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Recurrent Shocks, Poverty Traps, and the Degradation of the Social Capital Base of Pastoralism: A Case Study from Southern Ethiopia

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Abstract

The long-term effects of shocks are examined in the context of a traditional pastoral community. The impacts are empirically examined in connection with the micro-level poverty trap hypothesis and the associated minimum poverty threshold estimates reported in previous studies. We argue that these estimates cannot be taken as definitive and the core explanations behind them are incongruent with the institutional realities of the pastoral community for which they are reported. The reality is that shocks have implied long-term community-wide deprivation with a lasting effect of deterioration in the indigenous capacity to cushion those who slide into permanent destitution. This is evident in the empirically identified increasing loss of confidence in the indigenous social support structures. The findings rather highlight the need for policy interventions to focus on system level community-wide development issues rather than the commonly emphasized individual targeting implied by such exercises as asset-based poverty threshold estimates.

Key words: Shocks; Poverty Trap; Pastoralism; Social Capital; Ethiopia.

JEL: D62, I32, O13, Q18

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I. Introduction

The vast dryland areas of Sub-Saharan Africa are inhabited by traditional pastoralists who raise domestic livestock on extensive communal rangelands in arid and semi-arid ecosystems. Pastoralism is the main source of livelihood in these dryland environments where climatic conditions are quite abnormal to sufficiently support crop-based livelihoods. It is a system of production directed to productively exploit the meager resources of dryland ecosystems for valuable human use (Sandford, 1983; Swift, 1988; Pratt *et al*., 1997; Morton and Meadows, 2000; Krätli, 2001; Rass, 2006). However, the pastoral people are one of the most vulnerable segments of the world's rural poor. Phrases like "the future of pastoralism," or contextually similar titles and contents are not difficult to find in the literature (for example, Swift 1982; Hogg, 1992; Webb and Coppock, 1997; Leneman and Reid, 2001; UNOCHA-PCI, 2006), which rather indicates the increasing vulnerability of pastoral livelihoods to internal and external pressures in recent decades. Despite its crucial contributions as a source of livelihood to an ever increasing human population numbers, African pastoralism in particular has remained a low priority concern in development policy agendas of most governments because of the tendency to view it as a transitory mode of life with little future prospects (Rass, 2006).

African pastoral systems in the last several decades have experienced extreme vulnerability to recurrent livelihood shocks and negative trends that have substantially implied secular deterioration in pastoralist welfare. The sustainability of the pastoral mode of production has been significantly undermined due to recurrent exposures to exogenous pressures of natural shocks, especially recurrent droughts, violent conflicts, inappropriate interventions, and bad governance (Devereux, 2006; Rass 2006; W/Giorgis, 2008). Shocks, especially because of "decapitalization" (World Bank, 2008), can

lead to permanent pastoralist destitution. Recurrent shocks have a natural tendency to severely limit the system's asset accumulation potential. One result of this trend is the prevailing institutional inadequacy of the system to cushion those who may potentially slide into a state of persistent failure to improve their welfare. This latter effect implies the existence of a poverty trap from which it is impossible for the poor to escape by their own means (Barrett, 2003; Dercon et al., 2004). Recent studies hypothesize that shock victims may get caught up in a low level equilibrium poverty trap. They have attempted to design novel empirical strategies to find the minimum asset threshold estimates for this hypothesized low level equilibrium in order to inform policy decisions (Barrett, 2003; Lybbert et al., 2004; Barrett, et al., 2006). It clearly remains to be explored whether some of the suggested threshold estimates can be reliably taken as definitive. Therefore, this paper is diagnostically based on Barrett (2003) and Lybbert et al. (2004) with the aim to gain more insights into the issues they raise in connection with their suggested threshold estimates for Borana pastoralism.

Moreover, the important aspect of the role of indigenous welfare and social insurance schemes needs to be explored in connection with the micro-level poverty trap hypothesis. These schemes are indigenous innovations designed for shock recovery or household survival in times of livelihood stress. All the same, pastoral societies are often exposed to covariate risks of shock-induced community-wide deprivation. When recurrent widespread livelihood difficulties are common due to repeated shocks and endemic stresses, organized indigenous social insurance schemes gradually fail to serve the purpose for which they were originally established. Shocks will bring about widespread impoverishment and can have a long-term consequence of impaired local capacity for recovery and resilience. Therefore, the purpose of this paper is to empirically examine these issues by establishing integrated connections of shocks, poverty traps, and the social capital base of pastoralism based on evidence from the Borana pastoral area of southern Ethiopia.

The rest of the paper is organized as follows. A brief description of the study area and data source is provided in the next section. Section three is devoted to a general account of the origins and chronology of major shocks in the study area. The issues related to pastoral poverty trap are critically examined in section four based on empirical evidence from southern Ethiopia. Section five examines the implied effects of shocks on the social capital base of pastoralism. Concluding remarks are given at the end.

II. The general setting and source of data

Boranaland is a vast pastoralist territory of nearly 10 percent of Ethiopia's land mass comprised of arid and semi-arid ecological zones with bi-modal patterns of main (March-May) and short (September-October) rainy seasons. The average annual rainfall is below 500 mm, but with a pattern of significant differences across space as a function of altitudinal variation (Coppock, 1994). Therefore, the region is ecologically rather best suitable to livestock production based on flexible system of mobile pastoralism than cereal cultivation (see, Berhanu and Colman, 2007).

