Political Competition, Welfare Outcomes and Expenditures on Human Development: The Experience of a Democracy

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Abstract

There is a growing literature on the effect of electoral competition and democratic participation on issues such as corruption and government policy. This paper studies the effects of political competition and democratic participation on welfare outcomes. We develop a model to assess the effects of electoral competition on human developmental outcomes and empirically test the key predictions using data on infant mortality rates (IMR) in India. The empirical results provide strong support for the theoretical conjectures, which suggest that high electoral competition and high citizen participation in elections, rather than health expenditures, can explain much of the variation in IMR across different states in a democratic country like India.

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1. Introduction

This paper investigates the effects of special interest lobbying, electoral competition and democratic participation on the delivery of public services and human development outcomes in a developing country.

A large body of literature suggests that rapid growth rates, coupled with high levels of investment in human capital, will eventually result in higher living standards (World Bank 2002). In particular, when growth raises incomes above a threshold level, this provides a buffer against exogenous shocks that would otherwise result in mortality, deprivation, or famine. However, "growth sceptics" have noted, that this mechanism relies upon the growth dividend percolating to the most vulnerable members of society – an outcome that is not assured and is likely to be achieved over the long run. In addition, the record of growth in recent decades shows that many countries with low per capita growth rates have succeeded in providing health services and meeting basic nutritional needs, while others with similar or higher growth rates have failed (Sen 1982). Thus it is insufficient to merely consider output levels in isolation, without focusing on 'outcomes'[3].

In this paper we provide a novel explanation to resolve this anomaly. We argue that, for any given set of economic constraints (such as budgetary revenues, or per capita GDP), the level and quality of public services provided by a government in the short run is determined largely by political factors. Thus it is necessary to gauge the level of political willingness to tackle issues pertaining to human development. Governments

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[3] Sen (1982) has argued convincingly that in the case of the Bengal famine of 1942, outputs in the form of food production did not translate into the 'outcome' of food availability for all.

face multiple pressures when deciding on the allocation of their budgets across competing demands. On the one hand well-organized special interest groups will lobby the government, through political contributions and other means, for various forms of sector-specific policy concessions. However, such policy distortions come at a cost, if they lower general welfare, and this threatens the survival of the government. In a well functioning democracy, with a high level of political competition and a high level of political participation, there is a greater likelihood of a government losing power if its policies fail to provide for the needs of the electorate. The government must therefore trade-off the private benefits of distorting policies in favour of special interest groups, against the possible political costs of neglecting the welfare of its citizens. In a well functioning democracy voters can signal their preferences through the electoral system and hence the political costs of a policy distortion that lowers average welfare, will be larger. Our theoretical analysis therefore predicts that, *ceteris paribus*, governments that face high levels of political competition, coupled with high levels of voter participation, will deliver better public service outcomes, than governments in regimes with low levels of either political competition or voter participation.

We test the predictions of our theory on variations in the infant mortality rate[4] (IMR) across the states of India. The empirical results strongly support the predictions of the model. The focus on IMR within a given country seems particularly appropriate for our purposes. First, as suggested by Conley and Springer (2001), is the sensitivity of IMR over a short time period to investments in public health care. Other indicators, like life expectancy, are expected to have a long lag. Another reason, for choosing

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[4] Infant Mortality Rate is defined as the number of deaths by age one, per thousand live births.

IMR in the current context, is that in India, public health is delineated as a 'State Subject' under the Indian Constitution. Thus, this parameter should identify, why certain regions of India have better health outcomes as compared to others. Besides this, IMR is also considered as a general indicator of "social upliftment" and a broad proxy for human development, as it is 'a generally accepted social indicator of a nation's health and quality of life, particularly for the poorest members of society.' (Conley and Springer (2001) Pg 770). It therefore serves as a useful measure of an important dimension of human development.

