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THE PRIVATE PROVISION OF PUBLIC SERVICES AND INFRASTRUCTURE

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EXECUTIVE SUMMARY

The establishment and expansion of private enterprises and deregulated markets in the less developed countries (LDCs) is one of the Agency for International Development's (A.I.D) policy goals.

The purpose of this study is to investigate the desirability of accomplishing A.I.D.'s private enterprise policy goal by the substitution of private for public supply of goods and services that are typically thought of as being the sole responsibility of the public sector.

The major findings of this study are:

·There is considerable theoretical support for the proposition that private supply generates more output per dollar of input than public supply.

·Empirical evidence, from over thirty categories of so-called public infrastructure and services (birth control programs, building maintenance, education, hospitals, housing, parks, ports, postal service, prisons, refuse collection, streets, urban transit, wastewater service, water supply, etc.), strongly supports the theoretical proposition that private supply is more cost-effective than public supply.

Based on the theoretical and empirical findings about private versus public supply of public infrastructure and services, the following recommendations are made:

·A.I.D. and particularly the Bureau of Private Enterprise (B.P.E.) should expand the scope of their private enterprise promotion and assistance programs to specifically include the private provision of public infrastructure and services.

·A.I.D. and particularly the B.P.E. should immediately attempt to engage in some public infrastructure and services privatization demonstration projects.

·Given the lack of reported comparative cost data on private versus public supply of public infrastructure and services in the LDCs, A.I.D. should support efforts to systematically collect, analyze and report comparative cost data from the LDCs.

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INTRODUCTION

Over the past fifty years, governments have assumed a greater role in the economic affairs of most nations. There has been more emphasis on macro economic planning and management. In addition, public sector budgets have grown in absolute terms and also in relation to the size of private sector activity. This growth has been the result of rapid increases in welfare programs, military expenditures and a vast increase in the range and scale of so-called public infrastructure and services. In addition, the less developed countries (LDCs) have increased the scope of the state by embracing the concept of an entrepreneurial state; one that is allegedly the engine of growth and devlopment, and one that attempts to achieve growth by either operating nationalized industries or intervening heavily in the operation of private firms (state capitalism). Of course, some countries have voluntarily, but usually involuntarily, adopted socialist and communist economic systems for ideological reasons.

This trend toward more government involvement in the economy has begun to be seriously questioned. Indeed, there have been attempts to rely more heavily on deregulated free markets for the allocation of resources. This study addresses certain aspects of this new movement toward privatization and the private provision of so-called public infrastructure and services. In doing so, emphasis is placed on the theoretical and empirical lessons that can be used by the Agency for International Development (A.I.D.) to assist it in implementing privatization of public infrastructure and services in the LDCs.

New Trends

President Reagan in his first economic report, The Economic Report of the President (February 1982), made his position on the appropriate roles of the public and private sector clearly known. The President stated that "My economic program is based on the fundamental precept that government must respect, protect, and enhance the freedom and integrity of the individual. Economic policy must seek to create a climate that encourages the development of private institutions conducive to individual responsibility and initiative. People should be encouraged to go about their daily activities with the right and responsibility for determining their own activities, status and achievements."

A.I.D. has responded to the President's policy goals by engaging in a variety of general discussions with officials from LDCs who have expressed an interest in privatization (Muscat, 1984). Moreover, A.I.D. has established a Bureau of Private Enterprise (B.P.E.). The B.P.E. not only tells the private enterprise story, but it also finances feasibility studies for private projects, makes loans up to 25 percent of total project costs (not to exceed $2.5 million), assists private firms in organizing the remaining non-A.I.D. debt and equity capital requirements for their projects and also assists in the transfer of technology and management know-how.

By changing its programs to meet the President's policy goals, A.I.D. has begun to reflect broader changes. For example, academic work in the field of economic development has changed over the past decade, from being almost completely dominated by interventionists to being influenced, to a considerable extent, by those who advocate less state

ownership and intervention (Krauss, 1983). The influence of this change in academic thinking has not been limited to A.I.D. It has, for example, been reflected in recent works sponsored by the International Monetary Fund (I.M.F.) (Berg, 1982). The World Bank's World Development Report 1984 also, to some extent, accommodates some of the most recent free market analysis about the LDC's economic development problems.

In addition to the changes in academic thinking about economic development, there have been a variety of factors that, from a practical point of view, have accelerated the implementation of privatization policies (Glade, 1983).

·I.M.F. stabilization policies have acted, through conditionality requirements, to put pressure on many nations to shrink their budgets and also to adopt policies that would foster the efficient use of resources and consequent growth. Although conditionality does not typically require privatization, this policy often becomes the most logical means of satisfying the I.M.F.'s constraints.

·Both the World Bank's and A.I.D.'s programs have become more open to the possibilities of partially or, in some cases, completely privatizing some activities. This openness has, if nothing else, resulted in an environment in which major international organizations have not retarded moves to privatize, and in some cases it has atcually resulted in international organizations encouraging privatization.

