

## RESEARCH STATEMENT

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**Summary.** I am a development economist with interests in health and environmental economics, political economy, and public economics. My research aims to broadly understand the long-run determinants of economic inequality both across individuals and locations. Methodologically, I combine historical records and secondary data to employ quasi-experimental techniques and structural estimation methods to assess policy-relevant causal relationships, usually through impact evaluation. Below I summarize my current research projects along with some thoughts on future directions of my research.

**Early life Environmental Shocks and Economic Development.** In my job market paper – *Wrong Place, Wrong Time: The Long-Run Effects of In-Utero Exposure to Malaria on Educational Attainment* – I contribute to understanding what are the long-term consequences of early life malaria exposure for lifetime outcomes. Malaria is a vector-borne disease and its transmission varies around the year according to suitable climatic conditions. Individuals born in different months find themselves heterogeneously exposed when inside the womb. I exploit this heterogeneity in different locations in Brazil and different years to estimate the causal effects of in utero exposure to malaria on human capital accumulation. Whereas previous empirical work have identified differences in exposure to malaria by location and year of birth, my research exploits a narrower measure – by year, location *and month* of birth – which allows me to distinguish exposure across different critical periods of early life, such as different trimesters of gestation. This novel definition arguably controls for unobserved regional-level confounders since I am able to observe variation in exposure within locations, by month of birth. I find negative treatment effects on human capital accumulation for exposed individuals. The effects are heterogeneous across timing of exposure and socioeconomic conditions, and they are stronger for exposure during the first trimester of intrauterine life and for individuals at the bottom of the income distribution.

In a related working paper, Diogo Baerlocher and I study the long-term effects of childhood exposure to malaria on adult mortality in Brazil. Although the effects of malaria on infant mortality and socioeconomic conditions are well documented in the economic development literature, little is known about the *scarring* consequences of early life malaria infections on life expectancy and adult mortality. By exploring the 1957 malaria eradication campaign in Brazil as a natural experiment, we identify exogenous sources of variation in the decline in malaria rates according to pre-campaign endemicity rates in different regions. We find consistently positive treatment effects of early-life exposure to malaria on 10-year adult mortality rates. Our results further suggest a potential direct physiological effect and that a possible important indirect mechanism leading to this effect is educational attainment.

I aim to expand my research on the long-term consequences of early life environment by exploring different mechanisms that lead to its effects on different dimensions of economic development and political economy. For example, studying the economic and political implications of environmental shocks that affect individual and political outcomes, such as extreme weather variations causing droughts or other natural disasters, in heterogeneous ways is a line of research that interests me as a researcher aiming to address causal effects of economic and environmental shocks.

**Public Finance.** The role of government size for local-level state capacity is a long-lasting question that dates back to as early as 1788's Federalist papers, in which James Madison argued that lower congress size should increase with the number of states being added to the union but to be limited to enable coordination and avoid "intemperance of discussion". In *Pull Up a Chair: Municipal Council Size and Local Taxes in Brazil*, jointly with Evan Kresch, Rodrigo Schneider, Meredith Walker, we revisit the question of optimal legislature size by taking advantage of a unique quasi-experimental design from a Brazilian reform that allocated the number of seats on a municipal council based on population thresholds. Using a regression discontinuity design, we find that councils with an additional member have greater political diversity, which contributes to a greater ability to raise tax revenues, with this increase being driven by a less salient form of tax - services - as compared to property taxes. Importantly, more diverse councils use the increased tax revenue on "pro-social" public goods: health, education, and housing.

In another line of research, I study the effects of fiscal policies on macroeconomic variables and welfare. In Silva et al. (2015), co-authors and I employ a structural VAR model to show that emerging countries have a real exchange rate puzzle, where expansionist fiscal policy leads to currency depreciation in international markets. Additionally, we find evidence of trade balance deterioration after an exogenous expansionary fiscal policy.

**Historical Persistence and Long-Run Economic Development.** A recent branch of my research agenda involves the long-run implications of historical events to economic development, inequality, and poverty levels. In a work in progress with co-authors, we aim to study the colonial origins of clientelism and local underdevelopment in Brazil. During the sugar economic cycle that led Brazil to be the largest sugar exporter in the world and that lasted nearly two centuries, a landed elite emerged, controlling local politics and establishing a patron-client network within catchment areas around sugar factories (*engenhos*). We test the hypothesis that clientelistic political relations in Northeastern Brazil has its deep-rooted origins in this type of client-patron relationship by constructing a novel dataset with the georeferenced location and attributes of sugar factories circa early Nineteenth century and combining it with granular polling station-level data on local elections information. Reduced-form estimates find that an exogenous shock that largely increased politicians' monitoring costs for engaging in electoral clientelism, introduced by the electronic voting in 1998, has led to a larger reduction in votes for clientelistic parties in polling stations relatively closer to Nineteenth century sugar factories. In the next steps of the research agenda, we aim to extend the analysis in several ways, including (i) associating surnames of Nineteenth century

landowners to both early and current local representatives, and (ii) introducing electoral fraud data to test possible mechanisms associated with the previous results.

Another recent ongoing research project studies the the persistent effects of pre-modern historical pathways on local development and population density in Brazil. To address endogeneity issues arising from omitted variable bias, we employ an inconsequential units approach, restricting our analysis to contiguous municipalities that did not host historical city halls and find that the presence of historical postal office routes predicts current population density. We further employ a grid-level analysis by proxying population density with nightlight incidence to corroborate our findings. Further directions of the project involve exploring potential mechanisms explaining the observed correlation, including geography as well as state building factors.

**Concluding remarks.** The broad perspective of the research projects discussed above allows me to relate my field of expertise with other areas of study, such as geography, political science, and history, among others. This interdisciplinary aspect of the economic research is what drives me to pursue academic work. It pushes me to always seek new knowledge and to connect it with both my research and teaching. It also widens the scope for collaborative work not only with peers but also with students from different areas of expertise. Working collaboratively with colleagues and engaging students in my research agenda are objectives I have for my professional academic career, as I am enthusiastic about learning and sharing new knowledge.

#### REFERENCES

Silva, M., Baerlocher, D., and Veras de Paiva Fonseca, H. (2015). Fiscal shocks, the real exchange rate and the trade balance: some evidence for emerging economies. *The BE Journal of Macroeconomics*, 15(2):727–768.