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The Conundrum of the Disparity of Growth Between Indian States

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The Conundrum of the Disparity of Growth Between Indian States

An Honors Thesis submitted in partial fulfillment
of the requirements for Honors Studies in
International Economics & Business

By

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2015

International Economics & Business
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I. Introduction

India is poised as one of the most important economies of the century. As China rises to be a more prevalent force in the Asian neighborhood, India is the only comparable state in size and growth that could potentially act as a counter-balance. With so much focus on India's large economic growth, how have so few people recognized the large gap in growth rates between Indian states? And how have even fewer questioned the cause of this disparity? The country is one of the largest economies in the world and, since practicing more open-market policies starting in the early 1990s, has been known as one of the fastest growing economies as well. The measures taken to liberalize the market, which included industrial deregulation, privatization of state-owned enterprises, and reduced controls on foreign trade and investment, acted as catalysts to quicken the country's growth, which averaged about 7% per year from 1997 to 2011 compared to world average growth of between 3%-5% during the same time period. However, while it can be agreed upon that India has seen a vast amount of growth over the past two decades, what is not immediately obvious is the large amount of disparity of economic growth between the states of India. Some states see growth rates well below the 7% average, while others see growth well above that rate. For example, Gujarat is one of the richest Indian states, compared to Bihar, which is one of the poorest. With relatively similar annual GDP growth, the gap between the two states is not closing in the areas of percent of output or GDP per capita (Nagaraj et al., 2013). The question that must be researched is what is responsible for causing numbers that in many cases would be considered to be relatively extreme? It is a bit of a conundrum. India has many challenges that must be addressed, including an inefficient power generation and distribution system, and high spending and poorly targeted subsidies. How is it that Indian states that

seemingly have similar advantages can perform so differently? The hypothesis for this question is that policies put in place after India's independence from Britain in 1947 led to some states being currently tied up in bureaucracy and red tape, while others are perfectly placed to take part in the free market. This hypothesis will be studied as a two-part question; (1) Did certain factors such as national and state politics or state national resources have an effect on the level of support for industrialization from the central government to the states, (2) Did support to the states cause a larger number of state enterprises in the time before reform, with a negative effect on GDP Per Capita in the present?

After gaining liberalization from Britain in 1947, India began to follow the policy of the Permit Raj, which was an intricate system of licenses, regulations and red tape that were required to set up industry in India between 1947 and 1990. The policy was the result of India's decision to have a planned economy with heavy government control on industry through which GDP grew at about 3.63%. During this time the Indian economy had widespread regulation, protectionism, and state ownership of large monopolies.

After independence, the government of India started on the implementation of several ambitious projects of large infrastructure and development initiatives called "Five Year Plans." The plans were to be a replication of the Soviet Union's model of economic development. The focus was on industries in sectors such as power generation, iron and steel, machine tools, locomotives and automobiles and to move forward with rapid realization of goals by developing large state owned enterprises. This model focused on developing heavy industries through State Owned Enterprises (SOEs) in states that had easy access to natural resources, such as hydroelectric power, iron ore, and coal. States

that were comparatively lacking in the natural resources necessary for such industries were relatively neglected in participation in planned economic development.

In 1991, the Indian government was facing rising deficits. This was a result of high oil prices and an inadequate level of exports. By this time India's deficit had risen above 3% of its GDP. India went to the International Monetary Fund (IMF) for assistance, which was granted, but only under the conditions of the "Washington Consensus" policies. These policies required significant economic reforms on the part of India. Washington Consensus set forth ten policies for market reform: fiscal discipline, increased public expenditure on health and education, tax reform, interest rate liberalization, a competitive exchange rate, the removal of barriers to trade and barriers to foreign investment, privatization, deregulation, and secure property. These were what would be progressively required of India. Subsidies were restricted and tariffs were lowered. The 40% cap on foreign ownership was removed and this allowed for more foreign directed investment (FDI). The focus of my research will be how this policy affected individual Indian states comparing the outcome for economic growth and the infrastructure that was already in place both regulatory and socially.