·Changing views about the sectors that are vital to economic development have also acted to encourage thinking, if not acting, about the privatization option. For example, instead of focusing policies on conserving foreign

exchange by protecting domestic industries from foreign competition, many LDCs have begun to focus on earning increased foreign exchange through export expansion and growth. This has resulted in efforts, including privatization, to make the LDC's economies competitive in international markets.

·Privatization has often resulted from a dramatic change in attitudes, by some, about the role of multinational firms. It is becoming clearer that multinational firms transfer more than investment capital to LDCs. Multinationals are also an efficient means of transferring technology, management skills, information, access to markets and entrepreneurial skills to LDCs (Krauss, 1983).

·In some cases, privatization has resulted from nothing more than the implementation of on-going rolling privatization policies (Glade, 1983). Under these policies, the state originally invests in public enterprises, with the intention of privatizing them, when they become viable. It should be mentioned, however, that this strategy, as does the infant industry's justification for protection, often becomes difficult to implement because vested interests become intrenched and do not favor privatization.

·Often, even before the I.M.F. has entered the picture, LDCs have attempted to put their fiscal houses in order by adopting privatization policies.

If these trends affecting the LDCs were not enough, there have been strong privatization movements in several developed countries, most notably the United States and the United Kingdom. Privatization has been most visable in the U.S. at the state and local level. Faced with reduced transfers of funds from the federal government, voter disapproval for new

bond issues and growing hostility to increased taxes, state and local politicians have, in many cases, been forced to turn to the private sector to provide so-called public infrastructure and services. In other cases, politicians have privatized activities simply because they realize that private supply is cost-effective.

At the federal level, privatization is a policy of the current administration. For example, President Reagan signed Executive Order 12348 on February 25, 1982. This order established a Federal Property Review Board as part of the Executive Office of the President. The purpose of this board is to privatize surplus real assets owned by the federal government. To date, however, the administration has moved slowly to implement its privatization policy.

In addition to the current administration's interest in privatization, we should mention that the President's Private Sector Survey on Cost Control (PPSS) has produced a privatization report and made privatization recommendations that it estimates would save the federal government $28.4 billion over the next three years (PPSS, 1983). Federal legislators have also played a part in the privatization movement. For example, the federal government is presently engaging in about 11,000 commercial activities that are also being performed in the private sector. Excluding postal workers, about one in every four federal employees is engaged in these activities (Hanke, June 6, 1984). A bill (S.1746) is currently being debated in the Senate which would outlaw most of these federal commercial enterprises. Senators and Congressmen are also debating the merits of federal privatization in the Joint Economic Committee, where Senator Steve Symms is holding a series of hearings on "Privatizing the Federal Government."

Much the same as state and local governments in the U.S., Prime Minister Margaret Thatcher has actively implemented a wide-ranging privatization program in the United Kingdom (Brittan, 1983). Over the past five years she has privatized several hundred public enterprises by using 23 different methods (Beesley and Littlechild, 1983; Klein, 1984; Littlechild, 1983; Webb, 1984).

Project Purpose and Scope

The purpose of the present study is to examine the theory and empirical evidence about private versus public provision of so-called public infrastructure and services, and to draw conclusions from this examination for A.I.D.'s strategy to assist in implementing privatization.

Most public infrastructure and services in LDCs are supplied by the public sector. These operations have been characterized as being wasteful and inefficient, usually not operated with even the minimum standards for financial performance (Glade, 1983). This study is limited to addressing the privatization opportunities for these public infrastructure and services, a field that has not been systematically addressed by A.I.D., but one that potentially holds great promise for innovative privatization in the LDCs. By focusing on these functional areas, this study adds yet another dimension to A.I.D.'s general policy of attempting to encourage private enterprise. The privatization examples contained in this study offer a set of "talking points" for use by A.I.D. in its deliberations with representatives from LDCs who wish to know more about the functional areas in which privatization has been applied and what its results have been. In

addition to offering A.I.D. insights into new potential areas for privatization, the study offers advice as to how privatization in these areas can be implemented, particularly in the LDCs.

THEORY

Perfectly Competitive Markets and Market Socialism

Perfectly competitive markets and market socialism represent theoretical models that explain how economic efficiency in the allocation of resources can be obtained under private and public ownership, respectively.

Perfectly competitive markets, according to standard neoclassical theory, work in the following way: consumers maximize their utility functions subject to a budget constraint that is determined by individuals' income and the prices of commodities. Income is determined by the quantities of resources offered and prices received for them by their owners. Prices are determined in competitive markets, so that individual purchases of outputs or sellers of inputs are always price takers who have no control over market prices. Nature constrains the stock of resources in the economy and the state-of-the-arts constrain the technology. Subject to demand and cost conditions business enterprises attempt to maximize profits and produce output in a least-cost manner, so that the present value of the firm's assets are maximized.

The market socialist model of resources allocation (Lange, 1936; Lerner, 1936) is basically the same as the perfectly competition market model, with the exception that resources are publicly owned and prices are determined centrally by technocrats who set them equal to marginal costs.

