JOURNAL OF AFRICAN ECONOMIES, VOLUME 14, NUMBER 4, PP. 559–585
doi:10.1093/jae/eji022 online date 13 August 2005

Shocks and Consumption in 15 Ethiopian Villages, 1999–2004

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1. Introduction

Improving our understanding of risk and vulnerability is an issue of increasing importance for Ethiopia, as it is for much of Africa. A small, but growing, body of evidence, points to the role that risk, shocks and vulnerability in perpetuating poverty. Specifically, uninsured shocks — adverse events that are costly to individuals and households in terms of lost income, reduced consumption, or the sale or destruction of assets — are a cause of poverty. Dercon (2004) demonstrates that in Ethiopia rainfall shocks have persistent impacts on growth; further, he shows that covariates capturing the severity of the 1984–5 famine are causally related to slower growth in household consumption in the 1990s. Hoddinott and Kinsey (2001) and Alderman *et al*. (2004) show that rainfall shocks are causally related to reduced human capital formation and that the magnitudes of these effects are meaningful. For example, Alderman *et al*. (2004) estimate that children affected by the civil war and drought shocks of the late 1970s and early 1980s in rural Zimbabwe suffered a loss of about 14% of lifetime income.

Further, the threat of such events may cause households and individuals to take actions that, while providing some additional protection against shocks, come at the cost of income gains. In India, Morduch (1990) shows that asset-poor households devote a larger share of land to safer traditional varieties of rice and castor than to

[1] The authors thank the Food-For-Peace Office of USAID and the World Food Programme for generously funding the survey work and FFP/USAID, WFP, and DfID for funding the analysis that underlies this paper; in particular, we thank P.E. Balakrishnan, Robin Jackson, Malcolm Ridout and Will Whelan for their support. We have benefited from superb research assistance from Yisehac Yohannes. Errors are ours.

riskier, high-value activities. Dercon (1996) finds that Tanzanian households with limited liquid assets grow proportionately more sweet potatoes, a low-return low-risk crop. A household with average livestock holdings devotes 20% less of its land to sweet potatoes than a household with no liquid assets. The crop portfolio of the richest quintile yields 25% more per adult than that of the poorest quintile. Dercon (2002) summarises other studies which also point toward the conclusion that household choices that limit exposure to risk come at the cost of significantly lower incomes. But while shocks are perceived to be pervasive in much of Africa, there is surprisingly little quantitative data on their incidence, severity and consequences.[2]

This paper examines who is vulnerable to different types of shocks in rural Ethiopia. Using the two most recent rounds of the Ethiopian Rural Household Survey, it characterizes the nature, frequency and severity of climatic, economic, health and other shocks faced by rural Ethiopian households. It examines how shocks affect households, assess what shocks have been most important to different groups in Ethiopia and explores who was worst affected. In addition, it assesses the impact of these on levels and changes in measures of household well-being between 1999 and 2004.

2. Data

Ethiopia is a federal country divided into 11 regions. Each region is subdivided into zones and zones into *woredas*, which are roughly equivalent to a US or UK county. *Woredas*, in turn, are divided into Peasant Associations (PAs), or *Kebeles*, an administrative unit consisting of a number of villages. Peasant Associations were set up in the aftermath of the 1974 revolution. Our data are taken from the Ethiopia Rural Household Survey (ERHS), a unique longitudinal household data. Data collection started in 1989, when a survey team visited six PAs in Central and Southern Ethiopia. The survey was expanded in 1994 to encompass 15 PAs across four regions,

[2] World Bank (2005) provides evidence on the impact of various shocks, most notably rainfall and illness on consumption, using cross-sectional data from 1995 and 2000. Dercon (2004), Dercon and Krishnan (2000a, 2000b), Skoufias and Quisumbing (2003) and IDS/SC-UK (2002) also discuss the impact of shocks on household welfare, and Yamano *et al.* (2005) examine the impact of rainfall shocks on child health.

yielding a sample of 1477 households. An additional round was conducted in late 1994, with further rounds in 1995, 1997, 1999, and 2004.

As part of the survey re-design and extension that took place in 1994, the sample was re-randomised by including an exact proportion of newly formed or arrived households in the sample, as well by replacing households lost to follow-up by those which were considered by village elders and officials as broadly similar to in demographic and wealth terms. The nine additional PAs were selected to better account for the diversity in the farming systems found in Ethiopia. The sampling in the PAs newly included in 1994 was based on a list of all households was constructed with the help of the local PA officials. The PA was responsible for the implementation of the land reform following the 1974 and held wide ranging powers as a local authority. All land is owned by the government. To obtain land, households have to register with the PA and lists of the households who have been allocated land are kept. For these reasons, these household lists were a good source of information for the construction of a sampling frame. To ensure that landless households were not excluded, the sample was stratified within each village to ensure a representative number of landless households to be included. Similarly, an exact proportion of female-headed households were included via stratification.

Table 1 gives the details of the sampling frame and the actual proportions in the total sample (Dercon and Krishnan (2003) provides further characteristics about these localities). Using Westphal (1976) and Getahun (1978) classifications, Table 1 also shows that population shares within the sample are broadly consistent with the population shares in the three main sedentary farming systems — the plough-based cereals farming systems of the Northern and Central Highlands, mixed plough/hoe cereals farming systems and farming systems based around *enset* (a root crop also called false banana) that is grown in southern parts of the country. Note, too, that in 1994, the Central Statistical Office collected a data set as part of the Welfare Monitoring System. Many of the average outcome variables, in terms of health and nutrition were very similar to the results in the ERHS, suggesting that living conditions in our sample did not differ greatly from those found more generally throughout rural Ethiopia, see Collier *et al.* (1997).

