

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/376613643>

Index insurance and the moral economy of pastoral risk management in Mongolia

Article in *The Journal of Peasant Studies* · December 2023

DOI: 10.1080/03066150.2023.2284972

CITATIONS

3

READS

128

2 authors:



Daniel Murphy

University of Cincinnati

20 PUBLICATIONS 401 CITATIONS

[SEE PROFILE](#)



Byambabaatar Ichinkhorloo

University of Zurich

9 PUBLICATIONS 56 CITATIONS

[SEE PROFILE](#)

Index insurance and the moral economy of pastoral risk management in Mongolia

Daniel J. Murphy & Byambabaatar Ichinkhorloo

To cite this article: Daniel J. Murphy & Byambabaatar Ichinkhorloo (18 Dec 2023): Index insurance and the moral economy of pastoral risk management in Mongolia, *The Journal of Peasant Studies*, DOI: [10.1080/03066150.2023.2284972](https://doi.org/10.1080/03066150.2023.2284972)

To link to this article: <https://doi.org/10.1080/03066150.2023.2284972>



Published online: 18 Dec 2023.



Submit your article to this journal 



View related articles 



View Crossmark data 



Index insurance and the moral economy of pastoral risk management in Mongolia

Daniel J. Murphy^a and Byambabaatar Ichinkhorloo^b

^aDepartment of Anthropology & School of Environment and Sustainability, University of Cincinnati, Cincinnati, USA; ^bDepartment of Anthropology & Archaeology and Institute for Mongol Studies, National University of Mongolia, Ulaanbaatar, Mongolia

ABSTRACT

Rural livelihoods worldwide are being transformed by the increasing financialization of agricultural production. Microlending and the deeper integration of production cycles in commodity markets are clearly at the vanguard of these transformations, but insurance and similar financial products have become a new frontier. Here, we explore index-based livestock insurance in Mongolia, where even in the face of disaster and worsening climatic conditions, herders have expressed limited interest in, and some outright rejection of, index insurance. Using a decade of ethnographic research, we explore herder perceptions of index insurance, its effects, and the contrast with local moral economies of mutual aid.

KEYWORDS

pastoralism; insurance; risk management; neoliberalism; Mongolia

1. Introduction

The financialization of agricultural production and the deeper integration of production cycles in global commodity markets are shaping and transforming rural livelihoods around the world in profound ways. Pastoral regions are not excluded from these processes (Galvin 2009; McPeak, Little, and Doss 2012; Scoones 2021), and in many places, they have become 'the animating features of livestock production' (Gardner 2009, 782). A more recent component of rural financialization has been the promotion and implementation of insurance projects (Isakson 2015). Proponents contend that insurance, using neoliberal poverty reduction logics, increases the resilience of rural households to weather shocks by smoothing consumption and preventing further asset reductions. In doing so, it is argued, insurance can increase creditworthiness, reduce inefficiencies from informal risk sharing, and encourage additional risk taking. These positive risk reduction impacts align with broader neoliberal development aims of deeper market integration and increased economic growth.

However, given the significant and widely shared risks along with the high transaction costs associated with rural agriculture, development agencies and national governments have focused considerable effort on index insurance (Johnson 2013). As opposed to traditional insurance, index insurance functions like a derivative in that contractual remuneration is based on an index of observable but highly correlated phenomena.

Examples include rainfall-based indices in agricultural areas and normalized difference vegetation index (NDVI) or livestock mortality-based indices in pastoral ones. A few studies of index insurance in pastoral regions have ostensibly demonstrated a range of positive outcomes including positive correlations with herd size and reduced offtake post-drought, although this requires further study (Bertram-Huemmer and Krahnert 2018; Takahashi et al. 2016). Regardless, index insurance has received substantial acclaim in the professional development community, while in practice proponents have struggled to develop actual markets on the ground, many of which have very low rates of uptake including in Mongolia (Johnson 2021). This disjuncture has received little attention in the social science literature outside of the discipline of economics. In the limited studies and analyses that have been carried out scholars have noted a series of critical problems including increased exposure to market risks (Peterson 2012), worse-off outcomes (Binswanger-Mkhize 2012), excess basis risk (and insufficient coverage of risks) (Johnson et al. 2019) and increased economic inequality (Fisher et al. 2018; Taylor 2016). Although this research has explored the material impacts on rural agricultural livelihoods, there is little research regarding how those who should benefit (i.e. pastoralists) actually *perceive* index insurance. Understanding their perceptions, we argue, might provide an additional angle on why uptake rates are so low. Further, exploring the failures, setbacks or limits of financial products like index insurance might offer new framings for how we understand financialization and neoliberal capitalism more broadly.

Below we describe the case of index insurance in Mongolia, where even in the face of disaster and worsening climatic conditions, herders have expressed limited enthusiasm for, and some outright rejection of, index insurance. The ever deepening climate of pervasive precarity and uncertainty in Mongolia, as Pleckhahn and Bumochir (2018) describe it, and the otherwise widespread acceptance of microloans amongst pastoralists (Murphy 2018; Sneath 2012) make this an interesting case. Why are herders *not* buying insurance in such precarious conditions (while at the same time taking loans)? And what does this say about how we understand the neoliberal financialization of risk and risk governance? In order to understand this, we argue, we must take into account the cultural and social orders that pastoralists inhabit and the ways they frame risk and uncertainty (Matthan 2023). In doing so, we must see pastoralists as 'agents' and take into account the practical, moral and political economic dimensions of their life worlds, as Gardner (2009) argues. Such analyses can help demystify and denaturalize the neoliberal logic of index insurance and frame it as simply one alternative with a radically different distribution of rights, risks and divergent futures from other, often more preferable, moral economies of mutual aid and forms of care.

2. The trouble with index insurance

Over the last few decades rural agricultural development has increasingly been drawn into the global flows of finance and speculation (Bateman 2012). This neoliberalization of agricultural production has expanded dramatically since the collapse of the socialist world, evidenced in particular by the so-called global microfinance revolution (Loubere 2018; Roy 2010). In this historical shift, development agencies have promoted the use of loans and debt as a means to smooth consumption and raise capital investment needed for growth. However, the integration of rural production into the worlds of

debt, specifically, has strained the material links between production and distribution at the heart of agriculture (Ramprasad 2019). Concurrent with this global ubiquity of agricultural debt, there has been a growing interest in the commodification and securitization of risk through insurance. Insurance is viewed as a critical financial tool to minimize the disruptions and shocks that threaten agricultural production cycles. Moreover, rising costs from climate change-induced disasters have further raised the profile of microinsurance as a potentially valuable tool in disaster and climate change governance. Yet, to date, insurance projects in the developing world have not been as successful as imagined (Johnson et al. 2019) and projects particularly in pastoral regions of the world have struggled to sustain themselves.

Pastoralists, like other agricultural producers, confront substantial production risks and uncertainties, making them potentially lucrative targets for insurance. However, traditional insurance is insufficient to cover the risks that many pastoralists face (Barnett, Barrett, and Skees 2008). Disasters like dzud in Mongolia or droughts in East Africa are 'covariate' in that they impact entire populations over large regions, meaning that payouts would be excessive for traditional risk pooling (Ahearn 2018). There are a number of other challenges, as well. In most developed countries, traditional agricultural insurance is only possible because it is highly subsidized, making it comparatively expensive for the developing world where most pastoralists reside (Johnson et al. 2019). Pastoral areas are also often remote and challenging environments, making delivery and transportation difficult. These conditions also create large informational asymmetries for the insurer in that confirming ownership and losses for the purposes of actuarial analysis and indemnification is costly. In order to minimize these challenges and risks for the insurer, development and financial institutions have embraced the use of index insurance as a risk-pooling mechanism (Miranda and Ferring 2012).

Index insurance differs from traditional insurance in a number of ways that make it more attractive for pastoral populations. Index insurance decouples ownership from indemnification by tying actuarial risk to an index of measurable phenomena that are correlated with loss, rather than to the probability of loss itself. This removes the need to certify individual losses and indemnify claims. As such, index insurance functions more like a derivative than traditional insurance. For example, index insurance in crop agriculture often utilizes weather-based indices to trigger payouts for loss events, rather than actual crop losses. In some pastoral areas NDVI-based indices have also been used as a proxy for weather variables and livestock loss, while in Mongolia spatial aggregates of livestock mortality have been used to set loss thresholds and payout triggers (Bertram-Huemmer and Krahnert 2018; Peterson 2012). By decoupling individual loss from these thresholds and triggers, policies can avoid covering all of the potential loss risk. This discrepancy between an individual policy holder's actual loss and the threshold is called 'basis risk'. That difference in coverage is the amount of risk the individual is expected to bear. Basis risk, it is argued, not only shields insurers from excess risk but encourages some continuation of informal risk management. As we will see, though, basis risk has additional compounding problems. Overall, insurers prefer index insurance in these contexts because it reduces the transaction costs, informational asymmetries, and associated problems of moral hazard and adverse selection that come with traditional insurance (Miranda and Ferring 2012).

