“ We’re Living from Loan-to-Loan ”: Pastoral Vulnerability and the cashmere-debt Cycle in Mongolia

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"*WE'RE LIVING FROM LOAN-TO-LOAN*": PASTORAL VULNERABILITY AND THE CASHMERE-DEBT CYCLE IN MONGOLIA

Daniel J. Murphy

ABSTRACT

This paper explores the emerging articulations between microfinance and livestock production cycles among Mongolian pastoralists in contexts plagued by disaster and commodity market fluctuations. Ethnographic investigations of household production and vulnerability in two rural districts of eastern and western Mongolia demonstrates that both poor and wealthy households have become ensnared in a cashmere-debt cycle but that the bifurcation of livestock asset trajectories between large and small herds has also fostered diverse financial and herd management strategies that further exacerbate existing inequalities.

Keywords: Pastoralism; vulnerability; microfinance; disaster; livelihoods

INTRODUCTION

In recent years, key issues in rural Mongolia have captured international headlines including the massive increase in cashmere goat numbers and resulting overgrazing (Berger et al., 2013; Liu et al., 2013; Ng & Berger, 2017), the widespread indebtedness of Mongolians on both national and individual scales (Hornby, 2016), and the dzud disaster in 2010, a catastrophic winter event in which 10 million of 40 million head of livestock perished in a matter of months. Commentators and scholars have suggested that these events are in fact deeply

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entangled in pastoral regions of the country (Sneath, 2012), but little research has explored their connections at the household level. As a response, this paper uses ethnographic and household survey data to examine the emerging articulations, at the household level, of microfinance and livestock production cycles among Mongolian pastoralists in contexts differentially exposed to dzud disaster and commodity market fluctuations. The article argues that by tracking herd dynamics through herd growth and loss, it is possible to uncover how these linkages are shaped by household vulnerability and the ways in which minimum herd thresholds can constrain pastoral livelihoods. Results of the research describe what could be called the "cashmere-debt cycle," the shift in herd management toward cashmere production as a means to repay loans or the use of loans to smooth income. Yet, the research also describes clear differences in the use and function of the cashmere-debt cycle depending on exposure to dzud risk and market conditions. In Uliastai, a district with high dzud risk and poor market access, households have become ensnared in the cashmere-debt cycle, as loans temporarily allow them to weather such booms and busts but amplify their long-term vulnerability. In Uguumur, a district with low dzud risk and excellent market access, the cashmere-debt cycle represents, increasingly, an opportunity to engage in livestock speculation and nonpastoral investments. Consequently, the article argues in conclusion that these findings should refocus pastoral development efforts on disaster risk management and sustainable regional market development.

LITERATURE AND BACKGROUND

Mongolia is often cited as being one of the most successful cases of microfinance implementation in the world with the growth and profitability of "herder loans" (*malchnii zeel*). Moreover, it is also one of the few pastoral regions in the world where mobile herders are specifically targeted for loans and other financial products like index insurance (Taylor, 2016). However, scholars note a number of potential problematic impacts of this widespread adoption of debt (Empson, 2014, 2016; Marin, 2008; Waters, 2016). Sneath (2012), in particular, has argued that these financial products create a perverse cycle whereby herders utilize loans to smooth income streams from cashmere production, thereby increasing and deepening dependencies on debt. Here, I refer to this as the "cashmere-debt cycle." The simultaneous explosion in goat herds since decollectivization (from less than 20% of the national herd in the early 1990s to over 50% in recent years), rising percentage of herder income derived from cashmere (approximately 70–80% in some regions according to Addison & Brown, 2014), and substantial growth in the number and volume of loans provide support for this.

Yet, little research has explored how such dependencies and divergent strategies might operate at the household level. For instance, Janes and Oyuntsetseg (2016) have hypothesized that loans might not only smooth income from year to year but also might be used by wealthy herders to "garner the capital necessary to invest in productive assets," but there has been no research demonstrating that this is, in fact, the case. Moreover, there has been little exploration of the wide variations in pastoral production across the ecologically and culturally

diverse regions of Mongolia that might impact how households confront and experience this cycle. Understanding these distinctions is critical because key factors such as disaster risk and market access are unevenly distributed both between and within regions. For instance, a host of studies clearly demonstrate that disaster livestock mortality varies considerably in different regions (Janes & Oyuntsetseg, 2016; Middleton et al., 2015) and ethnographic research has shown how they vary considerably even at the district level (Murphy, 2014). Consequently, even though the cashmere-debt cycle is depicted as one driven largely by poverty and dependency, the data I present show that cashmere-debt cycle can work in multiple ways depending on a household's past, present, and potential herd growth trajectories and the ways cashmere and debt articulate with herd management in specific conditions. In order to understand how the cashmere-debt cycle might unfold in a diversity of ways, this paper argues that we must first understand the role of herd dynamics in pastoral vulnerability.

Wisner et al. (2004, p. 11) define vulnerability as "the characteristic of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard." Others have further extended this definition to elaborate on the complex contextual and embedded nature of vulnerability (Bankoff & Hilhorst, 2009) by focusing, in particular, on the power relations and cultural dynamics that render one vulnerable. In addition to the research presented here, previous analysis from one of the research sites (Uguumur), for example, has explored how the cultural dynamics of property and governance produces vulnerability to disaster and livestock loss (Murphy, 2014). Rather than beginning with the broader context and conditions of pastoral vulnerability, this paper will narrow the focus to the vulnerability of herds and the herd management practices that most directly impact their growth or decline. This focus on herds and herd management is a methodological one and does not eschew a broader historical and contextual analysis as the author has done elsewhere (Murphy, 2014). Additionally, it is evident that wealth can be measured in manifold and diverse ways. However, by focusing on herds, the primary asset that both enables and determines a pastoral lifeway, and herd management, it is possible to clearly see the diverse ways in which the cashmere-debt cycle might operate. As a consequence, I use herd size as a proxy for wealth. In order to do so, this paper draws on contemporary research on herd management in Mongolia pastoralism and, in a conceptual sense, an emerging body of literature referred to as "asset-based approaches to livelihoods."

In popular literature, Mongolian pastoralism is often presented in a monolithic and unchanging way (see Marin (2008) for an in-depth analysis). Pastoralists, often called "nomads," raise the "five snouts" (sheep, goat, horse, cattle, and camel) largely for subsistence and move with the seasons across the steppe. Even in some scholarly literature, the variation in pastoral production and herd management is only distinguished by ecological variables with camel herds in the Gobi, horses and sheep on the steppe, cattle in the central Khangai, and goats in the west and the Altai (Bazargur, 2005). However, Mongolian pastoralism has long been tied to trade and markets, both local and global, and

consequently has adapted to the dynamics of commerce and the vagaries of boom and bust in commodity circuits. Moreover, Mongolian pastoralism has been encapsulated for centuries within state-level political dynamics both as a source of power and as its object. Consequently, pastoral production and herd management, though patterned, are not easily categorized and as Sneath (2012, p. 218) argues "(Mongolian) pastoralism cannot be seen as constituting a single productive mode or described using a single set of formal rules in which all pastoralists can be considered to have the same economic orientation."

