ELSEVIER

Journal of Development Economics 75 (2004) 137–165

JOURNAL OF Development ECONOMICS

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Politics, information and the urban bias

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Received 1 August 2002; accepted 1 August 2003

Abstract

Governments in many LDCs skew public resources towards urban sectors, despite a majority of citizens residing in rural areas. This paper develops a novel political argument for this urban-bias phenomenon in a framework where all voters, rural and urban, have equal voice, but differ in their access to information. We argue that this difference is sufficient to give governments an incentive to inefficiently over-allocate resources towards urban areas. The bias is shown to worsen during adverse economic times, leading to increased migration. We also examine how voter informativeness affects efficiency of the electoral process in weeding out incompetent governments.

JEL classification: O18; H41; D72; R23
Keywords: Urban bias; Information; Heterogeneous electorate; Migration

"The most important class conflict in the poor countries of the world today is not between labor and capital. Nor is it between foreign and national interests. It is between rural classes and urban classes....Scarce investment, instead of going into water-pumps to grow rice is wasted on urban motorways. Scarce human skills administer, not clean village wells and agricultural extension services, but world boxing championships in showpiece stadia."—Michael Lipton (p1, 1977) in *Why Poor People Stay Poor: Urban Bias in World Development*.

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doi:10.1016/j.jdeveco.2003.08.003

1. Introduction

In many developing countries, public resources are often skewed in favor of urban areas, despite the fact that urban residents make up only a small fraction of the total population. This observation of an 'urban bias' in resource allocation was first made by Lipton (1977) in his seminal work on urbanization in developing countries. Twenty-five years later, the issue is still an important one. According to the Rural Poverty Report (2001), over 70% of the world's poor live in rural areas, and even in 2025, over 60% of the poor are likely to be of rural origin. In this paper, we examine the incentives of a government with electoral imperatives, in distributing resources between the urban and rural sectors, and ask the following question: Why may a government in a country with a predominantly rural population have an incentive to skew resources away from the rural sector towards the urban one? Exploring this issue helps address some of the factors that affect urbanization and migration in developing countries.

An examination of rural–urban differences in the provision of almost any public good in LDCs, reveals striking disparities in favor of urban areas (see Table 1 in Appendix C).[1] These disparities may arise for several reasons. For one, such urban–rural disparities may well be partly efficient (at least for some public goods) and arise due to a lower cost of providing urban public goods (see Arnott and Gersovitz, 1986). On the other hand, Lipton (1977) and Bates (1981) argue that at least part of this disparity arises due to the influence and lobbying power of the urban elite. In their view, more effective urban lobbying results in an inefficient amount of resources being allocated towards urban areas, in line with the preferences of the urban elite.[2] While lobbying factors are more likely to play a role in influencing government policy towards a relatively small, cohesive group of citizenry in the form of subsidies, price controls or tariff protection, the urban-bias phenomenon appears much more pervasive. Many public services such as basic health clinics, subsidized primary education, access to water and sanitation seem less likely to attract active lobbying efforts by any focused lobby group.

What distinguishes our approach from the explanations outlined above then, is that we focus on addressing the urban-bias question in a *non-lobbying* framework, where all agents (be they in rural or urban areas) have *equal* voice. Thus, the emphasis of our analysis is on precisely the wide spectrum of public goods where simple lobbying factors are less likely to be at work. In particular, this paper focuses on a distinct mechanism, namely, the difference in the information sets of urban and rural residents. In our argument, information plays a functional role—it enables citizens to draw an accurate link between observed public good outcomes and the role of the government's ability in bringing about those outcomes. Urban residents have an information advantage that may

[1] As argued by Williamson (1988), despite the abundance of suggestive evidence for the presence of an urban bias, there is a lack of careful empirical work on it. One reason for this may well be the difficulty in assessing the 'efficient' levels of public good provision, due to differences in costs across sectors and regions. Even the 'optimal' per capita outlays may vary, depending on the nature of the public good in question.

[2] This lobbying based explanation is further amplified by Ades and Glaeser (1995) and Glaeser (1999), who make the case that the government may have such an incentive not only due to effective urban lobbying, but also due to its fear of being overthrown by a coup (restricted, by assumption, to occur only in urban areas).

arise due to several factors: greater average wealth, higher education, better access to the media as well as a stronger urban focus in media coverage. Even if both rural and urban residents observe public good outcomes equally well, this information advantage implies that urban residents are better positioned to evaluate the role of the government's ability in achieving a given outcome.[3] In our political economy framework, with a government interested in getting re-elected, it is this advantage of urban residents that may result in an urban bias in the allocation of public resources.

In our benchmark case, we analyze government resource allocation, when *both* rural and urban public good outcomes are affected by sector-specific shocks, as well as by the government's administrative competence. Differences in resource allocation arise due to rural–urban differences in the observability of these sector-specific shocks. For example, rural residents may be relatively poorly positioned to ascertain the relative importance of government neglect versus other exogenous shocks in engendering a low output in rural areas. In contrast, urban residents, being better educated and with the support of an active media as a watchdog, are likely to hold a guilty government culpable much more accurately and faster.[4] Realizing this, a government that wishes to retain power (i.e. maximize its chances of getting re-elected) will tend to use a disproportionate share of the resources in generating more favorable urban outcomes. Thus, the electoral imperatives of the government translate the information advantage of urban areas into a bias in resource allocation toward such areas, even though they contain a *minority* of citizen-voters. Our analysis suggests that this bias is likely to be strongest when the government is relatively new and not yet politically well entrenched.

However, being better informed is not always advantageous to the urban resident. Under some conditions, this greater information availability can also serve to reverse the skew in resource allocation. We observe this on analyzing a version of the preceding model with economy-wide shocks (as against sector-specific shocks). Such a global shock could be, for instance, an economy-wide recession triggered by a world-wide financial crisis, an external threat, or a change in the country's credit-rating. Typically, urban residents tend to be more aware of such adverse shocks than rural voters. Now, we show that the effect of such information asymmetry is that any urban bias in resource allocation is reduced under good economic conditions and exacerbated in bad times. During good times, a higher output is appropriately discounted by the informed urban voter as being due to a favorable exogenous shock (rather than due to government competence), but not so by the uninformed rural voter. Therefore, in such times, the government has more to gain by improving rural outcomes and it does so by devoting more resources to the rural sector. In contrast, a negative shock results in the opposite effect—it increases the bias in

[3] To take an example, various factors can cause an electricity shortage. It could be low electricity generation because of labor strikes, poor transmission of power across badly maintained power lines, poor demand forecasts by the government or an unexpected demand shock, such as an increase in the international price of coal. Our assumption here is a simple one: the urban resident is better informed and hence better placed to evaluate whether the electricity shortage is due to the government's shortcomings, or because of trade unions that prevent public sector reform, or just simply an unexpected surge in the price of inputs.

[4] For example, one of the main reasons cited for a dense network of food provision centers in urban areas under the *Public Distribution System* in India is (thanks to an active media presence in urban areas) the negative publicity that food shortage in urban areas causes, relative to that in (media-poor) rural areas (see Howes and Jha, 1992).

resource allocation in favor of urban areas. Suggestive evidence from the Philippines provides support for this prediction. Examining immunization coverage in the Philippines following the negative global shock of the Asian Financial crisis of 1998, we find that the drop in coverage was much bigger in the least informed provinces than in the more informed ones.

It is interesting to note that our structure also provides a framework to study the effects of voter informativeness on the efficacy of a democratic political system. As is well recognized, elections play an important role not only in controlling moral hazard on the part of incumbent governments, but also serve the purpose of weeding out incompetent governments and retaining efficient ones.[5] While the moral hazard aspect of the problem manifests itself in the form of an urban-bias, given the heterogeneity in information sets across voters, the framework developed in this paper is also well suited to deal with the important role of information and elections in mitigating the adverse selection problem. Thus, we ask the question: if voters have more information available about the economic environment, will the political system become more efficient in weeding out low ability incumbents? Somewhat strikingly, our analysis suggests that this need not always be the case. Under some circumstances, an increase in information about the economic environment makes the relatively less informed voters put more weight on their own imperfect observations in determining the political outcome. This may outweigh the effect of an increase in the information's precision so that over a range, the political system may in fact become less efficient in weeding out incompetent politicians, despite an increase in overall information.

A bias in public good provision also has implications for individual migration decisions. Given that citizens' concern with the quality of public services often influence their choice of residence, our analysis makes several points relevant to the literature on rural–urban migration. First, it highlights the simple, but relatively neglected fact that rural–urban migration may be driven not just by differences in employment opportunities (Harris and Todaro, 1970), but also by a politically induced bias in public good provision. Second, it predicts that migration rates and levels of urbanization are likely to increase under adverse conditions in the economy, due to an exacerbation of the urban-bias in such situations. Both these predictions fit well with the phenomenon of 'urbanization without growth' as observed in many developing countries in the last few decades (see the World Development Report, 2000; Fay and Opal, 2000).

The paper is laid out as follows. Section 2 describes the benchmark model, demonstrates the basic result of a bias in sectoral resource allocation, and also examines the efficacy of the political system in throwing out incompetent governments and reelecting competent ones. Section 3 analyzes the effects of economy-wide shocks on the direction and magnitude of the bias in resource allocation. Section 4.1 discusses the implications of our analysis for rural–urban migration. Section 4.2 outlines various mechanisms that may drive a wedge in information availability between the rural and urban residents, and also provides some supportive evidence. Finally, Section 5 concludes.

[5] The relationship between information availability due to the media and the moral hazard issue has been examined in a developing country context by Besley and Burgess (2002), who use data from India to study government responsiveness to information.

2. The benchmark model

We construct a stylized political economy model of sectoral resource allocation. We begin by describing the key elements of our model.

2.1. Sectoral output and government performance

An incumbent government provides two sector-specific public goods, one each for the rural and the urban sectors. The output in each sector is a stochastic function of the public resources allocated by the government to it, the ability of the government, as well as the quantity of some (exogenous) regional input. For instance, agricultural output is not only affected by exogenous region-specific inputs such as rainfall, but also by the size of governmental resource outlay for public projects such as irrigation. Further, the effectiveness of such projects is likely to be a function of not just the total resource outlay, but also the ability of the government for 'appropriate' project design through the efficient marshaling, harnessing and deployment of these resources. Similarly, the urban industrial sector may be affected not only by exogenous oil price shocks, for example, but also by resources allocated towards 'export promotion activities' as well as the government's ability in identifying and promoting the 'right' industries (i.e. those with the maximum export potential).