On the development side, index insurance promises to provide a number of benefits (Barnett, Barrett, and Skees 2008). On the whole, insurance is seen firstly as a way to increase the resilience of rural producers in the face of weather shocks and climatic variability by smoothing consumption when productive assets are at threat. Even in conditions where livelihoods are no longer tenable, proponents theorize that insurance payments may also help households transition out of at-risk livelihoods into less risky ventures. Further, not only will households better weather the immediate impacts of these shocks and events, insurance can reduce their inefficiencies from risk avoidance and risk sharing across rural communities. By transferring risk management from informal risk sharing and coping to global financial markets, rural producers will be freed up to seek out riskier investments and increase inputs. The collateral benefit of these effects should also make rural farmers and pastoralists more credit worthy. In fact, in the face of struggling insurance projects, many now see this as the primary goal of index insurance (Johnson 2021). Finally, the promotion of index insurance is also seen as a way to develop rural financial access and financial markets in the developing world more broadly. On the one hand, the events experienced by rural producers are a novel frontier for capitalizing on risk and, on the other, promoting and supporting insurance markets should have a cascade effect of furthering 'pro-poor' market integration.

These descriptions of how index insurance works and how it impacts rural producers are largely theoretical. As Johnson (2013) and Johnson et al. (2019) have pointed out, analysis of its implementation and effects has received limited social scientific attention outside of economics. In an analysis of index insurance projects in East Africa, Peterson (2012) illustrated how index insurance reduced household exposure to production risks while simultaneously increasing their exposure to market risks. Others have raised concerns that, in some contexts, producers appear to be worse off from index insurance due to the high costs of insurance premiums (see Binswanger-Mkhize 2012) and excess basis risk (Johnson et al. 2019). For example, Johnson (2013) notes that the reliance on index insurance does not account for a substantial risk burden that most producers face. Jensen, Mude, and Barrett (2018) found, for instance, that index insurance only covers about 31% of the risk that households face, leaving a substantial gap in risk management. And finally, Taylor (2016) raises concerns, discussed more in detail later, that index insurance increases socio-economic inequality – a concern that is getting more attention in the index insurance community (see Fisher et al. 2018).

However, econometric analyses of individual index insurance projects in pastoral regions have suggested several positive impacts. Bertram-Huemmer and Krahnert (2018) found that in Mongolia, with some significant caveats discussed in detail below, index insurance had a moderate consumption smoothing effect and did, for some, relieve credit constraints in the immediate aftermath of dzud events. In Kenya, Jensen et al. (2018) found that index insurance was correlated with higher investments in livestock health and increased sales in non-event years, a reflection of reduced consumption pressures on herd size. Yet, despite these marginal positive effects, many in the index insurance community recognize that uptake of these policies continues to be quite low (Da Costa 2013), rarely exceeding 30% participation in a given year or region, and in many cases, participation is dropping (Johnson et al. 2019; Manthey 2019; Matul et al. 2013). As Johnson notes, 'despite the proliferation of index insurance pilot projects in recent years, the target clients have often not purchased insurance coverage with the

same enthusiasm that development agencies, economists, and insurance companies imagined they would' (2013, 2674). Consequently, she continues, there has been considerable 'frustration with the reluctance of the poor to recognize insurance as a worthwhile product from which they could benefit' (2013, 2674).

This seeming rejection of the financialization of risk challenges implicit evolutionary assumptions about the one-way neoliberalization of rural agriculture and pastoralism. Surely, index insurance fits within the longue durée of sustained colonial and post-colonial attempts to rationalize livestock production, and this is no less true in post-socialist contexts like Mongolia. And it is further complicated by the increasing use of loans amongst pastoralists around the world (Scoones 2021). However, although 'contemporary neoliberalism operates by deepening market integration', as Gardner (2009, 782) points out, such failures 'suggest that herders themselves help to remake pastoralism as a more fully commodified system of social relations'. From this perspective, he continues, neoliberalization operates not solely 'as a top-down intervention by policy makers and development experts' but also 'through the life worlds, social realities, and individual agency of pastoralists themselves'. Understanding why index insurance has encountered substantial obstacles and failed to garner the widespread participation of pastoralists requires an exploration beyond the quantitative impact of insurance on rural incomes; rather, it demands that we explore whether and how insurance articulates with those life worlds.

Insurance, we argue, works firstly by making complex, socio-natural phenomena like dzud legible for both commodification in the marketplace and risk management for neoliberal governance. Commodifying the risk of livestock loss, for instance, renders the biocultural constitution of 'livestock' (and their death) abstract and disembeds that experience from the lived realities of livestock-keeping. As Gardner (2009, 783) points out, the vast wealth of pastoral research has illustrated how the complex, contingent nature of livestock-keeping represents 'a unique form of social wealth predicated on cultural rules'. Moreover, following a long trajectory of anthropological research (e.g. Comaroff and Comaroff 1990; Ferguson 1985; 1999), Schareika et al. argue (2021) that these values, and the social economies of pastoral production that enact them, are embedded in moral economies of duty, obligation and reciprocity, and foster subjectivities shaped around kin, community and belonging. These moral economies in turn structure the complex social and cultural dynamics of property, mobility and exchange that constitute 'informal' risk management and the lived experience of herd growth and loss (see also Goldman, Daly, and Lovell 2016). Insurance, by contrast, represents an alternative moral logic materialized in disembedded market-based contracts.

Further, as Johnson (2013, 2667) argues, the abstract economies of insurance transform rural *producers* into financial *consumers* and (following Maurer 1999) transform those subjectivities from 'rights-bearers' to 'risk-bearers'. In other words, as she notes, the consequence of these transformations 'shift[s] the burden of planning and provisioning from socialized institutions to individual accounts' (2667). Rather than managing risk through the moral economies of kin and community, 'individual subjects are increasingly charged with their own self-care through private market transactions' (2667). Consequently, if index insurance is an intangible and contingent promise of future financial exchange, then this raises several questions: What kind of moral and political economy,

if any, do those transactions imply? How does that form of exchange articulate with other moral economies and forms of care, and how do herders perceive and weigh their relative effects? Understanding these questions might offer a broader perspective on why index insurance has failed to take off in Mongolia.

3. Methods and field sites

The research presented here covers a substantial, although episodic, period of mixed-method fieldwork beginning with preliminary data collection in 2006. Subsequent field periods included 15 months of ethnographic fieldwork in Uguumur district of Bayankhutag soum (county) in southern Khentii province in 2007 and 2008; a six-week follow-up there in 2014 and again in 2019; and, finally, six weeks in Uliastai district of Umnugovi county in Uvs province in 2015 (see [Figure 1](#) for field site locations). Index-based livestock insurance (IBLI) sales began in these two primary field sites in 2006, although as we will see, they differ in important ways. Uguumur is the easternmost district in Bayankhutag, lying along the southern riparian edge of the Kherlen River and extending south into the grassland steppe and semi-desert typical of much of eastern Mongolia. The district is relatively close to both the county and provincial centers and is well known for having a substantial number of wealthy herders, with an average herd size in 2015 of 844 animals (Murphy [2018](#)). Uliastai district lies in the extreme western reaches of Mongolia, situated along the northern bank of the Khovd River near the Altai Mountains. Considerably distant from the provincial center, the district consists of a highly varied mix of alpine steppe, desert, semi-desert, and steppe grasslands and is considered to be economically poorer on average than most, with an average herd size of 200 head of livestock (Murphy [2018](#)). At the time of research, those with herds over 500 were considered wealthy and those with over 1000, known colloquially as *myangat*, are very wealthy. Research conducted in the summer of 2023 revealed that this is changing rapidly, with some herders in Uguumur arguing that 500 is now a minimum herd size.



Figure 1. Research site locations.

Initial fieldwork from 2006 to 2008 focused on the political ecology of mobility and pasture management in the context of dzud disaster, which is described in detail below. During this time, a household survey was completed with 68 households; in-depth and repeat qualitative interviewing with 34 of them; and participant-observation with four separate households across the seasons. Insurance agents began their first sales season in 2008, and the lead author (Murphy) was able to observe eight sales visits to households during that time as well as substantial informal discussion. In 2014, follow-up research explored more narrowly the role of finance in shaping household vulnerability in Uguumur but this time with a comparative field site in Uliastai in 2015. The 22 households selected in Uguumur were from the original 68 in 2007–2008. In Uliastai, an additional 22 households were sampled. The sample was randomly selected from a list of households stratified by livestock wealth. Methods included household surveys but with a greater focus on in-depth qualitative interviewing.

