

User Charges in Local Government Finance

by

Richard M. Bird

In some important respects, any local government may be viewed as analogous to a business. It provides services to its customers -- residents. In turn (ignoring intergovernmental transfers) residents must pay for the services they receive. Of course, unlike a business, a government can impose taxes to finance its activities. Taxes, however, are "unrequited transfers" that bear no specific relation to the services that taxpayers receive. Taxes provide revenue to local governments, but that is all they do. In contrast, financing local services through user fees or charges not only provides funds with which to supply such services but also -- and from an economic point of view more importantly -- provides invaluable information on which services should be provided, in what quantity and quality, and to whom.

While user charge financing is most obviously important with respect to such utility enterprises as water systems, in principle this approach may be extended much more widely to encompass at least some aspects of such other local government activities such as refuse removal and the provision of recreational and cultural facilities. Box 1 illustrates the importance and widespread nature of user charge finance for local governments in Canada.

This paper sets out briefly the key questions to be determined with respect to the uses and limits of user finance. When should charges be levied by local governments? When charges are used, how should they be set? Although it is easier to set out the principles of user finance than to describe in detail just how to set prices for public services in practice, a few examples are presented to illustrate the variety of choices that must be made in determining user fees in particular instances. In addition, a brief annotated bibliography is provided for those who wish to pursue this subject in more depth.

The Rationale for User Charges

To many people the very idea of charging for many public services seems ridiculous. If an activity is carried out by the public sector, at least in a democratic setting, then presumably in some sense the market has been rejected as a means of obtaining the service in question. Attempts by governments to charge for services traditionally provided for free (like most parks) or to raise prices for services provided below cost (like roads) are thus likely to be viewed by the public at large, let alone by those more directly affected, as little more than a "revenue grab."

Such views seem widespread in many countries. Nonetheless, with respect to many activities of governments, especially local governments, they are misconceived. Governments are engaged in a vast array of programs. Some of these programs cannot and should not be priced in any meaningful way (see Box 2 for further discussion). But for many government services prices of various sorts are already charged, and for many others there are good reasons why they too should be priced. Moreover, some prices already charged (e.g. for roads) should be changed significantly. What is now priced by government in most countries, and how it is

priced, as a rule reflects historic accident and administrative convenience more than rational policy. Those who benefit directly from the unpriced (or underpriced) provisions of certain public services will no doubt be unhappy if proper charging policies are adopted. Citizens as a whole, however, should welcome the adoption of a well-designed policy of cost recovery and user charges in the public sector -- one which will lead to the best possible use of scarce public resources.

Indeed, whenever possible and desirable public services should clearly be charged for rather than given away. The main economic reason why user charges should be levied on the direct recipients of benefits from particular public services is to improve the efficiency with which governments make use of resources. Maximizing the efficiency with which scarce public resources are used is not the whim of an ideologically driven economist. It is simply common sense. Any society should surely use scarce public resources to provide its people with as large a bundle as possible of services which they want, and that is all that is meant by efficient resource use. Such efficiency is an especially important objective in poor countries in which local governments are often hard-pressed to finance anything.

The main economic rationale of user charges is thus *not* to produce revenue but to promote economic efficiency. Well-designed charges achieve this goal *both* by providing information to public sector suppliers as to how much clients actually are willing to pay for particular services *and* by ensuring that what the public sector supplies is valued at least at (marginal) cost by citizens. If government expenditure is financed through general taxes, rational consumers will choose to consume it to the point at which the marginal costs *to them* just equal the marginal benefits they receive. When consumers are not explicitly charged for consuming a service, what this means that the last unit is worth approximately zero. In reality, however, nothing in life is free, and there are real costs in providing any service.

When no charge is imposed for a service, more of it will be consumed than society as a whole would really be willing to pay for if the real costs were taken into account. From a social point of view "under-pricing" -- the free (or subsidized) provision of services -- results in the "over-consumption" of such services. As it were, resources are poured into a "black hole. Something goes in -- the resources used in producing the "excess" services -- but nothing of equal value to society comes out. The pernicious effects of this situation on both rational resource allocation and government finance may be accentuated if, as often occurs with respect to public infrastructure such as roads and airports, the resulting crowding is taken as a signal that there should be even more of the under-priced service provided.

Where Should User Fees be Applied?

Although the general case for charging where possible is clear, determining the proper domain and design of user charges in practice is a challenging task. The inherent characteristics of some important public sector activities are such that they cannot and should not be financed in this manner. Others *may* be. Still others *should* be. Box 2 sets out some of the characteristics of activities in question that should be taken into account in considering this question.

In principle the economically efficient price that should be charged for *any* good or service is the price that would be charged in a perfectly competitive market. Such a market is one in which there are many buyers and many sellers, all of whom have full information not only about the price and cost of the item in question but also about all possible substitute and complementary products. To be socially efficient, the goods in question must have no public goods characteristics, or, to put it another way, the prices of all products must fully reflect all external costs and benefits (see Box 2). Moreover, any distributional issues must be assumed to be dealt with in other ways (e.g. by lump-sum transfers).

Almost by definition, not all these conditions are likely to be satisfied when it comes to publicly-provided goods and services. Of course, some of them -- such as the competitiveness of markets -- may not be fully satisfied with respect to private sector provision either. But the problem is more serious in the public sector. Indeed, the economic rationale for public sector activities arises largely because some or all of the conditions required to achieve market efficiency are violated: publicness matters; excludability is not feasible; scale and sunk cost factors result in monopoly provision; non-priced externalities are significant; or distributional concerns are important.

Monopoly. The fact that many public sector activities are provided by a monopoly supplier is, for example, important when it comes to setting user charges. Either the scale and sunk cost factors mentioned in Box 2 create a so-called "natural" monopoly -- that is, given technology, it is infeasible (too costly) for competitors to emerge -- or public policy itself has, perhaps for good reasons, created a legal monopoly, as in the case of many regulatory programs.

In any case, efficient pricing in the case of a monopoly is a potentially double-edged sword. From the perspective of the monopoly itself, the most efficient prices are those that will extract the maximum return from their clients. Such monopoly pricing will be both discriminatory -- that is, imposing higher prices on those least able to avoid them -- and will result in monopoly output being less than is socially desirable in order for the owners of the monopoly to extract the maximum profit from its customers.

Preventing such undesirable outcomes is of course an important rationale for public involvement in the provision of some services (and the regulation of others). But how should *public* monopolies set prices? In principle, the answer is simple: they should set them as though they operated in a fully competitive market. In practice, however, determining what those prices should be, let alone implementing them, is by no means a simple task. Privatizing public monopoly activities simply changes the problem from one of deciding what the appropriate public sector price should be to one of deciding how to regulate the private sector price. The problem is monopoly, not ownership.

Mandatory Services. An additional problem in the case of many public services is that their use is mandatory, not optional. If motor vehicles must by law be registered annually, determining whether fees should be charged and designing such fees is quite different from setting the price of, say, access to a recreational facility e.g. a park at a given time of day. One may choose not to go to that park at that time.

One cannot legally choose to use an unregistered vehicle. Similar questions involving varying degrees of choice on the part of citizens arise with respect to many government programs.

Inelastic Demand. A related but distinct issue concerns the elasticity of demand for the service in question. If a service is mandatory, all those engaged in a certain activity, or with certain characteristics, *must* utilize it. If the activity is common (like driving) or the characteristics widespread, the demand for such services may be close to completely inelastic, that is, no matter how much may be charged for the service, people will have to pay it. High enough charges on any activity will always induce behavioral changes designed to avoid them -- whether legal (refraining from engaging in the activity in question), illegal (black market), or in between (offshore purchases or home production). But unless there is *some* responsiveness to prices, such charges serve no allocative or efficiency function.

