

## The Preference Bias in Sanitation: Explaining Failures in Public Provision

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**Abstract:** This paper explores the persistence of a “low-equilibrium trap” in the provision of public sanitation in the Indian subcontinent – characterized by a very low willingness to pay at the local level that is conjoined with a highly subsidized supply supported by soft-budget constraints at the state (federal) level. The resulting low level of cost-recovery is combined with endemic misuse of funds often with a complete breakdown of public services and frequent resort to private supply options. When considered jointly, these outcomes are symptomatic of a “tragedy of the commons”. Such failures in public provision at the local level may be traced, it is argued, to the persistence of a culturally evolved *preference bias* towards private, as opposed to public, consumption of hygiene. The ethically neutral outlook upheld by individuals towards public squalor alongside an emphasis on private cleanliness under the climatic conditions of the subcontinent is suggestive of a more general lack of an “existence-value” for the common good within the individual utility function that, in turn, implies unwillingness on part of individuals to sustain a positive demand for public goods over time. The administrative history of public sanitation in British India is used to illustrate the widespread occurrence of such a bias within the population. The resistance to sanitary reform and failures in public provision under both British India and post-independence suggests that a normal preference for the public good – local or state (federal) -- cannot be presumed for the Indian subcontinent. Without a change in the underlying preference structure, neither federal provision nor Tiebout-inspired reforms at decentralized provision ensure the desired outcome in terms of higher overall level of public sanitation. Finally, the decentralized provision of public goods post-independence is compared with the relatively centralized or “Imperial” administration in British India. Paradoxically, the latter appears to be the least conceived response to actual preference biases confronted by the state.

“Each one of our cities shouts out a fact: the problem of urban waste, in particular of hazardous waste is nearing crisis proportions. Heaps of garbage can be seen in even the most affluent colonies – ever so often just outside the structures into which residents and municipal workers are supposed to put the waste. Newspapers routinely carry photographs of medical, infectious waste that has been thrown and is lying heaped just outside the hospitals themselves, all too often even inside the hospital compound.”

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“Unauthorized dumping of garbage in open spaces, parks, on the banks of drains, etc. In part because every day `about 16 % to 25 % of garbage remains uncollected.’ Open sites, designated as waste receptacles, are still continued even after more than five years of constant persuasion by CPCB (Central Pollution Control Board) to stop them. Stray animals and rag pickers still invade the waste receptacles.. Indiscriminate burning of leaves, twigs, rubber, papers, plastic etc. in the street, in and around most of the waste receptacles.. Additional dustbins installed in places, `However, most of them have disappeared and these spots have become the open dumping sites of garbage and are not attended by the *Safai Karamcharis* (cleaning personnel) ... Hospitals and slaughter house wastes were mixed with domestic waste in the waste receptacles located nearby hospitals and slaughter houses and also in the areas of unauthorized slaughterings... Open defecation was also observed in the surroundings of waste receptacles... A third of the vehicles are uncovered, while the remaining `were covered temporarily with tarpaulin or plastic or jute sheets, which were torn or half covered, which results in spill over of the garbage on the roads which is a common sight.”

Reports filed by the CPCB on the state of sanitation in Delhi with the Supreme Court between 1996 and 2004. Compiled and quoted in Shourie (2004) *Governance and the Sclerosis that has Set In*, New Delhi: Rupa & Co.

## 1. Introduction.

The provision of public sanitation in India suffers from significant failures at both the micro and macro level. At the micro level these include highly distorted and subsidized pricing that is unrelated to actual costs of provision; poor collection efficiency – a result of both inability and unwillingness to collect arrears in taxes and charges; neglect of basic maintenance expenses that co-exists with disproportionate use of funds towards unproductive staffing and bureaucracy;

misuse of public funds, and corruption; frequent breakdown in service supply and resort to private service options in the informal sector<sup>1</sup>.

At the macro level, the federal division of state and local responsibilities for finance and provision of basic services has created a fractured decision structure that is unable to respond effectively to failures in public provision<sup>2</sup>. Though public sanitation is recognized in theory as a local public good, in practice its provision in India has been subject to an unstable and changing mix of central, state, and local responsibilities with attempts at both centralization and decentralization producing unsatisfactory results. In both cases provision continues to be effected under a soft budget constraint.

Two, the above mentioned failures have persisted over an inordinately lengthy period of time and are reflected throughout the recorded administrative history of modern public sanitation in India, since its inception in the seventeenth century under British colonial rule. The persistence of failures in public provision over time seems to point to unchanged fundamentals rather than to any specific institutional failure per se. This paper, therefore, attempts to move beyond the conventional analysis of market and government failures to explore a relatively neglected piece of the public provision puzzle – the persistence of a widespread *preference bias* in individual utility functions towards private, as opposed to public, consumption of sanitation. The existence of a normal preference for public goods or “developmental goals” is more often than not taken for granted in the literature and by policy makers. And suggestions for reform while focused on institutional and pricing inefficiencies have taken insufficient note of underlying preferences or their evolution over time.

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<sup>1</sup> The problem of sanitation is often seen the result of rapid population growth overwhelming existing facilities in urban centers. However, poor sanitation persists as a common feature across the village-town-city landscape in the subcontinent, irrespective of size or growth of population.

<sup>2</sup> The respective state governments plan and implement public work projects in conjunction with plan allocations made by the Central government and its development planning agencies. The responsibility for operation, maintenance, collection of service taxes and charges lies with the local agencies at the city-town or district levels. The raising of funds for investment purposes by municipal authorities is subject to approval by the state governments. The perennial deficits at the local level are covered by transfers, grants, and loans from the state government.

Emergence of the modern preference for public health and sanitation in the developed world may be traced to the nineteenth century “sanitary reform movements” in the industrializing cities of Britain and Europe. The resistance to sanitary reform and the slow progress in public provision under both British India and post-independence, instead, suggests that a normal preference for public sanitation cannot be presumed for the Indian subcontinent. What is more, unlike the experience of the nineteenth century sanitary movement in Britain, the progress of modern scientific knowledge in the subcontinent has done little to alter the prevailing structure of preferences. On the contrary, the persistence of a preference bias towards private, as opposed to public, consumption of sanitation has helped fuel individual consumption of medical services while limiting the role of overall public health or sanitation.