During these periods of field research, additional interviews were conducted with sales agents, project staff and consultants in Mongolia and in the US. Published material and media from the project, including official project reviews, video stories, press coverage and local advertisements, were also collected and reviewed. Survey data were analyzed in Microsoft Excel and interview data were analyzed initially in ATLAS.ti following the 2007–2008 research and after 2014 in Dedoose, a cloud-based qualitative data analysis tool. Qualitative data was coded for relevant themes and re-coded for subthemes. This paper draws on data from both research sites and across the various periods of research.

4. Pastoralism, disaster and insurance in Mongolia

4.1. Mongolian pastoralism and *maliin indeksjuulsen daatgal*

The IBLI project in Mongolia, or *maliin indeksjuulsen daatgal* in Mongolian, was jump-started by the World Bank following the dzud disasters of 1999–2002.¹ Dzud are catastrophic winter and occasionally spring mass livestock loss events. Although tied to a range of harsh climatological or ecological processes like excessive snowfall (or too little), icing, preceding summer drought, deep cold or extreme winds, all dzud are defined by an inability of livestock to graze, ultimately resulting in mass mortality. These features of the steppe are not new however, with documentary evidence of similar events occurring in the last thousand years (Rao 2015).

The emergence of IBLI is also tied to the profound shifts in Mongolian society that have occurred in the wake of post-socialist reforms beginning in the early 1990s. The collectivization of the Mongolian pastoral economy began in the late 1950s and early 1960s, but by 1993, herding collectives or negdel were disbanded following the collapse of one-party rule. Collective assets, including livestock, were privatized and livestock product prices were liberalized as part of what has been called 'shock therapy' (Mearns 2004; Rossabi 2005). Pastureland, in contrast, remained in common but under highly weakened and poorly funded state control. In the succeeding years, as Humphrey and Sneath (1999) has noted, the collective pastoral economy rapidly shifted to individual, atomized household economies, profoundly re-shaping the relations of risk that underpin the long-term

¹In Mongolian, the acronym is MID, and, in English, IBLI.

sustainability of herding livelihoods. Local government involvement in risk management is largely limited to emergency fodder provision, information dissemination, and the arrangement of emergency 'otor' (long-distance movements) contracts, much of which has only become substantial in the last decade or so (Murphy 2018; UNDP and NEMA 2010). Even so, many herders perceive such efforts as insufficient and very uneven. Consequently, by the end of the 1990s pastoralism in Mongolia had returned to a vicious boom and bust cycle with repeated disastrous dzud and their consequent effects on livelihoods and human health (Janes and Oyuntsetseg 2016; Murphy 2014). Nevertheless, a robust commitment to a moral economy of mutual aid between livestock herders continued to activate in times of stress like those that occur during dzud (Ericksen 2020; Fernandez-Gimenez, Batkhishig, and Batbayan 2012; Finke 2021; Upton 2012). In these circumstances, herders are obligated to assist and welcome other herders moving away from dzud-affected areas, with the expectation that such assistance might be reciprocated in the future. Murphy (2018) found that in some cases, various exchanges mark these encounters, resulting in long-term bonds, although in most cases, herders simply tolerate the presence of others (Finke 2021). As Sneath (2012) notes, these practices can be seen as enactments of deeply engrained hospitality obligations (see also Humphrey 2012).

In response to these conditions, development aid agencies and lending institutions sought additional non-state, pro-market pathways for rural development. Initially, community-based natural resource management emerged as a 'third-way', pro-community logic to reform pastureland management and build on these apparent moral economies; however, the results have been uneven (Murphy 2014; Ulambayar et al. 2017). More concerted, in particular, the World Bank and other lending agencies and donors sought to promote micro-finance as a means to stimulate rural economic growth and help herders manage risk (Marin 2008; Sneath 2012). Following banks such as Khaan Bank which began offering microloans to herders, there was increasing space for other financial products like insurance, particularly given the high risk associated with lending and the high risk of dzud.

Index-insurance was specifically attractive to the international development community because rural, developing economies like Mongolia had several qualities that made them unattractive to the traditional insurance industry (Mahul and Skees 2007). Insurance requires, firstly, infrastructure to identify and guarantee ownership and, secondly, a legal framework that ensures certification of loss and indemnification. Index-insurance, as outlined above, is more aptly described as a derivatives contract based on the likelihood of crossing some 'agreed upon' index threshold. In IBLI, that threshold is livestock mortality, and because Mongolia has long had an infrastructure for conducting a livestock census, there was no need to connect livestock ownership with owners. Rather, a herder can buy a contracted value of 'livestock' by species, based on the market price of a whole animal, and is remunerated (rather than indemnified) only if the county-level mortality rate crosses 6% or 10% depending on which contract they buy. This means that only the total livestock mortality for a given area needs to be assessed and certified (ie *soum* or county), not individual losses. According to the project, this prevents adverse selection and moral hazard. In theory, the risk exposure of the financial institution does not change depending on who purchases a contract, nor does it incentivize purchasers to alter their individual risk management. The project has been supported by new

legal infrastructure including IBLI-specific laws in 2004 and 2013 and is re-insured by global reinsurers (Project Implementation Unit 2012). If livestock mortality crosses a 30% threshold, the government of Mongolia and reinsurers provide additional funding to prevent the depletion of the risk pool and wiping out the market sustainability of the product.

IBLI in Mongolia, and in other countries like Kenya where similar projects operate, has been repeatedly declared a development success, even winning the World Bank's Golden Plough award for innovative design (Project Implementation Unit 2012). The project started with three pilot provinces in 2006 (including Khentii and Uvs where the data was collected) and progressively rolled out to the whole country (24 provinces) by 2010. In that same year, the winter of 2009–2010, the project underwent a substantial test as a large-scale dzud unfolded, dwarfing the dzuds of 1999–2002 that catalyzed the development of index insurance in the first place. In order to assess the impact of IBLI on households following this event, researchers from Deutsches Institut für Wirtschaftsforschung (DIW) Berlin in conjunction with Mongolia's National Statistical Office carried out a long-term panel survey of livestock herders in western Mongolia, the hardest hit region (Bertram-Huemmer and Krahnert 2018). Households were interviewed three times, beginning in 2012 and then in 2013 and 2014. The research found that insurance payments relieved households from credit constraints and reduced pressures on their productive asset base in the face of such a massive shock. Herders, for example, were less likely to panic sell, and the influx of cash alleviated the need for consumption offtake of herds. Consequently, the research claims that IBLI had a significant positive impact on herd size and growth, even though by the fourth year that difference had faded. Additionally, they found that insurance had an impact on biometrics like stunting and food security (World Bank 2016).

Herders in the research sites studied, particularly Uliastai, described these benefits as well. One woman explained how she and her husband purchased insurance prior to the dzud in 2010 and received sufficient compensation to pay off a loan they had taken out from a storeowner to pay for fodder. Without the insurance compensation they would have had to pay the debt using income from their spring cashmere sale which was already going to be lower due to the loss of animals in the winter. Another herder echoed this experience, stating that they took out a very small policy, for approximately 10,000 ₮ (\$8 US in 2010) and received almost 200,000 ₮ in return (\$160 US), which paid for their fodder debt and partially paid off an outstanding bank loan of 500,000 ₮. Relief from these credit constraints allowed these households to maintain a standard of living and consumption level despite the severe conditions they faced.

But, as data show, IBLI has also had considerable problems that challenge its long-term sustainability as well as its ability to satisfy the project's intended purpose. Most evident, in its first major test in 2010, IBLI failed to cover losses and had to rely on reinsurers to remunerate insured households (Taylor 2016). Additionally, even in the years following the 2010 dzud, IBLI has struggled to cover more than 30% of households in any province in any year, remaining under 10% for the country as a whole. Year-to-year changes, particularly at the local level, also tend to be highly volatile (see Manthey 2019; Mogge 2023; Taylor 2016). As Manthey (2019) notes using data from the DIW Berlin study, in 2012 only 15% of households in the study region had insurance, 18% in 2013, and 10% in 2015. Further, renewal rates among those insured were low. Data from the Mongolian National

Table 1. Comparison of herd loss statistics based on data described in Bertram-Huemmer and Krahnert (2018). The sample size was 667 herding households across three provinces, but it does not include households that lost all their animals or exited the pastoral economy.

	Average pre-disaster herd size	Average post-disaster herd size	Average loss	Average mortality rate (%)
Insured	349	219	130	37
Uninsured	308	167	141	46
Difference	41	52	11	9
Percent difference	13%	31%	—	—

Statistical Office demonstrates this trend has generally continued, with a small increase due to the entry of banks into the insurance market, although this has been small. The average percentage of households purchasing IBLI across the country rose to 15% in 2018 when banks began pairing loans with insurance but has since dipped closer to 12% since that time. This mirrors developments in an IBLI project in Kenya as well, where demand dropped from 33 to 18% (Jensen, Mude, and Barrett 2018). Further, in western Mongolia, Bertram-Huemmer and Krahnert 2018 found that 19% of the insured were not rural, meaning that they were absentee herd owners, itself an emergent economic phenomenon that has morphed from a subsistence orientation to a more speculative one over time (Fernandez-Gimenez 1999; Murphy 2015).