Table 1: *The Distribution of Households in the Ethiopian Rural Household Survey, by Agroecological Zone*

	Population share in 1994 (%)	Sample share in 1994 (%)	Number of villages
Grain plough complex: Northern Highlands	21.2	20.2	3
Grain plough complex: Central Highlands	27.7	29.0	4
Grain plough: Arsi/Bale	9.3	14.3	2
Sorghum plough/hoe: Hararghe	9.9	6.6	1
Enset (with or without coffee/cereals)	31.9	29.9	5
Total	100.0	100.0	15

Source: Dercon and Hoddinott (2004).
Percentages of population share relate to the rural sedentary population; they exclude pastoralists who account for about 10% of total rural population.

For these reasons, it can be argued that the sampling frame to select the villages was strictly stratified in the main agroecological zones and subzones, with one to three villages selected per strata. Further, sample sizes in each village were chosen so as to approximate a self-weighting sample, when considered in terms of farming system: each person (approximately) represents the same number of persons found in the main farming systems as of 1994. However, results should not be taken as being nationally representative. The sample does not include pastoral households or urban areas.[3] Also, the practical aspects associated with running a longitudinal household survey when the sampled localities are as much as 1,000 kilometers apart in a country where top speeds on the best roads rarely exceed 50 km/h constrained sampling to only 15 communities in a country of thousands of villages. So while these data can be considered broadly

[3] Pastoral areas were excluded, in part, because of the practical difficulties in finding and resurveying such highly mobile households over long periods of time.

representative of households in nonpastoralist farming systems as of 1994, extrapolation from these results should be done with care.

3. Shocks in Rural Ethiopia: A Description

In this section, we present data on the distribution of shocks in our rural Ethiopian sample. Our objective is descriptive — we want to understand what shocks occurred, how widespread these were, who was affected by them and what were their consequences. Since this descriptive approach generates a large number of figures and tables, we focus on discerning broad patterns in these data.

We define shocks as adverse events that lead to a loss of household income, a reduction in consumption and/or a loss of productive assets. Data used in this section are based on a household-level 'shocks' module developed in Hoddinott and Quisumbing (2003) that was field tested and refined to meet the specific circumstance of rural Ethiopian households, which in turn was an improvement on a shock module implemented in the 1995 round of the ERHS (Dercon, 2002). The module asks households to consider a list of adverse events and indicate whether the household was adversely affected by them. For example, in the Ethiopian version, respondents are asked, 'Has this household been affected by a serious shock — an event that led to a serious reduction in your asset holdings, caused your household income to fall substantially or resulted in a significant reduction in consumption?'

Shocks are divided into a number of broad categories: climatic; economic; political/social/legal; crime; and health. Climatic shocks include obvious examples such as drought and flooding, but also erosion, frosts and pestilence affecting crops or livestock. Economic shocks include problems in terms of access to inputs (both physical access and large increases in price), decreases in output prices, and difficulties in selling agricultural and nonagricultural products. Political/social/legal shocks include the confiscation of assets or arbitrary taxation by government authorities, social or political discrimination or exclusion and contract disputes. Crime shocks include the theft and/or destruction of crops, livestock, housing, tools or household durables, as well as crimes against persons. Health shocks include both death and illness. In addition, we also consider miscellaneous shocks such as conflicts and disputes with

other family members, neighbours or other village residents regarding access to land or other assets. For each shock, we obtain three items of information: when this shock occurred, whether it was confined to this household or whether it was more widespread, and what were the consequences in terms of income, assets and consumption.

Our description of shocks experienced by households in our Ethiopian sample begins with Figures 1–5. These enumerate the shocks that occurred between 1999 and 2004 (i.e., whether a household experienced a particular type of shock at least once). Drought is the most common climatic shock with more than half the surveyed household reporting this as a shock. However, other climatic shocks are common too. For example, more than one household in three reported having been adversely affected by pests or diseases that affected crops in their field, stored crops or livestock. Input (output) shocks were also relatively common, with these also reported by more than (slightly less than) a third of surveyed households. By contrast, political/social/legal shocks were reported to be relatively uncommon in this sample over this period, with no single shock being reported by more than 7% of respondents. While crime shocks appear relatively uncommon, the information presented in Figure 4 is slightly misleading in the sense that while few households report any one incidence of crime, a larger proportion of households — just over 20% — report being the victim of some sort of criminal activity. Death and illness are reported by a significant proportion of households; miscellaneous shocks such as disputes appear in this sample to be rare.

Table 2 indicates the extent to which the more commonly reported shocks are idiosyncratic (restricted to this household or this household and some others) or covariate (affecting all households in the village and possibly those nearby). Not surprisingly, drought, input and output shocks are reported to be covariate, with 79, 68 and 83% of affected households reporting that the spread of this shock included at least all households in the village. Theft or other crimes, death or illness are described in more than 90% of cases as idiosyncratic, with pests and diseases affecting crops or livestock appearing to be a mix of idiosyncratic and covariate shocks.

Table 3 reports the consequences of the most commonly reported shocks. These are divided into five categories: loss of household

