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Beyond Cost Recovery: Setting User Charges for Financial, Economic, and Social Goals

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Foreword

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Glossary

Affordable usage charge	Charge set to help the poor satisfy their basic needs. Must be below both willingness to pay and the standard for financial hardship.
Average cost	Total cost divided by the level of output. Total cost includes both variable and fixed costs.
Basic need	Minimum amount of a public service that society would like to provide to everyone.
Capacity	Designed or intended rate of output of a utility, with its existing capital stock.
Charge	Total amount a customer pays for the service consumed.
Constant-rate tariff	Tariff consisting of a constant usage charge times the amount of use.
Customer	Individual, household, firm, or other entity that purchases the output of the public utility.
Financial hardship	Percentage of a poor household's income, where society does not wish the poor to have to spend more than this amount to satisfy their basic needs.
Fixed charge	Charge for using the service, where the charge does not depend on the amount used. A fixed charge may vary across customers.
Fixed tariff	Tariff consisting only of a fixed charge per billing period.
Goal of a tariff	Specific aim, objective, or purpose of charging users of a public service.
Incremental cost	Extra cost of providing a public service to an individual customer, or group of customers. Note the difference between incremental cost and marginal cost.
Lifeline tariff	A multiblock tariff, typically consisting of two blocks, with the first block set with a lower usage charge.
Marginal cost	Extra cost of producing an additional unit of a good or service. Marginal cost focuses on the extra unit of output, in contrast to incremental cost, which focuses on the extra customer.
Multi-block tariff	Tariff in which the usage charge varies with different levels of use. May also include a fixed charge.

Normal profit	Profit required to induce the owners of an enterprise to keep it in operation indefinitely.
Opportunity cost	Value of a good or service in its next best use. In economics, the term "cost" always refers to opportunity cost.
Pricing rule	Rule for setting charges to pursue a specific goal.
Public service	Output of a public utility. The paper refers to all such output as a "public service", or simply a "service", even though the paper is meant to apply also to outputs that are perhaps better described as goods rather than services. "Public good" has a specific, technical meaning in economics, not necessarily associated with public utilities.
Public utility	Privately or publicly owned enterprise that has a legal monopoly over the supply of a good or service. A public authority usually regulates the operations of a privately owned public utility.
Revenue target	Revenue required from a tariff to provide funds to sustain the utility.
Social cost	Opportunity cost to society as a whole, rather than to a specific, private firm. Social costs differ from private costs when production of a private firm has effects not reflected in the firm's production costs.
Tariff	General schedule of charges that a customer faces in using a public service. The term "tariff" can also refer to a tax on imports, but this paper uses "tariff" only to refer to the schedule of charges for a public service.
Time-of-use tariff	Tariff in which the usage charge varies with the time at which the service is used. May include fixed charges and multi-block usage charges.
Two-part tariff	Tariff consisting of a fixed charge, plus a constant usage charge times the amount of use.
Usage charge	Charge per unit of the service supplied. A usage charge may vary across customers, across time, or for different levels of use.
Variable cost	Costs that change as the level of output changes, as a result of changes in inputs. Inputs vary in the time required to change them, so variable costs depend on the length of time allowed or available to make changes in inputs.

Abstract

This paper describes a way of setting user charges to pursue many, possibly conflicting goals. It has three requirements: (i) explicit and specific goals; (ii) for each goal, a pricing rule that includes only the necessary constraints; and (iii) a general and flexible structure of charges, to make room for as many pricing rules as possible. The latter will reduce conflicts among pricing rules, but reconciling any remaining conflicts requires compromises among the goals.

The paper covers several common goals of user charges: good governance, financial sustainability, distributive justice, economic efficiency, and fair pricing. It shows that they can be pursued jointly, with little compromise or sacrifice, by following three steps: (i) set usage charges for distributive justice and economic efficiency; (ii) if additional revenue is required for financial sustainability, set fixed charges for sustainability and fairness; and (iii) increase or adjust charges at a rate consistent with good governance.

The resulting user charge depends on circumstances, but is always simple and familiar. The approach suits whatever goals the public chooses for setting user charges, and is not particular to the five considered in this paper.

I. INTRODUCTION

User charges for public services can affect the performance of the public utility supplying the service, the welfare of the community, and the use of resources across the economy. Research indicates that a utility's management improves the more it relies on user charges for funding (Bierhanzl and Downing 1998, Bierhanzl 1999). Public utilities provide basic or essential services, such as water, power, and sanitation, and so user charges affect people's use of these services, and the production of nearly all goods and services.

"Cost recovery" is a common basis for setting user charges, or "tariffs", especially among international development agencies that advise developing countries. ("Tariff" also means a tax on imports, but this paper uses "tariff" only for charges for a public service.) For example, the Asian Development Bank (ADB) aims to "consistently advise governments of the need to adopt cost recovery principles in their water policies" (ADB 2001b, 26). The World Panel on Financing Water Infrastructure "proposes that the aim of water service providers should be sustainable cost recovery" (Winpenny 2003, 48).

Cost recovery loosely describes raising revenue through tariffs, but the meaning has become diluted and confused with many different goals. According to ADB, for example, cost recovery includes collecting revenue to fund both current operations and future investments; income redistribution; minimization of waste; containment of demand; and efficient management of the enterprise (ADB 2001a, 43). For the World Panel on Financing Water Infrastructure, cost recovery means that the public service should be funded by tariffs, with revenues covering recurring costs, but ensuring that the service is affordable for all (Winpenny 2003, 48).

Tariff setting goes beyond cost recovery, since a tariff is a tool of public policy that can be used for a variety of social, economic, and financial purposes. Cost recovery, in contrast, strictly means collecting payments from people who have benefited from some government investment. The cost of the investment could be recovered in many different ways, such as a lump-sum payment from the members of an irrigators cooperative who have benefited from some public investment in irrigation infrastructure. Recovering the cost from the users is not sufficient, however, to ensure that the facility will be able to sustain its operations indefinitely. A tariff, in contrast, is a tool to help manage the facility. And recovering the cost is not necessary if the investment is provided as a grant to users, with no expectation of reimbursement.

Economists have developed several different ways of setting tariffs for multiple goals. One approach, known as "Ramsey pricing", sets the usage charge that maximizes economic efficiency, while ensuring sufficient revenue (Ramsey 1927, Train 1997). Another approach, called "Feldstein pricing", combines economic efficiency and relative equity, while also ensuring sufficient revenue (Feldstein 1972).

The Ramsey and Feldstein pricing rules are sound, given their goals, but there are several things that limit their use in setting tariffs. Their technical nature makes the rules hard for non-economists to understand and apply, and neither Ramsey nor Feldstein pricing is widely used. Perhaps the most important limitation is that the rules apply only to their given goals. Utilities that choose only those goals should apply the Ramsey or Feldstein pricing rules, but otherwise the rules are not generally applicable.

Although it is common for tariffs to have many goals, it is equally common that the approach to tariff setting is vague and unsystematic. For example, ADB has funded numerous tariff setting studies in the developing countries in Asia and the Pacific (see KPMG 1996, ADB 1997b, and S.M. Group International 1998, among others). An internal review of several such studies concluded that they were inconsistent in their approach and findings, and recommended that ADB develop a guide to setting tariffs (Swales 2001). A review of ADB's policies and practices found that ADB's goals in tariff setting require further interpretation before they can be consistently applied (Dole 2003).

Tariff setting varies across types of public services, and requires detailed information on the given utility and its customers. Nevertheless, there are many concepts that apply to all types of public services, and that can be a basis for tariff setting in any context. This paper focuses on the concepts that apply to all types of public services, and proposes a general approach to setting tariffs, with just three requirements.

First, the goals of the tariff must be explicit and specific. A common problem in setting tariffs is that they are initially set for one goal, such as raising revenue, but then later modified for the benefit of others, such as affordability, without considering the impact on the initial goals. Acknowledging and considering all goals is a simple way to avoid implicit and unintended sacrifices among the goals, and may avoid sacrifices altogether.

Second, each goal needs a pricing rule that includes only the constraints required for that goal. Another common problem in setting tariffs is that the pricing rules are overly restrictive, and do not leave room for other goals. For example, financial sustainability requires only that the tariff raises enough revenue. How the tariff raises that revenue—through a fixed charge, a usage charge, or both—may have unintended effects but is irrelevant to financial sustainability. Since generating revenue does not otherwise restrict the tariff structure, the latter can be used to pursue other goals. A pricing rule should state specifically how to pursue the goal through the tariff. The rule should also be in the most general form consistent with the goal, to reduce the number of conflicts with other pricing rules.

Section II below discusses five common goals for tariffs, defining the goals and describing their pricing rules:

- A. Good Governance
- B. Financial Sustainability
- C. Distributive Justice
- D. Economic Efficiency
- E. Fair Pricing

Except for financial sustainability, these are society's goals, not a utility's, so Section II describes tariff setting from society's perspective.