There is also a clear and increasing trend toward wealthier households purchasing IBLI as opposed to the poor for whom the project was designed (Taylor 2016). This is problematic on a number of levels. Firstly, risk of herd loss disproportionately impacts the poor. According to data analyzed by Murphy (2014), the poor are evidently more at risk of crossing critical herd size thresholds that threaten their long-term viability as herding households, while the wealthy rarely approach such thresholds. Why wealthy households are generally less vulnerable to livestock loss is complex, but their ability to manage risk, particularly through mobility, exceeds that of the poor. And some of the data from the DIW Berlin analysis challenges the claim that IBLI had a clear impact on herd size. Looking at Table 1, it is evident that the insured both were wealthier pre-disaster and suffered a lower average loss rate. Given the geometric nature of herd growth (Dahl and Hjort 1976), these simple characteristics account for much of the difference in post-disaster herd size between insured and uninsured. As the authors themselves note, there is 'the possibility that the analysis captures the effects of household behavior instead of index insurance' (Bertram-Huemmer and Krahnert 2018). This discrepancy in the data is important because it mirrors much of the qualitative data on the ground. As one herder from Uliastai in Uvs stated: 'I do not have insurance now and I haven't insured before. For wealthy herders with many livestock, this is a valuable thing but for people like us with few livestock, this is very difficult'.

Many of these trends match the data gathered in Uguumur and Uliastai, despite the small sample sizes. In the district of Uguumur in 2008, 19 households out of 68, or 28% of the sample, had purchased insurance, with 74% of them considered wealthy, having over 500 head of livestock. The predominance of those households obtained policies on cattle, reflecting the impact of the 2002 dzud where nearly 60% of the cattle in the soum perished. Yet in 2014, only four out of the 22 households that were sampled still had insurance. Eight who had purchased in 2008 had stopped, and of the four remaining,



two households were newly insured. The two households who had purchased in both 2008 and 2014 belong to an extremely wealthy class of herders, one of whom owned 1800 head of livestock in 2014 and the other over 3000. Both of these herders had mortality rates of under 1% in 2008. Regardless, one of them purchased a policy in 2008 for the value of 26 cattle from Tushig Daatgal (an insurance company). He paid 79,691₮ (~US \$ 68 in 2008) and received 1,080,000₮ (~US\$ 930) as an indemnity payment the following August. Of the other eight households that no longer purchase insurance only three recalled receiving an indemnity payment, and that also was in 2008.

These patterns also match with fieldwork conducted in Uliastai in western Mongolia, where six households out of 22 had purchased insurance and five of those six were considered wealthy for the area. Only four had insured before, and three households in the sample were insured in 2010. Although several recalled large indemnity payments received by others (as we see below), only one household could recall the amount (~100,000₮). The pattern here in western Mongolia is particularly interesting because western Mongolia tends to have larger, more frequent dzud than eastern Mongolia. One might expect those in a higher risk area to display more interest in insurance, but the region is also generally poorer, making the cost of premiums relatively higher. Overall, in both areas, the participation in IBLI is both consistently low and volatile from year to year. Initial analysis might conclude that in western Mongolia insurance is simply unaffordable and in eastern Mongolia it is unnecessary, but interviews revealed some more complex answers about why households and individuals are reluctant about, if not opposed to, the exchange at the heart of IBLI.

4.2. The problem of basis risk

As described above, index insurance is tied to a narrow range of observable and measurable phenomena that are closely associated with loss and, as a consequence, it essentializes those associations. In the process, index insurance reductively simplifies a complex host of factors and variables that materialize events leading to loss. Most forms of index insurance are based on weather events like rainfall but IBLI is unique in that it is based on livestock mortality – an actual, material loss – a trait that we will see not only confuses some purchasers but also provokes a host of social questions about risk, trust and inequality. Further, as Marcus Taylor (2016, 237) points out, 'by naturalizing risk', IBLI 'fails to interrogate how [that] risk is produced'. In short, by naturalizing livestock loss, IBLI misses the prime questions of risk management – why do livestock die, and what does that mean? These are critical questions for understanding the moral economic implications of insurance and alternative forms for managing risk.

In 2009, shortly after returning from the field, Murphy acquired the underlying historical data set being used by IBLI to set risk ratings and premiums for the 24 provinces. The data from the National Statistical Office of Mongolia included nationally reported livestock mortality at the soum, or county, level from 1972 to 2009. In their risk-rating calculations, the project used this data set to establish the probability of individual species loss at the provincial level. However, in doing so the project made a grand assumption: that all dzud are the same. In other words, for them, dzud was a *natural* phenomenon, a discrete meteorological event albeit with varying frequency and intensity, like a hurricane or tornado. Using basic statistical analyses, in 2010, we disaggregated the loss data from

1972–1992 and 1993–2008 using decollectivization as a cut-off. A more comprehensive analysis for a broader time range can also be seen in Du et al. (2018). What emerged was a radically different portrait of dzud in those periods. Comparing the socialist period to the post-socialist period, loss rates were higher in good years during socialism and relatively low in bad years – (overall, less volatile) – but following decollectivization and privatization, the data showed a clear and marked transition to a boom-and-bust pattern, with very low loss rates in good years and astronomical loss rates in bad years (see Murphy 2014 a for district-level analysis). This is not surprising given that during the collective period government funding focused heavily on disaster loss prevention, with infrastructural and direct material support along with highly coordinated movement, but also on culling weak animals which is reflected in the comparatively higher good year loss rates. Conversely, post-decollectivization, government support has been limited and more recently relegated to market mechanisms like IBLI (Humphrey and Sneath 1999; Rossabi 2005). The consequence of this is seen in dramatically high bad year (i.e. dzud) loss rates and extremely low loss in good years as herders aim to increase herds as a self-insurance mechanism and to sustain income levels.

Even in our own ethnographic analyses, it was clear that although dzud events are conditioned by meteorological and climatological phenomena, they were also historically co-produced, deeply enmeshed in the social and ecological worlds in which livestock inhabit. And the risk of loss was unevenly distributed – even in the World Banks' own data set on dzud loss from 1999–2002 it was clear that wealthier households were much less likely to suffer high mortality rates (World Bank 2006). As a consequence, Marcus Taylor (2016, 239) notes: 'IBLI ... buttresses an ongoing process of social differentiation on the steppe'. In his analysis, he notes that 82% of contracts, for example, are purchased by households with large herds; yet those households were never as vulnerable in the first place.

Additionally, and more importantly, herders also have varied and complex understandings of dzud that contrast with this 'naturalization' of the phenomenon. In interviews discussing the nature of dzud, herders described a host of causal factors including common responses like changing weather patterns, climate change, and proximity to mining, but also poor relationships with local spirits, fractured community dynamics, and fragmented kinship relations. Some blamed dzud losses on the wealthy for overgrazing or trampling, while others saw the roots of disaster in poor decision-making by individual households. Most located their dzud experience in the historical experience of post-socialism, with the collapse of collectives and a largely absent local and national government. Across the responses dzud was seen as the material outcome not just of natural phenomena but also of a particular social order and its underlying political and moral economies, which in turn raises questions about the use of livestock mortality as an objective, unbiased index (see also Middleton et al. 2015). The indices and risk ratings in this sense might instead be a perverse reflection of the unequal distribution of risk and reward and the various social dynamics that make herd loss a reality in the first place.

This is most clearly seen in how herders understand 'basis risk'. Because index insurance is more of a derivatives contract and is not tied to ownership, there is the possibility that a purchaser will buy insurance and suffer a loss but not receive an indemnity payment because the index threshold has not been crossed. That risk of an uncovered loss is 'basis risk'. However, from the insurance side, there is no similar risk, since a purchaser who receives an indemnity payment without suffering a loss is inconsequential – the

market here only concerns the contract and the index, not the material possessions at threat. IBLI project consultants frequently voiced the concern to me that herders did not understand 'basis risk'. However, the interviews made clear that most herders actually did understand it, although there were still some herders who did not. As a herder in Uliastai states:

That insurance never came back to us, this is a difficult thing. I insured, gave them some money, and nothing ever came back. There was no result, if a disaster doesn't happen, then what? We went back, asked, and nothing. [They] took the money and nothing. They said the livestock losses never hit [the threshold]. That is difficult. (2015)

For some this was a breaking point. As one herder emphasized, 'Originally I thought that the insurance covered how many of your animals died but then I realized it's how many animals in our area died. Then I thought, okay, no, I quit'. The simplest explanation here is that herders did not understand basis risk, but a deeper analysis reveals why accepting 'basis risk' as part of the exchange runs counter to local moral economic logics.