If there is no price responsiveness -- the demand for the service is virtually inelastic -- any price charged for the service will simply "tax" those who use the service. User charges may of course still be justified in terms of fairness in such cases. Why should the cost of providing a service, even a mandatory one, be paid for by someone other than the user? (This assumes that the user receives at least some benefit from the service, which is not always the case.) But such charges have no efficiency rationale because, by definition, they do not affect choices or activities. Determining appropriate user charges when demand is inelastic is thus a quite different task than in more normal circumstances.

Clientele and Visibility. Other important characteristics of markets for public services relate to the clientele for such services and the visibility of the services. Some services are provided to final consumers, for example, parks. Others are provided in the first instance to intermediate producers, for example, licenses for trucks. Such services may be highly visible (schools) or basically invisible (regulation of weights and measures). Some public sector agencies serve special client groups who may like the service, for example, users of public swimming pools. In the case of most regulatory services, however, the direct clients can only by a considerable stretch of the imagination be considered to be the beneficiaries of actions which are presumably designed to achieve a broader public purpose. Consider, for example, park users who want to e.g. hunt and fish free of restrictions but who are asked to pay for the services of officials intended to prevent them from doing these things. The rationale for the charge is of course to deter such "bad" users for the benefit of "good" users, but it must be applied to all since it is not feasible to tell what kind of user a person is in advance. All these factors need in principle to be taken into account in deciding whether a price should be charged, to whom, and what that price can and should be.

Designing User Charges

It is important not just to impose user charges where appropriate but to "get the prices right" and to impose the *correct* charges. Even where user charges are already levied, their design could often be improved from an efficiency perspective. The primary economic rationale for user charges, as discussed earlier, is to encourage

the efficient use of resources within the public sector. Economic theory demonstrates that the best charges from this perspective are those that are equal to the marginal cost of supplying the good or service in question -- the marginal cost price, for short. If user charges are set below marginal costs, and demand is sensitive to prices, society will consume more of a service than it otherwise would. But this means, by definition, that society will be worse off as a result of such below-cost pricing. Properly defined, marginal costs measure the social benefit that would be obtained from diverting the inputs used to produce the service in question to their next most valuable possible use. Charging a price lower (or higher) than marginal cost therefore means that too much (or too little) of the service in question will be produced, viewed from the perspective of what society as a whole wants.

Marginal Cost Pricing

Efficient public sector user charges are marginal cost prices. But what is meant by "marginal cost"? Implementing this simple principle may prove to be surprisingly difficult. The difficulties arise for two major reasons. First, it may be very difficult to define costs properly in the case of many public sector activities. Second, even if such costs can be clearly defined, it may prove difficult or impossible to estimate them in the quantitative terms needed to determine appropriate user charges.

The costs relevant to marginal-cost pricing are quite different from the costs with which public sector managers, even those operating activities already structured as cost centers, are likely to be familiar. The notion of cost in financial accounting refers to identifiable monetary outlays incurred in the process of carrying out a particular activity. Such costs include, for example, wages, rent, utilities, transportation, supplies, and so on. The figures reporting such costs reflect actual financial outlays made in some particular time period. As anyone who has attempted such an exercise knows, it can be difficult enough to allocate such costs to any particular service activity. For example, what proportion of the costs of the director's office should be attributed to the delivery of a particular front-line service? Nonetheless, accountants have developed various methods that deal more or less satisfactorily with the problem of allocating such joint or overhead costs.

But *economic* costs as envisaged in the marginal-cost pricing approach are not accounting costs. The fundamental economic concept of cost is opportunity cost, or the value of the benefits that could have been obtained had the inputs been used instead for some alternative purpose. From this perspective, the cost of, say, a park does not simply consist of any tangible construction and operation costs that might be recorded in some financial accounts. Instead, the relevant cost is the (highest) value that the land could have realized had it been used for some other purpose, such as logging or residential development.

Effective application of the marginal cost pricing principle requires estimation of such social or opportunity costs. Even in principle this may often be a difficult task. Estimating the marginal cost of providing another unit of a particular service requires the identification of all the additional costs arising as a result of this incremental expansion. Congestion in transport facilities clearly gives rise to real social costs, for example, but it may be hard to convert such costs of waiting into

monetary values, as must be done to add them to other relevant costs in order to determine efficient prices.

Even when there are no conceptual problems in measuring the relevant marginal costs, there may be problems of measurability. Often, for example, some relevant market price can be found -- for example, the value of land used for a park if it were to be logged, or built on. But such prices can be used to measure socially relevant marginal costs only if it can be assumed that market prices are good approximations to marginal cost prices. For this assumption to be valid, the market from which the information is derived should be close to perfectly competitive -- that is, with sellers setting prices close to (social) marginal costs (including a normal rate of return on capital). Of course, similar questions must be answered in carrying out a cost-benefit analysis: but that does not make the answers any easier to find, or more convincing, when it comes to setting prices.

If correct marginal-cost based user charges can be calculated, and applied, by definition the amount charged for providing an additional unit of any particular service will just equal the benefit society as a whole obtains from providing that unit. In practice, however, what this means when marginal cost is not constant but rather varies with the level of output is that to determine the appropriate marginal cost-based charge to be imposed at any time in effect it is also necessary to estimate the effects of changes in prices on demand. While there are various methods by which such demand information may be obtained -- for example, by using market information on substitute or complementary activities (e.g. travel costs in the case of recreational facilities) or by carefully-structured surveys (e.g. contingent value analysis) -- as a rule it is even more difficult to get reliable information on demand than on cost.

Apart from defining and identifying costs appropriately, several additional basic issues must be decided in determining efficient marginal cost prices. One of the most important concerns the question of whether fixed costs (investment costs) are to be included. In principle, in order to ensure the efficient allocation of resources, it is clearly *short-run* marginal cost (SRMC) prices that should be imposed. Only when such charges are imposed will existing facilities be efficiently used. But if SRMC charges are used, strictly speaking it must be assumed that the size of the facility is optimal to begin with -- a most unlikely eventuality given the way in which most public sector investment decisions have been made in the past.

What to Do When SRMC Prices are Not the Answer

To be specific, for SRMC pricing to work for capital facilities, one of three improbable assumptions must be made. Either the initial investment decision was made on the basis of correct social cost-benefit principles. Or the facility will never wear out and have to be replaced. Or, finally, the SRMC prices can and will be altered as usage changes. That is, when there is excess capacity, no charge will be imposed, but as usage levels rise, user charges will also rise to reflect increasing congestion costs -- so that when it comes time to replace the facility, the funds will be available to do so. The problem with this solution is twofold. First, as noted earlier, congestion costs are in any case difficult to estimate accurately. Second, even if such costs can be estimated, user charges, once set, tend often to be "sticky," that is, difficult to alter significantly without major political and administrative efforts. Such

efforts are particularly unlikely to prove rewarding when the task is to raise prices to pay for a deteriorating level of service.

If instead, fixed costs are included in the initial pricing calculation -- that is, *long run* marginal costs (LRMC) are used as the basis for setting user charges -- overbuilt facilities will be even more underutilized than would otherwise be the case. Moreover, managers will not be able to benefit from the demand information signaled by observed reactions to SRMC prices. A wide range of public sector activities, particularly those involving large capital investments in infrastructure, may be characterized as facing decreasing average costs. Facilities with large sunk costs and high economies of scale, such as hydro-electric plants and telecommunication networks, are examples. As output expands in such cases the cost per unit falls, at least up to some point. But if average costs are decreasing, then marginal costs -- the cost of providing an additional unit of service -- must, by definition, be below average costs. Applying marginal cost pricing in such cases thus means that the user charge will be less than average cost, which in turn means that efficient charges will result in financial deficits.

