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## Does Slavery's Historical Presence Impact Economic Development? Evidence from the Free-Slave State Border

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Over the course of the last year, I have been working on a senior thesis studying the long-run economic effects of slavery in the United States. My project began with a term paper last spring, in which I compared economic outcomes of counties on either side of the border between formerly free and slave states. For my senior thesis, I have expanded the scope of this term paper, using more disaggregated geographical units – census block groups and tracts – and looking at outcomes over time. In order to conduct this research, Hesburgh Library resources and assistance have been essential.

My first phase of the project was also the first point at which I relied upon the library. I began by conducting an extensive literature review of economic research into the effects of slavery on economic development, both in the United States and around the world. To do so, I used the library's EconLit database to access papers in journals ranging from the American Economic Review to the Journal of Political Economy. Previous work in the United States had examined the relationship between the intensity of slavery in the past – generally using the slave fraction of a county's 1860 population as an explanatory variable – and economic outcomes today. However, I came to realize that no previous work had sought to compare the effect of the presence of slavery against a counterfactual of no slavery at all.

In order to address this gap in the literature, I decided to apply a regression discontinuity model to the border between slave and free states. This approach is generally applied to areas with a specific policy cutoff – for instance, a minimum test score or a boundary over which policies differ. It essentially involves plotting an outcome variable over a running variable – such as test scores – on either side of that cutoff and evaluating whether a jump, or discontinuity, is evident at the boundary. In my case, the cutoff was the border between free and slave states and my running variable was distance to the border from each census block group or census tract.

The outcomes ranged from poverty rates to household incomes and spanned a period from 1970 to the present, with earlier decades having data at the census tract level and later decades at the census block group level.

In order to conduct this analysis, the most difficult piece was calculating the distance from each census block group and census tract to the border. This required the use of ArcGIS, which I had never worked with before. As a result, I reached out to Matthew Sisk at the library to discuss the best way to go about making this calculation. We met on a couple of occasions over Zoom as he described the process for joining the two datasets, one with census block group and tract geographic locations and another – which Matthew produced for me – with the geographic location of the free-slave state border. In this process, I generated a new variable for the distance in kilometers from each census location to the border that I could use in my analysis.

In order for my analysis to be valid, it was important that geographic characteristics on either side of the boundary between free and slave states were roughly similar. If not, the difference in the characteristics could have driven a difference in outcomes, irrespective of the presence of slavery. To test this, I needed to get geographic data at the census block group and census tract-level. Once again, Matthew helped me work out the best way to do this in ArcGIS. I had data for geographic variables such as the soil suitability of several crops, altitude, slope, and rainfall. However, this was in raster data format, meaning that observations were coded for each pixel of a map, rather than for a geographic entity such as a census block group. To translate this to block groups and tracts, I needed to extract the raster value at each census block group and tract's population centroid – i.e. the center of the geographic unit, weighted by population. Matthew gave me tips on how to do this, and I was able to confirm that geographically, the two sides of the free-slave state border were the same.

Altogether, the resources I was able to take advantage of through the library were integral to my research project. The wealth of research I was able to access informed my understanding of my topic and also helped me to identify a gap in past literature. And in order to fill this gap, I relied upon the guidance of Matthew Sisk to grow more familiar with ArcGIS, a software I had never worked with before. It is therefore with genuine gratitude that I reflect on the role that the library has played in the development and completion of my senior thesis.