

# PIERRE E. BISCAYE

PhD Candidate, UC Berkeley Agricultural and Resource Economics

12/4/2023

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**Doctoral Studies** **University of California at Berkeley**  
PhD, Agricultural and Resource Economics, Expected May 2024  
*Dissertation:* “Natural Disasters and Livelihoods: Evidence from Pests, Disease, and Floods in African Countries”

*Primary Fields:* Development Economics, Environmental & Resource Economics  
*Secondary Fields:* Applied Econometrics, Labor Economics

**References**

<u>Professor Ethan Ligon</u> ligon@berkeley.edu +1 (510)-859-3266 UC Berkeley Ag. & Resource Economics	<u>Professor Edward Miguel</u> emiguel@berkeley.edu +1 (510)-642-7162 UC Berkeley Economics
<u>Professor Maximilian Auffhammer</u> auffhammer@berkeley.edu +1 (510)-643-5472 UC Berkeley Ag. & Resource Economics	<u>Professor Catherine Wolfram</u> cwolfram@mit.edu +1 (617)-258-5729 MIT Sloan School of Management
<u>Professor C. Leigh Anderson</u> cla@uw.edu +1 (206)-543-0365 U of Washington Evans School of Public Policy & Governance	

**Placement Officers**

<u>Professor Sofia Villas-Boas</u> sberto@berkeley.edu +1 (510)-409-4341	<u>Professor Max Auffhammer</u> auffhammer@berkeley.edu +1 (510)-643-5472	<u>Diana Lazo</u> lazo@berkeley.edu +1 (510)-643-5133
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**Prior Education**

<b>University of Washington</b>	MPA, International Development	2014
<b>Whitworth University</b>	BA, International Studies	2011

**Teaching**

<b>UC Berkeley</b>	ARE, <i>Introductory Applied Econometrics</i> , Lead Instructor	2022
<b>UC Berkeley</b>	ARE, <i>Introductory Applied Econometrics</i> , Jeremy Magruder	2021
<b>UC Berkeley</b>	ARE, <i>Environmental Economics</i> , David Roland-Host	2019
<b>UC Berkeley</b>	ARE, <i>Agricultural and Environmental Policy</i> , David Zilberman	2018
<b>U. of Washington</b>	Evans School of Public Policy & Governance <i>Economics for Policy Analysis and Management</i> , Brian Dillon	2013

**Grants and Fellowships**

2023 Angela Little Foundation Travel Grant (\$1,500), CEGA Research Grant (w/ Abdulrasheed Isah & Elena Stacy, \$10,000), IRLE Research Grant (w/ Abdulrasheed Isah & Elena Stacy, \$6,000), UC Berkeley Graduate Division Travel Grant (\$1,800), Rocca Dissertation Fellowship (\$10,000)

- 2022 STEG Research Grant (w/ Abdurashed Isah, \$33,000), SurveyCTO Research Grant (w/ Abdurashed Isah, \$2,000)
- 2021 Innovations for Poverty Action WWES Initiative Research Grant (\$12,000)
- 2020 UC Berkeley Department of Economics Research Grant (\$4,000), UC Berkeley College of Natural Resources Center for Educational Equity and Excellence Research Grant (\$3,100)

## Awards

- 2023 Pacific Conference for Development Economics Best Poster Award
- 2022 UC Berkeley 2022 Outstanding Graduate Student Instructor Award
- 2014 University of Washington Shelton Fellowship (Valedictorian)
- 2014 University of Washington Pi Alpha Alpha Academic Excellence Award
- 2011 Whitworth University President's Cup (Valedictorian)
- 2011 Whitworth University Mind and Heart Scholar