The focus on a single country, with a federal system, also seems appropriate in this context. Despite advances in medicine and public health, there still exist wide variations in infant mortality rates across countries. High-income countries have an average infant mortality rate of around 5 as compared to 80 in the low-income countries.[5] This is perhaps not unexpected, as more developed economies can be expected to have better medical facilities, nutrition and sanitation and hence superior health outcomes (Conley and Springer, 2001). However, somewhat more surprisingly, in India too, there is also substantial inter regional variation in the IMR. In 1991, the state of Kerala had an IMR of 42, while in Madhya Pradesh it was 133. On the other hand average per capita State Domestic Product (SDP) in these states were Rs. 8672 and Rs. 6111, respectively – suggesting perhaps that the variation in IMR may be due to factors additional to economic growth. Closely related to this was that the impact of health expenditures on infant mortality was also weak. As pointed out by Deolalikar (2004), there is evidence 'of a significant inverse association between infant mortality and government health expenditure.' A second reason for focusing on a single

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[5] Human Development Report 2003

country is that it allows for a more precise interpretation of the empirical results. Many of the factors that vary across countries (such as political systems, trade and exchange rate regimes, judicial systems) are common within a country. This implies that the there are likely to be fewer missing explanatory variables and unaccounted interactions in the regressions, resulting in a more controlled regression and coefficients that are more easily interpreted.[6]

The remainder of the paper is organised as follows. Section 2 provides a brief literature review on infant mortality issues and the literature on political competition, Section 3 sets up a simple model based on the common agency framework of Grossman and Helpman (1994) to analyse the impact of electoral competition on health policy outcomes. The data and empirical testing is done in Section 4 and Section 5 concludes.

Section 2: Literature Review

A number of studies have examined the link between IMR and developmental expenditures. Papers by Judge et al (1998), Babzano and Hillman (1994), Pampel and Pillai (1986), mostly corroborate the view that higher health care expenditures reduce IMR. However, these studies typically focus on developed countries and do not examine the political economy incentives that drive health policies. Thus, the paper by Judge et al (1998) considered variables like income-inequality, health expenditures as a proportion of GDP, social security transfers, and percentage of women in total workforce. Similarly, Babazano and Hillman (1994) did a cross-sectional study on the effects of health spending on IMR for OECD countries and found that the proportion

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[6] By way of example the impact of political competition in a US type of congressional system will differ from that of a parliamentary democracy – as in India. By excluding regimes in the former category the coefficient on the political competition term can be interpreted with more accuracy.

of health care expenditure was not a significant determinant for IMR. Conley and Springer (2001) also analyse the effect of state welfare spending on IMR for the OECD countries. They include a 'fixed-effect' variable in order to factor out the nation-specific effects. The study finds that state spending on welfare affects IMR both through social and medical mechanisms. The evidence on the effects of government spending on IMR therefore appears to be mixed, suggesting that there may be other factors (such as political incentives), which determine the effectiveness of spending on health outcomes.

There is a related body of literature that examines the role of politics in welfare spending. This issue has been analysed by Cameron (1978), Castles and Mitchell (1992) and Hicks and Swank (1992). In an early paper Cameron (1978) suggests causes for an increasingly pervasive government sector. He looks at five underlying causes - economic, fiscal, political, institutional and international and argues "democracy implies that the contenders for political office alter their programs in order to enhance their political appeal" (Cameron, 1978, p 1246). This can be in the form of reduced taxes or higher government expenditures (or both). This is perhaps of some relevance to a developing country democracy such as India where the bulk of voters do not pay taxes. Cameron's interpretation suggests that when the median voter pays no taxes, the government might use public spending as a way of securing political support.

Hicks and Swank (1992) show that electoral turnout has a positive influence on welfare effort in 18 developed democratic nations. They further suggest that the presence of leftist or centrist governments also increase commitment to higher welfare effort.

A related literature based on the seminal work of Grossman and Helpman (1994, 1996) examines the effects of lobbying on environmental policy choices. The general conclusion emerging from this work is that greater political accountability leads to improved policy outcomes (Damania et al (2003), Deacon (1999), Murdoch and Sandler (1997), Deacon (2003), Triesman (2000), Rose Ackerman (1999), Johnston (1999)).

While most of the empirical work in this area focuses on cross-country analysis, to our knowledge there has been no work on the reasons for variations in outcomes within countries. Typically, the literature associated with infant mortality, tries to link its effect on economic growth. Preston (1976) suggested economic development as a major factor in determining life expectancy. Bhargava et al (2001) also model the 'proximate determinants of economic growth' by focussing on health and human development as determinants. Using panel data regressions, they find a positive effect of adult survival rates on the GDP growth rates in low-income nations. Similarly Younger (2001) approaches the growth issue by analysing declines in IMR. It uses lagged IMR data as a dependent variable for the change in IMR and then looks for absolute and conditional convergence, using other fixed effect variables like school enrolments, availability of healthcare etc. He finds surprisingly that health availability has no impact on declining IMR.