The general pattern of the pastoral cyclical movement is between dry and wet season grazing territories. The dry season main area of concentration is in the territories of permanent traditional wells. The grazing areas around these permanent water sources are, however, normally protected for regeneration during the rainy seasons. The wet season grazing lands are used during rainy periods when surface water is in abundance to maintain livestock (Oba, 1998). Capital intensive large scale government pond construction projects have been designed and implemented in the Borana rangelands in order to extend the duration of use of these vast wet season grazing territories, albeit with serious environmental repercussions.

The Borana are one of the well known pastoral groups in East Africa. They mainly raise cattle though they have recently continued to diversify their herds in favor of goats and camel in response to the changing climatic and ecological conditions of their habitat (Coppock, 1994; Desta and Coppock, 2004). The Borana people are distinctively characterized by their unique traditional institutions of self-rule (the *Gada system*) and the accompanying indigenous social insurance schemes. These democratic traditional institutions of self-rule have been dynamically shaped by external factors of change and the pastoralist growing integration into the wider exchange system.

The quantitative data used in this paper were generated by interviewing 150 randomly selected households in a survey conducted in 2003, with the support of the Borana Lowland Pastoral Project Programme of the German GTZ, at four study sites in Dirre region of the Borana pastoral area of southern Ethiopia. Besides the structured household interviews which included the recording of household wealth accumulation trends in the last 40 years by asking household heads in the presence of their couples and other informed household members, the survey additionally adopted focused group discussions and key informant interview approaches. This aspect of the investigation was further enriched by our June-July 2008 survey of the region.

III. Shocks and the Borana pastoral crisis

a) The origins and chronology of major shocks

During the last four decades, the Borana pastoral system has been repeatedly hit by major external shocks of often catastrophic proportions. The crisis has been compounded by inappropriate external interventions and the system's own internal processes of change. A host of factors may be responsible, but the Borana pastoral crisis can be largely ascribed to its critical origins of

unprecedented high population growth rates, recurrent droughts, shrinking grazing area, violent conflicts, external interference, and bad governance.

The spectacular growth in human population on a shrinking natural resource base in the Borana rangelands has been a serious point of concern in recent years. The annual rate of growth appears to have shown a significant jump from around 1.3 percent in the 1960s to above 2.5 percent in the late 1980s (see, Helland 1980; Lindtjort et al., 1993). From the existing statistical evidence, the general indication of the present demographic structure is that the Borana pastoral population is a fast growing one with an underlying high momentum for further expansion. This dramatic change, among other things, is often strongly attributed to the crumbling state of the traditional population control mechanisms of the Borana *Gada system* (Lindtjort 1993; Coppock, 1994).

The devastating influence of the Borana pastoral crisis in large part seems to have originated from recurrent droughts and incessant violent conflicts, partly associated with bad governance. The Borana pastoral production system had experienced some sporadic heavy shocks of both natural and man-made origins in the 18th and 19th centuries (see, Tache, 1996; Taye, 2002). One known Borana famine disaster was in the early 1890s which was the result of animal disease epidemics that wiped out pastoral livestock with consequent disastrous effect on humans.[1] This was one of the 1890s East African pastoral shocks often quoted in the anthropological literature (Baxter, 1993). Prolonged severe drought (*oola*) was relatively less frequent in the past (discussion with Borana elders). The sporadic rain delays and deficits were, perhaps, not beyond the mitigating power of the system. Drought as a catastrophic recurrent phenomenon is of a recent history of only four decades in Boranaland. Sources indicate that only a

couple of known 20th century prolonged droughts of a significant scale in the pre-1973 period (see, Hogg, 1980).

A summary of major shocks in the past 40 years is shown in Table 1. For the Borana pastoralists, every decade since the 1960s has been characterized by devastating shocks of droughts and conflicts. In the 1960s, the Borana lost much of their assets in a conflict with the neighbouring Somali invaders. This was followed in the next decade by the devastating 1973-74 drought which resulted in the advent of relief food aid for the first time in Boranaland. The Borana pastoralists were caught up in the Ethio-Somalia war later on in the same decade and that was again succeeded by the 1984/85 major drought that ravaged the entire region. The 1990s began with the 1990/91 severe drought, conflict, and dislocation following the regime change in Ethiopia. The early 1990s featured the pastoralists' acrimonious relationship with the new Ethiopian regime and heightened conflicts with the neighbouring ethnic groups which then culminated with the catastrophic 1999/2000 drought, followed by the 2006 drought.

Table 1: The chronology of major shocks in Boranaland in the last 4 decades

Borana Gada leader	Gada period	Major shocks and events
Jaldessa Liban	1960-1968	- Conflict with Somali invaders, locally referred to as Olki Rooboy - Many households lost stock due to the invasion
Goba Bule	1969-1976	- The 1973-74 devastating drought - The advent of relief food aid
Jilo Aga	1977-1984	- The Ethio-Somalia war that resulted in a widespread destitution - The beginning of the 1984/85 drought
Boru Guyo	1985-1992	-The 1984/85 major drought -The 1990/91 drought - The 1991 regime change in Ethiopia and conflicts
Boru Madha	1993-2000	- Conflicts with neighbouring ethnic group - Loss of grazing land and conflict with the government - The 1999/2000 catastrophic drought
Liban Jaldesa	2001- Feb 2009	- The 2001 major clash with the neighbouring ethnic group - Period of recovery -2006 drought - incessant conflicts

