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The Political Economy of Infrastructure Investment in India*

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Abstract

We construct a simple political economy model with imperfect capital markets to explain infrastructure investments across Indian states. The model predicts that: i) the fixed cost of accessing the modern sector, ii) the initial stock of infrastructure, iii) median voter wealth, and iv) corruption, can all potentially why different states have different level of infrastructure investments. The theoretical model is motivated by recent empirical work on India that argues that the reason why per-capita income across Indian states have diverged is because of the distribution of infrastructure investments. The model suggests that reducing leakages in funds earmarked for infrastructure and reducing the fixed costs of accessing the modern sector - beyond their other well known effects - are policy complements. Together, they can incentivize politicians to spend more on infrastructure.

KEYWORDS: Public Investment, Positive Political Economy, Median Voter Theorem

JOURNAL OF ECONOMIC LITERATURE Classification Number: **P16:** Political Economy of Capitalism; **E62:** Fiscal Policy; **O40** Economic Growth.

1 Introduction

A fundamental question that confronts policy setters is whether there is a tendency for the poorer regions of a country to grow faster than the richer regions leading to a convergence in living standards. Such 'balanced' growth is of central concern as it enables regions to share more broadly the benefits of economic growth. In the Indian context, recent work suggests that per-capita income across states have not converged. Rather, Indian states have stratified towards a bimodal distribution suggesting the existence of twin peak dynamics (Bandopadhyay, 2001). In particular, Bandopadhyay (2001) identifies two convergence clubs in India over the 1965 - 1998 period, one at 50 % and another at 125 % the national income average. Bandopadhyay (2001) shows that while infrastructure spending strongly explains the lower convergence club, fiscal deficits and capital expenditures explain club formation at higher levels of state GDP.[1] This is consistent with recent empirical work in the Indian context which has supported divergence (Dasgupta et al. (2001), Marjit (2002), and Datta and Ravallion (2002)).

Figure (1) plots an infrastructure index using principal components analysis based on Indian state wise development expenditure data against the average growth of real per capita GDP between 1980 - 1998. The index is conducted for twenty five

[1] Bandopadhyay (2001) also finds that development expenditures on education are a strong explanatory variable for the observed polarization across Indian states over the time period 1965 - 1988. These results are consistent with a large literature on the impact of infrastructure investments on cross country long run economic performance.

Indian states for which data between 1980 - 1998 is available. The development expenditure data incorporate both economic and social expenditure categories from both the revenue and capital accounts. This data is obtained from various state fiscal documents which contain disaggregated data for several expenditure categories.[2] The real gross domestic product data has been obtained from the Economic and Political Weekly Foundation dataset (2003). As Figure (1) shows, there is a strong positive correlation between the infrastructure index and real per capita GDP growth between 1980 - 1998. Further, in a simple panel OLS regression of real per capita state GDP on the infrastructure index, we find that the slope coefficient has an estimate of (+).233. This suggests that an increase in state real GDP per capita increases the infrastructure index. [3]

What policy changes would incentivize politicians to spend more on infrastructure investment? This paper is motivated by this question. We answer this question

[2] These include, 1) education, sports, art, and culture, 2) medical, public health, and family welfare, 3) water supply and sanitation, 4) housing, 5) urban development, 6) agriculture and allied activities, 7) rural development, 8) energy, 9) industry and minerals, 10) transport and communication, 11) social security, and, 12) welfare. We focus on the period after 1980 due to the unavailability of a comprehensive state-wise development expenditure data set before 1980.

[3] A more disaggregated analysis of several state wise economic and social indicators against real per - capita GDP growth also reveals a positive relationship between these indicators and real per capita GDP growth. For instance, the states in India with higher total and female literacy rates, a higher share of industry relative to state output, a greater percentage of electrified villages, more road area, greater number of banks per thousand population, lower infant mortality rates, and a lower share of agriculture relative to state output, were in a better position to increase their growth rates. These results are consistent with the positive impact of infrastructure on economic growth found in the literature on regional economic performance in India, and are available from the authors on request.