The focus of our study is not on growth, but on the factors, that might affect health outcome levels. Thus we wish to study the quality of governance across the Indian States. Arguably, IMR, which is a good measure of the quality of health in a region, may be affected by economic, social and political variables.[7] Thus the existing literature does not explain adequately, why in a democratic country like India, there

[7] As Sen (1985, 1987) suggests, poverty is the inability of an economy to achieve 'ends'.

ought to be such large variations in infant mortality rates (Kerala 42 and Madhya Pradesh 133 in 1991). We suggest that part of the variation can be explained through the level of electoral competition within these states. We thus synthesise the inter connected strands of literature and argue that political competition, as exemplified by both electoral competition and democratic participation, would force a government to focus on better governance through higher provision of public goods and therefore better outcomes on public welfare.

Section 3: Model
The model is based on Damania *et al* (2003) and attempts to analyse the effect of political competition on government policy. A small state economy consists of consumers and firms. A subset of these firms form a lobby group which attempts to induce the government to provide sector specific policy favours. For concreteness we focus on the analytically simple case of a subsidy to production – though more general interpretations are possible.[8] However, the government must eventually face a budget constraint, which limits its spending options. Hence support for the lobbying firms implies that there is less available for other purposes, such as public health expenditures. For simplicity we focus on the not unrealistic case where the budget constraint binds and is given by:

$$\overline{G} = c^x + s \qquad (1a)$$

where c^x is government expenditure on public services[9] (like basic health) and s is the government subsidy provided to the lobbying firms. Citizens derive utility from

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[8] This is just one of many equivalent ways of assessing the effects of government support to a few.
[9] It must be specifically mentioned here that since the focus of this paper is on 'outcomes' rather than 'outputs', c^x refers to the effective public expenditure (on say health). Thus the citizens are not merely

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the public service c^x and a numeraire good y with constant marginal cost equal to one[10]. Citizen utility is thus

$$\Omega^P(x, Z^P) = u(x) + c^y \tag{1b}$$

where x is the level of consumption of health expenditure, $x = x(c^x)$, is the health production function, $x' > 0$ and $x'' < 0$, $u(c^x)$ is a strictly concave and differentiable sub-utility function and Z^P is the vector of any other factors which the consumers care about.

The lobbying firms produce good z at a given price p^{*}[11]. Production of z by each of the n identical firms is given by z_i, where $nz_i = Z$. The profitability of the lobbying firms depends in part on the subsidy (*s*) that they receive. This in turn is determined by the amount of contributions $C^R(s)$, paid by the lobbyists to secure the subsidy, where $C_s^R > 0$. We later define how the subsidy and contributions are optimally determined. For simplicity we assume that good z is exported. The cost of producing good z is given by $v(z_i(s))$, where we assume $v_z > 0$, and $v_{zz} > 0$. Given the subsidy (s), the profit function of each firm is:

$$\Pi^R(s) = U^R(p, z, s) - C^R(s) \tag{2a}$$

where,

$$U^R = p^{*}.z_i - v(z_i(s)) \tag{2b}$$

For future reference we note that differentiating Equation (2b) with respect to z yields the first-order condition

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concerned with the money that is spent in the health sector, but rather at the whole gamut of better health management.

[10] The good z does not enter the consumer's utility function because we assume that this good is entirely exported.

[11] The world market price p^{*} is exogenously given as the producer is a price taker in a small state.

$$\frac{\partial \Pi_i}{\partial z_i} = p - v_z = 0, \qquad (3)$$

Thus firms produce up to the point where the price is equal to the net-of-subsidy marginal cost.

The model defines a three-stage game, based on the following sequence of events.

Stage 1. Firms in sector z_i form their own lobby group to obtain subsidies / support from the government. The lobby groups offer the incumbent government a specific political contribution for selecting a policy s. The firms political strategy therefore consists of offering a political contribution schedule that links contributions to the subsidy received.

Stage 2. The government then sets its optimal public expenditure policy, given the lobby groups' strategies and the expected level of political rivalry that determines its survival after the election. This is determined by the level of democratic participation and political competition in the next election. The government receives the political contribution from the lobbies.

Stage 3 When the subsidy has been set, the firms choose their output levels.

