An Empirical Analysis of Investment Determinants in Indian States: 1998-2006

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Abstract

India's economic reforms in 1991 permitted investors to freely choose their preferred investment locations across the various states in the Indian union, leading to competition between states to attract investment projects through a bettering of their investment climates. The performance of states over the past 17 years in terms of attracting investments has widely varied: two states, Maharashtra and Gujarat have together accounted for over 30% of India's investments projects while other states have been much less successful. Some states, after a period of considerable neglect, have seen steady upswings in investment inflows while some others have fallen from their past images as good investment destinations.

Using panel data across 18 of India's most economically active states and covering the period 1998-2006, this study attempts to determine the critical factors which drive investment inflows across Indian states. The empirical findings predict that political stability and fiscal reforms are the two most important factors determining investment inflows across states. Using a disaggregated analysis, the study predicts that states successful in maintaining political and fiscal stability stand to gain most from public investments in human capital formation in terms of increased investment inflows. The study concludes that investors select states as investment destinations predominantly on the basis of their contemporary socio-economic performance as opposed to their past images as investment destinations.

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I. Introduction

Economic reform of the Indian economy in 1991 included, among other measures, the withdrawal of state control over the private sector and the abrogation of the Industrial Licensing Act which offered investors freedom to choose their investment location within the country. Previously, the Industrial Licensing Act required individual investors to petition the central government with regard to their investment proposal and New Delhi reserved the final say on the location of the investment in an effort to maintain equitable regional distribution of industries.[2]

With investors at liberty to choose their preferred investment destination amongst the various states in the Indian union, there arose an intense competition across states to obtain a share of the upcoming investment projects. This resulted in most state governments striving to better the investment climate prevailing in their respective states to make them conducive to inflows of domestic and foreign investment. Establishment of an investment project in a state has the potential to generate state income and output in addition to providing employment opportunities to local residents. Alhuwalia (2002) identifies private investments as the primary determinant of economic growth across states.[3] Dollar, Iarossi and Mengistae (2002) also expect a good investment climate to facilitate a higher volume of investment inflows, especially in the high productivity manufacturing and services sectors, leading to job creation, income growth and, ultimately, poverty reduction.[4] Ferro, Rosenblatt and Stern (2004) identify a good investment climate to be a key factor driving agricultural productivity and non-farm growth, especially through small-scale and medium-scale enterprises. The above-mentioned authors recognize an investment climate conducive to growth acceleration to be one of the pillars of poverty alleviation.[5]

An additional benefit emanating from investment inflows is an upsurge in tax revenues. Most Indian states remain heavily indebted with high borrowings (though fiscal deficits have reduced in the past four years); however, direct tax returns from profitable investment projects (and indirect returns from central

2 Anne O. Krueger and Sajjid Chinoy. "The Indian Economy in Global Context" in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: The University of Chicago Press, 2002). 23.

3 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 105-106.

4 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

5 Manuela Ferro, David Rosenblatt and Nicholas Stern. "Policies for Pro-Poor Growth in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 153-156.

transfers through rising individual incomes within states) have the potential to improve the fiscal positions of individual states.

Previous studies across Indian states have mostly focused on factors affecting economic growth or poverty reduction. Two cross-sectional studies, Giuseppe, Iarossi and Mengistae (2002)[6] and Veeramani and Goldar (2004)[7] discuss the effects of investment climate on total factor productivity in the manufacturing sector. Both these studies select a number of variables which together constitute the investment climate of a state and test their effect on total factor productivity using firm level data.

This paper, using panel data across 18 states and over a period of nine years between 1998 and 2006, attempts to identify the critical factors which determine investment inflows across Indian states. Concomitant with its analysis of the various determinants of investments in Indian states, the paper also links the empirical results with various policy implications for states to potentially improve their investment climates and attract greater volumes of investment.

The role of states in determining the amount of investment it receives cannot be underestimated. Though the federal framework of India causes all states to face certain common macroeconomic policies such as monetary policy and trade policy, states do retain extensive control over local administrative regulations, provision of infrastructure (including power and roads), state taxation, and provision of basic social services such as health and education.[8]

The 18 states chosen in this study account for nearly 94% of investments projects implemented in India and over 95% of India's output and population. Limitations of data force us to restrict our time period to only eight years. Also, the three new states of Chhattisgarh, Jharkhand and Uttaranchal have been omitted from this study. These states were carved out of the states Madhya Pradesh, Bihar, and Uttar Pradesh in 2000. Two out of these three states, namely Chhattisgarh and Jharkhand, are located in the mineral-rich belt of east-central India and have over the past three years attracted a disproportionately large amount of heavy investment projects, especially in the mining sector. The states, however, remain poor with respect to physical and social infrastructure and a lot of the investments are in the proposal stage with a small percentage of proposed projects implemented. A further period of observation

6 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

7 C. Veeramani and Bishwanath Goldar. "Investment Climate and Total Factor Productivity in Manufacturing: Analysis of Indian States (Working Paper No. 127)." Indian Council for Research on International Economic Relations. April 2004.

8 Manuela Ferro, David Rosenblatt and Nicholas Stern. "Policies for Pro-Poor Growth in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 169.

and data is, therefore, required for these states before framing their analysis.

The rest of the paper is structured as follows: the next section (Section II) discusses factors inherent within states which could have an effect on investment inflows. Section III discusses the independent variables in the model. Section IV lays out the key results from the various regression models and is followed by Section V, which contains a brief discussion of the results. The concluding section (VI) of the paper attempts to link the various results obtained with future policy implications.

II. A Theoretical Discussion of Factors Affecting Investments

Investment in this study refers to only manufactured goods and services so the typical investor in our model has the sole objective of profiting from the investment. In this respect, an investor's desire lies in maximizing his profit. Profit (π) can be expressed as:

$\pi = TR - TC$ or $\pi = (P*Q) - (Q*C)$ where TR is total revenue, TC is total cost, P is the price at which the item is sold, Q is the number of items which are produced, and C is the cost of production for each unit. The booming private sector in India means that competition exists within all sectors so it would be safe to assume that all the firms involved in the model are price-takers. Though all barriers to interstate flow of goods in India have not yet been removed, the implementation of the value added tax (VAT) by all states has been a step forward towards integrating the Indian economy as a single market. Even with existing barriers, there is significant transportation of goods and services across the county which makes it safe to assume that investors in the model have access to the entire Indian market (Economic Survey of India, 2008).[9]

In this respect, a firm essentially has to produce its revenue-maximizing quantity of products at minimum cost to maximize its profits. From the perspective of our study, the question of interest is how inherent factors within a state can affect a firm's ability to minimize its costs of production. The central assumption in our study is that a state unable to offer a suitable investment climate facilitating cost minimization would be a net loser in terms of investments received.

A firm's ability to successfully minimize cost is determined by its production function: $Q = f(K, L)$ where K and L are inputs of capital and labour, respectively. In light of this, we believe that states with a relatively skilled labour force, due to high levels of human capital development, can be expected to have higher labour productivity contributing to more efficient production at a lower cost.

9 The phasing out of the Central Sales Tax (projected to be phased out by 2010) should complete this process.

Labour productivity is positively affected by labour quality, which is typically expressed as a function of the educational qualifications and physical health of workers. With the world moving towards a global economy, workers with a relatively high level of educational attainment would be better equipped to work in the high productivity sectors of the economy such as the manufacturing and service sectors. Rates of absenteeism due to physical ailments would also be reduced in the presence of a healthy labour force. Consequently, states possessing a work force with a high degree of labour quality can expect to receive a higher inflow of investments.

In addition to labour quality, labour productivity within states can also be affected by political factors. Labour militancy and unionism can affect the production process through frequent work stoppages and affect labour productivity. Similarly, strikes, political unrest, and an insecure work environment can also have negative effects on labour productivity (and depreciation of physical capital if there are damages to firm equipment) through temporary cessations of work. These factors also determine the 'risk' associated with the investment. From this perspective, states with a stable political environment and a cooperative labour force should receive higher investment inflows.

Most, if not all, investment projects under consideration in this study are dependent on electric power. A state which can offer reliable power supply at a low cost to industrial and commercial consumers will provide investors with a lower cost of production and be preferred as an investment destination. The same analogy can be drawn regarding other physical infrastructure, like roads. States possessing a network of quality roads within its borders and well-connected with the rest of India facilitate producers through smooth market access and lower transportation costs. Production costs are also reduced through timely arrival of goods to markets and a reduction of the probability of losses during transportation of products from factory to market, especially with regard to perishable goods like food products.

