

**Cutting Back by Charging More: What Public Administrators Should Know About
the Demand for their Products**

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Introduction

Interest and growth in user fees as a revenue source has been extensive over the past 5 years. The fiscal crisis of the late 1970's and early 1980's has led practitioners and academics alike to explore user fees as a revenue alternative. Indeed, for cities, user based taxes, fees and charges now surpass the property tax as a revenue source. (Coleman: 1983, p. 5) There is also evidence that citizens accept fee increases. Recent survey data show that when given the choice of increase in fees or taxes, citizens choose fees. (Coleman: 1983, p. 8 and Drake: 1981, p. 25)

A vast literature in a multitude of related subfields elaborates the advantages and disadvantages of user fees. Advocates, most of whom use economic arguments, show how fees improve financial planning, financial structure, and allocative efficiency. Fees also prove consistent with basic notions of fairness. Those who benefit from public services pay for them. On the other hand, critics charge that fees are unfair to low income citizens. Also, the rational (or economic arguments) for expanding user fees "appear simplistic and devoid of social and personal values" (Drake: 1981, p. 20). In addition, despite growing public acceptance, fees are seen as just another way for government to stick it to the taxpayer. (Sansweet: 1979)

"Market Thoughts" and Effective Public Management

Jeffrey Straussman advocates the use of "market mechanisms – price, choice and competition" as ways "to curb expenditure growth and stimulate improved public sector performance". (Straussman: 1981, p. 150) To do this, managers need to think "market thoughts." (Straussman: 1981, p. 153) An understanding of supply and demand is at the heart of "economic thinking". Although public administrators study these concepts they seldom use

them in the context of everyday public management problems. For example, the title of this paper is nothing more than a rewording of the law of demand. As price increases, other things being equal, people reduce consumption. Nevertheless, for many managers the notion of cutting back by increasing price is novel (and vaguely negative).

The purpose of this paper is to present a few basic economic concepts with an eye toward the needs of local public managers. The law of demand, determinants of demand and elasticity are stressed. The theory is presented using a host of examples drawn from local government. Also, rules of thumb drawn from a blend of theory and practice are developed. Local government is the focus because goods and services provided by local government are more apt to fit criteria necessary for user fees application. (Mangum: 1962, p. 267)

The introduction of market mechanisms into local government administration will increase efficiency. Proper implementation of “market mechanisms,” however, rests on the ability of administrators to perceive issues in a market framework. This perception is often missing. Sometimes, even the most basic of economic concepts is “discovered”.

“Experience has consistently shown that a major determinant of the level of demand is cost to the user.” (Huston: 1979, p. 1811)

More often, however, authors discuss concepts without applying them in the context of program implementation. This is a key reason economic arguments have been dismissed as simplistic. Economic principals are not easy to apply, nor are they quickly internalized by administrators.

The use of a market mechanism is a way to deal with fiscal stress and improve efficiency. For example, there is a demand for all publicly provided goods and services. The law of demand can give insights into why and when citizens will change the level of government services desired. Hence, uncertainty in decision making can be reduced and efficiency enhanced. Also, program changes can be evaluated in light of this information.

A change in a user fee can have several effects. Revenue may increase or decrease. Use of the service may fall drastically, very little, or not at all. There may be increased pressure on related public facilities (i.e., an introduction of a fee to a unique downtown park may result in the crowding of suburban parks.) A thorough grounding in a “market framework” should increase an administrator’s ability to anticipate and predict these consequences.

Inside Demand

Demand is a term used widely in a variety of literature. It is often referred to as the level of services citizens desire, want or need. The “law of demand,” however, depicts the inverse relationship between price (P) and quantity (Q) (or service level). In other words, as price increases the quantity of service consumers desire falls. This is a critical point; demand is not service level alone, rather a service level (or Q) given price. It should be noted that if a public service is provided free of charge the law of demand still applies. Price is merely zero. The quantity demanded is at a maximum.

Citizens express their demand for a product through their willingness to pay. If the benefits to the individual are greater than the cost (or price) and an income constraint is not binding, then individuals will register preference by paying a price. (Ferris: 1982, p. 213) Hence, demand has three major determinants, price, quantity and income.

To illustrate the concept, consider a city swimming pool. When the pool charges \$0.25 per child, family A takes the kids approximately twice a week. At \$0.75 per child, the trip is reduced to an average of once a week. Family B, whose income is higher (or, perhaps has more enthusiastic swimmers) is unaffected by the price change. Family C, on the other hand, may forgo trips to the pool altogether. Their children now run through the sprinklers more often, The

market or overall demand for the swimming pool is the sum of individual demand for all consumers. Note that not all families need to cut consumption in response to a price increase for the law of demand to hold. Changes occur at the margin. Hence, in the absence of such factors as an unusually hot summer or area wide growth, the fee increase will result in fewer swimmers at the pool. It should be noted that the increase in fees (\$0.25 to \$0.75) may actually cause pool revenues to decline. This occurs when the percentage drop off in consumption is greater than the percentage increase in price.