## Publications

- Money or power? Choosing Covid-19 aid in Kenya (with S. Berkouwer, E. Hsu, O.W. Kim, K. Lee, E. Miguel, & C.D. Wolfram). *Energy Economics* Vol. 127B (2023). [Available here](#). [PEDL Blog](#). [IGC Blog](#).
- Exploring the gender gap in mobile money adoption: Evidence from eight low- and middle-income countries (with T.W. Reynolds, C.L. Anderson, C. O'Brien-Carelli, & J. Keel). *Information Technology for Development* (2023). [Available here](#). [EPAR Blog](#).
- Disbursing emergency relief through utilities: Evidence from Ghana (with S. Berkouwer, S. Puller, & C.D. Wolfram). *Journal of Development Economics* Vol. 156 (2022). [Available here](#). [World Bank Blog](#). [Energy Institute at Haas Blog](#).
- Economic benefits of empowering women in agriculture: Assumptions and evidence (with C.L. Anderson, T.W. Reynolds, V. Patwardhan, & C. Schmidt). *Journal of Development Studies* Vol. 57(2): 193-208 (2020). [Available here](#).
- A case of mistaken identity? Measuring rates of improved seed adoption in Tanzania using DNA fingerprinting (with A. Wineman, T. Njagi, C.L. Anderson, T.W. Reynolds, D.Y. Alia, P. Wainaina, E. Njue, & M.W. Ayieko). *Journal of Agricultural Economics*, Vol. 71(3): 719-741 (2020). [Available here](#).
- Methods of crop yield measurement on multi-cropped plots: Examples from Tanzania (with A. Wineman, C.L. Anderson, & T.W. Reynolds). *Food Security* 11, 1257-1273 (2019). [Available here](#). [EPAR Blog](#).
- Delivering development? Evidence on Self-Help Groups as Development intermediaries in South Asia and Africa (with M.K. Gugerty & C.L. Anderson). *Development Policy Review*, Vol. 37(1): 129-151 (2018). [Available here](#).
- Relating seasonal hunger and coping and prevention strategies: A panel analysis of Malawian farm households (with C.L. Anderson, T.W. Reynolds, & J. Merfeld). *Journal of Development Studies*, Vol. 54(10): p. 1737-1755 (2017). [Available here](#).
- Gender-associated differences in cross-domain risk perception among smallholder farmers in Mali: Implications for development (with A. Cullen, C.L. Anderson, & T.W. Reynolds). *Risk Analysis*, Vol. 38(7): p. 1361-1377 (2017). [Available here](#). [EPAR Blog](#).
- Do changes in farmers' seed traits align with climate change? A case study of maize in Chiapas, Mexico (with C.L. Anderson & A. Cronholm). *Handbook of Behavioural Economics and Smart Decision-Making: Rational Decision-Making within the Bounds of Reason* (Morris Altman, ed.), p. 251-274 (2017). [Available here](#).

Relative effectiveness of bilateral and multilateral aid on development outcomes (with T.W. Reynolds & C.L. Anderson). *Review of Development Economics*, Vol 21(4): p. 1425–1447 (2017). [Available here](#). [EPAR Blog](#).

## Working Papers

**“Agricultural shocks and long-term conflict risk: Evidence from desert locust swarms” (JOB MARKET PAPER)** [Available here](#).

How do transient agricultural shocks affect the risk of conflict over time? I study this question for the case of exposure to a desert locust swarm, effectively an agriculture-specific natural disaster, across 0.25 degree grid cells in Africa and the Arabian peninsula from 1997-2018. Using difference-in-differences and event study approaches I estimate that locust swarm exposure causes an average increase of 0.8 percentage points (43%) in the annual likelihood of experiencing any violent conflict over the following 14 years, with significant increases over the whole period. I find similar patterns for impacts on measures of conflict over output and over factors of production and on non-violent protests. Swarm exposure also significantly reduces mean cereal yields, consistent with a wealth mechanism decreasing permanent income and agricultural productivity and lowering the opportunity cost of fighting. Increases in conflict risk are concentrated in years with groups actively engaged in violent conflict in neighboring areas when low opportunity cost of fighting is combined with opportunities to fight. Patterns of long-term impacts on violent conflict are similar for severe droughts indicating the mechanisms are not specific to locust shocks. The wealth mechanism is a potentially important channel relating economic shocks to the long-term incidence of violent conflict.

**“Balancing work and childcare: Evidence from COVID-19 school closures and reopenings in Kenya”** (with D. Egger & U.J. Pape). Revision Requested at Journal of Human Resources. [Available here](#).

How does a shock to childcare and child labor affect adult labor supply in low-income agricultural settings? I use nationally-representative bi-monthly panel data from Kenya and discontinuities in when children in different grades were eligible to return to school after COVID-19-related school closures to estimate short-run causal effects of changes in availability of schooling on labor supply for household adults. A child returning to school increases adults’ weekly work hours by 29% concentrated among the most flexible margins of adjustment, particularly household agriculture. Overall effects are not gendered but responses for women and men are driven by different mechanisms. Women free up more time than men when childcare burdens fall but specialize more in childcare when returning students were net caregivers to younger siblings during school closures. Women also shoulder more of the reduction in child agricultural labor when students return to school, and shift from non-agricultural work into household agriculture (more easily combined with care of younger children). The results suggest policies increasing childcare access could substantially increase adult labor supply in low- and middle-income countries and support women to work outside of household agriculture.