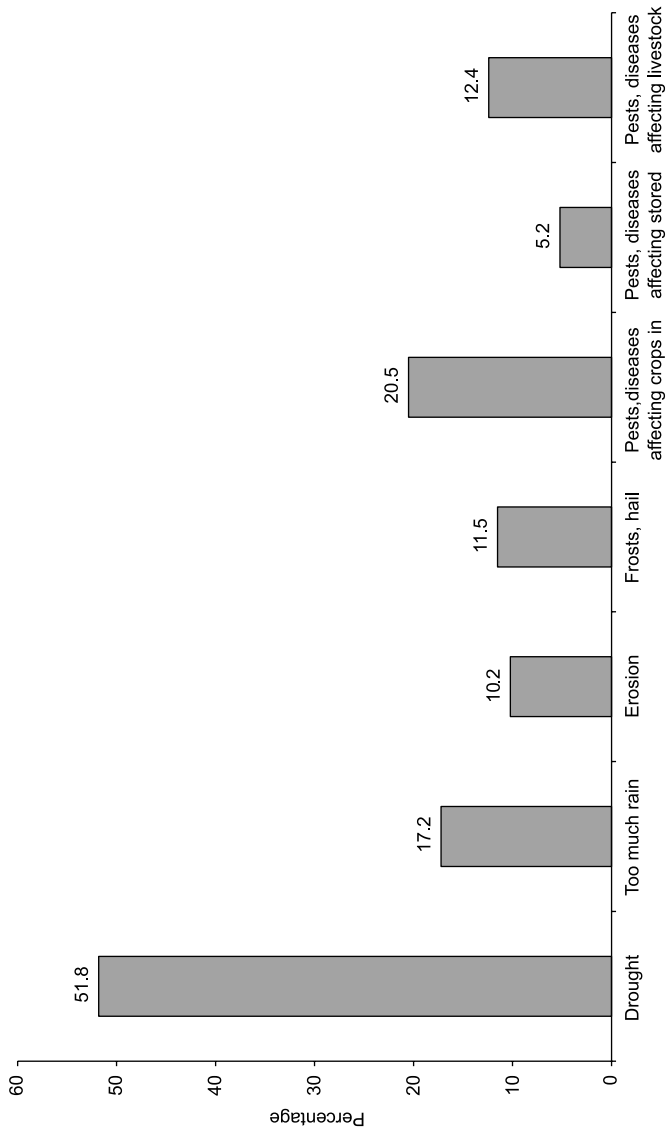

Figure 1: *Households Reporting Climatic Shocks between 1999 and 2004, Ethiopia*

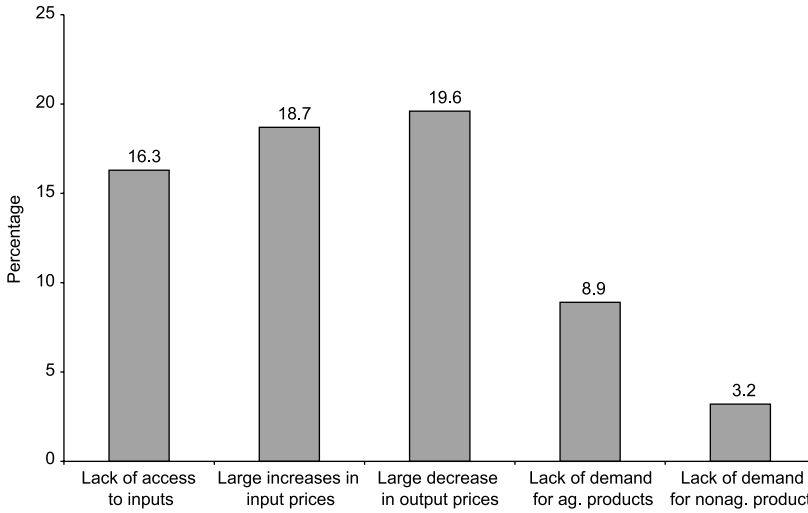

Figure 2: *Households Reporting Economic Shocks between 1999 and 2004, Ethiopia*

income; income loss and reduced consumption; loss of productive assets; a combination of asset, income, and consumption loss; and other (not specified) effects. In somewhat loose terms, Table 3 explores the extent to which certain types of shocks have different effects on households. The rows are ordered so that covariate shocks (drought, input and output shocks) appear first, followed by pests (a mix of idiosyncratic and covariate shocks) and idiosyncratic shocks (crime, death and illness).

While the survey module does not directly ask about the severity of impact, one could infer severity by comparing the percentages of reported impact on income and consumption with those shocks that lead to a loss of productive assets. In this regard, the striking feature of Table 3 is the absence of any obvious pattern of effect. Output shocks are somewhat less likely to lead to asset losses than other types of shocks; this may be due to the incidence of these shocks — see below. A death of a husband, wife or another person is also less likely to lead to asset losses. By contrast, drought, input shocks, pests and illnesses all are associated with loss of productive assets by at least 40% of households reporting being affected by these shocks.

We investigated further who is affected by these shocks, based on 'pre-shock' characteristics. To do so, we disaggregated the sample