Fees can be used strictly as an allocation or rationing device. The most obvious case occurs when quantity is constrained. For example, there may be a limited number of curb side downtown parking spaces. Price can be used as a device to ration these scarce spaces. (Mangum: 1962, p. 127)

Market Failures

If market mechanisms are so helpful why not let the private sector do it all? Simply, the market fails. A system of voluntary exchange will not always allocate resources effectively. Economists use two useful classifications for market failures “public goods” and “externalities”. A police patrol system is an example of a “public good.” The benefits of police protection are not easily *divisible* among citizens. Further, it would be impossible to *exclude* anyone from the benefits of the patrol service. When goods have these characteristics (non-divisible and non-excludable) the market fails. A price system alone would result in too few patrol cars. Under a voluntary price mechanism some “rational” citizens would hide or underestimate their true willingness to pay (preference). The benefits of police patrols to these people would be there whether they paid it or not. This is known as the “free rider” problem. Free riders can only be

eliminated when voluntary exchange is no longer an option i.e., *taxes*. Among other things, citizens in a democracy, reveal their preferences for public goods through the ballot box.

Recently, public managers have begun using surveys as an additional (and more direct) way to investigate citizen preferences.

Very few goods and services provided by local governments can be classified as “public goods”. On the other hand, many goods and services have “spillover” benefits or “externalities.” Spillover benefits occur when the benefits to society are greater than to the individual consumer. In this case, the market does not provide a mechanism for those receiving indirect benefits to reveal their preference. All citizens reap the health benefits of an effective urban trash collection system. In addition, individuals who have their trash hauled away also benefit. Other examples of goods with spillover benefits include: education, libraries, parks, recreation facilities, emergency mental health services, etc.

It should be noted that the “public goods” and “externalities” classifications do not address the issue of providing services to the low income. To complicate matters, often the link between providing services to the low income and externalities is blurred. Hence, the neat theoretical distinction falls short when questions of subsidy are addressed. (Shields: 1983)

Chargeable Goods

If a public service is excludable and divisible it is chargeable. Hence, demand can be revealed through market or semi-market mechanisms. This is not to say that price greater than zero is appropriate (or politically feasible). Rather, the good is a candidate for a charge from an economic perspective.

Services with externalities are usually chargeable. Spillovers can be taken into account by charging less than the market price. Often this will mean a price less than cost. The subsidy is picked up by taxpayers who presumably receive the indirect benefit. Determining the level of subsidy is in large part a political question. Information about the subsidy, however, should be explicit.

As mentioned earlier, the concept of “demand” specifies service level (or Q) given price (P). A change in P will result in a change in Q. It should be noted that the overriding goal of most public organizations is to provide “Q” to its citizens. “Q” needs to be examined closely before “P” (or the user fee) can be determined. Agencies seldom provide a single “Q” but rather a set of services. Coleman suggests services be “unbundled” to determine which are chargeable. (Coleman: 1983, p. 12) For example, police patrol services are “public goods” and are not chargeable. On the other hand, police services such as directing traffic after a sporting event have characteristics of divisibility and excludability. Externalities across services are also not uniform. Libraries do not produce a single “library service”. Rather, a set of distinctive services such as childrens literature, reference material, interlibrary loan, reserve books, loans on current best sellers, computer literature searches, etc. City libraries act as a supplement to the education system when they provide children’s literature. Spillover benefits are obvious. (Pfister: 1981, p. 33) On the other hand, it would appear that the individual is the major beneficiary of computer literature search. The case for spillovers is less persuasive. Further, patrons who use these services often have above average incomes (Huston: 1979, p. 1812).

In a unique project, Hennepin County Minnesota carefully revised its fee policy for human service programs. First, services were “unbundled” into 36 separate categories. Examples include: community nursing, criminal detention, detoxification, emergency care, foster

care, legal assistance and psychotherapy. After separate county wide fee schedules were established (on a sliding scale) services were “re-bundled” to allow for monthly “human service” billing. Also, monthly bills were adjusted to take into account a maximum monthly ability to pay. If these maximums were exceeded citizens were able to extend payments over additional months. (Eckhart: 1980)

As noted earlier, administrators of necessity focus attention on service delivery. The law of demand can be a useful tool for administrators dealing with service delivery problems. It can help administrators anticipate and explain why citizen preference (or consumption) for a public service will increase or decrease. Changes in the quality of services demanded by citizens cause a host of problems for the public manager. When “Q” is increasing, crowding, shortages and long waiting lists may result. There is pressure to increase staff, budget and capital equipment. Crowding can be eliminated by increasing price. The effect can be almost immediate. Richard Bird maintains that this is a key advantage and use for fees. (Bird: 1976) The law of demand is helpful because it can provide guidelines for administrative decision making.

A Change in the Quantity Demanded

When studying “demand,” economists distinguish between a change in demand (or shift of the demand curve) and a change in the *quantity demanded*. Change in the quantity demanded deals with the change in service level (or Q) due to a change in price alone. For example, how much will citizens cut back use of library computer searches, swimming pools, zoos, family planning services, parks, pick up basketball games at city recreation centers, mass transit etc. if the user fee increases? Also, how much water, electricity, and sewer will people consume if rates increase? Given the current fiscal climate, rate and fee increase are and will continue to be

policy decisions facing public managers. Note that when a service goes from free to fee it is nothing more than a movement along an existing demand function from $P=0$ to $P>0$. Quantity will respond, other things being equal, by falling.