**“Voltage quality and economic activity”** (with S. Berkouwer, M. Mikdash, S. Puller, & C.D. Wolfram). This study is pre-registered with the 3ie RIDIE Registry (ID: [928](#)) and has IRB approval in Ghana and the U.S. [Available here](#). [CEGA blog](#). [Energy for Growth Hub Memo](#).

Voltage quality issues—such as sags, spikes, and fluctuations—are pervasive across many low- and middle income countries, yet their unobservability has hampered large-scale analysis of their economic importance. We combine minute-by-minute customer-level power measurements with detailed panel surveys of more than 1,500 households and small businesses to characterize voltage quality issues experienced by customers in Accra, Ghana and analyze their costs. First, we document widespread voltage problems: approximately 20% of grid electricity is of poor quality (more than 10% below nominal voltage, 230V), including 30% during peak hours. Second, this imposes costs through spending on voltage protective equipment, dealing with damaged

appliances, and not being able to fully utilize appliances. Third, using a differences-in-differences design, we find that a 5V increase in average voltage—resulting from quasi-random construction of new transformers—reduces the frequency of appliance damages at treatment sites relative to control sites, but generates no other economic impacts after 1 year.

## **Research in Progress**

**“Natural disasters, aspirations, and labor supply”** (with A. Isah and E. Stacy). This study is pre-registered with the AEA RCT Registry ([ID R-0011881](#)) and has IRB approval in Nigeria and the U.S.

Do flood experiences affect psychological outcomes a year later? How does this affect labor supply responses? We survey 800 agricultural households in 70 communities in Jigawa State in Nigeria and community-level data on flood risk and realizations to analyze impacts of major flooding events in 2022 on outcomes including mental health, aspirations, locus of control, and risk perceptions. We cross-randomize an intervention providing local flooding history and predicted flood risk information to respondents to test whether this affects psychological outcomes and expectations about flood risk and future labor supply. Data collection is complete and analysis is ongoing

### **“Forcing labor reallocation? Floods and long-term structural transformation in Nigeria”**

Does exposure to a natural disaster affect labor supply and livelihoods over the long-term? What are the implications for agricultural transformation and transitions out of agriculture? I use household and individual panel data from Nigeria’s General Household Survey from 2010-2019 to estimate impacts of massive flood events in 2012—measured using both community survey reports and satellite-based measures—on household livelihood trajectories. Initial results indicate that households in flooded communities reduce non-farm wage labor and rely more on household farm work relative to communities with similar flood histories that did not flood in 2012, with effects persisting over 5 years later. Data cleaning is largely complete and analysis is ongoing.

**“Electricity reliability and long-term economic outcomes”** (with S. Berkouwer, S. Puller, & C.D. Wolfram). This study is pre-registered with the AEA RCT Registry ([ID: 4886](#)) and has IRB approval in Ghana and the U.S.

An important barrier to economic growth in many developing countries is the reliability of the electricity grid. In Ghana persistent power failures since 2012 have given rise to the term “Dumsor,” meaning “lights off-on” in the Akan language. According to a 2013 World Bank report, 61% of firms see electricity reliability as a major constraint, with firms reporting an average of over 700 hours of outages annually, compared to 1.5 hours for firms in the U.S. We exploit spatial network discontinuities in power quality across Accra to understand the long-term socio-economic impacts of differences in electricity reliability. We combine administrative infrastructure network data and electricity outage records with 5,000 on-the-ground firm and household surveys to estimate these impacts. Analysis is largely complete and writing is ongoing.

**“Recency bias in farmer responses to past pest and diseases losses in Malawi.”** Draft available upon request.

Pests and diseases are an important cause of crop losses globally, but their impacts on smallholder farm livelihoods have not received as much attention as the impacts of weather and price fluctuations. Using household panel data from the Malawi Integrated Household Panel Survey, I find that households that experienced preharvest losses from pests or diseases apply 25% more non-harvest labor inputs per acre and purchase 65% more seed per acre in the following season relative to households that did not. Impacts are not driven by an income effect from reduced crop production, and appear to be due to recency or availability bias affecting beliefs about risk from pests and disease. Preliminary analyses are complete and writing is ongoing.