The evolution of a preference bias for sanitation within the Indian subcontinent and its cultural-geographic roots is briefly explored in Section 2. Section 3 reconsiders the demand for public provision in light of such a preference bias. The existence of such a bias implies unwillingness on part of individuals to sustain a positive demand for public sanitation over time. A simple individual equilibrium-choice framework is employed to explore the key implications of such a preference bias for public provision.

Where the level and type of investment by the state in public facilities is set by exogenously determined technical standards -- or by “developmental goals” far beyond what is warranted by the prevailing preference for sanitation -- expectations of a soft-budget constraint are inescapably built into its operation and maintenance by local agencies. Thus, post-independence, local sanitation boards and municipal corporations in both urban and rural districts have rarely, if at all, sought, let alone achieved, financial self-sufficiency in the provision of basic sanitation services. This is reflected in available data on cost recovery efforts by local public agencies in various cities subsequent to decentralization measures undertaken by the state – recently, through the 73<sup>rd</sup> and 74<sup>th</sup> Amendments (1992) to the Indian Constitution. The fiscal performance data for urban services is reviewed in Section 5.

Suggestions for urban reform have focused on greater efficiency in pricing and administration, including greater decentralization. However, these are bound to have limited impact where the level and type of provision is far beyond what is warranted by prevailing preferences. Here, the mid-nineteenth century “imperial response” by the British to perceived sanitation problems in the subcontinent proves to be instructive. Though centralized, the tax and public goods administration under the imperial state appears to the least conceited response when confronted with underlying preference biases amongst the local population. The Indian state, in contrast, has effected a significant reversal of the more measured “imperial response” with predictable effects. Section 4 discusses the efforts by the British state to further sanitary reform in India. Conclusions are provided in Section 6.

## **2. The Preference Bias in Sanitation**

The preference bias in sanitation may be traced to the cultural-geographic evolution of norms of personal cleanliness that are ritualistically upheld by individuals in the Indian subcontinent alongside an ethically neutral outlook towards external or public squalor. The harsh geographic-climatic conditions of the subcontinent gave rise, some two millennia earlier, to an acute awareness of personal hygiene without which individual survival would have been threatened<sup>3</sup>. Survival in the temperate climatic zones, in contrast, demands far less in the form of personal hygiene<sup>4</sup>. Furthermore, the culturally evolved toolbox employed by the Hindus within the subcontinent came to include a stoic-like acceptance of the pervasive dirt, squalor and disease wrought by an unyielding and oppressive physical environment. The unique nature of this response is described in some

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<sup>3</sup> The code of Manu (circa 2<sup>nd</sup> century BC – 2<sup>nd</sup> century AD) considered the original source of ancient Hindu “dharma” or law contains extensive instructions for personal hygiene.

<sup>4</sup> Such a cultural-geographic division of values was, in fact, internalized early on by the Hindus, and found expression in their negative view of the foreigner non-Hindu. Thus, the Sanskrit term for foreigner, “mlechha” connotes a person who is dirty in his person or someone that does not follow the prescriptions of Manu.

detail by Nirad C. Chaudhuri (1966), one of the most astute commentators on Hindu civilization and society:

“What, however, nobody seems to suspect is the possibility that this impressive mortification of the flesh through the sacrifice of creature comforts, cleanliness, and appearance might have been due to the climate and weather of India. Now, if the dust, of the country showed itself to be inescapable, the easiest way to resist it was to demonstrate that it did not matter—that it did not deserve the notice it was crying out for and getting from unwise Westerners.”

“In regard to the problem of facing the dirt and squalor created by the climate and weather of the country, the Hindus created two very special attitudes quite early, and both are continuing till this day. .. The first of these attitudes was natural and positive, though it was also extreme to the point of extravagance. ... It is a maniacal anxiety for physical cleanliness, a super-Pharisaism. People afflicted with it, ..., bathe and wash all day long, purify everything they use, ..., with Ganges water or cow dung, ... This monomania must have originated in the first unpleasant experiences of the Aryans when they came into a tropical country. They found the dirt formidable, far more difficult to counteract than in temperate lands, and yet the labor to remove it was so great that it could not be faced with readiness. Therefore a more powerful motivation for cleanliness was treated by making the hygienic duty a part of religious duties. This was effectual, and it created a fear of dirt which no modern American or north European housewife can rival. .. The highest type of Hindu spirituality, on the other hand, arrived at a different solution, which was that of the sadhus. ..., the Hindu holy men made indifference to filth an essential attribute of saintliness. At the highest level of spiritual ascent, they said, all things must be equal to the devotee... But it must also be added that, below the level down to which the Hindu outlook on life and cultural consciousness seeped, there remained a wholly non-religious – passive defiance of squalor... as the climate operated more and more intensely on their outlook they become wholly neutral to squalor. The final result was an easy-going and even happy co-existence with it.”

“Occidentals come from a clean and tidy material world, in which dirt, squalor, and disorder are sins. But I declare every day that a man who cannot endure dirt, dust, stench, noise, ugliness, disorder, heat, and cold has no right to live in India. I would say that no man can be regarded as a fit citizen of India until he has conquered squeamishness to the point of being indifferent to the presence of fifty lepers in various stages of decomposition within a hundred yards, or not minding the sight of ubiquitous human excreta every where, even in a big city.”

These cultural responses evolved by residents of the subcontinent over two millennia have coalesced into a preference bias that cuts across income

groups<sup>5</sup>. Innumerable ethnographic and administrative records reveal the existence of a long standing and widespread preference bias for private as opposed to public consumption of hygiene within the general Hindu population. The following observation is obtained from the one of the earliest comprehensive accounts on Hindu customs and manners left behind by the French missionary and scholar, Abbe J.A. Dubois, who visited and lived in India between 1792 and 1823. The Abbe noted the Hindu obsession with private cleanliness conjoined with their indifference to unsanitary conditions outside their homes:

“Hindus purify their homes day by day from the defilements caused by promiscuous goers and comers. It is the rule amongst the upper classes to have their houses rubbed once a day with cow-dung, but in any class it would be considered an unpardonable and gross breach of good manners to omit this ceremony when they expected friends to call or were going to receive company. .. This custom appears odd at first sight, but it brings this inestimable benefit in its train, that it cleanses the house where it is in use from all the insects and vermin which would otherwise infest them.” (p. 154)

“The houses are crowded closely together; the streets are narrow, and excessively dirty with the exception of the street in the larger villages where the market is held, which is kept cleaner, and in which a certain amount of order is maintained. A few steps from the entrance door of each house is a large ditch into which all the manure from the stable and the refuse from the house are thrown. During the rains, these sewage pits become full of water, and form cesspools, which give off the most disgusting effluvia. *But this unpleasant arrangement, which is the same in all the villages, does not appear to affect the inhabitants in any way.* .. In the middle of each street there usually runs a sewer, which receives all the rubbish and filth from the house. This forms a permanent open drain, and gives of a pestilential smell, which none but a Hindu could endure for a moment.” (emphasis added)

The implications of such a bias for the demand and supply of public provision is considered next.