Nevertheless, Sneath (1999) notes a spectrum in herd management from "domestic" to "yield-focus" orientations, both outcomes of an array of forces and factors impacting household decisions. In contemporary post-socialist Mongolia, the most proximate factors impacting herds and herd management are the increasing frequency and severity of disastrous winter conditions that lead to dzud (Sternberg, 2010) and the opening up of the pastoral economy to the global marketplace (Marin, 2008), both outcomes of critical transitions in governance. These impacts are the most significant because disaster and market access (via sales) are the primary ways in which livestock are disposed of and herds are reduced. Janes and Oyuntsetseg's (2016) work has demonstrated the catastrophic implications of herd loss in the post-socialist transition and how access to markets and services shape the experiences and consequences of dzud. Yet, additional analyses have also demonstrated that dzud risk is not evenly spread (Rao et al., 2015; Tachirii et al., 2008). As Middleton et al. (2015, p. 2) note, "not all locations are equally affected in any given dzud and some regions have greater cumulative risk." In other words, in each major dzud, only some regions are affected but some regions, like Uliastai described below, experience cumulatively higher frequency and more intense dzud events than others.

Further, Kusano and Saizen (2013), Lhkavadorj et al. (2013a, 2013b), and Marin (2008) attend to the role of market conditions in shaping pastoral livelihoods in Mongolia. Kusano and Saizen (2013) note how market integration decreases the farther herders are located from the capital and largest city, Ulaanbaatar, and the implications that distance has for household-level offtake. In these poor market conditions, Lhkavgadorj et al. (2013b) note that the sharp reductions in milk and meat sales has increased dependence on cashmere, and Addison and Brown (2014) note the reticence of herders to sell in the face of dzud which reduces selling as a tool for managing risk. In sum, the uneven distribution of the frequency and severity of dzud and market access mean that herders in different places are not equally vulnerable. Moreover, those differences in vulnerability further condition distinctions in herd management including the ways in which herders use both cashmere and debt.

To better understand this linkage between vulnerability and the cashmere-debt cycle, I draw an analysis of herd dynamics within the "asset-based approaches to livelihoods" literature to explain how focusing on rates of loss and growth in herds can illuminate the way disaster and market access shape herd management. In other research, I have noted how problematic these approaches are as explanatory frameworks and have suggested their use largely as a starting point for exploring other drivers of livelihood vulnerability and

asset growth and loss (Murphy, 2014; see also Scoones, 2009, and Little, 2006). That is also my aim here. Nevertheless, as experts in pastoralism have long noted, those with initially larger herds will over time accumulate faster than those who did not given the geometric rate of growth in herds from births (Dahl & Hjort, 1976). Yet, the rates of herd growth are further determined by the timing of losses (such as through market sales and consumption) and, particularly, exposure to and impacts from shocks such as disease, drought, predation, and, in Mongolia, dzud (Murphy, 2014; Nitta et al., 2005). In a given set of conditions, these dynamics produce "asset thresholds" (Lybbert et al., 2007), a theoretical herd size above which herds will continue to accumulate and below which households are forced to deaccumulate over time, ultimately resulting in total herd loss (Lybbert et al., 2004). Empirical studies have found that those above such thresholds will shed assets in favor of sustained consumption while those below will constrict consumption in order to maintain assets (McPeak & Barrett, 2001). Because certain conditions can limit asset-smoothing strategies and minimal consumption requirements for household reproduction remain, households can be forced to shed assets thereby exacerbating deaccumulation. Over time, through repeated disaster events and other shocks, these dynamics can become "traps" (Carter & Barrett, 2006) and distinctions in herd management orientation may, in fact, reflect little about herd-owners" desires or abilities and more about their vulnerability to herd loss and the broader array of factors that produce it (Little, Debsu, & Tiki, 2014).

In this paper, I use this conceptual framework of thresholds and traps as a heuristic to understand how the cashmere-debt cycle can work in multiple ways and how cashmere and debt affect potential herd trajectories over time and articulate with herd management in specific contexts and conditions. Cashmere and loans upset the calculus of herd growth and loss, by creating new opportunities, new offsets' and new deficits, and thereby shift the dynamics of herds. For example, greater incomes from cashmere and income smoothing from loans can offset the need to sell livestock thereby reducing offtake. Yet, how this might work in different contexts of pastoral vulnerability is uncertain. For instance, does the cashmere-debt cycle reflect a relationship of dependency and the deeply vulnerable contexts of a poverty trap or is the cashmere-debt cycle amenable to other conditions in which herding is less risky and returns to investment high?

METHODS AND RESEARCH SITES

The data discussed in this article were collected from ethnographic research conducted in 2014 and 2015 in two districts (*bag*) of eastern and western Mongolia: (1) Uguumur district, Bayankhutag county (*soum*) in Khentii province, and Uliastai district, Umnugovi county in Uvs province (see Fig. 1 for location and description below). In each community, for this study, 22 households were selected ($n = 44$) by stratified sampling according to household herd size. Households were defined as the smallest cooperative unit recognized to have a household head (*geriin ezen*) and were interviewed with an extended livelihood questionnaire focusing on herd dynamics (multiple year loss and gains), finance,

Fig. 1. Research Site Locations.

and other economic variables. Questionnaires were followed up with semi-structured interviews with household heads (male and female) focusing on the connections between livestock production, finance, and disaster. Additional interviews were conducted with bank loan officers and staff, local administrators, ministry staff, and development practitioners and experts. All interviews were transcribed and analyzed using Dedoose. Questionnaire data were analyzed using Excel. All financial data have been adjusted for inflation.

The two research sites were selected for comparative purposes. Uguumur is an exceedingly wealthy area of Khentii province and for Mongolia as a whole. In order to obtain sufficient comparative perspective on the linkages between finance, markets, and disaster vulnerability, National Statistical Office census data on livestock mortality, density, and per capita holdings were consulted to find a research site with substantially different measures than Uguumur. Potential sites were largely limited to the remote western provinces resulting in the selection of Umnugovi county in Uvs province, an area ecologically similar to Bayankhutag where Uguumur is located and with similar livestock densities (40 head/km^2). Upon visit to the county, Uliastai was recommended as a suitable district for the research. As noted in Table 1, Bayankhutag county has high per capita livestock holdings and low good year and bad year mortality rates. Umnugovi, however, has low per capita holdings and relatively high mortality rates in good or nondzud years and bad or dzud years. Bad (dzud) years are defined as years where county livestock mortality exceeded 10%. As discussed in detail below, these distinctions allowed research to explore the linkages between vulnerability, production, and finance.