How can such deficits be financed? One obvious solution is by general taxes. But why should the beneficiaries of the service in question be subsidized by taxpayers in general? An obvious alternative solution would be to set prices at average costs rather than marginal costs. All costs would then be recovered, but of course with higher prices presumably output would decline, which is (by definition) not socially desirable. Other solutions to the problem of reconciling the efficiency objective of public sector pricing and the need to recover the financial costs of providing public services in as efficient and equitable a manner as possible must therefore be sought, as discussed below. None of these solutions is as economically desirable as SRMC pricing, but some may prove much easier to implement in particular circumstances.

Average Cost Pricing. In practice, some variety of average cost pricing is probably the most common way in which user charges are currently set. Moreover, usually only financial costs are considered, as discussed above. The reason this obviously inefficient practice is followed is presumably simply because such prices are easier to calculate, and perhaps to justify to client groups, than the more correct, but rather esoteric, marginal cost pricing beloved of economists. Although such reasoning is of course quite understandable, and in some instances average-cost pricing may be an acceptable outcome, this solution has its own problems.

As usually applied, for example, the average-cost pricing approach estimates the total financial cost of providing a particular service and divides by the number of units currently provided to obtain the appropriate user charge. There are two major problems with this approach. First, as already stressed, the result will not be efficient. If costs decline as output increases, the price will be too high and the output less than society really wants. If costs increase as output expands, the price will be too low, too much of the service in question will be demanded, and resources will again be misallocated -- especially if the excess demand at the unduly low price is taken as an indication that output should be increased e.g. by new investment. Only if unit costs are constant, so that marginal and average costs are equal, does average cost pricing make efficiency sense.

The second problem with average-cost pricing (assuming costs are not constant) is that setting such prices requires that the responsiveness of demand to price changes must be estimated, which as already mentioned is not an easy task. Suppose a particular service such as a park has previously been supplied free, or at a nominal cost well below any conceivable realistic price. Suppose also that the variable costs related to operating that particular park -- that is, the financial costs that must be incurred in order to keep it open and operating at some level -- can be estimated without great difficulty, and the number of persons currently utilizing the park (at a zero or nominal price) is also known. Clearly, dividing those costs by that number of people is most unlikely to result in full cost-recovery even of the variable costs because almost certainly fewer people will use the park if the price of doing so is substantially increased.

Setting average cost prices to recover operating costs thus requires not only information about how unit costs change as the number of users change but also information on how the number of users will change as prices change. Such information is not easy to obtain, and even if it is available the resulting prices are not likely to result in either an efficient allocation of resources (because of the difference between average and marginal costs) or in any useful information as to whether the park should be extended or eliminated (because the fixed cost aspect has not been factored into the calculation).

Average Incremental Cost Pricing. A compromise approach that may sometimes be useful is average incremental cost (AIC) pricing. Essentially, this approach attempts to calculate the costs incurred as a result of an additional user -- like marginal cost pricing -- but it does so in a way designed not only to result in full cost-recovery (like some versions of average cost pricing) but also to be computationally feasible in the real world of public sector managers. The idea is simply to allocate each element of costs, fixed and variable, financial and (to the extent readily measurable) social, to a particular incremental decision with respect to providing a service and then to assign to each additional user the incremental cost attributable, on average, to his or her usage.

For example, when a vehicle enters a highway at a particular time, the costs attributable to this decision may be broken down into those arising from the addition of one person at this time at this place (e.g. congestion), those attributable to the place (e.g. building the highway to its particular dimensions), and those attributable to the trip (e.g. wear and tear on the road). An approximation to efficient pricing in this case might be some combination of a time penalty at peak times, appropriate charges for cost recovery for road use (e.g. wear and tear, which is exponentially related to vehicle axle-weight, as well as accidents, which are related to driving records), and perhaps some sort of access charge (vehicle license) to recover the fixed cost of highways. Such charges could be levied in part on vehicles (vehicle license), in part on vehicle use (gasoline taxes; tolls), and in part on drivers (drivers' licenses). In each of these cases, the appropriate user charge could be calculated on the basis of available accounting information, supplemented by additional information as needed to take into account important social costs not accounted for in this way (noise, pollution, congestion), and the resulting charges imposed on users as a class on an average basis. Such a system does not by any means amount to marginal cost pricing in the strict sense, but it may be about as close as one can get in practice.

Multi-Part Tariffs. A somewhat similar approach to pricing is through the use of what is called a multi-part tariff. In their simplest form, such tariffs impose a fixed access charge -- for example, for connecting to the network -- and then an additional charge related directly to the amount of use made of the system. (A variant sometimes found in the local context is to charge differentially low (or zero) fees to residents for access to facilities on the grounds that they have already paid for access through their local property taxes.) Such a charge should be as close as possible to a marginal cost price for the usual efficiency reasons.

Such two-part tariffs are used by some public utilities to recover the deficit arising from the fact that total average incremental costs exceed marginal-cost based user charges. When it is easy to identify the characteristics of the users of a public service, multi-part tariffs -- in this instance often called discriminatory prices -- may be useful in achieving efficiency. Suppose, for example, that the responsiveness to price change by two distinct groups of users (say, sports and commercial fishing boats) is known, and is different. The less elastic (responsive) the demand, the higher the price that should be charged on efficiency grounds. Those with more alternatives, who can more easily switch to other services, will reduce demand more for a given increase in prices. The way to maximize efficiency (and in this case also revenue) is to charge more to those who have fewer choices.

Charging what the market will bear may not be considered fair since the rich usually have more alternatives than the poor. Nonetheless, it may provide a useful efficiency benchmark against which to assess the costs of deviating from efficient pricing for distributive or other reasons.

Variable Block Pricing. Another common form of price discrimination is declining block pricing, a practice common in some public utilities. Such pricing is closely related to the common practice of imposing lower unit charges on more frequent users (commuters, park visitors, etc.). The basic idea is that the more you use, the less -- per unit -- you pay.

Such a pricing strategy may make sense for a facility with substantial excess capacity, but even then care must be used to ensure that the extra consumption thus encouraged does not cluster and create a peak-load problem. To illustrate, in the case of a transit system, if the system is underutilized except at peak it may make sense to offer discounts for off-peak travelers, perhaps with the unit price declining the more such travel takes place. But it *never* makes sense to offer similar reductions to the regular commuters who are already straining the system's capacity at peak periods.

As this example suggests, the distributional effects of such pricing may be considered good -- the poor, the old, and students who travel off-peak benefit. Or it may be considered bad -- the poor commuters who must be at work by 8.30 a.m. are penalized. Sometimes public utilities have for distributional reasons introduced what are called "lifeline" block pricing systems, under which an initial small block of service (e.g. so many Kwh of power) is priced much below cost. This approach is more logical than declining block pricing, but, as noted elsewhere, as a rule such distributional considerations should not in the first instance be taken into account in deciding the appropriate level and structure of public sector prices.

Pricing Externalities

Education is easy to price. A large guard could be stationed at the classroom door to keep out those who did not pay. But this does not mean that it necessarily makes sense to charge for education. Even if it does make sense to do so, it may not be economically efficient to charge the entire cost to the presumed direct beneficiaries -- the students. All citizens presumably gain to some extent from raising the general level of education, and this external benefit should be taken into account in setting the price that should be charged for education, as for many other services provided by the public sector at all levels. Indeed, as emphasized earlier, unless there is some element of general public purpose or externality, it is not clear why an activity should be provided by a public sector agency in the first place.

The obvious way to take external benefits into account in setting user charges is to estimate the size of the marginal benefit provided by the service in question to an additional user and then to set the price equal to marginal cost less this external benefit. The resulting financial deficit could then be funded from general revenues. However, this simple strategy faces two major problems.