One aspect management should be aware of is the responsiveness of quantity demanded to an increase in user fees. The sensitivity of service level (or Q) to a change in user fees is known as the elasticity of demand. When service level is highly sensitive to a change in price, it is “elastic”. Thus, the more elastic the demand, the larger the drop in usage associated with a price or fee increase. On the other hand, if demand is inelastic, it is not very price sensitive. An increase in price, rate, or fee will cause consumption to fall somewhat.

One reason elasticity is so important is its use in predicting revenues from fees after a change in price. When demand is *inelastic* the increase in fees will offset the moderate fall in attendance or usage and revenues will rise. Obviously there are advantages to raising fees when demand is inelastic. A city can cut back and earn more at the same time.

A Change in Demand

When economists speak of a change in demand, they mean a *shift of the demand curve*. Demand curves shift in response to things other than price. Under these conditions, citizens will increase use of outpatient mental health services, swimming pools, yoga classes, city league softball etc. even if price *increases*. Commonly accepted non- price determinants of demands include: consumer tastes and preferences, the price and demand of related goods, consumer income, new consumers and consumer expectations. Increases in demand can lead to crowding, long waiting lists and congestion. Again, it should be noted, when these conditions change, a fee increase may not precipitate a fall off in usage or consumption.

Tastes and Preferences

It is difficult to predict when citizens' tastes and preferences will change. Indeed, the field of marketing deals with this aspect of demand almost exclusively. Nevertheless, an administrator may, with some research, develop rules of thumb that can aid in predicting changes in demand due to changes in tastes and preferences.

For example, during a particularly hot summer, demand for swimming pools may increase. The family that cut consumption when price went from \$0.25 to \$0.75 may feel that, given the heat, two trips a week to the pool is still merited. Alternatively, a cool summer may have the opposite effect. Publicity about the consequences of drunk driving might cause an increase in demand for alcohol abuse services. A higher than average divorce rate may cause an increase in demand for outpatient and mental health services. Society's wide concern with nutrition and exercise might cause an increase in the demand for jogging trails, fitness classes, swimming pools etc. Distinguishing between temporary shifts in demand (fads) and permanent shifts is a difficult problem. Multi-purpose facilities that have flexibility in service provision may be one answer.

Note that a community's tastes and preferences may change significantly over time. For example, neighborhoods of families with children may become communities of the retired. User fee revenues can be used as indicators of change in demand. It is an indicator that operates faster than the ballot box.

An optimal time to increase fees occurs when changes in taste and preferences cause demand to increase and demand is inelastic. In the best of possible worlds, revenues and usage both increase.

Related Goods

Demand for a public service can be influenced by the demand and price of related goods. An administrator who understands these relationships should be caught by fewer surprises. Further, policy alternatives can be evaluated and proposed in light of these principles. Related goods are divided into two categories, complements and substitutes.

Complements are goods such as needle and thread, bread and butter, gasoline consumption and highway usage, sewer and water, parks and tennis courts, residential growth and schools and parks. Sometimes measurement problems make pricing of a good or service difficult. For example, those who use highway and roads should pay for them. Yet, measuring the number of miles a person drives seems impossible. In these instances measuring and taxing or pricing a complement may be a solution. Hence, we tax (or as President Reagan rightly suggested increase the user fee on) gasoline as a proxy for road consumption. Similarly, the outflow of waste water is difficult to monitor. However, except for watering lawns, filling wading pools etc. water used by households eventually enters the sewer system. Winter water inflow can be used to measure waste water.

Any attempt to estimate usage (or Q) based upon consumption of a complementary product must be done carefully. Clearly, the correspondence between the two goods is less than perfect. To the extent they are not perfect, arbitrary transfers of income between citizens will occur. Consider the case of waste water consumption based upon winter water inflow. In this case, citizens who have winter house guests subsidize those with summer overnight visitors. This is an example of a transfer that should not affect city pricing policy. The transfer is small and probably randomly distributed.

Should a once a year extra garbage collection fee be assessed based upon size of lot and number of trees (trees and size of lot as complement to demand for garbage collection service)? This method would appear to be simpler than counting bags of garbage. In this example, however, those who compost and mulch with their leaves are subsidizing those who have it hauled away. Also, those with small trees are subsidizing those with large trees. Clearly, the acceptability of an arbitrary transfer is a question of value. Further, undesirable inefficiencies may occur. People might decide to cut down trees to reduce their fee. On the other hand, consumers of small quantities subsidize those who use large quantities under garbage collection fee systems that charge a uniform price to all residential citizens.

The question of who pays for a city's growth can be a potential nightmare. Paul Downing maintains that those who benefit (new homeowners and/or developers) should pay. This could take the form of a one time fee or an adjustment to a consumer's water bill. The bill would take into account the fact that as distance from the water treatment plant increase, costs increase (Downing: 1981, p. 47). However, these fees may not be politically feasible. A complementary good such as parks and schools built by developers (the cost of which is incorporated into the house) may be a politically palatable alternative (Note, fees based upon careful cost analysis would be more efficient.).