Contemporary India has a booming service sector which makes virtual connectivity as important as physical connectivity since many modern firms rely primarily on the telephone and the internet to maintain their operations.[10] States which possess sound telecommunication facilities will be able to attract these investors. It needs to be mentioned that most investments depending on telecommunications are generally associated with a high level of technological efficiency and consequently have higher rates of productivity and growth. Such firms are also able to offer its employees higher wages.

Finally, bureaucratic inefficiencies and delays add to transaction costs

10 This is especially true of firms which have international operations and firms which are in the 'knowledge economy' or sectors such as the IT sector or pharmaceutical sector.

and hinder the starting of the production process. Red-tape often causes hold-ups in obtaining various clearances and permits, essential to the establishment of the plant.[11] These clearances, which can be as high as 30, come from various departments such as the labour welfare department, environmental agency, and so on.[12] Many states have attempted to streamline this process through the creation of single window agencies from which all approvals can be obtained. Nonetheless, poor economic governance due to bureaucratic inefficiencies and cumbersome regulations creates additional fixed costs for investments and particularly hamper firms in the small-scale and medium-scale sectors which typically do not possess the political contacts required to circumvent bureaucratic hassles.[13] In this respect, states successful in reducing red-tape and maintaining a supportive bureaucracy for investors reduce fixed and other transaction costs for firms and are more conducive to investment inflows.

Before we embark on our empirical analysis, it must be noted that there are significant data limitations involved in measuring each of the factors mentioned in the above section which affect the costs of production. Data on physical and social infrastructure such as roads, tele-connectivity, educational profile of labour force, hospital beds or doctors per capita are not easily available on a time series basis across states. This forces our study to include a large number of proxies to substitute for these variables. Variables measuring governmental efficiency, such as bureaucratic sluggishness (typically measured by number of days required to obtain a clearance or start a business and the number of monthly visits undertaken by government inspectors to factories), are also not available over time.

III. Variables and Data

Dependent Variable

The dependent variable for the OLS, random effects, and fixed effect models is 'investment proposals per capita' (*Investment*) in a state for a given year. The variable is measured in Rupees. 'Investment' in our model covers over forty industries including agriculture, manufacturing, textiles, heavy industries, petroleum and other industries in the service sector. The data is reported by the Secretariat for Industrial Assistance, Ministry of Commerce and Industries.

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11 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 117.

12 Ibid.

13 Manuela Ferro, David Rosenblatt and Nicholas Stern. "Policies for Pro-Poor Growth in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 166.

Independent Variables

There are seven key independent variables in the model.

Social Sector Expenditure (Social)

Social sector expenditure covers government expenditure in the public health and education sectors. The variable is expressed as a percentage of total disbursement of the state government and the data is reported by the Reserve Bank of India.

Even after significant increases in privatization of health care and education over the past 15 years, most privatized schools and health units are located in large cities, while rural areas and smaller cities remain dependent on public health care and education. In higher education, many private schools, colleges, and universities also receive government grants which make the role of public funds quite significant in determining the quality of health and education available in a state. In this respect, government expenditure in these sectors is used as a proxy for the quality of health and education in the state.

A high quality of health and education in a state would make it attractive for investment in two ways: firstly, skill-level of employees is better with a high quality of education and health care, which raises labour quality and productivity within the state. Veeramani and Goldar (2004) find a positive correlation between the percentage of workers in the manufacturing sector with secondary education in a state and the state's investment climate as perceived by business managers.[14] Post economic reforms, the service sector has been India's engine for growth with significant contributions from the knowledge economy (IT industries, pharmaceuticals etc.). Sachs, Bajpai and Ramiah (2002) note that establishment of such industries require strong linkages with educational institutions for a highly skilled labour force.[15]

Additionally, since many companies invest across multiple states, the perception of their employees regarding the investment location plays into the decision-making process. Established employees with a family might prefer to work in states with a high level of education and healthcare for their personal and family welfare. A booming private sector means that employees in a firm have the opportunity of moving with their feet across companies, providing

14 C. Veeramani and Bishwanath Goldar. "Investment Climate and Total Factor Productivity in Manufacturing: Analysis of Indian States (Working Paper No. 127)." Indian Council for Research on International Economic Relations. April 2004.

15 Jeffery Sachs, Nirupam Bajpai, and Ananthi Ramiah. "Understanding Regional Economic Growth in India (Working Paper No. 88)." Center for International Development, Harvard University. March 2002.

them with sufficient leveraging power over their employers.[16] This constrains investors' choice of investment locations across states as well as within states. In light of these above observations, a positive correlation is expected between social sector expenditure and the dependent variable.

Gross Fiscal Deficit (Fiscal Deficit)

The data for fiscal deficit is reported by the Reserve Bank of India on an annual basis and expressed as a percentage of state domestic product (SDP). Many states until 2003 ran fiscal deficits as high as 6-7% of SDP. In 2004, the federal government passed the Fiscal Responsibility and Budget Management Act (FRBM) which called upon the central government to restrict its fiscal deficit to 4% of GDP. Soon after, many states followed suit and the combined fiscal deficit of states fell from 6.6% of SDP in 2003 to 4.4% of SDP in 2006.[17] Notable success stories have been Orissa and Gujarat, which ran fiscal deficits between 8 and 10% of SDP in 2001 and 2002 and had successfully truncated them to 1-3% of SDP by 2006.

Fiscal deficit in our model is an indicator of the depth of economic reforms undertaken in the state. A most integral yet contentious component of the reforms package was fiscal restraint. Fiscal deficits in most states emanate from politically motivated agricultural subsidies in addition to severe underpricing in the power and transport sectors.[18] Cross subsidization in state-run power and surface transport companies resulted in a subsidization of services for domestic consumers at the expense of industrial users who had to pay higher electricity bills and freight charges. This policy has led to an overconsumption of electricity by households and losses to state electricity boards, in addition to high input costs for commercial users.[19]

From this perspective, a reduction in fiscal deficit has multiple implications. First and foremost, it signifies fiscal responsibility, a willingness to implement tough fiscal and economic reforms, and a restraint from wasteful public expenditures. The funds recovered from ill-directed subsidies can be

16 Mr. Jawahar Sircar, Secretary, Ministry of Culture, Government of India and formerly, Principal Secretary for Higher Education, Government of West Bengal and Principal Secretary for Commerce and Industries, Government of West Bengal. Discussion on the demands made by investors in contemporary India. New Delhi, 24 June, 2007.

17 These figures are specific for the 18 states in our model. For all the 28 states in Indian economy, fiscal deficit as a percentage of State Domestic Product decreased from 4.38% of SDP in 2003 to 1.88% of SDP in 2006. (Planning Commission, Data Table 5).

18 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

19 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 115.

directed towards socioeconomic development, capital expenditures, and human capital formation which could potentially raise labour productivity in the state. A reduction of fiscal deficit can also signify rationalization of user fees for public services (and hence, enhanced delivery of public services) as well as a possible reduction of electricity tariffs and transportation rates for industrial users.[20] Additionally, in most states, the lion's share of state revenue goes to pay salaries, so a reduction of fiscal deficit signals a cutback in the bloated bureaucracies which most states possess[21]. A contraction in the size of the bureaucracy also has the potential to reduce corruption through a reduction of red-tape and removal of inefficient officers. Alhuwalia (2002), for example, mentions that the prevalence of large bureaucracies often forces entrepreneurs to fall prey to the "triple vicissitudes of harassment, delay and corruption."[22]

Finally, fiscal deficits also crowd out both public and private savings and, consequently, public and private investments.[23] This effect was observed between 1997 and 2001 when India's rate of savings and investments both declined in the face of rising fiscal deficits.[24] Prudent fiscal management therefore can have positive impacts on the state's investment climate through enhanced infrastructure development and labour productivity along with a reduction in corruption and bureaucratic delays. This leads us to expect a negative correlation between this variable and investment proposals.

Man-Days Lost in Industrial Dispute (Disputes)

This variable is included in the model as a proxy to measure industrial relations within a state. The data is obtained from the annual publication, Pocketbook of Labour Statistics[25], from the Labour Ministry and industrial dispute is defined as the stoppage of work either due to a strike or a lockout. A state with a high number of man-day losses will typically have low labour productivity, which will adversely affect the state's investment climate. Sachs, Bajpai and Ramiah (2002), for example, attribute the relatively low level of private investment in Kerala, notwithstanding Kerala's outstanding creden-

20 Ibid.,

21 M. Govinda Rao. "State-Level Fiscal Reforms in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 133.

22 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 117.