Third, a tariff that has more than one goal needs a flexible structure, to expand the range of options and increase the potential for reaching all goals. Pursuing more than one goal generally requires as many "instruments" as there are goals. A tariff that has only one part, such as a usage charge, is only a single instrument, and so can pursue only one goal. But using a flexible tariff structure makes the tariff a collection of instruments, thereby suited to pursuing many goals. The most common tariffs are indeed flexible enough to accommodate many goals. (This paper assumes that readers are already familiar with types of tariffs, but for those who are not, there are many good descriptions. For example, see Viscusi, Vernon, and Harrington 1995 for a general explanation of tariffs, and Train 1997 or Brown and Sibley 1986 for more detailed explanations.)

Section III shows that a simple and common tariff can indeed accommodate all five goals discussed in Section II, with little compromise or sacrifice among them. General pricing rules reduce

the number of conflicts among rules, and any remaining conflicts are easily reconciled with only minor modifications of the pricing rules. Setting a tariff involves only three steps:

- A. Set usage charges for distributive justice and economic efficiency.
- B. If additional revenue is required for financial sustainability, set fixed charges for sustainability and fairness.
- C. Increase or adjust charges at a rate consistent with good governance.

The tables at the start of Sections II and III contain an outline and summary of the corresponding section. Readers already familiar with tariff setting may find enough explanation in the tables, and could consult parts of the text for further explanation, as needed. The text discusses the main concepts only briefly, since there are many other sources for detailed explanations. (Some references are recommended in the text.) Section IV concludes the paper with some general comments on the approach proposed in this paper.

II. COMMON GOALS IN SETTING TARIFFS

The public, through a regulator or other representative, should set the goals for any tariff. This section deals only briefly with the issue of what the goals of a tariff should be, discussing only the circumstances where a goal is especially appropriate. The discussion focuses on defining and explaining the most common goals, and specifying a pricing rule for each.

A pricing rule is closely associated with its goal, but a goal and its pricing rule must be clearly distinguished. Since the goal is achieved through the pricing rule, the pricing rule tends to attract attention, even distracting attention from the goal. For example, marginal cost pricing is the rule associated with economic efficiency. Focusing on marginal cost pricing and its limitations, rather than on economic efficiency, can result in economic efficiency being implicitly and inadvertently dismissed as a goal.

Table 1 lists the most common goals, gives a brief definition of each, and a brief description of the associated pricing rule. The rest of this section discusses each goal and pricing rule in turn, in the order in which they impose increasing restrictions on the structure of a tariff. The discussion also considers any potential conflicts among the goals; Table 2 lists the conflicts between pairs of goals.

For further discussion and descriptions of common goals in tariff setting, see Phillips (1985), Bonbright et al. (1988), Bahl and Linn (1992), Jones and Mann (2001), and Dole (2003).

Table 1: Common Goals of Tariffs, and Pricing Rules for Each

GOAL	DEFINITION, WITH RESPECT TO DEVELOPING AND SETTING A TARIFF	PRICING RULE
A. Good Governance		
Transparent	Customers understand and accept the basis for the tariff	Transparent, verifiable steps to setting the tariff
Simple	Customers can easily understand their own charges	Every component of the tariff is essential to meeting the goals of the tariff
Predictable	Tariff does not disturb rational private decisions	Slow rate of change when significant increases or adjustments are required
B. Financial Sustainability	Utility can meet all financial obligations as they occur	Revenue meets or exceeds current financial obligations
C. Distributive Justice	Help the poor satisfy their basic needs for the public service	Usage charge is at or below willingness to pay for basic need, and total charge for basic need is below a given percentage of income
D. Economic Efficiency	Promote efficient use of resources throughout the economy	The usage charge equals marginal social cost
E. Fair Pricing	Everyone pays net social cost, adjusted for explicit, deliberate subsidies	Everyone pays at least their incremental cost, and the utility earns only normal profit, adjusted for explicit, deliberate subsidies

Table 2: Conditions under which Pricing Rules can Directly Conflict

	GOOD GOVERNANCE	FINANCIAL SUSTAINABILITY	DISTRIBUTIVE JUSTICE	ECONOMIC EFFICIENCY
Financial Sustainability	In the short run, if a major increase in the tariff is required			
Distributive Justice	Same as above	If many customers cannot afford the service		
Economic Efficiency	Same as above	None	If marginal cost is not affordable	
Fair Pricing	Same as above	None	If incremental cost is not affordable	None

Note: The table is symmetric, so the blanks indicate redundant cells.

A. Good Governance

1. Importance

A public utility is part of government, either directly if it is publicly owned, or indirectly if it is privately owned but publicly regulated. A utility may be small compared to the most prominent parts of government, but it may be the part that has the closest connection with people's daily lives. So principles of good governance should apply to public utilities as much as any other part of government.

Good governance is always a relevant goal, but it is especially appropriate when there was previously no charge for the public service. In that case, the public might expect that use of the service was a right, or a public good—like security or national defense, something that is provided to the public as a whole, without direct charge to anyone. If the public has such expectations about a public service, justifiable or not, and if the government or the utility intends to provide the service on a different basis, then good governance should be at least an initial focus of setting the tariff. (Brautigam 1991 and ADB 1999 provide general descriptions of good governance.)

2. Definition

Good governance applies to tariff setting in a variety of ways. The following focuses on three aspects of good governance that can affect the tariff setting process, and tariff structure.

- (i) *Transparent*: The public should be able to understand the tariff setting process, and how the charges were set for every type of customer.
- (ii) *Simple*: The charges resulting from the tariff should be clear and understandable, so that customers can understand how they might modify their use of the service and reduce their charges.
- (iii) *Predictable*: The tariff should not disrupt otherwise rational private decisions, especially investment decisions and others with long-term implications.

Transparency relates to the tariff setting process, while simplicity and predictability can constrain the tariff structure.

3. Pricing Rule for Transparency

Transparency requires that the process of developing a tariff be open to public scrutiny, that the public have access to all information used in the process, and that the process be clear and understandable. Transparency can help promote public acceptance of the tariff, and can reduce the potential for corruption and malfeasance. For example, if there are several customer groups with different tariffs, a customer will naturally want to be in the group with the lowest charges. Transparency in assigning customers to groups enables them to understand their own charges, and reduces the potential for customers and the utility to collude in assignments.

The surest way for tariff setting to be transparent is for the process to be laid out in clear and specific steps, and that all major decisions be based on clear and sound principles. Some of the more technical procedures for setting tariffs, such as Ramsey pricing, may be difficult for the public to understand, but as long as they are based on clear and sound principles (as is Ramsey pricing), then they cannot be ruled out for not being transparent.

Section III presents a clear and objective process for developing a tariff. The process may involve sophisticated, technical analyses, but the process is nonetheless transparent in the way defined here.

4. Pricing Rule for Simplicity

Customers should be able to understand the tariff, so that they can decide how to modify their use of the service and reduce their own charges. The billing process is important in helping customers understand their charges, but a clearly presented bill is not enough. The tariff structure itself must be simple to understand, accommodating the range of literacy and numeracy skills of the utility's customers.

Simplicity does not impose specific constraints on a tariff, unlike the other goals discussed below. Instead, simplicity requires that the tariff include only as many parts as needed to meet the given goals. More specifically, a tariff is as simple as possible if omitting any element or component would compromise one of the tariff's other goals. For example, a two-part tariff (fixed charge and usage charge) is unnecessary if the goal is merely generating revenue; either the fixed charge or the usage charge could be eliminated, with the remaining part set to generate sufficient revenue.

5. Pricing Rule for Predictability

Predictability is important for both political and economic reasons. Politically, an unexpected change in a tariff can introduce or increase political instability. Economically, a tariff can affect investment decisions and the use of resources. Public utilities are typically involved in producing basic or essential inputs, such as power or water. If a tariff was previously low, and there was no previous discussion of increasing it, then people could rationally make investment decisions based on the low tariff. Increasing the tariff without advance notice may invalidate previously rational investment decisions, and dissuade people from using sunk capital investments.

The best way to preserve predictability is for customers to understand and accept the basis on which they are charged and supplied service. Predictability is less likely to be an issue if customers understand and accept that, like private goods and services, maintaining the quality of the public service may involve price changes. If, however, customers have implicitly assumed that the service is guaranteed at the current charges, or if that expectation has been fostered (deliberately or not) by the utility or government, then it will be hard to maintain predictability and avoid disrupting expectations. In that case, either expectations need time to change, or charges need time to change to accommodate customers' expectations.

Predictability does not mean avoiding all increases in charges, however, even with entrenched expectations. Price increases are a normal and expected part of any economy, and (as discussed below) economic efficiency requires that prices represent associated social costs. Predictability means only that changes in the tariff should be forecast and announced in advance, so that future increases are in line with prior expectations.

Predictability does not apply only to increases in charges. Any change in the tariff, including a change in structure, should be forecast and announced in advance.

6. Conflicts with Other Goals

Transparency and simplicity do not conflict with any of the goals below. Predictability, however, can conflict with all of the other goals whenever the others call for an increase or adjustment in charges. In that case, the goals cannot be achieved simultaneously in the short run. There is less conflict in the long run, though, since predictability requires only that an increase in charges be announced in advance, and introduced gradually. See the other goals below for further discussion of potential conflicts with predictability.

B. Financial Sustainability

1. Importance

Like any private enterprise, a public utility will face financial obligations in the normal course of its operations. If society expects the service to be provided indefinitely, it must ensure that the utility has sufficient funds to meet its financial obligations as they occur. The funds required to sustain the utility can come from a variety of sources, including transfers from the government's general revenue (direct subsidies), from loans or equity, or from revenue collected through user charges.