Use of complementary products as proxies, may require well researched rules of thumb. For example, the city may decide that for every X number of single family homes an elementary school or park is necessary.

There is also a relationship between price change and the demand for the complementary products. As price increases, the demand for a complementary product will fall (or shift

downward). For example, higher price housing may mean that the demand for new schools and parks will slacken off.

Substitutes are another kind of related good. Examples of substitutes include: coffee and tea, cars and busses, private and public schools, single family homes and apartments etc. Many services provided by the public sector have private sector substitutes. For example, a citizen may seek counseling at a community mental health center or visit a private psychotherapist. Private health spas are substitutes for public tennis courts, jogging trails etc. The courts have actually developed a special classification for local government goods and services with private sector substitutes. They are known as "proprietary goods". (Valente: 1980, p.36)

The demand for a product is sensitive to changes in the price of substitutes. For example, an increase in the tuition at privately run elementary schools may cause an increase in the demand for public elementary schools. Over time the number of substitutes may grow. Libraries are illustrative. During Ben Franklin's day, public libraries were a major source of community information. Today, they are a tiny fraction of a large and growing information industry. (Gell II: 1979, p.171) In fact, librarians are rather discouraged about "growth" in light of the available substitutes. (Drake: 1981, p.22) As is discussed later, the number of substitutes is a helpful measure in assessing the elasticity of demand.

Income

A change in an individual's income can influence demand. Similarly, a community wide change in income (as with a booming or depressed local economy) can influence the demand for public services. Intuitively, it would seem obvious that as income rises, ability to pay rises, hence, demand will also rise. When this happened, economists classify the good as "normal".

Public sector infrastructure is an example of a normal good provided by local government. A booming economy would increase use (and demand for) streets, sewers, trash pick up etc.

Demand does not always rise as income increases. For example, a low income family may eat beans and corn bread several days a week. As their income rises, however, they would tend to add variety to their diet and decrease their consumption of beans and corn bread. Hence, their demand for beans and corn bread fall as their income rises.

Economists classify goods of this type as "inferior". In the public sector, goods that have a demand which tends to rise as income falls are of the "proprietary" type (have many private sector substitutes.¹ During a recession people must cut back. When a bread winner is laid off items such as private tennis lessons, health club memberships, trips to amusement parks and private schools are likely candidates to be cut from the family budget. Similar needs can be met more cheaply through the public sector. Likewise, when a family is in need of human services (health – mental health) they will look to the public sector. This is a time when "theoretically" fees could be raised (due to the increase in demand). Unfortunately, it is also the time when citizens can least afford a fee increase.

Growth

Demand also shifts as the number of new consumers change. Clearly growth puts stress on all government services. Because of the increase in demand, fees can be raised without a fall off in Q. It is advisable to look at the demographic composition of new citizens. For example, an influx of middle to upper income retirees may cause an increase in the demand for the public golf course. Young families, on the other hand, will demand more schools, playgrounds etc.

This concludes this section on common non-price determinants of demand. Decision makers would do well to keep these factors in mind before raising or introducing a fee.

Unfortunately, non-price determinants do not necessarily act in isolation. For example, a local economy may experience both a boom and an influx of new citizens. Both factors would tend to increase the demand for infrastructure. On the other hand, economic theory would be of less help in predicting the new demand for goods classified as proprietary. Citizens whose income has grown due to the expanding economy may substitute from public to private services. At the same time, however, new comers will put added stress on public facilities.

Peak Load Demand

Demand may fluctuate with season or time of day. For example, water consumption is usually highest in the morning and evening. Swimming pools and parks are busiest on summer weekends. Roads and mass-transit are most congested at rush hour. Public facilities are often judged by their ability to meet peak demand. Allocation of resources to address peak demand leaves slack periods with significant unused capacity. Economists suggest that uniform pricing mechanisms be replaced with a differential pricing mechanism (one for peak and off peak periods). This should smooth out utilization. For example, water pricing by time of day may encourage home bound persons to wash dishes, take showers, do laundry etc. throughout the midday. Remember, market demand is the sum of individual demand functions. When marginal consumers change overall water consumption the system will feel the effect. Recent research by the Rand Corporation has proven that time of day electricity pricing can be implemented successfully (Acton et al.: 1983). Downing suggests yet another advantage. Fees give

management an appropriate expansion signal if price is equal to cost during peak periods.

(Downing: 1981, p.18)

Singapore has an interesting peak pricing system to deal with rush hour congestion. The purpose of the policy is to encourage car pooling and mass transit. Part of the inner city has been designated a “congested zone” during rush hour. Cars with a driver only entering the “congested zone” must purchase a window sticker. Cars without stickers receive tickets. (Higgins: 1977, p.579)

Uniform pricing helps create excess demand during peak periods. “The resulting congestion may be an effective way of creating a coalition in support of an expansion in the capacity of the enterprise” (Wagner: 1983, p. 167). If there is significant unused capacity the expansion would be inefficient. Peak period pricing is a solution long supported by economists. Unfortunately, lack of technology available to monitor peak use and costs of implementation often make peak period pricing difficult.

