Research Papers on 'Poverty'

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Paper 1:

Assessing Heterogeneity of Treatment Effects

Date: 2025-02-11

Time: 19:19:34

Authors:

Tetsuya Kaji, Jianfei Cao

Summary:

- Treatment effect heterogeneity is of major interest in economics, but its assessment is often hindered by the fundamental lack of identification of the individual treatment effects. For example, we may want to assess the effect of a poverty reduction measure at different levels of poverty, but the causal effects on wealth at different wealth levels are not identified. Or, we may be interested in the proportion of workers who benefit from the minimum wage increase, but the proportion is not identified in the absence of counterfactuals. This paper derives bounds useful in such situations, which only depend on the marginal distributions of the outcomes. The bounds are nonparametrically sharp, making clear the maximum extent to which the data can speak about the heterogeneity of the treatment effects. An application to microfinance shows that the bounds can be informative even when the average treatment effects are not significant. Another application to the welfare reform identifies a nonnegligible portion of workers who increased and decreased working hours due to the reform.

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Paper 2:

Technical note on calibrating vision-language models under covariate shift

Date: 2025-02-11

Time: 10:10:15

Authors:

Behraj Khan, Rizwan Qureshi, Tahir Syed

Summary:

- Despite being a successful example of emerging capability, vision-

language foundation models for low-shot vision classification have a limited ability to sufficiently generalize to the target data distribution due to sample poverty, leading to sensitivity to variations in the data. A popular mitigation strategy is finetuning over multiple datasets, but domain generalization is expensive when practiced in this manner. This work examines both covariate shift between pre-training data and the underspecified target data, and \textit{confidence misalignment}, where the model's prediction confidence amplified by the limited data availability. We propose \textit{Confidence-Calibrated Covariate Shift Correction ($C3SC$)}, a unified framework to mitigate both covariate shift and confidence misalignment. $C3SC$ leverages Fisher information penalty for covariate shift correction and confidence misalignment penalty (CMP) to lower confidence on misclassified examples. Experimental results across various vision and covariate shift datasets demonstrates that $C3SC$ significantly improves in calibration (ECE) by 5.82% at maximum. $C3SC$ shows better robustness as well by showing 3.5% improvement in accuracy metric on challenging covariate shift datasets, making $C3SC$ a promising solution for reliable real-world vision-language low-shot applications under distribution shift.

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Paper 3:

The long-term impact of (un)conditional cash transfers on labour market outcomes in Ecuador

Date: 2025-02-06

Time: 12:56:45

Authors:

Juan Ponce, José-Ignacio Antón, Mercedes Onofa, Roberto Castillo

Summary:

- Despite the popularity of conditional cash transfers in low- and middle-income countries, evidence on their long-term effects remains scarce. This study assesses the impact of Ecuador's Human Development Grant on the formal sector labor market outcomes of children in eligible households. This grant, one of the first of its kind, is characterized by weak enforcement of its eligibility criteria. Using a regression discontinuity design, we find that the programme had no impact on formal employment rates and labour income earned in the formal sector around a decade after exposure, and thus not affecting the intergenerational transmission of poverty. We discuss possible

explanations for the lack of significant results considering how the programme contributes to persistence in school in the medium term.

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Paper 4:

General Geospatial Inference with a Population Dynamics Foundation Model

Date: 2025-01-30

Time: 01:38:39

Authors:

Mohit Agarwal, Mimi Sun, Chaitanya Kamath, Arbaaz Muslim, Prithul Sarker, Joydeep Paul, Hector Yee, Marcin Sieniek, Kim Jablonski, Yael Mayer

Summary:

- Supporting the health and well-being of dynamic populations around the world requires governmental agencies, organizations and researchers to understand and reason over complex relationships between human behavior and local contexts in order to identify high-risk groups and strategically allocate limited resources. Traditional approaches to these classes of problems often entail developing manually curated, task-specific features and models to represent human behavior and the natural and built environment, which can be challenging to adapt to new, or even, related tasks. To address this, we introduce a Population Dynamics Foundation Model (PDFM) that aims to capture the relationships between diverse data modalities and is applicable to a broad range of geospatial tasks. We first construct a geo-indexed dataset for postal codes and counties across the United States, capturing rich aggregated information on human behavior from maps, busyness, and aggregated search trends, and environmental factors such as weather and air quality. We then model this data and the complex relationships between locations using a graph neural network, producing embeddings that can be adapted to a wide range of downstream tasks using relatively simple models. We evaluate the effectiveness of our approach by benchmarking it on 27 downstream tasks spanning three distinct domains: health indicators, socioeconomic factors, and environmental measurements. The approach achieves state-of-the-art performance on all 27 geospatial interpolation tasks, and on 25 out of the 27 extrapolation and super-resolution tasks. We combined the PDFM with a state-of-the-art forecasting foundation model, TimesFM, to predict unemployment and poverty, achieving performance that surpasses

fully supervised forecasting. The full set of embeddings and sample code are publicly available for researchers.