Figure 1: Infrastructure Index using Principal Components and Growth Rate of Real Per Capita GDP Across Indian States, 1980 - 1998.

by constructing a simple theoretical model to understand the political economy of variations in infrastructure/development expenditures across Indian states. The theoretical model adds endogenous government policy using a majority voting setup to the framework of Galor and Zeira (1996). We assume that agents can engage in one of two activities: i) a subsistence activity which yields a fixed return and ii) a modern activity which requires a fixed investment and generates a return which depends on the stock of infrastructure in the economy. Politicians tax the modern sector and use tax proceeds to finance two policies under a balanced budget: a per head consumption subsidy (which is by unproductive by construction) and productive infrastructure. Given the setup, we show that the median voter theorem applies and in equilibrium and either a zero - subsidy policy (which we call P^* policies) or a positive subsidy policy (which we call P^0 policies) are offered. We show that the zero subsidy policy is the equilibrium policy choice if and only if the median voter, w^m, can access the modern sector at P^*. *Importantly, we show that the zero subsidy policy corresponds to more infrastructure investment than the positive subsidy policy.*

We then augment the model to incorporate corruption. We interpret corruption in the model as a leakage. To formalize ideas, suppose I is the amount that is planned for investment in infrastructure. Let $\theta \in [0, 1]$ denote the extent of corruption, where, $\theta = 1$, corresponds to full wastage. We assume that for every rupee set aside for such an activity, only $1 - \theta$ is actually invested, with the remaining fraction, θ, wasted. One can think of such leakages as a direct result of the presence of corrupt officials/personnel/public employees in charge of disbursing tax proceeds for infrastructure spending. As in the case of infrastructure investments, we assume that there are also leakages involved in the disbursement of the per head consumption subsidy. In particular, for every rupee of planned S, a fraction θ is wasted in the disbursement of the consumption subsidy. Given this, suppose that there are two levels of corruption, θ_1 and θ_2, such that $\theta_1 > \theta_2$. Further, suppose that a positive subsidy policy – the P^0 policies – is an equilibrium policy choice under θ_2. We show that P^0 policies will be the equilibrium policy choice under θ_1. In other words, *higher corruption makes it more likely for positive subsidies and lower infrastructure investment to obtain as equilibrium policies.*

In sum, consistent with the empirical evidence reported in Figure (1) the theoretical model predicts the following variables which can potentially account for differential infrastructure investment across Indian states: i) the fixed cost of accessing the modern sector, ii) the initial stock of infrastructure, iii) median voter wealth, and iv) corruption. These variables offer potential explanations for the distribution of infrastructure investments and therefore for why per-capita income across Indian states have diverged.

The paper is structured as follows. The next section formalizes the model. Section 3 discusses the policy implications of the model and concludes.

2 The Model

The economy is populated with a continuum of agents with unit mass. Each agent is characterized by its wealth level, w, where w has the distribution function, $F(w)$, with support $[\underline{w}, \overline{w}]$. Agents can engage in one of two activities: i) a subsistence activity which yields a fixed return, $a > 0$, and ii) a modern activity which requires a fixed investment, F, and generates return R. F denotes the fixed cost of accessing the modern sector. We assume that the return R in the modern activity depends on the stock of infrastructure, G, in the economy. $R(G)$ is increasing and strictly concave in G.

The economy has an initial capital stock of G_0 which can be augmented using tax proceeds in the current period. Throughout, we assume that the return from the subsistence sector is strictly dominated by investment in the subsistence sector, i.e.,

$$R(G_0) - a > 0. \tag{1}$$

Let I be the amount of investment on infrastructure, as in Barro (1990). For every rupee set aside for such an activity, a fraction, $\theta \in [0, 1]$ is wasted, while the remaining fraction $1 - \theta$ is invested in development projects. One can think of such leakages as a direct result of the presence of corrupt officials or personnel in charge of disbursing development funds, as in Mauro (1995). Consequently, given the planned investment, I, the stock of infrastructure is given by,

$$G = G_0 + I(1 - \theta). \tag{2}$$

Denote

$$\pi(G) = R(G) - F \tag{3}$$

to represent the payoff to an agent from the modern activity when I is the planned investment on infrastructure. We assume that there is a profit tax on the return from investing in the modern sector. However, to keep the model simple, we assume that the return from the subsistence sector is not taxed. Finally, besides choosing I, the government in place also disburses a per head consumption subsidy, $S > 0$, in lump sum fashion to agents in the subsistence sector. As in the case of infrastructure investment, we assume that for every rupee of planned S, a fraction θ is wasted in disbursement of the subsidy. This implies that agents receive a payoff of $S(1 - \theta)$ if S rupees are earmarked for the consumption subsidy.