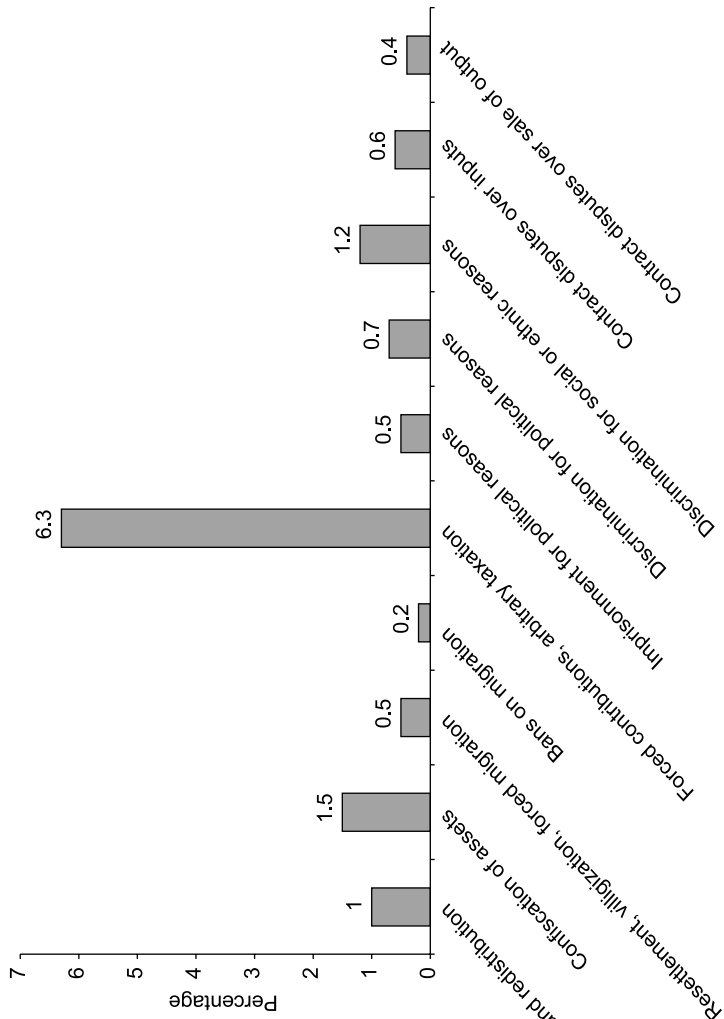

Figure 3: *Households Reporting Political/Social/Legal Shocks between 1999 and 2004, Ethiopia*

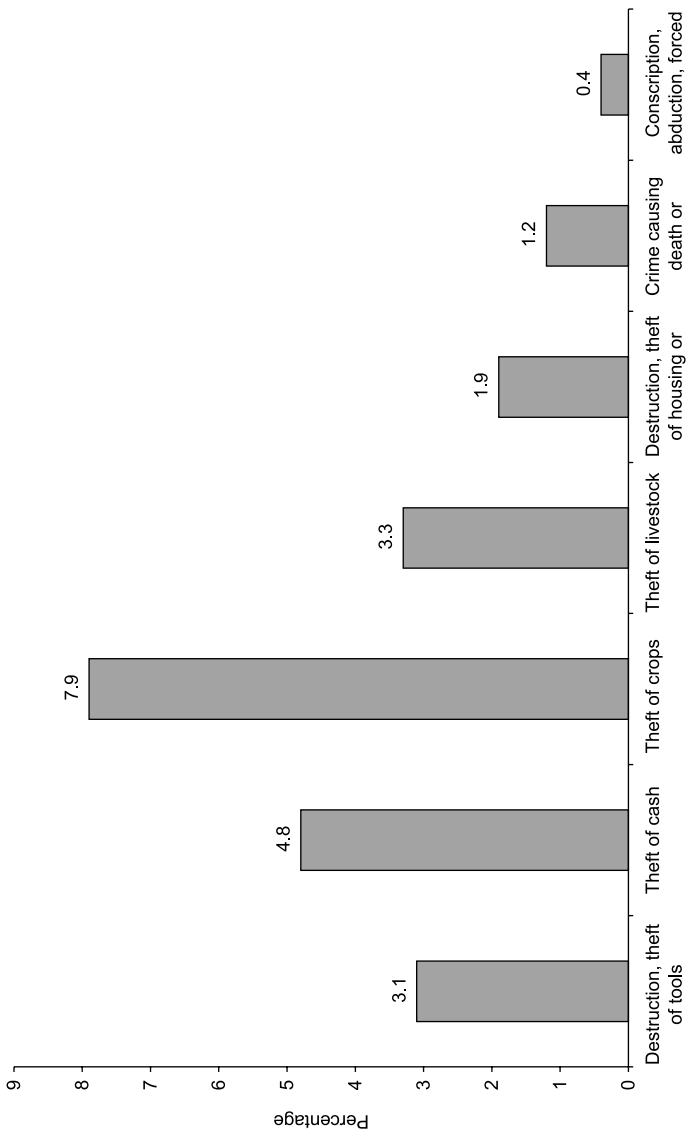

Figure 4: *Households Reporting Crime Shocks between 1999 and 2004, Ethiopia*

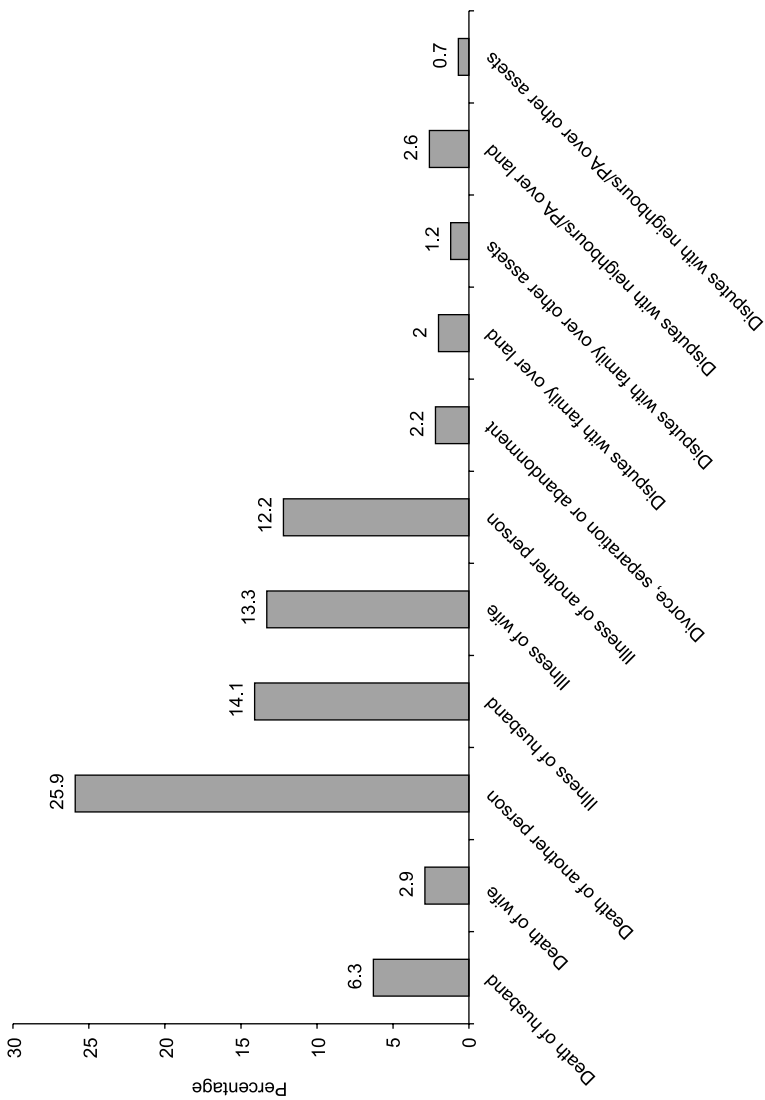

Figure 5: *Households Reporting Death/Illness/Conflict Shocks between 1999 and 2004, Ethiopia*