### **3. The Demand for Public (Goods) Sanitation Reconsidered**

The admission of a preference bias within the individual utility function suggests that the “optimal supply of public goods” may be determined by cultural-

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<sup>5</sup> The poorest of individuals living in the slums or on the pavements of urban India are commonly observed performing their daily ablutions under municipal faucets or on public sidewalks. The middle and higher income groups are equally immune to the surrounding squalor within the city or their neighborhoods.

geographic boundaries. The resulting implications for public provision may be explored with the help of a simple equilibrium choice model, and key results that correspond to the experience of public sanitation in the subcontinent are highlighted here. The demand for public goods is considered here for two contrasting cases: the so-called “progressive” case that illustrates a normal preference for public sanitation; versus the “weak” case that illustrates a biased preference for private, as opposed to public, sanitation.

Let  $U_1(pv_1, pu_1, pu_N)$  be the utility function for individual 1.

Where,  $pv_1$  is the level of consumption realized by individual 1 with private goods;

$pu_1$ , the level of private consumption realized by individual 1 that may be partly or entirely fulfilled through use of the common good,  $pu_N$ , once provided;

$pu_N$ , the common good available to all  $N$  members of the community, including individual 1.

While  $pv_1$  and  $pu_1$  are only different forms of private consumption, the separation made here both serves a descriptive purpose and helps clarify outcomes in public provision observed for the subcontinent. The separation between  $pu_N$  and  $pu_1$  in the utility function is meant to denote an “existence value” that the individual may attribute to the common good, over and beyond the utility derived from his own utilization of the common good. That is, the individual derives positive utility from the mere knowledge of the good’s existence, even though it is possible he may never have an occasion to actually use the good. Demand for public goods may be argued to require attribution of a positive existence-value to the common good within an individual’s utility function.<sup>6</sup> Thus,

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<sup>6</sup> The condition of an existence value for public goods was implied early on by Weisbrod (1964) in his definition of “option demand”. However, both in Weisbrod’s original argument, and the subsequent literature on option demand, the presence of an option value in the individual utility function is premised on uncertainty over an individual’s use of the common facility over time. No such uncertainty of use over time need be present for the individual to uphold a positive existence value as understood here. The definition of existence value employed here is closer to the interpretation provided by Bradford (1971) in his definition of collective goods as a “state of the world” variable within the individual’s utility function. More recently, Marmolo (1999) discusses the form of utility interdependencies that would give rise to such an existence value for public goods at the



while technological conditions would define the “least-cost” options for satisfying individual consumption – either through the provision of  $pv_1$  and/or  $pu_1$ , the relative technical efficiency of the supply option by itself will not be sufficient to determine demand for a “public good”,  $pu_N$ . For example, an individual’s need for security may be equally met through the purchase of a gun ( $pv_1$ ) and the services of a hired bodyguard ( $pu_1$ ), as it could through utilization of publicly provided police services. The individual may nonetheless value the existence of common police services,  $pu_N$ , which is equally available to all members of the community, including himself. Or, the desire to read a particular book may be just as efficiently met through an individual’s private purchase of the book as it may through membership in a reading club. Yet, the individual may value the existence of a public library collection – one that is beyond his own reading needs and of a size that he does not expect to ever fully utilize during his lifetime.

The distinct nature of a public good in the individual utility function – say, public cleanliness – is thus illustrated by Figure 1 (Figures at end of document). Let  $pv_1$  measure the individual’s consumption of hygiene with private goods;  $pu_1$ , the extent consumed by the individual using a public good – say, cleanliness of the common area fronting his own house; and  $pu_N$ , the existence of a clean neighborhood enjoyed in common with other individuals. The individual displays normal shaped preference or indifference curves over both his private and public consumption possibilities. The two private goods are supplied under a constant return to scale technology, and individuals are assumed to be homogeneous in income and preferences. The common good is provided at constant costs and exhibits no lumpiness in provision. Provision of  $pu_N$  is assumed here to be financed through an equal direct charge or lump sum tax share mandated on each individual. The level (or quality) of public good provision enjoyed in common by all individuals is indicated in quadrant (II) along the  $pu_N$  axis. Once the public good is provided, exclusion is assumed to be impossible.

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constitutional-choice level. Again, while the presence of existence value clearly fulfills such utility interdependencies, ex-post, the latter need not be admitted, ex-ante, for the former.

Prior to the provision of  $puN$ ,  $FF$  in quadrant (I) is the total budget constraint faced by the individual over the two private goods –  $pv1$  and  $pu1$ . Each individual purchases an equilibrium mix of  $pv1$  and  $pu1$  -- shown at  $A$  -- that is independent of the amounts purchased by other individuals in the neighborhood. However, given his preference for the common good, the individual remains in disequilibrium within the public goods quadrant – at  $e^0$ , and will wish to realize a positive level of public goods provision. Under the simplifying assumptions made here, the individual obtains equilibrium across the two quadrants at  $(B,C)$  with an exogenously (or collectively) determined level of public goods provision,  $puN^0$ .<sup>7</sup>

$TT$  in quadrant (I) is the after-tax budget constraint for  $puN^0$  level of public goods provision; and  $B$ , the new private good consumption equilibrium obtained by the individual, after tax. The dashed line through  $C$ , or  $TC$ , mirrors the corresponding consumption possibilities in quadrant (II). That is, once the public good is provided, the individual's equilibrium level of private consumption at  $B$ , in quadrant (I), is ultimately governed by the individual being part of the collective equilibrium obtained at  $C$ , in quadrant (II). Conditions exist however that could make the equilibrium obtained at  $C$  unstable or unachievable. Under such conditions, both the tax-funding and allocation of the common facility will be subject to significant problems of governance. Or, the individual's private consumption equilibrium may not be sustained at  $B$ .