4.3. Basis risk through a moral lens

Exploring basis risk through a moral lens illuminates a number of problems beyond simple cost–benefit. First, the abstract risk of crossing an arbitrary mortality rate threshold is not the same as real material loss. As one herder explains:

I don't get that feeling. Now when I say that a cow died in the river, you would feel it when the insurance company comes in with some money, you know. Otherwise, I don't feel it because it [i.e. soum mortality rate] isn't necessarily there ... I insured my cow, but it was struck by lightning or drowned. Your cattle is worth a million ₮, you know! I could have 'cattle' insurance, but the [insurance company] doesn't give [a repayment]. Or maybe the cow didn't die in the soum, and so [the insurance company] won't [repay] you. (Uliastai 2015)

Here, IBLI disembeds its moral economy of exchange from the actual material experience of loss and renders those connections abstract and immaterial (or indirect at best). That abstraction not only contrasts with local understandings about what causes dzud in the first place, it also runs counter to the affective logic of reciprocity – the 'feeling' of care accomplished through mutual aid that sustains mobility as a possible risk management strategy in the first place. With insurance, herders not only continue to assume the risk of dzud but also risk the possibility that the exchange will not be reciprocated.

When I was at home in 2008, when the weathered worsened, I had insurance. Many livestock died but the minimum threshold was not reached and so we did not receive an indemnity payment. After that, my father got extremely angry and said, 'I quit, insure or not insure doesn't matter, I will take care of it myself'. In our area, there were few households with insurance but even after, many that did buy insurance, quit. (Uliastai, 2015)

Disaster aid in this sense becomes contingent and, consequently, uncertain. As Johnson (2013) notes in her study of index insurance, 'project implementers often mention the clients' abiding distrust in financial institutions and particularly insurance where – unlike microcredit – the risk of default is borne by the client rather than the institution' (2675). This runs counter to local moral economies where mutual aid ensures that both households share the costs of cooperation and, reciprocally over time, the risk of loss (see Erickson 2014, 2020; Fernandez-Gimenez, Batkhishig, and Batbuyan 2012; Murphy

2019; Sandagsuren 2016; Upton 2010, 2012). When livestock losses do not cross the insurance threshold and households are not remunerated, insurance companies do not experience this kind of mutual cost-benefit or shared loss. It is not surprising, then, that encounters with the downsides of 'basis risk' are met with such emotional force.

This abstract logic of insurance becomes further morally suspect when we consider how basis risk articulates with changing patterns of social inequality. Data from both our own research and others' (Bertram-Huemmer and Krahnert 2018; Taylor 2016), demonstrates a clear tendency for wealthier herders, who are the least vulnerable, to purchase insurance, while poorer households are unable to cover the premiums. As a wealthy herder explained:

Insurance is valuable during risky times. One of my children insured around 470,000 ₮ (about 400 US\$) in 2008 and got back about 5 million ₮ (about 4,200 US\$). He got that much because the number [of dead livestock] exceeded the soum mortality rate. He personally didn't lose many livestock, but because it crossed the threshold, he got a lot back. (Uguumur, 2014)

This tendency for wealthy herders to receive indemnity payments without equivalent livestock loss while poorer herders are priced out of the insurance market has contributed to very negative portrayals of IBLI, particularly because the index reflects the greater proportion of herd losses of the poor. In other words, given that wealthy herders generally lose fewer livestock but can afford insurance premiums while the poor generally lose a greater percentage of their stock and insurance remains unaffordable, there is a feeling that IBLI both reflects and contributes to inequality.

This moral problem of inequality is exacerbated by how herders perceive the 'exchange' at play in insurance. A number of participants referred to IBLI as a form of gambling; phrases like '*azaa uzex*' (try one's luck) and '*botsoo tavix*' ('place a bet') were common in informal conversations. For them, buying an IBLI contract was like a game of chance (*murii togлом*) – and it involves betting not just on one's own animals but also on those of others given that the payout is triggered by soum loss rates. In other words, since one might not even lose livestock but receive a payment because other herders' livestock died, IBLI's speculative nature feels more like a gamble than 'insurance'. Premium payments, in this sense, act like a wager, making the exchange morally suspect because it can appear to induce the very threat that insurance is attempting to manage. This is one of the reasons why discussing dzud and other future hazards is problematic – simply invoking them might cause them to occur. Although herders did not explicitly state the following, we would argue that in the Mongolian cultural context this form of speculative hedging might also be highly problematic for a number of reasons. Other future-oriented actions and invocations, similar to buying insurance, can appear as an omen beckoning another's misfortune rather than simply securing one's own future (for similar discussions see Empson 2011). In this sense – although this requires additional research – insurance might stimulate spirits and other energies that activate potential harm or evil (*muu yér*).

For others, the problem with basis risk was simpler. As one herder in Uguumur, clearly frustrated by our conversation, directly stated, for him, 'Index insurance is a lie'. Interestingly, in discussing the inherently unequal way IBLI works on the ground, project consultants explained in a 2014 interview that they did not see any of these issues as design failures; rather, for them, IBLI simply functions as a kind of 'business interruption

insurance' – a speculative hedge against future costs as opposed to loss. In short, wealthy herders are also impacted during these risky times even if they do not lose livestock, they explained, and insurance can help smooth those costs. Yet, this wholesale reframing of IBLI away from poverty reduction to business risk insurance undermines the logic of World Bank and Government of Mongolia poverty reduction policy and, as herders see through this, there is a clear dissonance between how IBLI is marketed and how it works. However, this attempt at reframing the project was not confined to project staff or insurance companies.

In Bayankhutag, there were only two households who continued to purchase insurance between 2008 and 2014, both of whom were exceedingly wealthy. Confronted with the way IBLI ratchets up the inequality between herders, one un-ironically rationalized it as a patriotic form of investment: 'Yet, even if people insured and didn't lose their livestock, [premiums] end up as an investment in the nation' (Uguumur, 2014).

A wealthy herder in Uliastai disregarded concerns about inequality by offering a moral argument that it is an individual's responsibility to insure:

Even if there is a dzud or not, you must insure your livestock. I insured this year, but some people seem to be hanging on to only 20 or 30 thousand tugrugs. It means that they are stingy with their money. But this is a personal choice. (Uliastai, 2015)

Yet, even though atomizing risk management by downscaling it to individual responsibility is a cornerstone of neoliberal logics, pairing that logic with a soum-level mortality rate appears morally dissonant to many. The fusing of individual responsibility with collective outcomes mixes cultural categories of economic action in contradictory ways and raises a host of additional questions.

4.4. Trust and the political economy of risk management

It is not surprising, then, that these concerns about basis risk and the unequal distribution of benefits from insurance were frequently accompanied by an additional concern: Why doesn't the insurance simply insure individual losses? For example, a herder from Uliastai states, 'if livestock insurance were like car insurance, we would understand it more'. However, from the perspective of economists, index insurance is unique in that by not insuring individual losses and decoupling ownership from loss certification, it lowers transaction costs considerably when traditional insurance, as in this case, would be too costly. Further, as explained above, index insurance is designed to prevent adverse selection – in this case, the recruitment of only high-risk purchasers. It is also designed to prevent moral hazard by discouraging risky behavior and limiting fraud. In other words, index insurance is designed to ensure *trust*; however, this is not how many herders saw it. As one herder explained:

[IBLI] is certainly very difficult. And the meaning for us is difficult too, of course. In my opinion, they should insure households individually. You know, they should calculate it according to whether my animals are insured and my animal losses, because, of course, we are *honest*. If they do it by the soum threshold level, it's difficult and it will be of less use to us. (Uguumur, 2014)

Here the herder raises the concern that IBLI is designed in this way because herders are not trusted. As another herder notes defensively, 'of course a person won't just kill their

own animals!' In short, for them, IBLI positions herders themselves as a *risk* – even though the herder would otherwise also bear the risk that the insurance company might default. In other words, trust is only ensured one way.

This problem of trust, as in most exchange dynamics, was shot through every experience with IBLI, even those who viewed it positively. Herders described a lack of trust in agents and insurance companies, as well, and given that IBLI was new and unique, it should be no wonder that herders were skeptical. There were also concerns that IBLI could displace the relationships between herders that make them more resilient. Shifting risk management away from the relations of mutual aid and trust that shape and mediate the conditions precipitating dzud and recovery from it is potentially transformational and inherently uncertain. As one herder describes: 'If we work and support each other, we are already insured. Every herder loves his livestock more than his life whether they are insured or not. Insurance, loans, I don't believe in these things, they are not honest' (Ulias-tai, 2015).

Moreover, by unequally distributing access to and benefits from insurance, not to mention imposing a system where wealthy herders are – as some see it – effectively betting on whether the poor will lose more livestock, not to mention potentially beckoning their misfortune, further breeds distrust, resentment and anxiety within these communities.