Table 2: *Extent of Shocks, by Selected Shocks, Ethiopia*

	Households reporting this shock	How widespread was this shock?				
		Only affected this household	Affected some households in this village	Affected all households in this village	Affected this village and nearby villages	Affected areas beyond this *kebele*
		Idiosyncratic ←				→ covariate
Drought	52	6	15	32	26	21
Floods	17	11	22	31	26	10
Pests or diseases affecting crops or livestock	38	20	29	25	18	8
Input shocks (price increase or difficulties in access)	35	13	18	27	23	18
Output shocks (price decrease or difficulty making sales)	29	6	12	36	33	14
Victim of theft or other crime	22	77	14	4	3	1
Death of husband, wife or another person	35	80	10	5	4	1
Illness of husband, wife or another person	39	83	9	5	3	0

Data are taken from the Ethiopian Rural Household Survey, Round 6; 1,368 households provided reported information. Values presented are per cent.

Table 3: *Severity of Shock, by Selected Shocks, Ethiopia*

	Loss of household income	Income loss and reduced consumption	Loss of productive assets	Asset loss; asset loss and income loss or reduction in consumption	Other effects
Drought	25	32	21	20	1
Floods	16	36	25	19	4
Input shocks (price increase or difficulties in access)	26	31	17	23	3
Output shocks (price decrease or difficulty making sales)	33	32	10	22	4
Pests or diseases affecting crops or livestock	24	35	20	19	2
Victim of theft or other crime	31	26	24	19	1
Death of husband, wife or another person	25	15	15	19	26
Illness of husband, wife or another person	29	21	20	24	7

Data are taken from the Ethiopian Rural Household Survey, Round 6; 1,368 households provided reported information. Values presented are per cent.

by characteristics observed in the 1999 survey round and cross-tabulate these against shocks that occurred between 1999 and 2004, as reported by households in 2004. While such information by itself cannot be taken as an indicator of vulnerability (because it does not take into account the severity of shocks nor their impact), it provides some clues as to what types of households are most likely to be affected by different types of shocks.[4]

In general, the incidence of these shocks does not differ markedly by characteristics such as sex of head (27% of sampled households were female-headed in 1999) with the exception of illness shocks, which are much more commonly reported by male-headed households. There are no marked differences when we disaggregate on the basis of other demographic characteristics such as age of head, household size or dependency ratios. Households headed by individuals who have any schooling (only 17% of household heads have any schooling) were more likely to report being adversely affected by economic shocks affecting input and output markets as well as illness. While this may seem counter-intuitive, it may be that such households are more likely to experience such shocks because they are more likely to be engaged in market transactions. By contrast, there are some significant differences when we disaggregate by land quintiles.[5] Better-off households are more likely to be affected by pest, input and output shocks.

4. Shocks in Rural Ethiopia: An Econometric Assessment

While the discussion in Section 3 provides a detailed overview of the types of shocks experienced by households in our sample, it does not give us a quantitative sense of the consequences of these shocks nor does it tell us anything about the persistence of their consequences. Also, there are limits to cross-sectional analysis — it is difficult to tell, for example, if, conditional on location, wealth and other observable characteristics, female-headed households are more adversely affected by droughts than male-headed households. So in this section, we complement our descriptive analysis with an

[4] A full set of tables detailing these results are available on request.

[5] These land quintiles are based on a household's landholdings relative to other households in the same village. This procedure is preferable to calculating quintiles across the entire distribution in the data, since different areas have different potential and land quality.

econometric assessment of the impact of these shocks on one measure of welfare, log per capita consumption.

Our baseline results are reported in Table 4. The dependent variable is the log of per capita consumption. This is constructed in the following fashion. Food and nonfood consumption were covered in separate modules in the questionnaire. The section on food asked about 33 specified food items; for each, households were asked about the amounts they had consumed out of purchases, consumption out of own stock and consumption from gifts and wages-in-kind in the last week. These consumption levels are valued using prices obtained from local market surveys fielded at the same time as the household survey. Nonfood items are limited to non-investment goods, so we include consumables such as matches, batteries, soap, kerosene and the like, clothing and transport, but exclude investments in durable goods such as housing. Different recall periods were used for different items; for comparability all are changed into monthly (30 day) consumption and expressed in per capita terms.[6]

Log per capita consumption (*lnpcexp*) of household i in village v in 2004 is a function of two broad sets of household characteristics: household characteristics observed in 1999 ($H_{iv,1999}$) and shocks to households experienced between 1999 and 2004 ($S_{iv,2004}$). In addition, we include a vector that captures such potentially confounding factors such as the month in which the interview took place to capture seasonality. Vectors of parameters to be estimated are γ, β and κ. Denoting $\varepsilon_{iv,2004}$ as the white noise disturbance term, we write this relationship as:

$$lnpcexp_{iv,2004} = \gamma \cdot H_{iv,1999} + \beta \cdot S_{iv,2004} + \kappa \cdot X_{iv,2004} + \varepsilon_{iv,2004}.$$

Observable household characteristics are characteristics of the head (age, sex and schooling), demographic household characteristics (log size and dependency ratio) and household wealth (land-holdings and livestock ownership, the latter expressed in livestock units). Also included are measures of households' networks and connections within the village that may also affect consumption levels: whether the household belongs to an ethnic or religious minority; whether it is related to anyone holding an official position

[6] Dercon and Krishnan (2003) show that earlier survey rounds, using various permutations of adult equivalency, do not fundamentally affect the analysis of the determinants of living standards.