The dilemma of collective equilibrium under conditions of majoritarian democracy has been extensively studied by both the normative, social-choice literature and under the positive, public choice inspired political economy. The existence of a positive, if differing, preference for public goods however is taken for granted in both perspectives. The developed world has sustained relatively high levels of public goods provision along with high levels of tax compliance and good governance in the allocation of public facilities (Fukuyama, 2004). In terms

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<sup>7</sup> For any given individual budget constraint and size of the tax share group, there will be more than one equilibrium that can be realized by the individual across the two quadrants. With the added assumption of a benevolent state,  $(B,C)$  is also the mix of public-private consumption that obtains the individual the highest level of welfare on his utility plane.

of Figure 1, these countries have maintained a progressive path along the vector **P** in quadrant (II) that signifies household access to increasing levels of public good provision and utilization options over time.

The failures at tax collection and public goods provision that instead characterize the developing world suggests that the preference structure illustrated in Figure 1 cannot be taken for granted. The possibility of a *preference bias* in the individual household's consumption of private versus public sanitation is therefore admitted in Figure 2. The individual's indifference to public cleanliness, or  $puN$ , is reflected in the shape of the indifference curves in quadrant (II) of Figure 2, while the individual's indifference map in quadrant (I) displays normal preferences over private forms of consumption. For the individual holding such a preference bias, the consumption of "public cleanliness" is subject to rapidly diminishing returns measured in private utility terms. And the "optimal" mix of private-public goods consumed by the individual when faced with any reasonable set of relative prices would tend towards a corner solution. The individual would buy into far greater amounts of private as opposed to public cleanliness. In such a case, a state-mandated tax or charge (including no-littering rules) that reduces the individual's private consumption possibilities imposes a *net* utility loss. That is, the individual perceives himself as being worse-off with, rather than without, public provision<sup>8</sup>. The long term consequences for the individual household in such a community is represented instead by the curve **C** in quadrant (II), that indicates shrinkage of household access to common facilities accompanied by a return to private consumption options in quadrant (I).

The dilemma of public goods provision proves to be fundamentally different at the most elemental level. Thus, consider the familiar free-riding incentive that potentially affects the stability of collective equilibrium. In Figure 1, if the individual is honest and pays his tax share, he obtains a net increase in welfare captured by the shift from  $e^o (U^o)$  to  $C^N (U^N)$  in quadrant (II). However, he

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<sup>8</sup> It may be helpful to note here that the difference in an individual's subjective valuation of the public good in the two cases – "progressive" versus "weak" – does not rest on any assumption of behavioral difference across the two communities, including the possibility of myopic behavior.

potentially obtains an even greater increase in private welfare by evading his share of taxes. In a large number setting, tax evasion moves the individual household towards D, on the higher indifference curve  $U^{ev}$ , as long as other households continue to pay their tax share in the short run. However, in the long-run, if other individuals attempt the same, tax collections break down and the individual tax-evader faces the least preferred prospect of a return to  $e^0$ , as  $puN$  tends towards a zero level of provision. The individual in Figure 1, therefore, maintains a long term interest in enforcing honesty in tax collections, or penalizing tax evasion. That is, each individual perceives a net gain through good governance over time – measured by the increase in utility obtained from a move from  $e^0$  to C in quadrant (II).

No such surplus for good governance or honesty in tax payments exists for the individual household defined by Figure 2. Instead, an attempt by the state to provide an equivalent level of public goods,  $puN^0$  within such a community imposes significant utility losses on the individual tax payer, who is now forced onto a lower indifference curve,  $U^N$  at C. The compulsion to evade, or lower, the tax burden is much greater here than it is in Figure 1, and is motivated by different considerations. While the “free-rider” is, by definition, motivated by higher levels of private welfare attainable with the provision of a public good (at D in Figure 1), the tax-evader in Figure 2 seeks – at the very least and through tax evasion – to simply minimize his utility loss measured in private good terms. Even under circumstances where such evasion or lowered tax burden leads to poor service quality and/or a complete breakdown in service provision.

The fundamentally different incentive structure may be more starkly illustrated by altering the pay-off matrix used in the familiar prisoner’s dilemma game. In Figure 2A (end of document), the provision of the public good through equal mandatory tax shares leaves both individuals – R & C -- with a worse pay-off in cell (I) – (1, 1) relative to their pre-tax position in cell (IV) - (2,2). Each individual will therefore attempt to maintain his pre-tax position through tax evasion even at the cost of reduced public provision – cell (III) - (2,1) or cell (II)

(1, 2). Note that the underlying indifference to the state of public cleanliness is reflected in an unchanged private payoff perceived by the honest tax payer in the face of tax evasion by other individuals -- across cells (I) & (II) or cells (1) & (III). Under such a payoff structure, there exists little basis within the community to expect, leave alone enforce, honesty in tax payments by individual households<sup>9</sup>. Further, within a system of majoritarian democracy, the penalty threat required to minimize tax evasion will be seen as “oppressive” and deemed politically too costly.

Where the level and type of investment by the state in public facilities is set by exogenously determined technical standards -- or by “developmental goals” far beyond what is warranted by the prevailing preference for sanitation -- expectations of a soft-budget constraint are inescapably built into its operation and maintenance by local agencies. Public provision will inevitably be burdened with the necessity of subsidized or free provision to significant sections of the population. Note that the provision of subsidies too differs in significance under the two preference structures. In Figure 1 (the case with a normal preference for public sanitation), subsidies in form of tax exemptions or reduced user or access fees to a section of the population will be seen as a privilege that may, in adherence to democratic principles, need to be satisfied through some form of “means test”. In contrast, subsidized access to the public good, or exemption from tax in Figure 2, far from being seen as awarding a privileged level of private welfare, is likely to be interpreted as a “human right” – a claim to minimize the

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<sup>9</sup> In the classic prisoner’s dilemma game, the loss conventionally suffered by the “sucker” or honest individual – in cell (II) or (III) -- is attributed to the loss of the co-operative, i.e. public good outcome. Instead, in Figure 2A the individual remains indifferent to the state of public provision. The loss perceived by the honest taxpayer is in terms only of his private consumption possibilities. Note that the payoffs in cells (II) & (III) could be altered to (2,0) and (0,2) if tax evasion by one individual leads to an immediate and equivalent increase in the tax burden of the honest individual. The (2,1) and (1,2) payoffs obtained in cells (II) & (III) in Figure 2A, however, are meant to reflect the more realistic scenario where tax evasion by some individuals is likely to lead to a partial erosion of public goods provision in the short-medium term. The experience of the public sanitation sector in India seems to support such a hypothesis. Under either of payoff structures considered here, however, little incentive exists – for the individual or the collective -- to enforce honesty in tax payments.

