	0.010**	–0.004	–0.006	–0.012	–0.034
	(0.207)	(0.077)	(0.124)	(0.005)	(0.004)	(0.004)	(0.047)	(0.046)	(0.022)
Drought	–0.376	0.027	0.238**	0.009	0.006*	0.007**	–0.100*	0.027	0.008
	(0.247)	(0.068)	(0.116)	(0.006)	(0.003)	(0.003)	(0.055)	(0.060)	(0.031)
Cyclone	–0.035	0.065	0.039	–0.001	0.008***	0.005	–0.001	–0.015	–0.004
	(0.239)	(0.076)	(0.101)	(0.005)	(0.003)	(0.003)	(0.041)	(0.041)	(0.023)
Death/illness	–0.401	–0.005	–0.025	–0.004	0.005	0.003	–0.171	–0.058	–0.113**
	(0.590)	(0.047)	(0.183)	(0.014)	(0.007)	(0.008)	(0.109)	(0.129)	(0.058)
Dowry payment	–0.914***	0.031	–0.364***	0.011	0.005	0.001	0.056	0.165**	0.037
	(0.269)	(0.085)	(0.133)	(0.008)	(0.003)	(0.004)	(0.062)	(0.068)	(0.027)
Remittance	1.084**	–0.176	0.058	–0.023*	–0.002	0.013**	0.103	0.000	0.025
	(0.536)	(0.221)	(0.185)	(0.013)	(0.006)	(0.006)	(0.106)	(0.113)	(0.023)
Inheritance/dowry	–0.015	0.005	0.006	0.001***	0.001**	0.000	0.006*	–0.001	–0.002
receipt	(0.022)	(0.012)	(0.009)	(0.001)	(0.000)	(0.000)	(0.003)	(0.003)	(0.002)
Age of household	–0.117	0.043	0.000	0.003	0.001	0.002	0.009	–0.008	–0.003
head	(0.133)	(0.040)	(0.077)	(0.003)	(0.001)	(0.002)	(0.029)	(0.032)	(0.018)
Household size	0.285	–0.076	0.234	–0.004	0.002	0.004	0.052	–0.042	0.024
	(0.281)	(0.053)	(0.199)	(0.007)	(0.004)	(0.004)	(0.069)	(0.073)	(0.033)
Male-to-female ratio	0.942	–0.036	0.000	–0.046*	0.013	–0.004	–0.369	–0.348*	–0.061
	(1.208)	(0.290)	(0.471)	(0.028)	(0.013)	(0.016)	(0.229)	(0.193)	(0.128)
Dependency ratio	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household fixed effects	0.029	0.010	0.023	0.025	0.044	0.020	0.029	0.020	0.013
R-squared	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356
N									

Source: Authors' computations based on the survey data.

Note: Standard errors are clustered at the household level and are given in parentheses.

*p < .10. **p < .05. ***p < .01.

Table A.6 Impact of shocks on the monetary value of natural, physical, and livestock assets (fixed effects estimates)

Explanatory variables	Land			Physical			Livestock		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	–0.119	–0.208	0.532*	–0.460*	0.498	0.076	–1.138***	–0.173	0.034
	(0.557)	(0.138)	(0.310)	(0.271)	(0.311)	(0.233)	(0.397)	(0.389)	(0.229)
Drought	0.382	–0.058	0.357	–0.057	0.956***	0.302	–0.198	1.022***	0.522**
	(0.493)	(0.152)	(0.324)	(0.226)	(0.313)	(0.211)	(0.418)	(0.355)	(0.227)
Cyclone	0.964**	–0.276	0.676**	–0.390*	–0.447*	–0.361*	0.116	–0.657**	–0.392*
	(0.449)	(0.168)	(0.332)	(0.222)	(0.253)	(0.194)	(0.386)	(0.341)	(0.209)
Death/illness	–0.345	0.106	0.108	0.230	0.142	0.086	–0.174	–0.130	0.048
	(0.410)	(0.131)	(0.181)	(0.165)	(0.226)	(0.165)	(0.295)	(0.257)	(0.140)
Dowry payment	–1.181	0.034	0.051	0.117	–0.956**	–0.150	–0.888	–0.134	–0.455
	(0.959)	(0.057)	(0.353)	(0.383)	(0.475)	(0.481)	(0.768)	(0.652)	(0.315)
Remittance	–1.499***	0.003	–0.551**	0.485***	1.146***	0.451**	–0.376	1.372***	0.320**
	(0.495)	(0.151)	(0.227)	(0.170)	(0.246)	(0.198)	(0.319)	(0.331)	(0.164)
Inheritance/dowry receipt	1.929**	–0.330	0.028	–0.206	–0.716	–0.260	0.124	–0.747	0.137
	(0.932)	(0.364)	(0.344)	(0.357)	(0.551)	(0.272)	(0.611)	(0.615)	(0.197)
Age of household head	–0.034	0.013	0.012	0.027*	0.017	–0.005	0.017	–0.015	–0.009
	(0.043)	(0.024)	(0.017)	(0.015)	(0.019)	(0.017)	(0.018)	(0.021)	(0.017)
Household size	–0.191	0.091	–0.028	0.163*	–0.020	0.157*	0.060	0.109	0.125
	(0.228)	(0.079)	(0.137)	(0.100)	(0.130)	(0.091)	(0.171)	(0.168)	(0.099)
Male-to-female ratio	0.477	–0.144	0.342	–0.143	–0.717**	–0.008	0.058	–0.543	–0.018
	(0.471)	(0.110)	(0.354)	(0.168)	(0.302)	(0.188)	(0.305)	(0.335)	(0.128)
Dependency ratio	1.704	–0.241	–0.060	–0.986	–0.248	0.289	–0.025	–1.135	0.005
	(2.181)	(0.540)	(0.859)	(0.759)	(0.946)	(0.666)	(1.365)	(1.244)	(0.731)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.035	0.015	0.027	0.032	0.081	0.027	0.020	0.066	0.037
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.