Table 4: *Impact of Shocks and Other Covariates on (log) Consumption per Capita, 2004*

Covariate	Estimated coefficient	t-statistic (absolute value)
Shocks in prior five years		
Drought	−0.191	3.16**
Floods	0.033	0.54
Pests or diseases that affected field crops or crops in storage	−0.020	0.37
Pests or diseases that affected livestock	0.004	0.06
Difficulty in obtaining inputs or increases in input prices	0.040	0.69
Inability to sell outputs or decreases in output prices	−0.055	0.86
Lack of demand for nonagricultural products	−0.129	1.18
Theft or destruction of tools, inputs, cash, crops, livestock, housing, or consumer goods (crime)	0.044	0.82
Death of head, spouse, or another person	0.021	0.49
Illness of head, spouse, or another person	−0.089	1.77*
Other controls		
Female-headed, 1999	−0.026	0.48
Log age head, 1999	0.096	1.29
Head has schooling, 1999	0.101	1.71*
Log household size, 1999	−0.282	6.26**
Dependency ratio, 1999	−0.038	2.19**
Household in second land quintile, 1999	0.061	0.96
Household in third land quintile, 1999	0.144	2.40**
Household in fourth land quintile, 1999	0.151	2.42**
Household in top land quintile, 1999	−0.036	0.50
Livestock units, 1999	0.030	3.38**
Member, ethnic minority	0.173	2.58**
Member, religious minority	0.066	1.14
Relative holds official position in PA	0.135	3.29**
Mother or father was important in social life of village	0.171	3.93**
R^2	0.32	
Sample size	1,303	

Standard errors are calculated using the Huber–White method; PA dummies and month of interview dummies are also included but not reported.
*Significant at the 10% level.
**Significant at the 5% level.

in the locality; and whether a parent of the household head was an important person in the social life of the village. Dummy variables are included for each village, so that this is, in effect, a village fixed effects regression. The implication is that shocks are identified by within-village variation, which may make identification of covariate shocks difficult. Nevertheless, more covariate shocks are found in virtually all villages. Even if the case of drought, there is no village where all households indicate having been affected in the last five years. Both factors appear to allow identification of the impact of these relatively covariate shocks in our data.

Given that some shocks are relatively more common than others, we aggregate the data we have on shocks into the following categories, whether the household had experienced, between 1999 and 2004, the following events that had led to a loss of household income, a reduction in consumption and/or a loss of productive assets: a drought; floods or too much rain; pests or diseases that affected field crops or crops in storage; pests or diseases that affected livestock; difficulty in obtaining inputs or increases in input prices; inability to sell or decreases in output prices; lack of demand for nonagricultural products; theft or destruction of tools, inputs, cash, crops, livestock, housing or consumer goods, death of head, spouse or another person; and illness of head, spouse or another person.

Basic results are reported in Table 4. Observable household characteristics associated with wealth in 1999 (land, livestock and education of the head) are positively correlated with consumption levels in 2004. Bigger households and households with higher dependency ratios have lower consumption levels but other demographic characteristics (sex and age of the household head) do not have a statistically significant effect on consumption. 'Connections' appear to help. Households who have relations in positions of power, or whose parents were important in the village, have higher levels of consumption controlling for other household characteristics as do households who are part of an ethnic minority within the village.

The striking feature of the results of the shocks variables is how *unimportant* many of them seem to be. Experiencing a drought at least once in the previous five years lowers per capita consumption by approximately 20% and experiencing an illness which reduces per capita consumption by approximately 9% are the only shock variables that have a statistically significant effect on consumption.

Table 4, however, examines only the average effects of these shocks across all households in the sample. In Table 5 we disaggregate households by pre-shock (1999) characteristics and explore the extent to which the impact of shocks differs across different household types. Table 5 disaggregates on the basis of sex of head, education of head and landholdings. It indicates that drought and illness shocks are more important for certain household types than for others. Female-headed households, households where the head has no schooling and households in the bottom three quintiles of landholdings within their villages all report a much bigger impact of drought shocks experienced at least once in the last five years on current levels of consumption. Illness shocks appear more important for richer households (as measured by relative landholdings) and households where the head has no schooling.

Table 6 explores the extent to which shocks have long lasting effects. We take the set of shocks reported in the previous tables and disaggregate them into those that occurred in the previous two years and those that occurred between two and five years prior to the 2004 survey. Three past shocks would appear to have persistent effects: droughts, falls in demand for nonagricultural products and illnesses all experienced between 1999 and 2001 are all associated with lower consumption in 2004. Not only do we observe a statistically significant effect of these shocks; recall that we are controlling for a large number of potentially confounding factors and the magnitude of these effects is meaningful, with each reducing current consumption by between 13 and 20%.

Somewhat surprisingly, the large falls in grain prices observed in Ethiopia in 2001 do not appear to affect consumption. However, this price shock is likely to have had a larger effect on households in grain-surplus areas.[7] To investigate further, we reestimated this model, restricting the sample to three villages (Yetmen, Sirbana Godeti and Trirufe Ketchma) that historically have been grain surplus villages. We do find evidence of a persistent effect of the output price shock. In these three villages, households reporting that they had been adversely affected by falls in output prices between 1999 and 2001 have per capita consumption levels in 2004

[7] In a related exercise, we explored whether the fall in international coffee prices had a similar adverse affect on households in coffee growing areas but could find no evidence of any such an effect in our sample.