Financial sustainability, like good governance, is always a relevant goal, but it is most important when the utility has not been subject to strict financial discipline. For example, even if the utility charged for its services, the government might have implicitly assumed responsibility for sustaining the utility, thereby removing any effective budget constraint. Focusing on financial sustainability can limit or reduce the government's financial commitment, and improve the utility's performance. (For general discussions of the financial analysis of public utilities, see Phillips 1985 and Estache, Pardina, and Rodriguez 2003. For a discussion of the appropriate role of subsidies, see ADB 1996.)

2. Definition

A public utility is financially sustainable (or "sustainable") if it has sufficient funding to meet the financial obligations it will incur in the future. The identified financial obligations must be consistent with maintaining the targeted level of service, and the funding must be secure, regardless of the source.

3. Pricing Rule

Pursuing financial sustainability involves two different kinds of analyses: (i) a financial analysis, to determine the funds that the utility requires to maintain the targeted level of service; and (ii) if the utility is to be subsidized, an analysis of the rationale and security of the subsidy.

The financial analysis is largely a cash flow or accounting exercise, focused on establishing the financial obligations the utility would necessarily face in both the short and medium run. Measuring and identifying costs is an important part of this step, but the focus is not strictly on costs. Instead, the focus is on establishing the funds required to sustain the utility.

Costs are also important in other goals, such as economic efficiency and price fairness, where the term may have different meanings and implications, and so it is important that "costs" be defined and used precisely. In the context of financial sustainability, "cost" is strictly a financial or accounting concept, and the only costs that are relevant are those that are part of the utility's future financial obligations. These obligations may include a profit element, at whatever level the public decides.

For example, the utility may be required to pay income or property tax. Such a tax may not represent a social cost, but since the utility is obligated to pay the tax, it is a financial obligation that is relevant to sustainability. Similarly, a utility may purchase inputs, such as fuel, whose price is subsidized by the government. The cost of the fuel to the utility may be less than the cost to the society, but as long as the subsidy is stable and likely to persist into the future, the price the utility pays is the only thing relevant to financial sustainability.

Although subsidies may pose problems for other goals, subsidies are consistent with financial sustainability as long as they are explicit and secure. Such subsidies could be specific (for example, the government will provide a given amount per poor person served) or open-ended. A non-toll road network, for example, is a public service that is guaranteed to be funded by subsidies.

If the utility is directly subsidized, analysis of the subsidy should establish its rationale, timing, and extent; the government's commitment to the subsidy; and the government's financial capacity to fulfill that commitment. This involves social, economic, and political analyses, and so establishing the security of a subsidy significantly increases the effort required to develop a financially sustainable tariff. Without such an analysis, however, the financial sustainability of the utility cannot be assured, and the tariff should be designed to generate sufficient revenue without the subsidy.

The difference between the funds required to sustain the utility, and the funds available from subsidies (or other sources of income) determines the revenue required from the tariff. The aim of a tariff, with respect to sustainability, is only to generate this required level of revenue. How the tariff generates that revenue is irrelevant to achieving sustainability, and so sustainability does not directly restrict the structure of the tariff.

4. Conflicts with Other Goals

As mentioned above, financial sustainability can conflict with predictability, if sustainability requires a significant increase in charges. In that case, both goals cannot be achieved in the short term. A gradual increase in charges can preserve predictability, and achieve financial sustainability in the medium term.

Financial sustainability can conflict with distributive justice, if a sufficient number of the utility's customers cannot afford the service at a charge consistent with financial sustainability. The next section discusses further the potential conflict between sustainability and justice.

C. Distributive Justice

1. Importance

Societies typically rely on public utilities to supply households with basic or essential services, such as water, health care, education, and others. User charges affect not only households' use of basic services, but also their disposable income, and hence their overall quality of life. Society's interest in promoting a just distribution of income, or ensuring a minimum quality of life, therefore warrants consideration in setting user charges.

There are, however, many different ways to promote distributive justice, and user charges are probably among the least effective and appropriate ways. The following does not address the issue of the best ways to pursue distributive justice, but assumes that society has considered the alternatives, and has decided to pursue justice through the tariff. Since distributive justice applies to people, not firms or other legal entities, the following focuses only on households or residential customers. (For a brief discussion of distributive justice, see Lamont 2003. For a thorough and detailed discussion, see

Roemer 1996. For general discussions of delivering public services to the poor, see Cremer et al. 1998a, 1998b; Brook and Smith 2001; and Clarke and Wallsten 2002. For a discussion of delivering public services through direct subsidies, see Foster, Gomez-Lobo, and Halpern 2000.)

2. Definition

There are many different and even conflicting concepts of distributive justice. Egalitarianism, for example, requires an equal distribution of goods, or of income. Rawlsian justice features a concern for the status of the poorest. Welfarism is based on the economic welfare of individuals, while utilitarianism is based on direct and equal comparisons of welfare across individuals.

Incorporating distributive justice into tariff setting requires an explicit definition of what is just—whether it is egalitarian, utilitarian, Rawlsian, or any other concept of distributive justice. Any concept of justice can be taken as a goal of the tariff, provided it has clear and specific implications for tariff setting.

A general discussion of distributive justice in tariff setting does not, however, require a specific definition of justice, and so this paper does not take a position on what is just. Instead, it is sufficient for the discussion here to note simply that a tariff can have only two effects relevant to distributive justice:

- (i) income redistribution among the utility's customers, and
- (ii) influencing consumption of the public service, either positively or negatively.

So to be useful in tariff setting, any concept of justice must make specific prescriptions related to either the income distribution, or to the consumption of the public service, or both.

A common concept of distributive justice in tariff setting is that the tariff should enable the poor to satisfy their basic needs for a public service, without severe financial hardship. This goal of tariff setting is typically expressed as "affordability." For example, water supply and sanitation tariffs are commonly set so that the poor spend less than five percent of their income on water. When one of the tariff's goals is helping the poor satisfy their basic needs, tariff setting must consider both income and consumption effects.

3. Pricing Rule for Income Redistribution

To directly affect the distribution of income, a tariff should make lump-sum transfers between households and the utility. The transfer must be unrelated to use, because otherwise it will directly affect consumption. Changing a household's income can also affect its consumption of the public service, but that is an indirect effect that is (by definition) not the main intention of income redistribution.

Lump-sum transfers are easily implemented through a fixed component in the tariff. A fixed charge will decrease a household's income, transferring it to the utility, and a fixed discount or rebate will increase a household's income, transferring it from the utility to the household.

For example, suppose a tariff was supposed to transfer US\$10 per billing period to each member of a given group of households. The households could be billed the same as all others, but US\$10 would be deducted from the total charge for each billing period. If the household's total charge was less than US\$10, then the utility would have to pay the difference to the household (or credit the household's account).

If it was considered inappropriate or infeasible for the utility to pay a household whose charge was below the discount or rebate, then the tariff could not be used solely to transfer income, without

also affecting consumption. If the utility simply waived the charge (that is, did not pay the household) when the charge was below the discount, then consumption below the discount would be free. In that case, the tariff would be affecting the usage charge (setting it equal to zero), and so would be directly affecting consumption, not merely income.

Although it is easy for a tariff to redistribute income, it is very difficult to do it effectively. A deliberate effort to redistribute income, in tariff setting or any context, would require an analysis to determine both the amounts to transfer, and the identities of the people involved in the transfers.

Even if the utility had access to such information, incorporating it into tariff setting would effectively put the utility in the position of assessing and collecting income taxes. As such, if income redistribution is the only aspect of distributive justice (that is, excluding consumption effects), then it should generally be left to central government, and should not be incorporated into tariff setting.

4. Pricing Rule to Influence Consumption

To directly affect consumption or use of a public service, the usage charge should be set so that the households will purchase the intended or targeted amount at that charge. If the tariff also includes a fixed charge, then the fixed charge should be set so that households will choose to use the service; otherwise, the level of the usage charge is irrelevant.

Influencing use of the public service through a tariff requires at least three kinds of information:

- (i) the socially desired quality and level of use of the public service, per household;
- (ii) identities of households in the target population; and
- (iii) household demand as a function of the usage charge.

The socially desired quality and level of use ("targeted consumption") for a given type of public service will vary across societies, depending on culture, climate, and other factors. Setting the targeted consumption generally requires a social and political analysis. The targeted consumption may be a minimum, to satisfy basic needs, or a maximum, to control or restrict consumption. If society wants only to satisfy basic needs, the targeted consumption could be determined by observing the minimum sustainable use, or through scientific research.

There are various ways to define the target population. Where the focus is on ensuring the poor can satisfy their basic needs, the target population should be defined in terms of a minimum income. The minimum income might be established as the income required to attain a minimum quality of life, or a legal minimum wage. Even without an officially defined minimum income or wage, government should be able to specify a group of people that should be targeted for a minimum level of the public service.

Given the targeted consumption and population, the usage charge should be set according to household demand: willingness to pay at the targeted consumption. Setting the usage charge requires information on demand only at the targeted level of use, and not the entire range of demand. Economic efficiency, however, generally requires more information on demand, and so information on demand might come from other aspects of the tariff setting process.