First, it is almost always virtually impossible to measure external social benefits in any very convincing way. Generally, discussions on this issue tend to reduce to little more than assertions about individual preferences and perceptions. No easy solution can be offered to this problem, except perhaps to note that the few studies that have been attempted of external benefits (e.g. of education) suggest that in most cases they are substantially less (say, 10 to 30 percent) than the share often financed from general sources e.g. through intergovernmental transfers (say, 50 to 90 percent). What is at issue with respect to many public services is often simply increasing the proportion of costs currently recovered by user charges to a more reasonable level. It seems likely that this can often be done without significant reduction in any positive externalities generated by the service.

In the absence of better information, the best way to deal with this question would seem to be to put the burden of proof for large subsidization on those advocating such subsidies. From this perspective, the appropriate initial position in formulating sound public policy is that any public service with an easily identifiable direct beneficiary should be paid for by that beneficiary, *unless* sound and convincing arguments in favour of a particular degree of explicit public subsidy can be produced. This starting point is in complete opposition to that which many countries seem to have adopted, namely, that whatever subsidies now exist are right, so that the onus of proof with respect to any change lies with the proponents of change. This position may not be logical, but it is one with which proponents of user charges almost certainly will have to deal.

The second problem is that it is critical that any subsidy should be paid in the most efficient way. One approach much used in the public sector (e.g. in education and health) is to pay a *supply* subsidy in order to induce providers to lower their charges to direct users. This approach may be administratively convenient, but it has serious problems. For example, if the subsidy paid depends upon the number of

users, inefficient overexpansion may be encouraged. Similarly, the subsidy may go to the wrong people from the point of view of public policy -- for instance, the rich (whose demand for the service is more likely to be elastic) compared to the poor (whose demand is inelastic). Supply subsidies may also result in the provision of "gold-plated" services, that is, services that cost more to produce than society would really be willing to pay if it explicitly had to do so.

If such concerns are thought to be significant, shifting from a supply subsidy to a *demand* subsidy is an obvious possible alternative approach. For example, a tax credit or a transfer payment related to the consumption of the service in question might be directed to (the chosen) consumers. Although potentially important, this possible line of approach is not further discussed here. Alternatively, if supply subsidies are to be continued, they should to the extent possible be pre-determined in the budget process and hence less subject to manipulation by suppliers.

Pricing Local Services

The greatest scope for more and better use of user charges in general is undoubtedly at the local level. As mentioned earlier, in principle, fees could be employed not only for provision of such services as water and sewage but also to some extent perhaps even in such unlikely areas as police and fire protection, for example, by levying charges on companies (and perhaps even households) that have a higher incidence of crime and a higher risk of fire. When no such charges are assessed, potential victims of crime and fires are less likely to invest in safety measures that reduce these risks. The failure to levy user charges where they are applicable not only results in government spending that is higher than it should be, but also in a mix of government spending that does not reflect the real needs of society -- as determined by citizens, rather than bureaucrats.

Of course, even where charges are levied, it is critically important to "get the prices right" and to charge correctly. Often, existing fees are clearly defective. Water rates, for example, are frequently applied as fixed charges independent of the volume of water consumed. Consequently, the marginal cost of consumption is zero, leading to over-consumption of water and over-investment in water capacity. Even when metering of water consumption is applied but declining block rates are used, prices are less than marginal cost for large water consumers, favoring those with large lawns and backyard swimming pools. The fact that sewer charges are usually pro-rated on the amount of the water bill only compounds this pricing error.

Distance from the source of supply, for example, should matter in setting an appropriate user fee, as should the time of year when there are seasonal peaks in demand. The "postage stamp pricing" approach (uniform everywhere) almost never makes economic sense (although it may sometimes be warranted when administration and enforcement costs are taken into account). Generally, user fees should correspond to the marginal costs of providing service to each consumer. To cover capital or fixed costs, a connection (or admission) fee should be charged. Such a two-part pricing policy is a more efficient pricing instrument than a user fee set at the level of average total cost. On the whole, municipal governments should be encouraged to adopt an appropriate fee for services approach to program delivery wherever possible. Many

municipal waste management facilities and parking lots, for example, are seriously underpriced in most countries.

While it is obviously not practical here to go into all the complexities of the many activities just mentioned, some of the possibilities and problems of user charge financing are illustrated in Box 3 by considering a particular case, that of parks. Since parks are a good example of a "retail" service provided in a highly visible fashion to consumers, from one perspective park services would appear to be simple to price. But as is so often the case in the public sector, in reality matters are not so simple, as seen in Box 3. Box 4 sets out the rather different considerations that must be taken into consideration in setting prices with respect to such transport facilities as roads, airports, and docks. And finally, Box 5 reviews briefly the more limited case for pricing such social services as health and education.

The Costs and Process of User Charges

The preceding discussion stressed the often complex and difficult to obtain nature of the information ideally required to design appropriate user charges. In some instances, the costs of obtaining the needed detailed cost and demand information may exceed any conceivable benefits from imposing even the best designed charges. In all cases, such costs, like the actual costs of implementing charges and the (less visible) costs of compliance imposed on those who pay them, should of course be factored into the final determination of what should be charged for and what charges should be imposed. Many public sector activities -- for example, the cost of admitting a person to a park in the off season -- may readily be calculated. But the cost of collecting such a charge may exceed its amount. If so, no charge should be levied. Every road could be a toll road. But the cost of collecting all those tolls -- both the administrative and compliance cost and the related social cost of added congestion -- means that such charging makes no sense.

An additional factor that should be taken into account in determining user charges is the cost of changing public prices once they have been set. At some level the prices set by any public sector agency reflect the outcome of a political and administrative process. User charges are thus inevitably a political institution and hence, like all such institutions, inherently hard to change. Once set, they tend to prevail until political circumstances permit changes. This problem is of course most strongly marked when charges are initially imposed on a service previously provided for free, but it applies to some degree to all changes in public prices. It is in part for this reason that it is particularly important when setting prices in the first place to set prices that come as close as practicable to economically efficient prices. An initial mistake can last a long time.

Since user charges are inevitably politically determined to some extent, it is important from the beginning to provide an adequate process both of consultation with affected groups and of review by the public (and perhaps also by an appropriate central government agency) in order to ensure both that the prices set are reasonable and acceptable, and that subsequent adjustments can and will be made as appropriate. The details of just how this might be done of course need to be worked out with care for each particular area, but a few general principles may be stated here.

First, it is important to set out clearly the parameters within which individual public sector managers can determine prices. What should they take into account? Whom should they consult and in what fashion? To what review, if any, are their decisions subject? Political processes are distinguished from market processes primarily by emphasis on perceived procedural fairness. It is therefore imperative to set out clearly exactly what this means and how it is to be attained with respect to user charge policy.

Second, it is important to provide clear and strong incentives for managers to impose efficient user charges. For example, they may as a result obtain a larger budget or at least one over which they retain more control. Unless there is something to be gained from dealing with the difficult task of designing and implementing such charges, it is not clear what incentive managers have to undertake this task. This problem may be especially important when, as may sometimes be the case, the result of adopting proper pricing policies would likely be to reduce the demand for the service and hence to shrink the size of the agency budget.

Third, if the prices set by a particular agency are subject to central agency review, the principles that will guide such review should be clearly stated and the application of those principles demonstrated clearly to the affected managers and to the concerned public. Public sector managers, by definition, cannot and should be expected to respond solely to the "bottom line" in any financial sense. If they could, the activity in question should not be in the public sector. But they cannot be expected to act efficiently in pursuit of public policy objectives if the lines and rationale of accountability are not made crystal clear.