Elasticity Revisited

As mentioned earlier, elasticity is a measure of the volatility of demand (Wagner: 1983, p. 167). If quantity falls off sharply (is volatile) in response to an increase in price demand is elastic. If quantity is price insensitive demand is inelastic. Managers should use the concept of elasticity to help predict revenue from fees. When demand is elastic a price increase will cause revenues to fall. Inelastic demand, however, will lead to an increase in revenue.

Elasticities can vary along a single demand curve. As surprising as it may seem, the demand for a public swimming pool can be both elastic and inelastic. For example, consider a city with a unique, beautiful centrally located spring fed swimming pool. An increase in the adult

price of \$0.50 to \$1.00 may cause little or no decrease in attendance (e.g. inelastic demand). However a change in price from \$1.00 to \$3.50 may cause a large drop in attendance. At \$3.50 neighborhood pools, apartment pools, local rivers and lakes become relatively more attractive. The law of demand considers Q and P together. The \$3.50 price has moved citizens to the elastic portion of the demand function. Finance administrators should note that large increases in price are more apt to produce this effect (especially in the short run).

Aside from variations in elasticity within a single demand curve, there are variations across types of services. For example, water is relatively more inelastic than library computer searches. There are some common sense rules of thumb that will help an administrator determine the elasticity of demand for a particular service. Demand will tend to be inelastic if the service is 1) a necessity, 2) there are few substitutes and 3) it represents a small portion of the consumer's budget. Conversely, goods or services with elastic demand tend to be 1) luxuries, 2) have many substitutes and are 3) priced such that they represent a large portion of the consumer's budget. Trash collection is an example of an inelastic demand. It is a necessity, there are few substitutes and the charge is a small portion of most consumer budgets. On the other hand, tennis courts in a city with many recreation facilities (both public and private) would tend to be relatively less inelastic.

Knowing substitutes and their price should help an administrator evaluate elasticity. If the city has a near monopoly on facilities, demand will tend to be more inelastic. For example, if a city controlled a majority of useable softball fields the demand for city league softball would tend to be relatively inelastic. If charges are very low, demand is apt to be inelastic (small percent of consumer's budget). Arrington and Jordan found, in their survey of willingness to pay per capita

cost, that some low cost services that might be regarded as frills (museum) were given strong support. (Arrington and Jordan: 1982, p. 170)

A final note, as mentioned earlier, goods that are necessities are more likely to have inelastic demand. Low income citizens may be profoundly affected by an increase in a fee of this nature. The benefits of increased revenue may be offset by undue hardships upon the poor. It is thus advisable to consider explicitly the impact on the low income when evaluating a fee schedule change.

Regulatory Activities

Local governments perform a host of other activities that can be classified as “regulatory.” Many of these activities can use price or quasi-price mechanisms. Further, “market thoughts” might prove useful in evaluating policy changes. State and local regulatory functions are a grab bag of activities. They are outside the public/private good classification system and are “generally undertaken to ensure the public safety, health and welfare” (Glisson and Holley: 1982, p. 4). Items such as building permits, wiring permits, plumbing permits, subdivision permits, dog licenses, license to fumigate buildings etc. are examples.

When a citizen waters his lawn he is benefiting directly from the water. The benefits of regulatory activity are seldom enjoyed directly by the person who purchases the license etc. Obviously, the person purchasing a building permit does not benefit in the same way as the person who waters his lawn benefits from the water. The benefits (or reduced costs) accrue to society. Hence, government in some sense “sells” through license or special tax the “right to conduct an activity which imposes cost upon society.” (Mangum: 1962, p. 127) For example,

fires caused by faulty wiring are a serious threat. There is no guarantee that safe procedures will be followed. Hence, wiring permits serve to reduce the risk of this type of fire.

“Regulation” may have yet another purpose. It may simply be a way for government to share in the profit of a private enterprise as with taxi licensing. (Downing: 1981, p. 4) Owners of a license may also benefit if the license serve to limit competition and thereby increase potential profits.

The demand for regulatory activity is tricky to assess. The disparity between individual benefits and individual cost causes the problem. Given this disparity, license or fee avoidance is a potential problem. Avoidance may be widespread. For example, the University of Texas at Austin discovered that less than 25 percent of the bicycles on campus were registered. As the price of the license or permit increases and/or the inconvenience of purchasing it increases the incentive to avoid payment increases. The likelihood of being caught avoiding the license/fee and the penalty associated with non-compliance also influence avoidance decisions.

Paradoxically, at the same time, some regulatory activities could be viewed as having highly inelastic demand. For example, the law may state that a fumigating company must hire a minimum number of employers who have been tested and certified as properly trained in the safe use of pesticide. The only source of certification is government. The license, then, is a “necessity” without “substitutes”. These are two of the criteria for inelastic demand. If the fee is small relative to a firm’s overall budget the third criteria is satisfied. Further, if government limits the number of licenses available (liquor license) demand would tend to be even more inelastic.²

When assessing a potential license increase special care must be taken. If the goal is to influence behavior and potential costs to society are high, an increase in a fee may be harmful (Wiring permits that are ignored because the license has been raised may lead to increased fire hazards.). On the other hand, careful examination may reveal inelastic demand, a high likelihood of compliance and few inequities. Hence, this would be a good candidate to use for raising revenue. A reminder, as the license increases it becomes more likely that citizens will move from the inelastic to the elastic portion of the demand curve. If this happens, revenues will fall and non-compliance with the regulation jumps.