The district of Uliastai is dominated by high mountain steppe (*altai*) and is marked by a cold, semi-arid climate with 129 ml of annual precipitation. Though the area abuts the Khovd River, it is remote even within Uvs, widely

Table 1. Comparison of Key Vulnerability Indicators.

Site	Avg. Herd Size	Birthing Rate (%)	Bad Year Mortality (%)	Good Year Mortality (%)	Sales (%)	Consumption (%)	Sheep Price ($)	Sales Income ($)	Cashmere Price/ kilo* ($)	Cashmere Income ($)
Uliastai	200*	20	22.5	2.7	5	4	57	980.57	24.90	1,101
Uguumur	844	39	12.9	1.5	10	2	65	6,189	47.39	2,964

considered the most remote province in Mongolia. The people of Uliastai are predominantly Durvud and nominally Buddhist. The average household has six members with only 28% of adult children having become herders. Of the households sampled, 27% own at least one vehicle and 18% have a second home in a settled area. Though Uguumur is a mixed desert steppe landscape, it lies along the verdant Kherlen river valley and receives 224 ml of annual precipitation (more as rain during summer). It also abuts a major town (Undurkhaan, pop. 24,000) with substantial market access and is directly connected to the capital Ulaanbaatar via a recently constructed highway. The people are majority ethnic Khalkha, with Durvud and Uriankhai minorities, and mostly devout Buddhists. Households have an average household size of 5.5 members with 40% of adult children having become herders. Of the households sampled, 77% have at least one vehicle (32% have two or more) and all households have a secondary home in a settled area. These evident distinctions between the two research sites provide an appropriate setting for the comparative purposes of this research.

PASTORAL PRODUCTION AND VULNERABILITY

Pastoral production across contemporary Mongolia and historically through the centuries has served a dual purpose of raising livestock for household consumption and for the marketing of livestock products. However, since the dismantling of collectives and the privatization of livestock following the collapse of state socialism, pastoral production has undergone considerable change. As Sneath (1999) notes, production increasingly spans a spectrum between household economies exhibiting a more "domestic" orientation, with a focus on household reproduction (i.e., subsistence) and sustainable herd size as central priorities, and those exhibiting a "yield" orientation, with a focus on market return and herd growth. Moreover, a number of scholars have noted considerable variation in pastoral vulnerability to key hazards including dzud disasters, a catastrophic winter event in which livestock die *en masse* (Fernandez-Gimenez et al., 2012; Janes & Oyuntsetseg, 2016; Middleton et al., 2015; Murphy, 2014; Nitta et al., 2005). Here, I argue that variations in pastoral production (i.e., herd management orientation) and vulnerability are closely correlated and provide the key context for understanding how micro-loans and cashmere become linked in diverse ways. In order to do this, the following section will provide an overview of contemporary pastoral production in Mongolia and, by examining herd dynamics in Uliastai and Uguumur, how relative vulnerability drives the possibilities for pastoral production and the cashmere-debt cycle.

Pastoralists in Mongolia raise five kinds of livestock: sheep, goat, horse, cattle (yak), and camel. Each species is differently adapted to a range of ecologies. Camels, for instance, have a narrower ecological niche favoring drier ecologies to which they are specifically adapted like the Gobi. Each species also has different gestation periods (e.g., camels only gestate every 2 years), offspring rates (goats are more likely than sheep to twin), lifespans, and grazing requirements that affect productivity. Each of these species also produces a diverse array of products including meat (including blood and organs), skins, fibres

(wool, cashmere and hair), dairy, transportation, and a number of other minor products (horn, bones, etc.). Domestic needs as well as market conditions strongly impact the value of these products, their market returns, and ultimately the value of each species in a herd. The opening of the pastoral economy to global trade, for example, has precipitated dramatic shifts in the value of products and their prioritization within production and herd management. For example, cashmere, a high-end luxury fiber, which made up little of socialist period herding returns now dominates production in many regions of the country. However, wool, a key product during the socialist period, is highly devalued and poor quality, resulting in such low prioritization that households in Uguumur for instance, dispose of it or give it to poorer families rather than bringing it to market. Finally, each species is also differentially vulnerable to a variety of risks such as weather (i.e., storms, blizzards, flooding, lightning and high winds), disease, predation, and ultimately dzud, all of which affect their relative production utility for a household and herd composition. For example, the disastrous implications of dzud are particularly of concern for managing herd composition. Goats, for instance, are widely believed to be much weaker in these conditions than other species. Sheep, in contrast, are more resilient.

The combination of husbandry needs and requirements, domestic and market value, and species vulnerability strongly shapes herd management strategies and necessitates tightly managed organization of labor for tasks such as migration, herding, birthing, combing, shearing, weaning, and many other critical productive activities. The ratio of herd size to labor availability across the annual cycle can lead to labor bottlenecks that require either additional labor, at a cost (i.e., hired herders), or, conversely, constraints on herd size (such as through culling). This productive dynamic, in hazardous contexts, can modulate the relatively vulnerability of a household. For instance, the inability to support or access additional labor not only constrains herd size, but also limits mobility in times of stress leading to increased vulnerability to events like dzud. However, these strategies are complicated by the variations in dzud events. In regions that experience more frequent or covariate events (widespread and evenly distributed conditions), the support networks and labor pooling are limited in reducing vulnerability, whereas in areas with less frequent and more idiosyncratic events (spatially uneven), the support networks distribute risk and share resources to overcome such conditions. Moreover, other economic opportunities and supplemental income can also affect how households organize the management of their herds and their relative vulnerability to hazardous conditions. Diversification in economic activities near settled communities, for example, can limit the necessary mobility for maintaining large herds or shift priorities in herd composition.

Regardless, through time, households try to optimize herd management strategies to achieve a reasonable set of productive goals given an array of opportunities, constraints, and risks. Additionally, ecological diversity, market access, local social and political dynamics, and the uneven distribution of weather and climate risk all impact what goals are possible and what strategies are workable. As such, variations in herd management orientations are embedded within a broader set of conditions and driving forces that and shape the relative

vulnerability of household herds. Because the resources and opportunities to overcome risks (such as dzud or price fluctuations) are not evenly distributed and can over time generate radically different possibilities for herd growth, productive decisions, such as shifts to goats or loan adoption, might be symptomatic of spatially entrenched poverty and wealth dynamics.