A fiscal policy, P, in this setting is the policy tuple $\{t, I, S\}$, where $t \in [0, 1]$ denotes a proportional tax on profits in the modern sector, I is the level of infrastructure investment, and S is the level of the consumption subsidy. For a policy P, if an agent with wealth w decides to opt for the subsistence sector, his net payoff will be

$S(1-\theta)+a$. If he decides to opt for the modern sector, he needs to invest an amount $F > 0$. If $w < F$, the agent needs to borrow the residual amount, $z = F - w$, from the credit market.

Following Holstrom and Tirole (1997), we assume the presence of moral hazard of the following form: any agent has the option of investing F in an alternative project. This project yields a non-diversifiable return, B, to the agent, and nothing to the investor. We assume that $B < F$ and will refer to the alternative project as the unproductive project. Productive investment on the other hand leads to a gross return of $R(G)$. Agents need to pay back z to lenders and then have to pay a tax, $t \cdot \pi(G)$, to the government.[4] Thus, the net return from investing in the modern sector yields a payoff,

$$R(G) - (F - w) - t\pi(G) = (1 - t)\pi(G) + w. \tag{4}$$

Since an agent will be able to obtain a loan if he invests productively, we must have

$$(1 - t)\pi(G) + w \geq B. \tag{5}$$

Thus, for such an agent, investing in the modern activity yields a payoff of $(1 - t)\pi(G) + w + S$. Since $B < F$, an agent with wealth $w > F$ will always invest productively earning a payoff of $(1 - t)\pi(G) + w + S$ as well. Given a policy $P = \{t, I, S\}$, an agent with wealth w will prefer to invest in the modern sector if and only if equation (5) is satisfied and

$$(1 - t)\pi(G) \geq a. \tag{6}$$

[4] We are thus assuming an interest rate of 0.

It is clear that for an agent with wealth w if equations (5) and (6) are satisfied, then these equations will be satisfied for any higher wealth agent as well. Thus, given the policy, $P = \{t, I, S\}$, the set of agents that will be in the modern sector is given by the set of wealth levels $[w^*, \overline{w}]$, where w^* is the minimum level of wealth for which equations (5) and (6) are satisfied.

Given the policy triple, $P = \{t, I, S\}$, the total tax collection, T, is given by,

$$T = t\pi(G)(1 - F(w^*)) \tag{7}$$

The policy triple, $P = \{t, I, S\}$, balances the budget if and only if,

$$t\pi(G)(1 - F(w^*)) = I + S. \tag{8}$$

Let w^m be the median wealth holder and let $P^m = \{t^m, I^m, S^m\}$ be the policy that is the most preferred by this median wealth holder. We can now characterize this policy. Choose $P = \{t, I, 0\}$ to maximize $(1 - t)\pi(G)$ subject to the balanced budget constraint of the government, equation (8). Let $P^* = \{t^*, I^*, 0^*\}$ denote the optimal solution. Because of equation (1), we have $\pi(G_0) > 0$, and thus it is immediate that one has $(1-t)\pi(G) > a$. Now choose $\{t, I, S\}$ to maximize $S = t\pi(G)(1-F(w^*))-I$, subject to the constraint that the policy balances the budget and w^* satisfies,

$$(1 - t)\pi(G) = B - w^*. \tag{9}$$

Let $P^0 = \{t^0, I^0, S^0\}$ solve this maximization problem. We assume the existence of two political parties who compete in offering policies so as to obtain the larger share of votes. As it turns out that even though the policy space is multi-dimensional, the median voter applies to the present setting.