The n firms are sufficiently few that lobby group organisation is feasible. On the other hand, the general citizens are many and dispersed and hence unable to form a coherent lobby group. This is consistent with Olson's (1965) assertion that large groups face substantially higher collective action costs than do smaller groups Aggregating equation (2b), the firm lobby's indirect utility is given by

$$\Omega^R(s, Z^R) = nU^R(s) - C^R(s), \qquad (4)$$

where $nU^R(s)$ are the lobbying firms' aggregate profits, given the subsidy s and Z^R is the vector of all other factors that influence its profits (ignored in the model for simplicity).

The incumbent government's objective function is given by

$$G(s) \equiv C^R(s) + \phi(\Omega^R(s) + \Omega^P(s)) \tag{5}$$

where, $C^R(s)$ is the political contribution paid by firms, $\phi = \gamma\mu$ is an index for political competition, where γ is the democratic participation rate and μ is the level of political competition. $\Omega^R(s)$ is the firm lobby's utility function. $\Omega^P(s)$ is the consumer's utility function.

Government utility, $G(s)$, is thus a weighted sum of the political contributions and the level of total social welfare. As in Grossman and Helpman (1994), it is assumed that contributions are valued by the government for their many uses. They can for instance, be used for campaign spending or by the incumbent politicians' for personal consumption'. As suggested by Grossman and Helpman, social welfare is also valued because it increases the government's chances of retaining power in the next election.[12] The weight given to social welfare (the sum of firms and citizens utility) depends upon the probability that the government remains in power. This probability is affected by two factors: γ which represents the expected democratic participation rate in the elections, and μ which is the expected degree of political competition in election. We thus follow the influential work of Vanhanen (2000), who suggests that both political participation and political competition are necessary requirements for

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[12] In the context of a democratic system this is likely to occur if increases in aggregate welfare increase the welfare of the median voter, or the decisive group in a coalition. We do not explicitly model these issues which have been explored in great depth in the political economy literature (Persson and Tabellini, 2002)

democracy. This implies that in a democratic society, a politician would be more responsive to public policy decisions, if there exists an actively participating electorate and a significant opposition.

An implication of this formulation is that a proportion $(1-\gamma)$ of the electorate does not participate in the political process. This might be due to electoral apathy, or due to constitutional restrictions, which prevent a certain portion of citizens from voting.[13] What this formulation highlights is that if democratic participation is low, it will distort the government's objective function in favour of special interest groups' campaign contributions (or bribes).

However γ is only a partial measure of the degree of democracy, because if all citizens are coerced into electing and there is only one available choice, there is no incentive for the incumbent to focus on social welfare or alter their policies in any way. Hence, the effect of democratic participation also depends crucially on the expected level of political competition, μ.[14]

The equilibrium in this model has the structure of a common agency model by Bernheim and Whinston (1986) where several principals (the lobbying firms in our model) attempt to induce the single agent (the government) to undertake a certain action. This equilibrium maximizes the joint surplus of all parties, as discussed by Grossman and Helpman (1994). In our set-up, one condition that the equilibrium subsidy, s^*, satisfies is given by

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[13] For instance in some countries exclusion is based on gender, in others it is based on ethnicity or religion.
[14] High levels of political participation without alternatives to choose from will have little relevance in deciding policy outcomes, e.g. elections in single party dictatorships (Persson and Tabellini, 2002).

$$s^* = Arg \max G(s) \equiv C^R(s) + \phi(\Omega^R(s) + \Omega^P) \tag{6}$$

Differentiation of (5) with respect to the subsidy yields

$$\frac{\partial G}{\partial s} = n\frac{\partial C^R}{\partial s} + \phi\left\{ \frac{\partial \Omega^R}{\partial s} + \frac{\partial \Omega^P}{\partial s} \right\} = 0 \tag{7}$$

Turning next to Stage 1 of the game, where contributions are determined, differentiating equation (4) with respect to contributions C^R.

$$\frac{\partial \Omega^R}{\partial C^R} = \frac{\partial U^R}{\partial s}\frac{\partial s}{\partial C^R} - 1 = 0 \tag{8.1}$$

Note that since $\dfrac{\partial U^R}{\partial s} > 0$, then an interior solution to equation 8.1 exists only if

$\dfrac{\partial s}{\partial C^R} > 0$. Thus by the inverse function theorem, equation (8.1) can be rearranged as

$$\frac{\partial U^R}{\partial s} = \frac{\partial C^R}{\partial s} \tag{8.2}$$

Equation (8.2) suggests that the firm will pay contributions up to the point where the marginal benefits from a higher subsidy received from the government equals the marginal cost of higher contributions. In this sense, the contributions to the politicians by the firms are *locally truthful*, since they reveal the benefits of changing government policy.