“undue” burden of taxation. This difference in perspective across the two cases may explain the observed inability of the state in India to impose a credible “hard-budget constraint” on subsidized provision.

The overextension of facilities by the state in the face of such a preference bias is likely to generate a far worse pathology of outcomes in the public sector. With indifference to public sanitation that is widespread amongst the population, public facilities once provided are valued by individuals only to the extent that it allows each to reach a higher level of private consumption welfare. This is no different from the individual behavioral response described within the “tragedy of the commons”. In both cases individuals do not uphold a positive existence value for the “commons” and there is an overriding incentive to “corrupt” or over-use the commons for private individual gain. Thus, positions potentially obtainable along the private consumption axis in Figure 2 – such as  $e^*$  or better still,  $e^r$  -- will be individually preferred to position C, once the public good is provided. Thus, position R in quadrant (I) represents a feasible increase in private gain through corruption under conditions of a soft-budget constraint. R is obtained by the individual household by a combination of tax evasion – measured in real terms by the TF segment along the  $pu_1$  axis -- and use of the common facility for private use – measured in real terms by  $C^T$  along the same axis. The public park, for example, will be subject to both littering and pilferage as individuals attempt to convert their access to the park for private ends. The allocation of common facilities is subject to endemic corruption as individuals would seek to obtain disproportionate benefits in quadrant (I) – from privileged access to school admissions, hospital rooms, railway reservations, employment, etc.<sup>10</sup> Only under conditions where the soft-budget constraint breaks down, or is withdrawn, will the

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<sup>10</sup> Note here that the  $C^T$  measure of corruption in Figure 2 is only suggestive. The actual level of “corrupt” use realized by the individual household at any time is ex-ante indetermined, and will be affected by related costs and benefits of such action. These, in turn, will vary under different institutional-cultural setting, including existing levels of governance. Both sets of variables have been exhaustively covered by the vast economic literature on corruption. This paper’s focus instead is on the long run motivations affecting the provision of public goods.

corner solution,  $e^*$ , be realized by the community along with a relapse towards purely private consumption options in quadrant (I).<sup>11</sup>

Until such time, the community is likely to be caught in a “low equilibrium trap” with continuing depletion of resources within the public sector. Figure 2B illustrates the problem by revising the payoff structure to reflect a fully subsidized provision of the public good that is sustained by the availability of a soft-budget constraint. Thus, unlike in Figure 2A, the private payoffs in cell (1) with public provision remain unchanged relative to the payoffs in cell (IV) without public provision. However, now each individual actively “exploits” the public facility for private gain and is able to realize a significantly higher private payoff – reflected by the payoffs (4, 2) or (2, 4) in cells (II) and (III). As in Figure 2A, the individuals remain indifferent to the state of public provision, including its misuse by others – across cells (1) & (II) or (1) & (III). In addition, the fully subsidized provision of the public good means that neither individual has an immediate interest in moving back to cell (IV) – the dominant cell in both Figure 2A and in the classic prisoner’s dilemma game. That is, as long as the soft-budget constraint holds and the possibility of securing higher private payoff exists, the community is trapped between cells (II) & (III).

The persistence of such a “low equilibrium trap” over time is clearly evident in the administrative history of public sanitation in India. Thus, under both British India and the nationalist state, local agencies in rural and urban districts have rarely achieved financial self-sufficiency in provision of basic services. Instead, sanitation services tend to receive significant subsidies; sewage and water tariffs or taxes are consistently set far below cost; collection rates even for the subsidized charges remain low; municipal bodies are plagued by perennial deficits and operate under soft-budget constraints; wide spread misuse and pilferage of public facilities is observed; unreliable and poor service quality; lack

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<sup>11</sup> The recent collapse of municipal sanitation services in the Indian city of Chennai, and the resort to private collection services seems to reflect the collective realization of such a corner solution.

of maintenance, frequent breakdowns and resort to private supply options in the informal sector.

#### **4. Sanitary Reform and British India**

The lack of demand for public sanitation is not unique to the Indian subcontinent. It provoked the emergence of the so-called “sanitary movement” and efforts at providing public sanitation in the industrializing cities of Britain during the nineteenth century. Nonetheless, important differences underlie the lack of demand for sanitation in the two cases. In the latter case, unfamiliarity with evolving modern standards of hygiene and sanitation informed both private behavior and public choices. Public health efforts in Britain had also to contend with a relatively high income elasticity of demand for hygiene – public and private-- displayed by the lower income groups and in the working class neighborhoods. Progress in the public provision of sanitation was obtained only with support of the middle and upper income groups whose taxes cross-subsidized city-wide sanitation measures and facilities (Chaplin, 1999). In this case, the lack of effective demand by part of the population for public sanitation was overcome through cross subsidization across the city at the same time that education and advocacy of modern hygiene and public health measures helped form a normal preference for these goods across the population<sup>12</sup>.

Attempts at sanitary reform in the Indian subcontinent, however, confronted a highly evolved set of indigenous preferences that did not escape the notice of British administrators-reformers:

“Only one-fourteenth of the population of British India lives within municipal limits, and the problem of rural sanitation involves, therefore, the health of the great bulk of the inhabitants. When sanitary reform in India received its first impetus from the investigation of the Royal Commission of 1863, there was practically no organization for the prosecution of sanitary work outside the Presidency towns.

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<sup>12</sup> The dilemma of public provision confronted in nineteenth century Britain could be represented in terms of the classic prisoner’s dilemma payoff structure – though amended to reflect asymmetric payoffs across the two individuals. In such a case, public provision may be obtained with arrangements for side-payments or cross-subsidies between the two individuals. As the British experience shows, as long as a normal preference for public goods exists or net gains are perceived across the community, demand for public provision of sanitation may be sustained over time.