23 Manuela Ferro, David Rosenblatt and Nicholas Stern. "Policies for Pro-Poor Growth in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 162.

24 Mihir Rakshit. "Some Macroeconomics of India's Reform Experience," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 94-95.

25 They are compiled and collectively reported in the Statistical Abstract of India.

tials in human capital formation, to the existence of a militant labour force.[26] Subsequently, a negative relationship is expected between this variable and proposed per capita investment. To negate the possibility of heteroskedasticity, this variable is normalized for each state as a percentage of total man-days lost in India.

Incidence of Crime (Crime)

Incidence of Crime in a state measures the number of criminal activities occurring in a state in a given year from the filing of First Information Reports. Crimes include theft, robbery, murder, arson, rape, and riots. The data is reported on an annual basis by the National Crime Bureau.[27] To address heteroskedasticity, this variable is expressed as a per capita figure.

The variable serves as an indicator of political stability in the state and provides a picture of the safety and security of public life and property within the state. A high incidence of crime would result in a threat to both life and property, and few investors can be expected to have confidence in a state where the physical well-being of employees and industrial property cannot be adequately safeguarded. Incidents such as rioting or an unsafe work environment can negatively affect labour productivity through closure of work. Thus, a negative relationship is expected between the incidence of crime and the dependent variable.[28]

Installed Power Generation Capacity (Power)

This variable measures the total electric power generating capacity (in megawatts) installed within states. The data is reported annually by the Statistical Handbook of India. Veeramani and Goldar (2004) indicate that a constant supply of power is one of the factors viewed favourably by investors while evaluating a state's investment climate.[29] A similar sentiment is evoked by Dollar, Iarossi and Mengistae (2002), who report that irregular power supply leading to stoppage of work or damage of electrical equipment has forced many firms to purchase generators, placing an added burden on their input

26 Jeffery Sachs, Nirupam Bajpai, and Ananthi Ramiah. "Understanding Regional Economic Growth in India (Working Paper No. 88)." Center for International Development, Harvard University. March 2002.

27 They are compiled and collectively reported in the Statistical Abstract of India.

28 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 118.

29 C. Veeramani and Bishwanath Goldar. "Investment Climate and Total Factor Productivity in Manufacturing: Analysis of Indian States (Working Paper No. 127)." Indian Council for Research on International Economic Relations. April 2004.

costs.[30]

Power capacity also serves as a proxy for physical infrastructure in the model, with the absence of data on roads at the state level post 2002.[31] A high level of physical infrastructure coupled with reliable power supply betters investment prospects in the state by facilitating connectivity with markets and lowering input costs. Therefore, we expect a positive relationship between the power generation capacity in a state and the per capita investment proposals received. The variable is expressed in per capita terms to counter heteroskedasticity.

Investment Projects Implemented (Investment Stock)

The variable measures the total stock of investment projects implemented in each state since 1991. The variable is lagged by two years to prevent any simultaneity with the dependent variable and normalized by population to counter heteroskedasticity.

A high stock of per capita investments implemented indicates that the state has sound socioeconomic fundamentals and an efficient and investor-friendly bureaucracy capable of swiftly implementing investment proposals. If investors base their investment decisions solely on the state's previous record, a large amount of investments implemented in the past speaks highly of the state's investment climate. In this light, a positive correlation is expected with the dependent variable.

However, if β-convergence holds, we would expect contemporary investment flows to decrease in a state which has received a high amount of investment in the past.[32] This is feasible especially if the state has surpassed its capacity to absorb additional investment inflows without running into infrastructural bottlenecks. In such circumstances, a negative sign is expected with the dependent variable. In this respect, there is ambiguity regarding the direction of association of this variable with per capita investment proposals.

Time

The time variable controls for all the other factors in the state which are not accounted for in the model. This variable varies between 1 and 9 for all

30 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

31 Across the period 1998-2002, there exists a moderate positive correlation (about .26) between installed generating capacity in the state and length of roads in a state for the 18 states in our sample which leads us to use installed generating capacity as a proxy for the level of infrastructure prevailing in the state.

32 Jeffery Sachs, Nirupam Bajpai, and Ananthi Ramiah. "Understanding Regional Economic Growth in India (Working Paper No. 88)." Center for International Development, Harvard University. March 2002.

states depending on the year. 1998 has a corresponding figure of 1 and the value for 2006 is 9. As the total stock of investment proposals received by states increases over time, this variable is allowed to increase annually by a value of 1. A possible economic interpretation of this variable could be efficiency gains or increases in factor productivity through technological advancements or enhanced management skills. These factors typically grow over time and can be expected to have a positive correlation with investment inflows.

IV. Empirical Models

Model 1: Testing with All 18 states, OLS and Random Effects Estimation

We shall start our empirical testing by including all the 18 states in our dataset with the implicit assumption that there lies no fundamental difference in the socioeconomic fundamentals across the states. The summary statistics for this model are presented in Table 1 (Appendix).

$$Investment = \beta_0 + \beta_1(Power) + \beta_2(Fiscal\ Deficit) + \beta_3(Investment\ Stock_{t-2}) + \beta_4(Crime) + \beta_5(Disputes) + \beta_6(Social) + \beta_7(Time) + \varepsilon \quad (1)$$

ε is a stochastic error term in the model. We initiate our analysis with a simple OLS model, the results of which are presented in Table 4 (Appendix).[33]

From the results, fiscal deficit, incidence of crime, accumulated stock of investment projects and power generation capacity emerge as the key variables influencing investment proposals for a given state. The positive sign on the stock of per capita investments implemented indicates that the variable is a proxy for the image of the state as an investment destination. The positive coefficient for the variable indicates that the 18 states in the sample have not collectively overshot their capacity to absorb investment inflows (i.e. collectively for these 18 states, β-convergence has not started as yet).

Since our variables are measured in different units, they are not strictly comparable. In order to contrast the relative magnitude of their effects, the OLS estimates are standardized and expressed as the effect upon the dependent variable in terms of standard deviations away from the mean. As standardization of coefficients entails only a scalar operation, the statistical significance of the estimates remains unchanged. The results are presented in Table 5 (Appendix). As the idea of a 'standard deviation' is quite abstract, the table relates the measurement with the corresponding position of a state in our data set within the period under consideration.

33 All tables including the results are presented in the Appendix.

From Table 5 (Appendix), the variable having the largest effect on investment proposals is power generation capacity, followed by incidence of crime and fiscal deficit. A standard deviation increase of one in fiscal deficit has a Rs. 400 lesser impact in reducing per capita investment proposals in a state, as compared to a standard deviation increase of one in the incidence of crime. Stock of investments implemented in the state has slightly less than half the impact on per capita investment proposals as compared to a standard deviation increase in the power generation capacity within the state. The standardized coefficient of the time variable indicates that for every seven and a half years, there would be an increase in per capita investment proposals by Rs. 2,461, Rs. 300 more than the impact of a one standard deviation increment in power generation capacity. We can interpret this measure as Rs 2,462 increase in per capita investment proposals every 7.5 years due to technological augmentation.

To account for the panel characteristics of our dataset, we estimate the model using random and fixed estimates with robust standard errors. The null hypothesis that the coefficients from the random effects and fixed effects estimations are the same cannot be rejected by the Hausman test, so the random effects estimates are used and reported in Table 6 (Appendix).

With the random effects estimation of the model, stock of per capita investments implemented in each state drops out as a significant variable. Fiscal deficit, power generation capacity, incidence of crime, and time remain as significant variables in the model. Upon standardizing (Table 7, Appendix) the coefficient estimates, fiscal deficit has the largest effect on per capita investment proposals followed by power generation capacity: a one standard deviation increase in fiscal deficits causes Rs. 2,548 fall in per capita investment proposals and a one standard deviation increase in power generation capacity boosts per capita investment proposals by Rs. 2,115. Incidence of crime now has a smaller impact on the model: the effect of a one standard deviation increase in the incidence of crime reduces per capita investment proposals by Rs. 935, about two and a half times less than the effect of a one standard deviation increase in fiscal deficit. The standardized coefficient for the time variable signifies that for every seven years, the positive stimulus provided to proposed per capita investments through efficiency gains is Rs. 100 more than a one standard deviation increase in power generation capacity.