Implication for User Fee Policy

In the previous section key concepts surrounding the law of demand were discussed. In this section, theory and practice are blended. Specific implication useful to public managers will be developed.

Demand Factors

1. Increase Price Slowly

The public more easily accepts price changes that occur in small steps (compared to a large jump). This was strongly recommended by Zajac in his study of public utility pricing. (Zajac: 1978, p. 51). Recreation fee increases also seem to follow this trend. The town of Concord, Massachusetts, facing a fiscal crisis decided to have all recreation activities pay for themselves. In some cases, recreation registration fees doubled. Even though the recreation fee doubled, it was still below comparable private services. Hence, management did not expect

registration to decline markedly. Unexpectedly, registration fell off drastically. The finance director of the town concluded that it was the “shock of the fee increase rather than the actual level,” which caused the tremendous drop in registration. (Logalbo: 1982, p. 19) This suggests that the short run demand for recreation is highly sensitive to large jumps in price (elastic demand).

2. To Increase Revenue from Fees, Increase Fees when Demand is *Inelastic*

This point has been discussed several times in the text but merits highlighting. Services will tend to be inelastic if they are 1) necessity, 2) have few substitutes and 3) represent a small portion of the citizen’s budget. Unfortunately, it is rare for a service to have all three of these characteristics at once. If elasticity estimates are not available, managers must weigh the importance of the three factors mentioned above. There is evidence that if fees are very low (even if the good is not a necessity nor without substitutes) that demand will be inelastic. (As long as price is not increased dramatically.)

3. Peak Period Demand is Inelastic

As demand can fluctuate with time of day or season so too can elasticity. During peak periods, demand is inelastic. (Wagner: 1983, p. 167) At this time choices are constrained. For example, people must use the road at rush hour, air condition in the summer, use parks on the weekends etc. Peak period pricing then has two immediate advantages. First, it smoothes out demand. Second, it generates increased revenue.

4. Unbundled Q

Local governments provide libraries, police, recreation etc. These services do not represent a single service but are composed of several discrete services. As mentioned earlier, if a good or service is divisible and excludable it is chargeable. Services should be unbundled and assessed using these criteria.

“Chargeable” services should then be evaluated according to their spillover benefits. Richard Pfister, in his study of library fees, maintains that libraries should levy fees when benefits accrue primarily to the individual. (Pfister: 1981, p.34) Many public services, however, generate significant spillover benefits. In this event, Coleman suggests that the “price of a service should reflect the full cost of that part of the service determined to be of individual benefit in contrast to community benefit”. (Coleman: 1983, p. 7) Unfortunately, comparing community versus individual benefit is ambiguous at best. Also, there is little reason to believe that spillovers are uniformly distributed.

5. A Large Fixed Cost Component Causes Difficulties in Responding to Changes in Demand

A local government’s ability to respond reasonably quickly to changes in demand is a norm by which its effectiveness can be judged. Managers should understand that the very nature of the product itself can influence responsiveness. The ability to meet increases in demand is limited, once building have been constructed and equipment purchased (police cars, road maintenance vehicles). “This limitation is more severe for structures such as water treatment plants and bridges than it is for services like police.” (Downing; 1981, pp. 10-11). Hence, the larger the fixed cost the more important planning and forecasting become as a tool to maintain responsive local government.

Equity Factors

6. Assess Possible Cross Subsidization

Users fees are based upon the theory that those who benefit pay. This occurs fully only when fees cover all cost. If services are free or priced below cost and have characteristics of “divisibility” and “excludability” then non users are subsidizing users.

Residents vs. Non Residents

Sometimes city services are used by citizen and non resident alike. If an entry fee does not cover full costs residences are subsidizing non-residents. The tourist industry (motels, restaurants etc.) may support non-resident subsidization. Non-residents generate income for hotel/motel and restaurant owners. Also, tax dollars are generated through hotel/motel and general sales taxes.

What criteria should managers use to deal with this dilemma? First, management should determine whether fee increases will reduce significantly the income of any group of residents (e.g. motel owners). Second, what is the impact on tax revenue. In other words, are the benefits of a fee increase greater than the costs? Clearly, political costs cannot be ignored by the pragmatic administrator. Here, again, elasticity is a useful evaluative tool. For example, should a city increase fees for a state wide weekend softball tournament. If demand is inelastic the answer is undoubtedly “yes”. Inelastic demand means that attendance will not drop markedly when a fee is increased. Further, if current fees are below well attended events of surrounding areas the answer is again “yes”. Here affected firms can be reasonably assured that fee increases will have only a nominal effect on their business. If demand is estimated to be elastic, fees should probably

remain unchanged. (note that motels are *complements* to state wide, weekend softball tournaments).