Source*: Based on our discussions with the Borana oral historian Borbor Bule. Some records of the Borana catastrophic events are also found in Tache (1996) and Taye (2002). See, Coppock (1994) for the discussion of the effects of the two droughts of the Boru-Guyo period.*

b) The indigenous social insurance schemes

Traditionally, societies in one way or another have some established networks of routine social support for coping and crisis survival. The Borana have a clearly established compulsory indigenous social welfare schemes under the umbrella of the *Gada* institution. Viable household survival is the immediate concern of these institutions[2]. The poor, by the traditional Boran law (*sera*), have the right to assistance; it is a top issue on the *Gumi Gayo* (the Borana general assembly) agenda. The top *Gada* leadership and local councillors (*hayyu*) have the obligation to look after and listen to the voices of the poor. The Borana traditional social insurance schemes may be divided into three categories:

i*) The compulsory restocking schemes*: These are basically designed to meet the long term survival needs of Borana households through binding wealth transfer arrangements from the well-off to shock victims and needy members of the society. The obligatory schemes are implemented, though at different levels, within the framework of the vertical social organization. These compulsory restocking schemes are of two types, *Herba* and *Busa-Gonofa*. The nature of the *Herba* scheme is that it is only sporadically brought into play to restock those that experience wealth shocks in times of war or conflict. The traditional standard wealth transfer formula (rule) in the *Herba* scheme is N-1, where N stands for head of cattle lost during the fight (interview with Borbor Bule). Rather a top issue in the regular Borana traditional politics is the *Busa-Gonofa* scheme. It is a regular *annual* wealth redistribution scheme in which the rich are bound to restock the needy. The stocking process is based on prior assessments at

annual sub-clan meetings (*kora debanu*) of the size and specific needs of poor members, vis-à-vis, the capacity to meet these needs. Only genuine claims are addressed. Eligibility is based on natural causes rather than abusive wealth consumption.

The spirit of Busa-Gonofa is still high among the Borana society, but it is functionally an institution in crisis. A prominent manifestation is the widening gap between the demand for and supply of restocking assets as a result of high population growth and pervasive pastoralist deprivation in recent years. In this respect, priority nowadays is given to genuine claimants that have less work hands to seek alternative income opportunities elsewhere; those households with extra labor force, especially in accessible areas, are encouraged to supplement their income by putting some of their members in non-pastoral engagements.

ii) Temporary wealth transfers: This scheme refers to the *Dabare* (transfer) institution of cattle "loan" by wealthy households to the poor. The *Dabare* stock is at any time subject to recall by the owner (Cossins and Upton, 1987). A *Dabare*-holding poor household is a caretaker, but with the right to the entire use of the milk produced both for consumption and sale. The *Dabare* holder may also keep the newly born males, or occasionally sell them, with the consent of the *Dabare* stock owner. Inter-clan household *Dabare* arrangements are based on free will, but the traditional law (*sera*) allows for a special right to intra-clan household requests. Thus, among the people of the same lineage, appropriate responses to *Dabare* claims are compulsory (Taye, 2002).

iii) Welfare support to households of immediate needs: There is a universal requirement for milk provision by surplus producing families to food-deficit households in Borana residential encampments and neighbouring *arda*. The traditional institution of food sharing is established, not only as a matter of strict moral obligation in several respects, but it is often mandatory.

IV. Shocks and pastoral poverty traps

a) The conceptual framework

Dynamic poverty is often linked to the state of asset endowment of an agent. This refers to a condition of individual or household asset status in which there is persistent failure to achieve a sequence of defined minimum levels of welfare at all periods in time (see, Carter and May, 2001). This notion gives rise to the concept of poverty trap which is often associated with a theoretical threshold that defines dynamic poverty. In a nutshell, it refers to a low level equilibrium welfare status characterised by an extremely low accumulation potential for improved well-being.

The empirical analysis of poverty traps is fairly common in macro-level studies associated with the growth experience of nation states. There is an attempt to import some of these macro ideas to the micro-level analysis of poverty traps (for example, Barrett, 2003; Lybbert et al., 2004; Barrett et al., 2006; Adato et al., 2006). The diagram in Figure 1 is borrowed from Banerjee and Newman

(Banerjee and Newman 1994; also Azariadis, 1996) to illustrate the idea of a poverty trap. The 45^o line shows the equilibrium state in which the current asset endowment (K_t) remains equal to the future (K_{t+1}).

