

DEMOCRACY AND VISIBILITY

Anandi Mani and Sharun W. Mukand*

October 2000

*Anandi Mani: Dept.of Economics, Vanderbilt University - 1819B, Nashville, TN 37325, email: anandi.mani@vanderbilt.edu; Sharun Mukand: Braker Hall, Tufts University, Medford, MA 02155, email: smukand@tufts.edu. This paper has benefitted from discussions with Francesco Caselli, Steve Coate, Andrew Foster, Michael Kremer, Gib Metcalf, Russ Murphy, Amartya Sen and especially Sumon Majumdar. Thanks also to Patrick Webb for making the malnutrition data available.

DEMOCRACY AND VISIBILITY

Abstract

We examine the role of *visibility* in influencing government resource allocation across multiple public goods. In an electoral framework, outcomes are defined to be less visible in tasks if it is harder to assess government ability based on observed outcomes. Such a 'visibility effect' distorts resource allocation towards more visible goods. Our model provides an explanation for government neglect in the provision of several essential public goods, despite their considerable benefits. It throws light on the even more puzzling phenomena of voter apathy towards such neglect, and the focus of political competition on issues with small welfare benefits. We show that, even though greater democracy does reduce moral hazard in government effort, there need not be a monotonic improvement in provision of some essential public goods. Goods/services with low visibility are more prone to multiple equilibria in resource allocation, such that the outcome depends on voter expectations. We present on evidence on less and more visible public good outcomes in countries at varying levels of democracy.

KEYWORDS: Democracy, Visibility, Public Goods, Voter Expectations, Famines and Malnutrition

1 Introduction

Many developing countries are characterized by governmental neglect of basic amenities such as adequate access to health and educational services. As has been pointed out by a number of development economists, it is particularly puzzling that despite considerable benefits, the provision of essential public goods is characterized not just by governmental apathy, but more surprisingly, by voter apathy towards governmental neglect.¹ In fact, we often observe political competition and agitation on dimensions other than the those that may yield the greatest benefits.² This paper throws light on these preceding issues and asks the following questions. Why may governments be good at providing some public goods, but not others? Further, what is the impact of the extent of democratization on the nature and extent of public good provision? Our answers focus on the role of differences in the *visibility* of public good outcomes, and discuss why resource allocation by elected governments may be particularly susceptible to this factor.

Some outcomes are intrinsically less visible than others. To take a simple example, Sen(19xx) points out that the loss of life due to malnutrition is equivalent to ‘three hundred Jumbo Jet crashes a day, with no survivors, and more than half the victims being children’. In contrast the loss of life in a famine – concentrated in space and time – is certainly a more visible outcome. Such differences in visibility are ubiquitous.³

Visibility differences affect public good provision because of an essential aspect of government: Governments are required to provide a *multiplicity* of goods and services – from disaster relief to drinking water, from education and health to defence – rather than perform

¹As Dreze and Sen(1995), speaking of education provision in India, put it: “The empowerment of basic education is so obvious that there is something puzzling in the fact that the promotion of education has received so little attention from social and political leaders. .. “what is perhaps most striking of all is that the failures of government policy over an extended period have provoked so little political challenge.”

²Besley and Coate(2000) present interesting arguments for why some issues are politically *salient*, but not others.

³Other examples of visibility differences may be provided. (i) Short term outcomes are typically more visible than those that occur in the medium or long run. Rogoff(1990) (ii) The PROBE Report on education in India points out the relative neglect of education issues in the media: In an annual count across xx leading dailies in the country, only xx articles were about education (even less on primary education), as against xxxx articles on defence issues.

a single well-defined task. Likewise, voters' assessment of a government's competence, and their voting decisions, are based on the government's performance on a *vector* of outcomes. If outcomes on some tasks are less visible, it is harder for voters to assess a government's ability based on these tasks. Governments, being in the business of maximizing reputation, are aware of this. If outcomes depend both on their competence and their effort, they have an incentive to allocate resources across public goods so as to exploit differences in the visibility of their outcomes. For similar reasons, goods or services with a large number of complementary inputs are likely to be plagued by such a 'visibility effect' – because here again, it is harder to isolate the impact of the government's ability alone on the overall outcome.⁴

We incorporate these ideas by adapting Holmstrom(1982,1999)'s model of career concerns to a multi-task model of political competition.⁵ In our framework, we combine the multi-task aspect of governmental public good provision with differences in the degree of visibility across tasks. Our first result, demonstrates that governments have an incentive to allocate an inefficiently large amount of resources towards the more visible public good. This occurs because the electoral concerns of the incumbent government, gives it an incentive to signal its competence to the electorate by devoting a disproportionate amount of resources to the more visible public good. This result is similar in flavor to Holmstrom - Milgrom's(1991) work on the role of explicit incentives in multi-task models. Our work shows that their insight carries over quite naturally to a political economy world where the incentive structure is implicit rather than explicit.

We then go on to examine the result of greater *democratization* in the political structure on governmental incentives. While democracy has many aspects, at least to begin with we restrict our focus to the greater political competition that democratization implies. Greater democratization results in a larger ratio of resources allocated to the more visible rather than the less visible public good. Thus an increase in the extent of democracy has the potential to lower national welfare, because it might result in an inefficiently large reallocation of resources to the more visible public good - we call this the 'visibility' effect. However, the increased

⁴Problems such as malnutrition, high illiteracy or poor sanitation may be 'complex' in precisely this respect.

⁵Dewatripont, Jewitt and Tirole(1999b) explore a multi-task version of performance in government bureaucracies, but their analysis is not about electoral concerns. Also, their focus is less on allocation of effort across tasks as much as it is on overall effort.

possibility of losing power that greater democratization implies, also gives the incumbent an incentive to put in greater effort and resources. This latter incentive effect mitigates the moral hazard problem of the incumbent and hence greater democratization might also increase national welfare - this is the standard 'effort augmenting' effect . We show that the overall effect on national welfare is ambiguous, and depends on the relative importance of the 'visibility' and 'effort' effects. However, what is unambiguous is that there is going to be a decrease in the ratio of less visible to more visible public good that is supplied with democratization. In addition, if we ignore the overall distributional aspects of resources and effort across tasks, we can certainly say that democratization enhances overall resource and effort supplied by the government.

The above analysis suggests that resource allocation towards low visibility public goods has a tendency to be lower than what is optimal. However, even if this is the case, it is equally true that there are large differences in the quality and quantity of public goods provided. For example, the relative success of Sri Lanka, stands in sharp contrast to the abysmal performance of its neighboring countries in South Asia. An extension of the benchmark model, allows for complementarity between the ability of the government and the resources allocated for public goods by it. In this extension, we show that the low visibility public good, is particularly prone to multiple equilibria outcomes. Our analysis suggests that greater literacy and political awareness, by shifting voter expectations, might help improve the level of public good provision of low visibility public goods. Furthermore, we show that greater democratization results in an inverse U shaped relationship between the relative resource allocation between the more and less visible public goods. In this framework, we show that the inefficiency in resource allocation due to the 'visibility effect' increases and is maximum at some *intermediate* level of democracy. Thereafter the gap in resource allocation across the more and less visible public good decreases.

We then examine the theoretical predictions on the effects of visibility on the provision of public goods and services. In particular, we look at how 'visibility'(of outcomes) interacts with the extent of democracy to affects Government efforts to tackle two issues – famine and malnutrition. Our rationale in examining these two aspects of food provision is precisely the difference in the visibility of their outcomes: Famines, which involve a sudden and substantial

loss of life are rather visible events, as compared to malnutrition which is more insidious in occurrence. Sen(1982) brings out this contrast in visibility and its effects on government's incentives. On famine prevention he notes: *'(India's) real achievement relates to the elimination of sudden large-scale starvation and famines. Given the political system in India, including the ability of newspapers and opposition parties to pester the central and state governments, it is essential to avoid famines for any government keen on staying in power.'* In sharp contrast, his observation on malnutrition is: *'India's record on eliminating endemic non-acute hunger is quite bad.. It is amazing that in a country with as much politicization as India has, the subject of persistent hunger of a third of the rural population can be such a tame issue,..non-acute, regular starvation does not attract much attention in newspapers. These standard events in India seem not to be newsworthy.'*

We compare the evidence on famine occurrence with a cross-country analysis of the incidence of malnutrition. Our findings are quite consistent with our theoretical predictions on the effects of visibility. There is indeed a bulk of evidence in support of the fact that democracies are more effective in tackling famines: Sen(1981) makes this observation in a comparison of India and China; Devereux(1999) reports that 80% of all famine deaths in the twentieth century occurred in China and the Soviet Union. However, our analysis shows that democracies are no better than non-democracies at tackling malnutrition, perhaps even worse. For instance, it is rather striking that while there has been only one (small-scale) famine in independent India, it lies in the region with the highest rates of malnutrition in the world.⁶ In fact, the Indian Government's track record on famine prevention is all the more remarkable, given the high malnutrition greatly increases the probability of death during famine-like conditions. This suggests a huge effort towards famine prevention at the cost of gross neglect of other less visible public goods including malnutrition. We believe that the theoretical analysis of politics of visibility presented below has broad applications to other aspects of government resource allocation as well.