Often there are no tangible benefits associated with subsidizing non-residents. When Travis County, Texas dropped financial support of Austin libraries the city of Austin found that it was subsidizing county library users who lived outside the city limits. Hence, a \$24.00 non-resident library card fee was instigated. The City of Concord, Massachusetts, found when reviewing revenue sources in the wake of Proposition 2 ½ that its water pricing policies subsidized non-residents. (Lagabo: 1981, p. 18)

Users Who Consume Large Quantities vs. Small Quantities

When a service is free individuals who consume very little or none of the service subsidize those who take advantage of the service in great quantities. Further, when a uniform pricing scheme is used that reflects average cost this type of subsidization also occurs. For example, a monthly uniform trash collection bill does not take into account the fact that some families generate more trash and hence, costs of collection are greater.³

Variation by Income Level

Federal government programs such as AFDC, Public Housing, SSI, Food Stamps and Medicaid all involve a form of transfer from the middle and upper income to lower income individuals. Likewise, city services can be priced in such a way that income is transferred from one group to another. These transfers should be considered explicitly.

It would appear reasonable to change price structures when middle and upper income citizens are being subsidized by low income citizens. Although this seems unlikely, it happens.

For example, middle and upper income citizens are more likely to use golf courses. Libraries serve primarily white, middle class, college educated women. In addition, the primary purpose for library use is recreational. (Drake: 1981, p. 24). This is one reason that one can find within the library science literature individuals who advocate selective use of fees. (Gell: 1979b: p. 173)

7. Consider any Subsidy Explicitly

There are two major reasons that a “chargeable” good is subsidized. First, if there are significant spillover benefits, using this principle, everyone is better off if the service is subsidized since without a subsidy it would be under produced. Second, services are subsidized because low income individuals cannot afford to pay the full cost. The decision to subsidize should be made explicitly.

When considering or evaluating a subsidy, managers should ask these questions:

1. What services should be subsidized?
2. What is an appropriate subsidy? (Perhaps, more pragmatically, what is the current subsidy and how should it be changed.)
3. Who should be subsidized? (Should allowances be made for differences in income?) (Shields: 1981, p.21)

This complicates analysis because fees for activities with substantial spillovers should be below cost for all.

8. Devise Ways to Serve the Low Income

Charging fees and serving the low income need not be inconsistent. There are ways to incorporate the “ability to pay” notion into a fee structure. It is best to consider each service individually to determine which alternative should be employed. Seven methods will be briefly

outlined. They are (1) sliding scale, (2) free for all, (3) price differentiation, (4) minimum service level, (5) payment-in-kind, (6) community support, and (7) payment over time.⁴

Sliding Scale The sliding scale is a traditional method used by human service agencies such as community mental health centers. Information concerning income, assets, number of children etc. is collected and a fee adjusted for income differences is set. Sliding scale fee schedules require accurate income information that can be easily updated. It is well suited for services that require detailed records.

Free to All Given the needs for detailed accurate information and potential stigma associate with sliding scales, some services might be best provided free for all. This works best when externalities are high.

Price Differentiation This method overcomes many administrative problems associated with the sliding scale. Instead of classifying citizens by income substitute groupings are used. Common classification criteria include participant, product, place and time. (Howard and Crompton: 1980) Since children, the handicapped and elderly often have lower than average income they could be charged a lower price. Recreation centers might differentiated by time designating certain days “free days”. Also, pools in low income neighborhoods could charge lower fees.

Minimum Service Level In this case, all citizens would be guaranteed a free or subsidized minimum service level. A fee would be charged for additional service. (Wilcox and Mushkin: 1972).

Payment-in-Kind Citizens may be able to compensate agencies through payment-in-kind activities. Volunteer work is a good illustration. For example, administrators of battered women's centers often use former residences as effective volunteer counselors.

Community Support Revenues can be generated by activities such as bake sales, dances, concerts etc. Community members may organize or volunteer time and materials for such events. Recreation centers in low income areas may opt to generate revenue through these methods.

Payment over Time Citizens employ payment over time techniques to finance private sector goods such as cars, houses, appliances, etc. Why not the public sector? The cost for certain human services can be estimated fairly accurately. For example, family therapy is often concluded in ten sessions or less at a cost of say \$45.00 a session. Frequently, families are unable to pay the total cost at the end of each visit. They may, however, be able to pay for the service over a period of months.

Administrative Factors

9. Assess Fees Annually

A major benefit of the market is its ability to adjust spontaneously to change in supply and demand. This is not a characteristic associated with government. An effective annual fee assessment system may be a second best alternative. Fees can be adjusted to take into account changes in demand and increases in cost.

Determining the Demand for Public Service

How then can a manager *measure* the demand for a public service? Obviously, precise demand information is useful to public managers. It should be noted, that even without exact information the preceding rules of thumb should aid in decision making. Demand can be observed directly or estimated through surveys. Both methods, however, have their drawbacks.

Observing Directly

This method involves collecting information on “P” and “Q”. First, goods and services should be unbundled as much as possible. Refined schedules should be developed (monthly, weekly, daily data etc.) Decide what data you need then collect it. Beware of information overload. Sample estimates based upon proper sampling principles may be used.