*The villagers dwelt in complete indifference to their unhealthy surroundings, and virulent epidemics raged unchecked and almost unknown to the authorities. Since then progress has been slow, and in-commensurate with the thought and labor that have been bestowed on the subject.*

The reason lies in the apathy of the people and the tenacity with which they cling to domestic customs injurious to health. *While the inhabitants of the plains of India are on the whole distinguished for personal cleanliness, the sense of public cleanliness has ever been wanting.* Great improvements have been effected in many places; but the village house is still often ill-ventilated, and over populated; the village site dirty, crowded with cattle, choked with rank vegetations and poisoned by stagnant pools. That the way to improvement lies through the education of the people has always been recognized. One of the first acts of the Sanitary department was the issue of simple rules for village sanitation, which were translated into the vernacular and explained to the villagers..” (emphasis added)

*The Imperial Gazetteer of India (1909)*

The response of the state in British to perceived “public need” may be compared over two main periods. The first period, following the transfer of the colonies to the British Crown in 1858, is characterized by a more measured and centralized, or “imperial”, response to existing consumption preferences amongst the native population<sup>13</sup>. The British treaded cautiously, promoting significantly pared down schemes that could be supported locally for both their financial and administrative requirements. Village unions were organized with an exclusive focus on sanitation and funded by a small house-tax. Recognition of underlying fundamentals severely limited the public-goods response supplied by the administration – on both the tax and expenditure side:

“Much, however, remains to be done not only in the prosecution of large works, but also in the improvement of general sanitary conditions. Lack of funds is often a great obstacle to progress. The income of many municipalities is very small, and cannot be greatly enhanced without a burden of taxation which would be felt as oppressive.”

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<sup>13</sup> The establishment of urban municipal bodies dates back to an earlier period under the East India Company. The first municipal corporation was established by the Company in 1688 in the Madras Presidency. The new mayor found that “..the people strenuously resisted the imposition of anything in the nature of a direct tax. The town hall, schools and sewers which were to have been the first work of the new corporation could not be undertaken, and the mayor had to ask for permission to levy an octroi duty on certain articles of consumption that he might provide the necessary funds for cleaning the streets.” (quoted in *The Imperial Gazetteer of India (1909) The Indian Empire: Vol. IV, Administrative*, page 285).

The technical form of public-good supply too was shaped by specific native preferences. For example, the policy towards eradication of malaria and mosquitoes in the provinces was shaped by the native preference for private wells and community tanks and an aversion to piped-water. In districts where the resistance was strong and threatened the financial sustainability of a conventional public-goods response, the British restricted themselves to the supply and sale of quinine packets through public and private agents. Both the distribution of tax effort and public expenditure on public goods across the provinces in British India seemed to mirror the divergent preference for public provision. The British resisted any attempts at “artificial and abstract” equalization of public goods provision within its territories (Kumar, 1982).

The second -- a more democratic and decentralized -- stage of British rule, post-1920, was marked by increasing resource commitments by the state in response to pressures from back home and locally for more “nation building” expenditures. The unsustainable nature of these developmental goals in light of prevailing preferences for modern public services is evident in the performance of local government bodies – municipalities, district and local boards -- following the Government of India Acts of 1919 and 1935. The Acts set the stage for significant fiscal and political decentralization with greater revenue powers and responsibilities granted to the provinces and recognition of locally elected officials<sup>14</sup>. As expected, the elected members of municipal bodies proved reluctant to increase taxes to cover the cost of service provision or to enforce collection of dues. The district boards and municipalities continued to operate with a soft-budget constraint that was steadily pushed outwards with greater decentralization. Thus, while in 1895 the district boards had obtained 9 % of their total revenues from the provincial government the latter’s contribution increased to 42% by 1920 (Kumar, 1982). The same period witnessed accumulation of uncollected arrears and increased embezzlement of funds by municipal bodies –

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<sup>14</sup> The impetus towards greater decentralization had, in fact, begun with reforms initiated in the 1870s.

problems that continue to plague the financial health of local government, post-independence<sup>15</sup>.

## 5. The Great Reversal: Failures of Provision in the Indian State

Plan investment outlays on water supply and sanitation projects in the subcontinent witnessed dramatic jumps, post-independence. Plan outlays in the urban water and sanitation sector increased from a modest amount of Rs. 430 million (current prices) under the 1<sup>st</sup> Five Year Plan (1951-1956) to Rs. 59822.8 million under the 8<sup>th</sup> Plan (1997-2001). Plan outlays for rural water supply and sanitation increased from Rs. 60 million under the 1<sup>st</sup> Plan to Rs. 107287.9 under the 8<sup>th</sup> Plan<sup>16</sup>. The significant build-up of the state's developmental goals following independence in 1947 may therefore be seen in terms of a major reversal of the earlier, more measured, "imperial response" to the underlying preferences for private-public consumption with predicted results.

Thus, post-independence, local sanitation boards and municipal corporations in both urban and rural districts have rarely sought, let alone achieved, financial self-sufficiency in the provision of basic sanitation services. While financial assistance from the state and central government for water supply and sanitation has increased, local municipal agencies have failed to recover the cost of maintaining their public facilities. Available cost recovery data for local public agencies in various cities offer a stark picture.

The detailed study by Bagchi (2003) comparing pricing and cost recovery levels for urban services in three metropolitan areas -- Ahmedabad, Chennai, and Pune --found no significant improvement in the financial performance over the 1990s, notwithstanding the impetus towards decentralization provided by the 73<sup>rd</sup> and 74<sup>th</sup> (1992) Amendments to the Indian Constitution. In all three cities,

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<sup>15</sup> The rampant corruption that fell upon the Calcutta Municipal Corporation with the start of self-government in the 1920s is recounted by Chaudhuri (1987).