Both of these models operate in a mechanistic way and in an institutional vacuum. For example, both assume that transaction costs are zero (the cost of obtaining information and of negotiating, policing and enforcing contracts are zero); adjustment costs are zero; all resources are fully employed; resources are allocated for purely pecuniary incentives; and shirking by "owners" and employees is ruled out (De Alessi, 1982). In addition, it is assumed that the same quantity and quality of information can be generated by the centrally planned market socialist systems as by decentralized perfectly competitive systems (Hayek, 1940).

Property Rights Theory: Consequences of Public Relative to Private Enterprises

In the real world, the nature of rights to the use of resources, to the income the resources generate and to the transferability of those resources to others has an affect on the way resources are used. Property rights arrangements, in other words, are not neutral. The system of rights that accompany different organizational arrangements determines, through actual or imputed prices, how benefits and costs resulting from individual decisions will be allocated to decisionmakers and others. The study of how property rights arrangements affect the benefits and costs that individuals face and also their choices has recently been developed to the point where we can say something, at the theoretical level, about how public enterprises will behave relative to private enterprises (Alchian, 1965; Alchian and Demsetz, 1972; De Alessi, 1980; De Alessi, 1982; Furubotn and Pejovich, 1972; Klein, Crawford and Alchian, 1978).

When private property rights exist, an individual has the exclusive

rights to use and derive the income from resources. Moreover, an individual can voluntarily transfer the resources to others. The more precisely these rights are defined, allocated and enforced the closer the welfare of an individual will be to the total benefits and costs which are caused by an individual's decisions. Consequently, when taking decisions affecting such rights, the decisionmaker (owner) has the greatest incentive to take all benefits and costs into account, since their incidence will ultimately all be with the resource owner. With private ownership, zero information and transaction costs, regardless of the initial distribution of property rights, individual owners will bear the full consequences of their decisions and resources will be used in a theoretically efficient way and there will be no externalities (Coase, 1960).

In practice, however, information and transaction costs are positive and property rights are often attenuated. If other things are held constant, an increase in information and transaction costs will reduce the profitability of monitoring. This means that decisionmakers in prviate firms will have greater opportunities to shirk and to increase their utility at the expense of the owners of the private firms' assets. Consequently, the private enterprise's behavior will deviate from that which would maximize the present value of the firm's assets.

For private firms, any factor that attenuates the owners' property rights, such as government regulation, will reduce the profitability of monitoring. Hence, managerial and employee's opportunities to shirk and engage in actions on their own account will be increased, and the enterprise's behavior will deviate from the owners'/unconstrained objective of maximizing the

present value of the firm's assets.

All this is to say that, since information and transaction costs are positive and property rights are often attenuated, observed private enterprise behavior will always deviate from the theoretical ideal of maximizing the present value of the firm. Rather, the present value of the firm will tend to be maximized subject to the constraints of positive information and transaction costs and attenuated property rights. In addition to this, we can say that property rights become more attenuated as we move from private unregualted enterprises, to private regulated enterprises, to private mutual enterprises to private nonprofit enterprises. The implications of this attenuation of property rights is important: as the rights become more attenuated there will be more opportunity for employees and management to shirk and there will be a greater deviation from the goal of maximizing the present value of the enterprise's assets. In short, there will be less profitability for owners to engage in monitoring activity, and therefore, managers and employees will more frequently engage in behavior that is inconsistent with maximizing the present value of the enterprise's assets.

At one extreme on the property rights attenuation spectrum is government ownership. The item that distinguishes public and private enterprises is that fact that public assets are not "owned," since they cannot be effectively transferred. The only way taxpayers can change their portfolio of public assets is to move to another political jurisdiction or change the way in which public enterprises are operated. Both of these options are typically not attractive because they are very costly. This lack of transferability means that the capitalization of future

consequences of decisions taken by public bureaucrats and employees into current asset transfer prices is inhibited, and the "owners" have little incentive to monitor public managers' and employees' behavior.

Consequently, public managers and employees have much weaker constraints on their choices than do private ones. This means that public bureaucrats have a greater opportunity for discretionary behavior than do private managers and employees. Bureaucrats have, for example, more opportunity to allocate staff and assets under their supervision to enhance their own welfare, rather than to maximize the value of the public sector's assets. Since contractual pecuniary rewards of bureaucrats are subject to statutory limits, bureaucrats have incentives to allocate resources to enhance their job security and other nonpecuniary sources of welfare. This suggests that bureaucrats will adopt policies that will ease their work load and make their jobs more pleasant. They will, for example, choose pricing policies that are easy to administer, tailoring them less closely to demand and supply conditions and more closely to vocal special interest groups and/or powerful politicians; across-the-board wage increases should also be more common than select wage changes based on merit; hiring practices should be expected to rely less on capability than on race, sex, education, congeniality and other characteristics which will reduce organizational friction. As a result, public enterprises' behavior should be expected to have less responsive to demand and supply conditions, and will operate with higher costs for any given output level than private enterprises.

