

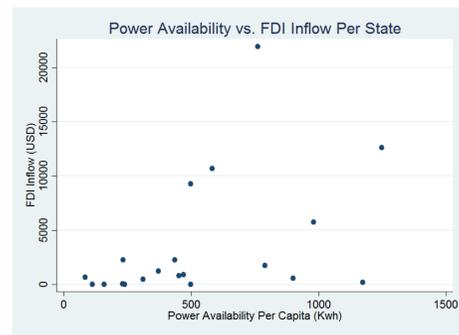
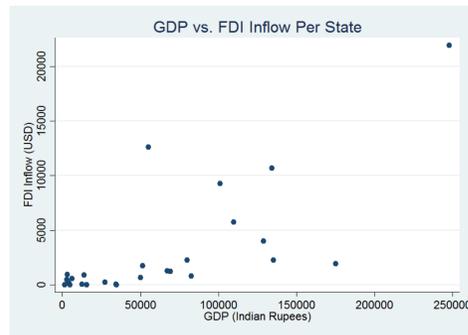
# Foreign Direct Investment in India: Assessing Inter-State Variations

## Introduction

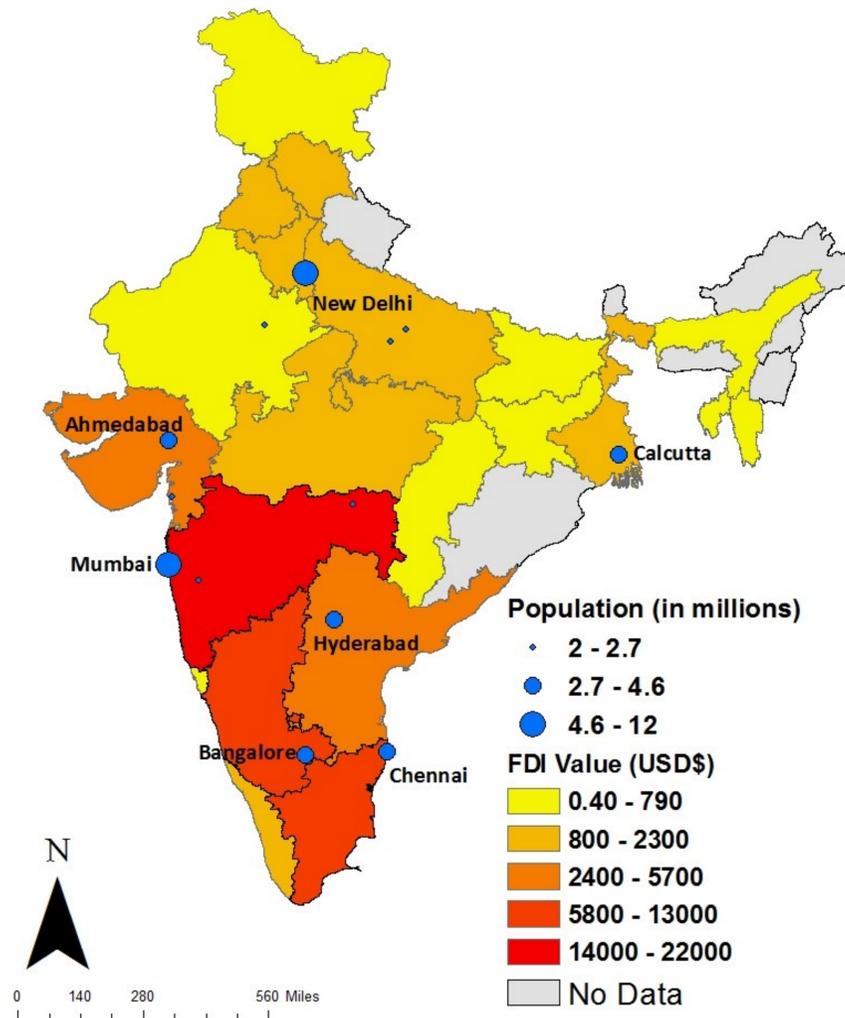
Foreign direct investment (FDI) is a significant driver of development for low and middle-income countries. Inflows of FDI bridge the gap between the desired and the actual level of capital stock, especially when domestic investment is not sufficient to push the actual capital stock up to the desired level. The literature shows certain factors are significant determinants of FDI inflows to a region, including infrastructure level, average education level of the population, labor cost, GDP, GDP growth rate, and the level of political stability. In India, there is great amount of variation in the value of FDI inflow by state, with 90% of FDI going to only five states. I sought to investigate why certain states received more investment than others, and whether these patterns were spatial or not. A better understanding of these differences is important for promoting balanced regional development in the country, especially given the observed relationship between FDI and increased economic development. Moreover, I hope that this research could be used in understanding the spatial determinants and regional variation of foreign investment in other developing countries similar to India.

## Methods & Results

I created individual layers based on my nine independent variables of state level data: GDP, minimum wage (both in Indian Rupees) GDP growth per capita, education quality, urban share of population, power availability per capita, average road density, and average national highway density. I also created a dummy variable- "four state"- to represent the states in which there was one of the four most populous cities in India: Mumbai, New Delhi, Chennai, and Bangalore. These cities are present in the states of Maharashtra, Delhi, Karnataka, and Tamil Nadu. I then ran a least squares regression to determine the effect of each explanatory variable on FDI. I found that two of my variables- GDP and presence in a state with one of the four most populous cities- were statistically significant. Power availability was also highly correlated with FDI inflow, while minimum wage and education quality showed no significant correlation. Based on these results, I also created a map showing the largest cities in India (over 2 million people) by population size and FDI inflow between 1991 and 2001.