Section II gives an outline of the benchmark model and then proceeds to examine the impact of democratization on public good provision. In Section III we extend the benchmark model to show the existence of multiplicity of equilibria and demonstrate the importance of

⁶According to the WHO Global Database (1997), more than 50% of all malnourished children in developing countries live in South Central Asia, most of them in India.

voter expectations. In support of our model, we present cross country evidence on malnutrition and famines in Section IV. Various extensions are discussed in Section V and we finally conclude in Section VI.

2 The Benchmark Model

The basic setup of the model is the following. Consider a simple two period model, where an incumbent government faces an election at the end of the first period. At the beginning of the first period, the government supplies two public goods, both of which affect voter welfare. The quantity of each public good provided is a function of the resources allocated to that particular public good by the government, as well as the competence of the government. Voters are interested in having the most competent government in power. Therefore, on observing governmental performance across a set of tasks, the voter attempts to come up with an estimate of the competence of the government. If the voter's estimate of government competence is high enough, the voter re-elects the government, otherwise she replaces the incumbent. In this last period, the government once again chooses to provide some amount of both the public goods, and the game ends. We now elaborate this basic framework in some detail.

There is an incumbent government of ability θ_g , where $\theta_g \sim N(\bar{\theta}_g, \sigma_g^2)$. The government supplies two public goods, each of whose output in period t is y_{jt} where $j \in \{a, b\}$. The output of each public good is a function of both the government's ability and the resources allocated or effort supplied by it. At the beginning of each period, the incumbent government has total resources or effort of size \bar{E} .⁷ The government allocates an unobservable amount of resources or effort $\mathbf{e}^* = (e_{a1}, e_{b1})$ across the two public goods. The output of public good A , is given by $y_{at} = \theta_g + e_{at} + \sum_{i=1}^{n_a} \theta_i$ where e_{at} is the effort exerted or resources spent by the government in providing the public good A in period t .⁸ In addition to the government, there are other inputs whose quality affects overall output. So for example, output is also a function of the

⁷This can be due to a head tax collected each period from the voters or the government's revenue earnings from export of a natural resource.

⁸In Section III we examine a production function that allows for complementarity between the ability of the government and resources allocated by it in pursuit of a task.

quality of a bureaucrat or of the private sector or foreign aid agencies.⁹ Similarly, the output of public good B is given by $y_{bt} = \theta_g + e_{bt} + \sum_{i=1}^{n_b} \theta_i$ where for simplicity we assume that $\theta_i \sim N(0, \sigma_i^2)$ is the unknown ability of all other inputs (be it a bureaucrat, private agent or foreign agency) which affect output, where $n_a \leq n_b$. We assume that the voting public imperfectly observes the output realization of each of the public good. So, the voter observes a z_{jt} where $z_{jt} = y_{jt} + \epsilon_j$ and $\epsilon_j \sim N(0, \sigma_j^2)$.

So what determines the government's choice of effort across various public goods? We assume that the incumbent government cares about two things - national welfare as well as the 'ego rents' that it earns by staying in power. Since we assume all voters to be identical, national welfare is identical to the welfare of a representative voter, which is given by $W_{vt} = \alpha y_{at} + (1 - \alpha)y_{bt}$. The government's ability to stay in power is a function of two things - the extent of democratization, D_m and its reputation. Of course, the greater the extent of democracy, the more sensitive is the government's ability to stay in power to its reputation for competence. The extent of democratization is captured by an index D_m , where we assume that D_m equals the probability that elections will be held where $D_m \in [0, 1]$. If elections are not held (as is the case with probability D_m), then the government's reputation is irrelevant for it's ability to remain in power. An increase in this index of democracy, increases the importance of reputation in determining the government's ability to remain in power. A government earns 'ego rents' $R > 0$, each period it remains in power. In addition, we allow for a government that cares about the welfare of a representative voter.

This suggests that the government's utility function is given by the following:

$$W_g = \lambda \sum_{t=1}^2 \delta^{t-1} W_{vt} + (1 - \lambda)[R + \delta(R(1 - D_m) + R D_m Pr(\text{Re-election}))] + V(\bar{E} - e_{at} - e_{bt}) \quad (1)$$

where δ is the discount factor and $\lambda \in [0, 1]$ is the weight on welfare of the voter and $Pr(\text{Re-election})$ is the probability of re-election and $V()$ is the rent earned by the government through not spending resources or effort where $V' > 0, V'' > 0$.

⁹Observe that in the case of each of these associated inputs, output is a function of just the ability and effort is assumed to be supplied inelastically. This is a simplifying assumption and relaxing it will not change the qualitative nature of the results that follow.

This brings us to the issue of the precise political structure in the event that elections take place. Voters observe noisy measures of the government's performance z_a, z_b and arrive at a perception of governmental competence. In addition to the voter perception of the ability of the incumbent, there is a certain non-economic aspect to elections which adds further uncertainty to the electoral process. This non-economic random variable η , can be thought to be the relative 'charisma', sense of humor or good looks of the incumbent as against that of a randomly drawn challenger and is distributed normally, i.e. $\eta \sim N(0, \sigma_\eta^2)$. The challenger is randomly drawn and is of expected ability $\bar{\theta}$.¹⁰

The above model is similar to Holmstrom's(1982) career concerns model. Given the absence of explicit contractual incentives between the voter and the government, the model is naturally suited to a political economy setting. However, the above model differs in that the government faces a multiplicity of tasks. We now solve for the equilibrium of the model, starting from the last period.

In the second and last period, since the government is not concerned about re-election, the government's optimal choice of effort will be driven solely by the weight it gives to national welfare. Of course, if $\lambda = 0$, then the government in power would earn rents equal to \bar{E} . Hence in determining the government's optimal effort choice in the last period, we completely ignore any reputational incentive of the government (i.e. $\lambda = 1$),

$$\max_{e_{a2}, e_{b2}} \lambda(\alpha y_{a2} + (1 - \alpha)y_{b2}) + V(\bar{E} - e_{a2} - e_{b2}).$$

Taking first order conditions, we obtain,

$$\partial U_g / \partial e_{a2} = \lambda\alpha + \partial V / \partial e_{a2} = 0$$

$$\partial U_g / \partial e_{b2} = \lambda(1 - \alpha) + \partial V / \partial e_{b2} = 0.$$

Notice that so long as government allocation of effort across the two tasks are substitutes, an increase in the weight assigned to public good A will result in a reduction in the amount of resources allocated to the supply of public good B . Therefore, in this case national welfare(equal to the welfare of the representative voter) is given by,

$$W_{v2} = \alpha y_{a2}^* + (1 - \alpha)y_{b2}^* = \alpha [\theta_g + e_{a2}^*] + (1 - \alpha) [\theta_g + e_{b2}^*]$$

¹⁰The 'non-economic' random variable ensures that the government attempts to maximize reputation, even though it faces a challenger of expected ability $\bar{\theta}$.

where e_{j2}^* is obtained from the first order conditions.

The important thing to notice is that in the last period, the voter's welfare is going to be more a function of governmental competence, than in period 1. Indeed, in the special case where $\lambda = 0$, the government's last period performance is *only* a function of the government's competence. It is because of this that reputation matters, since the voter wants to elect the government with the highest ability in power. We summarize the above by discussing the timing of the game.

The Timing: The incumbent, which has a resource endowment of \bar{E} observes D_m and chooses to expend a set \mathbf{e}^* of resources across the two public goods. Thereafter with probability D_m elections take place. Then the voter who (like the incumbent) does not know the ability of the government, observes a noisy signal of the public good \mathbf{z} and arrives at an estimate of the government's competence. η is realized and the voter in making his voting choice compares the utility that he can expect if the incumbent is re-elected government as compared to the utility from a randomly drawn challenger. Elections are held and the elected government determines public good output.

Having briefly outlined, the structure of the game, we now examine governmental decision making in the first period.

2.1 Equilibrium Analysis

The government's policy choices in the first period are complicated by its electoral concerns. Recollect that the incumbent knows whether there are going to be elections prior to choosing its effort vector. If there are no elections even in the first period, the government chooses the effort vector that solves (1). On the other hand, if elections are going to be held, then the government's equilibrium effort vector will be a function of its attempt to boost its reputation with the voters.