Disaggregating the States

The analysis carried out in the previous section assumed that all the states were homogenous with respect to their socioeconomic fundamentals. However, data and existing literature suggests that some states have managed to

attract higher levels of investment inflows due to a significantly different investment climate in comparison to their counterparts. This necessitates a disaggregation of our data set into groups of states classified by the quality of investment climate prevailing in them. Veeramani and Goldar (2004), for example, use the Firm Analysis and Competitiveness Survey (FACS) conducted by CII[34] and World Bank in 2002, which ranks 12 states according to their investment climate, to disaggregate their data set.[35] The rankings are based on the perception held by business managers in the manufacturing sector of the investment climate prevailing across different states in the Indian union. The states perceived by the majority of the business managers to possess the best investment climates were Maharashtra and Gujarat, while the three southern states, Andhra Pradesh, Karnataka, and Tamil Nadu, had 'good investment climates.' Kerala, Uttar Pradesh and West Bengal were viewed as having 'poor investment climates.'

Dollar, Iarossi and Mengistae (2002) also use the above classification of states to test for differences in productivity for firms in good and poor investment climate states. They report that the total factor productivity is 26% higher in 'good investment climate'[36] states as opposed to 'poor investment climate' states. This figure is strikingly similar to the cost differential perceived by business managers in the World Bank-CII survey, which is 30% less in good investment climate states than in poor investment climate states. The study further reports that labour productivity is 45% lower in poor investment climate states and the corresponding difference in the mean wage rate (proxy for skill level in the study) is 28%. Also, the average cost of power is 25% higher in the states with a poor investment climate.[37]

Empirical verification of the perception of business managers regarding investment climate across states indicates critical differences amongst these groups of states in terms of socioeconomic fundamentals, which can potentially affect the volume of investment received by these groups of states. These findings support a disaggregation of the states based on differences in investment climate and investment inflows across groups of states.

Compared to the Firm Analysis and Competitiveness Survey (World

34 Confederation of Indian Industries.

35 Omkar Goswami, A.K. Arun, Srivastava Gantakolla, Vishal More, Arindam Mookherjee , David Dollar Taye Mengistae, Hallward-Driemier and Giuseppe Iarossi. "Competitiveness of Indian Manufacturing: Results from a Firm Level Survey." Confederation of Indian Industries and The World Bank. January 2002.

36 The paper lumps together the 'best investment climate' states and the 'good investment climate' states as 'good investment climate' states. The rest of the states are 'poor investment climate' states.

37 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

Bank, 2002), a more comprehensive study in ranking states according to their investment climates was undertaken by Deutsche Bank (2007) with a more empirically grounded methodology. The investment climate is expressed as a function of the growth rate of state domestic product, population growth rates, share of manufacturing and construction in SDP, and level of infrastructure, measured through the length of roads constructed under the Golden Quadrilateral programme in the state.[38] This survey ranks Maharashtra, Gujarat, Delhi, Andhra Pradesh and Chhattisgarh as possessing the best investment climates. Opposed to the World Bank-CII study, Karnataka and Tamil Nadu are relegated to ranks 8 and 11 respectively. Uttar Pradesh, surprisingly, is ranked 7th in this survey, while Kerala and West Bengal continue to remain lower down at ranks 14 and 18 respectively. [39]

This study uses a different criterion, based on the individual performance of states in attracting investment proposals, to select the states to be tested for possessing a significantly better investment climate. Three states, Maharashtra, Gujarat, and Andhra Pradesh, have accounted for more than 40% of total investments[40] made in India over the period 1998-2006, a disproportionate figure when the mean share of investment proposals for all the states in our sample in this period has been 4.4%. We hypothesize that any state performing better than this average has a significantly better investment climate.[41] This criterion presents us with seven states, Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Orissa, Tamil Nadu and West Bengal, to be tested for a significantly different investment climate than the rest of their counterparts. For future reference, they are termed 'high performing states' and the remaining, 'low performing states.'

Both the World Bank-CII study and the Deutsche Bank study categorize Andhra Pradesh, Gujarat and Maharashtra as states possessing a good investment climate. The World Bank-CII study also includes Tamil Nadu and Karnataka as states with a good investment climate. Thus, the 'surprise' states in our

38 The Golden Quadrilateral project was a project designed to boost the quality of roads in the country. Inaugurated in 2003, the project attempted to connect the cities Delhi, Kolkata, Chennai, Bangalore and Mumbai through four lane highways of the highest road quality to ensure smooth transport of goods.

39 Eric Heymann, Tobias Just, Lonneke Lowik and Maren Vath. "450 bn Reasons to Invest in India's Infrastructure." Deutsche Bank Research. November 2007.

40 Period average of state investment proposals expressed as a percentage of all India investment proposals.

41 This should have been the outcome through Industrial Licensing which aimed to achieve equitable distribution of investment projects. There are 18 states in our model accounting for about 82% of India's investment proposals across the period so the average share of investment per state is around 4.4%. The percentage of proposed investments in these 18 states is lower than the percentage of investment projects implemented as the three new states (Chhatisgarh has received the maximum amount of investment proposals in the period 2004-07) over the past four years have attracted a large proportion of investment proposals but are yet to implement most of these proposals.

selection of high performing states are West Bengal and Orissa. Uttar Pradesh and Madhya Pradesh, though marginally eligible for selection, have been excluded since they have shown a steadily declining proportion of investment proposals through the period under consideration. In 1998, Uttar Pradesh attracted 10% of India's investment proposals, higher than Andhra Pradesh, but by 2006, this figure was reduced to 6.2%.[42] In fact, Uttar Pradesh has seen a steady decrease in its share of investment proposals in seven years since 1998. Such a consistent decline in investment proposals is not observed in any other high performing state and, as a result, Uttar Pradesh is categorized as a low performing state. Additionally, the growth of Noida, one of Delhi's suburbs, as a major commercial hub has boosted the investment levels in Uttar Pradesh as Noida falls within the administrative jurisdiction of Uttar Pradesh, causing investments in Noida to accrue as investments in Uttar Pradesh.

West Bengal and Orissa in recent years have witnessed large upswings in investment inflows and therefore have been hypothesized to possess a healthy investment climate. Orissa's leap has been phenomenal. Orissa attracted little over 2.5% of all India investment proposals in 2003 and in 2006 it accounted for more than 8.5% of the investment proposals filed in India.

West Bengal's ascent has been less dramatic but marked by steadier growth in investment proposals. Since 2004, the state has attracted around 4.5% of India's investment proposals.[43] The West Bengal government in the period between 2002 and 2006 also repeatedly vowed to better its investment climate and received accolades from several top Indian business houses as heading towards the right direction.[44] In light of these empirical observations, West Bengal and Orissa are added to the group of high performing states.

Model 2: Interaction Dummies

As a first step to determine whether the seven states selected are significantly different from the others, we run an OLS regression with interaction dummies for each independent variable in the equation. The 'state dummy' variable has a score of '0' for 'high performing states' and '1' for 'low performing states' and is multiplied with each of the independent variables as an interaction term.

42 By 2007, Uttar Pradesh's share had further fallen to 4.6% of all India investments, underlining that the state is rapidly falling out of favour with India's investors.

43 In 2006, West Bengal share of all-India investment proposals was 4.8%.

44 Malabika Bhattacharya, "Things are moving in the right direction: Buddhadeb" The Hindu, 29 February 2004, http://www.hindu.com/2004/02/29/stories/2004022902471000.htm (Accessed 26 May 2007).

$$Investment = \beta_0 + \beta_1(Power) + \beta_2(Fiscal\ Deficit) + \beta_3(Investment\ Stock_{t-2}) + \beta_4(Crime) + \beta_5(Disputes) + \beta_6(Social) + \beta_7(Time) + \beta_8(State\ Dummy * Power) + \beta_9(State\ Dummy * Fiscal\ Deficit) + \beta_{10}(State\ Dummy * Investment\ Stock_{t-2}) + \beta_{11}(State\ Dummy * Crime) + \beta_{12}(State\ Dummy * Disputes) + \beta_{13}(State\ Dummy * Social) + \beta_{14}(State\ Dummy * Time) + \beta_{15}(State\ Dummy) + \varepsilon \quad (3)$$

State Dummy= '0' for 'high performing states' and '1' for 'low performing states'. '*State Dummy'* is an intercept dummy measuring the difference in investment proposals arising from the fact that an individual state belongs to the 'low performing' bracket. The results are presented in table 8 (Appendix).

The explanatory power of the model after the inclusion of the interaction dummies experiences a twofold increase over the previous models to nearly 50%. The joint hypothesis test with the null hypothesis $\beta_{8=}\ \beta_{9=}\ \beta_{10=}\ldots\ \beta_{15}=0$ is comfortably rejected, indicating that there does exist a significant difference between the two groups of states.