One way to track whether the connections between herd management and vulnerability are spatially and chronically entrenched (i.e., resulting in poverty or wealth "traps") is through examining herd outcomes, which in this case are best measured by herd size. Research focus on herd size is problematic for a number of reasons, including how it reinforces a narrow conception of livestock as "capital" and herd growth as inherently valued in ways that might not be culturally resonant in noncapitalist economies (Ferguson, 1985). It can also reproduce a myopic focus on asset dynamics over broader contextual factors, as well as an inherent gender bias against other forms of work and wealth (Hodgson, 2000). Though I have critiqued this narrow focus elsewhere (Murphy, 2014), herd size is a good proxy for tracking the production of vulnerability for a number of reasons, though others like income are also valuable. First, as discussed above, pastoral households are primarily dependent on the products of their herds and, consequently, the size and growth of herds can be helpful as an indicator of wealth and poverty dynamics across a population. In Mongolia, this focus on herd size and growth resonates through titles such as *myangat malchin* (herders with over a thousand livestock) and various medals and awards such as "best herder" (*sain malchin*) that are largely attained through increased herd size. Moreover, herd size also points us to key factors and conditions that support increases in herds or result in decreases. This is critical because herd growth is central to the viability of a pastoral lifeway more broadly. Without livestock, households have little reason to pursue a mobile livelihood beyond settled communities. Even more so, rather than looking at factors leading to herd growth, it has been argued that looking at herd loss can provide a reliable starting point for understanding vulnerability and potential trajectories for household economies over time (Murphy, 2014). Further, by disaggregating sources of loss, whether positively through sales or negatively through disease or dzud, it is possible to identify what sources of loss drive herd reductions and ultimately herd vulnerability. In turn, this enables exploration of how those sources of loss articulate with hazards, broader economic conditions, and ultimately decisions such as herd composition and loan adoption. Comparing Uliastai and Uguumur below (see also Table 1), it is evident that chronic exposure to risks, such as dzud, and market access are key variables driving the trajectory of herds over time and changes in the cashmere-debt cycle.

Uliastai households have an average herd size of 387, though leaving out the single wealthiest household (a statistical outlier at 1,020 head) lowers this average to 200, which is the number used here as it more accurately represents the population. Given the average household size of six members, per capita livestock holdings are approximately 33 head. In contrast, Uguumur households average 844 head of stock with a per capita holding of 154 head. When looking comparatively across the sample, we can see these distinctions most clearly by

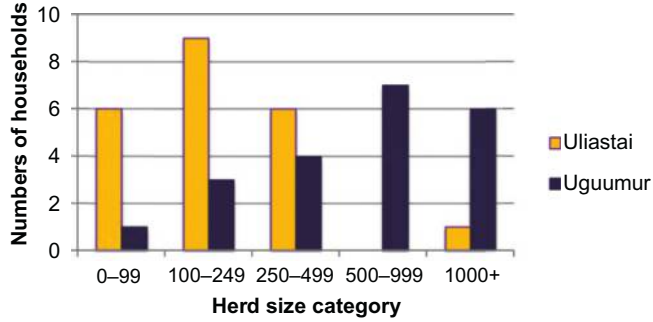

Fig. 2. Distribution of Households According to Herd Size Category.

separating households by culturally resonant herd size categories (Fig. 2). In the sample from Uliastai, most households have below 250 head whereas in Uguumur, most have above 500 head of livestock. Participants in Uguumur identified 200−250 head of small stock as a kind of threshold for pastoral viability while in Uliastai participants recognized a wide variation from 50 to 150. As might be expected, households in Uliastai are also more "domestic" in their productive orientation while Uguumur households are decidedly more yield or market-oriented. For example, in looking at herd offtake rates, Uliastai households slaughter 4% of their herds for household consumption (15 head) and 5% for livestock sales (19 head). In Uguumur, households slaughter 2% of their herds (20 head) for household consumption and 10% of the total herd goes to sales (85 head). Further, these figures signify large differences in both per capita consumption and income derived from offtake. For example, per capita consumption offtake (per year) in Uliastai is 2.5 while in Uguumur, it is 3.7 and per capita sales offtake rates are 3.6 in Uliastai and 15.5 in Uguumur. These glaring differences are highly condition by two driving factors: disaster risk and market access.

Uliastai is located in a region known for its deep, cold winters and has experienced three major dzud disaster events and two minor ones since 1991 resulting in high bad (or dzud) year mortality rates (average of 22.5%). This pattern is true of much of western Mongolia and has significant implications for herd growth potential. Yet, along with these bad years, herders in Uliastai also cope with risks from lightning, wolves, drowning, disease, and other numerous risks; as a consequence, herds have low birth survival rates of 20% and high mortality rates for good (nondzud) years (2.7%). This increased disaster risk and negative loss rate severely limits sales offtake, resulting in higher proportions of positive herd loss for consumption and dependency on cashmere for their primary income source. Further exacerbating these conditions is the lack of market access and poor market conditions. Nearly all Uliastai households sell their livestock and products in the countryside to itinerant traders, some of whom are local. This coupled with the extreme distance to end markets in Ulaanbaatar (1,516 km) and the provincial capital Ulaangom (119 km) results in low prices.

In 2015, live sheep were sold at approximately US$57. Average income from livestock sales in 2015 was only US$980 compared to annual average income of $1101 from cashmere. Due to conditions that limit herd growth and herd value, herd composition is dominated by goats since cashmere is not only a high value product ($24.90 per kilo), it reduces pressures on herd offtake as cashmere production does not require the slaughter of stock. The downside of this herd management strategy is the general weakness of goats and higher mortality in dzud conditions; however, goats are also more likely to twin as herds recover. In short, many households in Uliastai have found themselves trapped in a cycle in which prioritizing cashmere production, given current conditions, is the most sensible pastoral production strategy.

Moreover, households in Uliastai reported higher dependency on cooperative labor and only one instance of hired labor. In fact, most were surprised to hear of the dominance of hired labor in Uguumur having little experience with it. Additionally, compared to Uguumur, households reported fewer visits to county and provincial centers and more reliance on household food production. Nevertheless, though households were dependent on pastoral income they were also more economically diversified with higher rates of supplementary income from activities like furniture making, leather goods production, boot and shoe making, firewood collection, home repair, and limited diary production for sale in county and provincial centers. Because of these dynamics, herd management in Uliastai is decidedly more subsistence or domestic oriented than Uguumur.