Since the government's effort allocation is unobservable, it will attempt to influence the voter's perception of its ability through its policy choice. As in Dewatripont, Jewitt and Tirole (1999 a,b), the voter attempts to infer the government's ability by first calculating the joint density of the ability θ and the observables $\mathbf{z} = (z_{a1}, z_{b1})$. Since voter's do not directly observe the productivity of the public good supplied by the government, they first calculate

the joint density of the observables(z_j) and ability(θ_g) conditional on a resource or effort expenditure vector \mathbf{e} in period t , which is given by $f(\theta_g, \mathbf{z}|\mathbf{e})$. This gives rise to a marginal density of the observables $\hat{f}(\mathbf{z}|\mathbf{e}) = \int f(\theta_g, \mathbf{z}|\mathbf{e})d\theta_g$.

A government that seeks re-election in order to maximize its electoral chances would like to enhance its reputation with the voting public. Therefore, let us examine how the voter arrives at his estimate of the government's competence, conditional on his noisy observation of the output vector, \mathbf{z} and the government's equilibrium resource or effort expenditure vector, $\mathbf{e}^* = (e_{a1}, e_{b1})$. In particular, the voter's estimate of the government's competence is given by,

$$E(\theta_g|\mathbf{z}, \mathbf{e}^*) = \int \theta_g \frac{f(\theta_g, \mathbf{z}|\mathbf{e}^*)}{\hat{f}(\mathbf{z}|\mathbf{e}^*)} d\theta_g.$$

A government with electoral incentives, will exert effort and allocate resources across *both* the public goods so as to maximize the probability of re-election. Observe that in our setup, maximizing the probability of re-election is equivalent to the government attempting to maximize its reputation for being competent. The voter's estimate of the competence of the incumbent government, after he noisily observes the productivity of the public goods being supplied is $E[E(\theta_g|\mathbf{z}, \mathbf{e}^*)]$, where the first expectation is with respect to the observable performance of the government and the second expectation is with respect to the ability of the government. The government will choose $\mathbf{e} = (e_{a1}, e_{b1})$ to maximize his expected utility,

$$\max_{e_{a1}, e_{b1}} \lambda W_{vt} + (1 - \lambda)[R + \delta(R(1 - D_m) + RD_m[E[E(\theta_g, \mathbf{z}|\mathbf{e}^*)]] + V(\bar{E} - e_{at} - e_{bt}) \quad (2)$$

Assuming an interior solution, we obtain the first order condition for an equilibrium by differentiating with respect to e_{a1} , which gives rise to,

$$\lambda\alpha + \delta(1 - \lambda)RD_m \int \int \theta_g f(\theta_g, \mathbf{z}|\mathbf{e}^*) \frac{\partial \hat{f}(\mathbf{z}|\mathbf{e}^*)/\partial e_{a1}}{\hat{f}(\mathbf{z}|\mathbf{e}^*)} dz d\theta + \partial V/\partial e_{a1} = 0. \quad (3)$$

Similarly, we also obtain an expression on differentiating with respect to e_{b1} . This above expression is just an application to political economy of Dewatripont, Jewitt and Tirole's(1999) result on career concerns of managers. First, observe that since both the government's competence and the noisy observable of output of each public good is normally distributed, the joint distribution of the two is also normally distributed. In particular, the joint distribution of θ and z given the effort vector \mathbf{e} , is also normally distributed. Since for

simplicity we have assumed that there is no correlation amongst the error terms, the joint distribution is proportional to,

$$f(\theta_g, z_{a1}, z_{b1} | e_{a1}, e_{b1}) \propto -exp \left[\frac{(\theta_g - \bar{\theta}_g)^2}{2\sigma_{\theta_g}^2} + \frac{1}{2} \left(\frac{(z_{a1} - \bar{\theta}_g - e_{a1})^2}{\sigma_{\theta_g}^2 + \sigma_a^2} + \frac{(z_{b1} - \bar{\theta}_g - e_{b1})^2}{\sigma_{\theta_g}^2 + \sigma_b^2 + \sum_{i=1}^{n_a} \sigma_i^2} \right) \right].$$

We can use the above joint distribution to obtain the marginal distribution which is proportional to,

$$\hat{f}(z_{a1}, z_{b1} | e_{a1}, e_{b1}) \propto -exp \left[\frac{1}{2} \left(\frac{(z_{a1} - \bar{\theta} - e_{a1})^2}{\sigma_{\theta_g}^2 + \sigma_a^2} + \frac{(z_{b1} - \bar{\theta}_g - e_{b1})^2}{\sigma_{\theta_g}^2 + \sigma_b^2 + \sum_{i=1}^{n_a} \sigma_i^2} \right) \right]$$

By taking logs and differentiating the above expression with respect to e_{A1} and e_{B1} , we obtain,

$$\frac{\partial \hat{f} / \partial e_{a1}}{\hat{f}(z_{a1}, z_{b1} | e_{a1}, e_{b1})} = \frac{(\theta - \bar{\theta}_g) + \epsilon_a}{(\sigma_{\theta_g}^2 + \sigma_a^2 + \sum_{i=1}^{n_a} \sigma_i^2)}$$

By manipulating the above expression, we obtain the following result,

$$cov \left(\theta_g, \frac{\hat{f}_{e_{a1}}}{\hat{f}} \right) = \frac{\sigma_{\theta_g}^2}{(\sigma_{\theta_g}^2 + \sigma_a^2 + \sum_{i=1}^{n_a} \sigma_i^2)}. \quad (4)$$

Using the fact that the likelihood ratio has zero mean, we can simplify the above expression to arrive at the following,

$$\lambda \alpha + \delta(1 - \lambda) R.D_m cov \left(\theta_g, \frac{\hat{f}_{e_{a1}}}{\hat{f}} \right) + \partial V(\mathbf{e}^*) / \partial e_{a1} = 0. \quad (5)$$

We can now use equation (x), (xx) and (xxx) to obtain the following expression,

$$F_1(e_a, e_b, \sigma_a, \sigma_b) = \partial V(e_{a1}, e_{b1}) / \partial e_{a1} + \lambda \alpha + \delta(1 - \lambda) R.D_m \frac{\sigma_{\theta}^2}{(\sigma_{\theta}^2 + \sigma_a^2 + \sum_{i=1}^{n_a} \sigma_i^2)} = 0. \quad (6)$$

Similarly, we can obtain an equivalent expression by differentiating with respect to e_{B1} ,

$$F_2(e_a, e_b, \sigma_a, \sigma_b) = \partial V(e_{a1}, e_{b1}) / \partial e_{b1} + \lambda \beta + (1 - \lambda) D_m \frac{\sigma_{\theta}^2}{(\sigma_{\theta}^2 + \sigma_b^2 + \sum_{i=1}^{n_b} \sigma_i^2)} = 0. \quad (7)$$

Observe that the above results imply the following about government incentives to allocate effort across various public goods. If the voter finds public good A as more *visible* than public good B (if $\sigma_a^2 < \sigma_b^2$), then the government will on the margin have greater incentive to allocate resources in providing public good A rather than public good B , so long as resource

allocation across the two public goods are substitutes ($F_{12} > 0$). This arises because the voter would like to elect the most competent government. This is true because in the last period, the government will no longer have a reputational incentive to mobilize effort and resources.¹¹ Public good output in this final period, is going to be a function primarily of the government's competence. Hence the voters will have an incentive to elect the government whom they perceive to have the highest perceived ability. If z_{a1} is less noisy than z_{b1} , the voter will put a larger weight on the output of public good A rather than public good B , in his attempt to assess governmental competence. The government will accordingly respond to this by allocating more resources towards the 'more visible' public good A . If ψ is defined as the difference between effort allocated between public good A and B , i.e. $\psi = e_{a1} - e_{b1}$, we have the following proposition,

PROPOSITION I. *If $F_{12} > 0$ then government allocation of resources across the two public goods will be such that $\forall \alpha \in [0, 1]$,*

(i) *for $\sigma_a < \sigma_b$ and λ small enough, the government will allocate a larger share of total resources to public good A i.e. $e_{a1}^* > e_{b1}^*$.*

(ii) *the relative share of total resources allocate to public good A is an decreasing function of the relative visibility of the two public goods i.e. $d\psi/d\sigma_a < 0$ and $d\psi/d\sigma_b > 0$.*

PROOF: See Appendix . \square

Therefore, if electoral concerns are strong enough, the incumbent will bias resource allocation in favor of the 'more visible' public good. This will be true so long as an increase in resources devoted to the provision of one public good, increases the marginal cost of allocating resources for the other public good.

The *political salience* of a public good is determined by the extent to which the performance of a government in providing a particular public good determines the voter's decision to elect or reject the government.¹² It is interesting to observe that the issue or public good that is politically salient might have little to do with its importance to the overall national

¹¹We assume that λ is the same across governments. Of course, if we assume that governments are governed solely by the desire to remain in power, λ (and hence e^*) equals zero. In this case output in the last period is solely a function of the ability of the government.