Note: Standard errors are clustered at the household level and are given in parentheses.

*p < .10. **p < .05. ***p < .01.

Table A.7 Impact of shocks on natural, physical, and livestock assets (village fixed effects estimates)

Explanatory variables	Land			Physical			Livestock		
	Husband	Wife	Joint	Husband	Wife	Joint	Husband	Wife	Joint
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Flood	0.129	0.059	0.291**	0.005	0.006*	0.007	–0.058	–0.066	–0.028
	(0.221)	(0.093)	(0.107)	(0.011)	(0.003)	(0.008)	(0.075)	(0.063)	(0.031)
Drought	0.056	–0.023	0.283**	0.008	–0.002	–0.001	0.005	–0.057	–0.005
	(0.203)	(0.086)	(0.114)	(0.009)	(0.003)	(0.006)	(0.065)	(0.050)	(0.027)
Cyclone	0.188	0.077	0.265**	–0.012	–0.005	0.000	0.100	0.016	0.031
	(0.281)	(0.098)	(0.124)	(0.009)	(0.004)	(0.008)	(0.075)	(0.055)	(0.030)
Death/illness	–0.155	–0.050	–0.005	–0.003	0.001	0.002	–0.075	–0.054	–0.006
	(0.254)	(0.070)	(0.075)	(0.007)	(0.003)	(0.005)	(0.057)	(0.045)	(0.022)
Dowry payment	–0.459	–0.062	–0.210	0.016	0.016*	0.024*	–0.080	0.060	–0.006
	(0.421)	(0.097)	(0.159)	(0.030)	(0.009)	(0.014)	(0.122)	(0.095)	(0.060)
Remittance	–0.433**	0.105	0.008	0.008	0.009**	–0.002	0.084	0.199***	0.065**
	(0.207)	(0.100)	(0.107)	(0.010)	(0.004)	(0.007)	(0.067)	(0.046)	(0.030)
Inheritance/dowry receipt	0.275	–0.171	–0.202	0.005	–0.006	0.011	0.022	–0.017	–0.042
	(0.320)	(0.151)	(0.124)	(0.013)	(0.005)	(0.011)	(0.116)	(0.101)	(0.034)
Age of household head	0.023***	0.002	–0.006**	0.000	0.000***	0.000	0.005**	0.000	–0.002*
	(0.007)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)
Household size	0.075	–0.013	–0.004	0.006**	–0.001	0.011***	0.077***	0.024	0.029***
	(0.045)	(0.016)	(0.022)	(0.003)	(0.001)	(0.003)	(0.020)	(0.015)	(0.010)
Male-to-female ratio	0.085	–0.087***	–0.033	–0.003	0.002	–0.005	0.028	0.035	–0.016
	(0.088)	(0.026)	(0.056)	(0.005)	(0.002)	(0.004)	(0.031)	(0.031)	(0.012)
Household dependency ratio	0.557	0.347	–0.153	–0.032	0.008	–0.055***	0.064	–0.051	–0.093
	(0.699)	(0.240)	(0.327)	(0.028)	(0.014)	(0.020)	(0.204)	(0.136)	(0.092)
R-squared	0.017	0.012	0.016	0.014	0.023	0.047	0.043	0.020	0.021
Village fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: Standard errors are clustered at the village level and are given in parentheses.
*p < .10. **p < .05. ***p < .01.

Table A.8 Impact of shocks on financial capital (outstanding credit, village fixed effects estimates)

Explanatory variables	Husband	Wife	Joint
	(1)	(2)	(3)
Flood	–0.421	0.070	–0.350
	(0.325)	(0.341)	(0.298)
Drought	0.115	–0.100	0.261
	(0.298)	(0.338)	(0.278)
Cyclone	–0.991***	–0.549	–0.713*
	(0.356)	(0.405)	(0.402)
Death/illness	0.489*	0.174	0.117
	(0.248)	(0.233)	(0.328)
Dowry payment	0.882	0.619	0.954
	(0.604)	(0.508)	(0.692)
Remittance	1.188***	0.688**	2.039***
	(0.374)	(0.307)	(0.338)
Inheritance/dowry receipt	–0.339	0.817	–0.060
	(0.681)	(0.676)	(0.656)
Age of household head	–0.006	–0.002	–0.007
	(0.010)	(0.010)	(0.008)
Household size	0.119**	0.017	0.327***
	(0.044)	(0.073)	(0.070)
Male-to-female ratio	–0.074	–0.169	–0.163
	(0.133)	(0.132)	(0.108)
Dependency ratio	–0.341	–0.658	0.699
	(0.964)	(0.870)	(0.700)
Village fixed effects	Yes	Yes	Yes
R-squared	0.033	0.016	0.080
N	1,356	1,356	1,356

Source: Authors' computations based on the survey data.
Note: Standard errors are clustered at the village level and are given in parentheses.
*p < .10. **p < .05. ***p < .01.

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