The modern property rights theory has, more than anything else,

reflected themes contained in Adam Smith's Wealth of Nations. For Smith, "No two characters seem more inconsistent than those of trader and sovereign" (Book V, chapter ii, Part I). Smith observed that this was the case because people are more prodigal with the wealth of others than with their own. Public administration was negligent and wasteful, since public employees had no direct interest in the commercial outcome. Smith, for example, noted that the productivity of public lands was only 25 percent that of comparable private lands. Consequently, he recommended that the remaining public commons be privatized. If this occurred, the owners would have the incentive to monitor activities, eliminate waste and maximize the present value of their assets. As Smith put it: "The attention of the sovereign can be at best very general and vague consideration of what is likely to contribute to the better cultivation of the greater part of his dominions. The attention of the landlord is particular and minute consideration of what is likely to be the most advantageous application of every inch of ground upon his estate." (Book V, chapter ii, Part II, Article I).

In the context of this study, the implications of property rights theory are rather profound. If our objective is to attain economic efficiency and reduce public sector waste, we should not rely on market socialist reforms, such as replacing current bureaucrats with technocrats who will apply techniques such as benefit-cost analysis and marginal cost pricing. For, without changing property rights arrangements and thereby the incentives faced by public sector managers and employees, we cannot expect their behavior to approach that which would be consistent with maximizing the

present value of the public enterprise's assets (Haveman, 1972; Mises, 1969; Mises, 1981). If we desire to improve efficiency and eliminate public sector waste, we must adopt privatization policies. In particular, we will focus our attention on those privatization possibilities that concern the supply of so-called public infrastructure and services; in other words, those activities that many might be accustomed to thinking of as proper functions of any governmental entity.

The Public Goods - Externality Problem

Even though theory points to the superiority of private over public enterprises, many argue that there are factors, in addition to production costs, that must be considered, when determining the choice between public and private enterprise. One of these considerations is externalities. When information and transactions costs are high and/or property rights are nonexistent or attenuated, it is possible that third parties will be affected by transactions between buyers and sellers. These third-party effects are called externalities.

It is often argued that the existence of externalities is a justification for public enterprise. For example, education, it is alleged, generates large externalities in a democratic society, and that private enterprise would, from a social efficiency point of view, undersupply education because external benefits would not be taken into account in the transactions between private schools and students. Hence, it is argued, there is a need for public schools.

A related concept, public goods, is also used to justify certain types of public sector activity. A public good, once it is supplied, is available for others to use and enjoy, even after one person has used it.

Therefore, the potential users of a public good are not rivals. Consequently, there will be a tendency for all potential users to attempt to be "free riders" and not pay, or not pay enough, for the private provision of a public good, and the public good will either not be supplied or under-supplied.

A classic example of public goods and the argument for public enterprise is spraying to eradicate disease-carrying insects. It is argued that this activity should be under the purview of the public sector because it has public good characteristics.

To sort out the solutions to the alleged problems of externalities and public goods, we must realize that goods can be either supplied by public or private enterprises, and that this supply can either be financed by public user fees and taxes or private charges. Once the distinction between private versus public supply and finance is made, it should be clear that, even if externalities and public goods exist, the supply of the products with either of these characteristics can be private, while their finance is public. For example, schools could be private and insect abatement could be supplied by private firms at appropriate levels by using public finance to compensate, in full or in part, the private suppliers in each case. By combining public finance and private supply, the problems of suboptimal private supply, due to externalities and/or public goods, is overcome, and at the same time, the cost advantage of private supply can be attained.

In this study, we only address the issue of private versus public supply of so-called public infrastructure and services. The issues surrounding externalities and public goods are separate from those of

supply, and are only limited by necessity to questions concerning finance.

The National Monopoly Problem

Another alleged problem that gives rise to calls for public enterprise is the existence of natural monopoly conditions. It is argued that a firm will become a natural monopoly if the average cost of producing a product is declining over the relevant range of market demand. In this case, if there is more than one firm producing the total market output, each firm must be producing the output at an average cost level that is above the average cost level that would exist if one firm produced the total market output. Hence, each firm, faced with this situation, will be inclined to cut price in an attempt to increase its market share and reduce its average costs. Consequently, economic warfare will result and there will only be one survivor, a natural monopolist.

Like any monopoly situation, it is argued that the natural monopolist will, after it has established itself, raise prices and restrict output in such a way as to create economic waste. Many, therefore, conclude that, when the conditions for natural monopoly exist, government should step-in and supply the market by employing a public enterprise. It is argued that this will not only solve the monopoly problem per se but also will eliminate the wasteful competition (duplicate facilities) that would occur if unregulated competition prevailed.