5. Pricing Rule for Satisfying Basic Needs

Both income and consumption effects are relevant when distributive justice focuses on helping the poor satisfy their basic needs. Using only demand to set the usage charge for basic needs could result in the poorest paying an extremely high percentage of their income for the public service:

people will presumably pay whatever it takes (or the cost of the next best alternative) to satisfy their basic needs. If the tariff is the best (or only) means of helping the poor satisfy their basic needs, then income effects should also be considered in tariff setting. If the targeted consumption goes beyond basic needs, however, then only consumption effects may be relevant.

The pricing rule for satisfying basic needs combines the rules for both income redistribution and influencing consumption. The usage charge must be set so that it does not exceed willingness to pay at the level of basic need. Income effects must then be assessed by comparing the total charge for basic needs with household income in the target population. If the total charge exceeds society's standards for financial hardship, then a fixed discount should be deducted from the household's bill.

A "lifeline tariff" can incorporate both the required consumption and income effects, without assessing additional fixed charges or discounts. The first block would extend up to the level of basic need, with the usage charge set at or below willingness to pay. Since all households will purchase at least their basic needs, the first block is essentially a fixed charge (assuming demand is inelastic). If the total charge at willingness to pay exceeds the standard for financial hardship, then the usage charge would be reduced accordingly, with little or no effect on consumption. The rest of this paper calls a usage charge "affordable" if the total charge for the basic need is below both willingness to pay and the standard for financial hardship.

For example, suppose the basic need for power was 25 kWh per household per month, and that the usage charge was \$0.25 per kWh for the first 25 kWh. If all households were willing to pay more than \$0.25 per kWh for 25 kWh, then all households would purchase at least 25 kWh. A household that purchased exactly 25 kWh would pay \$6.25. Reducing the usage charge in the first block to \$0.20 per kWh would not change consumption, but would reduce the household's total charge to \$5.00. Reducing the usage charge in the first block thus has the same effect as keeping the usage charge at \$0.25, and providing a lump-sum transfer of \$1.25.

One disadvantage of a standard lifeline tariff is that it provides income subsidies to all households, both rich and poor. Income subsidies could be better targeted to the poor by offering the lifeline tariff only to households who consumed below a given threshold. Such a tariff structure, however, would involve a sharp increase in charges at the threshold, which could compromise the aim of delivering basic needs if needs vary across households.

6. Conflicts with Other Goals

Income redistribution is likely to be very complicated, both for the utility and for its customers, and so would conflict with simplicity. Income redistribution can potentially conflict with fairness, but only if customers object to the goal itself; lump-sum transfers are otherwise consistent with fairness.

Influencing consumption can conflict with economic efficiency, since the pricing rules for both dictate levels of the usage charge.

Satisfying basic needs can conflict with financial sustainability, particularly if a high proportion of customers purchase only their basic needs. At the extreme, if all customers are purchasing only their basic needs, or if poor customers cannot be identified and billed separately, then both distributive justice and sustainability cannot be achieved if the affordable usage charge does not generate sufficient revenue for sustainability. Achieving distributive justice and sustainability together would then require an increase in revenue from other sources, such as an external subsidy. If, as is more likely, some customers are using more than the basic need, then the tariff could be set to raise sufficient revenue from those customers. In that case, customers using more than the basic need would be subsidizing others.

Distributive justice can also conflict with economic efficiency, and fair pricing. See parts II.D and II.E for further discussion of those two potential conflicts.

D. Economic Efficiency

1. Importance

Public utilities typically produce basic inputs to production and consumption, such as water, power, and transportation. User charges can therefore affect the allocation of goods and services across an economy. The price system is the main way of allocating goods and services across market-based economies, and so user charges can affect production and welfare across an economy. Perhaps even more than other goods or services, it is important to “get the prices right” for public services. A price is “right”, from an economic perspective, if it is consistent with economic efficiency.

Economic efficiency is always a relevant goal, but cannot realistically be achieved without adequate information on demand. If there was previously no charge for the service, or if the charge bears no relationship to costs, then it might be difficult to predict how demand would change in response to an efficient tariff, especially if the service was congested. In those circumstances, good governance and financial sustainability should be the initial focuses of the tariff, with economic efficiency considered when demand is sufficiently established.

2. Definition

Economic efficiency is one of the fundamental concepts of economic reasoning. There are various technical definitions of economic efficiency, but the basic idea is that “all free ways of increasing welfare have been used up” (Lesser and Dodds 1997, 58). Welfare depends on the allocation of resources across an economy, and so economic efficiency is not defined specifically in terms of prices or tariffs. Instead, a tariff is consistent with economic efficiency if it promotes an efficient allocation or use of resources.

The kind of efficiency discussed here therefore focuses on the allocation of goods and services after production. Efficiency in production (“technical” efficiency) is also an important economic concept, but aside from some recent empirical research (Bierhanzl and Downing 1998, Bierhanzl 1999), economic reasoning relative to user charges applies only to efficiency in allocation.

3. Pricing Rule

Economic efficiency is especially applicable to setting a tariff, since according to standard economic theory, economic efficiency results if all prices in an economy equal their associated marginal social costs. Many economists have therefore advocated setting usage charges for public services equal to the marginal social costs of output. To do this requires estimating marginal cost at current or forecasted use of capacity, including all costs, even those that occur outside or beyond the utility, as discussed below. (There are many good descriptions of marginal social cost pricing and the role of tariffs in promoting economic efficiency, such as Joskow 1976, Bahl and Linn 1992, and Weiss 1995. For discussion of appropriate use of short-run and long-run marginal costs in setting tariffs, see Anderson and Bohman 1985, Vickrey 1987, Valle 1988, Fisher 1990, and Weisman 1991. For an explanation of estimating marginal social cost from market prices, see Curry and Weiss 2000 and ADB 1997a.)

4. Definition of Marginal Cost

Marginal cost is a basic economic concept, but noneconomists often confuse it with variable cost. A variable cost is any cost that can change as output changes. For example, fuel is a variable cost in operating a diesel generator, whereas the cost of the generator itself is fixed once it is in place.

Marginal cost is the *change* in total cost for a one-unit change in output. For example, if variable cost is \$100 when the rate of output is 10 units per day, and \$115 when output is 11 units, then marginal cost at that level of output is \$15 per unit.

Marginal cost can change as the rate of output changes, and as the time allowed or available for changing production changes. For example, when output is below the designed capacity of a utility, output can be increased by adding inputs at the same rate as for lower levels of output; at that rate of output, marginal cost would be constant. As output approaches capacity, though, some inputs, such as labor or power, may be required in increasing amounts to raise the rate of output; at that rate of output, marginal cost would be increasing.

If output is sustained above the designed capacity, then it is usually cheaper to increase capacity than to add the immediately variable inputs. Allowing for the extra time required to increase capacity means that "long-run" marginal cost can be less than "short-run" marginal cost. Expanding capacity is economically justified whenever the utility's customers are willing to pay more than the long-run marginal cost.

5. Applying the Marginal Cost Pricing Rule

Applying marginal cost pricing requires more than just setting the tariff equal to the marginal cost of output of the utility. The marginal cost must be based on a complete accounting of the net resource costs of output and of use of the service, from the perspective of society as a whole. Costs of the utility itself can deviate from the "social" costs in three different ways.

First, the price of inputs can deviate from their true marginal social costs as a result of imperfections in the market for inputs. For example, a utility that buys an input in a monopolistic market will generally pay more than the marginal cost of that input. In this case, although the market price does not represent marginal cost, price can be used as part of the information used to estimate marginal cost. Similarly, if seemingly free natural resources are used as inputs, their marginal opportunity costs must be estimated and included in the marginal cost of the utility, as if the utility paid a price equal to the estimated marginal cost.

Second, the utility itself may have impacts beyond its boundaries, imposing costs or even benefits on its neighbors, on its customers, or on society as a whole. For example, power production may generate air pollution that damages property or health, or induce spending to prevent such damage. Similarly, all residents of a community will experience the benefits of street cleaning and solid waste management. The monetary value of such "externalities", both positive and negative, should also be estimated and incorporated into the social costs of the utility.

When externalities are environmental, marginal social cost pricing incorporates the "polluter pays principle." That principle dictates that polluters should face a charge associated with the pollution costs they impose on society. Marginal social cost pricing also stipulates that polluters should face a charge, but goes further in specifying the level of the charge. Marginal social cost pricing is more general than the polluter pays principle, since it covers all costs associated with output and use of a public service, including but not limited to the costs of pollution.

Third, congestion causes users of the public service to impose costs on each other, in competing for use of the service. The nature of congestion costs varies across different public services: for telephone service, congestion increases the time to get a dial tone; for power, congestion increases the risk of a blackout; and for public roads or transit, congestion increases travel time, operating costs, and pollution. In general, a service is not congested if an additional customer can use it without adversely affecting those currently using it. The cost of congestion should be similarly estimated and incorporat-

ed into the marginal social cost. Since congestion typically varies over time, usage charges based on marginal congestion costs should also vary over time (known as "time-of-use" or "peak-load" pricing).