Conditions are quite different in Uguumur, where 28% of participating households were *myangat* or herders with a thousand or more head of livestock. Moreover, households in Uguumur have experienced only two major and one minor dzud disaster events since 1991 and with a low average mortality rate from those events (12.9%). This lower "bad year" mortality rate limits the effect of noneconomic loss on herds and permits households to grow their herds. Moreover, given that risks posed to livestock are largely limited to dzud, birthing survival rates are roughly 39% (40% being optimal for large herds) and "good year" noneconomic mortality averaging 1.5%. With limited noneconomic loss exposure and higher birthing rates, households have greater capacity to both grow their herds and offtake for sale. This opportunity is amplified by the much higher livestock prices with the average sheep price of US$65. Moreover, given the higher prices and larger herds, households can afford higher offtake rates resulting in higher incomes from sales ($6,189) and less dependency on other forms of income such as cashmere ($2,964). Also, because herd growth has limited constraints relative to Uliastai, herd composition decisions are not pressured toward high-value animals like goats; consequently, sheep make up a larger proportion of herds.

Beyond herd production, there are other key differences. Households in Uguumur, particularly in the top two wealth categories, depend greatly on hired labor both for long-term herding employment and for short-term work such as sheep shearing and cashmere combing (Murphy, 2015). Outside of weaning periods, cooperative labor is relatively rare and kin groups form territorial units rather than economic ones. Herders in Uguumur are also more intimately tied

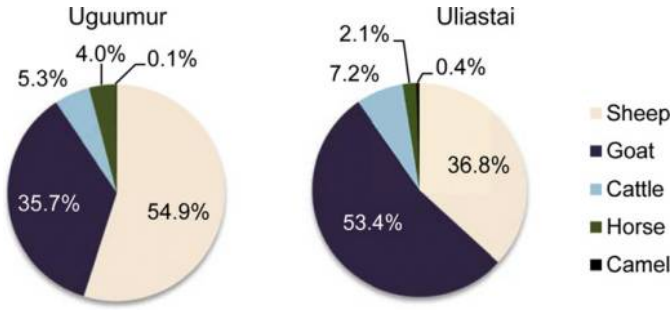

Fig. 3. Herd Composition by Site.

to settled communities like the provincial capital where many have second homes and even in Ulaanbaatar where some very wealthy myangat have apartments. Herding in Uguumur is also utilized to invest in other activities like hotels, bars, and groceries in these settled areas (Fig. 3). Many myangat herders have additional businesses beyond herding through which they employ others. In sum, Uguumur is decidedly more market-oriented and yield focused than Uliastai.

Clearly, pastoralists in Uliastai and Uguumur do not share similar conditions of vulnerability. In Uliastai, the higher risk of dzud and livestock loss combined with the higher "good year" rates of loss from smaller hazards such as predation and disease do not permit sufficient time for herd recovery. In addition to low birth survival rates, these sources of loss lower the ceiling on potential herd growth from the natural increase of herds. In stark contrast, the low rates of noneconomic livestock loss for household herds in Uguumur mean that herd owners can benefit from a much higher ceiling on natural increase as they do with higher sales volumes and higher per capita consumption rates. Uliastai households strategically retreat from the market with lower percentage sales and reduced per capita consumption in order to minimize offtake. In these conditions, Uliastai households appear to be living below a key asset threshold as they find themselves unable to grow their herds in the face of disaster and low prices, thereby reducing income opportunities from other kinds of loss (i.e., sales). Further, this limitation does not permit the use of herds as insurance against bad years. In other words, excess livestock in herds are a means to insure against catastrophic loss; here, Uliastai households are limited in their capacity to self-insure. Uguumur households are decidedly not.

Rather, Uguumur households find themselves above an asset threshold and in a kind of wealth trap. The high ceiling on herds allows them to not only sell more livestock but also use them as insurance buffer against hard times, which in turn allows them to grow their herds at even faster rates. These different trajectories, given the array of driving forces and conditions in which pastoral production takes place, are critical to understanding the rise in cashmere production and the increasing use of loans. Highly vulnerable households are more likely to be driven to shift herd management and production to higher

value livestock products, such as cashmere, in order to reduce pressure on offtake. Moreover, their dependence on such lumpy incomes makes them more likely to pursue income smoothing through loans. Wealthy households, like those in Uguumur, hypothetically face little need or pressure to shift herd management to higher value products such as cashmere nor should they need loans given their high incomes and ability to self-insure. However, as I describe below, though the cashmere-debt cycle in Uliastai is clearly driven by adverse economic and environmental conditions, increasing goat herds and loan use in Uguumur appear driven by other factors.

MICROFINANCE AND THE CASHMERE-DEBT CYCLE

Herders in Uliastai and Uguumur are well integrated into the financial services markets that are ubiquitous across rural Mongolia. Although few use livestock insurance or savings, herders have widely made use of "herder loans", an ostensibly "low-interest" (annually 30%), six- to twelve-month loan (up to two years) available to herders typically from Khaan bank, the dominant provider of rural banking services. Repayment is flexible and can be tied to seasonal income expectations such as with cashmere in the spring. Collateral frequently consists of all major assets such as livestock, ger (yurt), and vehicles and according to herders is substantially undervalued. Half of the households sampled in Uliastai had taken out a loan in the year preceding the interview period (June, 2015) with an average size of US$925.23 and at an average monthly interest rate of 2.2%. Of these households, only five have repaid them at the time of the interview. Local officers stated that there were no defaults that year but recalled high default rates following the 2010 dzud (see also UNDP 2010). In Uguumur, 12 of the sampled 22 households have taken out a loan in the previous year with an average size of $2,371.43 for a similar average monthly interest rate of 2.3% (Table 2). Of those 12 loans, 10 had been repaid already. Loan officers stated that defaults were rare even following dzud. Evidently, Uguumur households take substantially larger loans at approximately two-and-half times the size taken by households in Uliastai, and though no participants reported defaulting on loans, the difference in volumes and repayment rate demonstrates the enhanced capacity of Uguumur households to repay the debt. This section will explore these differences by describing the uses of loans and herder's experiences with them. In particular, this section will explore the mechanics of the cashmere-debt cycle and how they articulate with the dynamics of pastoral production and vulnerability described above.

As noted above, the nationwide growth in cashmere production since decollectivization has also coincided with the increasing expansion of the rural

Table 2. Comparative Loan Data.