Table 5: *Impact of Shocks by Household Characteristic on (log) Consumption per Capita, 2004*

	Female-headed households	Male-headed households	Head has no schooling	Head has some schooling	Household is in bottom three land quintiles	Household is in top two land quintiles
Drought	−0.430	−0.098	−0.200	−0.141	−0.197	−0.163
	(3.71)**	(1.36)	(2.93)**	(1.16)	(2.60)**	(1.63)
Floods	−0.072	0.058	0.032	0.125	0.003	0.096
	(0.57)	(0.85)	(0.49)	(0.85)	(0.04)	(0.99)
Pests or diseases that affected crops	0.027	−0.025	0.022	−0.229	0.001	−0.051
	(0.24)	(0.41)	(0.35)	(1.97)**	(0.02)	(0.55)
Pests or diseases that affected livestock	−0.047	0.033	0.011	−0.081	−0.066	0.047
	(0.27)	(0.54)	(0.16)	(0.73)	(0.84)	(0.51)
Difficulty in obtaining inputs or increases in input prices	−0.040	0.059	0.060	−0.034	0.035	0.078
	(0.25)	(0.97)	(0.88)	(0.29)	(0.47)	(0.81)
Inability to sell outputs or decreases in output prices	0.067	−0.042	−0.064	−0.072	−0.028	−0.144
	(0.35)	(0.65)	(0.82)	(0.61)	(0.34)	(1.47)
Lack of demand for nonagricultural products	−0.206	−0.150	−0.190	0.316	−0.103	−0.304
	(0.77)	(1.29)	(1.80)*	(0.81)	(0.71)	(1.68)*
Crime shocks	0.199	0.005	0.030	0.085	−0.001	0.119
	(1.63)	(0.09)	(0.48)	(0.84)	(0.02)	(1.28)

(*continued on next page*)

Table 5 (*continued*)

	Female-headed households	Male-headed households	Head has no schooling	Head has some schooling	Household is in bottom three land quintiles	Household is in top two land quintiles
Death of head, spouse or another person	−0.176 (1.83)*	0.052 (1.11)	0.027 (0.57)	−0.055 (0.60)	0.027 (0.50)	0.038 (0.54)
Illness of head, spouse or another person	−0.114 (0.74)	−0.071 (1.34)	−0.137 (2.34)**	0.094 (0.91)	−0.047 (0.72)	−0.156 (1.93)*

Specification as per Table 4; standard errors are calculated using Huber–White method; PA dummies, month of interview dummies, and perceptions of rainfall in previous harvest year are also included but not reported.
*Significant at the 10% level.
**Significant at the 5% level.

Table 6: *Impact of Shocks by Timing of Shock on (log) Consumption per Capita, 2004*

Covariate	Estimated coefficient	t-statistic (absolute value)
Drought, 2002–4	−0.169	2.72**
Drought, 1999–2001	−0.131	2.54**
Pests or diseases that affected crops, 2002–4	0.004	0.05
Pests or diseases that affected crops, 1999–2001	−0.039	0.70
Pests or diseases that affected livestock, 2002–4	−0.022	0.30
Pests or diseases that affected livestock, 1999–2001	0.014	0.18
Difficulty in obtaining inputs or increases in input prices, 2002–4	0.045	0.63
Difficulty in obtaining inputs or increases in input prices, 1999–2001	0.021	0.32
Inability to sell outputs or decreases in output prices, 2002–4	−0.184	2.24**
Inability to sell outputs or decreases in output prices, 1999–2001	−0.006	0.09
Lack of demand for nonagricultural products, 2002–4	0.003	0.02
Lack of demand for nonagricultural products, 1999–2001	−0.208	1.76*
Crime shocks, 2002–4	−0.021	0.32
Crime shocks, 1999–2001	0.108	1.50
Death of head, spouse, or another person, 2002–4	0.035	0.67
Death of head, spouse, or another person, 1999–2001	−0.007	0.14
Illness of head, spouse, or another person, 2002–4	−0.021	0.37
Illness of head, spouse, or another person, 1999–2001	−0.142	2.39**
R^2	0.33	
Sample size	1,303	

Specification as per Table 4; standard errors are calculated using Huber–White method; PA dummies and month of interview dummies are also included but not reported.

*Significant at the 10% level.

**Significant at the 5% level.

approximately 28% lower than comparable households not reporting this shock.

We note two checks on the robustness and validity of these results. First, the specification used controls for household characteristics in 1999, including human capital (education), social capital and physical capital (land, livestock). We re-estimated these regressions using the level of consumption in 2004 as the dependent variable, using the same control variables as before but also including lagged (1999) consumption as a regressor. Lagged consumption was instrumented using further lags of consumption and asset values (using preceding rounds of the data). The results were effectively the same in terms of the impact of the shock variables.

Secondly, in addition to asking households about individual shocks that had adversely affected them, households were also asked to enumerate the three most important adverse shocks that they had experienced over the previous five years. These are summarised in Table 7. Virtually all households (95%) reported a most important shock, 85% reported a second most important shock and 62% reported a third most important shock. The most commonly reported 'worst shocks' are drought (47%), death (43%) and illness (28%). When we disaggregate by degree of importance of these worst shocks, we see that these same three shocks were always listed as being the most important adverse shocks experienced by these households. Two, drought and illness, also appear as shocks that adversely affect current consumption. While death shocks do not appear to have an effect on consumption, Table 3 indicates that — unlike other shocks — households often reported that the death of a husband, wife or another person had an 'other effect' (other than an effect on income, consumption, or productive assets) on households.