After being liberated from Britain, the Indian policy of industrializing through state owned enterprises (SOEs) distorted incentives and inhibited free enterprise. The complex system of licensing procedures created delays, prohibitions and barriers to entry for natural entrepreneurship. When the Indian economy was liberalized in 1991, the poorer states that had been under-industrialized were in the right position to take advantage of the opportunities of the now relatively free market. The regions that had been made use of within the plans for industry with a high number of SOEs were

inhibited by convoluted bureaucracy and fell behind. Since the liberalization of the Indian economy, there has been a resulting “divergence of fortune” among the Indian states. Some states have a rapidly growing GDP while others face a more sluggish outlook and there has been great variation in the growth performance of the states. States generally fall into one of two categories: forward or backward. Forward states have higher levels of per capita income, better infrastructure, higher per capita resource flows, private investment, and better social and demographic indicators, while the backward states do not. Although they faced what would be considered a comparatively worse off starting point at the time the liberalization of the market, poorer states do not necessarily lag behind economically. Richer states experienced a degree of convergence during the post-reform period while the poorer states did not.

The hypothesis is based on market-based economies experiencing better economic performance than economies with high levels of government-sponsored industry. The objective is to study the relationship between government involvement, and the impact of these factors on economic growth. The objective in this project is to carefully examine this hypothesis by using detailed data from India. The goal of this research paper is to determine if there is a correlation between state resources or party affiliation and the outlay from the central government and also to determine if there is a correlation between government outlay and the eventual number of state enterprises and in turn if those state enterprises had an effect on the current GDP Per Capita.

The next section will cover comparable theories for this disparity such as the geographical and reversal of fortune hypotheses. The following will address the data and the steps taken determining the validity of the proposed hypothesis after which the next

section will report the results. The last section will further elaborate upon the results discussing potential further research.

II. Methodologies from previous studies

Although there has been little study into the disparities of economic progress in Indian states there has been comparable study into the role of institutions in growth. One study, done by Murphy, Shleifer, and Vishny, is a proponent for the idea of the “Big Push” in which simultaneous industrialization of many sectors of the economy can be profitable overall even when no individual sector can be successful in industrializing alone. This idea is presented through a model demonstrating firms producing different products investing and expanding production simultaneously, allowing them to all sell of their output to each other's workers and making them able to afford to pay a wage premium and still break even. (Murphy et al., 1988) This model shows two equilibria, one with and one without industrialization. In the case of India, this would mean that successful states grew in one big push allowing for one industry to prop up another, while those that are unsuccessful are so because of the moderate approach. The study continues to demonstrate other such models with the common feature of complementarities between industrializing sectors. In a study done by Sachs, Bajpai, and Ramiah, the purpose is to explain the growth experiences of 14 major states of India between 1980 and 1998 by examining whether per capita incomes in the states have been converging or diverging. (Sachs et al., 2002) The study concludes that richer states experienced a degree

of convergence during the post-reform period, while the poorer states did not and were more likely to show divergence.

The Reversal of Fortune Study (Acemoglu et al., 2002) looks into areas such as the correlation between urbanization and population density with economic growth. Acemoglu investigated the link between urbanization and income using cross-sectional regressions, studying urbanization and income per capita from 1750 to 1913 of income per capita on urbanization regressions. The Reversal of Fortune also studies the geography hypothesis claims that differences in economic performance reflect differences in geographic, climatic, and ecological characteristics across countries. Acemoglu investigated the link between urbanization and income using cross-sectional regressions, studying urbanization and income per capita from 1750 to 1913 of income per capita on urbanization regressions. This is found to not have a substantial effect on performance. The study that I am proposing has the added value of following the trail of assumptions. The Indian government assumed that it would be able to make great progress by supporting economic development in areas with more geographic and ecological resources. My study will determine the effect of this assumption in the long run, after the state has stopped regulating the market.

The main hypothesis of the study is that societies that are prosperous today will stay prosperous because of the organization of the society. The belief is that a cluster of institutions that ensure property rights are necessary for economic growth. If a major shock, like colonialism disrupts the institutions of that society and establishes extractive institutions it will result in a reversal of fortune. While this can account for the broad

question of why some societies do better than others, it does not address how states within the same society can differ in economic growth so much.

This study follows the trail of assumption. The Indian government assumed that it would be able to make great progress by supporting economic development in areas with more geographic and ecological resources. This paper studied the effect of this assumption in the long run, after the government has stopped regulating the market.

As a starting point, the 15 states chosen were those from the Ghosh study covering the period 1960/61–2006/07, and evaluating economic performance in Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.