Site	Loans	Avg. Loan ($)	Monthly Interest Rate	Repaid
Uliastai	11 (50%)	925.23	2.2	5
Uguumur	12 (54%)	2,371.43	2.3	10

financial sector and as some have argued, this has led to a broadly observable pattern of income smoothing whereby herders take out loans in fall and repay in spring with cashmere income. As one herder in Uliastai explained, "We have to take our loans when goats don't have their cashmere and meat and skin prices are cheap, and then in the spring we repay from our cashmere sale." In interviews, loan officers and bank officials confirmed this pattern and even included this strategy in marketing materials for financial services. The fall season is marked by high expenses including schooling, winter preparation, and transportation costs but households receive little in the way of income save for livestock sales in November. During this time, households that have excess cull stock will sell them before the winter in order to reduce winter feed needs, though market glut can lower prices. In contrast, the spring often has fewer costs but with cashmere sales, very high income; consequently, herders have responded to these "lumpy" incomes by taking out loans in the fall and repaying in the spring. It is this cycle that is believed to drive both the uptake of loans and ratcheting up the increase of goats in household and national herd composition.

However, as the data below reveal, the story is much more complex and varied than this. In both Uliastai and Uguumur, there were considerable differences in both reasons for acquiring loans, uses of those loans, and means of repayment (see Table 3). In both sites, herders used loans for medical needs, schooling and celebrations such as weddings and *Tsagaan sar* or "lunar new year." The latter are often discussed within Mongolia as a prime driver of what are considered uneconomic and risky mid-winter loans, as much of the loan is spent on gifts, food, alcohol, and other nondurable goods during the most climatically hazardous time of the year. However, there were also differences in loan use between the two sites. In Uliastai, herders reported using loans to restock after large losses and in the past as a means to start and build a herd.

Table 3. Comparison of Loan Uses and Sources of Repayment.

Loan Use	Uliastai	Uguumur
Medical	2	2
School	1	1
Restock	2	0
Livestock trade	0	1
Transportation	2	0
Household needs	1	3
Wedding/Tsagaan Sar	3	2
Real estate/construction	0	3
Repayment Source	**Uliastai**	**Uguumur**
Savings, retirement, wages, nonstock income	5	0
Livestock sales	2	3
Cashmere	4	9

Conversely, in Uguumur, no one reported using loans in this way in the past; rather, herders reported using loans to engage in trade by buying livestock cheap in the countryside and selling for higher prices in the capital. In interviews, other herders discussed using this tactic in past years and was also was confirmed by ethnographic observation with a nonsampled household. Additionally, three herders in Uguumur reported using loans to purchase materials for shelter and home construction and three for consumer goods like computers and household appliances (i.e., "household needs" in Table 3), whereas two herders in Uliastai utilized loans for purchasing transportation including a motorcycle. The latter is unnecessary in Uguumur as 77% of households own at least one car or truck and all own a motorcycle.

Households in each site also differed in terms of repayment. In Uguumur, a few households (three) used livestock sales to payoff loans while most (nine) used cashmere income. The average income derived from cashmere was approximately US$2,963.81 in 2014, slightly higher than the average loan size. In Uliastai, however, the repayment of loans was more complicated. Some had partially paid off loans with savings, retirement incomes, or wages and other nonpastoral income. Out of 12 loans, only four households had partly paid off loans with cashmere. Average cashmere income for Uliastai households was only US$1,106.05 in 2015, about one-third of cashmere incomes in Uguumur. Though cashmere income exceeded loan size, household income for basic needs limits the amount of cashmere that can be dedicated to loan repayment.

These differences are critical for a number of reasons. In Uguumur, households are more likely to use loans for investment in assets like shelters, speculation on livestock prices through trade, and for the purchase of consumer goods. Given the large volume of the loans, the high potential for economic returns on investments, and the speed of repayment, herders in Uguumur do not appear to be financially burdened by the use of loans but rather utilized them opportunistically. This stands in contrast to Uliastai where herders use loans for medical emergencies, re-stocking, and key social obligations like weddings (though the latter are also important in Uguumur). Moreover, the low volume of loans, limited use in investment, and slow and diverse means of repayment signify that households in Uliastai are overleveraged and less likely to be able to cover the repayment of a loan only from cashmere income. In fact, even though the ratio of loan size to cashmere income is nearly identical in each research site (80% in Uliastai to 84% in Uguumur), it is apparent that cashmere income alone is insufficient to cover loan repayment in Uliastai, given the smaller margins above covering basic household needs. In short, this broad pattern between the research sites articulates with the bifurcated herd trajectories described above and confirms Janes and Oyuntsetseg's (2016) suggestion that the cashmere-debt cycle is more complicated than general descriptions suggest. This pattern is even clearer when we disaggregate households by class and explore explanations offered by herders themselves.

Loan use was well distributed throughout wealth categories in both Uliastai and in Uguumur, but as herders note there are substantial differences between

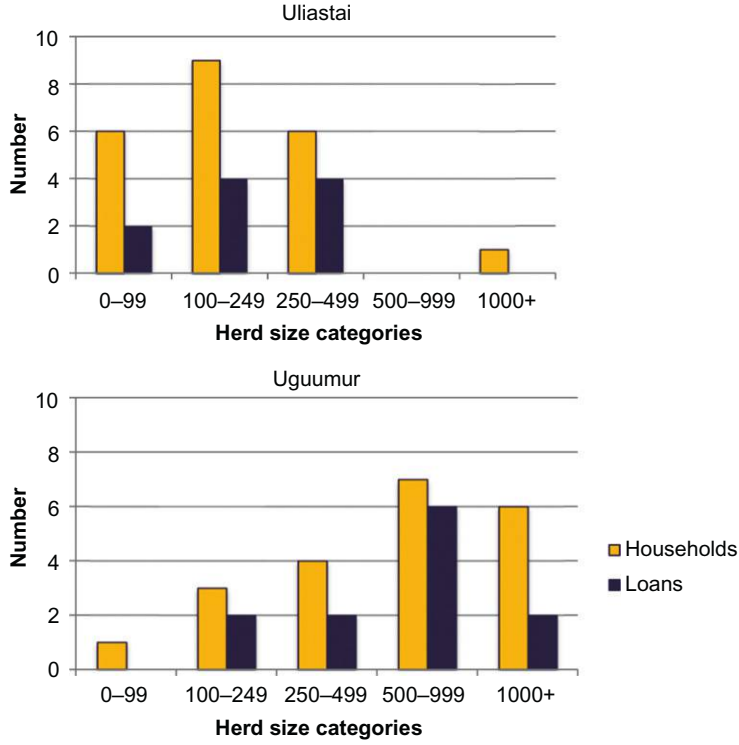

Fig. 4. Number of Households and Loans by Wealth Category in Each Research Site.

the wealthy and the poor in how loans are used and their implications for herding livelihoods (Fig. 4). As one herder from Uguumur articulated:

> Until you have cashmere it can be difficult. For those with few animals, it is just like this. Those with a lot of livestock, it is quite different. Because there isn't a steady salary, there is only cashmere. But if you do not have loans then you will have to sell livestock to meet your needs and then if you have few livestock you will be quickly finished. Those with many livestock do not know these things […] that's the difference in livestock numbers. (Uguumur herder, 2014)