6. Limitations of the Marginal Cost Pricing Rule

There is one major limitation to achieving economic efficiency through marginal social cost pricing. In theory, marginal cost pricing is economically efficient only if all prices of all goods and services in an economy are equal to their marginal social costs of production. Although market forces tend to drive prices in private enterprise to the level of marginal private cost, other economic factors commonly create barriers between price and marginal social cost. Setting a tariff for a single utility equal to marginal social cost is therefore consistent with economic efficiency, but it does not guarantee efficiency even in the sector in which the utility operates.

7. The Argument for Marginal Cost Pricing, Focused on the Utility

Although marginal social cost pricing has limited potential in promoting efficiency throughout an economy, it can at least promote efficient use of resources associated with the utility, including the utility's variable inputs and its fixed capital. The argument for marginal social cost pricing focused on a utility takes different forms, depending on whether demand is above or below the utility's capacity.

When demand is below capacity, marginal cost pricing calls for the usage charge to be set according to only the marginal social cost of the inputs that can be increased in the short run. Marginal cost would exclude capital costs, but would include the social cost of unpriced inputs, such as raw water used to produce a municipal water supply.

The logic of marginal social cost pricing, in this case, is to encourage additional use of the otherwise idle capacity of the utility, constrained only by the social cost of the inputs that will vary. That is, whenever the usage charge is above short-run marginal social costs, a lower usage charge can benefit users by encouraging them to use more of the idle capacity, at no net cost to society. Note, however, that since marginal social costs include all costs associated with production, including the cost of pollution and the opportunity cost of unpriced inputs, marginal social cost pricing may restrain use of the service below the capacity of the enterprise.

When the utility is operating at or above its designed capacity, marginal social cost pricing calls for the usage charge to include short-run marginal costs of variable inputs and the marginal cost of congestion. If capacity is scarce and the tariff does not incorporate congestion costs, then the value of the service is dissipated through congestion. Use of the service would continue to increase until the value of the service degrades to the point where additional users are dissuaded by the sum of the tariff and the inconvenience or poor quality of the service.

When a service is congested, the logic of marginal social cost pricing is to control use of the service through price rationing, which economic theory, history, and casual observation all indicate as the least-cost way of allocating goods and services. Incorporating congestion costs into the usage charge therefore improves economic efficiency by avoiding other, more costly means of allocation (namely queuing and service degradation).

In the long run, the best way of dealing with congestion is through planning of capacity, but efficient charging can play an important role in such planning. As mentioned above, expanding capacity is economically justified whenever customers are willing to pay the average total cost of new capacity, or the long-run marginal social cost. Careful monitoring and forecasting of demand would indicate when the efficient usage charge would exceed long-run marginal social cost, enabling new capacity to be

installed in advance. In this case, the efficient usage charge could be maintained at the level of short-run marginal social cost.

8. Conflicts with Other Goals

Economic efficiency dictates that the usage charge equals all of the marginal costs associated with output and use of the public service. If the current level of usage charge is far below the economically efficient level, then economic efficiency and good governance (specifically, predictability) could not be achieved simultaneously in the short term. If the usage charge is increased slowly, however, economic efficiency and good governance could be achieved simultaneously in the medium or long term.

Sudden and unexpected increases in demand could also put economic efficiency in conflict with good governance. If the service suddenly becomes congested, then tradeoffs must be made between gradual increases in usage charges, and using the tariff to immediately ration scarce capacity with a high usage charge. Careful monitoring of demand and planning of capacity can help avoid or minimize conflicts between efficient pricing and good governance.

Since distributive justice can also dictate the usage charge, efficiency and justice can conflict. In particular, when justice focuses on helping the poor satisfy their basic needs, the usage charge cannot exceed the affordable rate. Justice and efficiency are most likely to conflict when capacity is scarce and the efficient usage charge is high. In that case, the conflict can be reconciled by setting the usage charge at the affordable level for use up to the level of basic need, and charging the efficient rate for higher levels. The compromise of efficiency is limited as long as there is a small proportion of poor customers, and as long as the usage charge above the basic need is high enough to control total use. When there is excess capacity, efficiency may not conflict with helping the poor satisfy their basic needs, since marginal operating costs can be quite low for some kinds of public service (water and sanitation in particular).

Since economic efficiency restricts only the usage charge, it need not limit the total revenue raised by the tariff. In fact, if capacity is scarce then the efficient charge may raise revenues in excess of the revenue target. If there is excess capacity, however, the usage charge may not raise sufficient revenue for sustainability. Additional revenue can be raised through a fixed charge (a two-part tariff), without sacrificing efficiency.

E. Fair Pricing

1. Importance

A tariff differs from a market price in at least two ways that can raise concerns about fairness. First, a price in a competitive market is determined by forces beyond any individual's control; a tariff, in contrast, is specified directly by decision makers (in the utility, or in a regulatory body), and then dictated to customers from a position of monopoly power. The tariff is therefore subject to direct influence from the personal preferences or prejudices of decision makers.

Second, a market price is generally the same for all customers, but there can be good reasons for a tariff to vary across customers (such as a fixed charge that varies by customer class). Customers who face higher charges will naturally question the basis and fairness of the tariff, especially since the tariff is the result of a decision making process, rather than the result of anonymous market forces. Perhaps because of the potential for discrimination, fairness has been and continues to be one of the most important goals in tariff setting in the United States. Fairness should be a focus of the tariff whenever the tariff varies across customers.

2. Definition

Although fairness is a common goal in tariff setting, there is no established definition of the goal. One reason is that there seem to be at least two different ways to define the goal, based on cost, or effect. Although a cost-based definition can be easily adjusted to satisfy an effect-based one, the same does not apply in reverse, and so this paper uses the following cost-based definition: a tariff is fair if users pay the net social cost associated with their use of the public service, unless society has explicitly and deliberately decided that they should pay otherwise. Exceptions to paying the net social cost would occur if society has decided to subsidize some users (to promote justice, for example), or if some users have accepted that they should pay more (to subsidize others, for example). (For detailed, technical descriptions of fairness and preventing implicit subsidies, see Baumol 1986 and Zajac 1995.

3. Pricing Rule

The first step in setting a fair tariff is for society to decide what (if any) exceptions should be allowed to users paying their net social cost. That process is generally beyond the scope of tariff setting itself, but it should involve all members of society who would face a burden under the resulting tariff, such as users who provide cross-subsidies, or members of society at large who would provide external subsidies.

Once society decides who should be subsidized and who should provide the subsidies, a fair tariff should be free of all other implicit external and internal subsidies. A tariff is free of implicit subsidies if it satisfies two conditions:

- (i) Everyone pays at least the incremental costs associated with their use of the public service, adjusted for explicit, deliberate, and specific subsidies.
- (ii) The utility earns only a "normal" profit, or revenue from the tariff equals the total social cost, adjusted for explicit, deliberate, and specific subsidies.

This pricing rule does not directly restrict the structure of a tariff, and any tariff structure can, in principle, be fair.

The first part of the pricing rule can be applied to groups of customers instead of to every individual, if customers are sufficiently similar within groups. A simple and reasonable way to specify groups is in terms of customer classes: groups of customers that share a set of specified characteristics. Typical customer classes include residential, commercial, and industrial customers, but there is no limit on how customer classes can be defined. The only essential feature of a customer class is that all members are sufficiently similar, so that evaluating the class as a whole is a reasonable substitute for evaluating each member individually. Defining customer classes always increases the cost and complexity of the tariff setting process, however, and can create opportunities for corruption.

The incremental cost for a customer class consists of all costs associated with or attributed to the class. The incremental costs would thus include all variable costs, plus any directly attributable fixed costs. The costs would generally be measured in financial terms, namely using observed market prices unadjusted for taxes, subsidies, externalities, or other distortions. The incremental costs could include, however, congestion costs and other externalities that fall exclusively on other users.

The first part of the pricing rule ensures that each customer pays at least their fair share. The second part, in contrast, ensures that customers do not pay more than their fair share. That is, according to standard economic reasoning, there are no implicit cross-subsidies if every group pays at least its incremental costs (part 1), and if the utility earns no more than a "normal" profit (part 2). These two constraints together ensure that each customer class pays only its fair share.

It is beyond the scope of this paper to define a utility's "normal" profit. In general, the utility's profit would be determined in the process of evaluating the revenue required for financial sustainability. A public enterprise might not earn any profit, and in that case there is no need to define "normal" profit. If the utility was privately owned but publicly regulated, the utility's profit could be determined by the regulatory body.

This paper does not, however, take a position on the regulation of public utilities through profits, or any other means. If it is clearly and easily established that a utility is earning only normal profit, then it is easy to assess a tariff's fairness. If not, then other, slightly more complicated analyses are required. (See the recommended references above.)

The second part of the pricing rule also aims to eliminate implicit, external subsidies. A utility is receiving implicit, external subsidies if its total social cost exceeds the revenue required for financial sustainability with a normal profit. Eliminating implicit, external subsidies could require the tariff to generate more than the normal profit, with the excess revenue transferred to the government. If it is not feasible to increase taxes on the utility, then external subsidies cannot be eliminated, and so revenue should generate only normal profits.

4. Conflicts with Other Goals

Fair pricing, as defined here, does not conflict with financial sustainability or economic efficiency. In fact, fair pricing complements and perhaps even reinforces both of those goals. Fair pricing can conflict with good governance, in the same way as other goals, as discussed previously.