Source: Registrar General and Census Commissioner (2001).

It examines regional divergence in per capita income during the pre- and post-reform periods, doing a regional analysis. In this study, Ghosh establishes that there are large variations in the growth performance of the states. Some states are growing faster than the economy, while others have growth rates that are slower than the national average. Ghosh tested for convergence of the states' per capita incomes empirically by estimating cross-sectional regression of the annual growth rate of per capita income on the initial level of per capita income. The results suggest that the ongoing economic reforms have heightened state disparity in per capita income. The states with higher initial levels of per capita income grew faster than those with lower initial levels during the post-reform period. (Ghosh, 2012)

III. Data and Methodology

For this study, the population data employed was retrieved from the 1951, 1961, 1971, 1981, 1991, 2001, and 2011 Indian Census. The data for the industrial resources, state public sector undertakings, GDP per capita, and outlay of funding from the central government has been retrieved from the 12 five-year plans and other reports from the Indian Planning Commission.

To determine the role of policy, it must be determined if factors such as political affiliation, mineral resources, and population has a role in where the central government would allocate during the initial planning stages and if the initial outlay of central support has an effect on current GDP per capita.

Table 1

State	Party Similarity	Resources 1956	Outlay (R.cr)	Population 1956	GDP Per Capita 2010
ANDHRA PRADESH	1	0	119	31115000	2726.449
ASSAM	1	1	57.9	8029000	1015.53
BIHAR	1	2	194.2	29085000	931.2154
KARNATAKA	1	1	80.6	19402000	3757.606
KERALA	0	0	72	13549000	2757.771
MADYA PRADESH	1	3	123.7	18615000	5385.852
MAHARASHTRA	1	3	266.2	32003000	1279.264
ORISSA	1	3	100	14646000	3837.468
PUNJAB	1	0	126.3	9161000	1171.047
RAJASTHAN	1	1	97.4	15971000	3539.051
TAMIL NADU	1	2	173.1	30119000	1908.69
UTTAR PRADESH	1	1	253.1	60274000	2990.707
WEST BENGAL	1	3	153.7	26300000	1074.065

State party similarity with state governments that have been aligned with the national government for three years or more, showing 1, and if less than three years showing 0. The number of resources show if the state has iron ore, coal, or zinc; 0 if it has none, 1 if it has one, 2 if two of the resources are present, and 3 if three are present. The outlay is the amount of funding from the central government to the state.

For the data in Table 1, Party Similarity shows the correspondence between the national and the state party. If both the national and state party have been aligned for 3 or more years it is depicted as a dummy variable of 1. If the national and state parties are not aligned or have been aligned for less than three years it is depicted as 0. The Resources category refers to three main resources considered by the Planning Commission according to the first three five-year plans: iron ore, coal, and zinc. The number shown refers to the number of resources the state was known to have at the time of initial planning (i.e. Bihar was known to have two out of three of the desired resources). The data for Table 1 is pulled from the second five-year plan in 1956.

The data compiled was also used to determine if there is a relationship between state resources identified in the initial planning periods and the number of public sector undertakings (PSUs) within each individual state by the time the start of the reform period, or between party similarity in 1956 and PSUs, as well as the relationship between the number of PSUs and GDP per capita in 2010.

Table 2

State	Coal	iron ore	zinc	Total	PSUs	GDP Per Capita 2010	Party Similarity 1956
ANDHRA PRADESH	0	0	0	0	40	2726.449	1
ASSAM	1	0	0	1	42	1015.53	1
BIHAR	1	1	0	2		931.2154	1
GUJARAT	0	0	1	1	37	1251.18	
HARYANA	0	0	0	0	22	1515.46	
KARNATAKA	0	1	0	1	78	3757.606	1

KERALA	0	0	0	0	102	2757.771	0
MADYA PRADESH	1	1	1	3	18	5385.852	1
MAHARASHTRA	1	1	1	3	48	1279.264	1
ORISSA	1	1	1	3	27	3837.468	1
PUNJAB	0	0	0	0	24	1171.047	1
RAJASTHAN	0	0	1	1	22	3539.051	1
TAMIL NADU	1	1	0	2	67	1908.69	1
UTTAR PRADESH	0	0	1	1	50	2990.707	1
WEST BENGAL	1	1	1	3	49	1074.065	1

Party similarity with state governments that have been aligned with the national government for three years or more, showing 1, and if less than three years showing 0. The Total number of resources show if the state has iron ore, coal, or zinc; 0 if it has none, 1 if it has one, 2 if two of the resources are present, and 3 if three are present. PSUs shows the number public sector undertakings during the time period from 1985-1993.