Fourth, it should of course be made clear to directly affected clients that the real public with respect to any decision about how much should be charged for a particular service is the population as a whole, as represented by their elected officials. This point must be emphasized to offset the inevitable tendency for the only public voice to be heard with respect to charging policy to be that of the direct beneficiaries of the previous policy, who are clear losers. In addition, efforts must also be made to persuade affected groups that the pricing policy adopted is reasonable. To achieve this, the policy must not only *be* reasonable, but it must be persuasively presented as such to a group of people whose natural interests are generally diametrically opposed to user charges. One way to do this may be to persuade the directly affected users that if they do not pay a price reasonably related to the benefits they personally receive the service will not be provided. If they are not willing to do so, then it probably should not be, but in any case this threat must be made credible.

Finally, experience suggests that the major area of general public concern with user charges is related to perceived adverse distributional effects. The most common objection to user charges is undoubtedly that they are "unfair" and "regressive." Such concerns will of course often be raised by directly affected users in pursuit of their own interests; but they may nonetheless be quite real. In reality, however, appropriately designed user charges may be both fair and even progressive. If

taxpayers pay for identifiable public services which they consume, and no one either receives a service without paying for it or pays without receiving a service, this outcome would probably be perceived by many to be perfectly fair. The rich do not, as a rule, pay no more or no less for bread or milk than the poor. Why should they pay more or less for a fishing license?

Nonetheless, less use is made of charges by the public sector than seems warranted in part because many think user charges produce adverse distributional effects. If a service that was previously provided free of charge to everyone will now extract the same payment from everyone who uses it, how can user charges not hurt low-income households? On closer examination, however, this argument is less convincing than may first appear. What happens in the absence of adequate user charges? Who really benefits from a zero-price policy? The answers to these questions need to be carefully examined before the "fairness" of imposing user charges for any particular program can be appraised.

The income profile of the consumers of a large range of government services suggests that upper income households may sometimes benefit disproportionately from the consumption of free, or low-cost, public services. For example, low storage and landing fees at local public docks disproportionately benefit the few households that own private yachts, and most of the benefits from subsidized higher education accrue to upper-income families. There is certainly no presumption that zero-priced public services are necessarily either effective or efficient means of redistributing income, assuming that is what society wishes to do.

If a user charge sufficient to cover marginal costs is introduced, thus ensuring that the value placed by users on the resources used to produce the public service is at least equal to the value that would be realized by using these resources for some other purpose, fewer general taxes -- a significant share of which are paid by the poor and which carry their own economic costs -- would have to be collected. The result of introducing user charges in this case would not be to raise extra revenue but rather, by rationing the demand for public services, to reduce the size of the public sector. Moreover, if properly designed and applied, such user charges might even extract proportionately more from the rich than from the poor. In such instances -- and there may be more of them than seems commonly to be recognized -- the introduction of correct user charges should improve both the efficiency *and* the equity of public sector operations.

More generally, two alternative strategies may perhaps be utilized to alleviate such distributional concerns. The first is to present a detailed and convincing study of the expected distributional effects of imposing user charges. If such effects are not serious, this should be said, and the truth demonstrated convincingly. If, however, there may indeed be some adverse distributional effects, a second approach of admitting their existence and demonstrating what is going to be done to offset them should be followed.

Among the possible offsets might be devices such as "lifeline" pricing schemes (access to an initial basic quantity of the service for everyone at low prices) or compensating changes in general transfer payments. Alternatively, for certain services, some variant of a "smart-card" scheme might be appropriate. Under such a

scheme, all users would access the service using a card, but low-income users would be given a certain initial credit on their cards, thus simultaneously achieving universality (everyone has the same card) and targeting (those who need it have free or subsidized access).

Similar approaches should be taken to other possible areas of legitimate public concern with respect to the possible adverse effects of user charge policies on the achievement of relevant public policy goals. *Either* people have to be persuaded that such effects will not in fact occur, or will be so small that they will not matter. *Or* they have to be convinced that the goals in question can and will be more efficiently and effectively achieved by explicit budgetary subsidies or in some other way. Close attention to such political economy issues may prove to be the key to public acceptance of more rational cost recovery, user charge and pricing policies in the public sector.

Guidelines to Public Pricing

The preceding discussion summarizes a large, complex, and technical literature relevant to the determination of appropriate cost recovery and user charges policies in the federal public sector. Further reading on many of the points raised in this discussion may be found in the attached bibliography. To conclude, the general principles that this discussion suggests should guide public sector managers charged with designing and implementing cost recovery and user charge policies may be summed up in the form of a set of simple guidelines, as follows.

[1] ***Know the product.*** The nature and characteristics of the services delivered by each public program must be thoroughly understood in the terms set out in Box 1 in order to assess the potentially appropriate scope for imposing prices.

[2] ***Know the data.*** If some or all of the services provided appear to be suitable candidates for the application of user charges, the next step is to assemble all the necessary information on costs and usage patterns on a service by service basis, using both financial accounts for costs and surveys or other sources for usage information.

[3] ***Adjust data as necessary.*** If there is clear and strong evidence of externalities, or if other major adjustments to financial data appear necessary to account for differences between accounting and opportunity costs, such adjustments should of course be made. Since, by definition, any such adjustments are inherently subjective to some extent, and hence may be legitimately subject to severe questioning by both clients and central review agencies, it is especially important to be as explicit and clear as possible about exactly what is being done and why.

[4] ***Set the prices.*** In principle, the user charges established should, as noted above, be SRMC prices or the closest possible practical approximation - for example, AIC prices or multi-part tariffs. If the proposed charges deviate substantially from these benchmarks, be explicit as to the reasons justifying the deviations.

[5] ***Justify any subsidy*** that analysis suggests is warranted with respect to specific services. Estimate the amount of the budgetary allocation required and explain how it should be paid and utilized in order not to distort the economic benefits of pricing the

service in question. If some method other than specific budgetary subsidy is recommended, give very good reasons for the recommendation.

[6] ***Consider carefully just how the proposed scheme can be implemented.*** Possible organizational ways of implementing the proposed charges must be considered and the case for the choice of, for example, a special operating agency, vote netting, some form of earmarking, or general fund financing, made carefully, bearing in mind the need to conform to general government policy guidelines with respect to budgeting.

[7] ***Devise a sales plan for the proposed scheme.*** Finally, present a plan for selling the chosen policy of cost recovery or user charges both to the directly affected clients and to the public generally.

Box 1

The Importance of User Charges in Canada

<i>As share of "own-source" revenues:</i>	<u>1974-75</u>	<u>1994-95</u>
All Provincial governments	6.3	5.7
All Local governments	16.0	22.1
<i>Local governments, by province:</i>		<u>1993</u>
Newfoundland	21.9	
Prince Edward Island	34.4	
Nova Scotia		22.4
New Brunswick		31.9
Quebec		19.1
Ontario		18.6
Manitoba		20.3
Saskatchewan		19.7
Alberta		34.8
British Columbia		34.2
Yukon	32.9	
Northwest Territories		63.8

As percentage of local expenditures, Ontario, 1991:

General government	6.9
Protection to persons and property	2.3
Transportation services	28.1
Environmental services	54.6
Health services	6.0
Social and family services	6.8
Recreational and cultural services	23.2
Planning and development	20.4

User charges per household, Greater Toronto Area, 1993: \$1,077

Source: Data from Tables 2, 3, 4, and 5 , R.M. Bird and T. Tsiopoulos, "User Charges for Public Services: Problems and Potentials," *Canadian Tax Journal*, 45 (no. 1, 1997), pp. 66-70.