Proposition 1 *The median voter theorem applies and in equilibrium, either the policy P^* or the policy P^0 is offered.*

Proof. The proof of the proposition is straightforward. First, assume that at the equilibrium policy choice, $P = \{t, I, S\}$, the median voter is in the modern sector. The income of the median voter under this policy is

$$Y^m = (1-t)\pi(G) + S(1-\theta) + w^m.$$

Let μ denote the mass of agents in the modern sector. Since the policy must balance the budget, we have $t\mu\pi(G) = I + S$, where $\mu = 1 - F(w^*)$, and w^* satisfies $(1 - t)\pi(G) = B - w^*$. Thus $Y^m = \pi(G) - \frac{I+S}{\mu} + S(1-\theta) + w^m$. Since $\mu < 1$, if $S > 0$, Y^m is less than $\pi(G) - \frac{I}{\mu} + w^m$. We now argue that the subsidy amount, S, cannot be positive. Consider the alternative policy $P^{'}$ such that $I^{'} = I$ and $S^{'} = 0$, and $t^{'} < t$ such that $t^{'}\mu^{'}\pi(G) = I$ where $(1-t^{'})\pi(G) = B - w^{'}$. Clearly, if $\mu^{'} > \mu$, since $t^{'} < t$, and the income of the median voter under this policy is given by $\pi(G) - \frac{I}{\mu^{'}} + w^{'m}$ which is strictly greater than it's earlier income. Thus S must be zero. The proof is now complete noting that by definition P^* maximizes $(1-t)\pi(G)$. Now if at the equilibrium policy choice, the median voter is in the traditional sector, then his income is equal to $a + S(1-\theta) + w^m$. The optimal policy then maximizes $S(1-\theta)$

subject to the constraint that the policy balances the budget implying that the policy choice is P^0. ∎

Which of these policies will result in equilibrium? This will depend upon the median voter's wealth level, w^m, in relation to the fixed cost of investment, F, that allows access to the modern sector. The next proposition provides a complete characterization. We say that an agent with wealth w can access the modern sector at the policy P if at P equations (5) and (6) are satisfied for any agent, w.

Proposition 2 *P^* is the equilibrium policy choice if and only if the median voter, w^m can access the modern sector at the policy, P^*.*

Proof. The necessity part is obvious. We show that if the median voter can access the modern sector at policy, P^*, then P^* is the equilibrium choice. To see this, note that there is an agent with high enough wealth, say $\overline{w}$, who definitely prefers the policy P^* to the policy P^0. For this agent, we must have

$$(1 - t^*)\pi(G^*) + \overline{w} > (1 - t^0)\pi(G^0) + \overline{w} + S^0$$

Since the median voter can access the modern sector at P^*, he can thus ensure himself a payoff of $(1 - t^*)\pi(G^*) + w^m$ under the P^* policy which by the above inequality is strictly greater than $(1 - t^0)\pi(G^0) + S^0 + w^m$, the payoff under the P^0 policy. This proves the result. ∎

We now provide a sufficient condition under which P^* is the equilibrium choice.

Proposition 3 *Suppose $R(G_0) - F + w^m > B$, then in equilibrium policy P^* is chosen.*

Proof. Since $R(G_0) - F + w^m > B$ at the null policy, $t = I = S = 0$, the median voter can access the modern sector. Moreover, from equation (1), it is preferable for the median voter to chose the modern sector at this null policy. Since the P^* policy maximizes $(1-t)\pi(G)$ subject to the government budget constraint, it must be that $(1-t^*)\pi(G^*) > \pi(G_0)$. Since $\pi(G_0) > B - w^m$ (by hypothesis), we thus have

$$(1-t^*)\pi(G^*) > B - w^m.$$

Thus, at P^*, equations (5) and (6)are both satisfied for w^m and thus by Proposition 3, P^* is the equilibrium choice. ∎

Since under the policy P^*, the subsidy amount is zero, we will refer to this policy as the *productive* policy, while under the policy, P^0, the subsidy amount is positive. Moreover, as the following proposition shows, investment under the P^0 policy will be lower compared to investment under the P^* policy. P^0 will thus be referred to as the *unproductive* policy. Let I^* (respectively, I^0) be associated with the policy P^*(respectively, P^0). Then the following proposition holds.

Proposition 4 *Suppose that $\pi(G)$ is concave, then $I^* > I^0$.*

Proof. Let $\{t^*, I^*\}$ be the optimal no subsidy policy, and let μ^* be the mass of agents who are in the modern sector with this $*$ policy. Let $\{t^0, I^0\}$ be the optimal positive subsidy policy and let μ^0 be the associated measure of agents who are in the modern sector with this positive subsidy policy. It is possible to show that $\mu^* > \mu^0$. We now show that $I^* > I^0$ for any G_0. For any given μ, suppose we want to maximize $(1-t)\pi(G_0 + I(1-\theta))$ subject to $t\pi(G_0 + I(1-\theta)\mu = I$. The first order condition is given by

$$\pi^{'}(G) = \frac{1}{\mu(1-\theta)} \tag{10}$$

Let $I^*(\mu)$ be the solution to equation (10). Since $\pi(\cdot)$ is strictly concave, $I^*(\mu)$ is increasing in μ whenever $I^*(\mu) > 0$.