¹²This term is borrowed from Besley and Coate(2000) who analyze the importance of the political salience of an issue as a factor in giving rise to non-majoritarian outcomes.

welfare. To see this observe that the above result holds for all $\alpha \in [0, 1]$. Therefore, so long as a public good is relatively visible, the government will have an incentive to allocate resources towards it, even if its provision has little impact on voter welfare (i.e. α is very small).

A puzzling feature of the development experience of some democratic developing countries, is the underprovision of resources for the social sector. For example, Dreze and Sen (1995, page 111-37) when talking about education in India observe that “The empowerment of basic education is so obvious that there is something puzzling in the fact that the promotion of education has received so little attention from social and political leaders. They on to assert that “what is perhaps most striking of all is that the failures of government policy over an extended period have provoked so little political challenge.” So an issue of interest is the following. Why is it that despite its obvious importance for overall development, that there is such underprovision of resources for the social sector - be it health or education?

To see this it is important to observe that performance of many public goods is a function of governmental decisions as well as the performance of a number of other inputs. For example, delays in construction of an irrigation project might be a function of not just the federal government, but also an obdurate bureaucracy, foreign aid and technology, private investors and so on. This suggests that sectors whose performance requires good performance of several associated inputs might be less visible. This suggests that differences in visibility across public goods might arise for reasons other than technology. We confirm this in the following corollary to the above proposition.

COROLLARY I. *If $F_{12} > 0$, $\lambda < \bar{\lambda}$ and $\sigma_a = \sigma_b$, then $\forall \alpha \in [0, 1]$ the government will allocate a larger share of resources towards public good A if $n_a < n_b$.*

Therefore, if public good A requires fewer complementary inputs, it is ‘more visible’ to the public, even if it is relatively important in welfare terms (i.e. α is large).

The above observation is noteworthy because it might help provide us with a clue for the poor performance of governments in certain sectors of the economy. For example, access to education is not just a function of the central government providing greater resources towards education, but is also a function of all the other factors that determine the access to education and literacy of the population - some of which may be a function of factors other

than the quality of the bureaucracy.¹³

The above discussion has helped emphasize the importance of the visibility of a public good, in understanding governmental incentives towards allocating resources across public goods. However, it is important to observe that there might be several factors that mitigate against the effect that we have discussed above. We consider each of these effects in the last section of the paper.

2.2 Democracy and Public Good Provision

In this section we analyze the impact of alternative institutional structures on the incentives for public good provision. In particular, we examine the impact of democratization on governmental incentives for allocating resources and effort.

Democracy and elections provide political competition and helps make governance more effective because of alleviating the moral hazard problem (Ferejohn, 1986) or mitigating the adverse selection problems (Rogoff, 1990). By weeding out incompetent politicians and giving those in power an incentive to put in effort, democracies are believed to provide the right incentives for effective governance and public good provision. There is by now considerable evidence that suggests that democracy is a meta-institution that improves governmental performance and the lot of its citizens on many dimensions.¹⁴ Greater democratization of political institutions has two distinct components that need to be considered. First, and most importantly, democracy encourages political competition. However, greater political freedom is but one component of democratization. In addition, greater democracy is also accompanied by greater civil rights, press freedom and transparency of institutions. To begin with, in this section, we confine our analysis to examining the impact of greater democratization on governmental incentives to put in effort and resources. Subsequently, we also examine the

¹³The above argument in turn provides one possible rationale for decentralization of public good provision. This is true if the provision of a public good is a function of inputs at both the Federal and State level. Decentralization of public good provision by making the state government solely responsible might improve effort expended by the state government. Of course as Bardhan and Mookherjee (1999) have pointed out, decentralization of public good provision might suffer from other problems, such as capture by local vested interests, but that is a separate issue.

¹⁴Barro(1999) and Rodrik (1999, 2000) both provide evidence to the effect that democracies provide higher growth, wages, greater equity and more stability in economic performance than non-democracies.

impact of greater civil freedom and transparency on public good provision.

In our framework, greater democratization makes the incumbent's likelihood of staying in power, more sensitive to his actual performance. In an imperfect democracy, even an incompetent government might manage to hold on to power. However, we are less likely to see such a persistence in power, as democratic institutions take root and become more efficient. We model an increase in democratization and the concomitant increase in political competition in a simple way. In particular, with greater democracy, the incumbent's likelihood of staying in power is more sensitive to his actual performance and accompanying reputation. Therefore, greater democracy gives the incumbent greater incentives to mobilize and allocate resources in a manner so as to enhance the probability of remaining in power. Greater democratization has two distinct effects on governmental incentives. First, the threat of losing power has a positive incentive effect and spurs the government to greater effort in mobilizing and distributing resources efficiently. This is the standard benefit that arises when elections control moral hazard on the part of the incumbent (see Ferejohn, 1986). We call this the '*effort augmenting effect*' of greater democracy. However, in a world where a multiplicity of public goods are provided, governments have an additional incentive. In particular, in order to enhance its reputation with voters, the government has an incentive to allocate an inefficiently large amount of resources away from the less visible and towards the more visible public good. We call this the '*visibility effect*' of elections. So what is the net effect of greater democratization on governmental incentives to mobilize and allocate resources across competing public goods? We examine the impact of greater democratization on governmental incentives - net of the '*visibility effect*' and the '*effort enhancing*' effect in the following proposition.

PROPOSITION II. *An increase in the index of democratization results in,*

- (i) an increase in the aggregate effort allocated towards public good provision,*
- (ii) a rise in the ratio of the more visible to the less visible public good if $F_{12} > 0$.*

PROOF: See Appendix. \square

As mentioned earlier, greater democratization has an '*effort augmenting*' effect that increases the total resources available for provision of all public goods. In addition, the '*visibility effect*' results in this augmented resource pie being disproportionately allocated in favor

of the relatively more visible public good. This gives rise to various possibilities, which are perhaps best captured in Figure I.

Insert Figure I here

There are three possibilities of the relative size of the ‘effort augmenting effect’ and the ‘visibility effect’ with greater democratization:

(i) If the ‘visibility effect’ is large and the ‘effort augmenting’ effect is small, then an increase in the performance of the more visible public good comes at the cost of worsening performance of the less visible public good.¹⁵ In other words, both the absolute amount of resources(or effort) and the share of total resources allocated to the less visible public good, comes down with greater democratization.

(ii) If most of the increase in effort due to an increase in D_m is allocated towards the more visible public good, then greater democracy might not result in a reduction in the absolute amount of the less visible public good, but an increase in the amount of the more visible public good.

(iii) If greater democracy, has a dramatic ‘effort augmenting effect’ while the ‘visibility effect’ is relatively small or moderate, then there will be an increase in the absolute amount of resources (or effort) devoted to both the less and more visible public good.

Each of the above three effects are captured in the correspondingly labeled curves in Figure I. However, what is of interest is that quite irrespective of the size of the relative magnitude of the ‘visibility’ and ‘effort augmenting’ effects, democratization results in a rise in the ratio of the performance of the relatively more visible public goods. We now examine how these effects of democracy on public good provision under a more general production function, yielding both similar as well as additional insights on the impact of visibility.

3 Do Voter Expectations Matter?

Our analysis so far has shown that low visibility public goods, such as health, sanitation or the quality of education can receive scant attention, particularly in democracies. However,

¹⁵This is likely when the government’s effort function is very convex and $C_{12} > 0$.

we must readily admit that there is wide variation in the experience of countries, at similar levels of democracy, or even across regions within countries. For instance, the state of Kerala in India, boasts rates of literacy and child mortality that are far superior to those in other parts of the country. Neighboring Sri Lanka, with a comparable level of democracy as India, has done a distinctly better job in the provision of education, health and other social welfare services – and these issues are central issues in its elections. Also, it is hard to believe that such relative neglect of low visibility public goods is true in highly democratic countries.

To address these concerns, we return to more general production function, originally proposed (as opposed to the additively separable case considered in the benchmark model). We find that allowing for complementarity between talent and effort in this manner yields some interesting additional insights, while preserving the basic result presented in the earlier section.

Consider $y_i = \theta_g(e_i + k) + \sum_{j=1}^{n_i} \varepsilon_i$.¹⁶ Using this more general production function, the optimal effort level to be expended on task i is given by the solution to the equation below.

$$\frac{\bar{\theta}}{(e_i + k) + \frac{\sigma_i^2}{(e_i + k)\sigma_\theta^2}} = C_a(e_a, e_b) \quad (8)$$

The left-hand side of the equation is the expression equivalent to that in equation (x), for the marginal benefit from additional effort, and the right hand side represents marginal cost of effort. Note that with complementarity between effort and ability, the marginal benefit varies with the level of effort. As a result, there could be multiple equilibrium effort levels in either task.