The data in Table 2 was retrieved from Indian Planning Commission reports and the World Statesmen Encyclopedia. It depicts the states' resource allocation as well as their number of PSUs, GDP Per Capita in 2010, and party alignment between the central government and states.

For this study, it is prudent to first consider if there is a correlation between political similarity and central government outlay to each state, the availability of the resources determined in the initial planning and government outlay, and the population of each state. It is necessary to consider if the outlay from the government was used to determine if each factor individually had any effect on how much the planning commission chose to allocate for industry development. Next it must be determined if there is a correlation between the Commission's plans for outlay during the initial five-year plans and current GDP Per Capita as a means to establish if government planning and intervention has had long term effect on GDP Per Capita. Using the data from Table 2, it is also necessary to determine if there is a correlation between the number of

resources within each state during the initial planning stages and the number of PSUs established during the time before market reform and in turn check for a correlation between the number of PSUs at the time of financial reform and current GDP Per Capita for each state.

Because all states did not start with the same GDP Per Capita, it is necessary to control for their GDP Per Capita at the onset of state planning. And so a regression is used to determine if there is a correlation when previous GDP Per Capita is taken in consideration. A regression is also used to determine if there is a correlation between the initial government outlay and current GDP Per Capita when controlling for initial GDP Per Capita.

IV. Results

The hypothesis of this study is in two parts. The first part is based on the idea that during the initial planning stages of the Indian Planning Commission; states were categorized into groups that would determine the amount of central government support for industrialization moving forward. Based on the planning documents it can be determined that specific states were earmarked for higher amounts of funding from the onset decided by a range of variables (1st Five Year Plan.) In this particular study, the variables examined are the relationship between state and national party, the presence of a few key industrial resources, and population.

The second part of the hypothesis, addresses the assumption that a higher outlay from the central government led to a higher level of state intervention in the market by

way of PSUs, which in turn led to a stunted economy in the present. Previous studies have touched on this hypothesis as an explanation for the divergence within the Indian economy.

For the data from Table 1 there is a very small correlation between government outlay and party similarity as well as between government outlay and resources, showing that alignment between the national controlling party and the state controlling party did not play a significant role in how much the central government would allocate to the states for economic development. Neither did the presence of resources crucial to development within a state play a large role in how much funding a state would receive. There is a large correlation between the population of a state and the amount of planning funds allocated to each state. With a correlation number of (-0.293) there is only a small correlation between initial central outlay and current state GDP Per Capita. With that it can be determined that variable such as population played a larger role in determining how large an allocation a state would receive than a similarity of policy or the resources available.

Correlation between Party Similarity, Resources, Population and GDP Per Capita to Outlay

	Party Similarity	Resources	Population	GDP Per Capita
Correlation	0.30897	0.37844	0.80393	-0.29346

With the data from Table 2, there is almost no correlation between the resources within each state during the initial planning period and the number of PSUs present by the start of market reform, nor is there correlation between the number the number of PSUs during the beginning of economic reform and present GDP Per Capita. There is a surprising negative correlation between Party Similarity at the start of planning and the number of PSUs at the start of the 90s, meaning that when the national and state parties were aligned, there were fewer establishments of PSUs within those states.

Correlation between Resources, Party Similarity, and GDP Per Capita to Number of PSUs

	Resources	GDP Per Capita	Party Similarity 1956
Correlation	-0.15933	-0.06184	-0.69000

Because starting economic status is an important factor in future GDP Per Capita, it was necessary to control for GDP at a point previous to market reform. When controlled for an earlier GDP Per Capita in 1970, the correlation between current GDP Per Capita in 2010 and the initial five-year plan outlay changes from a low negative (-0.293) to a high positive (0.610) meaning that when controlling for the starting GDP Per Capita of the states, the higher the outlay from the central government, the higher the GDP Per Capita.