Box 2

Determining the Domain of User Charges: Some Relevant Characteristics of Public Sector Activities

Publicness (or "non-rivalness" or "subtractability") refers to the impact that consumption by one more user of a particular service has on consumption opportunities of all users. At one extreme -- a "pure public good" -- adding an additional beneficiary has no effect at all on how much anyone else consumes. An additional spectator at an uncrowded fireworks display does not reduce the enjoyment others receive from watching the show. At the other extreme -- a "pure private good" -- if one person consumes a service, there is nothing left for anyone else. If one person eats an apple, no one else can eat that apple. Since one of the main economic rationales for government is to provide citizens with the amounts of public goods they wish, it is not surprising that many important government activities demonstrate marked publicness characteristics. Examples are traffic signals or for that matter roads (up to the point of congestion). But government activities may be found at many points along the spectrum from pure public to pure private goods. Broadly, the *less* public an activity is in the sense used here, the *more* desirable (in efficiency terms) it is to charge for it.

Excludability refers to the feasibility of preventing anyone from consuming a service. To put it another way, if a particular activity is highly excludable in nature, it is relatively easy -- that is, not very costly -- to prevent anyone who has not paid for access from obtaining it. Again, traffic signals provide an example of a service with respect to which excludability is costly, and buses one where it is simple. The publicness of an activity determines to some extent whether pricing is *desirable*; its excludability determines whether pricing is *feasible*. Neither publicness nor excludability need necessarily reflect any inherent characteristic of the activity as such. Sometimes these aspects of a particular public sector program may reflect only the technological means of delivery and hence reflect policy choices.

Economies of scale and **Sunkness of costs**. The first two characteristics referred to the nature of the services provided from the point of view of *consumption*. The next two refer instead to the nature of the *production* process and are particularly relevant to programs which require significant capital investment in infrastructure. A traditional argument for the public provision of certain services has been the sheer size of the initial investment required. When combined with decreasing unit costs as scale increases, efficient private sector provision of such services can be difficult to achieve, essentially because efficient pricing in decreasing-cost industries will not recover full costs. Broadly, the less "sunk" the costs -- that is, the less the difference between the long-term and short-term incremental costs of providing an additional unit of service -- and the less important economies of scale, the easier it is in principle to determine and apply economically efficient charges for the use of infrastructure such as roads and transit systems.

Externalities provide another important reason for public sector provision of certain services which give rise to important benefits (or costs) that are not priced -- perhaps for the publicness or excludability reasons cited above -- and hence may not be fully taken into account by private producers. Education affords an important example. Transport systems provide another instance. As each additional user is linked to a network, all users presumably benefit as the range of potential interchange is thus expanded: this is a positive externality. If this externality is sufficiently valued by society, below-cost public provision or perhaps explicit subsidization of private provision may be warranted. User charges may still be appropriate with respect to such programs, but they must be designed taking such externalities into account.

Social and Political Objectives are presumably satisfied to some extent by everything government does or else it would not (or should not) do it. But of course this aspect is more important with respect to some activities than to others. Perhaps the clearest case is with respect to programs where the sole and only objective is redistribution. Obviously, it makes no sense to think of charging the beneficiaries in accordance with the benefits they receive. Probably most government programs have at least some redistributive effect, often deliberately intended. Again, there would seem to be little role for imposing user charges -- at least with respect to the distributive aspect of the program.

Box 3

Pricing Public Recreational Facilities: The Case of Parks

At least three significant factors that differ from the circumstances in the private sector impinge on the pricing of at least some public parks -- the "heritage" aspect; distributional concerns; and the fact that some services associated with parks (e.g. much of the work of park rangers) is not only not sought by specific clients but may be actively resisted by those who would prefer to cut wood, drive off-road, and hunt free of regulations. In addition to these factors, which may affect both the extent to which park costs can and should be recovered directly from users and the way in which they should be recovered, in many cases there are substantial problems in assessing just what the responsiveness of demand to price changes is likely to be and hence in setting appropriate prices to ensure efficient utilization of park facilities, let alone to guide future decisions with respect to investment in this field.

First, to the extent there is a "heritage" aspect to particular parks, the implication is clearly that there is a high degree of "publicness" associated with their existence, which in turn implies that it is not economically desirable to attempt to recover full costs. In this connection, however, it should be remembered that the costs in question are economic -- opportunity -- costs, not budgetary or financial costs. The financial costs of operating an existing park often seem likely to be less than its opportunity costs (i.e., the economic return the property could yield in alternative uses) -- depending of course largely on the location of the park -- so a cost-recovery policy may still be desirable. If there is reason to think that (efficiently set) financial costs exceed the economic cost, however, some subsidy from general revenues may be required. As always, any subsidies should be pre-determined, that is, not subject to manipulation by recipients.

Second, it is common to have differential pricing of public recreational facilities for distributive reasons. Of course, differential charges may often make sense for many reasons: different park facilities have different costs; demand patterns are different; there are generally peak-load problems; sometimes it may cost more to collect charges than they yield; and so on. But such common practices as differentially low prices to e.g. frequent users, local residents, school children, and seniors all work the wrong way from an efficiency perspective and serve little if any distributional goal. The first economic function of user charges is to ration access to a scarce resource, so prices are most needed exactly when people, and especially perhaps poorer people, are most likely to use the facility e.g. on a hot summer weekend. The second function of prices is to signal how much consumers are willing to pay for access. As a rule the poor are able and willing to pay less than the rich, so they are more likely to be deterred from using costly facilities.

The problem here is essentially one of unequal income distribution, and it can hardly be corrected by such a trivial matter as a lower park entrance fee. Nonetheless, if it is considered desirable to lower prices for certain groups on policy grounds, the correct way to do is not to charge more to other users ("cross-subsidizing") - thus doubling the efficiency costs of the policy - but rather, as in the case of the public good (heritage) argument, to pay out of (presumably less distorting) general revenues an explicit subsidy to the facility related to the number of qualifying users.

Third, it may be possible to charge for the basic regulatory services provided by park staff both in part by adding to the entrance fee -- on the grounds that the immediate benefits of deterring bad users are gained by other users -- and in part by such additional means as treating part of hunting licenses and fishing license fees as in effect a "benefit" (or "liability-based") charge. Such charges may not be administratively (or politically) worth the trouble, but the difference between park enforcement costs and park provision costs presumably at least deserves consideration.

Finally, no matter how park prices are set there will be substantial informational and accounting problems in determining precisely what prices should be set. On the cost side, for example, detailed cost accounting records related to particular activities are needed. More importantly, on the demand side, some evidence with respect to the elasticity of demand - itself a reflection of the availability and price of substitutes, among other things - could be obtained from close analysis of the existing revenues, provided the information available is sufficiently of time and place specific. Additional information could be obtained by analyzing survey data with respect to the complementary private costs (e.g. travel costs) people incur to make use of park facilities, and even by conducting special surveys to determine the "contingency value" that may be placed on parks even by those who do not make direct use of them in any given year.

If such value (or "option demand") is high, then it may be inappropriate to attempt full cost-recovery from direct users. Instead, what may be called for would be either a general fund subsidy as noted above -- or, conceivably, some form of earmarked revenue or benefit tax. To take a somewhat far-fetched instance, a special levy on canoes may be in order if it turns out, for example, that every one who buys a

canoe does so in part because he or she thinks that someday they may use it in a provincial park. In reality, of course, a plethora of such small specific earmarked "benefit" taxes are most unlikely to make sense, and what such evidence may suggest instead may be that -- to continue the example -- canoeists (or whoever) ought to be charged somewhat higher prices as and when they become users than the actual marginal costs to which their use of the facility gives rise.

Box 4

Financing Transport through User Charges

Investment and Pricing

In principle, the variable costs of providing transport services should clearly be recovered by imposing charges on the direct users of such services. Indeed, when feasible, a separate transport fund could be established and run essentially like any other public enterprise, charging prices that approximate to efficient (short-run marginal cost) prices. Recent experience in many countries with "BOT" (build-operate-transfer) systems under which new transport infrastructure is constructed by private entrepreneurs who are repaid by charging for use of the infrastructure and who subsequently transfer the system to the public sector suggests that this "partial privatization" approach is increasingly feasible.