Insert Figures II (a) and (b) here

OBSERVATION I: Public goods which require a larger number of complementary inputs are more likely to suffer from a multiplicity of equilibria in the extent of resources allocated by the government.

As seen in Figures II(a) and (b) the number of equilibrium effort levels depend upon the shape of the marginal benefit curve. Consider the slope of this curve:

¹⁶Here we have taken specific values for certain parameters in the original output function: $\mu = 1, \gamma = 0$ for simplicity.

$$\bar{\theta} \cdot \frac{\left(1 - \frac{\sigma_i^2}{(e_i+k)^2 \cdot \sigma_\theta^2}\right)}{\left[(e_i+k) + \frac{\sigma_i^2}{\sigma_\theta^2}\right]^2}, \text{ where } i = \{a, b\}$$

For small values of the noise term, say σ_a , the slope of marginal benefit function is decreasing at all levels of effort, hence this curve is downward sloping for all e_a . However, for a sufficiently large noise component σ_b or a large number of complementary inputs, n , $\left(1 - \frac{\sigma_b^2}{(e_b+k)^2 \cdot \sigma_\theta^2}\right)$ is positive at lower levels of effort in task b – hence the marginal benefit curve is upward sloping in this range.¹⁷

A noisier outcome in task b also increases the optimum effort level in task a , given substitutability of effort across tasks. This raises the marginal cost of task b at all effort levels (i.e. shifts the y-intercept).¹⁸

Figures II(a) and (b) depict these cases of a small value of σ_a and a large value of σ_b respectively. As seen in Figure II(b), a large σ_b results not only in a lower marginal benefit, but also a higher marginal cost for b ; hence the marginal cost of effort can exceed the marginal benefit at zero effort in good b . As a result, there can be multiple (stable) equilibria for task b , but a unique equilibrium effort level in task a .

Thus, public goods with low visibility of outcomes, or with multiple complementary inputs are more susceptible to multiple equilibria. An economy could be caught in a low-equilibrium trap in the provision of such public goods, as seen in Figure II(b). If the electorate expects low effort by the government but sees a large output realized, it is more likely to credit such an outcome to chance, or to complementary inputs rather than to the government’s ability; hence the government has little incentive to put in effort.

On the brighter side, however, it is precisely in the case of such public goods that there can be a significant improvement in outcomes because of say, public awareness or media campaigns. By increasing voters’ expectation of government’s (equilibrium) effort, such campaigns increase the government’s incentive to put in effort – because, with higher expected effort, good outcomes are attributed more to the government’s ability rather than to the ability of complementary inputs or to pure luck.

¹⁷Complementary inputs will add a term $n \cdot \sigma_j^2$ to σ_b^2 in the numerator and denominator.

¹⁸As shown in the Appendix, $de_a^*/d\sigma_b > 0$: more noisy outcomes in task b increase the optimum effort on task a . The intercept of the MC curve is $C_{12}de_a^*/d\sigma_b$.

The phenomenon described here accords with the idea that voter apathy can lead to inferior outcomes, but that a more vigorous electorate can significantly improve outcomes on relatively low visibility public goods such as health (malnutrition), education, sanitation etc., rather than in high visibility events such as famine, war or disaster relief alone.¹⁹

In the absence of such concerted demands for better government however, democracy could actually worsen matters in low visibility public goods.

Figures III(a) and (b) consider the impact of an increase in the degree of democracy on the marginal benefit and marginal cost curves of both tasks. An increase in the degree of democracy shifts the marginal benefit curve upwards (as seen from equation(8)), and this shift is larger for the high-visibility task. However, with substitutability, the resulting increase in optimum (equilibrium) effort level in either task, shifts up the MC curve for the other task as well.

Insert Figures III (a) and (b) here

In the case of the high-visibility task, there is always an increase in the optimum level of effort, starting from the unique initial equilibrium. This shifts up the marginal cost curve for good b . At the initial low-effort equilibrium (i.e. $e_b^* = 0$), the size of the shifts in the marginal benefit and marginal cost curves depends upon the relative magnitudes of $\frac{\bar{\theta}}{k + \frac{\sigma_b^2}{k \cdot \sigma_\theta^2}}$ and $C_{ab}(e_a, e_b = 0) \cdot \frac{de_a^*}{dD_m}$ respectively.

For small increases in the degree of democracy, the new marginal cost curve at the low effort equilibrium for good b lies above the new marginal benefit curve – even if the size of the shift in the latter is greater. For small increases in the degree of democracy, the the low-visibility task could remain stuck at the low equilibrium trap, even as the equilibrium effort in the high visibility task increases. Thus the effort gap between the two tasks initially increases.

For larger increases in D_m , the upward shift in the marginal benefit curve eventually dominates the shift in the cost curve (provided the degree of substitution across tasks, C_{ab}

¹⁹We have not attempted to make any argument as to whether the public good in question is likely to be stuck in the low or high equilibria. See Morris and Shin (2000) for some suggestions, though they do not seem directly relevant to our case.

is not too large). For a sufficiently high degree of democracy then, the outcome in the low-visibility task has a unique high-effort equilibrium as well, such that further increases in democracy bring down the effort gap between the two tasks.

We summarize the above results in the following proposition.

PROPOSITION III. *An increase in D_m worsens the gap between the resources allocated between the more and less visible public goods upto some intermediate level of democracy \hat{D}_m . However, for $D_m > \hat{D}_m$, the differences in resources allocated between the two public goods comes down.*

PROOF: See Appendix . \square

Thus, allowing for interaction between effort and ability in the provision of public goods provides us with two additional insights. First, it shows that higher voter expectations can play a crucial role in generating better outcomes in the provision of low visibility public goods such as health, sanitation or education (as opposed to famine relief or defence during war). To this end, it suggests a role for active public awareness and mass communication campaigns. Also good governments can have spillover effects beyond their tenure in office: by raising the expectations of the electorate, they could permanently improve matters. Second, we find that the impact of greater democracy on the provision of low-visibility public goods need not be monotonic – while greater democracy can worsen matters (as seen in the earlier section) at initial stages, things do improve at sufficiently high levels of democracy.

4 Evidence

In this section we present evidence from a wide variety of sources to suggest how the ‘visibility effect’ affects governmental resource allocation towards various public goods and services. In a series of examples we examine some evidence that suggests that the ratio of government expenditure on the more visible to the less visible public good is increasing in the amount of democratization, upto some intermediate level of democracy. Due to data limitations, we often focus on outcomes rather than actual expenditure allocations. The immediate difficulty in an empirical implementation of the above project is to make the case that different public goods or indeed ‘events’ have unambiguous differences in visibility. In order to make a case,

we start with the most well known example - famines and malnutrition.

4.1 Famines and Malnutrition

In terms of their visibility, famines and malnutrition are a striking contrast. Famines involve a sudden and substantial loss of life within a very short time frame. The effect of malnutrition is not as dramatic – yet it is no less a killer, a quiet and unobtrusive one. According to Devereux(1999), the overall excess mortality associated with famines in the twentieth century is estimated at 70 million. The World Health Organization estimates that out of 11.6 million deaths among children under five in developing countries in 1995 alone, 6.3 million – or as much as 54 % – were associated with malnutrition.²⁰ Yet malnutrition is something that goes largely unnoticed precisely because of its innate low visibility. The resources of politicians and political parties are channelized to other more visible dimensions of political competition. As suggested by our analysis, in a political equilibrium, both voters and politicians rationally choose to put less weight on less visible public goods, even if such public goods maybe much more important for national welfare.

A remarkable finding of recent famine analysis, which runs counter to conventional wisdom, is that the prime cause of a famine is often not food shortage. This phenomenon of poverty amidst plenty during a famine is now well documented.²¹

Even more striking is the contrast between the incidence of famines in democracies and non-democracies: Devereux(2000) documents the toll taken by famines in the twentieth century – only 130,000 of the 70 million deaths have occurred in democracies!²² China and the

²⁰Source: Page 5, WHO Global Database on Child Growth and Malnutrition, 1997.

²¹The year of the Great Bengal Famine in India (1943) was a year where output was much higher than the previous year; so also in the case of the Bangladesh famine(1974): the districts that were worst hit by the famine were the ones that had the largest bumper harvest in the previous year; during the Irish famine of 1846-48, there were large exports of foodgrain were reported. See Sen(1990) for a discussion of these and other famine occurrences.