## FDI Inflow (1991-2001) and Populous Cities



## Limitations

Because I only had FDI values on the state level for 28 states, I was not able to analyze the data for the remaining Indian states. Such a small sample size made it difficult to produce significant results. My study was also restricted by the fact that the data for the independent variables came from different years. Although my FDI data was an aggregate sum of FDI inflow over the decade 1991-2001, none of my independent variables (with the exception of power availability per capita) spanned this exact time frame. Instead, datasets were from different years in the 1990's or early 2000's, and spanned different time intervals. Given that this decade was a period of high economic growth and significant change in India, it is likely that some of the data I did not include was significant, as some of my variables could have been changing on an annual basis. Therefore, it is difficult to draw conclusions from data representing different time frames. Another main area that restricted the potential usefulness of my results was the fact that my data was not annual. FDI often changes year to year as a result of changes in government policy or economic growth level, and therefore it would have been better to analyze it annually. Finally, my FDI data only showed FDI inflow overall, and not investment by sector. Therefore, my analysis could not capture differences in FDI inflow to the technology, manufacturing, or other industries, which may have shown revealing trends or changed the significance of my earlier results.

## Conclusion

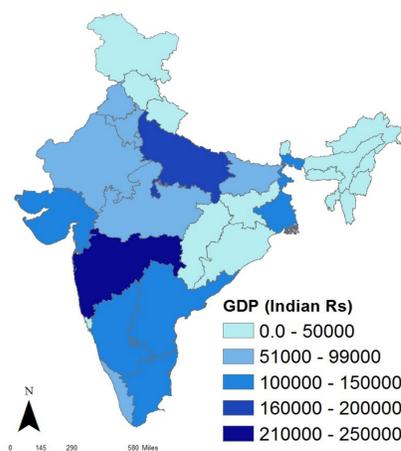
My data confirmed conclusions from the literature that GDP and proximity to major cities are two major determinants of FDI. This is likely due to the benefits associated with populous cities and large capital stock, such as economies of agglomeration and positive network effects. Both of these factors would make a location attractive to foreign companies looking to invest in a particular state in India. Moreover, power availability showed a high correlation with FDI, likely due to the necessity of power in running businesses. These conclusions are relevant for policy in that they allow relevant stakeholders to better understand the principle draws for foreign investors. Further research should be done with annual data to better analyze the relationship between other spatial factors of interest, such as railroad density or elevation. Another area for further investigation would be the impact of human capital, measured in tertiary education level. It may be more revealing to only look at quality of tertiary education rather than education level overall, since this may be a better indicator of how well a labor force is trained. These results may also be useful in understanding the regional disparities in FDI in countries similar to India. Given that FDI inflow significantly impacts a country's development level, it will no doubt continue to be an important area of study for policy makers in the coming decades as low and middle-income countries continue to develop.

## References

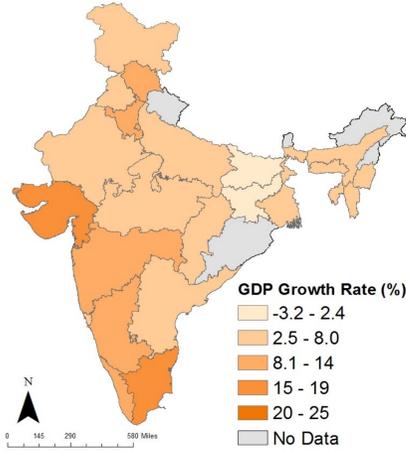
Sources: Tufts Geodata Database, India Stat  
Class: Intro to GIS 101, Fall 2015  
Project Coordination: WGS\_1984 UTM Zone 44  
Cartography: Adrienne Larson



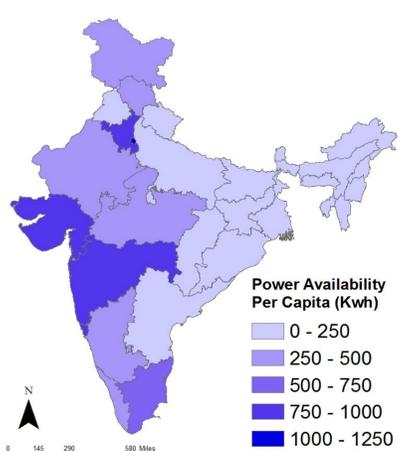
### GDP (Indian Rs)



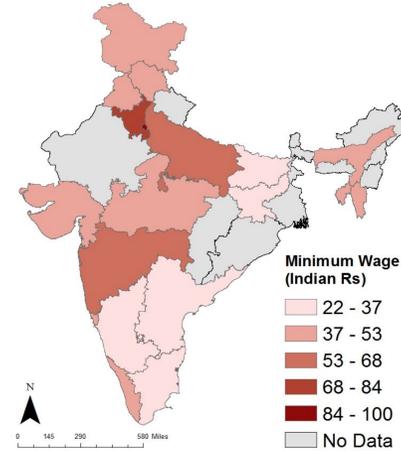
### GDP Growth Rate (%)



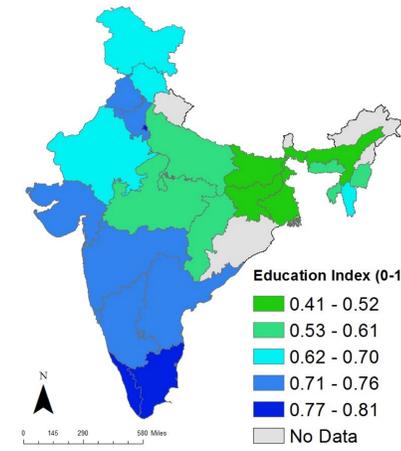
### Power Availability Per Capita (Kwh)



### Minimum Wage (Indian Rs)



### Education Quality Index (0-1)



### Highway Average Density (Km/ Sq Km)