Whatever method is followed to determine pricing and investment decisions with respect to any government program, the critical link between the two needs to be recognized. If prices are too low, demand will expand to the point at which facilities become crowded. Pressure for new investment in facilities will appear. If such facilities are funded from general revenues, they are basically free to users, who of course will want more of them. But if prices are inefficiently low, expanding the service would be a waste of both scarce public funds and the nation's resources. The only solution to this problem is obviously to impose proper charges on users of infrastructure services in the first place.

The basic principles of linking user charges and investment are thus simple with respect to *new* investment: (1) Determine in principle what the pricing structure should be and, given that structure, whether the investment is worthwhile (as assessed by a normal social cost-benefit analysis). (2) If it is worthwhile, make the investment. (3) Then apply the pricing structure.

Where *existing* infrastructure is concerned, in principle, short-run marginal cost pricing will ensure the most efficient use of the system. If the existing investment is optimal -- that is, has essentially been made in accordance with the principles just listed -- user charges designed to reflect such marginal costs will both induce efficient use of that stock and signal when new investment is required. (Note that In order to finance the new investment, SRMC prices would have to increase sharply as facilities became more congested. The practical feasibility of charging increasingly higher prices for an increasingly deteriorating level of service is obviously low.)

In any case, this ideal world seldom exists, so that efficient pricing will give results very different from "cost-recovery" prices. If a facility is underutilized, SRMC prices would likely be below the levels needed to recover even variable costs (properly measured). If it is congested, SRMC pricing would likely produce a surplus over current costs (as required to finance the presumably needed expansion). In neither case is full cost recovery likely to be efficient since the existing infrastructure is probably not optimal.

This is obviously a chicken-egg dilemma (quite apart from the often critical political aspect). How to get there -- the right prices for the right infrastructure -- from here -- where often historical developments have left us with, in effect, the wrong prices for the wrong infrastructure -- is a challenging task. But what can be said with certainty is that it is probably better to be roughly "right" -- that is, to charge some form of roughly economically sensible price (e.g. average incremental cost price or multi-part tariff along the lines set out above) -- than to be clearly wrong (e.g. by making investment decisions in isolation from pricing decisions).

Financing Roads

For these reasons, in most countries the pricing structure of the transport sector as a whole needs careful reconsideration to correct undesirable distortions and to ensure that both public and private sector decision makers make the best use of scarce social resources. Taxes on motor vehicles and motor fuels, for example, can to some extent be considered as "road user charges" and may properly be earmarked through a device such as a road fund to the construction, maintenance, and operation of a road system. In principle, the variable costs of providing road services should be recovered by imposing charges on road users. Indeed, when feasible, a separate "road fund" could be established and run essentially like any other public enterprise, as Switzerland, for example, is increasingly trying to do. Until recently the cost of charging has been thought to make the direct imposition of road user charges impractical. This situation is changing, however, as new techniques of electronic vehicle identification, "smart cards," and so on are developed.

A second-best method of paying for road services may be to levy a tax on motor fuels, and to earmark the proceeds for the construction and improvement of roads and highways. Such an earmarked fuel tax is in effect a crude proxy for a price (user charge) that charges road users the marginal costs of providing road services. While fuel taxes are of course ubiquitous, most countries do not even pretend to finance roads on a user-pay basis. But in an era of fiscal restraint in which public transit is being pressed more and more to "pay its own way" it is becoming increasingly important for roads also to pay their own way. Fuel taxes, vehicle purchase taxes, annual licenses, and direct charges all need to be carefully explored in this connection.

Financing Ports

Ports and marine services offer another example of some of the possibilities and problems of improving cost-recovery and charging policies with respect to services which are provided primarily to a specific, easily identifiable group of producers. In principle, while there are certainly some technical problems -- not to

mention obvious political ones -- few would question that most services to marine transport can and should be priced. Moreover, it is not that difficult to set out in principle how such facilities should be priced. Furthermore, in practice, a wide variety of fees, prices, and charges are already levied for most marine transport services. The problem is thus not, as in many other areas, one of introducing user charges in an area where they are either technically difficult or administratively or politically infeasible. Rather, it is to impose the "right" charges -- and, most importantly, to have them accepted.

On efficiency grounds, the correct pricing rule is always marginal-cost pricing, which in a competitive market will both allocate costs in accordance with benefits at the margin and give correct signals with respect both to the utilization of existing facilities and the construction of new ones to both users and managers. The only convincing economic rationale for charging less than full costs is when too many facilities are already in place. Past bad investment may thus sometimes justify less-than-full-cost pricing in some limited circumstances - *provided* care is taken not to misread the resulting relatively full utilization of facilities to mean more investment is warranted. This caution is much easier to say than to implement in the inevitably political-administrative process of setting user charges, however. Hence, even in these circumstances it might be more advisable from a national perspective to price above short-run marginal cost (thus inducing inefficient under-utilization) in order to obviate the danger of misreading full utilization as a rationale for yet another inefficient expansion in capacity.

Another possible argument for less than full-cost pricing might be that competing facilities (rail, road, air; other countries' ports) are underpriced. This argument too is unconvincing, however. Two wrongs do not make a right but rather result in wasting still more scarce resources; and if other countries are foolish enough to provide subsidized benefits, presumably one should be glad to take them. Of course, to the extent there is a national public policy rationale for maintaining shipping and port facilities at a particular level, even if it is economically inefficient to do so, some degree of subsidization might be appropriate. But such subsidization should not take the form of inefficiently low or distorted prices. Rather, it should be an explicit, pre-set budgetary transfer conditional upon the maintenance of whatever level of service is desired, assuming efficient charges are imposed to recover the balance of the cost. Much the same can be said with respect to the regional development arguments that have long influenced transport pricing. If regions deserve subsidies for some reason, they should get them. But they should not do in the form of underpriced access to costly transport services which waste scarce public and economic resources.

While of course a detailed study would be required to work out just how port prices should be set, a few general remarks may be made based on the principles set out earlier, as follows:

* First, some prices (e.g. berthage fees) are often set to some extent on the so-called "value of service" principle, i.e., basically ignoring the real costs imposed by the use of the facilities and charging what the type of vessel or cargo in question is assumed to be able to bear. Such an approach may of course be quite rational price discrimination policy for a monopoly, and it may

also in certain circumstances -- if demand elasticity is assumed to be inverse to the value of products -- accord with the requirements of efficiency (the Ramsey rule), assuming that the objective of pricing policy is profit maximization.

*Second, levying uniform charges for services that cost very different amounts in different places and for which the demand varies greatly from place to place is certain to be an allocatively inefficient policy. Moreover, such charges are most unlikely to be either efficient or effective ways of achieving any coherent regional development goals. Each port is different, and one would expect the rational level and structure of prices in each port to be different.

*Third, with respect to most transport infrastructure, one of the most critical problems is "peaking" which means that efficient prices will be different at different times. While less obviously true for ports than for airports (or roads), this probably means that seasonal or even daily differences in charges are warranted.

* Finally, and most generally, since the fixed cost attributable to the creation of facilities is usually large relative to the variable cost occasioned by their utilization (at least up to the congestion point), in principle the best approach to full-cost recovery (net of any "public purpose" general subsidy) is probably some form of multi-part tariff. One part might be an "access charge" (e.g. a general port fee), with the balance of the charge being more closely related to usage (e.g. time of use, size of berth, depth of vessel, etc.). Of course, such a system will be economically efficient only if the fixed charge does not induce any customers to drop out of the market completely -- e.g., move to a port in another country -- so it would probably have to be set close to competing international levels.