Barring power generation capacity, all the other explanatory variables for the high performing states are significantly different from zero. Power generation capacity also displays an unexpected negative sign. Social sector expenditure and industrial disputes have a significant effect on investment proposals in high performing states. State dummy measuring the difference in per capita investment proposals in low performing states relative to high performing states is not statistically significant but displays the expected negative sign.

Except for industrial disputes, all other interaction dummies are significantly different from the estimated coefficients for high performing states. The interaction dummies indicate that social sector expenditure in low performing states is comparatively lesser than the high performing states, even though the net effect of social sector expenditure on investment proposals is unexpectedly negative for low performing states. Low performing states have also been less successful in implementing investment projects relative to high performing states and thereby have a poorer image as potential investment destinations. The overall effect of the variable, stock of investments implemented per capita, remains positive for low performing states. Fiscal deficit and incidence of crime are also relatively higher in low performing states, and their net effect on the dependent variable remains negative as hypothesized.

The same equation is also estimated using random and fixed effects with robust standard errors. The Hausman test fails to reject the null hypothesis that

the coefficients produced using fixed effects estimates are the same as those produced by random effects estimates, leading us to prefer the random effects estimates (Table 9, Appendix). These are extremely similar to the OLS estimates which signify the robustness of the OLS model when the estimation is performed using interaction dummies.

Disaggregating Dataset by High and Low Performing States

Model 2, with the interaction dummies, indicates that there is a significant difference between the two groups of states in terms of the socioeconomic fundamentals which contribute to forming a state's investment climate. In light of this result, this section contains an analysis of the disaggregated data set, in which we separately run the model for high and low performing states. The summary statistics for the two categories of states are presented in Tables 2 and 3 (Appendix).

Model 3: High Performing States

The estimated equation is the same as equation 1 and is estimated using OLS. The results are presented in Table 9 (Appendix). The estimated coefficients are very similar in terms of statistical significance and magnitude to those estimated for high performing states in the previous model. Power generation capacity still has the negative sign associated with it but is no longer significant and the rest of the variables remain statistically significant and display the expected signs.

To compare the relative effects of the different variables, we standardize the coefficients. The results are presented in Table 10 (Appendix). On standardization, incidence of crime and social sector expenditure turn out to be most significant variables, followed by fiscal deficit. A one standard deviation increase in social sector expenditure raises proposed per capita investments by Rs. 9,653, more than twice the increase that results from a one standard deviation increase in the stock of investment projects implemented in each state. An increase of one standard deviation in the incidence of crime results in a corresponding drop of Rs. 9,304 in per capita investment proposals received by the state. The effect of a one standard deviation increase in fiscal deficit results in Rs. 6,384 decrease in per capita investment proposals, and the corresponding drop in the dependent variable for a one standard deviation increase in industrial disputes is Rs. 3,658.

Fixed effects and random effects estimations with robust standard errors are also undertaken for this model. The Hausman test with the null hypothesis that the fixed effects and random effects coefficients are the same cannot be rejected and the random effects estimates are persisted with (Table 11, Appen-

dix). These estimates again are extremely similar in statistical significance and magnitude to the OLS results which accentuates the latter's robustness.

Model 4: Low Performing States

The investment determinants for low performing states are also determined using equation 1, first with OLS (Table 14, Appendix) and then random and fixed effects. The Hausman test fails to reject the null hypothesis that the random and fixed effect coefficients are not significantly different from each other. The application of the random effects model (Table 16, Appendix) with robust standard errors causes the variables fiscal deficit and industrial disputes to be statistically significant, in addition to incidence of crime. Social sector expenditure maintains its negative sign but is no longer significant, and the rest of the variables display the expected sign (stock of investments implemented in the state remains positive) but are not significant. When using standardized coefficients (Table 17, Appendix), the detrimental effect upon per capita investment proposals is approximately Rs. 300 more from a standard deviation increase in fiscal deficit than a standard deviation increase in the incidence of crime. 'Industrial disputes' has the least effect on the dependent variable. A one standard deviation increase in industrial disputes results in a reduction in per capita investment proposals of Rs. 148. It is worth noting that the explanatory power of both the OLS and random effects model for low performing states is much lower in comparison to those for high performing states.

V. Discussion of Empirical Results

Drawing from the four models, fiscal deficit and incidence of crime stand out as the two decisive factors determining investment proposals. From a policy perspective, we can infer that economic reforms, policy reforms, and fiscal prudence, in addition to political stability and protection of public life and property, are the two factors which investors consider the most while selecting their investment locations. Fiscal deficit's vitality in the model is accentuated due to the large number of factors it quantifies in terms of quality of government expenditures, quality of governance, and the availability and quality of physical and social infrastructure.

These results closely resemble the opinions evoked by foreign investors in a survey in 2003 and 2004 undertaken by the Federation of Indian Chambers of Commerce and Industry (FICCI). FICCI surveyed foreign investors to determine the factors which guided their selection of investment destinations across states in the Indian union. Both in 2003 and 2004, investors gave maximum weight to 'political stability', 'stability in policy guidelines', and 'reduc-

tion in ground level obstacles'.[45]

From our interaction dummies, we observe that high performing states maintain smaller fiscal deficits, and the incidence of crime is also lower in this group than the low performing states. More importantly though, states forming the high performing bracket have generally been the most willing to implement economic reforms, especially through a reduction of red-tape and reforms within their transport and power sectors.

Maharashtra and Gujarat's bona fides as investor-friendly and reform oriented states have been well established over the years. Amongst the others, Orissa is cited by Sachs, Bajpai and Ramiah (2002) as a state which built its reputation as an investment destination through strides made in policy reforms. For instance, Orissa was one of the first states to initiate reforms in its power sector in the 1990's.[46] Tamil Nadu was India's first state which formulated a New Economic Policy (1991), even before the federal government did so, in an effort to attract investments and promote industrialization. Andhra Pradesh, under its erstwhile Chief Minister Chandrababu Naidu, took a series of bold initiatives with regard to deepening economic reforms between 1994 and 2004. The state government then even raised and, in the process, rationalized, some user fees for public services.[47] Even West Bengal, which has been historically castigated by India's business community, courtesy of its Marxist government and straining labour relations, made a concerted effort to boost its image as an investment destination post 2001 under its dynamic Chief Minister, Mr. Buddhadeb Bhattacharya, through greater assistance to investors, a dismantling of bureaucratic controls, and concrete steps through new legislations to reign in a militant labour force.[48]

Power generation capacity, though significant in the OLS and random effects models for all the eighteen states, is not significant for low performing states and shows an unexpected negative association with the dependent variable for high performing states. The negative relationship is observed probably because most states in the high performing bracket, with the exception of Karnataka and Tamil Nadu, do not witness significant increases in their power

45 Federation of Indian Chambers of Commerce and Industry, FICCI's FDI Survey 2004: The Experience of Foreign Investors in India (New Delhi: Federation of Indian Chambers of Commerce and Industry, 2004) 6.

46 Jeffery Sachs, Nirupam Bajpai, and Ananthi Ramiah. "Understanding Regional Economic Growth in India (Working Paper No. 88)." Center for International Development, Harvard University. March 2002.

47 Loraine Kennedy, "Political Determinants of Reform Packaging: Contrasting Responses to Economic Liberalization in Andhra Pradesh and Tamil Nadu" in Regional Reflections: Comparing Politics Across India's States, ed. Rob Jenkins (New Delhi: Oxford University Press, 2004) 44-45.

48 Partha Pratim Basu "Brand Buddha in India's West Bengal: The Left Reinvents Itself" Asian Survey 157:2 (March-April 2007): p. 297.

generation capacity in the period 1998-2006. As the average power generation capacity for high performing states remains significantly greater than low performing states, it reflects that the former group made significant progress in developing their generating capacities in a previous period which in return attracted a much higher level of investment proposals in the period under consideration.

Social sector expenditure also behaves enigmatically in the model for low performing states by displaying an unexpected negative sign with the dependent variable. The mean social sector expenditure in low performing states, however, is only one percentage point lesser than the mean social sector expenditure in high performing states. There could be three possible explanations for this variable's anomalous behaviour. Firstly, poor delivery of public services in the spheres of health and education in these states might result in inefficient spending, which has no tangible impact on human capital development. This is supported by the fact that many low performing states such as Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan[49] rank poorly on Human Development indices such as literacy rates.[50]

A second explanation could be that other factors in the low performing states adversely affect their image as investment destinations and hinders investment inflows, considerably negating the progress made in the field of human capital development. Our empirical models and other surveys such as those conducted by FICCI in 2003 and 2004 indicate that these factors would include political stability, fiscal prudence, and general macroeconomic policies prevailing in the state. The example of Kerala, for instance, has been mentioned previously in this paper as a state which has made significant achievements in the field of human capital development but has received a disproportionately low share of investments due to the prevalence of a militant labour force.[51] States like Uttar Pradesh and Bihar have been traditionally viewed with distaste by investors due to high political instability, and a similar problem is being faced at present by Chhatisgarh and Jharkhand, which are affected by ultra left-wing extremism.