To capture these various elements that affect sector specific output, we assume that output of sector j, denoted by y_j, is given by:

$$y_j = \tau_g + f(e_j) + \theta_j \qquad j \in \{\text{Rural, Urban}\} \tag{1}$$

where τ_g is the ability of the government, e_j is the resources allocated to sector j and θ_j is the quantity of some region specific input. The effectiveness of resources allocated is given by the function $f(e)$ which is assumed to be concave and satisfying the standard Inada conditions. The region-specific input θ_j is assumed to be normally distributed with mean 0 and variance σ_j^2. The ability of the incumbent government is denoted by τ_g, which is assumed to be the same for the provision of both goods.[6] Thus, ceteris paribus, both rural and urban voters would prefer more able governments.

The benefit of this simple structure is that it implies that the marginal product of public resources is identical in both sectors, and therefore the first-best allocation would involve equal division of resources between the two sectors, i.e. $e_r^{FB} = e_u^{FB}$.[7] As we will see below,

[6] Two aspects of the above structure maybe worth pointing out. First, the assumption that the government's ability τ_g is equally effective in determining the rural as well as the urban outcome, is made primarily for simplicity of exposition. There is no qualitative change in the results if we assume instead, only a positive correlation between the government's ability in providing rural goods and urban goods. Secondly, we have assumed no complementarity between the government's ability τ_g and resources e. Again, the general favor of the argument is unchanged even if the production function incorporated a complementarity between the two [say, for example, $y_j = \tau_g f(e_j) + \theta_j$].

[7] This equality in resource distribution is of course due to the assumption that the effectiveness of resources, $f(e)$, is the same in both sectors. Again, this is made primarily for exposition. If we instead assumed (as in Arnott and Gersovitz, 1986), that the marginal effectiveness of resources is lower in the rural sector than in the urban sector, i.e. $f_r'(e) < f_u'(e)$, then the first best allocation would involve $e_r^{FB} < e_u^{FB}$. As will become evident in our analysis below, even in this case, a government interested in enhancing its chances of re-election will bias its allocation of resources e_r^* and e_u^* (Proposition 1) such that $e_r^* < e_r^{FB} < e_u^{FB} < e_u^*$.

political imperatives on the part of the incumbent can lead to a bias in sectoral resource allocation.

2.2. The information structure and voter inference

Governance is a multi-faceted task with unique features and requires a variety of skills. Not surprisingly, ex-ante it is difficult to determine with much reliability how adept a particular politician is going to be at performing the multifarious tasks involved in running a government. Hence we assume, as is standard in career concerns models,[8] that the true ability τ_g of the incumbent in the provision of public goods is not known by anyone, including the incumbent. All agents are assumed to share a common prior that the government's talent τ_g is drawn from a normal distribution with mean $\bar{\tau}_g$ and variance σ_τ^2.

Even though the government's ability is not known ex-ante, citizens can update their estimate of it through their observations of the public outputs. A higher output leads to a more favorable perception of the government's ability, and hence to a higher chance of retaining power. The key feature of the career-concerns formulation, as can be seen in the production function (Eq. (1)), is that resources e_j are a substitute for ability τ_g. This implies that by increasing output, through an increased allocation of resources, the government can skew the voter's perception of governmental competence in its favor. Of course, when there are multiple sectors vying for scarce resources, the gains from such allocation are higher in those sectors where this inference process is the sharpest. This is the heart of our argument: differences in visibility lead to differences in inference; hence, a government that is interested in maximizing its public perception will tend to allocate more resources to sectors in which the inference process is better.

At the beginning of the period, the incumbent government allocates resources $e=\{e_r,e_u\}$ to the two sectors, out of a fixed total budget $\bar{B}$. The precise sectoral allocation is not observable to the citizens. While standard in such models, this assumption is perhaps particularly defensible in the context of developing countries, where corruption and lack of transparency mean that actual amounts spent are not often public information, and it is common to find governments both under- and over-shooting planned expenditures.

Nature then chooses the level of local inputs θ_u and θ_r for the two regional inputs, and the output y_u and y_r in the two sectors is realized as a combination of the government's ability, the region-specific input and the resources allocated, according to the production function Eq. (1).

We assume that while all residents can see the output of both regions, those living in a particular sector have better knowledge about the region-specific input θ_j in their sector. More specifically, we assume that while none of the rural residents can observe the urban

[8] For classic examples of the career concerns framework in a managerial effort-provision context, see Holmstrom (1982) and Dewatripont et al. (1999). Persson and Tabellini (2000, Chapter 4) provide a useful overview of the relevance of a career concerns framework to address political economy issues. From a technical viewpoint, this assumption of the true ability τ_g being not known ex ante by the incumbent, avoids signaling issues in the model.

input θ_u, a fraction p_u of urban residents know the true level of the urban input θ_u. Similarly, a proportion p_r of rural residents know the true level of θ_r, but do not observe θ_u. Therefore, while non-residents know the distribution of the local inputs in the two regions, they do not observe their actual realizations.[9] Due to this difference in knowledge about local input levels, urban and rural residents differ in their inference about the government's ability, even when they observe the same outcomes. For example, a decrease in infant mortality in an area may be observed identically by rural and urban residents, but whether this was due to the effort of some local non-governmental organizations rather than the competence of the government, is likely to be better known to local residents. As a result, this observation of an improvement in neonatal health would be interpreted quite differently by local residents than by non-residents.

2.3. The political structure

Having described the structure of the economy, we now turn to the objective of the government in power. The political structure here is simple and focuses on the incumbent government's desire to remain in power, with the government's objective being to maximize its chances of re-election. At the end of the period, the incumbent faces a randomly drawn challenger in an election. The success of the incumbent government, in the face of such competition, will depend on first and most importantly, the citizens' perception of its ability (vis-a-vis that of the challenger) *and* second, the relative charisma of its leader.[10]

Note that the output in both sectors is positively affected by the ability of the government in power. Further, as will be seen in the subsequent analysis (Proposition 1), a government's resource allocation decision is not correlated with its underlying ability. Therefore, in choosing a government, all citizens would prefer to elect one of higher perceived ability. However, in addition, there is a further factor that determines political outcomes. In particular, we follow Rogoff (1990) and assume that voters also care about

[9] In our benchmark model, we deliberately emphasize the role of rural–urban differences in information about the (exogenous) regional input rather than any of the other variables. This is because of two reasons. Firstly, if we interpret y_r and y_u as public services in an area, we believe that a priori there is no reason to believe why a rural citizen should not be able to observe his own predicament and the quantity of the public good as well as an urban resident, for public services are generally experienced individually. On the other hand, typically a myriad of inputs affect the overall level of the public service, and each individual has little incentive to acquire information about such inputs, except in that they may be related to other activities he or she is involved in. Thus, it is perhaps more natural to focus on asymmetry of information about inputs rather than about output. We do this by focusing on distortions arising solely due to informational differences about the sector specific input, while keeping all else between the urban and rural sector symmetric. Secondly, in a subsequent section (viz. Section 3) we examine how the implications of our theory change when we consider informational differences about some *global* shock rather than informational differences about sector-specific shocks.

[10] Given our emphasis on elections, it may seem that our analysis is restricted to societies which are democratic. That is not quite accurate; our framework can with (minor) adjustments be adapted to non-democratic societies. The crucial assumption that has to be maintained is that the probability of an incumbent retaining power is an increasing function of his/her perceived ability. Therefore, so long as coups/revolts are more likely against a government that is perceived to be of low ability, our analysis would remain relevant even for non-democratic societies.

an additional 'charisma' factor. This captures some non-economic aspects of the incumbent and the challenger such as articulateness, commitment to a social identity, or even sense of humor of the candidates. Indeed, these non-economic characteristics may differ in the eyes of individual voters. We capture these aspects collectively with a variable c which we call the 'charisma' of a randomly drawn challenger, relative to the incumbent. For each voter, the challenger's charisma (relative to that of the incumbent) is assumed to be an independent draw from a uniform distribution over $[-c_0,c_0]$, that is observed prior to the election.

The ability of this challenger is expected to be the same as the ex ante ability of the incumbent viz. $\bar{\tau}_g$. A citizen compares her own estimate of the incumbent government's ability with $\bar{\tau}_g + c$ (which represents the talent plus relative charisma of the challenger), and votes to either retain or oust the incumbent depending on whichever value is higher.[11] The candidate who obtains a majority of the votes is the winner of the election.

If we denote the fraction of the population living in rural areas by N_r, and that in urban areas by N_u, in most developing countries $N_u < 0.5 < N_r$. With the majority of the populace residing in rural areas and all having equal voice, the 'median voter' is usually a rural resident, and therefore it requires to be explained yet why resources get skewed in favor of the urban sector.

2.3.1. The timing

We now summarize the timing of the above game. At the beginning of the period, the incumbent government chooses to allocate resources across the two sectors. Sector specific outputs are then realized. Residents in region j observe the outputs in both sectors; a fraction p_j also observe their region-specific input θ_j. On the basis of the information available, voters make an assessment of the ability of the incumbent government. The government then faces an election against a randomly drawn challenger. Prior to making his voting decision, each voter realizes a charisma factor c, that determines the relative charisma of the challenger vis-a-vis the incumbent. Finally, at the end of the period, elections take place and the politician that obtains a majority of the votes is elected to power.

How do these aspects of the political structure, as well as citizens' information and inference process affect the government's resource allocation across the two sectors? To address this question, we next analyze the equilibrium of this game.

2.4. Equilibrium

We now turn to examining governmental decision making in allocating its total budget $\bar{B}$ between the two sectors. The crucial element in this model is that a higher output boosts public perception about the government's ability. Since output is a function of both ability (which is unknown ex ante) and resources, a government can use resource allocation to influence the level of output and thereby bolster its reputation. The differences in our

[11] From a modeling point of view, the 'charisma' factor makes the probability of re-election a *smooth* stochastic function of the perceived ability of the incumbent government. This ensures that slight changes in perceived ability will not result in discontinuous jumps in the probability of getting elected.

approach here are two: First, we have a multiplicity of goods, and second, there is heterogeneity in the information sets of the rural and urban electorate. Let us now examine the nature of equilibrium in this game.