For a given μ, now consider the following maximization problem: maximize $t\mu\pi(G_0 + I(1-\theta)) - I$. The first order condition is,

$$\mu\pi(G_0 + I(1-\theta)) + \frac{dI}{dt}[t\mu\pi^{'}(1-\theta) - 1] = 0, \tag{11}$$

where $\frac{dI}{dt}$ is given from the equation

$$(1-t)\pi(G_0 + I(1-\theta)) + w = B, \tag{12}$$

and $1 - F(w) = \mu$. Total differentiating equation (12) and noting that μ is fixed (and thus w is fixed) implies

$$\frac{dI}{dt} = \frac{\pi(G)}{(1-t)\pi'(G)(1-\theta)}. \tag{13}$$

Utilizing equation (13) in (11), and simplifying, yields

$$\pi^{'}(G) = \frac{1}{\mu(1-\theta)}. \tag{14}$$

Since equation (10) and (14) are the same equations, for a given μ, the solution to (14) is the same as that of (10) and equals $I^*(\mu)$. Since μ^* under the P^* policy is greater than μ^0, it follows that,

$$I^*(\mu^*) > I^0(\mu^0). \tag{15}$$

∎

Proposition (4) suggests that investment in infrastructure under P^* policies will be greater than investment under P^0 (positive subsidy, or unproductive) policies. Further, we can show that if q_1 denotes the proportion of agents in the modern sector under the P^* (zero subsidy) policy while q_2 denotes the proportion of agents in the modern sector under the P^0 (positive subsidy) policy, then the following holds $I_1 > I_2$ and $q_1 > q_2$.[5] This suggests that if the mass of entrepreneurs in the modern sector exceeds the mass of entrepreneurs in the subsistence sector, higher investment obtains. Finally, Proposition (3) provides a sufficient condition that allows the median voter to be able to access the modern sector. In other words, if the median voter can invest in the modern sector, then his optimal policy is, P^*. This implies that,

$$\underline{w} < w^m_{\text{positive subsidy}} < w^*(G_0) < w^m_{\text{zero subsidy}} < \overline{w}. \tag{16}$$

Equation (16) implies that there exists some w^* such that if $w^m > w^*(G_0)$, then the optimal policy is P^*, with no subsidy. If $w^m < w^*(G_0)$, then the optimal policy is, P^0, with a subsidy. Note that $w^*(G_0)$ is falling in the initial stock of infrastructure,

[5] The proof of this proposition is available from the authors on request.

G_0. This means that the higher the stock of infrastructure, the easier it is for the median voter to access the modern sector: i.e., $w > w^*$.

We now focus on the impact of corruption on optimal policy choices. It may be of interest to know how the optimal policy changes if the extent of leakage, as captured by θ, changes.

Proposition 5 *Let $\theta_1 > \theta_2$, and suppose policy P^0 is an equilibrium policy choice under θ_2, then P^0 is the equilibrium policy choice under θ_1.*

Proof. It is immediate that under the P^* policy, the net income of an agent is greater when the leakage, θ is less, i,e.,

$$(1 - t^*(\theta_2))\pi(G^*(\theta_2)) > (1 - t^*(\theta_1))\pi(G^*(\theta_1)).$$

Since under θ_2, the equilibrium policy choice is P^0, by Proposition (2), we know that the median voter cannot access the modern sector under P^* at θ_2. Since, $\theta_1 > \theta_2$, the median voter will not be able to access the modern sector at P^* at θ_1 as well. ∎

Proposition 5 suggests that if corruption is higher, then positive subsidy policies are more likely to obtain in equilibrium. This is because more leakage, makes $R(G) - G > a$ less likely to be satisfied, which implies that agents cant access the modern sector.

In sum, consistent with the empirical evidence reported in Figure (1), the theoretical model predicts the following variables which can potentially account for differential infrastructure investment across Indian states: i) the fixed cost of accessing the modern sector, ii) the initial stock of infrastructure, iii) median voter wealth, and iv) corruption or leakages in infrastructure spending. In the next section we conclude with some policy recommendations based on the theoretical model assessing the potential effectiveness of each these measures on regional growth.