Substituting (8.2) into the first-order condition (7)[15] and using equation (1) defines the optimal policy of the government:

$$\frac{\partial G}{\partial s} = n\frac{\partial C^R}{\partial s} - \phi\frac{\partial \Omega^P}{\partial x}\frac{\partial x}{\partial c^x} = 0 \tag{9}$$

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[15] We use the fact that $\dfrac{\partial U^R}{\partial s} = \dfrac{\partial C^R}{\partial s} \Rightarrow \dfrac{\partial \Omega^R}{\partial s} = 0$ (from equation 7.2).

Thus the government distributes its budget between the subsidy to lobbyists and expenditure on health to equate the politically relevant marginal benefits to the politically relevant marginal costs. The former include the increase in contributions flowing from the higher profits accruing to firms, while the latter include the welfare loss resulting from a decline in public services delivered to the electorate. The importance given to the welfare loss depends upon the expected political costs as summarized by the electoral effect (ϕ).

We now analyze the impact of electoral competition on the level of subsides provided by the government to the firms. Totally differentiating (9) and rearranging yields,

$$\frac{ds}{d\phi} = -\frac{\partial^2 G}{\partial s \partial \phi} \Big/ \frac{\partial^2 G}{\partial s^2} < 0 \qquad (10)$$

Since, by the second order conditions, $\dfrac{\partial^2 G}{\partial s^2} < 0$ and $\dfrac{\partial^2 G}{\partial s \partial \phi} = -\dfrac{\partial \Omega^P}{\partial x}\dfrac{\partial x}{\partial c^x} < 0$

Thus the model yields the following prediction that we test in the following section:

Prediction: **Higher electoral competition will lead to (i) increased welfare spending by governments and (ii) better health outcomes**.

Section 4: Data and Empirical Results

The existing literature on IMR, viz. Preston (1976), Bhargava et al (2001) Younger (2001) has mostly use a cross-country or pooled data to estimate the determinants of IMR. Typically, OLS estimators controlling for nation/region specific fixed effects have been used and in some cases a lag of IMR has been used as explanatory variables. Some of the major determinants of IMR have been identified in

the literature as, expenditure on public health, poverty levels, income levels, literacy –

particularly female literacy and factors like the presence of doctors or medical

facilities. The objective of our study is to analyse whether electoral competition plays

a role in reducing infant mortality (through direct or indirect channels), after

controlling for these factors.

However, variables like expenditure on health, literacy levels and poverty levels

might be correlated with political competition, hence OLS would give inconsistent

estimates. Thus system estimation with good instruments would provide consistent

estimators of the coefficients. This is what is attempted in the empirical exercise[16].

We use pooled data for the 15 major states of India, for the period 1985-2000. The

economic data are from the Reserve Bank of India's annual report on Indian State

Finances. The data on social indicators like IMR are drawn from the National Human

Development Report 2001 – 'The State of Human Development"[17]. The data

pertaining to State level voter percentage and the percentage of votes accruing to the

opposition have been taken from the State election data released by the Election

Commission of India.

The variables used in the regressions are:

Electoral Competition (ELCOMP)– In any democratic society, the voting pattern

would determine the level of political competition. There are two components that

determine the level of political competition. The first is the proportion of voters who

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[16] It must be understood that most empirical research on social policy focuses primarily on expenditures on welfare undertaken by the government. This is in a sense a measurement of 'welfare effort'. However, it might be argued that unless one focuses on the quality of expenditure, the results might be inadequate. As a case in point Esping-Anderson (1985) argues: " By scoring welfare states on spending, we assume that all spending counts equally. But some welfare states, the Austrian one, for example, spend a large share on benefits to privileged civil servants" (pg 19). We in our paper wish to distinguish between the 'means ' and the 'ends' of public policy. The idea is not to negate the importance of the expenditure levels, but to also highlight in a sense the efficiency of expenditure. Thus we need a model where the developmental 'ends' and the 'means' will be determined simultaneously through the interaction of electoral competition.