Regardless, even in the face of reduced participation and the clear disconnect with many herders, the Government of Mongolia, in their 2015 State Policy on Food and Agriculture, named IBLI the government's principal approach to deal with herders' risk exposure to dzud. This radical change in risk governance is not simply a theoretical move. As a herder cogently noted: '... the [government] organization and leadership is very bad because [of IBLI]. Like now, the governors who are supposed to work for us, just disappear. That's how it is now' (Uguumur, 2014).

Many herders noted this sense that IBLI, along with other projects and programs, has displaced the expected duties and obligations of local authorities in managing dzud risk and that complaints about local assistance and disaster management are often dismissed as an individual responsibility. These dynamics signify a radical shift in rural governance and one that even wealthy herders are uneasy with. An oft-repeated phrase from herders, wealthy or otherwise, when asked about whether the local government is effective in managing dzud risks, is '*numur baikhgui*' or 'there is no protection'.

5. Discussion and conclusion

There are, as the data above show, a number of reasons why index insurance has failed to interest herders in the study sites. From a practical standpoint it is clear that for many herders there are a number of problems including insufficient coverage, the upfront costs of premiums, the difficulty of access, and the lack of need in relatively good years. In areas of higher risk like the western regions of Mongolia, households tend to lack sufficient incomes and have little surplus to purchase insurance. Other practical concerns included the lack of insurance agents and the difficulty of getting to soum and aimag centers where insurance can be easier to purchase. Yet a narrow focus on the practical eschews other, much more fundamental dynamics that the data above suggests are at play.

As Ewald (1991, 207), in a frequently cited quote, argues: 'to calculate risk is to master time, to discipline the future ... Above all, it means no longer resigning oneself to the decrees of providence and the blows of fate, but instead transforming one's relationships with nature'. IBLI attempts to transform this relationship by abstracting and dematerializing risk from actual loss (or the experience of it). This decoupling of loss from nature, however, does not appear to be recognizable to many herders we interviewed. By utilizing historical livestock mortality data, IBLI not only ignores the possible reasons why such events occur, in doing so it also makes a major assumption that dzud are natural disasters, distinctly external to human activity, and coherent, bounded 'events'. But herders have diverse explanations for causes of dzud and mortality rates, which question whether mortality rates could possibly reflect some reality that can be *meaningfully* indexed. For instance, along with herder behavior such as overgrazing or preparedness and larger global weather patterns driven by climate change, herders explained that dzud may be caused by spiritually and environmentally polluting activities like mining (see also High 2017), the activities of local spirits (e.g. *gazriin ezed*, 'masters of the land', or *lus savdag*, 'water dragons'), or spoiled relations and bad blood with neighbors (amongst others), all factors sustained by mutual relations that determine the circulation of misfortune. As such, IBLI in many ways does not reflect herder relationships with nature and, consequently, becomes 'hard to understand', as a herder quoted previously put it.

IBLI's framing of that relationship also extends out into the moral and political. Insurance is a 'a credence good', in that its qualities and value are difficult for the buyer to observe. Part of this difficulty lies in the fact that insurance implies a promise of future exchange and that exchange is contingent upon some undesirable outcome (Johnson 2013). With index insurance, this is further complicated by basis risk, which renders remuneration an uncertainty for herders. The moral economies of mutual aid that communities have long depended on for informal risk sharing also imply a promise of future exchange; yet, unlike insurance, they are often non-contingent and do not involve the gamble inherent in basis risk. For example, as Upton (2010, 2012) and Fernandez-Gimenez, Batkhishig, and Batbayan (2012) describe, this moral logic, which extends beyond kinship bonds, requires that a herder fleeing the threat of dzud is to be welcomed, as the potential future occurrence of a dzud in the receiving community would necessitate reciprocation. Current processes of social change are challenging this ethic but it still remains potent in rural areas (Erickson 2020; Finke 2021; Ichinkhorloo and Yeh 2016; Murphy 2018; Sandagsuren 2016). IBLI documents often frame insurance markets and informal risk-sharing as commensurable, analogous and/or transposable social forms – but clearly, they are not. Manthey (2019, 11), makes this argument clear, noting that 'informal risk-sharing tends to be based on reciprocity instead of the 'pure logic' behind insurance. The concept behind index-based insurance might be particularly difficult to grasp because of the basis risk problem'.

The moral economic framing of index insurance raises additional concerns around fairness, trust and social inequality. Many herders clearly felt cheated when they experienced loss without remuneration, some even when they understood IBLI in the abstract. In contrast, informal risk sharing only confronts this issue when *all* suffer the costs of cooperation, and the loss, over time, is shared. Further, others felt that the structure of index insurance explicitly framed herders as a risk. Again, in contrast,

the moral economy of the steppe compels herders to reciprocate with the understanding that everyone is potentially 'at risk', not 'a risk' – and that identity is mutually shared.

These concerns about fairness and trust also imply deeper concerns about their linkage to social differentiation and its effect on the distribution of power. As Sneath (2012, 201) argues, 'Mongolian concepts reveal the inextricable linkage between political and economic spheres, and their roots in a holistic notion of social order'. In this sense, power and its moral underpinnings precede and infuse a notion of 'economy'. In rural Mongolia, much of the social order and its moral economy circulates around the distribution of risk and reward. Index insurance, by reformulating what constitutes risk, challenges not just various kinds of economic action but also the social order. For example, as some herders saw it, IBLI works by ensuring contractual rights to a wager on the potential loss of another's livelihood. And because wealthy herders face a lower risk of livestock loss while also purchasing insurance, the payments they receive appear to come at the expense of others. Moreover, those payments further strain 'the social order' because the wealthy can invest them as a source of social power but also might relieve them of contributing to the mutual aid inherent in more equitable forms of risk sharing. IBLI, in short, risks disembedding those individuals from ethical considerations at the heart of rural lifeways.

Herder responses to index-based livestock insurance, however, do not occur in a vacuum; rather, they articulate with a wider array of other various forces reshaping rural life in Mongolia. Thirty years of neoliberal policymaking has certainly privileged financial and commodity-focused development programming. Microfinance in the form of loans, insurance, savings and other banking services along with the expansion of livestock product markets for cashmere have incorporated pastoral livelihoods into an increasingly wider global political economy (Ichinkhorloo 2018; Marin 2008; Murphy 2018; Sneath 2012). This financialization and commoditization of pastoral livelihoods has substantially transformed pastoral risk in Mongolia (Addison and Brown 2014; Murphy 2019). Globally, as Bush (2016) argues, such processes of risk financialization have catalyzed substantial social and political change by reducing the role of the state in managing risk and transferring those risks to individuals (Matthan 2023). Off-loading social forms of care from the state to the market, in this case through the logic of risk transfer, are intended to make the free market more tolerable. Yet the efficient, Pareto optimality of market-based insurance is 'being promoted alongside policies and processes that systematically exacerbate the prevalence of risk in the lives of the poor' (Bush 2016, 848).

Not coincidentally, these outcomes emerge from an increasingly dominant neoliberal governmentality that, as noted earlier, 'shifts [the citizen-subject] from a rights bearer to a risk bearer' (Maurer 1999, 365). In other words, financialization through insurance like IBLI is not just about 'poverty reduction'; it also concerns state-making and citizenship – creating certain kinds of entrepreneurial subjectivities (Foucault 2008; Rose and Miller 1992). However, despite the very real, transformative power of neoliberal logics and practice, this description of the financialization of rural agricultural production appears incomplete. Mongolian herders, as described in detail above, have at a minimum lacked enthusiasm for index insurance and in many cases outright rejected it. This sort of rejection requires a more nuanced approach to how we understand the transformative potential of neoliberal

logics in Mongolia and other pastoral regions of the world. As Pleckhahn and Bumochir (2018, 343) argue, in Mongolia 'many people on a daily basis experiment with and draw from different materials and phenomena to create diverse economic encounters, forging the different types of economic futures that make up Mongolian capitalism'. Such nuance also provides hope that other, alternative lifeways and forms of care are not only thinkable but possible.

Acknowledgements

The research discussed in this paper was supported by funding from the National Science Foundation, the Wenner-Gren Foundation for Anthropological Research, the Taft Humanities Research Center, and the University of Cincinnati. The authors also express their appreciation to numerous people who assisted the data collection and supported us in the field as well as to Marissa Smith, Irmelin Joelson, and Sohini Kar, who commented on early drafts. The paper is dedicated to Daniel Murphy's field assistant D. Chimedtseren, who passed away unexpectedly in 2019 and without whom this research would not have happened.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

Financial support for this research was provided by the National Science Foundation (CA-DDRIG SBE-0719863 and BCS-1951195), Wenner Gren Foundation for Anthropological Research, Institute for International Education Fulbright Program, Lambda Alpha National Honor Society, the University of Kentucky, the Charles Phelps Taft Research Center, and the University of Cincinnati. Institutional support was provided at various times by the National University of Mongolia, Center for Development Research, the American Center for Mongolian Studies, and UNESCO Institute for the Study of Nomadic Civilizations.