We do this backwards, starting from the end of the period. Suppose the realizations of the urban and rural outputs, and the urban and rural regional inputs have been y_u, y_r and θ_u, θ_r, respectively. Note that among the urban voters, while all observe y_u and y_r, only a fraction p_u also get to see the region-specific input θ_u. Let us call them as ''informed'' urban voters. Likewise, in the rural population, while all residents observe y_u and y_r, only a fraction p_r of the voters are informed in that they get to observe θ_r. We will refer to those voters who see only y_u and y_r (but not the regional inputs) as ''uninformed''.

Now consider a voter's decision rule. Let us denote by $E[\tau_g|$ information set] the voter's estimate of the incumbent government's ability based on her information about the urban and rural public goods, y_u, y_r, and about the region-specific input θ_j (if available). Such a voter will vote to re-elect the incumbent only if $E[\tau_g|$ information set$]>\bar{\tau}_g+c$.

Consider a particular group of voters. Since charisma c is distributed uniformly over $[-c_0,c_0]$, the fraction of this group who vote to re-elect the incumbent is given by $\frac{E[\tau_g|\text{ information set}]-\bar{\tau}_g+c_0}{2c_0}$.[12] We have four groups of voters in the population: (a) informed rural and urban voters, whose information sets consist of (y_u, y_r, θ_u) and (y_u, y_r, θ_r), respectively, and (b) uninformed rural and urban voters, whose information sets contain only y_u and y_r. Thus, in the final electoral calculation, given realizations (y_u, y_r; θ_u, θ_r), the incumbent will win the election only if it captures a majority of the votes:

$$N_u\left[p_u\frac{E(\tau_g\,|\,y_u,y_r,\theta_u)-\bar{\tau}_g+c_0}{2c_0}+(1-p_u)\frac{E(\tau_g\,|\,y_u,y_r)-\bar{\tau}_g+c_0}{2c_0}\right]$$
$$+N_r\left[p_r\frac{E(\tau_g\,|\,y_u,y_r,\theta_r)-\bar{\tau}_g+c_0}{2c_0}+(1-p_r)\frac{E(\tau_g\,|\,y_u,y_r)-\bar{\tau}_g+c_0}{2c_0}\right]>\frac{1}{2} \quad (2)$$

Any government interested in retaining power would like to ensure that a majority of the voting public forms a favorable posterior assessment of its ability τ_g. To see how this is affected by the allocation of resources, we need to derive the expressions for the rural and urban residents' ex post assessment of the government's talent in Eq. (2) above. In computing this, we make use of the fact that all our random variables are normally distributed. This considerably eases computation: Not only are the posteriors normally distributed, but also the following property of Bayesian updating with normal distributions yields relatively tractable expressions. (This property is derived in Appendix A; also see DeGroot, 1970.) In particular, if $y=\tau+\theta$, where $\tau\sim N(\bar{\tau},\sigma_\tau^2)$ and $\theta\sim N(0,\sigma_\theta^2)$, then the distribution of τ conditional on observing y is also normal with mean $\frac{h_\tau\bar{\tau}+h_\theta y}{h_\tau+h_\theta}$ and variance $\frac{1}{h_\tau+h_\theta}$, where $h_\tau=1/\sigma_\tau^2$ and $h_\theta=1/\sigma_\theta^2$ are the precisions of the two distributions.

Consider an informed urban voter. She observes y_u and y_r, as well as the actual level of the urban input θ_u. If she expects that the government's allocation of resources to

[12] This fraction is one if $E[\tau_g|$ information set$]-\bar{\tau}_g>c_0$ and is zero if $E[\tau_g|$ information set$]-\bar{\tau}_g<-c_0$. These cases are taken into consideration in the formal proof of Proposition 1 given in Appendix B.

the urban sector is e_u^*, then she deduces with perfect precision that the government's ability is

$$\tau_g = y_u - f(e_u^*) - \theta_u \tag{3}$$

Similarly, informed rural voters who observe the true level of the rural input θ_r, deduce that the government's ability is

$$\tau_g = y_r - f(e_r^*) - \theta_r \tag{4}$$

The equilibrium concept here is rational expectations equilibrium. Thus, the citizens' expectations about resource allocation are realized, in equilibrium. The government expends resources to influence public perception, but in equilibrium, the net effect is zero. This can be seen from Eq. (3). For a given amount of urban resources e_u, the right-hand side of Eq. (3) is $\tau_g + f(e_u) - f(e_u^*)$. Thus from the government's point of view, the marginal return to increasing resources to the urban sector is $f'(e_u)$; but in equilibrium, $e_u = e_u^*$, and so the equilibrium effect is nil. Comparing Eqs. (3) and (4), one can see from the government's objective, that the marginal return to increasing perceived talent among the informed voters (by increasing y_j) is the same in both sectors.

Next consider uninformed urban voters, i.e. those who do not see the regional input θ_u. In their case, observing either outcome y_j, $j \in \{U,R\}$ is like observing the government's talent with an error term of variance σ_j^2 (which is the variance of θ_j). Thus, this urban voter obtains two observations of the government's talent, y_u and y_r, from two distributions with precisions $h_u = 1/\sigma_u^2$ and $h_r = 1/\sigma_r^2$, respectively. Therefore, the mean of her posterior belief about the government's ability is given by:

$$\frac{\bar{\tau}_g h_r + h_u(y_u - f(e_u^*)) + h_r(y_r - f(e_r^*))}{h_\tau + h_u + h_r} \tag{5}$$

Here, the terms h_τ, h_u and h_r are the precision of the different pieces of information, and thus constitute the weights on the prior and the realizations. The information set for the uninformed rural voter is the same as that of an uninformed urban voter, i.e. she too observes only y_u and y_r. Therefore, the mean of her posterior belief about the government's talent is also given by Eq. (5).

This posterior belief is increasing in both y_u and y_r; however, the marginal return to increasing y_r is $h_r/(h_\tau + h_u + h_r)$, while that from raising y_u is $h_u/(h_\tau + h_u + h_r)$. Therefore, if variance of the urban input θ_u is lower than that of the rural input θ_r, it would imply a greater incentive on the part of the government to devote resources to increasing the urban output y_u rather than increasing y_r.

Note that all of the above posterior beliefs are increasing in y_u and y_r, and therefore the government would like to distribute its given budget $\bar{B}$ between the two sectors so as to maximize its objective, as expressed in Eq. (2).

Now, if e_u is the funds allocated to the urban sector, then the ex ante distribution of y_u is normal with mean $\bar{\tau}_g + f(e_u)$, and variance $\sigma_\tau^2 + \sigma_u^2$; similarly, given an allocation e_r to the rural sector, y_r is normally distributed with mean $\bar{\tau}_g + f(e_r)$, and variance $\sigma_\tau^2 + \sigma_r^2$. Using the expressions from Eqs. (3), (4) and (5), the government's ex post reputation is also

normally distributed (given that Eq. (2) is the sum of normally distributed variables); resource allocation between the two sectors affects only the mean $\mu(e_r,e_u)$ of this distribution. Thus, the government's objective of maximizing its average ex post reputation amounts to a choice of e_r and e_u so as to maximize $\mu(e_r,e_u)$. Are there factors that will bias the government's optimal resource allocation in favor of either sector? We address this question in Proposition 1 below.

Proposition 1. *For c_0 large enough, an urban bias in government resource allocation for public goods arises (i.e. $e_u^* > e_u^{FB} > e_r^{FB} > e_r^*$) if:*

$$N_u p_u - N_r p_r + \frac{h_u - h_r}{h_\tau + h_u + h_r}[N_u(1-p_u) + N_r(1-p_r)] > 0$$

where $h_u = 1/\sigma_u^2$ and $h_r = 1/\sigma_r^2$, respectively.

Even when the rural population is in a majority, a bias in resource allocation towards the minority urban sector is likely to occur if (i) the variability of the rural input, i.e. σ_r^2, is high or that of the urban input, i.e. σ_u^2, is low, (ii) the fraction of informed urban voters, i.e. p_u, is high or the fraction of informed rural voters, i.e. p_r, is low, or (iii) the variability in the public perception about the government's ability, i.e. σ_τ^2, is high (in the case when $h_u > h_r$).

Proof. See Appendix B. □

The above proposition summarizes conditions under which a government will tend to over-allocate resources to the urban sector. Notice that, as in other theories of voting with identically informed voters, in our model too, a larger urban population share, N_u, makes an urban bias more likely. Here however, even when the urban population is in a minority (i.e. for $N_u < N_r$), an urban bias can arise despite the absence of any lobbying. This 'bias' arises because the incumbent government maximizes its chances of re-election, by allocating resources across sectors so as to disproportionately influence voter perception in those sectors where the voters have the sharpest inference process. Thus, differences in access to information may lead the 'effective' median voter to be from the minoritarian sector.[13] Citizens who are better placed to acquire and process information have more governmental resources allocated towards them.

In particular, in the model so far, such informational advantage occurs through two possible channels. The first is the variability of the region specific input θ_j.[14] One interpretation of this variability in θ_j is 'technological': for instance, rainfall (a crucial input into agricultural output) is variable in a way that electricity (an input into the industrial sector) is not. If the variance of the rural sector input, i.e. σ_r^2, is sufficiently higher than that of the urban sector input, i.e. σ_u^2, then even with a majority of the

[13] The mechanism that here leads the 'effective' median voter to differ from the actual median voter, is quite distinct from other informational stories (e.g. Feddersen and Pesendorfer, 1996) where less-informed voters delegate the voting decision to more-informed voters. In our model, such a commitment by the rural voters would see the government expend even more resources towards influencing the urban voters whose votes would then be even more crucial; in other words, the urban bias would only be exacerbated.