²²Of the thirty three recorded famines in the twentieth century arguably only one was in a functioning democracy - namely the Maharashtra famine of 1974. Indeed, given the dramatic decline in food availability of around 70%, it is often cited as a case of a successful governmental response rather than otherwise. While famine data is notoriously unreliable, Devereux's list is perhaps the most careful: Nigeria(1903-06), Tanzania(1906-07), West Africa(1913-14), Tanzania(1917-19), China(1920-21), Soviet Union(1921-22),

Soviet Union together account for over 80 % of all famine deaths in the twentieth century. This contrast holds up in terms of the percentage of the national population lost due to famines as well. The Great Leap famine in China killed 4.5% of China's population. As recently as in the early 1990s, 12-15% of North Korea's population was lost to famine. In contrast the sole famine that occurred in India resulted in a loss of well below 0.01 percent of the population.²³ Sen(19xx) contrasts the incidence of famines in China and India over the last fifty years – as compared to China's five famines that killed 46.5 million in China over the past century, independent India has seen only a single famine for which the upper estimate of the death toll was 130,000.

A couple of explanations have been put forth for these rather dramatic differences in famine prevention and relief across democracies and non-democracies.²⁴ The first is the fact that, in a democracy, the populace is in a better position to voice its demands to elected representatives – because it can oust bad performers from office through elections - this is the effect of political competition. A related factor identified is the role played by a free press under a democracy: N.Ram(198x) documents how the presence of a free press that critically examines a government's performance galvanizes the government into greater effort - this is the transparency effect that we talked about.

This section of the paper is very, very preliminary – please do not quote

The incentive effects of greater political competition and transparency could indeed be very plausible reasons for superior government performance in famine prevention in democracies. However, it would then be reasonable to extrapolate that such incentive effects must increase government efforts in other areas as well. In light of our theoretical analysis, we are immediately drawn to assess the record on hunger and malnutrition. Given its much

China(1927), China (1929), Soviet Union (1932-34), China (1943), India (1943), Rwanda(1943-44), Netherlands(1944), Soviet Union (1946-47), Ethiopia (1957-58), China(1958-62), Ethiopia (1966), Nigeria (1968-70), West Africa (1969-74), India(1972-73), Ethiopia(1972-75), Somalia(1974-75), Bangladesh(1974), Cambodia(1979), Uganda(1980-81), Mozambique(1982-85), Ethiopia(1983-85), Sudan(1984-85), Sudan(1988), Somalia(1991-93), North Korea(1995-99), Sudan(1998).

²³See Table 1 and pages 6-9, Devereux(2000) for further details.

²⁴Of course, high income countries are not famine prone and in addition are likely to be democratic. So the real puzzle is amongst the low income countries that are vulnerable to famine(high malnutrition) and which happen to be democracies.

lower visibility and its severe impact on mortality, both during famines and otherwise, we address the question: What is the record of democracies, which are so effective in tackling famines, with regard to malnutrition? Our preliminary cross-country analysis suggests: not any better than non-democracies, perhaps worse. We present some of our analysis below.

Since data on government expenditures is impossible to obtain at a disaggregated cross country level, we directly focus on outcomes. The data on malnutrition is obtained from the WHO Global database on Child Growth and Malnutrition(1997). Our dependent variable is the percentage of malnourished children under five years of age, as a percentage of all children under this age. Our index of democracy is a transformation of the Freedom House index, and is identical to the one used by Rodrik(1999) and others. We control for some important factors that we believe affect the degree of malnutrition. Foremost is the calorie availability per capita. This data is obtained from the FAO Statistics Yearbook for various years. We also control for the degree of inequality, as measured by the Income Gini, obtained from the high quality data in Deininger and Squire(1996), and female adult literacy as reported in the Human Development Report(1997). Further, the WHO Global database(1997)reports substantial regional differences in the prevalence of malnutrition.²⁵ Hence, we introduce regional dummies for South Asia, Sub-Saharan Africa and Latin America.²⁶ Our data on malnutrition covers 44 countries over a time period between 1987 and 1995. There are multiple observations for some countries, and all countries are not covered for all years in this time period. For each data point on malnutrition, the independent variables used are from the closest previous year for which data is available. We use the mean of the observations available for each country over this period.

The picture that emerges from our analysis is that economies with a higher degree of democracy are no better at tackling malnutrition than those without. In general, the coefficient on democracy is either significant positive, positive but insignificant or negative

²⁵It estimates that the risk of being malnourished (measured in terms of being underweight) is 1.2 times higher in Asia than in Africa and three times higher in Africa than in Latin America. As the E-DAT Disaster database suggests - Latin America almost never suffers from droughts.

²⁶Within Africa, the risk of malnutrition is highest in Sub-Saharan Africa. Across regions within Asia, the risk of being malnourished is highest in South Central Asia – both in terms of prevalence rates and absolute numbers.

and insignificant. Thus, we conclude from our cross-country analysis that given their striking success of democracies on famine prevention, their lack of similar advantage in tackling malnutrition is equally striking.²⁷

In the case of India, the contrast between its performance in famine prevention and malnutrition is particularly remarkable: Its success at famine relief and prevention is exceptionally high, just as its rates of malnutrition are among the highest in the world. The WHO reports that over 50 % of malnourished children across developing countries in the world live in South Central Asia — most of these in India. Such malnutrition makes children more susceptible to disease. Further, it is precisely the malnourished who are more likely to die, should famine-like conditions prevail. In this sense, these high rates of malnutrition make the success in famine prevention in India even more of a striking success. Indeed, it brings home our point about the politics of visibility with greater force: The low rates of famine incidence cannot be attributed to better overall health of the population, given the high incidence of malnutrition. It suggests substantial effort on the part of the government in averting disasters with high visibility, and substantial neglect of less visible, but equally important issues.

5 Extensions

In this section we briefly outline some of the neglected aspects of the relationship between visibility and the allocation of resources for public goods.

HETEROGENEITY, IDEOLOGY AND VISIBILITY:

Perhaps the most important drawback of our model is that we have neglected examining the impact of heterogeneity of the population, on the nature of public good provision.

In particular, in the benchmark model, the voter's decision to re-elect or reject the incumbent was a function of the government's perceived ability. Any differences that might exist between the voters was quite irrelevant in determining their voting choice, since *all* voters were better off with a more rather than less able government. However, this assumption is appropriate only so long as the public good that is in question engenders low dimensional

²⁷It should be emphasized that we are not making any claims over here about the efficiency or otherwise of the record on tackling famine and malnutrition problems.

conflict amongst a heterogeneous set of voters. In reality there are a variety of public policies where the issue is not just which government will enlarge the size of the national cake, but rather how the government plans to divide it. The greater the underlying inequality amongst the population, the higher the potential importance of ideology and redistributive issues in determining electoral outcomes. This would suggest that the government's incentive to redistribute resources to boost its electoral chances might have the potential to reinforce or mitigate the incentive of the government to divert resources to the more 'visible' public good.

In addition, the visibility of a public good might itself be a function of underlying heterogeneity of the population. So a farmer might be better able to assess the role of the government in ensuring irrigated fields than a person living in an urban area.

In further work (in progress), we examine the impact of voter heterogeneity on the politics of visibility. The paper adapts Besley and Coate(2000) to show that if political competition was strong enough, then the politics of visibility remains important and our results are unaffected. However, if political competition is not strong enough, then it can be shown that the government might have an incentive to allocate resources in favor of the public goods that is preferred by its own constituency, even if this good happens to be less visible. We then go on explore conditions under which political competition is more likely to be a competition amongst the ability as against the ideology of the political participants.

TRANSPARENCY AND DEMOCRACY:

Greater democracy, almost by definition means more political competition and the possibility of loss of elections. However, as argued forcefully by Sen (1999), democracy results in greater political and civil rights. Indeed Sen(1999) argues, greater political and civil rights "...include the possibility to scrutinize and criticize authorities, to have the freedom of political expression and an uncensored press, to enjoy the freedom to choose between different political parties and so on". Greater political freedom and democracy have two distinct aspects which need to be highlighted. The first is the freedom to choose amongst competing candidates, that constitutes the essence of political competition. Second, the greater information availability accompanies democratization. This increase in information might be because of the freedom of political expression as well as the enhanced freedom of the press. We follow

Gonzalez(1999) in labeling this informational aspect of political freedom as its *transparency*, which we assume to increase with the amount of democracy.

In our paper the emphasis has been on the implications of increased political competition that accompanies greater democratization. We demonstrated, that the increased political competition that accompanies democracy results might result in an inefficient substitution of effort and resources away from the less to the more visible public good. However, as argued in the preceding paragraph, greater democracy is also likely to be accompanied by greater transparency. So the issue of interest is to examine the incentives for public good provision when political competition is correlated with more transparency. While we do not fully explore the impact of transparency, we suggest how it might impinge on our preceding analysis.

