

# Causal inference with observational data

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## Research Impact

Causal inference with observational data is essential for unlocking insights from complex, real-world data and understanding causal relationships in economic systems. This dissertation contributes to this goal by studying three different questions with observational data.

Chapter 2 has three contributions. First, I examine the effect of fridge adoption on children's health and education outcomes. My results show that fridge adoption significantly increased the average years of schooling for children by 0.28 years. Besides, I delve deeper into understanding how refrigerator adoption influences education outcomes by showing that fridge adoption decreased child household work and increased parental childcare. Finally, the impact of fridge adoption on child school enrollment is more pronounced among females, attributable to their greater involvement in household chores before refrigerator adoption. This suggests potential avenues for policy interventions aimed at addressing gender disparities in education.

Chapter 3 has two contributions. First, by employing the latent class model, we successfully classified banks into compliant and non-compliant banks. Our findings reveal that compliant banks report

significantly more SARs than their non-compliant counterparts. Second, we found that the Central Bank of Brazil's (CBB) AML supervision is mainly driven by inherent risk, which has a bias toward larger banks. We show that the CBB could improve its effectiveness by better supervising banks with medium inherent risk and non-compliant AML controls. Finally, we found that there are differences in the efficacy rate for the compliant banks, which can be a signal of the possibility of these banks being over-reporting. Over-reporting can reduce the productivity of the analysis performed by the FIU and, consequently, decrease the effectiveness of the whole AML system.

Chapter 4 has two contributions. First, we contribute to the literature on climate sensitivity classification. Climate risk sensitivity is the spatial expression of climate risk research, and we test the source of climate risk sensitivity. Second, our research provides evidence of a much larger effect of flood risk on housing prices in China. This finding is crucial for policymakers and real estate developers to consider when planning and investing in flood-prone areas.

Finally, this thesis also outlines limitations and future research directions for the application of observational studies in causal inference. The impact of this part is even broader.