[14] For simplicity of exposition, we have only considered a single, exogenous input θ_j into each sector. If there were multiple inputs into each sector, then the variance would be expected to be higher in the sector in which there are a larger number of inputs and greater diversity in the supply of these inputs.

population being rural, the government is likely to devote a disproportionate share of resources towards the urban sector. The lower variability in θ_u translates into a sharper, more nuanced assessment of the government's ability from observing an increase in the urban output than a corresponding change in the rural output. Given electoral imperatives, this translates into the government devoting more resources to raising urban output.[15] Another possible channel for the increased variability in the rural sector is due to the fact that rural residents tend to be more geographically dispersed. This could also lead to a greater variation in the received quality of the same public good.

More importantly, even if there is no difference in the variability of the sector-specific inputs, i.e. $\sigma_r^2 = \sigma_u^2$, an urban bias can still arise if there are a sufficiently high number of informed urban voters as compared to informed rural voters. Note that this refers to knowledge about the region-specific input, which allows residents to infer the government's ability perfectly from the observed outcomes; a higher number of such informed voters in the urban area viz. $N_u p_u$ as compared with $N_r p_r$, will induce the government to put more resources to the urban public good than the rural one.[16]

The above proposition also looks at the effect of initial perception about the government on the direction of the bias. In the more plausible case where variability of the urban input is lower than that of the rural input, i.e. $h_u > h_r$, urban bias is more likely when σ_τ^2 is higher. For example, public perception about the ability of a government which has never been in power before is likely to be more variable. Such governments have a lot to gain by demonstrating better performance, and will therefore be more inclined to skew resources in favor of the more discerning urban voters. In contrast, for governments who have been in power for long, public perception about ability is likely to be quite precise; such governments will find it more difficult to effect a change in the perception through changes in output. This reduces their incentive to bias resources towards the urban sector. Thus, the model suggests that the longer an incumbent stays in power, the degree of urban bias in its resource allocation decision should diminish over time.

In this section, we have looked at the consequences of differences in information availability about region-specific inputs and outcomes. In Section 3, we study the effect of differences in information availability with respect to global shocks, i.e. shocks that affect all regions symmetrically. Before doing so, let us consider the efficiency of the political system here in re-electing talented governments and deposing those with low ability.

2.4.1. Efficacy of the political system

In the past few decades, there has been a wave of democratization in much of the developing world. This has once again focused attention on one of the central functions of democratic electoral politics, namely, to weed out incompetent governments.

[15] Our analysis has been restricted to two competing public goods—one rural and the other urban. The model can be generalized to a world with a multiplicity of public goods, where some rural goods may have a lower variability of the sector specific input (vis-a-vis urban goods) and vice versa. In such circumstances, we can expect that there may be a rural bias for some goods and an urban bias in the case of others. This accords with some of the evidence discussed in Moore (1993).

[16] In Section 4.2, we discuss possible sources of such informational advantage of urban voters over rural residents.

However, a casual observer of electoral politics in countries as diverse as Indonesia, India, Kenya and Nigeria would argue that in most of these countries 'ability-based' politics frequently takes a backseat. Instead, what often drives outcomes in many of these cases, are other non-ability-based characteristics of politicians—be it ethnicity, ideology, religion or language.[17] Comparing these features of the democratic process to the more ability-based competition observed in developed countries, a key issue that is often raised is whether better access to information would result in a more 'efficient' electoral system. In other words, would better access to information (be it through education, the media or otherwise) improve the chances of low ability incumbents being deposed and high ability ones retained? In this section, we take a first stab at this question. To keep things interesting, we will assume that the fraction of informed voters is in a minority in the population.

In the relatively simple political structure here, people vote based on their perception of the government's ability as well as on some non-related factors, which we call 'charisma'. Here, charisma is a catch-*all* term for all non-ability based characteristics that affect a voter's decision. Given that the production process (Eq. (1)) for the provision of public goods in both sectors is increasing in the government's ability τ_g, economic efficiency here requires that governments with above average talent be re-elected, while those with talent below the average $\bar{\tau}_g$ be replaced.

The actual electoral process here is stochastic and depends not only on τ_g, but also on the realization of the shocks θ_u and θ_r. Thus, one way to analyze the efficacy of the political system would be to compute the probability of re-election for a government of particular ability level τ_g, and study the effect of various factors on this probability. As is shown in Appendix B, incorporating the updated beliefs (Eqs. (3), (5) and (4)) of the various groups of voters into Eq. (2), yields the equilibrium condition for re-election as:

$$\left\{N_u p_u + N_r p_r + (N_u(1-p_u) + N_r(1-p_r))\frac{h_u + h_r}{h_\tau + h_u + h_r}\right\}(\tau_g - \bar{\tau}_g) + \frac{N_u(1-p_u) + N_r(1-p_r)}{h_\tau + h_u + h_r}(h_u\theta_u + h_r\theta_r) > 0 \quad (6)$$

Since $h_u\theta_u + h_r\theta_r$ is normally distributed with mean 0 and variance $h_u + h_r$, the probability of re-election for a government of ability τ_g is then given by:

$$1 - \Phi\left[-\frac{(\tau_g - \bar{\tau}_g)}{\sqrt{h_u + h_r}}\left\{h_u + h_r + \frac{N_u p_u + N_r p_r}{1 - N_u p_u - N_r p_r}(h_\tau + h_u + h_r)\right\}\right] \quad (7)$$

where Φ is the cdf of the standard normal distribution. As expected, this probability is increasing in τ_g, and exceeds (is less than) 0.5 when τ_g is greater than (less than) the mean $\bar{\tau}_g$. Differentiating the above expression identifies the effects of the various parameters on this probability function. These are summarized in the following proposition.

[17] Bardhan (1998) points to the ironic fact that electoral candidates in India are able to satisfy their constituencies through symbolic gestures such as erecting statues, rather than providing sorely needed public goods like drinking water.

Proposition 2. *For a government of talent τ_g exceeding (is less than) the mean $\bar{\tau}_g$, the probability of being reelected increases (decreases) with (i) a rise in the proportion of perfectly informed people $N_u p_u + N_r p_r$, and (ii) a decrease in the variability in the public perception about the government's ability, i.e. a lowering of σ_τ^2.*

The effect of a decrease in the variability of the rural or the urban input on this probability is U-shaped. Specifically, for τ_g exceeding the mean $\bar{\tau}_g$, the probability of getting reelected (i) decreases with a decrease in σ_r^2 or σ_u^2 if $h_u + h_r < (N_u p_u + N_r p_r)h_\tau$, and (ii) increases with a decrease in σ_r^2 or σ_u^2 if $h_u + h_r > (N_u p_u + N_r p_r)h_\tau$.

Proof. See Appendix B. □

With an increase in the proportion of informed people in the population, whether in the rural or the urban sector, the political structure becomes more 'ability-based' in the sense that the probability of reelecting talented governments and weeding out untalented ones increases. In equilibrium, the informed voters observe perfectly the talent of the incumbent government; therefore any increase in the number of such voters raises the efficacy of the political system.

Similar is the effect of a decrease in the ex ante variability in public perception about talent. As can be seen from the above inequality (6), inefficiency in the political process here occurs due to the fact that extreme negative values of $h_u\theta_u + h_r\theta_r$ can cause uninformed voters to vote against an incumbent with above average talent (i.e., $\tau_g > \bar{\tau}_g$). However, as h_τ increases, uninformed voters' decisions become less sensitive to changes in θ_u or θ_r, so that it takes relatively more extreme (negative) values of $h_u\theta_u + h_r\theta_r$ to inefficiently overthrow a competent incumbent. Therefore, as σ_τ^2 decreases, the region of inefficiency shrinks and hence the probability of a competent government being re-elected increases.

The effect of a change in σ_u^2 or σ_r^2 on this probability is however quite non-monotonic. When $h_u + h_r < (N_u p_u + N_r p_r)h_\tau$, an increase in the precision h_u or h_r has an adverse effect on the probability of reelecting talented governments and overthrowing untalented ones. For relatively higher levels of precision (i.e. for $h_u + h_r < (N_u p_u + N_r p_r)h_\tau$) however, the effect is reversed and an increase in this precision increases the efficacy of the political system.

Intuition for this result can be understood from the fact that, at intermediate levels of h_u and h_r, an increase in either of the precisions has two effects. To see this, first consider an uninformed voter. When completely uninformed, her voting decision is a function of only her prior and 'non-ability' based (charisma) factors. As the precision of her observations y_u and/or y_r increases, she shifts more weight on to (perceived) ability differences between the incumbent and the challenger, as gleaned from observed realizations of output. Consider a large negative realization of y_j, caused by a large negative realization of θ_j. On observing such a y_j, the uninformed voter is now less likely to re-elect the government, even though it may be of above-average talent. This is because, with a lower variance of θ_j, she would now attribute the low y_j more to poor government ability than to an adverse regional input shock. Thus, conditional on any given negative realization of y_j, the probability of reelection decreases as h_j increases, even for a government with above average talent. This first effect serves to reduce efficiency of the political system. Secondly, however, as h_j increases, such extreme (negative) values of θ_j (and consequently y_j) become less likely; (in expected terms) the outputs y_u and y_r become more reflective of

the government's talent τ_g. Thus, while the region of inefficiency expands, the probability of being in that region decreases. The combination of these two effects leads to the non-monotonic impact of a change in h_u or h_r on the efficacy of elections.

To summarize, our analysis above offers several insights into the impact of greater information on the electoral process. The impact depends upon the nature of the increase in information. An increase in the fraction of well-informed voters does shift the focus of elections more towards ability of the candidates, and away from observable, but non-ability based characteristics (such as ethnicity, social identity, etc.). However, partial improvements in information availability of imperfectly informed voters could initially make matters worse, since it can lower the likelihood of reelecting competent governments or deposing incompetent ones.

