

# Coping with Shocks in Mongolia

April 5, 2016

## 1. The project at a glance

The *Coping with Shocks in Mongolia* research project analyzes the impact of extreme weather events on the livelihoods and welfare of Mongolian households. Our focus is on extremely harsh winters, locally called *dzud*, that cause high livestock mortality. Even though an exact causal relationship between global climatic trends and *dzud* intensity in Mongolia has not yet been proven, the increased frequency of these severe winters since the late 1990s raises fears that more serious and more frequent disasters are looming.

Taking the perspective of affected households, our analysis focuses in particular on the costs caused by *dzuds*, which often concern directly the source of existence for many households, such as the loss of assets (livestock). Furthermore, the project explores costs in terms of health and human capital outcomes as well as costs with consequences for society as a whole, such as poverty and inequality. This understanding of how households are affected by and cope with weather shocks will help us inform policy-makers on how to strengthen the resilience of households and prevent distress migration.

The project is implemented by the German Institute for Economic Research (DIW Berlin) in cooperation with the National Statistical Office of Mongolia (NSO). The project is funded by the German Federal Ministry of Education and Research (BMBF) under the Economics of Climate Change program. The project started in February 2012 and will continue through September 2016. For more information, see [www.diw.de/mongolia](http://www.diw.de/mongolia).

## 2. Collection of panel data complete

Our analysis is based on unique household panel data that are collected as part of the project in three Western Mongolian provinces (Uvs, Zavkhan, Govi-Altai).



Map of Mongolia. The three survey provinces are marked in grey.

The sample consists of 1768 households, which are representative of the population in the region. Each household was interviewed three times between 2012 and 2015. Since the end of 2015, the complete dataset of three panel waves is available electronically.

The quality of the collected data is extremely satisfying, making them a promising research base. For instance, the attrition rate (the proportion of households dropping out of the sample over time) is surprisingly low: Only 3.3 percent of households dropped out of the sample between wave one and wave three. This rate is low compared to other panel surveys from developing countries. The low attrition rate is particularly remarkable given that more than half of the sample regularly moves their campsite. This is surely attributable to the excellent work of the enumerators and the motivation and efforts of the entire team in Mongolia.

## 3. New research papers

In 2015, three further academic papers were completed, each of which appeared in the open-access DIW Discussion Paper series.

**Veronika Bertram-Huemmer and Kati Kraehnert (2015): Does Index Insurance Help Households Recover from Disaster? Evidence from IBLI Mongolia. DIW Discussion Paper 1515.**

This paper investigates the impact of indemnity payments from index insurance on the asset recovery of households after a catastrophic weather disaster occurs. Its focus is on the Index-Based Livestock Insurance (IBLI) in Mongolia. The authors analyze the effect of IBLI indemnity payments after a once-in-50-year winter disaster struck Mongolia over 2009/10. The database for the analysis is three waves of the household panel survey implemented in western Mongolia. The authors employ the bias-corrected matching estimator to account for selection into purchasing IBLI. Results indicate that pastoralist households purchasing IBLI before the shock recover faster from shock-induced asset losses than comparable non-insured households. The authors find a significant, positive and economically large effect of IBLI indemnity payments on herd size one and two years after the shock. In the medium term – three and four years after the shock – the effect slowly vanishes. Results are robust to defining post-shock livestock recovery in different ways, varying the number of matches per observation, the choice of covariates, and the use of alternative propensity score estimators. An analysis of shock coping strategies as well as complementary

qualitative interviews conducted in the field suggest that indemnity payments helped herders avoid selling and slaughtering animals, thus smooth their productive asset base. Also, IBLI appears to have relieved households from credit constraints. Our study is among the first to provide evidence on the beneficial effects of index insurance after a weather shock in a developing economy.

**Katharina Lehmann-Uchner and Kati Kraehnert (2015): Food intake and the role of food self-provisioning. DIW Discussion Paper 1537.**

This article investigates the role of food self-provisioning for the intake of nutrients of households in Mongolia. The authors analyze nutritional outcomes within and across urban wage employees, rural households with small herds, and pastoralists with large herds. Food self-provisioning significantly affects dietary quality and quantity. Farming food crops improves the nutrient intake. In contrast, animal husbandry increases the intake of calories and nutrients from animal sources, while it decreases the intake of carbohydrates and nutrients from vegetal sources. This finding suggests household-specific market failures due to remoteness exist. Last, exposure to a weather shock does not affect households' calorie intake.

**Valeria Groppo and Kati Kraehnert (2015): The Impact of Extreme Weather Events on Education. DIW Discussion Paper 1534.**

This paper analyzes the short- and long-term impact of extreme weather events on educational outcomes in Mongolia. The focus is on two extremely severe winters that caused mass livestock mortality. The authors use household panel data with comprehensive retrospective information on households' historic experience with weather shocks. Exposure to the weather shock significantly reduces the likelihood of being enrolled in mandatory school two to three years after the shock. Similarly, it significantly reduces the probability of completing basic education ten to eleven years after the shock. Both effects are driven by children from herding households. Results are robust to measuring shock intensity with district-level livestock mortality and climate data as well as household-level livestock losses. Exposure to weather shocks during preschool age (as opposed to exposure during primary and secondary school age) yields the worst consequences for educational attainment. Overall, the evidence points toward income effects as the channel through which the shock impacts education.

### 4. Research in progress

Currently the team at DIW Berlin is working on research papers on four topics.