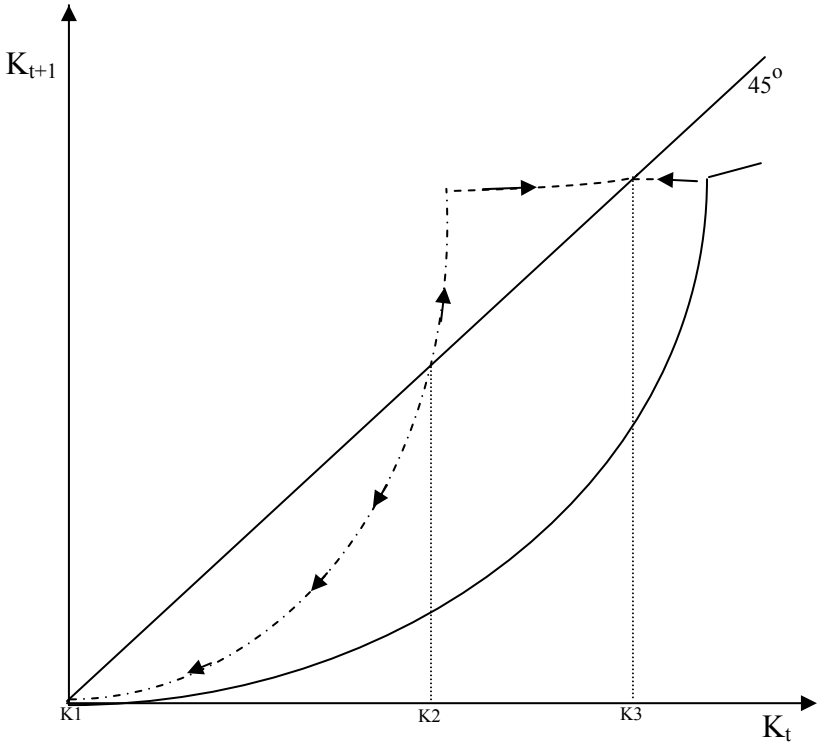


Figure5.1: Illustration of poverty trap equilibrium thresholds

The diagram theoretically suggests two kinds of poverty traps. The first, illustrated by the solid line below the 45^o line, cross-sectionally indicates a condition of a regressing system where every agent becomes poorer and remains trapped. Persistent shocks among poor communities might bring about such lasting effects. The dashed line suggests the existence of threshold effects (Barrett, 2003), thus the clustering of the poor and rich agents depending on their initial asset endowments. It demonstrates the hypothesised

existence of multiple, dynamic equilibria discussed in the economic growth literature (Quah, 1997; Bianchi, 1997; Desdoigts, 1999). There is an unstable equilibrium threshold that indicates a switching point in the wealth accumulation path (Lybbert, et al., 2004). This is K2 in Figure 1, the reference threshold level of initial asset endowment. Agents with initial status below this threshold eventually converge to low level equilibrium state K1, while those above the threshold move towards the high level equilibrium state K3. This implies polarized clusters of low and high wealth agents. Hobbled by poor initial conditions, with possible superimposed shocks, low status agents find it difficult to cross the threshold point and remain stuck at the low level equilibrium poverty trap.

b) Evidence from southern Ethiopia

A key empirical challenge in the micro-level study of poverty dynamics is the identification of the low level threshold for practical policy intervention which is tantamount to the estimation of K2 in Figure 1. Barrett (2003) underlines the potential effectiveness of non-parametric techniques in this respect. He demonstrates this by using cattle herd dynamics data (for the 1980-1997 period) generated through a cross-section interview of 55 Borana households in southern Ethiopia. The S-shaped unstable wealth dynamics demonstrated in Figure 1 is estimated by using a non-parametric method that relates herd sizes of two different time periods, H_t and H_{t+i} (where i =10), with the second variable (H_{t+i}) logically taken to be dependent on the first one (H_t).

Barrett's reported non-parametric estimation results are that 12-15 head of cattle is the minimum wealth threshold for successful livestock capital accumulation in Borana pastoralism (see, also Lybbert et al., 2004). The idea of post-shock recovery is central to the explanation of the non-parametric threshold estimates. The simple generalisation is that a shock victim with post-shock asset holding status of cattle size below 15 will never recover to its higher pre-shock wealth status primarily due to the claimed consequent limited capacity for pastoral mobility. It is argued that a pre-shock cattle holding above the high equilibrium threshold estimate which is 75 head of cattle would either show a partial recovery and converge to this claimed higher steady state equilibrium or collapse to the low level state of poverty trap (Lybbert et al., 2004). Pastoralists having cattle herds below the minimum threshold would then join the pool of sedentarized farming destitute with an eventual collapse of their herds to 1 head of cattle. The curtailed capacity for opportunistic mobility and consequent livestock consumption, possibly well above replacement, are the central explanations provided in Lybbert et al. (2004). These key reasons, though apparently important, all beg the question as to whether they definitely hold in all circumstances. Here, firstly, we qualify these explanations based on our field investigations of the institutional realities of Borana pastoralism. Secondly, we explore whether the suggested threshold estimate can necessarily be taken as definitive.

First, how strong are the underlying explanations?

i) the issue of limited capacity for opportunistic mobility: This is the core explanation for the estimated minimum to be a pastoral poverty trap threshold. It is claimed that households with cattle holding below 15 are incapable of migrating with their animals in

search of better rangeland resources for herd build up owing to their severely curtailed capacity to support mobile herders; thus the poor are hobbled. However, a single independent herder migration is, perhaps, more of an exception than a norm in Borana pastoralism. A joint effort is rather the norm[3].

The role of pastoralist key institutions should not be overlooked. Individual wealth accumulation partly benefits from communal social resources. Co-herding, for example, is a key feature of Borana pastoralism. It is common to find poor households' animals being herded by others alongside their own; independent herding is rather less common. From our survey data, 96 percent of the interviewed sample households were found to practice joint-herding. A significant proportion (41 percent) of the respondents identified small livestock size as a central reason for co-herding. Therefore, there is no strong reason to always assume that the poor cannot exploit the opportunities of strategic mobility for survival and accumulation. It is rather the overall shrinkage of Borana land and imposition of external institutional structures and restrictive interventions that appear to have remained a significant threat to pastoral mobility rather than individual households' limitation to feed mobile herders. Moreover, despite its deteriorating efficacy, the system has some internal support mechanisms as a minimum opportunity for the poor. The problem with Borana pastoralists is that they apparently are all getting poorer.

ii) less accumulation due to stock consumption by the poor: This explanation is largely deduced from the observed relatively high rate of off-take by the poor as compared with

that of large stock owners. For our sample households, for example, the average cattle off-take rate was 12 percent for the cattle holding group below 15, while it was 6 percent for those holding status above 75 head of cattle. However, this relatively high off-take rate in the bottom range requires cautious interpretation. It is not that the poor necessarily sell their animals more frequently than do the rich; it is rather that the small number they sell is large in relation to their holding size. Pastoralists as a group exercise high prudence in livestock consumption. There is also an informal strong community pressure against off-take decisions by the poor. The poor mainly sell light weight animals such as old cows and young males that fetch low prices rather than a limited number of high value male livestock. Nor are all these sales by the poor entirely destined to finance consumption. Households often reinvest part or all of their sales proceeds on replacement stock. Off-take decisions are sometimes part of accumulation decisions and the poor do replace; 19 percent of the total livestock purchases by our sample households were made by those in the *very poor* wealth ranking category, although this group forms only 12.2 percent of the sample households. Moreover, despite the difficulties, some poor pastoralists often make efforts to regain their position in the system. Diversification is a means to achieve this aim either through investment purchases of small stock and young cattle for gradual herd build-up, or indirectly through minimized livestock off-take.