3. Resource allocation under common global shocks

Economies are buffeted by shocks and uncertainties of many kinds. In the previous section, we demonstrated how an urban bias in resource allocation could arise due to differences in access to information availability about region-specific inputs. However, this is surely only part of the picture. Economies can also be hit by economy-wide shocks which affect all regions. For instance, countries suffer from adverse balance of payments crises and economy-wide recessions. A collapse in access to the international capital market after the East Asian crisis made it harder for governments to raise and allocate funds to *all* sectors in these economies. An issue of interest is whether the sectoral distortions that we identified in the previous section get exacerbated or mitigated in the presence of such economy-wide common shocks. In this section, we adapt the benchmark model of the previous section to analyze the issue of how changes in economic conditions can affect the degree of bias in sectoral resource allocation. Indeed as we will subsequently discuss, such an examination may throw light on Fay and Opal's (2000) puzzling evidence that a majority of the developing countries that experienced negative shocks to growth during the last two decades, also experienced positive urbanization.

We retain the basic structure of the model in the previous section. However, in order to keep the analysis simple while also incorporating the possibility of global economy-wide shocks, we make the following changes. In particular, we drop regional inputs from the production process[18] and instead assume that productivity depends on a factor A which affects output in *both* sectors. This exogenous shock can be either high A_H (if the state is high H), or low A_L (if the state is low L), with $A_H > A_L > 0$. Thus, both the rural and urban sectors have the same technology of production:

$$y_j = A_s[\tau_g + f(e_j)] \qquad j \in \{\text{Rural, Urban}\}$$

where $s \in \{H,L\}$, and as before, τ_g is normally distributed with mean $\bar{\tau}_g$ and variance σ_g^2. Thus, sectoral production is a function of the (common) state of the world, with the high

[18] The absence of the sectoral input is for simplicity. Alternately, we could assume that $p_u = p_r = 1$, so that all residents can see perfectly the regional input in their respective regions.

state H occurring with probability p_H, and the low state L with probability p_L, where $p_H + p_L = 1$.

Given the greater prevalence of television, radio and newspapers in cities and higher levels of education, urban residents are more likely to be aware of, say, fluctuations in the world market, the country's credit rating, as well as any other exogenous economy-wide shocks; thus, it seems reasonable to assume that urban residents are better informed than rural residents about the incidence of these global shocks. We capture this by assuming that while urban voters can observe perfectly the state of the world, the rural voters do not observe it at all. As regards output, here we assume that all urban voters can see perfectly the urban output and all rural voters can see perfectly the rural output, but none can see the output in the other's sector. The above assumptions have been deliberately made with the aim of emphasizing that we have made the two sectors completely symmetric in every respect, except for the fact that while urban voters can observe the state of the world, the rural voters cannot. Therefore, any distortions in governmental resource allocation that arise will be only due to differences in information availability.

The timing of the game is as before: at the first stage, the government (and the urban resident) sees the state of the world and decides on the allocation of funds between the urban and rural sectors; the output of the two sectors is then realized (and observed by the respective constituencies), and finally elections occur.

3.1. Equilibrium

As in the previous section, voters have expectations about the government's expenditure in the two sectors. Let us denote by $e_j^*(s)$ the expectation about the government's expenditure in sector j in state s. (As before, in equilibrium, these expectations are actually realized.) Note that in the absence of region-specific shocks, all urban voters here are informed (in the sense of the previous section). Therefore, for an urban resident who observes the state of the world to be s, her belief about the government's ability, on seeing an urban output of y_u is

$$\frac{y_u}{A_s} - f(e_u^*(s)) \tag{8}$$

The rural voter however, does not see the state of the world. Therefore, on observing a rural output of y_r, she is not sure if this has occurred due to the production function $y_r = A_H[\tau_g + f(e_r^*(H))]$ or due to $y_r = A_L[\tau_g + f(e_r^*(L))]$. Thus, the mean of her updated belief about the government's ability is weighted by the relative probabilities of the two states and is given by:

$$p_H\left[\frac{y_r}{A_H} - f(e_r^*(H))\right] + p_L\left[\frac{y_r}{A_L} - f(e_r^*(L))\right] \tag{9}$$

Comparing expressions (8) and (9), we see that whereas the increase in perception from a marginal increase in urban output y_u in state s is $1/A_s$, that from a marginal increase in rural output y_r is $\frac{p_H}{A_H} + \frac{p_L}{A_L}$. Comparing the two marginal benefits gives the direction and magnitude of bias in resource allocation between the rural and urban sectors. This is summarized in the proposition below.

Proposition 3. *The government's optimal resource allocation between the two sectors is characterized by the following:*

$$\frac{N_u f'(e_u^*(L))}{N_r f'(e_r^*(L))} = p_L + p_H \frac{A_L}{A_H} < 1 < p_L \frac{A_H}{A_L} + p_H = \frac{N_u f'(e_u^*(H))}{N_r f'(e_r^*(H))} \tag{10}$$

For the case $N_u = N_r$, this implies that $e_u^* > e_r^*$ when the state is L, and $e_u^* < e_r^*$ when the state is H.

Proof. See Appendix B. □

The above result is quite striking. In particular, any urban bias in resources will be exacerbated in the bad state and will be lessened in the good state. Further, for some parameters (for example, when N_r and N_u are sufficiently 'close', as in the limiting case of $N_r = N_u$) there will be a rural-bias in resource allocation in the good state and an urban-bias in the bad state. The intuition for this result is relatively simple: in good times, the same resource allocation is more likely to produce a higher output in either sector. However, a better performance by the government is appropriately discounted for by the urban voters. This is because in good times, urban voters know that their high incomes are because of the state being H, and not entirely due to government performance and ability. On the other hand, the rural voters (who are uninformed about the state) are not sure if the better performance is due to a high productivity shock or in spite of a low one. Thus, they do not discount a better performance as much as the urban residents. Realizing that the rural voter is more likely to attribute their high income to governmental ability rather than to a favorable state, the government prefers to devote more resources towards the rural sector in the good state, so as to enhance its chance of staying in power. In the bad state, the opposite logic works, and therefore the resource allocation decision gets biased in favor of the urban sector.

Using Eq. (10), we can also examine the magnitude of this bias in the two states. For example, if A_H increases relative to A_L, i.e. if A_H/A_L rises, then the difference between $e_r^*(H)$ and $e_u^*(H)$ increases, while that between $e_u^*(L)$ and $e_r^*(L)$ decreases. Again, it is the asymmetry of information between urban and rural voters that is at work. A higher A_H raises the marginal product of resources in both sectors, but from the government's point of view, this is more valuable in influencing the perception of the rural voters rather than that of the urban voters, who discount any increase in output appropriately.

As we shall see in the next section, given that citizens care about the quality/quantity of public goods, such bias in public good provision has important implications for patterns of migration.

4. Extensions and discussion

Our analysis has focused on examining the implications of differences in information availability across a heterogeneous population on sectoral resource allocation. Two distinct questions immediately come to mind: first, why may such differences in information exist? and second, do our results of bias in resource allocation have any implications for the

theory and pattern of migration in developing countries? In this section, we discuss both of these issues, starting with the latter.

4.1. Migration and urbanization

The quality of public services such as education, health, water supply or crime prevention are important factors on which decisions about residence are made. The politically motivated wedge in rural versus urban public good provision that we described above thus has important consequences for the degree of urbanization. In this section, we briefly explore this link between such a bias in public good provision, migration patterns and the degree of urbanization.

While the discussion that follows is only suggestive, it nevertheless has potentially important implications. First, through its focus on the government's incentives for public good provision, it emphasizes an important, but relatively unexplored link between public good provision and migration patterns. Second and more directly, it adds a much neglected political dimension to the (large) literature on the design of government policies so as to ensure socially optimal migration levels from rural to urban areas.[19] Our simple analysis suggests that policy design exercises that ignore such political considerations may well turn out to be quite imperfect.

We begin by considering a simple version of the classic Harris–Todaro model on migration. In this model, migration takes place in response to the differential between the rural wage w_r, and employment opportunities in the urban sector, which are generally characterized by a (high) inelastic wage $\bar{w}$ and a probability of obtaining employment, p_u. Risk neutral individuals compare w_r with $p_u\bar{w}$ in making their decision on whether or not to migrate. Typically, wages in the rural sector are assumed to be completely flexible and given by the marginal product of labor, i.e. $w_r = g_r'(N_r)$, where $g_r(\cdot)$ is the rural production function. If n_u is the number of jobs in the urban sector, then competition for such jobs means that $p_u = \frac{n_u}{N-N_r}$. In equilibrium, the distribution of workers across the two sectors is such that $g_r'(N_r) = w_r = \bar{w}\frac{n_u}{N-N_r}$. Thus, rural–urban migration takes place either due to an increase in the differential between the urban and rural wage $\bar{w} - w_r$, or due to improved job opportunities in the cities, i.e. an increase in n_u. This is the classic result of Harris and Todaro (1970).

Now, suppose that workers care about not just wages, but also the availability of public goods in their area of residence. In other words, the utility of an individual in region j equals $x_j + y_j$, where x_j is his (expected) employment income and y_j is the level of public services in the area. Taking this into account, the modified migration equilibrium condition is now given by,

$$g_r'(N_r) + y_r = \bar{w}\frac{n_u}{N - N_r} + y_u \tag{11}$$

Observe that a priori, if we ignore any political imperatives of governments in providing public goods, the mere inclusion of public goods in the model would not affect

[19] For instance, see Basu (1980) on subsidies to rural and urban workers, as well as Bhagwati and Srinivasan (1974).

migration decisions, since the government's optimal allocation of resources would imply $y_u = y_r$.

Let us examine Eq. (11) in light of Proposition 1. We argued that under plausible conditions, a government concerned with staying in power will allocate resources such that there is an 'urban bias', i.e. $e_u^* > e_r^*$. Thus, in expected terms, the gap between urban and rural public goods, i.e. $y_u - y_r$, will be positive. This bias has a direct impact on the rural worker's migration decision. More of them choose to migrate, i.e. $(N - N_r)$ goes up, despite a constant urban wage and a non-decreasing rural wage. Individuals' decision to migrate to cities is driven by the greater public good provision gap between urban and rural areas, created by the government's political imperatives. This gap may be in the form of rural–urban differences in education facilities, law and order, access to health, and so on.[20] Note that this simple formulation provides an explanation for the puzzle of 'urbanization without growth', i.e. migration occurs in spite of no increase in urban–rural wage differences (see for example, Fay and Opal (2000)). According to the World Development Report (2000), "Africa's pattern of 'urbanization without growth' is in part the result of distorted incentives that encouraged migrants to move to cities to exploit subsidies rather than in response to opportunities for more productive employment". Our analysis throws light on why governments facing greater political threat to remaining in office may well prefer to allocate greater resources towards the more visible urban sector. This 'urban bias' in resource allocation results in a greater incentive for migration and a higher level of urbanization than we might expect by just examining rural–urban wage differences.