<sup>16</sup> The 9<sup>th</sup> Plan proposed provision of safe drinking water for the entire urban population with a planned expenditure of Rs. 263 billion with state governments contributing 56 %, the Central government, 34 %, and the municipalities/beneficiaries contributing 10 %. Government of India (1999) *National Commission for Integrated Water Resources Development Plan*. Report of the Working Group on Water Management for Domestic, Industrial and other Uses. Ministry of Water Resources, New Delhi.

tariffs and taxes for water, sewerage and solid waste disposal were found to be unrelated to actual costs of provision<sup>17</sup>. The rate of cost recovery for water and sanitation services was measured by Bagchi (2003) by comparing the share of water supply (WS) and sanitation revenues to total municipal revenue (TR) with the share of water and sewerage expenditure to total revenue expenditure (TRE). Thus, for the city of Ahmedabad -- the worst performer -- in 1990/1 while WS and sewerage contributed just 8.84% of the total corporation revenue, it accounted for almost 16% of the total expenditure. The relative shares in 1999/2000 showed no change – at 10.28% of total revenue versus 17 % of total revenue expenditure (see Table 4 in Bagchi). The cost recovery measures got much worse for all three cities when considering solid waste disposal (SWD) and sanitation services alone – i.e. without the share of water in revenue or expenditure<sup>18</sup>. The per capita measures in Bagchi (2003) are more revealing. Again, for Ahmedabad in 1990/91, the per capita income from SWD and sanitation was Rs. 0.12 (Rs. 5.65 for Pune; Rs. 0.11 for Chennai) as opposed to the per capita expenditure on SWD and sanitation of Rs. 42.01 (Rs. 52.86 for Pune; Rs. 44.66 for Chennai) . By 1999/2000 these had increased to, respectively, Rs. 1.29 (Rs. 17.77 for Pune; Rs. 0.41 for Chennai) as against Rs. 170.20 (Rs. 129.54 for Pune; Rs. 112.93 for Chennai). Overall, with the exception of a few municipalities in Maharashtra and Gujarat, municipalities in no other state raise own-revenues sufficient to cover local expenditures (NIPF, 2004).

Even with low levels of cost recovery for urban services, the three cities display poor ability and willingness to collect arrears in payment. In Ahmedabad, the percentage of collection to total revenue demand, including arrears, for its conservancy tax was 19.72 % in 1990/91 while increasing to 31 % by 1999/2000. The collection efficiency while higher for Chennai (34.49 % for its sewerage tax)

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<sup>17</sup> The Chennai Metropolitan Water Supply and Sewerage Board fared relatively better in terms of tariff performance when compared to both the Ahmedabad and Pune Municipal Corporations. Being an autonomous or non-elected body, the Chennai Board is less accountable to the local electorate.

<sup>18</sup> Revenue from charges and/or taxes imposed on the supply of water – mostly a private consumption good provided by the municipality – have served to cross-subsidize the provision of sanitation and solid waste disposal – mostly public consumption goods.

and Pune (52.24 % of the sewerage tax), showed less improvement over the same period – overall collection efficiency in Chennai was lower at 30.87 % in 1999/2000.

The composition of total revenue expenditures (TRE) in all three cities suggests on the other hand a persisting bias towards unproductive use. Thus, in 1990/91 share of salaries and wages (S&W) in TRE for SWD and sanitation in Ahmedabad was as high as 93 % (90.5 % for Pune; 89.37% for Chennai) while share of operation and maintenance (O&M) expenses in TRE for SWD and sanitation was only 6.13 % (0.005% for Pune; 4.31% in Chennai). The picture in 1999/2000 remained mostly unchanged – S&W share at 92.95% (93.41 for Pune; 87.24% in Chennai) versus a O&M share at 5.53% (4.95 % for Pune; 1.99 % for Chennai). What is more, expenditures on salaries and wages by municipalities in several states exceed their own-revenues, leaving little or nothing for maintenance and operational expenses (NIPF, 2004). The very low allocation of funds towards maintenance has meant rapid deterioration of existing public facilities over time and non-existent service.

## **6. Conclusion**

The failures in provision of public sanitation in the Indian subcontinent have arisen less from any specific institutional failing than from the proclivity of the developmental state to ignore the prevailing preference bias towards private, as opposed to public, consumption. By overextending the level and type of provision relative to what local preferences would support, the state has set in motion outcomes that, considered jointly, are symptomatic of a “tragedy of the fiscal-commons”: low levels of tax compliance combined with endemic corruption and mis-governance often with a complete breakdown of public services and frequent resort to private supply options. The increased control over economic resources exercised by the Indian state, post-independence, has subjected it to the private-consumption demands by individuals and rampant corruption. Electricity, irrigation, water and sanitation services are often provided free of charge or significantly below-cost, and dues to the state frequently cancelled in

fulfillment of electoral promises. Local public sanitation services have rarely, if at all, achieved financial self-sufficiency. Instead, sanitation departments in both urban and rural Indian districts have struggled through varying stages of fiscal bankruptcy and mis-governance, often with a total collapse in the provision of basic sanitation services.

Greater efficiency in pricing and administrative reform including fiscal decentralization ensures an optimal supply of public provision only where a normal preference for the public good may be presumed. Given the lack of a normal preference for sanitation in the subcontinent the desired outcome in terms of a higher overall level of public sanitation is not ensured even under Tiebout-motivated efforts at decentralization. A positive role for the state confronted with the discussed bias towards private consumption rests as much on efforts to steer the underlying preference towards the provision of public goods as it does on better governance.