Input and output shocks, pests affecting crops and crime are all reported by between 11 and 14% of households. Other shocks are less frequently reported. Strikingly, policy shocks (land redistribution, state confiscation of assets, resettlement, villagisation or forced migration, bans on migration, forced contributions or arbitrary taxation) which featured so prominently in earlier rounds of the ERHS have substantially diminished in importance. Only 7% of households reported being adversely affected by such policy shocks, compared to 42% who reported being affected by these prior to 1994 (Dercon, 2002, Table 1).

Table 7: *Household Self-reports of the Worst Shocks Experienced between 1999 and 2004*

Most commonly reported worst shocks	Percent
Ranked by occurrence	
Drought	46.8
Death of head, spouse or another person	42.7
Illness of head, spouse or another person	28.1
Inability to sell outputs or decreases in output prices	14.5
Pests or diseases that affected crops	13.8
Crime	12.7
Difficulty in obtaining inputs or increases in input prices	11.3
Policy/political shocks (land redistribution, state confiscation of assets, resettlement, villagisation, or forced migration, bans on migration, forced contributions, or arbitrary taxation)	7.4
Pests or diseases that affected livestock	7.0
Ranked by degree of importance	
Most important shock	
Drought	32.6
Death of head, spouse, or another person	26.1
Illness of head, spouse, or another person	8.0
Second most important shock	
Death of head, spouse, or another person	14.8
Drought	13.6
Illness of head, spouse, or another person	12.3
Third most important shock	
Illness of head, spouse, or another person	12.2
Death of head, spouse, or another person	8.1
Drought	8.0

Data are taken from the Ethiopian Rural Household Survey, Round 6; 1,371 households provided reported information; in response to the question 'What were the three most important shocks to affect this household?', 95% of households reported a most important shock, 85% reported a second most important shock, and 62% reported a third most important shock.

5. Conclusions

Ethiopia is a shock-prone country. Virtually all households report being adversely affected by shocks between 1999 and 2004. Drought shocks and illness shocks are the most important shocks

in the sense that households report these as being especially important and, controlling for other household and village characteristics, they are associated with lower levels of per capita consumption. The magnitudes of these effects are nontrivial. Experiencing a drought at least once in the previous five years lowers per capita consumption by about 20% and experiencing an illness reduces per capita consumption by approximately 9%. In particular, the impact of drought shocks has to be put in perspective: the main drought in this period, in 2002, is viewed by many as a well-managed drought episode, with few reported famine deaths across the countries. Our finding of an effect of about 20% lower consumption, several years later, suggests that its impact was still severe despite this perceived effective response.

Certain shocks are more important for certain types of households. Female-headed households, households where the head has no schooling and households in the bottom three quintiles of landholdings within their villages all report a much bigger impact of drought shocks experienced at least once in the last five years on current levels of consumption. Illness shocks appear more important for richer households (as measured by relative landholdings) and households where the head has no schooling. Further, the importance of different types of shocks appears to be changing. Dercon (2002) reports that in the 1990s, drought and policy shocks were the predominant adverse events reported by these households. While drought remains important, policy shocks such as land redistribution and arbitrary taxation are now much less important than they were while death and illness shocks are now much more important.

Some shocks appear to have long lasting effects. Households reporting have been adversely affected by drought, illness, or (in the case of grain surplus villages) output price shocks between 1999 and 2001 had significantly lower levels of consumption — between 13 and 28% — when observed several years later in 2004. Dercon (2004) reports similar results, showing that drought shocks experienced in the 1980s were causally associated with slower growth in the 1990s. That shocks have long-lasting effects has important policy implications: uninsured risk does not just cause short-term welfare fluctuations but has long-term effects in terms lower consumption and poverty. Protecting households against shocks may well have a

high return in fighting long-term 'chronic' poverty. Nevertheless, these estimates are still relatively 'short-term' effects, and the true long-term impact cannot be identified from this work. For example, the implications of uninsured risk on activity and asset decisions, whereby households avoid profitable but risky activities for fear of low welfare levels if droughts or other serious events occurs would affect consumption and poverty levels, but would not be identified in this analysis. In short, the true impact of risk and shocks may still be underestimated.

An additional caveat stems from the methodology used here. The results are dependent on linking information on self-reported shocks to welfare outcomes. The results appear suggestive and robust, but this does not imply that there is no problem with this type of information. If unobserved heterogeneity is correlated with the direct shock terms, then what we may be picking up is not the impact of the shock, but some other characteristic, correlated with observing particular shocks. Arguably, we may then be measuring that unobserved characteristic and not the impact of the shock. While possible, this does not seem to be a convincing explanation for our findings related to shocks such as drought. Still, we may be missing some very important events and trends in this period, not readily picked up in our 'shocks' module. Our evidence on the relative importance of particular shocks may then be misleading. For example, a gradual deterioration of circumstances, for example due to land degradation or a gradual decline in returns and prices for some activities, may be relevant for outcomes but not picked up readily in our questionnaires. These concerns suggest that more evidence is needed on how to collect effective information on shocks and other events and trends, to analyse the impact of uninsured risk and prioritise interventions.

Mindful of these caveats, we end by noting Hoddinott and Quisumbing's (2003) claim that understanding shocks and their consequences is a necessary (though not sufficient) step to the design of programs and interventions designed to blunt their pernicious effects. They argue that assessing vulnerability to shocks requires answering four interlinked questions: (1) Who is vulnerable? (2) What are the sources of vulnerability? (3) How do households cope with risk and vulnerability? and (4) What is the gap between risks and risk management mechanisms? This paper

provides direct evidence on questions (1) and (2) as well as showing that the inability of households to insure against or mitigate these shocks has led to subsequent reductions in household welfare. Companion work by Gilligan and Hoddinott (2004, 2005) and Hoddinott *et al.* (2005) provides evidence on (3) and (4).

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