Evidence from migration surveys provides support for the idea that better provision of public services in urban areas such as education, sanitation, health is an important determinant of the rural migrants' decision to move to urban areas (see summary in Williamson, 1988; Andersen, 2002).

Another related implication follows from Proposition 3, which argues that the extent of urban bias in a country will be more acute in bad times. In this case, Eq. (11) implies that the extent of migration towards cities would increase when the economy is faced with a negative shock, such as a macroeconomic collapse. This is also consistent with evidence presented by Fay and Opal (2000, Table 1) on 'urbanization without growth' in Africa. They find that the rate of growth of urbanization was slightly higher in countries that experienced negative average growth rates.

4.2. Information availability and public good provision

We have systematically explored the consequences of informational asymmetries between the rural and urban areas in skewing the pattern of public resource allocation.

[20] To take a particular example, Andersen (2002) reports that according to the MECVOI survey, access to better public goods, especially public education, was *the* most important reason for rural–urban migration in Bolivia.

In this subsection, we briefly discuss the possible sources and extent of these asymmetries.

4.2.1. Wealth and education

Urban residents with greater wealth cannot only afford better information, their higher education level imply a better capacity to assimilate it, as compared to their rural counterparts. For instance, the World Development Report (2002)[21] notes that in Nepal, "...access to the press has been constrained by poverty, low literacy, and inadequate transport. Daily circulation of newspapers averages only 11 copies per 1000 people and residents of rural areas are particularly unlikely to receive information." According to the Indian *National Readership Survey* (1999), 62% of Indians in urban areas read newspapers and magazines each week, while only 29% of rural residents do so. This pattern is likely to be replicated across the developing world, with the much higher rate of rural illiteracy (see Table 1 drawn from the Rural Poverty Report, 2001).

4.2.2. Biased media coverage

This bias created by the greater demand of wealthier and more educated urban 'clients' for information is further magnified through biased media coverage. Revenue for newspapers and other commercial media comes from two sources: client subscriptions and advertisement revenue. Given higher readership and wealth, advertisers (and hence newspapers) find it optimal to target the urban readership (see Stromberg, 2001 for a discussion).

4.2.3. Population density

Finally, one of the defining characteristics of an urban area is the relatively high population density. Cities such as Tokyo, Mexico City, Sao Paulo have between 16 and 28 million individuals living in a concentrated area or space. High population density and urbanization generates positive information externalities. As argued most recently by Glaeser (2000), informational externalities are a crucial reason for the development of cities in the first place.[22] Such information externalities imply that an urban resident is likely to have a better assessment of the actual realization of any sector-specific input or common shocks.

4.3. Government responsiveness and the urban informational bias

In the face of these informational disparities, it is hardly surprising that governments would find it politically advantageous to skew public resources in favor of the well-informed urban voter. Anecdotal evidence of this phenomenon can be found in

[21] Page 192, Box 10.7.

[22] Glaeser (2000) finds that one of the most important reasons as to why financial firms locate in Manhattan is that "financial firms maintain their access to the continued swirl of information that surrounds the stock market." Similarly, one of the big advantages of locating in Silicon Valley was informational; according to Saxenian (1994), "informal conversations were pervasive and served as an important source of up-to-date information."

several contexts.[23] However, recent work done by Stromberg (2001) provides more systematic and direct evidence, albeit in the context of the United States over the period 1920–1940. Based on an exogenous expansion in access to radios during the New Deal in the United States, he shows that U.S. counties with more radio listeners received more unemployment relief funds. In a developing country context, Besley and Burgess (2002) provide cross-sectional evidence at the state level in India that states with higher newspaper circulation had governments that were more responsive in tackling floods and droughts.

4.3.1. Government response to global shocks: immunization coverage in the Philippines

While the above cited papers provide evidence for the basic proposition of urban bias in our paper, a novel prediction of our model is the effect of positive or negative global shocks on government responsiveness (Proposition 3). It says that, in case of a negative shock, the government would be more reluctant to switch resources away from the relatively well-informed urban voter than from the poorly-informed rural voter and urban bias is likely to be exacerbated. In this subsection, we provide some supportive evidence for this relation between information availability and changes in public good outcomes by examining the impact of a specific exogenous, global shock, on immunization coverage across provinces in the Philippines.

One of the reasons for studying the Philippines is that it was hit by the Asian Financial crisis in 1997. An immediate consequence of this crisis was that the Philippine Central Government effected a 25% across the board cut on total maintenance and operating expenditure appropriations of all national government agencies in February 1998, including the Department of Health. Thus, for our purposes, the Asian crisis could be regarded as an exogenous global shock, inasmuch as the budget cuts that followed had the potential to affect all provinces symmetrically. However, as emphasized by Reyes et al. (1999), since the government had 'the discretion to decide which programs/activities will be given funding priority so that the impact of fiscal austerity measures on actual expenditure obligations on various programs is largely uneven'. Data on immunization coverage both before and in the immediate aftermath of the post-crisis budgetary

[23] Unusually high prices of onions in the city of Delhi got a lot of play in the media (for one account of the story, see a leading Indian newsmagazine *Frontline* (07/20/98)) in the run-up to the elections in 1998 and is commonly held responsible for the dismal performance of the incumbent party in the elections. So much so, that in a (futile) bid to prevent it from becoming an election issue, (and while many in the Indian countryside regularly find it difficult to satisfy even their basic daily food requirement) the government imported several thousand tonnes of onions even though it had a detrimental impact on the rural agricultural sector. As the president of a farmers' party, *Shetkari Sanghatan* observed in response, "...Onion prices is a sensitive point for the urban middle classes. The onion has brought tears to the eyes of many politicians. (*The Hindu*, 04/10/2002)."

Indeed, the political sensitivity of a rise in food prices in urban areas is well known. It has resulted in the Indian government setting up an overwhelmingly disproportionate number of *Public Distribution Scheme* (PDS) outlets that provide subsidised food in urban areas, while almost completely ignoring the rural areas, where the bulk of India's famine and malnutrition cases occur (Mooij, 2002). In large part, this urban bias in the distribution of PDS outlets (which serve mainly the urban poor and lower middle class) is perhaps more due to governmental fear of adverse publicity in the case of a spike in urban food prices, rather than the lobbying efforts of a clique of rich/influential urban residents, who to begin with are unlikely to be directly dependent on food from ration shops.

cutbacks (1996, 1997 and 1998) are available from Reyes et al. (1999), who have compiled it from the Field Health Services Information System database of the Department of Health. Immunization coverage was chosen as our proxy for government expenditures for two reasons. First, immunization coverage is almost completely provided out of the government health budget. Second, government expenditures on immunization are less likely to be subject to lobbying by a coterie of urban-based elites, as may be argued in the case of transfers or aid programs directed toward a particular (small) group of citizens.[24] Another important reason for our focus on the Philippines is the availability of a unique data set on information availability at the province level from the Philippines' Functional Literacy, Education and Mass Media Survey, 1994. This was a nation-wide survey that examined a variety of information access indicators, such as ownership of radio, television and newspaper readership, as well as literacy at the province level.

Reyes et al. (1999) note that budgetary cutbacks in the immediate aftermath of the Asian Financial crisis led to a dramatic reduction in immunization coverage in the Philippines. We are interested in whether these cutbacks in immunization coverage (at the province level) were related in any way to the degree of access to information availability. There is considerable variation in factors that affect information access across provinces—education and literacy levels, media exposure, and population density. We aggregate the province level data on the percentage of the population that is literate (10 years of age and older), reads newspapers and owns televisions and owns radios to construct a simple index of information availability at the province level: INFO = literacy + newspaper readership+(radio + television) ownership where the variable takes on a minimum possible value of 0 and a maximum of 400. There are a total of 70 provinces and Table 2 presents a comparison of mean values of different variables for the top 25% and bottom 25% of provinces, ranked by this information access index.[25]

As seen in Table 2, the level of immunization in each year is systematically higher in the best informed provinces, relative to the least informed provinces. This is consistent with the basic idea expressed in Proposition 1. Secondly, while all provinces suffered a drop in immunization coverage following the crisis, the adverse impact of the negative shock was much larger in the least informed provinces. Following the budget cut in 1998, the top quartile of best informed provinces saw a drop of 18.6% in the fraction of the eligible population immunized, relative to 1997. In contrast, the bottom quartile of provinces saw a much sharper drop in of 34.1% in immunization coverage. This picture of immunization coverage is fairly robust. It holds up for a variety of information access variables as well as different comparison groups. These include/exclude population density, personal computer ownership and each of the individual information access variables such as radio, television and literacy.

[24] We would have ideally liked to look at the impact on public good expenditures across different provinces within each region, rather than outcomes, but such data were unavailable. However, the overlap between the expenditure and outcome variables is likely to be rather strong in this case, since the drop in immunization coverage was directly linked to an exogenously induced budget cut.

[25] There is little change in the rankings of the provinces even if we use other combinations of the above variables to construct an index of information availability.

Table 2
Impact of the Asian crisis on immunization coverage in the Philippines

Variables	Best-informed provinces (top 25%)	Least-informed provinces (bottom 25%)	High-density (urban) provinces (top 25%)	Low-density (rural) provinces (bottom 25%)
Population density (per km^2)	7278.67	161.39	8871.78	104.39
Information index[a]	314.48	184.95	304.07	204.51
Literacy %	97.47	89.09	97.55	91.11
Radio ownership %	89.63	72.06	87.11	73.39
TV ownership %	78.98	13.04	75.11	21.72
Newspaper readership	48.41	10.76	44.29	18.28
Fraction of eligible population immunized				
1997	92.19	82.54	89.67	86.3
1998	70.08	53.88	74.84	62.71
% Change in fraction of eligible population immunized, 1997–1998	−18.56	−34.08	−12.26	−27.51
Number of observations	18	18	18	18

[a] The information index for each province is defined as: Literacy Rate + Newspaper readership + Radio ownership + TV ownership in the province.