First, what are the dynamics of livestock recovery following the 2009/10 dzud? Here, the focus is on understanding whether livestock losses caused by the

dzud trapped some herders in poverty. The herding management decision in the post-shock period will also be examined.

Second, how did the transition from planned to market economy affect human capital outcomes? Our analysis builds on information on siblings of household heads included in our sample.

Third, what is the short-term impact of economic shocks on household well-being, and how do households react to such shocks?

Fourth, how do households adjust their food consumption patterns to cope with shocks?

### 5. Project news

***Veronika Bertram-Huemmer receives the University Meets Microfinance Award***



Veronika Bertram-Huemmer  
(photo: private)

Veronika Bertram-Huemmer was honored for her research with the University Meets Microfinance Award. The outstanding section of her doctoral dissertation was also published as a DIW Discussion Paper 1515. The research demonstrates that an index-based weather insurance

can help households in developing countries, such as Mongolia, cope with the financial consequences of extreme weather changes.

***Amartuvshin Tserennadmid awarded scholarship from the Open Society Foundations to join DIW Berlin as a guest researcher***



Amartuvshin Tserennadmid  
(photo: private)

Amartuvshin Tserennadmid joined the team at DIW Berlin as a guest researcher from September 2015 to February 2016. During her stay in Berlin, she carried out research on the short-term nutritional responses of households to economic shocks.

***Marrit Teirlinck completes Master's Thesis at the Toulouse School of Economics***



Marrit Teirlinck (photo: private)

Marrit Teirlinck successfully completed her Master's thesis on "Adverse Shocks and Coping strategies: The case of the Mongolian Herders" at the Toulouse School of Economics. In her thesis, she explores the short-term effects of shocks on household well-being, drawing on the first two waves of panel data.

Her analysis distinguishes between idiosyncratic and covariate shocks. She additionally explores the ex-post coping strategies of households and examines which types of shocks trigger which type of coping strategy. Results reveal that households that have experienced a covariate shock in the past 12 months tend to have a spur in their nonfood consumption and income growth, while experience a downfall in their durables goods accumulation.

### 6. Events

#### **Research workshop in Berlin**

DIW Berlin invites submissions for a one-day research workshop on “Analyzing the Impact of Extreme Weather Events from a Microeconomic Perspective.” The workshop will take place on June 27, 2016 in Berlin, Germany. The event provides a forum for discussing methods, data, and results with fellow researchers working in the field of the economics of climate change. We invite researchers to submit empirical studies addressing the following questions:

- What is the impact of extreme weather events on households’ well-being, and which are the channels through which this impact is realized?
- Which strategies do households apply to cope with extreme weather events, either *ex ante* or *ex post* ?
- What is the link between households’ risk perception and risk management strategies?
- Which policies are most effective in mitigating the effects of extreme weather events?
- Papers analyzing household survey data from developing and transition countries are particularly welcome.

Papers or extended abstracts (minimum 1,000 words) should be submitted in pdf format via email to Ms. Olga Zhylenko ([mongolia@diw.de](mailto:mongolia@diw.de)) by April 30, 2016. For further information, please see the attached Call for Papers.

#### **Policy workshop in Ulaanbaatar**

A one-day policy workshop will be held on September 5, 2016 in Ulaanbaatar, Mongolia. During the event, research results and policy implications will be presented. The event will be hosted jointly by the NSO and DIW Berlin. More detailed information will follow in the months to come.

### 7. Research stay at DIW Berlin

The project team at DIW Berlin invites researchers to submit applications for joining the team in Berlin for a research stay and to work together with the Mongolian household survey data. Interested researchers are asked to provide their own funding for travel and living expenses, while office space and IT equipment will be made available by DIW Berlin. Please contact Kati Kraehnert ([kkraehnert@diw.de](mailto:kkraehnert@diw.de)) for more information.

### 8. Team members at DIW Berlin

**Dr. Kati Kraehnert** (project leader) studied Social Anthropology and Economics at Free University Berlin and Wake Forest University. She earned a PhD in Agricultural Economics from Humboldt University in 2010.

**Dr. Valeria Groppo** (postdoc researcher) joined the team in 2013. She earned her PhD from the University of Milan (Italy) and worked at the ILO and the WTO before coming to DIW Berlin.

**Dr. Veronika Bertram-Huemmer** (guest researcher) studied International Economics and Chinese Studies at Eberhard-Karls-University Tübingen and at the University of Sydney. She earned a PhD from University of Hannover in 2015.

**Katharina Lehmann-Uschner** (PhD student), who joined the team as a research associate in 2012, started her PhD in the DIW Graduate Center in 2013. After completing the first year of coursework, she re-joined the project as a PhD student. She earned her Master’s degree in International Economics from the Graduate Institute in Geneva.

**Marrit Teirlinck** (guest researcher) earned her Master’s degree in Development Economics and Public Policy from the Toulouse School of Economics. She currently is a doctoral candidate in the Berlin Doctoral Program in Economics and Management Science (BDPEMS).



German Institute for Economic Research  
Department of Development and Security  
Mohrenstrasse 58  
10117 Berlin  
Germany  
[www.diw.de](http://www.diw.de)

For more information on the project visit the project website:  
[www.diw.de/mongolia](http://www.diw.de/mongolia)

Or contact **Dr. Kati Kraehnert**:  
Email: [kkraehnert@diw.de](mailto:kkraehnert@diw.de)  
Phone: ++49 (30) 89 789 442

To subscribe or unsubscribe from this newsletter send an Email to:  
[mongolia@diw.de](mailto:mongolia@diw.de)