[17] As data for most of these indicators are available at certain points of time, the data for the interim years have been projected, by calculating the compounded growth rate between those years.

exercise their right to vote. This component is important since it is a measure of voter 'activism', which means that political parties have to tailor policies, which would be agreeable to the majority of the polity (see Vanhanen (2000) for a discussion). This is important for those countries where voting is not compulsory[18]. The second measure of competition is the proportion of votes accrued by the opposition or the losers. This indicates the actual level of political competition and choice. Closely following Vanhanen (2000) we define electoral competition similarly. *Health expenditure per capita (MEDPC)* was calculated by dividing the expenditure on public health with the population of each State. Infant Mortality Rate (IMR) – defined as the number of deaths of children under 12 months per 1000 live births. *Share of Agriculture in State output (AGRISDP)*. State Output per capita Factor Cost (SDPPC). *Revenue Deficit Per capita (RDPC)* and *Health expenditure as a ratio to State Domestic Product (HEALTHSDP)* which was calculated by the authors by dividing expenditure on public health with the output of each State. *Female literacy in rural areas* (FEMRURLITERACY) was included as a control variable, as was the *Proportion of births handled by health professionals* in rural areas (HEALTHPROF) (See Appendix for data and its sources).

We consider IMR to be a function of electoral competition, health expenditure, poverty and other variables. However, health expenditure itself might be a function of electoral competition. Thus there may exist a simultaneity bias in the equation. This can be solved using two-staged least squares (TSLS) in a simultaneous equation system.

The model that we test is:

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[18] Unlike say Australia

$$\log(imr)_{it} = \alpha_1 + \alpha_2 \log(medpc)_{it} + \alpha_3 \log(elcomp)_{it} + \alpha_4 \log(agrisdp)_{it}$$

$$+ \alpha_5 \log(femrurliteracy) + \alpha_6 \log(healthprof) + \alpha_7 \log(sdppc) + \varepsilon_1 \quad (1)$$

$$\log(medpc)_{it} = \beta_1 + \beta_2 \log(elcomp)_{it} + \beta_3 \log(sdppc) + \beta_4 rdpc_{it} + \varepsilon_2 \quad\quad (2)$$

where the variables have been defined earlier[19].

We use two measures of health expenditure to test the predictions of the models. The first is medical expenditures per capita $medpc_{it}$ and the other $healthsdp_{it}$. We expect the coefficient of $medpc_{it}$ ($healthsdp_{it}$) in equation (1) to be negative, indicating that higher medical expenditures per capita should reduce the infant mortality rate of a region. Similarly, we expect high electoral competition to also lower infant mortality because of the need for political parties to show better 'output delivery'. Thus the coefficient for $elcomp_{it}$ is also expected to be negative. The coefficient of $agrisdp_{it}$ is expected to be positive, because share of agriculture in total output may proxy poverty[20] and high poverty is expected to contribute to higher infant mortality. The coefficient of $sdppc_{it}$ is expected to be negative because higher incomes should reduce infant mortality. Similarly higher female literacy ($femrurliteracy_{it}$) should also have a negative impact on infant mortality, as should the presence of more health professionals ($healthprof_{it}$).

Moving on to equation (2), as suggested by theory, higher electoral competition should make governments focus on developmental expenditures like health and sanitation. Thus the coefficient of $elcomp_{it}$ is expected to have a positive sign. The

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[19] We use log(elcomp), log(agrisdp), log(sdppc) and rdpc(-1), urbanisation, vaccination of women in rural areas and a budgetary institution index as instruments (as they are the exogenous and pre determined variables in the system). We do a Hausman Specification test to confirm that the residuals are not significantly different from zero and hence the instruments may be considered to be valid.
[20] A positive correlation of 0.3 between poverty and share of agriculture in SDP confirms this. More generally it is well known that most of India's poor live in rural areas and are in the agricultural sector.

greater the per capita state output, the greater ought to be the level of medical expenditure per capita. On the other hand, the higher is the income of the people, the lesser would be their reliance on State funds, consequently, the sign of the coefficient of $sdppc_{it}$ is ambiguous. The sign of the last variable, viz revenue deficit is ambiguous. It could be argued that a higher revenue deficit would translate into higher expenditures on public health. On the other hand, a higher revenue deficit could act as a constraint on discretionary expenditures. Thus the sign of $rdpc_{it}$ is ambiguous.