John Stuart Mill was one of the first to argue that, under natural monopoly conditions, private firms would engage in wasteful competition to serve individual customers in a market. This would result in the

duplication of highly specialized assets and ultimately private monopoly power. The solution, as he saw it, was to supply infrastructure and services in these cases by employing public enterprises (Schwartz, 1966). Mill's analysis did not go unchallenged. Chadwick (1859) argued that, in natural monopoly situations, competition for the right to serve individual customers would indeed be wasteful. However, this did not rule out competition and the desirable results that accompany it. The essential point made by Chadwick was that competition should focus on this right to serve an entire service area. rather than individual consumers. In short, Chadwick argued that a franchise or concession to supply an entire service area be established and that private firms compete for the right to serve the franchise.

Demsetz (1968) rediscovered and extended Chadwick's notion that competitive results could be obtained, even in situations where natural monopoly conditions exist, by simply establishing a franchise and then requiring competition for the right to serve the franchise, rather than for individual consumers. By doing this Demsetz argued that public enterprise and its accompanying inefficiency could be avoided, and the wastes and inefficiency of natural monopoly could also be avoided. Instead, the benefits of free, unregulated, competitive, private enterprise could be obtained.

The key to Demsetz's system is the bidding procedures. To obtain the desired result of free competition and cost-effectiveness of private supply, Demsetz's system requires the award of the franchise to the firm that agrees to serve the franchise with the lowest prices for the output specified in a contract. In other words, the public authority that

established the franchise would not receive payment from a successful franchisee. Rather, the public authority would act as a bargaining agent for customers in the franchise area. The public authority would have as its objective to award the franchise to the private firm that would supply a given quality and quantity of service over the franchise's life at the lowest price. The firm that won the bidding for the franchise would then have a contract with the franchisor, who represented the consumers in the franchise area. So, the natural monopoly problem would be solved without recourse to public enterprise. It should also be mentioned that public utility regulation, an approach to the natural problem that is often used in the U.S., would not be required.

As with any method for dealing with the natural monopoly problem, four outcomes are considered to be desirable: (1) prices should be based on incremental cost of supply; (2) the products supplied should be of the appropriate quality and quantity; (3) production should be accomplished so that costs are minimized; and (4) profits should just be sufficient to attract capital into the particular line of production under consideration.

Demsetz claims that his private, competitive franchise arrangement will generate results that satisfy the four desirable features mentioned above. Moreover, he questions whether these features can be obtained by either public enterprises or regulated private enterprises. Given these claims, and the fact that we are focusing on privatizating so-called public infrastructure and services—some which might possess natural monopoly characteristics—we examine the franchising system in more detail.

There are two stages where alleged problems can arise in a franchising

system: (1) the bidding stage and (2) the operating stage. At the bidding stage, one potential problem concerns the issue of effective competition (Holcombe, 1911 and Williamson, 1976). Evidence suggests that, at the end of an existing franchise, the current franchisee often has its franchise renegotiated, without visible competition from other bidders. Many have suggested that this indicates conduct that will lead to the exercise of monopoly power and poor performance, since no competitive forces are at work to regulate the franchisee.

The critics of franchising go on to speculate about why firms that win original franchises retain them with no visible competitive threat from other firms. They suggest that the existing franchisee has an advantage over potential entrants, since the existing franchisee has more and better information about the demand and cost conditions associated with the franchise; has an established working relationship with the franchisor; and is possibly able to mislead potential bidders. Moreover, in addition to these advantages, the potential bidders might shy away from bidding because of anticipated transitional or start-up costs that it would have to incur and that the existing franchisee would not incur. These factors it is argued, eliminate potential competition from the franchise system, so that it gradually evolves into a system in which the initial franchisee gains monopoly power as the franchise is turned-over.

In defense of the franchise system, we should mention the French water and wastewater industries, where franchising has been successfully for over a century (Monod, 1982). In these industries, effective and vigorous competition exists as franchises turn-over. This competition has

been reported in other sectors that use franchises in France, too (Holcombe, 1911). For example, Holcombe (1911) reported that 13 bids were received for the Paris gas system, when the franchise was put up for bid in 1905. That the franchise system for water and wastewater in France is competitive, or perceived to be competitive, is attested to by the fact that the socialist government that came to power in 1981 did not nationalize these so-called public utilities, particularly since they did nationalize many firms that were engaged in what is normally thought of as commercial activity. This nationalization episode is revealing, since it was the mayors, regardless of their political party affiliation, who argued against nationalizing water and wastewater firms. The mayors, who act as agents for water and wastewater customers, through their agency powers to establish and negotiate terms for franchises, argued that nationalization would lead to increased costs for these services.

Even in cases where the current franchisee is the only visible bidder for a new franchise, competitive results can be obtained if the market is periodically open to potential rivals of the current franchisee. Recent research in a new theoretical field called "contestable markets" indicates that competitive results can be obtained with only two bidders (Baumal, Panzar and Willig, 1982; Coursey, Isaac and Smith, 1984; Coursey, Isaac, Luke and Smith, 1984). Moreover, and perhaps even more surprising, this research indicates that, under natural monopoly conditions, if markets (franchises) are contestable, potential entry or competition for the market (franchise) disciplines behavior almost as effectively as is the case within competit markets. Hence, if a market (franchise) can be contested, it performs

in a competitive fashion.