Second, how important is the initial wealth status?

The initial state of asset endowment is often thought to be an important determinant of current welfare levels. Poverty is then essentially perceived to be a result of poor initial

conditions. Persistent deprivation could be a consequence of inherited poverty, irreversible loss of economic status and other innate characteristics of the agent of concern. Financial market failure and severe shocks are the often quoted unfavourable conditions that hold the initially disadvantaged in poverty traps. Moreover, weak initial asset status may force the poor into low-return activity portfolio adoption that significantly limits their pace of accumulation to escape poverty (Dercon, 1998; Zimmerman and Carter, 2003).

The question here is to find out whether the initial asset holding status of a pastoral household significantly determines its current position. More specifically, is the probability of currently being under the estimated threshold (15 head of cattle) significantly determined by the reported initial wealth status? The sample Borana households were asked to recall their cattle holding status at the time when they first independently established their families. This is considered as forming their initial start-up capital. Table 2 shows logistic regression results for the determination of the likelihood of household current asset holding below the suggested threshold of 15 head of cattle. The explanatory variables are initial cattle herd size at the time of household formation (INITIALH), age of household head (AGE), household size (HHSIZE), gender of household head (FEMHEAD, =1 if female) and distance from the nearest town (LOC).

The model significantly explains the relationship. The coefficients for household size and location are significant and consistent with expectations. Wealth status and family size are normally positively correlated; and the likelihood of finding wealthy households is higher in remote locations than in peri-urban areas. The explanatory variable of crucial

interest here is the initial herd size (INITIALH).[4] Its coefficient is negative, but not statistically significant. The probability of currently being under the suggested threshold of 15 head of cattle is thus not significantly determined by the initial cattle wealth. It is, perhaps, an indication of the fairly stochastic nature of wealth accumulation in the pastoral system where some poor households might find their wealth status improved while the non-poor may become poorer. In a Borana saying, "*wealth is like cloud*," it comes and unpredictably goes[5]. The result offers a clue that the threshold estimate of 15 head of cattle reported in Barrett (2003) is not necessarily a threshold for poverty trap.

Table 2: Logit coefficients for the likelihood of cattle holding below the suggested poverty threshold (N=113)

	Explanatory Variables				
	INITIALH	AGE	HHSIZE	FEMHEAD	LOC
Coefficients	-0.004	0.002	-0.357***	0.913	-0.016*
P-values	0.248	0.896	0.000	0.206	0.059

LR χ^2 (5) = 33.68; P-value (0.000)

****Significant at 1% level; * Significant at 10% level of significance.*

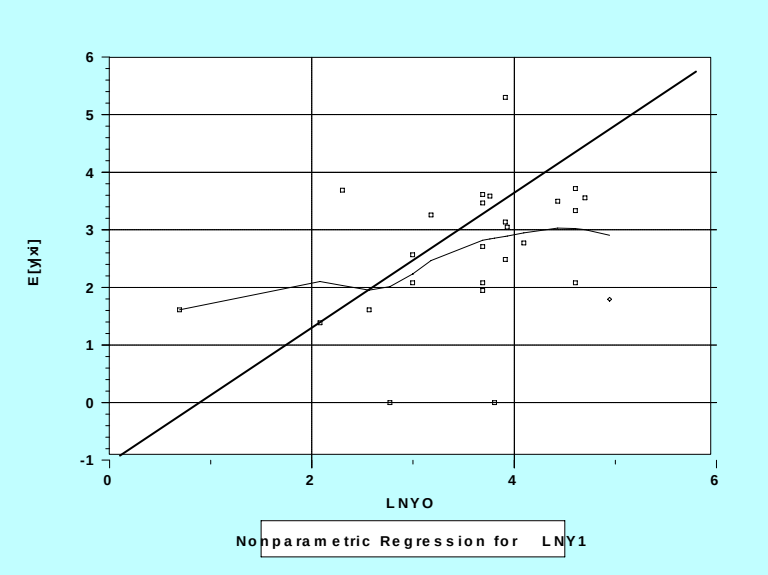
How definitive is the suggested dynamic poverty threshold?

Although this is an important issue of further inquiry, it may be possible to gain some understanding based on our data. A similar non-parametric estimation approach to that of Lybbert et al. (2004) is followed here to preliminarily assess the reliability of the suggested threshold estimate as a definitive minimum for pastoral poverty trap in Borana pastoralism. The limitation of our data must be, however, be clearly mentioned at the outset. Firstly, year-on-year household cattle herd data were difficult to generate for the 40 years period covered in the interview due to the obvious recall difficulties. The Borana traditional *Gada* calendar was, therefore, alternatively used to base interviews on key milestones in order to improve the level of recall, but still this has the obvious disadvantage of lack of analytical flexibility. Secondly, since households differ in the length of their history, the process results in varied sample sizes for the assessment of wealth dynamics in different periods. The data are uniquely generated with the help of a longitudinal questionnaire built into the cross-sectional survey. A recall error bias and related complications are the inevitable consequences of such an approach.