Box 5

Financing Social Services: Health and Education

Few subjects are more controversial than the prospect, and to a limited extent the reality, of user charges with respect to such "social" services as health and education. It is not possible here to consider any of the complex issues of social and economic policy related to such user charges in depth, but it should be noted (1) that not all such charges are bad, (2) that, indeed, some charges are desirable for various reasons, and (3) that in many instances unless some charges are introduced, the range of policy choices open may be undesirably narrow. Governments are probably right to be experimenting with some forms of user charges for certain social services, along with other and likely more important forms of restructuring education and health finance such as internal pricing for hospital services, school-based budgeting, and moving to demand rather than supply subsidies. Charges are not a panacea, but properly designed and applied, they can help in delivering social services more effectively. Unfortunately, improperly designed charges may hurt not only the wrong people but the reform of health and education finance in general. In no area is it more important to ensure that whatever is done should be done in such a way as to maintain adequate access to such basic public services for all.

In the case of post-secondary education, for example, failure to charge full-cost tuition fees clearly results in an "upside down" subsidy to the rich from the poor. Because students are disproportionately drawn from the ranks of upper-income families, and costs not covered by tuition are financed from general revenues, "free" post-secondary education generates significant income redistribution from the poor to the rich. Indeed, there are few areas of public policy where the case for more reliance on user charges is stronger than with respect to universities and colleges. Yet there are also, equally obviously, important public policy goals that may be realized by post-secondary education institutions, both generally in terms of "external benefits" accruing from a more educated population and specifically in the form of increased research activity and capacity. Most students probably should pay more for their education than required by the financing structure set up in the days of relatively painless growth in general government revenues. But this by no means implies that universities can or should be financed entirely through tuition fees. There clearly remains an important role for both public sector finance -- notably of non-professional graduate studies and research -- and, within limits, other private sector sources of finance e.g. with respect to research. As in the case of health, user charges are only part -- though a potentially important part -- of the solution to the problems of financing education.

SELECTED ANNOTATED REFERENCES

Introductory Note

The following brief list of references may be consulted for more information on the general arguments for applying prices to a wide range of public sector activities as well as on the limitations of pricing as a means of financing public sector activities and the political and administrative difficulties often encountered in introducing charges for services previously supplied "free". Some of these items also contain extensive discussions of the principles to be followed in designing public prices and user charges as well as many examples of the applications of these principles -- or in some instances their non-application -- in a wide variety of particular policy areas.

One of the major lessons to be derived from this general literature is that, while general principles undoubtedly help in deciding what should be priced and what the general form of the prices to be charged should be, specific problems require specific solutions. For the most part, therefore, those seeking specific guidance to the design and implementation of pricing policy with respect to a particular activity -- e.g. recreation facilities or bus fares -- must refer to literature dealing more specifically with the area in question. Unfortunately, it is not practical to review such literature in detail here, but, as noted, some of the items listed contain extensive references to relevant material.

Selected References

R. Arnott et al., eds. Public Economics: Selected Papers by William Vickrey. Cambridge: Cambridge University Press, 1994. Fundamental papers on theory and practice of public pricing by one of pioneers in field: well worth reading for combination of analytical power and close attention to practical detail.

S.J. Bailey, Practical Charging Policies for Local Government (Discussion Paper 20, Public Finance Foundation, London, 1988). Analysis of Canadian experience and its applicability to UK case. Not as "hands-on" as its title applies.

E. Bennathan and A.A. Walters. Port Pricing and Investment Policy for Developing Countries. New York: Oxford University Press, 1979. Excellent example of application of marginal cost pricing approach to an important area of federal transportation policy. For a somewhat different approach, see Haritos and Hildebrand.

R.M. Bird. Charging for Public Services: A New Look at an Old Idea. Toronto: Canadian Tax Foundation, 1976. Broad-ranging overview of scope for, design of, and limitations on the use of charges, public pricing, and earmarking in most areas of Canadian public finance.

R.M. Bird and T. Tsiopoulos, "User Charges for Public Services: Potentials and Problems," Canadian Tax Journal, 45 (no. 1, 1997), pp. 25-86. Updated examination of provincial and local user fees in Canada.

D. Bos. "Public Sector Pricing," in A.J. Auerbach and M. Feldstein, eds., Handbook of Public Economics, vol. I. Amsterdam: North-Holland, 1985. Comprehensive and rigorous survey of theoretical literature on public pricing.

Congressional Budget Office. The Growth of Federal User Charges. Washington, 1993. Recent survey of U.S. practice. Useful background for anyone referring to extensive US-based literature on pricing of particular public sector activities.

Z. Haritos and D. Hildebrand. Civil Marine Infrastructure: Annual Costs and Revenues, 1955-1969 (Ottawa: Canadian Transport Commission, 1973). One of a series of studies in the early 1970s - others covered air, rail, and road transport - which analyze transport infrastructure costs in detail. While out of date, this attempt in effect to provide the basis for applying the AIC (average incremental cost) pricing policy (set out in detail in Z. Haritos, Rational Road Pricing Policies in Canada (Ottawa: Canadian Transport Commission, 1973)) remains of interest.

I.G. Heggie, Management and Financing of Roads: An Agenda for Reform (World Bank Technical Paper No. 275, Washington, 1995). A detailed discussion of all aspects of road financing, including user charges and earmarking.

P.-O. Johansson. An Introduction to Modern Welfare Economics. Cambridge: Cambridge University Press, 1991. A useful brief introduction to a variety of relevant topics: see in particular chapter 8 on various practical approaches to overcome the problem of preference revelation with respect to externalities and public goods e.g. by the use of carefully designed surveys and such indirect measures as travel costs.

C. Kessides, Institutional Options for the Provision of Infrastructure (World Bank Discussion Paper No. 212, Washington, 1993). A detailed discussion of the organization and financing of a wide variety of infrastructure investments. (See also W.F. Fox, Strategic Options for Urban Infrastructure Management (Urban Management Programme Policy Paper No. 17, Published for UNDP/UNCHS/World Bank Urban Management Programme, World Bank, Washington, 1994)).

R.P. McAfee and J. McMillan. "Analyzing the Airwaves Auction," Journal of Economic Perspectives, Winter 1996. Account of important recent experience in applying advanced theoretical ideas to auctioning part of electromagnetic spectrum; useful brief introduction to uses and limitations of auction approach. References to underlying (and often difficult) theoretical literature.

G.M. Meier, ed. Public Pricing for Development Management. Baltimore: Published for the Economic Development Institute of the World Bank by Johns Hopkins University Press, 1983. A useful collection of readings on the subject of public pricing aimed at managers in developing countries but relevant more generally.

S. Mushkin, ed. Public Prices for Public Products. Washington: The Urban Institute, 1972. Useful review of theory of public pricing and applications in a wide variety of areas in U.S. A bit dated but still unmatched in scope in American context: similar in this respect to Seldon (on U.K.) and Bird (on Canada).

P. Portney, "The Contingent Valuation Debate: Why Economists Should Care," Journal of Economic Perspectives, Fall 1994. A good introduction to the subject. See also the accompanying papers by Hanemann and Diamond and Hausman, particularly the skeptical view taken in the latter.

A. Seldon. Charge. London: Temple Smith, 1977. A somewhat polemic but still useful review of the arguments for charging prices in context of many public sector activities in the U.K.

W.R. Thirsk and R.M. Bird. "Earmarked Taxes in Ontario: Solution or Problem?", in A.M. Maslove, ed., Taxing and Spending: Issues of Process. Toronto: University of Toronto Press, 1994. Comprehensive review of case for earmarking user charges and "user-charge-like" taxes, with emphasis on provincial-local public sector activities.

R.E. Wagner, ed. Charging for Government: User Charges and Earmarked Taxes in Principle and Practice. London and New York: Routledge, 1991. Useful collection of mostly theoretical papers on user charges and earmarked taxes; special emphasis on "public choice" approach.