3 Discussion and Conclusion

Recent empirical work on India argues that the reason why per-capita income across Indian states have diverged in the last few decades is because of the distribution of infrastructure investments. However, virtually no study - to the best of our knowledge – has attempted to provide a theoretical explanation for why infrastructure investments across Indian states vary, and how exogenous policy changes can incentivize politicians to spend more on infrastructure investments.

The model in the previous section suggests that the way to incentivize higher development expenditure spending as a preferred policy choice by politicians is to enact policies that allow the median voter to invest in the modern sector. In terms of the exogenous policies in the model, this can be achieved by reducing the fixed cost of accessing the modern sector and reducing wastage or corruption in infrastructure spending. In addition, redistributive policies that would lead to greater median voter wealth would also result in politicians providing more infrastructure investment (although we do not have an explicit exogenous redistributive policy in the model). Because political parties will compete to provide the optimal policies preferred by the median voter, each of these policies will potentially allow infrastructure investment to be sustained in equilibrium.

With reference to the creation of a modern industrial sector, it is now widely acknowledged that the priority given to heavy industry - producing capital goods - in India's economic planning has created two disadvantages in terms of development policy. First, because investment is indivisible, heavy industry offers little potential for regional dispersion. Second, because heavy industry is capital intensive, such investment provides little opportunity for employment generation (Mitra et al., 1998). In this context, supplementing investment in heavy industry with policies that simultaneously strengthen the role of small and medium enterprises (SME's) producing consumption goods has traditionally been perceived as a highly desirable way of ensuring balanced growth within India. Policies facing SME's take the form of preferred loans, investment subsidies, and subsidies for transporting raw materials and finished products to and from backward regions (Mitra et al., 1998). These potentially would reduce the fixed costs of investing in the modern sector. However, the policy of financial incentives has failed to stimulate and spread investment by SME's. For instance, in the 1980's, more than 50% of subsidies were concentrated in only 5% of the regions deemed under-developed (Mitra et al., 1998, p. 16), suggesting that policies favoring SME's were a failure in terms of increasing regional investments.

The model above suggests a possible reason behind why SME investments - which we broadly interpret as investment in the modern sector - were concentrated in a few regions: the returns to investing in the modern sector depend on *both* investments in infrastructure as well as an appropriate sectoral credit policy that reduces the fixed costs of accessing the modern sector (eq. 3). This suggests that the relevant policy bundle is such that *infrastructure spending is made in conjunction with a relevant credit policy which reduces the fixed costs of investing in the modern sector.* These insights are also consistent with the findings of the latest World Bank Development Policy Review which notes that credit markets show considerable evidence of market failure in India and that "the vast majority of India's rural poor still do not have access to formal finance (World Bank Development Policy Review, 2006, p. 135)". With respect to these observations, the model above suggests however that better infrastructure will not only raise the returns from investing in the modern sector, but will also reduce the fixed costs of investing in the modern sector as well.

The appropriate policy bundle would therefore need to emphasize that an appropriate credit policy as well as infrastructure investments are strategic complements, not substitutes.

Further, there is ample evidence that there is rampant and institutionalized corruption, especially in the lower and middle rungs of government in India. Because of ineffective accountability mechanisms, there is enormous leakage in the implementing of public investment programs (World Bank Development Policy Review, 2006). Some of the major issues in implementation include i) poor absorptive capacity, especially in poorer states; ii) significant leakage of funds; and iii) weak monitoring and evaluation systems (World Bank Development Policy Review, 2006, p. 142). Joshi and Little (1996) note that a large number of workers in the public sector are also redundant with "dissapointingly little productive employment being generated (p. 192)". In terms of cross country evidence, Davoodi and Tanzi (1997) show that corruption connected with public investment projects leads to a lower quality of public infrastructure.

In terms of the intuition developed in the model, more leakages lead to lower infrastructure investment being sustained in equilibrium. This is because higher leakages reduce the return to investing in the modern sector. If the amount of leakages or corruption is sufficiently high, the median voter will opt to invest in the subsistence sector. His preferred policy involves an unproductive subsidy and lower infrastructure investment, with his preferred level of public investment less than the level of public investment that would occur if the median voter was in the modern sector (Proposition 5).