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FIGURE 1

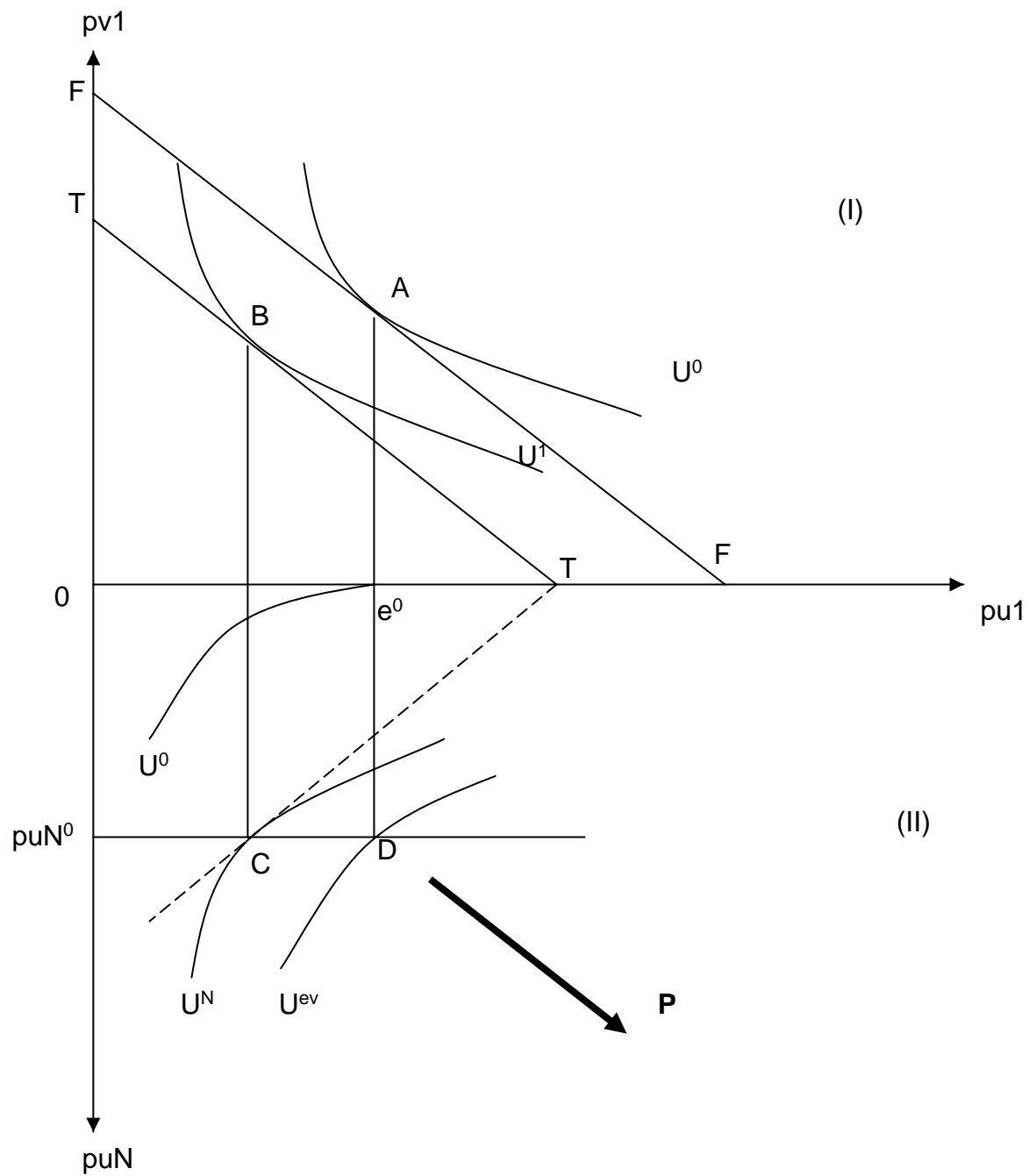
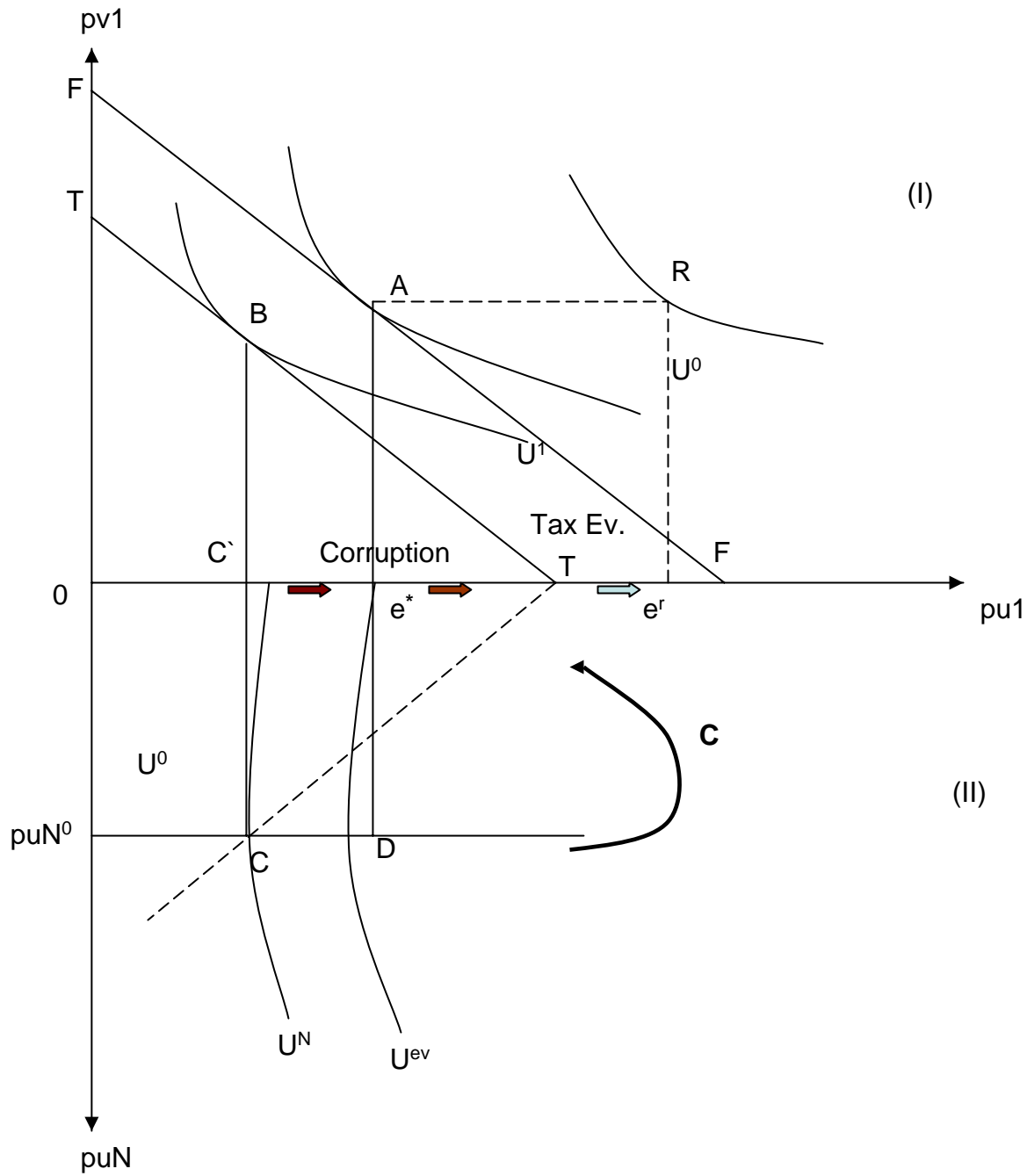


FIGURE 2



**C**

(I)	(II)
1	2
1	1
(III)	(IV)
2	2
1	2

**R**

Figure 2A

**C**

(I)	(II)
2	4
2	2
(III)	(IV)
4	2
2	2

**R**

Figure 2B