Additionally, some states in the low performing bracket, such as Kerala[52],

49 These states are collectively referred to in common jargon as 'BIMARU' or 'ailing' states due to their backwardness in human capital development, low rates of growth and high incidence of poverty.

50 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 108.

51 Jeffery Sachs, Nirupam Bajpai, and Ananthi Ramiah. "Understanding Regional Economic Growth in India (Working Paper No. 88)." Center for International Development, Harvard University. March 2002.

52 For Kerala, a lot of the migration is to the Gulf countries.

Haryana and Punjab, in addition to the *BIMARU*[53] states, witness a great deal of migration of the local labour force to other Indian states, such as Maharashtra and Karnataka, in search of better employment opportunities. Dollar, Iarossi and Mengistae (2002) also have a similar explanation for lower mean wage rates in states (especially West Bengal and Kerala which have made significant advances in human capital formation) with a poor investment climate, citing that labour mobility, especially amongst skilled workers, is quite high and workers move to states with higher levels of investment in search of better opportunities. This depletes the availability of skilled workers across these states and hampers labour productivity, which in turn dissuades productive investments.[54]

Nonetheless, the critical importance of social sector expenditure in stimulating investment inflows is underlined in the model with the interaction dummies and the model for high performing states. In both these models, social sector expenditure displays a positive and significant relationship with proposed per capita investment. In fact, for the high performing states, social sector expenditure has the largest effect upon the dependent variable. We can infer from this that investments in human capital development yields rich dividends to states in terms of investment inflows only after they attain a threshold level of political stability and are able to implement sound economic and fiscal policies.

VI. Linking Empirical Results with Policy Implications

Since the economic reforms of 1991, India's economy has witnessed spectacular growth averaging over 6.5% between 1991 and 2006. This growth has mostly been driven by the private sector, and a principal factor contributing to this has been a significant improvement in India's investment climate, which has raised the productivity of existing investments and the expected return from investments over the short and medium term.[55]

The strong positive relationship between private investment and economic growth in the Indian economy has already been documented in the introduction of this paper. Further evidence of the relationship between investment and growth can be observed from India's low Incremental Capital Output Ratio (ICOR), which has hovered around the level of 4 in the post-reforms period.[56]

53 *'BIMARU states'* refers to Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh and translates directly as 'sick states.'

54 David Dollar, Giuseppe Iarossi and Taye Mengistae. "Investment Climate and Economic Performance: Some Firm Level Evidence from India (Working Paper No. 143)." Centre for Research on Economic Development and Policy Reform. July 2002.

55 Manuela Ferro, David Rosenblatt and Nicholas Stern. "Policies for Pro-Poor Growth in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 157.

56 Capital is measured using Gross Domestic Capital Formation.

This figure indicates an approximate average rate of return of 25% from investments made in the economy. The low ICOR makes the rate of return from investments in the Indian economy one of the highest in the world, rivaled only by China.[57]

Within our model, high performing states, which attracted larger volumes of investment, also grew faster in the period 1999-2006; the average per capita growth rate for this group of states is 6.2%, and the corresponding figure for low performing states is 4.15%. This provides further empirical evidence linking economic growth to the prevailing levels of investment in states. In this respect, a high level of productive investments is a must if India is to sustain its impressive growth record through the 21st century.

Given this critical relationship between levels of investment and growth prospects of Indian states, we conclude our study with a set of policy recommendations which should go a long way in improving the investment climates of these states and make them more conducive to future investment inflows.

Drawing from the empirical results, we advocate that policy makers should strive to increase political stability and enhance public safety within their respective states, in addition to deepening fiscal and economic reforms. With respect to fiscal reforms, inefficient subsidies, mostly offered as political sops in the agricultural sector or through severe under-pricing of public services, especially in the transport and power sectors, should be weeded out at the earliest stage. The funds recovered from terminating such subsidies should be directed towards human capital formation, well-targeted income redistribution schemes, and development of physical infrastructure.[58] Concurrently, a prudent selection of sectors chosen for expenditure cuts is also required. Rao (2004) demonstrates that haphazard attempts at controlling fiscal deficits in the 1990's led to a crowding out of capital expenditures across Indian states, which exacerbated infrastructure bottlenecks and hampered the efficient delivery of public services.[59] In this respect, it is important to note the areas within government expenditures targeted for achieving fiscal restraint.

The interaction dummy model (Model 2) suggests three key areas in which low performing states lag with respect to high performing states: higher political instability and higher incidence of crime, higher fiscal deficits, and poor human capital formation. Since human capital formation is the primary

57 Rakesh Mohan, "The Growth Record of the Indian Economy, 1950-2008: A Story of Sustained Savings and Investment", Reserve Bank of India (February 14 2008), http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=379, (Accessed 27 May 2008) p. 12-13.

58 Montek S. Ahluwalia. "State-Level Performance under Economic Reforms", in Economic Policy Reforms and the Indian Economy, ed. Anne O. Krueger (Chicago and London: University of Chicago Press, 2002) 120-121.

59 M. Govinda Rao. "State-Level Fiscal Reforms in India," in India's Emerging Economy ed. Kaushik Basu (New Delhi: Oxford University Press, 2004) 119.

driver of investment inflows in high performing states, augmentation of health and education levels to increase labour productivity in low performing states is essential to match their performance with high performing states. To ensure this, well-directed social programs focused on enhancing the health and educational enhancement of the labour force, especially in rural areas, are required to ensure that social expenditure does not go to waste and have no significant impact on the state's development.

As incidence of crime has the largest negative effect on investment inflows in low performing states, a potential policy framework for low performing states should prioritize maintaining law, order, and political stability. Second on the list of priorities for low performing states should be a reduction of fiscal deficits. Along with the maintenance of political stability and implementation of fiscal reforms, policy makers in low performing states should also retain focus on expediting human capital formation within their respective states. This would allow the low performing states to benefit immediately from private investment inflows once they achieve the necessary pre-requisites in terms of political stability and enacting of reforms to build their images as stable and conducive investment destinations. It must be highlighted that fiscal reforms, in addition to signalling a state's willingness to undertake economic reforms, also have significant positive externalities associated with them, especially in terms of recovery of public funds which can be devoted towards social development, capital expenditures, and better delivery of public services. Reduction of fiscal deficits will also result in the freeing of private and public savings which could subsequently be diverted to fund productive investments. A decline in fiscal deficits stemming from trimming the bureaucracy also has the potential to reduce hassles from prevalent red-tape and corruption.

Finally, our empirical results indicate that investment inflows are boosted by the previous record of the states in implementing investment projects (or their past image as investment destinations) only amongst the high performing states. However, the impact of this variable on the dependent variable is much smaller than incidence of crime, level of fiscal deficit, or quality of health and education. Two inferences can be drawn from this. Firstly, high performing states are yet to attain their investment potential and are capable of receiving further investments without overheating their economies.[60] Secondly, past record (though it does impact current inflows once a state has successfully built its investment image and maintained it through sound socio-economic policies) does not supersede socio-economic fundamentals within the state as

60 A test for β-convergence does not demonstrate any evidence for convergence. Across all the states in our study as well as the two groups of states, a simple linear regression between 'investment proposals' and 'stock of investment projects implemented' yields a positive coefficient on the independent variable which is statistically significant.

the key factor driving current investment proposals. This implies that investors pay more attention to socio-economic fundamentals within a state than its past image as an investment destination and are prepared to reward good governance with investments and punish poor governance by moving with their feet to other states. In light of this, low performing states have sufficient opportunity and incentive to catch up with their high performing counterparts in terms of attracting private investments through a concerted effort at betterment of their political and socioeconomic credentials.

Once the low performing states succeed in bettering their investment climates over the short or medium term,[61] they can expect to receive a higher volume of investment inflows and attain faster rates of growth. This would increase the number of states in India with good investment climates and offer entrepreneurs investing in India with a larger number of investment destinations to choose from. Though this might result in some of the contemporary high performing states losing a few investment projects, the net result should be positive as it would reduce the prevailing inequity in growth across states and further increase competition between them in the race to attract investments. Added competition between states could potentially lead to an enhancement of India's aggregate investment climate and, consequently, higher rates of growth and development across the nation.