The implications of these new theoretical findings are extremely powerful and significant in the context of the charges that competitive bidding for franchises does not exist, since, if the franchise can potentially be contested by even one firm, then competitive outcomes can be obtained.

It is alleged that pricing problems could also arise at the bidding stage. For example, if service to the franchise involved decreasing costs, then it would be possible to have competitive bidding; a winning bid with no excess profits; and a winning bid's price for the output that exceeded the marginal cost of the output. Demsetz (1968) has responded to this concern noting that, by allowing either two-part tariffs or price discrimination in the bidding, both zero profits and prices set at marginal costs could be obtained. However, this complication would require more specialized knowledge on the part of the franchisor who was evaluating the bids.

In addition to the alleged problems of inadequate competition and nonoptimal prices—problems that can occur at the bidding stage of a franchise—several concerns have been expressed about problems that might be encountered during the operating phase of a franchise.

Franchises typically last for a considerable length of time. For example—in France, where franchises are common—they can last for as long as 30 years, when capital infrastructure is both owned and operated by the franchisee. In situations where private firms have operating concessions to operate and maintain capital that is owned by a public entity, the maximum length of the franchise is 12 years. Due to this time scale, significant changes in demands, costs and technologies will probably occur over the

life of the franchise. These changes will require rather complex pricing formulae, and these will require considerable expertise on the part of the franchisor, so that the original bids can be properly evaluated. In addition it will require considerable monitoring effort by the franchisor. Contracts will often contain clauses that allow for renegotiation, if the pricing formula "breaks down" due to unanticipated "shocks". If renegotiation is frequent, it is argued franchise bidding is robbed of its most desirable characteristic, which is reliance on price determination through competitive market processes.

The reason why pricing formulae complexity and contract renegotiations accompany long-term franchises is made clear with several examples. Early franchises were not bid on the basis of low price. Rather, they usually only specified the maximum price that could be charged over the life of the franchise (Bauer, 1939). These terms worked against the consumers during deflationary periods and for the franchisee. The opposite situation occurred during inflationary times.

As a result of dissatisfaction with this simple type of pricing agreement, particularly during inflationary periods, many franchises were simply abandoned and either public enterprise assumed the role as supplier or public utility type regulation was imposed on a private supplier. However, in some cases, franchises were retained and made more complex to deal with inflation. For example, the franchise to supply gas for Paris specified a maximum price and also fixed a minimum profit for the firm (Holcombe, 1911). This arrangement created considerable problems for the city of Paris because the price of coal used to manufacture gas increased rapidly during World

War I. Consequently, the average cost for gas was twice the maximum price allowed under the franchise. To maintain the franchise's minimum profit guarantee, the city of Paris had to subsidize the franchise from tax revenues.

To overcome the problems associated with early franchises, more and more complexity was built into pricing formulae and/or rengotiation provisions were included.

Although the complexity of franchise pricing formulae and evaluation and monitoring costs increase as the length of a franchise's life increases, the competitive price determination features of franchises are not lost if the franchise is contestable at the time of renegotiation.

A second concern associated with the operation phase of franchises occurs toward the end of the franchise's life. It is argued that incentives exist that make firms underinvest in fixed assets and to reduce maintenance. This problem is most acute when the assets of the franchise revert to a public entity at the end of the franchise. However, it exists whenever there is some probability that the firm will lose all or part of its investment at the end of a franchise.

These investment and maintenance problems can be overcome by allowing the firm to fully amortize its investments during the franchise and also requiring the firm to be bonded with regard to the maintenance of plant and equipment. This latter requirement reduces the monitoring required by the franchisor because the bonding firm will, in effect, take over responsibility in this area and guarantee that the terms of the contract are met. However, there will still be considerable monitoring responsibility placed on the franchisor who is acting as the customers' agent.

Even though the natural monopoly situation possesses problems with regard to correct prices, product quality and quantity control, production at least cost and profits that are just sufficient to provide necessary capital, two points should be emphasized. First, many so-called public infrastructure and services that are assumed to display natural monopoly characteristics simply do not qualify for this industry category. Second, even when natural monopoly characteristics do exist, there are private ways, through franchising and contracting, that can more effectively address the problems mentioned above than do either public enterprises or regulated private utilities.

Concluding Observations Concerning Economic Theory

Considerable theoretical support favoring the private provision of so-called public infrastructure and services exists. Property rights are not neutral. Indeed superior results are generated in cases where property rights are less attenuated compared with cases where rights are more attenuated or public. This leads to the conclusion that, from a theoretical point of view, private provision of public infrastructure and services would be desirable from an economic point of view.

However, even though agreement might be reached as to the comparative cost advantages of private versus public enterprise, some argue that public enterprise is required because of the existence of externalities or public goods problems. We have shown that these problems do not affect the decision as to whether a service should be supplied by an private or a public enterprise. Hence, we are still left with a strong theoretical preference

for private supply over public supply.