Here, this herder notes the bind that the poor find themselves in: unable to live with loans nor live without them. In particular, he describes the lumpiness of herder incomes coming seasonally in livestock sales and cashmere and how loans smooth their incomes, something he argues that wealthy herd-owners do not experience. Moreover, without loans as he points out, the poor would be pressured to sell more livestock in the fall to meet seasonal expenses as described above. In that scenario, the ultimate outcome could be a downward cycle of disinvestment leading to an exit from pastoralism, a frequent reality following catastrophic dzud (UNDP, 2010). For the poor then, loans are critical and

consequential in good years, though they can exacerbate the consequences of loss in bad years. As one herder describes:

> I had a loan before the dzud. It was 1 million tugrug so not much but nearly all of my animals died and those that were left were not fat or well-fed so repaying it was very difficult. I sold two horses to pay and from my left over livestock. (Uliastai herder, 2015)

As noted in other interviews, this dependency on both loans and cashmere for poor households and the way they exacerbate the consequence of herd loss was deeply lamented. Poor herders noted that they were "living from loan-to-loan" and that come spring "we pray 'cashmere please be expensive!'."

The cashmere-debt cycle also further exposes poor households to price risk. One herder commented that "(taking a loan) is like placing a bet" because cashmere prices are unpredictable and any shortfall in cashmere income must be met by selling livestock when prices are very low.

> We don't have any fixed income and that's why (sometimes) we pay back the loan by selling animals. It doesn't matter what the meat price is when repayment time is at the corner, (we have) to avoid the increasing interest. (Uliastai, 2015)

Moreover, indebted herders who are dependent on loans must simply sell cashmere when they have it. As one herder in Uliastai pointed out, "people with loans have no option to wait and see about prices, whether it will reach or rise. They have no choice but to sell their cashmere. But herders who are able to wait, do wait." The wealthy, in contrast to the poor, have the flexibility to withhold their cashmere until prices rise. Moreover, wealthier households also have access to the labor required to more quickly comb cashmere, the shelters and feed to protect livestock in order to comb earlier, and the transportation and communication resources to take advantage of initial prices which tend to be high. Conversely, as noted above, wealthy herders have utilized the cashmere-debt cycle to their advantage by using loans to purchase livestock when prices are low as a kind of speculation and repaying loans with cashmere income in the spring. As one wealthy herder described:

> I took out a loan and bought livestock, with the loan. So, with the loan I buy them cheap and then sell. I bought 40, 50 old livestock and turned them for cash. I bought them live, slaughtered them, and sold them. (Uguumur, 2014)

In short, poorer households are trapped in a cashmere-debt cycle which, although it may smooth incomes and relieve pressure on immediate offtake, further exposes them to price risk and does little to reduce their long-term vulnerability to dzud. The cashmere-debt cycle, in the face of continued dzud risk and poor market access, simply sustains their continued presence on the steppe. In contrast, the wealthy appear to seek out the speculative opportunities made available by the cashmere-debt cycle for productive investments at greater economic return. In other words, cashmere presents an opportunity to seek out loans without threatening their herds. They are enabled primarily by limited

exposure to dzud, whether through differential exposure or through self-insurance, and beneficial market conditions.

Additionally, because Uliastai is generally poor and Uguumur much more wealthy, the cashmere-debt cycle has become embedded in community economies in divergent ways. In Uliastai, participants were generally negative about loans calling them "difficult" (*xetsuu*), "heavy" (*xund*), and that "one must be careful" (*xashirlax*). Moreover, the sense of being "caught in a bind" was repeated by many herders. As one herder noted, "herder loans are scary […] bad things. Yet, if you don't have a loan and have to use livestock, you can become stockless […] a herder with few animals can be finished." This sentiment coloured Uliastai participants' views of formal loans as "untrustworthy" (*naidvargui*) and consequently many herders voiced a preference for informal loans from stores and friends.

> Bank loans are really exasperating (*yadargaatai*) […] they are so anxiety inducing (*bachimduu*). Because they are just so nasty, we get loans from a friend. (Uliastai, 2015)

Herders argued that in contrast with the harsh, institutionalized nature of formal banking loans, informal loans are flexible, low cost, and regulated by familiar moral economies of social obligation and trust. Again:

> If you get a bank loan it has an interest rate but from a private person there is no interest rate and 4–5 months later you pay back. There is no contract, too. (Uliastai, 2015)

These perspectives contrast decidedly with experiences and perspectives from Uguumur. Regarding the difference between formal and informal loans, one herder stated:

> The good side is that rather than begging from someone I put my own animals up and take (a loan) […] so, I won't have to go worrying about begging from someone […] you can just go to the bank, talk about it and then get (a loan). (Uguumur, 2014)

This sense of being indebted to another individual rather than an institution resonated across the interviews in Uguumur and, as noted by Empson (2016) is rooted even deeper in Mongolian culture as reflected by proverbs like *urgui bol bayan, uvchingui bol jargal* (tr "without debt, rich, without illness, happy"). Yet, herders in Uguumur still stated a preference for the sense of certainty, security, and clarity provided by banking institutions:

> It is easier to take a loan from a bank than from individuals because repaying deadlines are very clear […] If I took a loan from one person, he may ask suddenly "I need the money now" […] he might ask for the money when meat is cheap and then who wants to slaughter many animals? (Uguumur, 2014)

In fact, overall in Uguumur, formal loans are seen in a generally positive light. One herder contends:

> The change is not bad. Herders" livelihoods have improved. In herders" lives, risk has gotten better, now there isn't a ger without a TV, there isn't a ger without a phone, there isn't even a household without a car. (Uguumur, 2014)

These differences are intriguing and require further study and attention. For instance, Uguumur is marked by a sociality that is much more atomized than Uliastai. As an example, households in Uliastai settle in larger, multiple household *khot ail* (cooperative encampments) and cooperate on labor tasks in ways that are absent in Uguumur. Yet, whether or not these social and cultural factors are drivers of informal loan use rather than economic dynamics like the cashmere-debt cycle (or more likely both) remains to be seen.