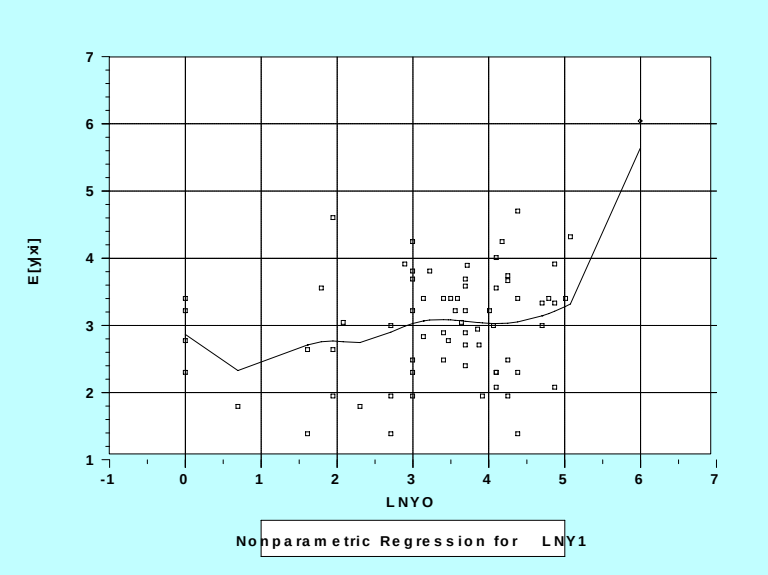
The non-parametric estimation results are shown in Figures 2a-2d each based on sample households with different lengths of history. The horizontal axis measures herd size on a logarithmic scale[6]. A diagonal line is mechanically imposed on Figure 2a for an initial illustrative purpose of rough visual inspection[7]. Observations that lie further to the right of the diagonal line display the condition of households whose cattle wealth fall below the initial position. The estimated non-parametric curves show the average function (predicted values) fitted to the scatter of observations. None of the estimated non-

parametric curves *strictly* resembles the S-shaped pattern of identifiable thresholds discussed previously. The general tendency of the concentration of data scatters in the direction of the right lower corner of the plane or the horizontal axis indicates a substantial non-recovery situation. The non-parametric curve generally bends to the right to capture this outcome, thus indicating a lower expected value than the initial wealth position.

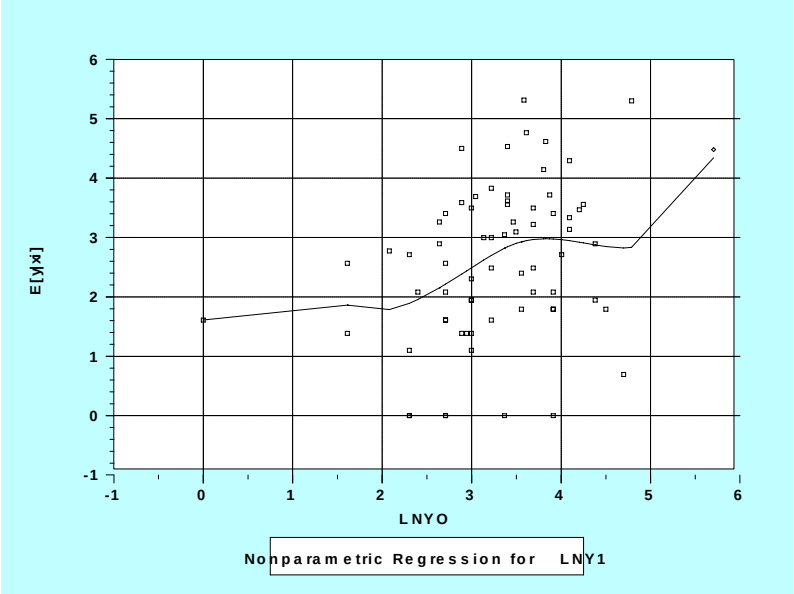
Figure 2: Non-parametric estimates of household cattle holding dynamics



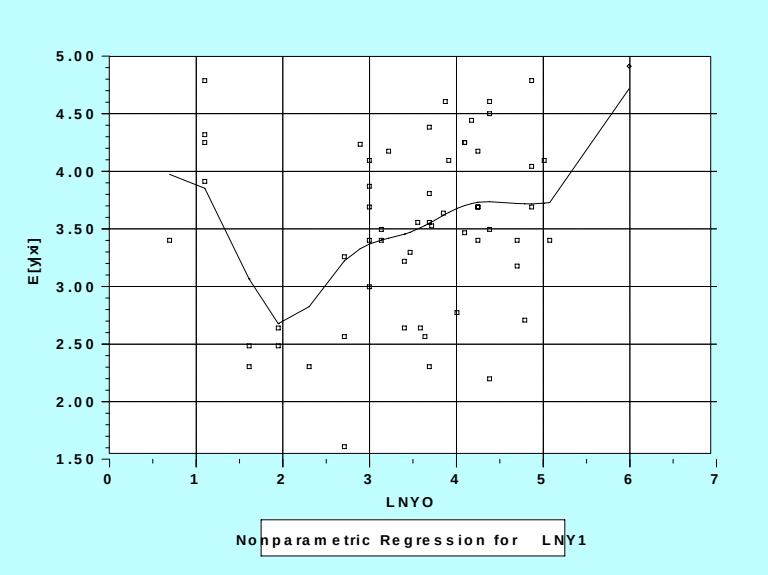
*2a: **Period 1969-03**; Gaussian Kernel, bandwidth=0.4; N=26,*