However, some point to natural monopoly problems as a justification for favoring public supply. Natural monopoly problems, although not as common as most economists believe (Black, 1977), do exist in some cases, particularly when assets are highly specialized and require significant investments. But, the natural monopoly problems can be overcome most effectively through competitive bidding and contestable markets for franchises. Hence, even in this special case, we are left with the conclusion that private suppliers are, from a theoretical point of view, superior to public enterprise.

In the next section, we review private versus public comparative cost data for various functional areas of public infrastructure and services. This is done in an attempt to determine whether our theoretical conclusions can be empirically validated.

COMPARATIVE COST STUDIES

Although economic theory strongly supports the notion that private enterprises, regulated by competitive market processes, are more efficient and productive than public enterprises, regulated by political and bureaucratic processes—many of the advocates of public enterprise might rightfully ask, "Does the evidence support the theory?" Some of them, with the strongest opinions, may even go further. They often claim, based on their own evidence (which is often casual and unsystematic), that they "know" that public enterprises are more efficient than private enterprises. The purpose of this section is to review, in a systematic way, the evidence, which addresses the question of public versus private efficiency.

Public Sector Wages and Productivity

One general measure of the private versus public efficiency differential, if one exists, is unit labor cost. Public employee pay levels, for federal employees, have been found, for comparable skill levels, to be substantially higher than the private sector (Bellante and Long, 1981; Smith, 1977). For example, Smith (1977), in a comprehensive investigation of federal pay structures for 1975, found that public federal pay was as much as 20 percent higher than pay in the private sector, controlling for factors such as age, education, experience and sex. It has also been found that federal productivity, when compared with the private sector, is lower (U.S. Congress, Joint Economic Committee, 1979). Consequently, the unit labor cost levels, for similar types of output, are generally higher in the federal, than in the private sector.

In addition to levels of unit labor costs, it is instructive to evaluate trends in productivity and unit labor costs. Orzechowski (1977) has conducted such an evaluation, and found that the trends were working against the federal, as opposed to the private, sector. Table 1 summarizes his findings.

Table 1

Public and Private Sector Productivity

Year	Unit Labor Costs		Output/Man Hour	
	Federal Government	Manufacturing	Federal Government	Manufacturing
1967	100.0	100.0	100.0	100.0
1968	102.5	102.3	101.8	104.7
1969	108.5	106.5	103.4	106.9
1970	117.5	112.5	106.4	108.1

This general information about wages, productivity and unit labor costs is consistent with economic theory that concludes that private enterprises should be more efficient than public ones.

Europe's Nationalized Industries

Europe's nationalized industries provide us with another general comparison of private and public enterprise performance. In fact, nationalized industries provide quite a different perspective on the problem of private versus public efficiency. Public enterprises in Europe produce everything from pots and pans to cars and trucks. They even run hotel chains. In doing so these public enterprises are quite different from their private counterparts.

The most striking feature of nationalized enterprises is their politicization. Governments appoint the boards and top management. Governments provide subsideies, since most nationalized companies lose money. Politicians must be consulted and approve major decisions. Government, therefore, determines pricing, purchasing, plant location and closedown, diversification, incentive systems, executive compensation, product development and financial policies. Labor relations are also regulated by politicians, and contrary to popular belief, they are much more stormy in nationalized, than in private companies. Not surprisingly, successful managers of nationalized enterprises resemble politicians rather than businessmen (Monsen and Walters, 1983).

The public ownership of nationalized enterprises and their accompanying politicization leads to an interesting set of comparisons between nationalized concerns and similar private concerns. Sales per employee are lower for nationalized firms. Adjusted profits per employee are lower. Physical production per employee is lower. Taxes paid per employee are lower. Per dollar of sales, operating expenses plus wages are higher. Sales per dollar investment are lower. Profits per dollar of total assets are lower. Profits per dollar of sales are lower. Sales per employee grow at a slower rate. And, with the exception of nationalized oil companies, virtually all nationalized companies generate accounting losses (Monsen and Walters, 1983).

Evidence from Europe's public enterprises is also consistent with the notion that property rights arrangements are not neutral, and that private enterprises are more efficient than public enterprises. We now move to review comparative cost evidence of a more specific nature.

Administration

Unfortunately, there has been very little systematic analysis of general administrative costs in the public sector, which, of course, makes a general comparison with the private sector difficult. However, one study of local governments by Spann (1977) did find that the number of employees increased relative to general administrative services delivered by 29.15 percent, during the period 1962-67. Although these data do not compare public and private costs, they do indicate that, during this period, unit labor costs for general administration, at the local level, rose dramatically.

We do have, however, some evidence for specific administrative functions that reveal the superior efficiency of private services. These are reviewed below.

Debt Collection - Debt owned the federal government is considerable, about $220 billion, and a considerable amount of this is represented by uncollectable accounts. Moreover, the volume of these bad debts has been increasing (Grace, 1984). Part of the reason for the increasing uncollectables is due to the inefficiency of public debt collection operations, when compared to private operations.