Consider the following example. Suppose, the observable output z_{i1} has the distribution $z_{i1} \sim N(0, \mu(D_m)\sigma_i^2)$ where $\mu(D_m) \geq 0$, and $\mu' < 0, \mu'' > 0$. The benchmark model of the preceding section can be considered to be the special case where $\mu = 1$. In addition, in order to solve explicitly for equilibrium effort levels, we work with the special case where $c(e_A, e_B) = e_A^2 + 2ke_Ae_B + e_B^2$, where $k \in (0, 1)$ is the degree of substitutability between effort in the two tasks. Under these assumptions, consider the impact of an increase in democracy on the government's incentive to allocate effort across the two public goods. Greater democracy by increasing political competition enhances the asymmetry in effort allocation across the two public goods. However, now greater democracy is also accompanied by enhanced transparency. However, greater transparency reduces the incentives for the government to inefficiently allocate resources in favor of the more visible task. At very high(low) levels of democracy, the transparency effect is likely to dominate(be dominated by) the visibility effect. In the following proposition we show that the asymmetry in resource allocation across the public goods is going to be maximized at some intermediate level of democracy. Therefore, beyond a certain threshold level of democracy, the asymmetry in effort allocation diminishes.

Observe that while conceptually distinct, this result is similar in flavor to our results in Section IV.

RICH VERSUS POOR COUNTRIES:

How would an increase in income and resources with the government, affect the level of resource misallocation between the more and less visible public good? Suppose we expect governments in richer countries to have more resources to allocate to public good provision than poor countries. In this case the marginal cost curve becomes flatter. Observe that the gap between the marginal benefit curves between the more and less visible public goods comes down at higher levels of government expenditure. Therefore, when the government has a larger budget E , out of which it has to allocate resources for public good provision, then the asymmetry in public good expenditure across the public goods is lower. This implies that the misallocation of resources is likely to be lower in richer rather than poor countries - for a given level of democracy.

6 Conclusion

Most public policies adopted and public goods provided, have outcomes which differ in the extent of their *visibility* to the public. We examine the implications of differences in the ‘visibility’ of different public policies on the nature of government intervention in the public arena.

We arrive at the following conclusions. First, governments have a tendency to allocate resources towards the more visible public good. Our framework helps explain why political competition is often on dimensions other than the one that yields the greatest economic benefits. Second, greater democracy gives governments more of an incentive to misallocate resources in favor of the more ‘visible’ public good. However the impact of greater democratization on national welfare is ambiguous, since more political competition has positive incentive effects in the form of greater effort on the part of the government. Third, we explore conditions under which multiple equilibria might exist. We outline an argument to suggest why we should expect multiple equilibria, in the provision of public goods that require a larger number of complementary inputs - such as education, health and sanitation. Our analysis suggests that raising public awareness about the importance of the role of the government in supplying public goods such as education and health can have an important role to play. In particular, by changing voter expectations, previously apathetic governments might have an incentive to provide higher levels of the less visible public goods. Finally,

we show conditions under which there is a non-monotonic relationship between the extent of democratization and the extent of resource misallocation across the two public goods. The inefficiency associated with greater democracy is highest at some intermediate level of democracy and decreases thereafter.

References

1. Angell, Alan and Graham, Carol (1995); “Can Social Sector Reform Make Adjustment Sustainable and Equitable?”, *Journal of Latin American Studies*, 27, 189-219.
2. Bardhan, Pranab (1984, 1999); *The Political Economy of Underdevelopment*, Oxford University Press
3. Bardhan, P. and Mookherjee, Dilip (1999); Expenditure Decentralization and the Delivery of Public Services in Developing Countries, *IED Working Paper*
4. Barro, Robert (1999); “Determinants of Democracy”, *Journal of Political Economy*, vol 107, no.6 pt.2, pp S158-184.
5. Besley, T. and Coate, S. (1998); “Sources of Inefficiency in a Representative Democracy: A Dynamic Analysis”, *American Economic Review*, v. 88, no.1, pp. 139 - 156.
6. Besley, T. and Robin Burgess (2000); Does Media Make the Government More Responsive? Theory and Evidence from Indian Famine Relief Policy *Working Paper, LSE*
7. Besley, T. and Coate, S. (2000); “Non-Majoritarian Outcomes and the Role of Citizen’s Initiatives”, *Working Paper, LSE*
8. Devereux, Stephen(2000): Famines in the Twentieth Century – *Institute for Development Studies Working Paper*, no. 105 – University of Sussex
9. Dewatripont, M., Jewitt, I. and Jean Tirole (1999 a); “The Economics of Career Concerns, Part I: Comparing Information Structures”, *Review of Economic Studies*, 66, 183-198
10. Dewatripont, M., Jewitt, I. and Jean Tirole (1999 b); “The Economics of Career Concerns, Part II: An Application to Missions and Accountability of Government Agencies”, *Review of Economic Studies*, 66, 199-217.
11. Dreze, Jean and Amartya Sen (1989); *The Political Economy of Hunger, Vol. I-III*, Oxford University Press

12. Dreze, Jean and Amartya Sen (1995); *India: Economic Opportunity and Social Change*, Oxford.
13. Dixit, Avinash (1999); “Incentives and Organizations in the Public Sector: An Interpretative Review”, mimeo. Princeton University
14. Gonzalez, Maria (1999); “Elections, Democracy and Macroeconomic Policy Cycles”, *mimeo*. Princeton University
15. Haggard, Stephan and Williamson, J. (1994) in J. Williamson, (ed.), *The Political Economy of Policy Reform*, Institute for International Economics, Washington, DC.
16. Holmstrom, Bengt (1982, 1999) “Managerial Incentive Problems: A Dynamic Perspective”, *Review of Economic Studies*, vol. 66
17. Holmstrom, Bengt and Paul Milgrom (1991) “Multi-Task Principal-Agent Analyses: Incentive Contracts, Asset Ownership and Job Design” *Journal of Law, Economics and Organization*, 7, 24-52
18. Majumdar, S., Mani, A. and Sharun Mukand (in progress) “Ideology versus Ability: The Politics of Visibility in a Heterogeneous Society”
19. Ram, N. (1989); “ An Independent Press and Anti-Hunger Strategies: The Indian Experience” in Dreze and Sen (1989a)
20. Rodrik, Dani(1999): Democracies pay higher wages – *Quarterly Journal of Economics* – August
21. Rodrik, Dani (2000); “Institutions for High Quality Growth: What They Are and How to Acquire Them” *NBER Working Paper 7540*
22. Rogoff, Kenneth (1990), “Equilibrium Political Budget Cycles” *American Economic Review* 80, 21-36
23. Sen, A.K.(1982): ‘Coromandel Lecture’ New Delhi: As published in *The Hindu*
24. Sen, A.K.(1990): *Resources, Values, Development* – Oxford University Press

25. Sen, Amartya (1999); *Development as Freedom*, Oxford University Press
26. Spector, David (2000); “Rational Debate and One-Dimensional Conflict”, *Quarterly Journal of Economics*, Vol. CXV, pp 181-200
27. WHO Global Database on Child Growth and Malnutrition(1997): Compiled by de Onis, Mercedes and Blossner, Monika, World Health Organization, Geneva

Appendix

PROOF OF PROPOSITION I: Differentiate (5) and (6) with respect to σ_a to obtain,

$$\begin{aligned} F_{11} \frac{\partial e_{a1}}{\partial \sigma_a} + F_{12} \frac{\partial e_{b1}}{\partial \sigma_a} + F_{13} &= 0 \\ F_{21} \frac{\partial e_{a1}}{\partial \sigma_a} + F_{22} \frac{\partial e_{b1}}{\partial \sigma_a} + F_{23} &= 0 \end{aligned}$$

We obtain a similar expression by differentiating (5) and (6) with respect to σ_b . Rearranging these expressions in matrix notation we obtain,

$$\begin{pmatrix} F_{11} & F_{12} \\ F_{21} & F_{22} \end{pmatrix} \begin{pmatrix} \frac{\partial e_{a1}}{\partial \sigma_a} \\ \frac{\partial e_{b1}}{\partial \sigma_a} \end{pmatrix} = \begin{pmatrix} -F_{13} \\ -F_{23} \end{pmatrix}$$

Since $F_{13} > 0$ and $F_{23} = 0$, this gives us, $\frac{\partial e_{a1}}{\partial \sigma_a} = \frac{-F_{13}F_{22} + F_{12}F_{23}}{F_{11}F_{22} - F_{12}F_{21}} < 0$. Therefore an increase in σ_a results in a reduction in e_{a1} . Similarly, we can calculate the change in effort allocated towards public good B , when the variance associated with good A goes up. Since we assume that the allocation of effort across the two tasks are substitutes, we have $F_{12} = F_{21} > 0$ which results in $\frac{\partial e_{b1}}{\partial \sigma_a} = \frac{-F_{11}F_{23} + F_{13}F_{21}}{F_{11}F_{22} - F_{12}F_{21}} > 0$. A decrease in the variance associated with public good B results in an decrease in the effort associated with public good A . \square

PROOF OF PROPOSITION 2: Differentiating F_a and F_b with respect to D_m , we have $F_{aD_m} = \frac{\sigma_\theta^2}{(\sigma_\theta^2 + \sigma_a^2 + \sum_{i=1}^{n_a} \sigma_i^2)}$ and $F_{bD_m} = \frac{\sigma_\theta^2}{(\sigma_\theta^2 + \sigma_b^2 + \sum_{i=1}^{n_b} \sigma_i^2)}$.