61 For example, it took West Bengal about 5 years (2001-2006) to significantly improve its investment climate.

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Appendix

Summary Statistics:

Table 1: Summary Statistics for all 18 states

Variable	Observation	Mean	Std. Dev.	Min.	Max.
Stock of investment per capita (Rs.)	162	1571.23	1435.3	1.60	5759.84
Time	162	5	2.59	1	9
Social Sector Expenditure as a percentage of State Domestic Product (%)	162	33.75	5.85	17.2	48.3
Installed Electricity Generation Capacity (Kilowatts per 1000 persons)	162	76.95	44.83	6.63	186.31
Crime per 1000 persons	162	2	1.1	.54	11.12
Gross Fiscal Deficit as a percentage of State Domestic Product (%)	162	5.76	3	-.85	17.48
Industrial Disputes as a percentage of all-India disputes (%)	162	5.23	12.54	0	73.60
Proposed investment per capita (Rs.)	162	2040.97	3337.84	-2407.83	25302.66

Table 2: Summary Statistics for High Performing States

Variable	Observation	Mean	Std. Dev.	Min.	Max.
Stock of investment per capita (Rs.)	63	2087.51	1472.98	364.23	5759.84
Time	63	5	2.60	1	9
Social Sector Expenditure as a percentage of State Domestic Product (%)	63	34.23	4.22	23.4	48.3
Installed Electricity Generation Capacity (Kilowatts per 1000 persons)	63	99.73	32.21	47.69	147.44
Crime per 1000 persons	63	1.79	.55	.72	2.66
Gross Fiscal Deficit as a percentage of State Domestic Product (%)	63	5.39	2.34	.50	10.92
Industrial Disputes as a percentage of all-India disputes (%)	63	10.94	18.50	.09	73.60
Proposed investment per capita (Rs.)	63	3551.43	4574.69	99.47	25302.66

Table 3: Summary Statistics Low Performing States

Variable	Observation	Mean	Std. Dev.	Min.	Max.
Stock of investment per capita (Rs.)	99	1242.68	1315.82	1.60	4911.01
Time	99	5	2.60	1	9
Social Sector Expenditure as a percentage of State Domestic Product (%)	99	33.44	6.68	17.2	45.4
Installed Electricity Generation Capacity (Kilowatts per 1000 persons)	99	62.45	45.83	6.63	186.31
Crime per 1000 persons	99	2.14	1.32	.54	11.12
Gross Fiscal Deficit as a percentage of State Domestic Product (%)	99	6.00	3.34	-.85	17.48
Industrial Disputes as a percentage of all-India disputes (%)	99	1.60	2.76	0	19.20
Proposed investment per capita (Rs.)	99	1079.76	1631.97	-2407.83	7149.20

Regression Results:

Table 4:[62] OLS results for all 18 states

No. of Observations	162
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	60.47 (.03)
Stock of Investment Projects Implemented per capita (Rs.)	.33 (1.67)*
Gross Fiscal Deficit as a percentage of SDP (%)	-170.41 (-2.01)**
Installed Generating Capacity per capita (kwh)	17.64 (2.75)***
Crime per 1000 of population	-586.10 (-2.58)**
Social Sector Expenditure as a percentage of Total Disbursements (%)	23.32 (.49)
Industrial Disputes in state as percentage of all India disputes (%)	-22.80 (-1.18)
Time	318.42 (3.11)***
Adjusted R^2	.2235

62 In all the tables, the t-statistic is represented in parentheses below the coefficient. * indicates significance at the 10% level, ** at 5% and *** at 1%.

Table 5:[63] OLS results for all 18 states with estimates expressed as standardized coefficients

No. of Observations	162	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients[†]	Comparable State and year[‡]
Intercept	60.47 (.03)	
Stock of Investment Projects Implemented per capita (Rs.)	992.15 (1.67)*	Gujarat, 1998
Gross Fiscal Deficit as a percentage of SDP (%)	-1492.79 (-2.01)**	Orissa, 2003
Installed Generating Capacity per capita (kwh)	2148.20 (2.75)***	Maharashtra, 1998
Crime per 1000 of population	-1816.91 (-2.58)**	Kerala, 2006
Social Sector Expenditure as a percentage of Total Disbursements (%)	923.47 (.49)	Tamil Nadu, 2000
Industrial Disputes in state as percentage of all India disputes (%)	-405.16 (-1.18)	Andhra Pradesh, 2000
Time	2416.81 (3.11)***	7 years from start of time period
Adjusted R^2	.2235	

[†]Standardized Coefficient= $\beta_i*(\mu_i+1*\sigma_i)$.

[‡]Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.

63 In all the tables, the t-statistic is represented in parentheses below the coefficient. * indicates significance at the 10% level, ** at 5% and *** at 1%.

Table 6:[64] Random Effects estimation results with robust standard errors for all 18 states

No. of Observations	162
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	747.28 (.29)
Stock of Investment Projects Implemented per capita (Rs.)	.18 (.50)
Gross Fiscal Deficit as a percentage of SDP (%)	-290.92 (-2.70)***
Installed Generating Capacity per capita (kwh)	17.37 (2.09)**
Crime per 1000 of population	-301.58 (-2.57)***
Social Sector Expenditure as a percentage of Total Disbursements (%)	16.35 (.34)
Industrial Disputes in state as percentage of all India disputes (%)	-10.32 (-.57)
Time	292.07 (2.68)***
Adjusted R^2	Within= .2374 Between= .2308 Overall= .2330

64 In all the tables, the t-statistic is represented in parentheses below the coefficient. * indicates significance at the 10% level, ** at 5% and *** at 1%.

Table 7:[65] Random effects estimation results for all 18 states with estimates expressed as standardized coefficients

No. of Observations	162	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients†	Comparable State and year‡
Intercept	747.28 (.29)	
Stock of Investment Projects Implemented per capita (Rs.)	541.17 (.50)	Gujarat, 1998
Gross Fiscal Deficit as a percentage of SDP (%)	-2548.46 (-2.70)***	Orissa, 2003
Installed Generating Capacity per capita (kwh)	2115.32 (2.09)**	Maharashtra, 1998
Crime per 1000 of population	-934.90 (-2.57)***	Kerala, 2006
Social Sector Expenditure as a percentage of Total Disbursements (%)	647.46 (.34)	Tamil Nadu, 2000
Industrial Disputes in state as percentage of all India disputes (%)	-183.39 (-.57)	Andhra Pradesh, 2000
Time	2219.73 (2.68)***	7 years from start of time period
Adjusted R^2	Within= .2374 Between= .2308 Overall= .2330	

†Standardized Coefficient= β_i*(μ_i+1*σ_i).

‡Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.

65 In all the tables, the t-statistic is represented in parentheses below the coefficient. * indicates significance at the 10% level, ** at 5% and *** at 1%.

Table 8: OLS Results with Interaction Dummies

No. of Observations	162
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	3966.21 (.89)
Stock of Investment Projects Implemented per capita (Rs.)	1.27 (3.67)
Gross Fiscal Deficit as a percentage of SDP (%)	-826.00 (-4.68)
Installed Generating Capacity per capita (kwh)	-34.32 (-1.60)
Crime per 1000 of population	-3191.81 (-2.94)
Social Sector Expenditure as a percentage of Total Disbursements (%)	251.57 (2.69)
Industrial Disputes in state as percentage of all India disputes (%)	-124.26 (-5.29)
Time	651.43 (3.84)
StateDummy	-284.16 (.06)
StateDummy*Stock of Investment Projects Implemented per capita (Rs.)	-1.03 (-2.55)**
StateDummy*Gross Fiscal Deficit as a percentage of SDP (%)	803.74 (4.16)***
StateDummy*Installed Generating Capacity per capita (kwh)	38.78 (1.72)*
StateDummy*Crime per 1000 of population	2993.68 (2.72)***
StateDummy*Social Sector Expenditure as a percentage of Total Disbursements (%)	-330.76 (-3.12)***
StateDummy*Industrial Disputes in state as percentage of all India disputes (%)	81.30 (.86)
StateDummy*Time	-632.11 (-3.20)***
Adjusted R^2	.4946

Table 9: Random Effect Results with robust standard errors and Interaction Dummies