Thus, our simple analysis of immunization data from the Philippines delineates a pattern consistent with the predictions of our theory, both Propositions 1 and 3. Provinces where citizens were relatively poorly informed had lower immunization coverage and suffered a much larger setback in coverage in response to the budget cuts, than provinces that were relatively better informed. While reassuring, our results should be interpreted only as suggestive. For our study to be more convincing, we would like to have more direct data on government public expenditures.

5. Conclusion

This paper emphasizes a distinct mechanism that underlies urban bias in government resource allocation—namely, differences in information across urban and rural residents. In analyzing this informational channel, the paper also contributes more broadly to the literature analyzing the impact of information on the efficacy of the political system.

We show that greater information availability may result in the government allocating disproportionately more resources towards the urban citizen at the expense of the relatively poorly informed rural resident. Furthermore, the extent of this bias is affected by the overall condition of the economy. In the presence of good shocks, the urban bias is mitigated and may even be reversed, while under adverse economic shocks, the urban bias in resource allocation is exacerbated. Our analysis also has some contributions to the literature on rural–urban migration. It shows that, unlike in the traditional Harris–Todaro explanation, such migration can occur even in the absence of a significant gap between rural and urban wages. In this context, our mechanism thus throws light on the phenomenon of ‘urbanization without growth’ that has been found

to be widely prevalent in many developing countries, particularly Africa in the past few decades. Finally, in emphasizing the differences in information access across urban and rural residents, the paper also contributes to our understanding of the effect of information on the role of the electoral system in weeding out incompetent governments and retaining competent ones. In particular, we find that greater information availability need not always improve the ability of elections to help control this adverse selection problem.

Acknowledgements

This paper has benefited from comments by V. Bhaskar, Karla Hoff, Debraj Ray, two anonymous referees and seminar participants at Ohio State University, Williams College, the 2001 NEUDC conference at Boston University, the 2002 CEA meetings at Calgary and the 2003 APET conference at Duke University.

Appendix A. Updating with only region-specific shocks

Consider the case where (see DeGroot, 1970),

$$y = \tau + f(\mathrm{e}) + \theta$$

where $\tau \sim N(\bar{\tau},\sigma_\tau^2)$, and $\theta \sim N(0,\sigma_\theta^2)$. Now, consider the updating of talent τ, given an observation of y and expecting that the government is spending e^*:

$$p(\tau\,|\,y) = \frac{p(\tau)p(y\,|\,\tau)}{p(y)} = \frac{\frac{1}{\sqrt{2\pi}}\frac{1}{\sqrt{\sigma_\tau^2}}e^{-\frac{1}{2\sigma_\tau^2}(\tau-\bar{\tau})^2}\frac{1}{\sqrt{2\pi}}\frac{1}{\sqrt{\sigma_\theta^2}}e^{-\frac{1}{2\sigma_\theta^2}(y-\tau-f(e^*))^2}}{\frac{1}{\sqrt{2\pi}}\frac{1}{\sqrt{\sigma_\tau^2+\sigma_\theta^2}}e^{-\frac{1}{2(\sigma_\tau^2+\sigma_\theta^2)}(y-f(e^*)-\bar{\tau})^2}}$$

$$= \frac{1}{\sqrt{2\pi}}\frac{1}{\sqrt{v^2}}\exp\left[-\frac{1}{2v^2}\left(\tau^2 - 2\tau\left\{\frac{h_\tau\bar{\tau}+h_\theta(y-f(e^*))}{h_\tau+h_\theta}\right\} + \left\{\frac{h_\tau\bar{\tau}+h_\theta(y-f(e^*))}{h_\tau+h_\theta}\right\}^2\right)\right] \tag{12}$$

where $v^2 = \frac{\sigma_\tau^2\sigma_\theta^2}{\sigma_\tau^2+\sigma_\theta^2} = 1/\left(\frac{1}{\sigma_\tau^2}+\frac{1}{\sigma_\theta^2}\right)$.

Thus, $\tau|y$ is normally distributed with mean $\frac{h_\tau\bar{\tau}+h_\theta(y-f(e^*))}{h_\tau+h_\theta}$ and variance v^2.

Appendix B. Proofs of Propositions

Proof of Proposition 1. Incorporating the updated beliefs (Eqs. (3), (5) and (4)) of the various groups of voters into Eq. (2) yields the condition for winning as:

$$\begin{aligned} & N_u p_u\{\tau_g - \bar{\tau}_g + f(e_u) - f(e_u^*)\} + N_r p_r\{\tau_g - \bar{\tau}_g + f(e_r) - f(e_r^*)\} \\ & \quad + [N_u(1-p_u) + N_r(1-p_r)] \\ & \quad \times \left\{ \frac{h_u(\tau_g - \bar{\tau}_g + \theta_u + f(e_u) - f(e_u^*)) + h_r(\tau_g - \bar{\tau}_g + \theta_r + f(e_r) - f(e_r^*))}{h_\tau + h_u + h_r} \right\} \\ & \quad > 0 \end{aligned}$$

This expression can be re-written as:

$$\alpha Y + \beta X + S[f(e_u) - f(e_u^*)] + T[f(e_r) - f(e_r^*)] > 0 \tag{13}$$

where $Y = \tau_g - \bar{\tau}_g$ is a normal random variable with mean 0 and variance $1/h_\tau$, $X = h_u\theta_u + h_r\theta_r$ is a normal random variable with mean 0 and variance $h_u + h_r$, and the parameters α, β, S and T are given by:

$$\alpha = N_u p_u + N_r p_r + [N_u(1-p_u) + N_r(1-p_r)]\frac{h_u + h_r}{h_\tau + h_u + h_r}$$

$$\beta = \frac{N_u(1-p_u) + N_r(1-p_r)}{h_\tau + h_u + h_r}$$

$$S = N_u p_u + \frac{N_u(1-p_u) + N_r(1-p_r)}{h_\tau + h_u + h_r} h_u$$

$$T = N_r p_r + \frac{N_u(1-p_u) + N_r(1-p_r)}{h_\tau + h_u + h_r} h_r$$

Note that since the updated estimate of the talent is a normal variable, while the charisma factor is uniformly distributed with c_0 and $-c_0$ as the upper and lower bounds, it is possible that for extreme outcomes of $\tau_g - \bar{\tau}_g$, θ_u or θ_r, either all or none of the voters in a particular group will vote for the incumbent. Of course, if c_0 is large enough, then the probability of that occurring is very small, but it needs to be incorporated in the condition for calculating the overall probability of re-election. We will later show that incorporating it still maintains Eq. (13) as the equilibrium winning condition. Therefore, for the time being, let us take Eq. (13) as the condition for re-election, and examine the government's resource allocation problem. $\tau_g - \bar{\tau}_g$, θ_u and θ_r are independent, normally distributed with mean 0. Thus, given e_u and e_r, the ex ante distribution of the random variable on the left-hand side of Eq. (13), is normal with mean

$$\mu(e_u, e_r) = S[f(e_u) - f(e_u^*)] + T[f(e_r) - f(e_r^*)]$$

and a variance V which is unaffected by e_u and e_r.

The government wishes to choose the allocation of resources between the urban and rural sectors so as to maximize its chances of being reelected. Thus in deciding to allocate

its budget $\bar{B}$ between the two sectors, the government compares the marginal product (from its viewpoint of maximizing the probability of getting reelected) $Sf'(e)$ from an extra dollar in the urban sector with the marginal product $Tf'(e)$ in the rural sector.

Thus, we have that $e_u^* > e_r^*$ if $S > T$, i.e. if

$$N_u p_u - N_r p_r + \frac{h_u - h_r}{h_\tau + h_u + h_r}[N_u(1-p_u) + N_r(1-p_r)] > 0$$

which is the condition in Proposition 1.

Condition (13) holds when the difference between the estimate of the incumbent's ability and $\bar{\tau}_g$, for each group of voters, lies between $-c_0$ and c_0. Thus, for each realization of $Y = \tau_g - \bar{\tau}_g$, there is a corresponding cutoff value such that for shocks $X = h_u\theta_u + h_r\theta_r$ larger than this cutoff, the incumbent wins. Note that since the updated estimate of the talent is a normal variable, while the charisma factor is uniformly distributed with c_0 and $-c_0$ as the upper and lower bounds, respectively, it is possible that for extreme outcomes of $\tau_g - \bar{\tau}_g$, θ_u or θ_r, either all or none of the voters in a particular group will vote for the incumbent. Consider for example, the case where $Y = \tau_g - \bar{\tau}_g$ is large, so that all of the informed rural and urban voters vote for the incumbent no matter what the realization of the shocks θ_u, θ_r or of the charisma factor c. However, some of the uninformed voters may still vote for the challenger for very adverse realizations of θ_u and θ_r. Again, there is a cutoff value of $X = h_u\theta_u + h_r\theta_r$ which defines the boundary between winning and losing. In this case however, a slight drop in talent τ_g does not cause as much of a drop in the number of votes (since among the informed voters, it has no effect) and therefore does not require as much of a compensation in terms of X to win the election. Hence, the winning condition is flatter in those regions. The precise equations to determine the cutoff conditions can be derived in a manner similar to Eq. (13), and are available from the authors on request. They are depicted by the dark line in Fig. 1.

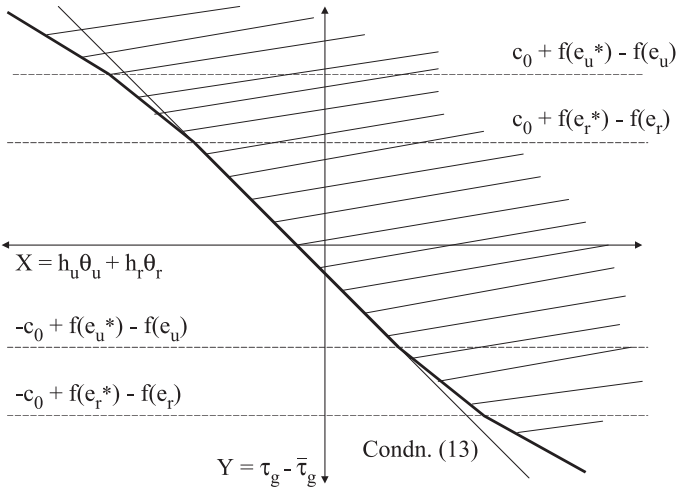

Fig. 1. Election winning region.