Fair pricing will not conflict with satisfying basic needs if society explicitly and deliberately decides to subsidize basic needs. If not, then fairness and justice will conflict if the incremental costs associated with basic needs are not affordable for the poor. One could argue that the incremental costs associated with basic needs are limited to variable costs with little or no capital costs. In that case, the incremental cost of basic need is not affordable for the poor only if variable costs are not affordable.

III. SETTING A TARIFF TO SATISFY MULTIPLE GOALS

The previous section focused on defining some common goals of tariffs, and specifying pricing rules for each. As discussed above, conflicts may exist among the rules, preventing a tariff from achieving multiple goals. It is often claimed that these conflicts cannot be reconciled, and that "final tariff design is typically a compromise" among goals (KPMG 1996, chapter 10). This section shows, however, that a simple tariff structure can pursue all of the goals discussed above, with minimal compromise or sacrifice among them.

The actual tariff that is appropriate depends on circumstances, and will vary across sectors, but the tariff need not be more complicated than a standard lifeline tariff, with fixed charges as needed to provide whatever additional revenue is needed to sustain the utility. Developing such a tariff involves only three sets of calculations:

- A. Set usage charges for distributive justice and economic efficiency.
- B. If additional revenue is required for financial sustainability, set fixed charges for sustainability and fairness.
- C. Increase or adjust charges at a rate consistent with good governance.

The following discusses each of these calculations in more detail, including the information required for each. Table 3 provides a brief outline and summary.

Table 3: A Tariff Structure Broadly Consistent with the Goals Discussed in Section II

PROCESS	INFORMATION	CHARGE
A. Set usage charges for distributive justice and economic efficiency	<ul style="list-style-type: none"> • Affordable usage charge • Basic need • Efficient usage charge 	<ul style="list-style-type: none"> • Usage charge = affordable rate for use at or below basic need • Otherwise, usage charge = efficient usage charge
B. If additional revenue is required for financial sustainability, set fixed charges for sustainability and fairness	<ul style="list-style-type: none"> • Fair customer classes • Revenue target per class 	<ul style="list-style-type: none"> • No fixed charge for use below the basic need • Otherwise, fixed charge = required revenue from fixed charge per class, averaged over number of customers per class
C. Increase or adjust charges at a rate consistent with good governance	<ul style="list-style-type: none"> • Time to introduce new tariff 	<ul style="list-style-type: none"> • Introduce any decrease in charges immediately • Introduce increases at a constant rate until new tariff is fully implemented

A. Set Usage Charges for Distributive Justice and Economic Efficiency

1. Rationale

For distributive justice (helping the poor satisfy their basic needs) and economic efficiency, the usage charge is the most important component of a tariff. Economic efficiency is the only goal discussed in Section II that has a pricing rule directly specifying a usage charge, namely that the usage charge should be equal to marginal social cost. A fixed tariff could be consistent with helping the poor satisfy their basic needs, but that goal is easier to achieve with a usage charge. Since it involves metering, a usage charge can be used directly to identify customers eligible for a special affordable rate. A usage charge also allows customers the opportunity to reduce their charges to as low a level as desired.

A usage charge requires metering, and so the following assumes that meters are installed and read for individual customers. Without metering, economic efficiency is not a feasible goal (unless the efficient usage charge is zero), and only a fixed charge is possible.

2. Required Information

Setting a just and efficient usage charge requires two kinds of information:

- (i) the affordable usage charge, and the level of basic need
- (ii) the economically efficient usage charge

Acquiring or developing the required information can involve detailed social and economic analyses. Although these analyses are preliminary to setting the tariff, they are both the most difficult and the most important part of the tariff setting process, if the tariff is to achieve its goals.

3. Affordable Usage Charge and Basic Need

These two pieces of information are essential to ensuring delivery of basic needs to the poor. As discussed in Section II.C, the affordable usage charge depends on the lowest income in the target population, the willingness to pay for the basic need, and society's standard of financial hardship.

Expertise in social analysis is the most important in developing this information, but expertise in economics may also be required. Social analysis would focus on determining society's standards for basic need and financial hardship. These are fundamentally social or political choices, but the choice should be informed by scientific information, such as the energy required to meet certain heating standards in winter. Economic analysis would be required to estimate willingness to pay. If basic need is accurately identified, though, and if the standard for financial hardship is low, then willingness to pay is likely to exceed the level of financial hardship, and so estimating willingness to pay would be unnecessary. The affordable usage charge is then simply the threshold for financial hardship divided by the level of basic need.

Identifying the basic need must also consider the types of customers in the target population. In the case of power supply, for example, if the target population includes both single and multiple families per connection, then the basic need for a single family would not be sufficient for a multi-family connection. Setting the basic need to accommodate the largest multi-family connection would provide basic needs for all customers, but would subsidize extra consumption for smaller connections, and perhaps also for customers who should not be eligible for the affordable rate at all.

If basic needs vary considerably across customers, then pursuing justice without compromising other goals requires an investment in identifying and targeting customers eligible for the affordable rate. For example, multi-family connections could be separated from or into single-family connections. The target population could also be required to identify themselves, by approaching the utility to register for the affordable usage charge.

If none of these means is suitable, then the conflicts between justice and the other goals cannot be reconciled. In this case there are only two options: help the poor satisfy their basic needs in other ways, such as with direct subsidies or income support; or sacrifice the other goals.

4. Economically Efficient Usage Charge

The first step in estimating the efficient usage charge is to determine whether capacity is abundant or scarce. In general, capacity is abundant if use of the public service can increase without a significant increase in marginal social costs, including congestion costs and other externalities.

If capacity is abundant, then the efficient usage charge can be approximated as the average variable costs of the utility, measured as a social cost. The operating costs can be estimated in social terms by adjusting observed input prices for taxes, subsidies, and other market distortions, following standard methods. If some inputs are unpriced or underpriced, then the analysis should estimate the associated marginal social costs. Estimating marginal social costs can require significant expertise in economic analysis. But if there are no major distortions in input markets, if resource-based inputs are not in scarce supply, and if there are no externalities, then estimating the efficient usage charge may require only a financial analysis, to estimate the utility's average variable costs as a simple approximation to marginal cost.

If capacity is scarce, then estimating the efficient usage charge requires estimates of marginal social cost as a function of the level of use of the public service, and estimates of how demand for the service responds to increases in the usage charge. The estimates of marginal social cost would include the marginal cost of production, the marginal cost of externalities, and the marginal cost of congestion.

The efficient usage charge in this case is where marginal social cost equals the marginal willingness to pay for use of the service. Developing this kind of information would require advanced expertise in economics, but if congestion is severe and capacity cannot be expanded, then the benefits of implementing efficient charging could be worth the cost of the analysis.

When capacity is scarce, setting the usage charge should be coordinated with any plans to expand capacity. If the efficient usage charge exceeds the average cost of new capacity (long-run marginal cost), then expanding capacity is economically justified. If demand is growing and capacity can only be expanded in large increments, then it may be economically justified to install excess capacity relative to current demand. Under those circumstances, the efficient charge could decrease significantly when the new capacity is installed, and increasing the usage charge to reflect current scarcity may not be necessary if the scarcity persists only in the short run.

If demand varies significantly over time, and if the utility cannot store its output for sale in periods of peak demand, then the economically efficient usage charge may vary over time. For example, the demand for water can vary by month or by season. If it is not economical to store water available at one time for distribution later, then production cannot be spread out over time to accommodate peaks and ebbs in demand. Under those conditions, the economically efficient usage charge can vary over time.

Economic efficiency is more sensitive to the nature of the public service than any of the other goals, and so estimating the efficient usage charge must consider the technical details of the service. For example, the efficient usage charge for power would vary by voltage, and the efficient charge for transport would have to consider how people use the service. In general, setting the usage charge should consider, in the context of the given public service, how the charge can best promote efficient use of resources.

5. Setting an Affordable and Efficient Usage Charge

Setting a usage charge for affordability and efficiency requires two levels: the affordable rate, up to the level of basic need, and the efficient rate beyond that amount. If capacity is abundant, however, the efficient usage charge may be close to or even less than the affordable charge. In that case, there might be only one level of the usage charge that would be both affordable and efficient.

A two-block usage charge will always be affordable for the poor, and involves a minimal sacrifice in economic efficiency. There is little loss of efficiency when capacity is abundant. In that case, the main aim of efficiency is to encourage use of the utility's idle capacity. Setting the affordable rate below the efficient one achieves that basic aim, but at the cost of some inefficient use of variable inputs.

The loss of efficiency would be greater when capacity is scarce. In that case, the main aim of efficiency is to limit use of the public service, but setting the affordable rate below the efficient rate has the opposite effect. The usage charge will not direct the service exclusively to the highest valued uses, but all customers in the target population will be able to purchase at least their basic needs, without financial hardship.

When capacity is scarce, the usage charge may also be financially sustainable and fair. If the usage charge alone raises sufficient revenue, then a tariff based only on the efficient usage charge is also fair, since in that case the total charge to a customer is based directly and only on the customer's use, and the economic cost per use.