Since initially “p” does not change, this step essentially involves collecting quantity data e.g. attendance at pools, number of interlibrary loan requests. If price is differentiated, separate schedules should be developed. Hence, separate information should be collected for children, adults and the elderly if different prices are charged. If peak period pricing is employed a separate schedule for peak and non peak periods is necessary.

Information should be disaggregated as much as possible. For example, each swimming pool or library in the city should keep its own records. Peak usage periods should be noted for potential adjustment. Also, as mentioned by Glisson and Holley characteristics of the population served should be noted. If past data on fees and attendance are available more extensive analysis is possible. Elasticity can be investigated. Note, price must change before elasticity can be monitored.

The “law of demand” (“Q” increases as “P” decreases) applies only when “other things are held constant”. As all managers know, this does not happen in the real world. Hence, the price quantity data collected in a fee schedule will not allow a manager to distinguish between a shift of the demand curve (change in demand) and a movement along the curve in response to price (change in quantity demanded).

However, if price, say over a year, is relatively constant and quantity increases there is reason to believe demand has shifted. For example, if in year 1 weekly attendance at a swimming pool is 700 and it rises to 900 a year later it would be safe to assume that demand has shifted (increased). This would be true only if price was constant or increased. If the fee had been lowered and attendance jumped the increase is probably due to the fee change.

What would cause attendance to increase with price increases? The non-price determinants of demand hold a clue. Has the number of people in the pools services area risen (growth)? Has the price of substitutes such as movies, bowling, private pools etc. increased (change in price of substitutes)? Is it a particularly hot summer (change in tastes and preferences)? Is the shift likely to be short run or long run phenomena (hot summer vs. growth). Clearly, “market thoughts” can provide management with a useful framework to evaluate problems.

All in all, however, analysis of a demand schedule cannot answer key questions about externalities and how to meet the needs of low income citizens. Also, exact elasticity estimates are difficult since things are seldom held constant. More sophisticated measures of demand can be estimated. Regression analysis is usually employed. This is a task for staff trained in econometrics or a consultant.

Surveys

Surveys can also be used to estimate citizen preferences. Often, well organized, special interest groups have disproportionate power over city allocation decisions. A properly constructed and administered survey has the potential of giving information about preferences of *all* citizens. (Ferris: 1982, p. 213)

There is evidence, however, to suggest that people will hide their preferences. Citizens know that an increase in fees seldom is accompanied by an increase in the quantity or quality of service. Hence, they view it as an increase in cost without a corresponding increase in benefits. Citizens realize that questionnaire items about increased fees may mean fees will be going up. There is, hence, an incentive to hide true preference in an attempt to keep fees down. Further, people just don't know how often they will be using a service. For every family that plans 2 trips a week to the pool there will be several others who make spur of the moment decisions. And, these families can have a profound effect on pool usage.

Librarians for the State of Texas became concerned about the cost of interlibrary loan. The unit cost was \$10.66. (Seidenberg: 1982, p. 21). Currently the service was free of charge. A survey was mailed to 1200 interlibrary loan users. One hundred forty eight returned the survey. Respondents were asked how much they would be willing to pay for interlibrary loan services. They were also asked questions about satisfaction with the service. Although almost 90% of those who returned the survey were satisfied and 93% would use it again, only 10% were willing to pay \$5.99 or more for the service. Also, the results varied little by income level. (see Table 1)

Table 1

“HOW MUCH WOULD BE WILLING TO PAY TO HAVE
YOUR INTERLIBRARY LOAN REQUEST FILLED?”*

Price range	Income Level				Total
	Under \$10,000	\$10,000- 19,999	\$20,000- 49,999	\$50,000+	
\$0	0%	3%	0%	0%	3%
\$0.01 – 2.50	65	55	69	57	63
\$2.51 – 5.00	23	21	25	29	24
\$5.01 +	12	14	6	14	10
Total	100%	100%	100%	100%	100%
(Number)	(17)	(29)	(51)	(7)	(104)

*Percent Distribution

** Note that 148 people returned the survey. Only 104 respondents gave information on these two variables.

Source: Maria Atkission and Kay Frels, Analysis of Interlibrary Loan Users Survey (Paper submitted to Political Science 5304, The Scope and Methods of Public Administration, Southwest Texas State University) 1982

Conclusion

Choice is at the heart of economics. How should scarce resources be allocated? This is of daily concern to public managers. This paper was designed to help local public managers better understand one aspect of this important decision making tool. Clearly, “supply” is the other side of the coin. That, however, is the subject of another paper.

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¹ "Given the negative connotation associated with the word "inferior" for purposes of this article "proprietary" will be used for government services which have characteristics of an inferior good."

² Note that the author is not advocating this restriction. Rather, she is pointing out the effect on elasticity. Obviously, inefficiencies are introduced when competition is limited by government.

³ See Zajac and Downing for a detailed discussion of the problems with average cost pricing.

⁴ See (Shields:1981, pp. 21-23) for a more detailed discussion of these techniques.