<b>Conference Presentations</b>	2023	Midwest International Economic Development Conference (MWIEDC); Pacific Conference for Development Economics (PacDev); Western Economic Association International (WEAI) Annual Meeting; Agricultural & Applied Economics Association (AAEA) Annual Meeting
	2022	Empirical Studies of Conflict (ESOC) Conference; Centre for the Study of African Economies (CSAE) Conference; Pacific Conference for Development Economics (PacDev)
	2021	All-California Labor Economics Conference (ACLEC); Giannini Agricultural & Resource Economics Student Conference (GARESC); Pacific Conference for Development Economics (PacDev)
	Earlier	Data for Policy Annual Conference 2017; International Consortium on Applied Bioeconomy Research (ICABR) Annual Conference 2017; Association for Public Policy Analysis & Management (APPAM) International Conference 2016; Mobile Education Symposium 2012
<b>Other Presentations</b>	2023	UC Berkeley Development Economics Seminar; UC Berkeley Agricultural and Resource Economics Seminar; UC Berkeley Development Lunch Seminar; Princeton University Climate Change & Conflict Invited Presentation
	2022	UC Berkeley Development Lunch Seminar
	2021	IPA Kenya Women's Work, Entrepreneurship, and Skilling Evidence and Policy Roundtable; UC Berkeley Environmental Economics Seminar; UC Berkeley Development Lunch Seminar; Busara Center for Behavioral Economics Lunch and Learn Seminar
	2020	UC Berkeley Development Lunch Seminar
	2017	The World Bank Agricultural Microdata Technical Convening; Bill & Melinda Gates Foundation Financial Services for the Poor Acceleration Week Digital Credit Learning Session
	2016	Myanmar Ministry of Labour, Immigration, and Population National Identity Programs Workshop; International Telecommunications Union Focus Group on Digital Financial Services and Financial Inclusion (ITU FG-DFS) Quarterly Convening
	2015	International Telecommunications Union Focus Group on Digital Financial Services and Financial Inclusion (ITU FG-DFS) Quarterly Convening
	2015	Evans School Research Symposium
<b>Refereeing</b>		Journal of Development Economics, Food Security, Journal of Development Studies, Agricultural and Resource Economics Review, Empirical Economics
<b>Activities</b>	2022-2023	Mentor, UC Berkeley <a href="#">Social Sciences Research Pathways</a>
	2021-2023	Mentor, UC Berkeley <a href="#">Sponsored Projects for Undergraduate Research</a>
	2020-2023	Volunteer, UC Berkeley <a href="#">Bear Pantry</a>
	2021-2022	Organizer, UC Berkeley Economics of Race and Equity Reading Group
	2021-2022	Lead, High School Outreach for <a href="#">Economists for Equity at Berkeley</a>
	2021-2022	Tutor, UC Berkeley <a href="#">Underrepresented Minorities in Economics</a>
	2020-2022	Mentor, <a href="#">CEGA EASST Program</a>
	2021	Mentor, <a href="#">GAIN Network</a>
	2021	Mentor, <a href="#">CEGA DIWA program</a>
	2019-2020	Organizer, UC Berkeley ARE Faculty Brown Bag Seminar

**Selected**     **University of Washington**     Research & Strategic Initiatives Manager, *Evans School*  
**Prior**           *Policy Analysis & Research Group (EPAR)*, Prof. C. Leigh Anderson     2014-2018  
**Employment** **University of Washington**     Research Coordinator, *Enhancing Women's Agricultural*  
                      *Value*, Profs. C. Leigh Anderson and Mary Kay Gugerty                 2014-2016  
**University of Washington**     Research Assistant, *Evans School Minimum Wage Study*,  
                      Profs. Marieka Klawitter and Mark Long                                 2014  
**World Vision International**     Program Officer, Education & Life Skills     2011-2013  
**Aficare Burkina Faso**            Program Management Associate             2009-2010

**Languages**    English (Native), French (Fluent), Spanish (Intermediate)

**In-Country Experience** Burkina Faso, Burundi, Ghana, Kenya, Malawi, Tanzania

**Skills**            STATA (proficient), R (proficient), Python (intermediate), Excel, SurveyCTO/Open Data  
                      Kit (proficient)

**Citizenship**    USA