Results

Tables 1 and 2 give the results of the econometric exercise. The results of Table 1 are consistent with the model. Note that $medpc_{it}$ is not significant, when imr_{it} is the dependent variable. This confirms Deolalikar's (2004) assertion that increasing levels of per capita medical expenditures have no impact on infant mortality. However, the key result is that higher electoral competition reduces infant mortality. Higher incomes ($sdppc_{it}$) and more health professionals have a significant and negative effect on infant mortality. This view is further corroborated in the second equation of Table 1, which shows that higher electoral competition has a positive impact on health expenditures. Similarly as income per capita rises ($sdppc_{it}$) it leads to an increase in per capita health expenditure as well. This suggests that economic growth is also an important determinant of IMR. The coefficient of $agrisdp_{it}$ and $femrurliteracy_{it}$ is of the right sign but is statistically insignificant, as is the case with $rdpc_{it}$.

Table 2 runs the same model with health expenditure as a share of state output ($healthsdp_{it}$) as one of the dependent variables. There appear to be some differences in results in this case. First of all, the key results remain unchanged, viz. that electoral

competition increases health expenditure as a share of state GDP and that electoral competition impacts negatively on IMR. Both of these are significant. Poverty as measured by the share of agriculture in State GDP appears to have no impact in infant mortality. Here too $healthsdp_{it}$ appears to have no effect IMR in the first equation of Table 2 corroborating Deolalikar's (2004) findings. One possible explanation for this counterintuitive result is that this reflects purely wasteful public expenditure. That is, merely enhancing expenditure on health has no impact on the 'outcome' of infant mortality[21]. The number of health professionals have a significant impact on reducing IMR, however the coefficients of $agrisdp_{it}$, $sdppc_{it}$ and $femrurliteracy_{it}$ are not significant. Surprisingly in the second equation, income appears to be negatively related to health expenditures as a proportion of SDP. In other words, poorer income levels are associated with relatively higher levels of health expenditure as a share of State GDP. In other words, $healthsdp_{it}$ could in fact be capturing the effects of a higher incidence of poverty and hence IMR in a state,

Conclusion

This paper explores the role of electoral competition on government policy outcomes. Our empirical research for the Indian regional government shows, what our model predicts, that increased political competition, would lead a government to prioritise more on public welfare and on ensuring better outcomes for citizens. The transmission channels of how electoral competition impacts upon the 'outcomes' are still unclear, as is shown by our empirical exercise, where in one case it is straight forward as a higher electoral competition leads to higher per capita health expenditures, which in

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[21] A possible explanation that is consistent with recent World Bank household surveys conducted in the state of Andhra Pradesh, is that environmental factors (such as indoor pollution, pesticide exposure and contaminated water) are the main cause of IMR amongst the vulnerable poor, and that health interventions are ultimately ineffectual when infants are consistently exposed to these risks (World Bank 2001). If this were the case, health expenditure could have no impact on IMR.

turn would impact upon the 'outcome' of infant mortality levels. However, it appears that electoral competition does have a 'direct' impact on IMR levels, possibly through ensuring better management and policies. This is revealed in our empirical models, where even though health expenditure has a no impact on IMR, electoral competition appears to reduce infant mortality. We believe that these results are particularly significant in the context of developing democratic nations like India.

The other conclusion that we can arrive at is a realisation that the major issue is not one of centralisation or decentralisation of government; rather it is one of the levels of political competition. To the extent that there exists multiple avenues for political competition in a decentralised world, there will be a higher probability of the electorate ensuring better outcomes. In such a situation, a decentralised system of governance is preferred to a centralised one, where there might be a 'risk' of a democracy 'locking' itself into a low competition environment and thereby getting poor outcomes for itself.

Table 1: TSLS Estimation of developmental outcomes due to Electoral Competition

Dependent Variable	Independent Variables	Coefficients
Log (IMR)	Log (Medpc)	0.259 (0.92)
	Log (Elcomp)	-0.270** (-4.34)
	Log(Agrisdp)	-0.108 (-1.60)
	Log(Sdppc)	-0.336* (-1.93)
	Log(Femrurliteracy)	-0.07 (-0.96)
	Log(Healthprof)	-0.321** (-6.97)
	Adj. R-square	0.59
	Number of Observations	225
Log (Medpc)	Log (Elcomp)	0.132** (3.26)
	Log(sdppc)	0.637** (19.57)
	Rdpc	0.0002* (2.42)
	Adj. R-square	0.87
	Number of Observations	225