B. If Additional Revenue is Required for Financial Sustainability, Set Fixed Charges for Sustainability and Fairness

1. Rationale

If the affordable and efficient usage charges do not raise sufficient revenue to sustain the utility, and there are no external subsidies, additional charges will be required. That is likely to occur whenever capacity is abundant, since in that case the efficient usage charge would cover only operating costs. The additional revenue required for financial sustainability can be raised through a standing fixed charge.

A fixed charge should not, however, bail out a utility that has planned its capacity poorly. Sound planning of capacity may result in a utility having excess capacity, but such capacity should be fully utilized eventually, and should be installed in advance only if it saves future development costs. Assessing a fixed charge for that spare capacity should amount to only a redistribution of charges across time, with customers ultimately paying less than they would for more frequent investments in capacity.

A fixed charge does not compromise economic efficiency, as long as it is indeed fixed with respect to use, and provided it does not cause users to avoid the public service altogether. A fixed charge need not compromise distributive justice, since it can be waived for customers using less than their basic needs.

Since a fixed charge is not based on use, it can compromise fair pricing if the total amount that customers pay differs from their associated costs. The key to setting fixed charges, then, is to raise revenue sufficient to meet financial sustainability, but to vary the fixed charge across customers so that their charges approximate their associated costs.

If usage is not metered, then a fixed charge is the only feasible tariff. The following discussion also applies to setting fixed charges for sustainability and fairness if no usage charge is assessed, with the revenue from the usage charge set at zero. If there is no usage charge, then helping the poor satisfy their basic needs requires identifying poor customers in advance.

It is difficult to set a standing fixed charge unless customers have an incentive to maintain a “connection” with the public service. For many public services, such as water and power, the incentive comes from the nature of the service itself. For others, such as road tolls, the incentive to pay the standing fixed charge can come from setting a fixed initiation charge in addition to a fixed standing charge, so that customers would have to pay the initiation charge whenever they reconnected to the service or failed to pay the standing charge.

Fixed initiation charges are sometimes associated with the fixed cost of starting use of the public service, as when a customer connects to the power grid. Even if there are fixed costs associated with initiating service, those costs can be collected through a fixed standing charge, making it easier for customers to pay. Relative to the goals discussed here, there is no role for an initiation charge except for providing the incentive to pay a standing charge. The following thus focuses on standing fixed charges.

2. Required Information

Setting fixed charges for financial sustainability and fair pricing requires two kinds of information:

- (i) Fair customer classes.
- (ii) The revenue required from the fixed charges, per customer class.

Like the information required to set a usage charge, the extent to which the tariff achieves its goals depends on the quality of the information used to set the fixed charge.

3. Fair Customer Classes

A uniform fixed charge for all customers is, in general, not consistent with fair pricing. Fairness requires that users pay the costs they impose on the utility. But with a uniform fixed charge, the smallest user pays the same as the largest user.

A uniform fixed charge can approximate fair pricing, though, if the level of use does not vary significantly across customers. For example, if the maximum use is only slightly above the minimum use, then a uniform fixed charge would not strictly achieve fair pricing, but it may be close enough.

If use varies widely across customers, then a fixed charge can still be approximately fair, if customers can be put into classes where use does not vary widely. To avoid compromising economic efficiency, the class must be defined in terms of common characteristics that are indirectly related to use. For example, classes could be defined in terms of the type of customer, and the customer's installed capacity to use the service. Common types of customers include residential, commercial, and industrial. Capacity to use the service could be measured by the diameter of pipes, for water supply, or rating of the circuit, for power.

A class of customers eligible for the affordable rate should also be defined, if such customers can be identified in advance; such customers may instead be required to identify themselves. The purpose of such a class, though, is to help the poor. This class would not be assessed a fixed charge, to preserve affordability of the basic need. If it is not feasible to define such a class, then all customers with use at or below the basic need could be exempted from the fixed charge.

Assessing the fixed charge for use above the basic need, though, would make the charges discontinuous, and could impose financial hardship on the poor if the basic need varied across customers. To reduce the impact of the discontinuity, the fixed charge could be assessed only when average use over several billing periods was above the basic need; or the threshold could be increased above basic needs to reduce the risk of compromising affordability, at some cost to efficiency.

4. Required Revenue from Fixed Charges, per Class

The revenue required from the fixed charge equals the total revenue target for the class, less the revenue raised from the usage charge. The usage charge should, in general, cover all variable costs, and so the revenue required from the fixed charge equals only fixed costs assigned to the class.

The key to setting the required revenue from the fixed charge is therefore assigning the fixed costs per class. According to the rules for fair pricing discussed in Section II.E, the fixed costs per class should be at least those costs directly attributable to the class (the incremental costs).

Determining the directly attributable fixed costs requires a financial analysis of the capital costs of the utility. The attributable capital costs would include, for example, extra infrastructure required to extend the service to remote areas, or special infrastructure required to deliver service of different quality to certain customers.

Some additional fixed costs, above the directly attributable costs, must be assigned to at least one class in order to meet the revenue target for the utility. Some fixed costs, such as the salaries of management, are pure overhead, not directly attributable to any particular customer class. These costs

would not be covered if the revenue from fixed charges was limited to only attributable costs. The rules for fair pricing defined in this paper do not restrict the assignment of unattributed costs, and so some other method of assigning the costs is required. For example, the unattributed costs may be assigned to pursue other goals besides the five discussed here, or by standard accounting methods such as “fully distributed costs” (see Mitchell and Vogelsang 1991).

5. Setting the Fixed Charges

Given the customer classes and the revenue requirement per class, the fixed charge per class is easy to calculate: for each class, subtract the revenue from usage charges from the revenue requirement, and divide by the number of customers.

Although calculating the fixed charge is easy, it is not so easy to ensure that the resulting charges are indeed fair to individual customers within a class. Even with the best information and expertise, there is no guarantee that customer classes can be defined with sufficiently narrow variability in use. So an important part of setting fixed charges is assessing the fairness of the resulting charges.

A simple standard of fairness within a class is that the proportion of the revenue target a customer pays should equal the customer’s use as a proportion of the total use of the class. The two proportions will differ whenever there is a fixed charge and use varies across the class, and so evaluating fairness within a class requires a decision on how much the two proportions can differ.

If the charges resulting from the given customer classes are considered unfair or intolerable (or if customer classes are not defined at all), then there are three options for further developing the tariff:

- (i) Define new customer classes that are more fair, which would require better information and further analysis.
- (ii) Reduce the revenue target, which would require a direct subsidy to the utility.
- (iii) Increase the usage charge, which would require a sacrifice of economic efficiency.

The best option among these three depends on the benefit of marginal cost pricing, versus the cost of developing fair customer classes, or the loss of fairness. For a given customer class, if demand is not sensitive to the usage charge (between the efficient usage charge and the usage charge that meets the revenue target), then there would be little or no sacrifice of economic efficiency by implementing only a usage charge for that class. This might apply, for example, to the use of sanitation services by ordinary domestic customers.

C. Increase Charges at a Rate Consistent with Good Governance

1. Rationale

The preceding two sections have discussed how to set usage and fixed charges from an ideal or long-term perspective, without regard to their immediate impact. If the new tariff results in a decrease in charges, then the utility could introduce the new tariff immediately, assuming that a decrease in charges does not upset any entrenched expectations. Suppose, in contrast, that the new tariff involves a significant increase in charges, and that there are entrenched expectations regarding the quality and charges (justified or not). Then good governance requires that the utility give its customers advance notice of the increases, and that the increases be introduced slowly, to give custom-

ers the opportunity to learn how to adjust their use of the service. As discussed in Section II, gradual introduction of a new tariff may involve a sacrifice in all other goals, at least in the short run.

2. Required Information

Achieving good governance with an increase in a tariff requires at least one piece of information: the length of time customers need to adjust to the new charges. Developing or acquiring this information would require expertise in political analysis, to predict the response of politically important groups of customers. Social and economic analyses could contribute to the political analysis, to determine the effect of the new tariff on vulnerable or sensitive groups of customers, and the effect on investment decisions.

3. Introducing the New Tariff

If the analysis determined that the tariff could be fully implemented in, say, three years, then the usage charge and fixed charge could be increased every year at a constant rate. That is, the usage charge and fixed charge would increase every year by one-third of the difference between the current and future charges. This requires, of course, predictions of the usage and fixed charges three years into the future; those predictions should be updated as conditions change. It also requires forecasting the revenue requirements. On this account it is useful to distinguish between short-term immediate cash flow and longer-term needs. The way that short-term needs grow could determine the time allowed to introduce the new tariff.

The same technique could be applied if the new tariff involves mainly a change in structure, and not necessarily an increase in charges. For example, a change from average cost pricing to a two-part tariff could involve a decrease in the usage charge and the introduction of a fixed charge, with no increase in the revenue raised by the tariff. In that case, good governance would still require that customers be given the time and opportunity to learn how to adjust their use of the service to the new tariff, but the time required is probably less than for a net increase in charges.

IV. GENERAL COMMENTS ON THE METHOD PROPOSED IN THIS PAPER

The most important messages of this paper are that setting a tariff to satisfy multiple goals requires an explicit and specific definition of the tariff's goals, and a pricing rule for each goal that incorporates only the required constraints. This paper has focused on five particular goals, but it does not matter what the goals are, as long as they are chosen in consultation with the public.