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Paper 5:

Leveraging ChatGPT's Multimodal Vision Capabilities to Rank Satellite Images by Poverty Level: Advancing Tools for Social Science Research

Date: 2025-01-24

Time: 14:49:00

Authors:

Hamid Sarmadi, Ola Hall, Thorsteinn Rögnvaldsson, Mattias Ohlsson

Summary:

- This paper investigates the novel application of Large Language Models (LLMs) with vision capabilities to analyze satellite imagery for village-level poverty prediction. Although LLMs were originally designed for natural language understanding, their adaptability to multimodal tasks, including geospatial analysis, has opened new frontiers in data-driven research. By leveraging advancements in vision-enabled LLMs, we assess their ability to provide interpretable, scalable, and reliable insights into human poverty from satellite images. Using a pairwise comparison approach, we demonstrate that ChatGPT can rank satellite images based on poverty levels with accuracy comparable to domain experts. These findings highlight both the promise and the limitations of LLMs in socioeconomic research, providing a foundation for their integration into poverty assessment workflows. This study contributes to the ongoing exploration of unconventional data sources for welfare analysis and opens pathways for cost-effective, large-scale poverty monitoring.

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Paper 6:

Exploring the heterogeneous impacts of Indonesia's conditional cash transfer scheme (PKH) on maternal health care utilisation using instrumental causal forests

Date: 2025-01-22

Time: 11:21:05

Authors:

Vishalie Shah, Julia Hatamyar, Taufik Hidayat, Noemi Kreif

Summary:

- This paper uses instrumental causal forests, a novel machine learning

method, to explore the treatment effect heterogeneity of Indonesia's conditional cash transfer scheme on maternal health care utilisation. Using randomised programme assignment as an instrument for enrollment in the scheme, we estimate conditional local average treatment effects for four key outcomes: good assisted delivery, delivery in a health care facility, pre-natal visits, and post-natal visits. We find significant treatment effect heterogeneity by supply-side characteristics, even though supply-side readiness was taken into account during programme development. Mothers in areas with more doctors, nurses, and delivery assistants were more likely to benefit from the programme, in terms of increased rates of good assisted delivery outcome. We also find large differences in benefits according to indicators of household poverty and survey wave, reflecting the possible impact of changes in programme design in its later years. The impact on post-natal visits in 2013 displayed the largest heterogeneity among all outcomes, with some women less likely to attend post-natal check ups after receiving the cash transfer in the long term.

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Paper 7:

Dollarized Economies in Latin America. An Inflationary Analysis of Pre, During and Post Pandemic

Date: 2025-01-21

Time: 18:39:45

Authors:

Joseph Ariel Tello Carvache, Jorge Alejandro Moncayo Correa, Carlos Sempertegui Seminario

Summary:

- Given the hyperinflation that most of the Latin American countries suffered in the 90 and their decision towards adopting dollarization and in most cases keeping their own currency, this paper analyzes the effectiveness of dollarization as a protective mechanism against economic disruptions in Latin American countries. It assesses the context that led Latin American dollarized countries to dollarize and analyzes CPI, GDP, and the poverty rates pre, during, and postpandemic in Latin American countries, considering those that are dollarized and those that are not, and evaluating its relation to the US. Interviews were carried out with experts in the field. It assesses the advantages and disadvantages of dollarization regarding global crises. The data

was compared and analyzed to check if there were patterns that support the paper objective which is that dollarization might serve as a protective mechanism against economic disruption. It was found that dollarization protects the economy against inflation, however, it does not fully protect the economy when considering economic performance and poverty. In conclusion, this research concludes that dollarization does not completely serve as a protective mechanism against economic disruptions nonetheless, it found that a bigger role is played by domestic policies and government action.

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Paper 8:

Distributionally Fair Peer-to-Peer Electricity Trading

Date: 2025-01-16

Time: 18:02:50

Authors:

Estibalitz Ruiz Irusta, Juan M. Morales

Summary:

- Peer-to-peer energy trading platforms enable direct electricity exchanges between peers who belong to the same energy community. In a semi-decentralized system, a community manager adheres to grid restrictions while optimizing social welfare. However, with no further supervision, some peers can be discriminated against from participating in the electricity trades. To solve this issue, this paper proposes an optimization-based mechanism to enable distributionally fair peer-to-peer electricity trading. For the implementation of our mechanism, peers are grouped by energy poverty level. The proposed model aims to redistribute the electricity trades to minimize the maximum Wasserstein distance among the transaction distributions linked to the groups while limiting the sacrifice level with a predefined parameter. We demonstrate the effectiveness of our proposal using the IEEE 33-bus distribution grid, simulating an energy community with 1600 peers. Results indicate that up to 70.1% of unfairness can be eliminated by using our proposed model, even achieving a full elimination when including a non-profit community photovoltaic plant.

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