Figures in brackets refer to t – statistics

** significant at 1% level or below

* significant at 5% level

Table 2: TSLS Estimation of developmental outcomes due to Electoral Competition

Dependent Variable	Independent Variables	Coefficients
Log (IMR)	Log (Healthsdp)	-0.561 (-0.60)
	Log (Elcomp)	-0.219* (-2.31)
	Log(Agrisdp)	-0.152 (-1.51)
	Log(Sdppc)	-0.373 (-1.13)
	Log(Femrurliteracy)	0.128 (0.61)
	Log(Healthprof)	-0.379** (-4.20)
Log (Healthsdp)	Adj. R-square	0.50
	Number of Observations	225
	Log (Elcomp)	0.131** (3.23)
	Log(sdppc)	-0.355** (-10.62)
	Rdpc	0.0002* (2.07)
	Adj. R-square	0.55
	Number of Observations	225

Figures in brackets refer to t – statistics

** significant at 1% level or below

* significant at 5% level

Appendix1: Source of Data used in the Empirical Exercise

Data	Source
Electoral Competition (ELCOMP)	Calculated by the Authors, using data on state level elections, published by the Election Commission of India
Medical Expenditure per capita (MEDPC)	Report on Finances of State Governments, Reserve Bank of India
Infant Mortality Rate (IMR)	The State of Human Development, Planning Commission, Government of India
Female literacy rates in rural areas (FEMRURLITERACY)	The State of Human Development, Planning Commission, Government of India
Percentage of births attended by health professionals in rural areas (HEALTHPROF)	The State of Human Development, Planning Commission, Government of India
State Domestic Product per capita at factor cost (SDPPC)	Central Statistical Organization, Government of India
Revenue Deficit per capita (RDPC)	Report on Finances of State Governments, Reserve Bank of India
Share of Agriculture in State Output (AGRISDP)	Central Statistical Organization, Government of India
Health Expenditure as a ratio of State Output (HEALTHSDP)	Report on Finances of State Governments, Reserve Bank of India

Appendix 2: Average Values (1985-2000) of the variables used in empirical analysis

States	IMR	SDPPC (Rs.)	ELCOMP	MEDPC (Rs.)	AGRISDP (%)	HEALTHSDP (%)	RDPC (Rs.)	FEMRURLITERACY (%)	HEALTHPROF (%)
Andhra Pradesh	54	7354.4	0.38	66.4	28.2	1.01	104.6	27.1	41.0
Assam	90	5499.0	0.45	67.0	34.7	1.29	18.3	54.2	14.4
Bihar	74	3524.0	0.41	38.6	42.1	1.12	59.2	19.6	14.5
Gujarat	76	10080.0	0.24	81.8	18.8	0.87	137.8	38.8	33.2
Haryana	51	10677.7	0.41	70.8	37.8	0.72	159.7	34.1	24.8
Karnataka	73	7904.8	0.40	79.9	30.1	1.09	60.0	36.1	40.5
Kerala	41	8671.6	0.47	97.7	23.0	1.28	205.1	83.9	87.7
Madhya Pradesh	132	6111.0	0.32	53.7	33.9	0.91	73.5	24.0	22.1
Maharashtra	72	11401.7	0.39	80.7	16.6	0.83	145.5	43.2	37.8
Orissa	123	4888.2	0.32	55.5	32.9	1.19	161.3	33.0	17.3
Punjab	72	11914.0	0.12	106.5	43.3	0.94	378.5	45.4	45.4
Rajasthan	85	6371.9	0.33	75.9	31.5	1.23	131.1	15.5	18.5
Tamil Nadu	53	9005.9	0.41	90.7	19.2	1.11	177.5	43.1	60.7
Uttar Pradesh	97	5261.1	0.32	50.6	36.0	1.04	142.6	21.7	12.0
West Bengal	60	7345.4	0.40	71.6	27.8	1.03	205.0	39.8	24.1

IMR: Infant mortality rates per 1000 live births
SDPPC: State Domestic Product per capita
ELCOMP: Electoral Competition
MEDPC: Medical Expenditure Per Capita
AGRISDP: Share of Agriculture in State Domestic Product
HEALTHSDP: Share of Medical Expenditure in State Domestic Product
FEMRURLITERACY: Percent of female literacy in rural areas
HEALTHPROF: Percent of births carried out by health professionals in rural areas

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