The shaded area in the figure denotes the region in which the incumbent wins the election. Note that in equilibrium, $f(e_u)-f(e_u^*)=f(e_r)-f(e_r^*)=0$, and so the deviations from Eq. (13) above the line $Y=c_0$ and that below the line $Y=-c_0$ exactly cancel each other out. Thus, Eq. (13) gives the equilibrium condition for winning over the entire range of X and Y.

Changing e_u and e_r also has marginal effects on the regions where the condition for re-election departs from Eq. (13). Since the density of a normal variable goes to zero at the extremes, these marginal effects become vanishingly small when c_0 is very large. Therefore, if c_0 is large enough, then in calculating the marginal benefits one needs to only take into account the marginal effect of e_u and e_r on $\mu(e_u,e_r)$. □

Proof of Proposition 2. From Eq. (7), the probability of winning for a particular government of talent τ_g is given by:

$$1-\Phi\left[-\frac{(\tau_g-\bar{\tau}_g)}{\sqrt{h_u+h_r}}\left\{h_u+h_r+\frac{N_u p_u+N_r p_r}{1-N_u p_u-N_r p_r}(h_\tau+h_u+h_r)\right\}\right]$$

For $\tau_g>\bar{\tau}_g$, this is clearly increasing in $N_u p_u+N_r p_r$ and in h_τ. Differentiating this expression with respect to h_u+h_r gives:

$$\varphi(\cdot)\frac{(\tau_g-\bar{\tau}_g)}{1-N_u p_u-N_r p_r}\left\{\frac{1}{2\sqrt{h_u+h_r}}-\frac{N_u p_u+N_r p_r}{2(h_u+h_r)^{3/2}}h_\tau\right\}$$

which is greater or less than zero according as $h_u+h_r\gtrless(N_u p_u+N_r p_r)h_\tau$. Thus, for $\tau_g>\bar{\tau}_g$, the probability of winning is increasing in h_u+h_r only if $h_u+h_r>(N_u p_u+N_r p_r)h_\tau$. □

Proof of Proposition 3. For the urban sector, the gain in perception from a marginal increase in y_u in state s is $1/A_s$. In state s, given an allocation of resources $e_u(s)$ to the urban sector, the urban output y_u is normally distributed with mean $A_s[\bar{\tau}_g+f(e_u(s))]$. Therefore, in electoral terms, the marginal benefit from allocating an extra dollar to the urban sector in state s is $\frac{1}{2c_0}N_u A_s f'(e_u(s))/A_s$.

For the rural sector, the gain in perception from a marginal increase in y_r is $\frac{p_H}{A_H}+\frac{p_L}{A_L}$. Thus, in electoral calculations, the marginal benefit from increasing resources to the rural sector is given by $\frac{1}{2c_0}N_r A_s f'(e_r(s))[\frac{p_H}{A_H}+\frac{p_L}{A_L}]$.

Equating the two marginal benefits gives us, for the state L:

$$\frac{N_u f'(e_u^*(L))}{N_r f'(e_r^*(L))}=p_L+p_H\frac{A_L}{A_H}<1,$$

and for state H:

$$\frac{N_u f'(e_u^*(H))}{N_r f'(e_r^*(H))}=p_L\frac{A_H}{A_L}+p_H>1,$$

with the inequalities following from the fact that $p_L+p_H=1$ and $A_H>A_L$. □

Appendix C

Table 1
Rural–urban differences

	Adequate sanitation		Safe drinking water		Health services		Illiteracy rates	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Asia and the Pacific								
Cambodia	–	9	20	12	80	50	37.7	69.6
China	74	7	–	–	100	89	12	26.2
India	70	14	–	82	100	80	26.7	55.3
Indonesia	77	49	87	57	–	–	–	–
Malaysia	94	94	100	86	–	–	–	–
Nepal	28	14	61	59	–	–	35.8	64.2
Pakistan	93	39	85	56	99	35	43	–
Philippines	89	63	91	81	77	74	2.7	10.3
Sri Lanka	68	62	88	65	–	–	6.6	15.2
Thailand	97	94	94	88	90	90	3.3	7.5
Viet Nam	43	15	–	–	100	80	–	–
Latin America and the Caribbean								
Bolivia	74	37	88	43	77	52	8.9	36.1
Brazil	80	30	80	28	–	–	10.7	31.1
Colombia	97	56	90	32	–	–	–	–
Costa Rica	95	70	100	99	100	63	4.9	17
Dominican Rep.	76	83	88	55	84	67	–	–
Ecuador	95	49	81	10	70	20	–	–
Guatemala	95	74	97	48	47	25	16.8	47.8
Honduras	–	57	91	66	80	56	–	–
Nicaragua	34	35	93	28	100	60	–	–
Panama	–	–	99	73	95	64	–	–
Paraguay	65	14	70	6	90	38	–	–
Peru	89	37	91	31	–	–	–	–
Venezuela	64	30	79	79	–	–	–	–
Africa								
Cameroon	64	36	–	30	44	39	–	–
Ghana	62	44	88	52	92	45	–	–
Lesotho	56	35	64	60	–	–	–	–
Madagascar	68	30	–	–	65	65	–	–
Mauritania	44	19	87	41	72	33	–	–
Niger	79	5	70	44	99	30	–	–
Nigeria	50	32	80	39	85	62	–	–
Senegal	71	15	90	44	–	–	–	–
Sierra Leone	17	8	58	21	90	20	–	–
Uganda	75	55	60	36	99	42	–	–
Zambia	94	57	66	37	100	50	–	–

Source: Rural Poverty Report 2001. Figures across countries are not comparable since they are for the latest year available for each country.

References

Ades, A.F., Glaeser, E.L., 1995. Trade and circuses: explaining urban giants. Quarterly Journal of Economics 110, 195–227.

Andersen, L., 2002. Rural–Urban Migration in Bolivia: Advantages and Disadvantages. Working Paper no. 5/2002, Institute for Socio-Economic Research, Catholic University of Bolivia, La Paz.

Arnott, R.J., Gersovitz, M., 1986. Social welfare underpinnings of urban bias and unemployment. Economics Journal 96, 413–424.

Bardhan, P., 1998. The political economy of Development in India. Oxford Univ. Press, New Delhi.

Basu, K., 1980. Optimal policies in dual economies. Quarterly Journal of Economics 95, 187–196.

Bates, R.H., 1981. Markets and States in Tropical Africa: The Political Basis of Agricultural Policies. University of California Press, Berkeley.

Besley, T., Burgess, R., 2002. The political economy of government responsiveness: theory and evidence from India. Quarterly Journal of Economics 117, 1415–1452.

Bhagwati, J., Srinivasan, T.N., 1974. On reanalyzing Harris–Todaro: policy rankings in the case of sector-specific sticky wages. American Economic Review 64, 502–508.

Dewatripont, M., Jewitt, I., Tirole, J., 1999. The economics of career concerns. Part II: an application to missions and accountability of government agencies. Review of Economic Studies 66, 199–217.

DeGroot, M., 1970. Optimal Statistical Decisions. McGraw-Hill, New York.

Fay, M., Opal, C., 2000. Urbanization without Growth: A Not So Uncommon Phenomenon. World Bank Working Paper. No. 2412.

Feddersen, T.J., Pesendorfer, W., 1996. The swing voter's curse. American Economic Review 86, 408–424.

Glaeser, E.L., 1999. Urban Primacy and Politics. Discussion Paper no. 1874, Harvard Institute of Economic Research.

Glaeser, E.L., 2000. The future of urban research: nonmarket interactions. In: Gale, W.G., Rothenberg Pack, J. (Eds.), Brookings–Wharton Papers on Urban Affairs 2000. Brookings Institution Press, Washington, DC, pp. 101–150.

Harris, J., Todaro, M., 1970. Migration, unemployment and development: a two-sector analysis. American Economic Review 60, 126–142.

Holmstrom, B., 1982. Managerial Incentive Problems: A Dynamic Perspective, in: Essays in Economics and Management in Honor of Lars Wahlbeck. Swedish School of Economics, Helsinki, pp. 209–230. Reprinted in Review of Economic Studies (1999) 66, 169–182.

Howes, S., Jha, S., 1992. Urban bias in Indian public distribution system. Economic and Political Weekly 27, 1022–1030.

International Fund for Agricultural Development, 2001. Rural Poverty Report.

Lipton, M., 1977. Why Poor People Stay Poor: Urban Bias in World Development. Harvard Univ. Press, Cambridge, MA.

Mooij, J. 2002. Welfare Policies and Politics: A Study of Three Government Interventions in Andhra Pradesh, India. Working Paper no. 181, Overseas Development Institute, London.

Moore, M., 1993. Economic structure and the politics of sectoral bias: East Asian and other cases. Journal of Development Studies 29, 79–128.

Persson, T., Tabellini, G., 2000. Political Economics: Explaining Economic Policy. MIT Press, Cambridge, MA.

Reyes, C., Manasan, R., Orbeta, A., de Guzman, G. 1999. Social Impact of the Regional Financial Crisis in the Philippines. Discussion Paper no. 99-14, Philippine Institute of Development Studies, Philippines.

Rogoff, K., 1990. Equilibrium political budget cycles. American Economic Review 80, 21–36.

Saxenian, A., 1994. Regional Advantage: Culture and Competition in Silicon Valley and Route, vol. 128. Harvard Univ. Press, Cambridge, MA.

Stromberg, D., 2001. Mass-media and public policy. European Economic Review 45, 652–663.

Williamson, J.G., 1988. Migration and urbanization. In: Chenery, H., Srinivasan, T.N. (Eds.), Handbook of Development Economics, vol. 1. North-Holland, Amsterdam, pp. 425–465.

World Bank, 2000. World Development Report: Attacking Poverty. Oxford Univ. Press, New York.

World Bank, 2002. World Development Report: Building Institutions for Markets. Oxford Univ. Press, New York.