References

Addison, J., and C. Brown. 2014. "A Multi-Scaled Analysis of the Effect of Climate, Commodity Prices, and Risk on the Livelihoods of Mongolian Pastoralists." *Journal of Arid Environments* 109: 54–64. <https://doi.org/10.1016/j.jaridenv.2014.05.010>.

Ahearn, Ariell. 2018. "Herders and Hazards: Covariate Dzud Risk and the Cost of Risk Management Strategies in a Mongolian Subdistrict." *Natural Hazards* 92 (S1): 165–181. <https://doi.org/10.1007/s11069-017-3128-4>.

Barnett, Barry, Christopher Barrett, and Jerry R. Skees. 2008. "Poverty Traps and Index-Based Risk Transfer Products." *World Development* 36 (10): 1766–1785. <https://doi.org/10.1016/j.worlddev.2007.10.016>.

Bateman, Milford. 2012. "The Role of Microfinance in Contemporary Rural Development Finance Policy and Practice: Imposing Neoliberalism as 'Best Practice'." *Journal of Agrarian Change* 12 (4): 587–600. <https://doi.org/10.1111/j.1471-0366.2012.00376.x>.

Bertram-Huemmer, Veronika, and Kati Krahnert. 2018. "Does Index Insurance Help Households Recover from Disaster: Evidence from IBLI Mongolia." *American Journal of Agricultural Economics* 100 (1): 145–171. <https://doi.org/10.1093/ajae/aax069>.

Binswanger-Mkhize, Hans. 2012. "Is There Too Much Hype About Index-Based Agricultural Insurance?" *Journal of Development Studies* 48 (2): 187–200. <https://doi.org/10.1080/00220388.2011.625411>.

Bush, Sarah Breger. 2016. "Risk Markets and the Landscape of Social Change: Notes on Derivatives, Insurance, and Global Neoliberalism." *International Journal of Political Economy* 45 (2): 124–146. <https://doi.org/10.1080/08911916.2016.1185315>.

Comaroff, J. L., and J. Comaroff. 1990. "Goodly Beasts, Beastly Goods: Cattle and Commodities in a South African Context." *American Ethnologist* 17 (2): 195–216. <https://doi.org/10.1525/ae.1990.17.2.02a00010>.

Da Costa, Dia. 2013. "The 'Rule of Experts' in Making a Dynamic Micro-Insurance Industry in India." *Journal of Peasant Studies* 40 (5): 845–865. <https://doi.org/10.1080/03066150.2013.857659>.

Dahl, G., and A. Hjort. 1976. *Having Herds: Pastoral Herd Growth and Household Economy*. Stockholm Studies in Social Anthropology. Stockholm: University of Stockholm.

Du, Chunling, Masato Shinoda, Kaoru Tachiiri, Banzragch Nandintsetseg, Hiroshi Komiyama, and Shusuke Matsushita. 2018. "Mongolian Herders' Vulnerability to Dzud: A Study of Record Livestock Mortality Levels During the Severe 2009/2010 Winter." *Natural Hazards* 92 (S1): S3–S17. <https://doi.org/10.1007/s11069-017-2893-4>.

Empson, Rebecca. 2011. *Harnessing Fortune: Personhood, Memory, and Place in Mongolia*. Oxford: Oxford University Press.

Erickson, Annika. 2014. "Depend on Each Other and Don't Just sit: The Socialist Legacy, Responsibility, and Winter Risk among Mongolia Herders." *Human Organization* 73 (1): 38–49. <https://doi.org/10.17730/humo.73.1.e218g65507n665u0>.

Erickson, Annika. 2020. "The Limitations of Wintering Away from Customary Pastures in Relation to Dzud in Mongolia's Gobi Region." *Nomadic Peoples* 24 (1): 86–110. <https://doi.org/10.3197/np.2020.240105>.

Ewald, Francois. 1991. "Insurance and Risk". *The Foucault Effect: Studies in Governmentality*. Chicago: University of Chicago Press.

Ferguson, J. 1985. "The Bovine Mystique: Power, Property and Livestock in Rural Lesotho." *Man* 20 (4): 647–674. <https://doi.org/10.2307/2802755>.

Ferguson, J. 1999. "The Cultural Topography of Wealth: Commodity Paths and the Structure of Property in Rural Lesotho." *American Anthropologist* 94 (1): 55–73. <https://doi.org/10.1525/aa.1992.94.1.02a00040>.

Fernandez-Gimenez, M. E. 1999. "Reconsidering the Role of Absentee Herd Owners: A View from Mongolia." *Human Ecology* 27 (1): 1–27. <https://doi.org/10.1023/A:1018757632589>.

Fernandez-Gimenez, M., B. Batkhishig, and B. Batbuyan. 2012. "Cross-boundary and Cross-Level Dynamics Increase Vulnerability to Severe Winter Disasters (Dzud) in Mongolia." *Global Environmental Change* 22 (4): 836–851. <https://doi.org/10.1016/j.gloenvcha.2012.07.001>.

Finke, Peter. 2021. "Pastoralist Dilemmas: Where to go and When to Move, or with Whom to Talk About." *Human Ecology* 49 (6): 831–842. <https://doi.org/10.1007/s10745-021-00268-3>.

Fisher, Eleanor, Jon Hellin, Helen Greatrex, and Nathaniel Jensen. 2018. "Index Insurance and Climate Risk Management: Addressing Social Equity." *Development Policy Review* 37 (5): 581–602. <https://doi.org/10.1111/dpr.12387>.

Foucault, M. 2008. *The Birth of Biopolitics: Lectures at the College de France 1978-79*. Picador: New York.

Galvin, K. A. 2009. "Transitions: Pastoralists Living with Change." *Annual Review of Anthropology* 38 (1): 185–198. <https://doi.org/10.1146/annurev-anthro-091908-164442>.

Gardner, Benjamin. 2009. "Are Livestock a Troublesome Commodity?" *Geoforum; Journal of Physical, Human, and Regional Geosciences* 40 (5): 781–783. <https://doi.org/10.1016/j.geoforum.2009.10.002>.

Goldman, Mara J., Meaghan Daly, and Eric J. Lovell. 2016. "Exploring Multiple Ontologies of Drought in Agro-Pastoral Regions of Northern Tanzania: A Topological Approach." *Area* 48 (1): 27–33. <https://doi.org/10.1111/area.12212>.

Government of Mongolia. 2015. *State Policy on Food and Agriculture*. Mongolia: Ulaanbaatar.

High, Mette. 2017. *Fear and Fortune: Spirit Worlds and Emerging Economies in the Mongolian Gold Rush*. Ithaca, NY: Cornell University Press.

Humphrey, C. 2012. "Hospitality and Tone: Holding Patterns for Strangeness in Rural Mongolia." *Journal of the Royal Anthropological Institute* 18 (1): 63–75.

Humphrey, Caroline, and David Sneath. 1999. *The End of Nomadism? Society, State, and Environment in Inner Asia*. Durham, NC: Duke University Press.

Ichinkhorloo, Byambabaatar. 2018. "Collaboration for Survival in the age of the Market: Diverse Economic Practices in Post-Socialist Mongolia." *Central Asian Survey* 37 (3): 386–402. <https://doi.org/10.1080/02634937.2018.1501347>.

Ichinkhorloo, Byambabaatar, and Emily T. Yeh. 2016. "Ephemeral 'Communities': Spatiality and Politics in Rangeland Interventions in Mongolia." *Journal of Peasant Studies* 43 (5): 1010–1034. <https://doi.org/10.1080/03066150.2016.1168812>.

Isakson, S. Ryan. 2015. "Derivatives for Development? Small-Farmer Vulnerability and the Financialization of Climate Risk Management." *Journal of Agrarian Change* 15 (4): 569–580. <https://doi.org/10.1111/jac.12124>.

Janes, C., and Ch Oyuntsetseg. 2016. *Making Disasters: Climate Change, Neoliberal Governance, and Livelihood Insecurity on the Mongolian Steppe*. Santa Fe, NM: SAR.

Jensen, Nathaniel, Andrew G. Mude, and Christopher B. Barrett. 2018. "How Basis Risk and Spatiotemporal Adverse Selection Influence Demand for Index Insurance: Evidence from Northern Kenya." *Food Policy* 74: 172–198. <https://doi.org/10.1016/j.foodpol.2018.01.002>.

Johnson, Leigh. 2013. "Index Insurance and the Articulation of Risk-Bearing Subjects." *Environment and Planning A* 45 (11): 2663–2681. <https://doi.org/10.1068/a45695>.

Johnson, Leigh. 2021. "Rescaling Index Insurance for Climate and Development in Africa." *Economy and Society* 50 (2): 248–274. <https://doi.org/10.1080/03085147.2020.1853364>.