*2b**: Period 1977-93;** Gaussian Kernel, bandwidth=0.4; N=70*



*2c**: Period 1985-03;** Gaussian Kernel, bandwidth=0.4; N=70*



*2d**: Period 1977-98**; Gaussian Kernel, bandwidth=0.4; N=59*

Turning to the specific figures, 2a shows a lower bending point at approximately 12 head of cattle. The majority of households that had a reported initial herd size above this approximate minimum, especially above an approximated size of 55, are generally found not to have regained their original status after a longer walk through the frequent shocks that have ravaged Borana pastoralism since the early 1970s. It apparently signals the

overall Borana system's convergence to lower state of welfare. And yet it is important to note that Figure 2a is based on a small sub-sample (N=26) of older households with a family formation history extending back to the 1960s and before, which, on the other hand, might partly reflect the effect of household life cycle. Figure 2b, for the shorter period 1977-1993, apparently shows similar evidence where the great majority of households had become poorer. Figure 2c for the period 1985-2003 indicates a more or less similar case of non-recovery for majority of the households. The lower tail region of Figure 2d rather roughly indicates a case where some households with initial holding below 8 head of cattle had improved their wealth positions while, on the other hand, beyond the lower bending point, some of the initially better off had their status deteriorated. Moreover, it is often the case that not all abysmally hit shock victims would automatically slide into a state of permanent asset poverty. Generous former owners can attract a wide community support and/or may reclaim some remaining *Dabare* stock previously lent out, while a mean pastoralist may run into a state of permanent failure.

It does generally appear that consistent identification of the equilibrium thresholds is very difficult. The results obtained here do not generally support the conclusion reached in Lybbert et al. (2004). In some cases households with initial herd size below the suggested threshold level were able to improve their status, while those that reportedly were initially wealthy, of course, could not regain their claimed original position. It is an indication that the possibility of some level of accumulation from below the suggested threshold level cannot be completely ruled out but, with frequent shocks and underlying

trends, that there is also a basic long-term downward spiral where those with large herds have been steadily losing wealth. Therefore, the threshold estimates reported in the previous studies are most notably quite explorative rather than definitive. Irrespective of the level of rigour in the interviewing method, from our experience in field investigations, a significant recall error is an inescapable consequence of a quantitative "longitudinal interview" built into a cross-sectional survey. The estimated non-parametric function is also apparently sensitive to the chosen time periods.

V. The degrading social capital base of pastoralism

Social capital is a term with diverse conceptualisations and several disagreements across disciplines (Streeten, 2002). In addition to matters of professional discipline, the difficulty of reaching common ground in the definition of social capital partly appears to be due to the differential perceptions about the complex relational forms specifically constructed within societies. Some definitions stress localized reciprocity such as personal and family networks and ties. Others stress social groups associated for some common interest and goals like in the case of credit and saving associations (Ellis, 2000). Networks and memberships in groups dominate the commonly adopted perception of social capital in the development literature.

Social capital is a key asset of the peripheral poor such as the pastoral peoples. The vulnerability of the pastoral livelihood systems naturally necessitates indigenous mechanisms and social insurance schemes that serve as a fallback platform in times of

severe stresses and shocks. The Borana Busa *Gonofa* indigenous welfare institution (discussed above) is a good example of such robust local schemes which neither the definition of local reciprocity alone nor that of membership in an association does seem to exhaustively explain. A key proposition here is that indigenous welfare institutions can profoundly fail to achieve their aims and could crumble in the face of mass poverty set in by recurrent shocks.

The social capital component of the pastoral livelihood system is quite sensitive to trends in the conditions of its natural and financial capital foundations. This testable proposition can be empirically examined by referring to trends in the levels of trust and confidence in the system's indigenous social welfare mechanisms in the face of mounting livelihood pressures. Pastoral poverty is supposed to breed an increasing sense of dependence on external institutions and structures with a corresponding loss of confidence in the indigenous social insurance schemes. The level of trust and confidence in own support structures is then inversely related to that of external agents.

As indicated above, membership in an association or a group is the frequently used measure in the empirical approach to the analysis of social capital. This is quite problematic in the context of societies that have long-established indigenous institutional mechanisms such as the Borana *Busa Gonofa* where membership is by birth rather than by choice. Here, the levels of trust and confidence in indigenous support institutions vis-à-vis those in the external structures are empirically examined following the testable

propositions mentioned above using the binary logit model. A summary of variable descriptions is given in Table 3.

Table 3: Definition of variables for the logit estimation of trust and confidence in the indigenous welfare system

Variable	Description	Descriptive statistics	
		Mean	SD
TC_CWRS	Dummy for level of trust and confidence in the community wealth redistribution system, 1 if strong; 0 otherwise	0.57	0.5
TC_REL	Dummy for level of trust and confidence in friends and relatives, 1 if strong; 0 otherwise	0.59	0.49
TC_GOV	Dummy for level of trust and confidence in regional government agencies, 1 if strong; 0 otherwise	0.24	0.43
TC_LSCG	Dummy for level of trust and confidence local administrative structure of central government, 1 if strong; 0 otherwise	0.21	0.41
TC_NGO	Dummy for level of trust and confidence in NGOs, 1 if strong; 0 otherwise	0.48	0.5
STOCKSIZE	Livestock size in total livestock units (TLU)	23.7	34.84
AGE	Age of household head	53.4	16.9
FEMALHEAD	Gender of household head, 1 if female; 0 otherwise	0.16	0.37
DNTOWN	Distance from nearest town or market centre (km)	34.5	28.3
INLSGOV	Dummy for involvement in local administrative structure of the central government, 1 if Yes; 0 otherwise	0.11	0.31

Table 4 shows the estimated results of the model. The core finding is that the level of poverty measured here by stock size and distance from the nearest town/market centre are the key explanatory factors of pastoral household level of trust and confidence in the traditional welfare institutions of the system. The likelihood of trust and confidence in the community wealth redistribution system and in the more localized networks of friends and relatives significantly increases with livestock size and distance from the urban centre. The level of trust and confidence in external institutions, on the other hand, significantly decreases with distance. The results also indicate the general picture of the tendency that the level of trust and confidence in the own support system is inversely related to that in external institutions, especially with respect to the key variables of wealth size and distance.