Focusing on the tariff's goals can reduce some of the typical problems with pursuing multiple goals. Common problems with tariffs include implicitly sacrificing financial sustainability for vague concerns about affordability (Brook and Smith 2001), or expanding the block of the affordable usage charge for political purposes (Boland and Whittington 2000). Keeping all goals in mind when modifying a tariff will avoid implicit or unintended sacrifices, and may avoid sacrifices altogether.

Except for financial sustainability, the goals discussed in this paper are goals of the public and not of the utility itself. A utility will naturally be interested in financial sustainability, but may have little or no interest in, or commitment to, good governance, distributive justice, economic efficiency, or fair pricing. Achieving such broad social goals requires more than just setting the tariff appropriately. It also requires, among other things,

- (i) a regulatory system that monitors performance of the utility, relative to the tariff's goals as well as the many other aspects of performance;
- (ii) an efficient and effective system for billing and collecting the tariff;
- (iii) ensuring quality of service, so that customers feel they have received good value for the amount they are charged and have incentive to pay; and
- (iv) periodic review of the tariff, with updating as conditions change.

Another message of this paper is that when a tariff has many goals, the pricing rules must be examined for conflicts or inconsistencies. The potential for conflicts can be reduced by specifying rules in the most general and flexible way that is consistent with achieving the goals. If there are no conflicts among the rules, then multiple goals can be achieved by applying each pricing rule separately. Otherwise, conflicts must be explicitly and deliberately reconciled as part of the tariff setting process.

This paper has explored one approach to avoiding and reconciling conflicts, namely by using a tariff structure with multiple components, and by making small or short-term compromises in applying pricing rules. That approach can be both simple and effective, provided that it is feasible to implement a tariff with multiple components, and that there are minimal conflicts among the rules.

There are, however, other approaches to pursuing multiple goals, and this paper does not make any claim for the superiority of its approach. Another approach to pursuing multiple goals is to combine goals with conflicting rules into a single, combined goal, following the examples of Ramsey and Feldstein pricing. That kind of approach reconciles conflicts by building tradeoffs explicitly into the tariff setting process, and may come closer to achieving multiple goals.

The difficulty with combining goals, however, is that it requires new rules for each new combined goal. This paper's approach minimizes the analytical effort required to specify new rules, and preserves any existing understanding or acceptance of the existing rules. This paper also shows that, with the goals considered here, the essence of the existing rules can be maintained, and multiple goals can be pursued, provided there is sufficient effort in preliminary, supporting analyses.

REFERENCES

- Asian Development Bank, 1996. *Bank Criteria for Subsidies*. Manila.
- _____, 1997a. *Guidelines for the Economic Analysis of Projects*. Manila.
- _____, 1997b. *Water Tariff Structure and Financial Policies of Water Enterprises, ADB TA No. 2501-INO*. Manila.
- _____, 1999. *Governance: Sound Development Management*. Manila.
- _____, 2001a. *Guidelines for the Financial Governance and Management of Investment Projects Financed by the Asian Development Bank*. Manila.
- _____, 2001b. *Water for All: The Water Policy of the Asian Development Bank*. Manila.
- Anderson, R., and M. Bohman, 1985. "Short and Long-run Marginal Cost Pricing (On Their Alleged Equivalence)." *Energy Economics* 7(4):279-88.
- Bahl, R. W., and J. F. Linn, 1992. *Urban Public Finance in Developing Countries*. Oxford: Oxford University Press.
- Baumol, W. J., 1986. *Superfairness*. Cambridge: The MIT Press.

- Bierhanzl, E. J., 1999. "Incentives for Efficiency: User Changes and Municipal Spending." *Journal of Public Finance and Public Choice* XVII(1):19-34.
- Bierhanzl, E. J., and P. B. Downing, 1998. "User Changes and Bureaucratic Inefficiency." *Atlantic Economic Journal* 26(2):175-89.
- Boland, J. J., and D. Whittington, 2000. "The Political Economy of Water Tariff Design in Developing Countries: Increasing Block versus Uniform Price with Rebate." In A. Dinar, *Political Economy of Water Pricing Reforms*. Oxford: Oxford University Press.
- Bonbright, J. C., A. L. Danielsen, et al., 1988. *Principles of Public Utility Rates*. Arlington, Virginia: Public Utilities Reports, Inc.
- Brautigam, D., 1991. Governance and Economy: A Review. Policy Research Working Papers No. 815, Policy and Review Department, The World Bank.
- Brook, P., and W. Smith, 2001. *Improving Access to Infrastructure Services by the Poor: Institutional and Policy Responses*. The World Bank, Washington, D.C.
- Brown, S. J., and D. S. Sibley, 1986. *The Theory of Public Utility Pricing*. New York: Cambridge University Press.
- Clarke, G. R. G., and S. J. Wallsten, 2002. Universal (ly Bad) Service: Providing Infrastructure Services to Rural and Poor Urban Consumers. Policy Research Working Paper No. 2868, The World Bank.
- Cremer, H., F. Gasmi, et al., 1998a. *The Economics of Universal Service: Practice*. Economic Development Institute, The World Bank, Washington, D.C.
- _____, 1998b. *The Economics of Universal Service: Theory*. Economic Development Institute, The World Bank.
- Curry, S., and J. Weiss, 2000. *Project Analysis in Developing Countries*, 2nd ed. London: Palgrave MacMillan.
- Dole, D., 2003. Setting User Charges for Public Services: Policies and Practice at the Asian Development Bank. ERD Technical Note No. 9, Economics and Research Department, Asian Development Bank, Manila.
- Estache, A., M. R. Pardina, et al., 2003. An Introduction to Financial and Economic Modeling for Utility Regulators. Policy Research Working Paper 3001, The World Bank Washington, D.C.
- Feldstein, M. S., 1972. "Equity and Efficiency in Public Sector Pricing: The Optimal Two-Part Tariff." *The Quarterly Journal of Economics*(1):175-87.
- Fisher, P. S., 1991. "The Strange Career of Marginal Cost Pricing." *Journal of Economic Issues* 25(1):77-92.
- Foster, V., A. Gomez-Lobo, et al., 2000. *Designing Direct Subsidies for Water and Sanitation Services—Panama: A Case Study*. The World Bank, Washington, D.C.
- Jones, D. N., and P. C. Mann, 2001. "The Fairness Criterion in Public Utility Regulation: Does Fairness Still Matter?" *Journal of Economic Issues* 35(1):153-72.
- Joskow, P. L., 1976. "Contributions to the Theory of Marginal Cost Pricing." *The Bell Journal of Economics* 7(1):197-206.
- KPMG, C. M. P. L., 1996. "Final Report for National Water Tariff Policy Study, Viet Nam, ADB TA No. 1998-VIE." Asian Development Bank, Manila.
- Lamont, J., 2003. "Distributive Justice." In *The Stanford Encyclopedia of Philosophy*. Available: <http://www.plato.stanford.edu/entries>.

- Lesser, J. A., D. E. Dodds, et al., 1997. *Environmental Economic and Policy*. New York: Addison-Wesley.
- Maxwell, S., 2002. "Rule-based Price Fairness and Its Effect on Willingness to Purchase." *Journal of Economic Psychology* 23:191-212.
- Mitchell, B. M., and I. Vogelsang, 1991. *Telecommunications Pricing—Theory and Practice*. New York and Melbourne: Cambridge University Press.
- Phillips, J. C., 1985. *The Regulation of Public Utilities—Theory and Practice*. Public Utilities Reports, Inc., Arlington, VA.
- Ramsey, F., 1927. "A Contribution to the Theory of Taxation." *Economic Journal* 37:47-61.
- Roemer, J. E., 1996. *Theories of Distributive Justice*. Cambridge: Harvard University Press.
- S.M. Group International, 1998. *Water Supply Tariff Study, PRC: Final Report, ADB TA No. 2773-PRC*. Asian Development Bank, Manila.
- Swales, M. C., 2001. *Towards a Common Approach to Tariff Setting, ADB TA No. C00554-USA*. Manila, Asian Development Bank, Manila.
- Train, K. E., 1991. *Optimal Regulation: The Economic Theory of Natural Monopoly*. Cambridge: MIT Press.
- Valle, A. P. D., 1988. "Short-run versus Long-run Marginal Cost Pricing." *Energy Economics* 10(4):283-86.
- Vickrey, W., 1987. "Marginal- and Average-Cost Pricing." In J. Eatwell, M. Milgate, and P. Newman, eds., *The New Palgrave: A Dictionary of Economics*. London: Palgrave MacMillan.
- Viscusi, W. K., J. M. Vernon, et al., 1995. *Economics of Regulation and Antitrust*. Cambridge: MIT Press.
- Weisman, D. L., 1991. "A Note on First-best Marginal Cost Measures in Public Enterprise." *Energy Economics* 13(4):250-3.
- Weiss, J., 1995. *Economic Policy in Developing Countries: The Reform Agenda*. London: Prentice-Hall.
- Winpenny, J., 2003. *Financing Water for All*. World Panel on Financing Water Infrastructure, France.
- Zajac, E. E., 1995. *Political Economy of Fairness*. Cambridge: The MIT Press.

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