Johnson, Leigh, Brenda Wandera, Nathan Jensen, and Rupsha Banerjee. 2019. "Competing Expectations in an Index Based Livestock Insurance Project." *The Journal of Development Studies* 55 (6): 1221–1239. <https://doi.org/10.1080/00220388.2018.1453603>.

Loubere, Nicholas. 2018. "Indebted to Development: Microcredit as (de)Marginalization in Rural China." *Journal of Peasant Studies* 45 (3): 585–609. <https://doi.org/10.1080/03066150.2016.1236025>.

Mahul, O., and J. Skees. 2007. *Managing Agricultural Risk at the Country Level: The Case of Index-Based Livestock Insurance in Mongolia*. Washington, DC: World Bank.

Manthey, S. 2019. "Drivers of Micro-Insurance Demand: Empirical Evidence from an Index-Based Livestock Insurance in Mongolia." Master's Thesis, Universidad Carloss III de Madrid, Madrid, Spain.

Marin, A. 2008. "Between Cash Cows and Golden Calves: Adaptations of Mongolian Pastoralism to the 'Age of the Market'." *Nomadic Peoples* 12 (2): 75–101. <https://doi.org/10.3167/np.2008.120206>.

Matthan, Tanya. 2023. "Beyond Bad Weather: Climates of Uncertainty in Rural India." *Journal of Peasant Studies* 50 (1): 114–135. <https://doi.org/10.1080/03066150.2022.2116316>.

Matul, M., A. Dalal, O. de Bock, and W. Gelade. 2013. *Why People do not buy Microinsurance and What Can we do About it? ILO Microinsurance, Paper 20*. Geneva: International Labour Organization.

Maurer, Bill. 1999. "Forget Locke? from Proprietor to Risk-Bearer in New Logics of Finance." *Public Culture* 11 (2): 365–385. <https://doi.org/10.1215/08992363-11-2-365>.

McPeak, J., P. D. Little, and C. R. Doss. 2012. *Risk and Social Change in an African Rural Economy*. Routledge: New York.

Mearns, R. 2004. "Decentralization, Rural Livelihoods, and Pasture-Land Management in Post-Socialist Mongolia." *European Journal of Development Research* 16 (1): 133–152. <https://doi.org/10.1080/09578810410001688770>.

Middleton, N., Henri Rueff, Troy Sternberg, Batjav Batbuyan, and David Thomas. 2015. "Explaining Variations in Climate Hazard Impacts in Western Mongolia." *Landscape Ecology* 30 (1): 91–107. <https://doi.org/10.1007/s10980-014-0091-2>.

Miranda, Mario, and Katie Ferring. 2012. "Index Insurance for Developing Countries." *Applied Economic Perspectives and Policy* 34 (3): 391–427. <https://doi.org/10.1093/aapp/pps031>.

Mogge, Lukas. 2023. A District-Level Analysis of the Effect of Risk Exposure on the Demand for Index Insurance in Mongolia. Ruhr Economic Papers, no. 1018. Leibniz-Institut für Wirtschaftsforschung: Essen, Germany.

Murphy, Daniel J. 2014. "Booms and Busts: Asset Dynamics, 'Natural' Disaster, and the Politics of Excess in Rural Mongolia." *Economic Anthropology* 1 (1): 104–123. <https://doi.org/10.1002/sea.212007>.

Murphy, Daniel J. 2015. "From Kin to Contract: Labor, Work, and the Production of Authority in Mongolia." *Journal of Peasant Studies* 42 (2): 397–424. <https://doi.org/10.1080/03066150.2014.974569>.

Murphy, Daniel J. 2018. "Disaster, Mobility and the Moral Economy of Exchange in Mongolia." *Nomadic Peoples* 22 (2): 304–329. <https://doi.org/10.3197/np.2018.220207>.

Murphy, Daniel J. 2019. "We're Living from Loan to Loan": Pastoral Vulnerability and the Cashmere Debt-Cycle in Mongolia." *Research in Economic Anthropology* 39: 7–30.

Peterson, N. 2012. "Developing Climate Adaptation: The Intersection of Climate Research and Development Programmes in Index Insurance." *Development and Change* 43 (2): 557–584. <https://doi.org/10.1111/j.1467-7660.2012.01767.x>.

Pleuckhahn, Rebecca, and Dulam Bumochir. 2018. "Capitalism in Mongolia: Ideology, Practice and Ambiguity." *Central Asian Survey* 37 (3): 341–356. <https://doi.org/10.1080/02634937.2018.1510600>.

Project Implementation Unit. 2012. *Index Based Livestock Insurance Project Implementation Report 2005-2012*. Ulaanbaatar: Government of Mongolia.

Ramprasad, Vijay. 2019. "Debt and Vulnerability: Indebtedness, Institutions, and Smallholder Agriculture in South India." *Journal of Peasant Studies* 46 (6): 1286–1307. <https://doi.org/10.1080/03066150.2018.1460597>.

Rao, M. P., N. K. Davi, R. D. D'Arrigo, J. Skees, B. Nachin, C. Leland, B. Lyon, S-Y. Wang, and O. Byambasuren. 2015. "Dzuds, Droughts, and Livestock Mortality in Mongolia." *Environmental Research Letters* 10: 1–12.

Rose, N., and P. Miller. 1992. "Political Power Beyond the State: Problematics of Government." *The British Journal of Sociology* 43 (2): 173–205.

Rossabi, Morris. 2005. *Modern Mongolia: From Khans to Commissars to Capitalists*. Berkeley, CA: University of California Press.

Roy, Anand. 2010. *Poverty Capital: Microfinance and the Making of Development*. New York: Routledge.

Sandagsuren, Undargaa. 2016. *Pastoralism and Common Pool Resources: Rangeland Co-Management, Property Rights, and Access in Mongolia*. New York: Routledge.

Schareika, Nikolaus, C. Brown, and M. Moritz. 2021. "Critical Transitions from Pastoralism to Ranching in Central Africa." *Current Anthropology* 62 (1): 53–76. <https://doi.org/10.1086/713248>.

Scoones, Ian. 2021. "Pastoralists and Peasants: Perspectives on Agrarian Change." *Journal of Peasant Studies* 48 (1): 1–47. <https://doi.org/10.1080/03066150.2020.1802249>.

Sneath, D. 2012. "The 'age of the Market' and the Regime of Debt: The Role of Credit in the Transformation of Pastoral Mongolia." *Social Anthropology* 20 (4): 458–473. <https://doi.org/10.1111/j.1469-8676.2012.00223.x>.

Takahashi, Kazushi, Munenobu Ikegami, Megan Sheahan, and Christopher B. Barrett. 2016. "Experimental Evidence on the Drivers of Index-Based Livestock Insurance Demand in Southern Ethiopia." *World Development* 78: 324–340. <https://doi.org/10.1016/j.worlddev.2015.10.039>.

Taylor, Marcus. 2016. "Risky Ventures: Financial Inclusion, Risk Management and the Uncertain Rise of Index-Based Insurance." In *Risking Capitalism (Research in Political Economy Vol. 31)*, edited by Susanne Soederberg. Leeds: Emerald Group Publishing.

Ulambayar, T., María E. Fernández-Giménez, Batkhishig Baival, and Batbayan Batjav. 2017. "Social Outcomes of Community-Based Rangeland Management in Mongolian Steppe Ecosystems." *Conservation Letters* 10 (3): 317–327. <https://doi.org/10.1111/conl.12267>.

UNDP and NEMA. 2010. Dzud National Report 2009-2010. UNDP Early Recovery Program.

Upton, C. 2010. "Living off the Land: Nature and Nomadism in Mongolia." *Geoforum; Journal of Physical, Human, and Regional Geosciences* 41 (6): 865–874. <https://doi.org/10.1016/j.geoforum.2010.05.006>.

Upton, C. 2012. "Managing Mongolia's Commons: Land Reforms, Social Contexts, and Institutional Change." *Society & Natural Resources* 25 (2): 156–175. <https://doi.org/10.1080/08941920.2011.597494>.

World Bank. 2006. *Mongolia - Poverty Assessment*. World Bank: Washington, DC.

World Bank. 2016. Mongolia – Index-based Livestock Insurance Project Implementation Completion and Results Report: Report No. ICR00002949. Washington, DC: World Bank.

Daniel J. Murphy is a cultural anthropologist whose research explores the interwoven relationships between humans and their environments, focusing in particular on the cultural, political and economic dimensions of human response to environmental change. He is currently an Associate Professor in the Department of Anthropology and the School of Environment and Sustainability at the University of Cincinnati.

Byambabaatar Ichinkhorloo is a cultural anthropologist whose research focuses on the socio-cultural impacts of economic development and conservation in Mongolia. He is currently a lecturer in the Department of Anthropology and Archaeology at the National University of Mongolia and Science Secretary of the Institute of Mongol Studies.