Table 4: Logit coefficients of level of trust and confidence in the traditional welfare system

Explanatory variables	Dependent variables				
	TC_CWRS	TCF_REL	TC_GOV	TC_LSCG	TC_NGO
STOCKSIZE	0.199**	0.035***	-0.004	-0.001	-0.009
	(0.034)	(0.009)	(0.582)	(0.861)	(0.200)
AGE	0.018	0.004	0.034**	0.025*	0.011
	(0.139)	(0.739)	(0.017)	(0.077)	(.344)
FEMALHEAD	-0.581	0.566	-0.491	-0.671	-0.999
	(0.262)	(0.296)	(0.447)	(.318)	(0.842)
HHSIZE	-0.112	-0.032	-0.151	-0.167*	-0.077
	(0.137)	(0.710)	(.110)	(0.083)	(0.276)
DNTOWN	0.016**	0.034***	-0.041***	-0.030***	-0.017**
	(0.017)	(0.000)	(0.000)	(0.004)	(0.011)
INLSCGOV	1.186*	0.336	0.027	-0.875	0.272
	(0.093)	(.642)	(.975)	(0.432)	(0.644)
CONSTANT	-0.882	-1.502*	-0.787	-0.597	0.592
	(0.218)	(0.058)	(0.365)	(0.501)	(0.397)
Number of observations	145	144	144	144	143
LR χ^2 (6)	21.37	40.13	29.39	20.35	13.97
Prob > χ^2	0.001	0.000	0.000	0.002	0.052
Log likelihood	-88.298	-77.389	-65.162	-63.514	-91.965

Numbers in parentheses are P-values
*** Statistically significant at 1% level; ** significant at 5%; * significant at 10% level of

These results clearly indicate the degrading social capital base of Borana pastoralism. Poverty and increased reliance on non-pastoral sources of income would inevitably undermine the efficacy of the essentially livestock-based traditional community welfare system as a reliable fallback mechanism. In fact, those in peri-urban areas of relatively more intensive cropping culture may be more inclined to drop the *Busa-Gonofa* system. With increasing proximity to the urban centre, confidence in the indigenous welfare system is likely to be eroded because households that tend to settle in peri-urban areas are those with eroded asset status in search of relief provisions and non-pastoral opportunities. In short, the Borana's usual answer to the question of the fundamental origins of eroding confidence in the traditional social welfare scheme is this: "we all of us are getting poorer."

VI. Concluding Remarks

This paper has attempted to demonstrate the Borana pastoral crisis as an experience of growing pastoralist impoverishment fundamentally set in by the devastating recurrent shocks of the last four decades. Recurrent shocks and negative trends have a natural tendency to severely limit the system's asset accumulation potential. One of the damaging impacts of such a trend is related to the observed degradation of the indigenous social support capacity of the system. Since the mid 1970s, the Borana pastoralists have rather become more dependent on external assistance. This is strongly associated with growing pastoralist destitution and the implied critical effect of increasing loss of

confidence in indigenous support institutions consequent upon the crumbling situation of the existing local capacity to effectively respond to the voices of the poor.

The novelty of the micro-level poverty trap hypothesis lies in its practical policy relevance of designing support interventions. It particularly seems to be profoundly connected with the issue of external support interventions basically centred on the strategy of individual targeting. Pastoralist restocking is one of such strategic interventions, but it is a practice of enormous challenges. There are documented cases of East African pastoralist restocking programmes implemented by NGOs as part of their disaster relief and rehabilitation efforts which are basically characterized by provisions of small stock to individual households (Anderson, 1999). However, it is a practice far short of the level of support implied by the poverty trap threshold estimate reported in Lybbert et al. (2004) for Borana pastoralism. The practical task of addressing pastoral poverty in the context of the low level equilibrium trap threshold discussed above is, therefore, very demanding to the extent that it may require a fundamental re-orientation of the existing practice and value systems of development agents currently working among pastoralist communities.

NOTES:

1. According to our informant, Borbor Bule, the *Gumi Konye* Borana assembly of May 1892 at Arero made an enumeration of survivors only to find out 972 households for consolidated resettlement.
2. For a comparison, the often-quoted popular indigenous social insurance institution in highland Ethiopia, *Idir*, is rather basically established to meet the emergency cost of financing the burial of the dead and related costs of the Ethiopian Coptic tradition.
3. There is even a Borana proverb that analogously compares the condition of growing ivy on its host tree and pastoral migration of the poor with the support of their rich neighbours.
4. The logit estimates for the likelihood of cattle holding above the threshold are similar, but with the opposite signs.
5. Initial conditions become increasingly more important if rich pastoralists continue to adopt diversified income portfolios instead of holding their assets only in livestock form which makes them vulnerable to poverty in the unpredictable environment.
6. LNYo is the natural logarithm of herd size for the base year. The estimation process relates year $\mathbf{t_0}$ and year t+i, where i takes on different values based on the period under consideration.
7. This is not made in other figures to avoid inaccuracy.

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