Controlled Correlation between Party Similarity and Resources with Outlay

<i>Regression Statistics</i>	
Multiple R	0.61002
R Square	0.372125
Adjusted R Square	0.257966

Standard Error	1156.835
Observations	14

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	8724709	4362354	3.259705	0.077322
Residual	11	14720933	1338267		
Total	13	23445642			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-306.953	1367.513	-0.22446	0.826513
X Variable 1	-0.68604	3.120787	-0.21983	0.830032
X Variable 2	4.684042	1.836398	2.550668	0.026963

With regards to the correlation between the number of PSUs at the start of market reform and the current GDP per capita (2010) , when controlled for the earlier GDP Per Capita (1970), there is a high correlation between the number of PSUs and the current GDP Per Capita, meaning that the more PSUs in the state at the start of the reform the higher the current GDP Per Capita. This outcome is opposite of the hypothesis that more government involvement by way of these state enterprises played a part in stunting the economic growth of the involved states.

Controlled Correlation between Outlay and PSUs with 2010 GDP Per Capita

<i>Regression Statistics</i>	
Multiple R	0.866109
R Square	0.750144
Adjusted R Square	0.700173
Standard Error	721.0427
Observations	13

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	15609072	7804536	15.01153	0.000974
Residual	10	5199026	519902.6		
Total	12	20808098			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-2398.14	978.9326	-2.44975	0.034272
X Variable 1	36.90144	8.73419	4.224941	0.001758
X Variable 2	5.083876	1.248705	4.071319	0.002245

V. Discussion

The hypothesis that resources and party affiliation would be shown to have an effect on the considerations of the planning commission when determining the central government funding for industry development during the initial planning stages was not proven to be true, nor was the continuation of the hypothesis that state intervention by way of funding for industry development and the creation of public sector undertakings would have a negative effect on the long-term economic growth of individual states.

There are multiple reasons for these outcomes. For the first part of this hypothesis a more in-depth look at data taking a year-by-year look at outlay and political affiliation beyond the general look at length of time for political party alignment between state and national governments. A look at the year-by-year outlay for development from the central government could yield a different outcome. Taking a closer look beyond just the presence of particular resources within states and instead including a wider range of resources beyond the top three particulars listed within the planning documents, as well as including the actual amount and breadth of these resources within each state to give a

better picture of the range of availability for particular industries by potential of what resources already existed within the state could also tell a different, more complete story. Within the present outcomes, there is no relationship between the amount of resources and the amount support from the central government. In the documents for the first five-year plan, states were sectioned by outlay into three categories of A, B, and C.

State Plans

(Rs. crores)

part A states

Assam	17-49
Bihar	57-29
Bombay	146-44
Madhya Pradesh	43-08
Madras	140"84
Orissa	17-84
Punjab	20-21
Uttar Pradesh	97-83
W. Bengal	69.10
total	610-12

part C states

Ajmer	1-57
Bhopal	3-90
Bilaspur	0-57
Coorg	0-73
Delhi	7-48
Himachal Pradesh	4-55
Kutch	3-05
Manipur	1-55
Tripura	2-07
Vindhya Pradesh	6-39
	31-86

part B states

Hyderabad	41-55
Madhya Bharat	22-42
Mysore .	36-60
Pepsu .	8-14
Rajasthan	16-82
Saurashtra	20-41
Travancore- Coch in	27-32

173-26

States categorized by future outlay during the first five-year plan. 1951

The low level of correlation shows that these groupings were not as politically motivated nor resource based as hypothesized.

For the second part of the hypothesis addressing the long-term effects of PSUs on GDP Per Capita, the survey done by the Planning Commission only had a 50% participation rate, which could have potentially skewed the results. The thought behind the hypothesis was that states that received more funding would have a higher level of planned implementation of industry building through PSUs which would in turn leave behind a more bureaucratic and red-tape-laden system after the start of the reform period hindering the long-term growth of the state economies. The data collected showed this to not be true. There is potential that a closer study of more specific PSUs might uncover a negative correlation between certain types of PSUs and GDP Per Capita or that a more comprehensive set of data might show a correlation in the opposite direction or no correlation at all.

Overall, there is insufficient evidence from this study to suggest that state resources or political alignment had an effect on the support for industry building during the planning period. There is also no sufficient evidence to suggest that establishment of state PSUs had a negative effect on freedom economic growth.

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