Clearly, there are a whole host of social and cultural factors that condition the relative importance and value of formal and informal debt as well as the social and moral economies of trust and obligation upon which they rely; yet, these distinctions also highlight how the cashmere-debt cycle functions in Uguumur and Uliastai in dramatically different ways. In Uguumur, pastoral production, given reduced dzud threat and better market access, is buffered from the pressure to adopt goats and the potential negative effects of debt such as high interest rates and default which pressure households to repay from their core herd. In fact, most herd owners have limited the increase of their, albeit already large, goat herds. As one herder states:

> Sheep are profitable all year long, but with goats, they provide (income) just once a year from cashmere profits. With a sheep, there is income in all four seasons of the year. That means money. You can't do that by selling a goat. At all other times, goats provide poorly. And they are really difficult in the winter during a zud, they are not calm animals like sheep – they (die) easily. (Uguumur, 2014)

In this sense, increased goat herds are not a viable year round source of income. Instead, they are only important insofar that they can be used to repay loans and, as herders stated, function as a form of insurance by diversifying their income sources. In other words, cashmere production in Uguumur, though it has increased, is not critical as it is in Uliastai where herding would be an unsustainable livelihood for many without it. Rather, cashmere provides an additional source of income, a measure of insurance, and a pool from which to repay loans that are primarily used for investment, rather than for subsistence or an emergency, and hence encourages further herd growth and market offtake for other species such as sheep. However, in high-risk and remote Uliastai, pastoral production is exposed to the negative potential of debt when households shift their herds to goats and take on debt. There, the cashmere-debt cycle becomes a way of life as vulnerability to dzud limits the potential for herd growth and limited market access constrains the value of other livestock products.

Yet, even though the cashmere-debt cycle is pervasive in Uguumur and Uliastai, a few participants contended that loan use is diminishing and for different reasons. In Uliastai, loan use may be dropping as herders find seasonal opportunities outside of herding such as artisanal gold mining and as the poor are increasingly sloughed off due to repeated dzud disasters. In Uguumur, several herders noted that loan use has decreased as herders have acquired experience with them, becoming "financially literate." As one herder states:

> In those days you could find any reason for a loan, now people's minds are so scared they will only take loans as they need […] Now, people take very specific amounts and grow their herds […] Loans are understood now. (Uguumur, 2014)

Research conducted in 2007–2008 in Uguumur reveals that many more households utilized loans (72% as opposed to 54% in 2014) and for a much wider array of uses. More recently, however, with growing herds and increased market access, herders have shifted their financial strategies to focus on other opportunities like savings and investment returns. As one herder points out:

> People are getting smart about the market and becoming more farsighted. And, they don't want to give just 2, 3 million dead *tugrug* [Mongolian currency] as interest to the bank. (Uguumur, 2014)

Yet, even though the cashmere-debt cycle might be waning, in Uliastai cashmere and debt are for many the only viable means by which they can remain pastoralists.

DISCUSSION AND CONCLUSION

Despite the pervasiveness of the cashmere-debt cycle in Mongolian pastoral economies, it is quite clear that the dynamics of debt and cashmere production do not solely reflect conditions of vulnerability. Rather, as we see in Uguumur, the cashmere-debt cycle has become an opportunity to expand pastoral economies beyond livestock sales and generate additional income and diversify investments. This strategy is enabled by reduced vulnerability to dzud disaster and better market conditions for livestock products, which minimizes the pressure to shift herds to goats and the need for loans in order to smooth income streams. Nevertheless, in Uliastai, the cashmere-debt cycle is clearly driven by conditions marked by higher vulnerability to dzud and poor market access. Because of repeated, intense disasters with high livestock mortality rates and low market value for livestock products, herding households in Uliastai, and likely similar regions, simply cannot derive sufficient income from the sale of their herds save for cashmere. Consequently, households have shifted the composition of their herds and, because of the lumpiness of cashmere income, take out loans to smooth income.

In these conditions, it is possible to say that households in Uguumur have largely crossed an asset threshold in which deaccumulation is unlikely. Conversely, in Uliastai, herders find themselves locked in a poverty trap as the conditions prevent households from crossing that threshold. Though it is difficult to determine what those exact herd size thresholds are, these dynamics match the predictions of the "asset-based approaches to livelihoods" literature; namely that households above thresholds will shed assets (i.e., sales) in order to sustain consumption levels while households below a threshold will retain assets while lowering consumption offtake. Clearly, that is the case here as households in Uguumur sell and consume livestock at higher rates, while in Uliastai, households retain their assets by shifting to cashmere production and reduce their per capita consumption. Loans further complicate this picture. Even though loans

appear to function as a momentary stop−gap and prevent immediate deaccumulation, they have become integrated into pastoral production in Uliastai in problematic ways. The overleveraged, chronic use of loans exposes households to price risk when prices fall below interest rates as well as to default risk in the event of a dzud disaster when households are already suffering from negative loss. In these contexts, loans amplify pastoral vulnerability.

These dynamics extend beyond households and their herds and across communities. In Uliastai, widespread negative experiences with loans appear to have encouraged herders to resist formal finance in favor of moral economies of mutual aid and support where social obligations ensure trust. In Uguumur, however, the opportunistic use of formal loans, in conjunction with increased wealth, shifts in labor, and the rise in conspicuous consumption, seems to exacerbate the fracturing of moral economies of mutual aid and obligation. Consequently, along with a more geographically diverse exploration of the cashmere-debt cycle and more robust quantitative analyses of herd thresholds, future comparative research should more deeply explore whether the cashmere-debt cycle and other financial dynamics are disrupting or enabling the continued sustainability of these moral economies and what that might mean for future development pathways. The consequences of such changes are equally problematic for the continued viability and sustainability of pastoral lifeways in Mongolia.

The findings described here not just offer new directions for future research but also pinpoint clear implications for future pastoral development. In the 27 years since the collapse of socialism and the considerable sums spent on development and aid, efforts, and initiatives by both the governmental and the nongovernmental sectors have failed to mitigate dzud risk in any meaningful way and consequently, pastoralists remain vulnerable to dzud and some, like herders in Uliastai, locked in poverty traps. The consequences and costs of this failure extend beyond rural areas and, even though mining will remain a central focus of economic development despite the economic downturn and recent bailouts, it would behoove decision-makers to reorient pastoral development with a core focus on herd risk and herd value in more regionally equitable and sustainable ways. The findings described in this paper clearly demonstrate that dzud risk and market conditions are the primary forces shaping pastoral vulnerability. Bright spots in pastoral risk management in Mongolia, such as community-based natural resource management and cooperative movements (Ulambayar et al., 2017), should be integrated with more robust state, province and local administrative-level capacity-building in disaster risk management. Additional layering of risk such as through formal insurance (index-based livestock insurance) appears insufficient to deal with the core risks the vulnerable face (Taylor, 2016). Moreover, risk management initiatives should also be coupled with market development including regional integration, marketing chain improvements, and a diversification of livestock product export markets (Addison & Brown, 2014). Reorienting pastoral development to focus on the core, material threats to herds, and their value through risk management and sustainable market development should shift the dynamics of thresholds and allow herders to escape the trap of the cashmere-debt cycle.

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