This line of argument suggests that reducing corruption may not only have the standard efficiency enhancing effect on growth by raising quality improving public investments, but by increasing the return to investing in the modern sector, reducing leakages from development expenditures allows higher infrastructure investment to be sustained endogenously. In particular, reducing the leakage of funds earmarked for public investment therefore incentivizes politicians to spend more on public investment and less on unproductive subsidies. Several policy proposals have been made to tackle corruption within a regional context in India. For instance, within the context of West Bengal, a vigorous auditing of funds earmarked for public investments, performance evaluation by independent bodies, scrutiny of large contracts and procurements, and incentives to whistle blowers (Banerjee et. al, 2002). In general, specific government departments at the block level within states should be targeted for special investigations coupled with mechanisms for performance monitoring.

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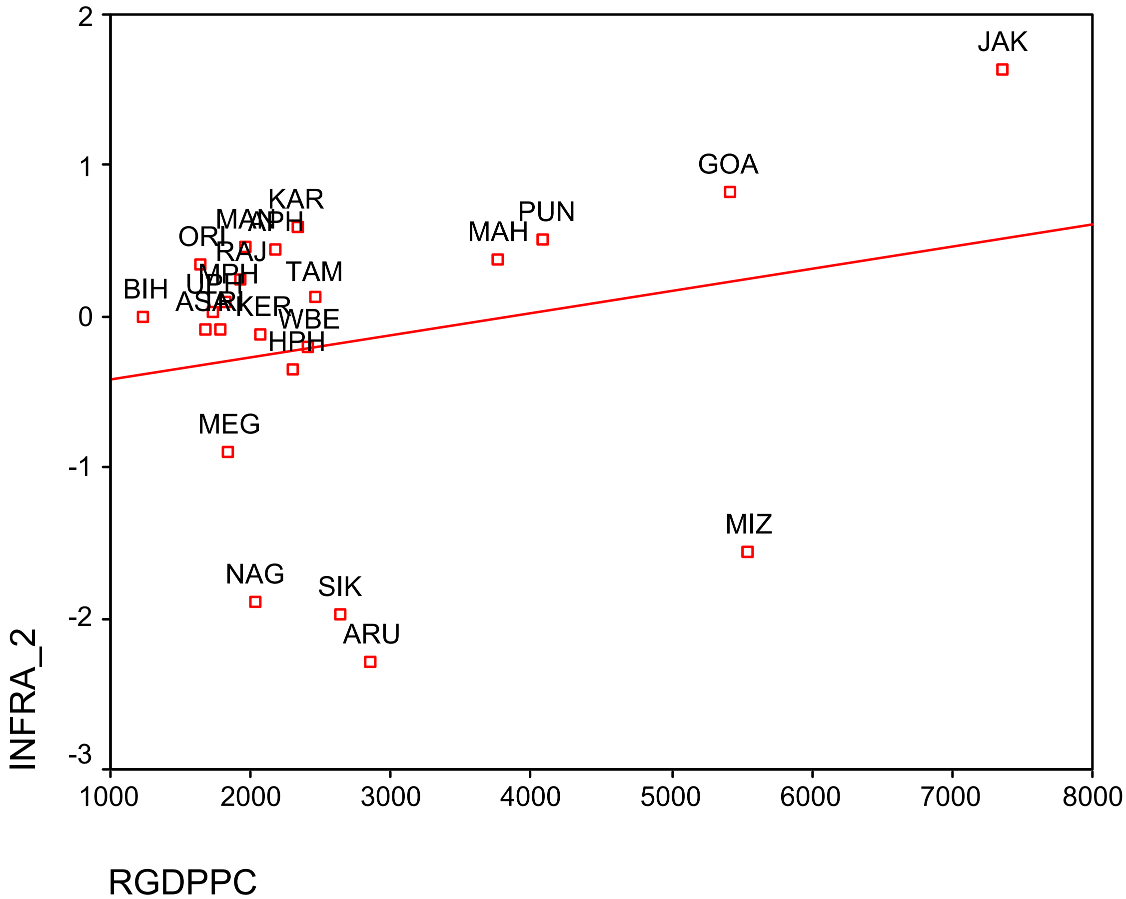

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FIGURE 1