No. of Observations	162
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	3966.21 (.62)
Stock of Investment Projects Implemented per capita (Rs.)	1.27 (2.57)***
Gross Fiscal Deficit as a percentage of SDP (%)	-826.00 (-2.72)***
Installed Generating Capacity per capita (kwh)	-34.32 (-.99)
Crime per 1000 of population	-3191.81 (-2.15)**
Social Sector Expenditure as a percentage of Total Disbursements (%)	251.57 (2.42)**
Industrial Disputes in state as percentage of all India disputes (%)	-124.26 (-3.06)***
Time	651.43 (2.53)**
StateDummy	-284.16 (.06)
StateDummy*Stock of Investment Projects Implemented per capita (Rs.)	-1.03 (-2.00)**
StateDummy*Gross Fiscal Deficit as a percentage of SDP (%)	803.74 (2.64)***
StateDummy*Installed Generating Capacity per capita (kwh)	38.78 (1.11)
StateDummy*Crime per 1000 of population	2993.68 (2.02)**
StateDummy*Social Sector Expenditure as a percentage of Total Disbursements (%)	-330.76 (-2.96)***
StateDummy*Industrial Disputes in state as percentage of all India disputes (%)	81.30 (1.70)*
StateDummy*Time	-632.11 (-2.38)**
Adjusted R^2	Within= .4252 Between= .8091 Overall= .5417

Table 10: OLS estimates for High Performing States

No. of Observations	63
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients: High performing states
Intercept	3996.21 (.62)
Stock of Investment Projects Implemented per capita (Rs.)	1.27 (2.53)**
Gross Fiscal Deficit as a percentage of SDP (%)	-826.00 (-3.23)***
Installed Generating Capacity per capita (kwh)	-34.32 (-1.11)
Crime per 1000 of population	-3991.81 (-2.03)**
Social Sector Expenditure as a percentage of Total Disbursements (%)	251.07 (1.86)*
Industrial Disputes in state as percentage of all India disputes (%)	-124.26 (-3.65)***
Time	651.43 (2.65)**
Adjusted R^2	.4350

Table 11: Standardized Coefficients for OLS Model of High Performing States

No. of Observations	63	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients†	Comparable State and year‡
Intercept	3966.21 (.62)	
Stock of Investment Projects Implemented per capita (Rs.)	4521.82 (2.53)**	West Bengal, 2007
Gross Fiscal Deficit as a percentage of SDP (%)	-6384.98 (-3.23)***	West Bengal, 2002
Installed Generating Capacity per capita (kwh)	-4528.18 (-1.11)	Maharashtra, 1999
Crime per 1000 of population	-9304.84 (-2.03)**	Gujarat, 2000
Social Sector Expenditure as a percentage of Total Disbursements (%)	9653.42 (1.86)*	Andhra Pradesh, 1999
Industrial Disputes in state as percentage of all India disputes (%)	-3658.21 (-3.65)***	West Bengal, 1998
Time	4950.87 (2.65)**	7 years from start of time period
Adjusted R^2	.4350	

†Standardized Coefficient= $\beta_i*(\mu_i+1*\sigma_i)$.

‡Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.

Table 12: Random Effect estimates with robust standard errors for High Performing States

No. of Observations	63
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients: High performing states
Intercept	3996.21 (.61)
Stock of Investment Projects Implemented per capita (Rs.)	1.27 (2.53)**
Gross Fiscal Deficit as a percentage of SDP (%)	-826.00 (-2.68)***
Installed Generating Capacity per capita (kwh)	-34.32 (-.98)
Crime per 1000 of population	-3991.81 (-2.12)**
Social Sector Expenditure as a percentage of Total Disbursements (%)	251.07 (2.38)**
Industrial Disputes in state as percentage of all India disputes (%)	-124.26 (-3.01)***
Time	651.43 (2.49)**
Adjusted R^2	Within= .4707 Between= .7033 Overall= .4988

Table 13: Standardized Random Effects Coefficients with robust standard errors for High Performing States

No. of Observations	63	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients†	Comparable State and year‡
Intercept	3996.21 (.61)	
Stock of Investment Projects Implemented per capita (Rs.)	4521.82 (2.53)**	West Bengal, 2007
Gross Fiscal Deficit as a percentage of SDP (%)	-6384.98 (-2.68)**	West Bengal, 2002
Installed Generating Capacity per capita (kwh)	-4528.18 (-.98)	Maharashtra, 1999
Crime per 1000 of population	-9340.84 (-2.12)**	Gujarat, 2000
Social Sector Expenditure as a percentage of Total Disbursements (%)	9653.64 (2.38)**	Andhra Pradesh, 1999
Industrial Disputes in state as percentage of all India disputes (%)	-3658.21 (-3.01)***	West Bengal, 1998
Time	4950.87 (2.49)**	7 years from start of time period
Adjusted R^2	Within= .4707 Between= .7033 Overall= .4988	

†Standardized Coefficient= $\beta_i * (\mu_i + 1 * \sigma_i)$.

‡Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.

Table 14: OLS Results for Low Performing States

No. of Observations	99
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	3682.05 (2.77)***
Stock of Investment Projects Implemented per capita (Rs.)	.24 (1.95)*
Gross Fiscal Deficit as a percentage of SDP (%)	-22.22 (-.49)
Installed Generating Capacity per capita (kwh)	4.45 (1.13)
Crime per 1000 of population	-198.13 (-1.77)*
Social Sector Expenditure as a percentage of Total Disbursements (%)	-79.19 (-2.72)***
Industrial Disputes in state as percentage of all India disputes (%)	-42.96 (-.81)
Time	19.32 (.33)
Adjusted R^2	.2913

Table 15: Standardized Coefficients for OLS Model of Low Performing States

No. Of Observations	99	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients†	Comparable State and year‡
Intercept	3682.05 (2.77)**	
Stock of Investment Projects Implemented per capita (Rs.)	614.04 (1.95)*	Goa, 2002
Gross Fiscal Deficit as a percentage of SDP (%)	-207.53 (-.49)	Uttar Pradesh, 1998
Installed Generating Capacity per capita (kwh)	481.84 (1.13)	Haryana, 2006
Crime per 1000 of population	-685.53 (-1.77)*	Delhi, 2002
Social Sector Expenditure as a percentage of Total Disbursements (%)	-3177.10 (-2.72)***	Bihar, 2006
Industrial Disputes in state as percentage of all India disputes (%)	-187.31 (-.81)	Rajasthan, 1998
Time	146.83 (.33)	7 years from start of time period
Adjusted R^2	.2913	

†Standardized Coefficient= $\beta_i * (\mu_i + 1 * \sigma_i)$.

‡Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.

Table 16: Random Effects Estimate Results with robust standard errors for Low Performing States

No. of Observations	99
Dependent Variable	Proposed Investment per capita (Rs)
Independent Variables	Estimated Coefficients for all states
Intercept	3110.24 (2.20)**
Stock of Investment Projects Implemented per capita (Rs.)	.11 (.56)
Gross Fiscal Deficit as a percentage of SDP (%)	-70.02 (-2.11)**
Installed Generating Capacity per capita (kwh)	8.79 (1.20)
Crime per 1000 of population	-197.98 (-2.38)**
Social Sector Expenditure as a percentage of Total Disbursements (%)	-58.62 (-1.55)
Industrial Disputes in state as percentage of all India disputes (%)	-34.37 (-1.70)*
Time	27.15 (.47)
Adjusted R^2	Within= .1292 Between= .5394 Overall= .3171

Table 17: Standardized Coefficients for Random Effects Model of Low Performing States

No. of Observations	99	
Dependent Variable	Proposed Investment per capita (Rs)	
Independent Variables	Standardized coefficients†	Comparable State and year‡
Intercept	3110.24 (2.20)**	
Stock of Investment Projects Implemented per capita (Rs.)	281.43 (.56)	Goa, 2002
Gross Fiscal Deficit as a percentage of SDP (%)	-653.99 (-2.11)**	Uttar Pradesh, 1998
Installed Generating Capacity per capita (kwh)	951.18 (1.20)	Haryana, 2006
Crime per 1000 of population	-368.24 (-2.38)**	Delhi, 2002
Social Sector Expenditure as a percentage of Total Disbursements (%)	-2351.83 (-1.55)	Bihar, 2006
Industrial Disputes in state as percentage of all India disputes (%)	-149.85 (-1.70)*	Rajasthan, 1998
Time	206.34 (.47)	7 years from start of time period
Adjusted R^2		Within= .1292 Between= .5394 Overall= .3171

†Standardized Coefficient= β_i*(μ_i+1*σ_i).

‡Example of a state in our data set which was one standard deviation away from the mean in some given year in the period under consideration.