Given $\sigma_a < \sigma_b$ (or $n_a < n_b$), $F_{aD_m} > F_{bD_m}$.

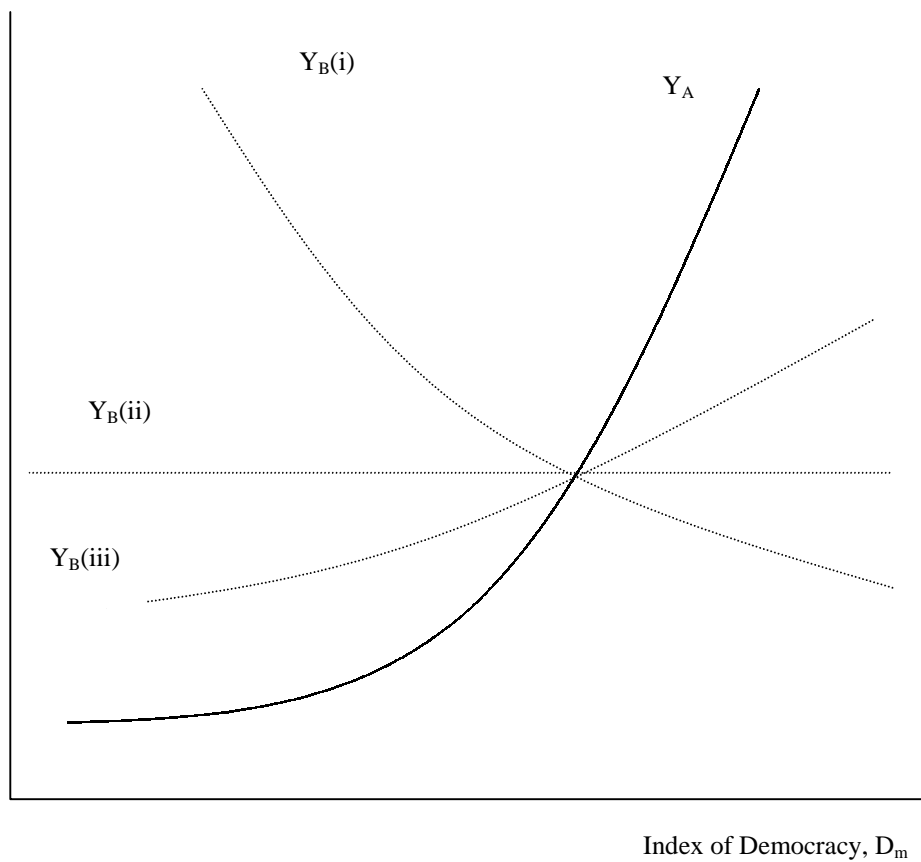
$$\frac{de_a^*}{dD_m} = \frac{-F_{bb}F_{aD_m} + F_{bD_m}F_{ab}}{F_{aa}F_{bb} - F_{ab}^2}, \text{ and } \frac{de_b^*}{dD_m} = \frac{-F_{aa}F_{bD_m} + F_{aD_m}F_{ab}}{F_{aa}F_{bb} - F_{ab}^2}.$$

(i) $\frac{de_b^*}{dD_m}, \frac{de_a^*}{dD_m} > 0$ provided $F_{aa}, F_{bb} > F_{ab}$. Hence aggregate effort increases with D_m .

(ii) From proposition I, given $\sigma_a < \sigma_b$ (or $n_a < n_b$), $e_a^* > e_b^*$. From (i) and (ii) $\frac{d(e_a^* - e_b^*)}{dD_m} > 0$.

\square

Expected Output
of Public Goods
 Y_A and Y_B



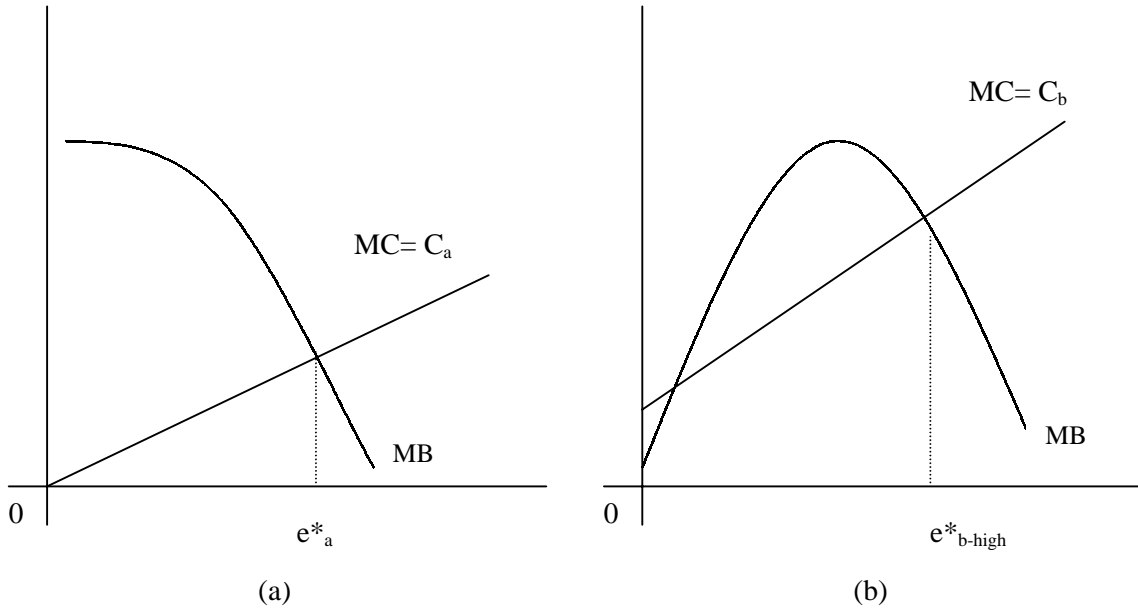


FIGURE II

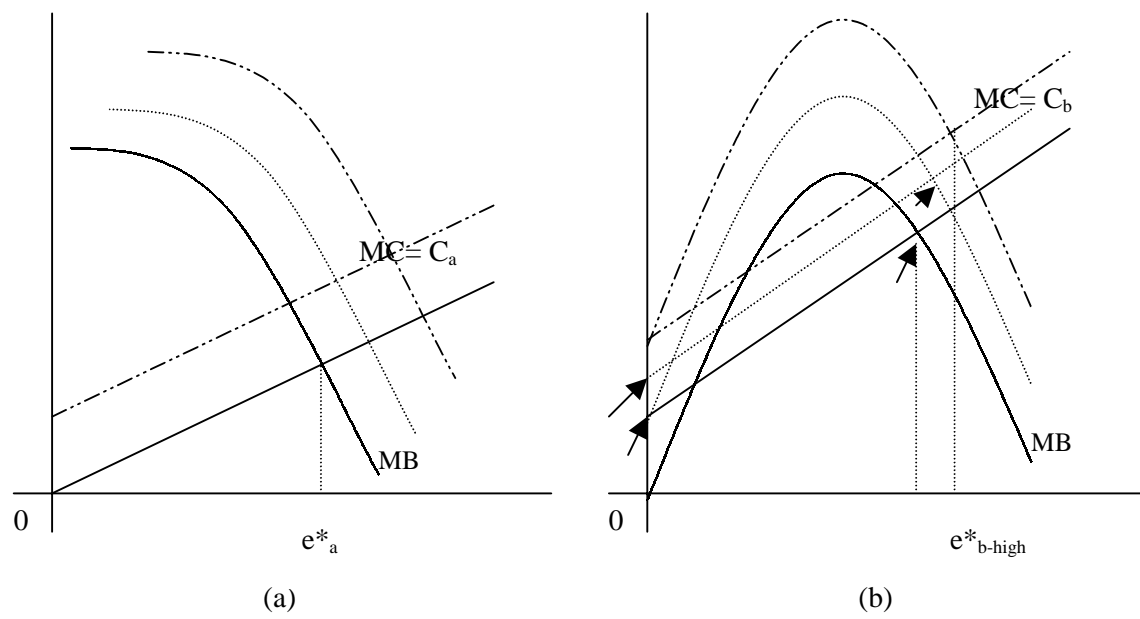


FIGURE III: Non-Monotonic Change in Effort Gap as Democracy Increases