Bennett and Johnson (1981) summarize findings from a variety of General Accounting Office reports that document the relative inefficiency of the public sector debt collection operations. For example, in 1976, one agency reported that it spent $8.72 per account to maintain and pursue collection, while one of the largest private collection agencies performed the same function for $3.50 in the same year. In addition, private firms reported that it was profitable to pursue collection on debts as small as

$25, while the federal government typically wrote-off debts of less than $600. If this were not enough, the federal government reported that it required a minimum of one year, and frequently much longer, to obtain a judgement against a debtor. Private firms, on the other hand, obtain judgements in about five months. This relative slowness in collection for the federal government simply means that it must incur opportunity costs (carrying charges) on accounts receivable much longer than the private sector. This increases further the total cost of federal accounts receivable and ultimately "collecting" them.

Payroll - In testimony before the Joint Economic Committee, J. Peter Grace (May 1, 1984), Chairman of the President's Private Sector Survey on Cost Control, indicated that it cost the U.S. Army $4.20 to process a payroll check. He stated that the same function was performed by private firms for $1.00 per check.

Social Security Medicare Payments - General administrative functions have become very computer intensive. In the area of automated data processing (ADP), the federal government has fallen behind the private sector. Today, approximately 50 percent of the government's 17,000 computers are so old that they are no longer supported by the manufacturers (Agee, May 30, 1984). Consequently, they must be maintained by specially trained governmental personnel. The federal government's ADP systems led to high cost and slowness. This is particularly noteworthy in the processing of the federal medicare program, which will discuss below. However, before doing so, we mention that, at the local level, ADP systems are also often dated and more expensive to operate than private systems. For example, Orange,

California is saving about $1.6 million per year by contracting out for all its ADP operations to a private firm (Hanke, March 29, 1984; Poole, 1980).

Hsiao (1978) found that to process a Medicare claim in 1971 and 1972, the public cost was 35 and 18 percent higher, respectively, than a compatable private firm. Also, the private firms were found to process claims at a faster rate and with a lower error rate than the public sector.

In related studies by Frech (1976;1980), the property rights theory of the firm was validated. Often medicare claims are processed by private carriers. These carriers are made up of two types: proprietary firms, typically profit-making firms owned by stockholders, and nonproprietary firms, primarily mutuals "owned" by policy-holders. Modern property rights theory predicts that proprietary should be more efficient than the non-proprietary firms. This prediction results from the fact that the shareholders have a greater incentive to monitor the firms' activities, than policy-holders, because the benefits to individual shareholders of monitoring would be greater and the monitoring costs would be less.

Using 1970 data, Frech (1976) developed a regression cost model to analyze the differences between proprietary and nonproprietary firms. He found that nonproprietary firms incurred 45 percent higher processing costs, take 80 percent longer to process claims and made 140 percent more errors. Frech (1980), in a more refined analysis, generated similar results.

A similar analysis of private and mutual savings and loan associations found results that confirmed the property rights theory of the firm (Nicols, 1967). Nicols' analysis found that the costs of administering loans were much higher (62.6 to 72.6 percent) for mutuals than proprietary savings and

loan associations. He found that this was caused by very high perquisites, such as larger offices, larger staffs, more expensive and numerous company cars, longer tenure, and more nepotism benefits being received by management. Again, this reflects more monitoring by shareholders than mutual "owners" because the monitoring pay-off is higher for shareholders.

Although the work by Frech (1976;1980) and Nicols (1967) did not deal directly with the issue of private versus public efficiency, it did confirm the property rights theory of the firm. In addition, this work provides some strong insights into the issue of private versus public efficiency. Taxpayers certainly have a much less favorable benefit-cost ratio for monitoring government employees than do either the "owners" of mutual organizations or private organizations. This implies that government employees will be freer to engage in activities that they deem to be beneficial for themselves, with less regard for taxpayer "owners".

Airlines

Although there are many nationalized and private airlines, there has only been one systematic series of studies which deals with the comparative efficiencies of private and public airlines (Davies 1971;1977). Davies compared the performance of Australia's two interstate airlines, the public Trans Australian Airlines (TAA) and the private, but heavily regulated, Ansett Australian National Airway (Ansett). These two operations provided a good experiment for the test of the hypothesis that private airlines are more efficient than public airlines because passenger and freight rates are identical; both typically have the same routes and departure times; and both are compelled to use the same type of equipment.

Davies' findings are most revealing. He found that, even with the above constraints, the private airline was more efficient. Using data from 1958-1974, Davies found that the ratio of tons of freight and mail carried per employee for Ansett to TAA averaged 2.03 to 1, for passengers carried per employee 1.17 to 1 and for revenue earned per employee 1.12 to 1.

Air Traffic Control

Air traffic control in the U.S. has been dominated by the Federal Aviation Administration (FAA), although private firms have operated smaller airports, whose traffic did not qualify them for an FAA tower. All this changed in 1981, when the Professional Air Traffic Controllers' Organization, a public union, called a strike of public controllers. This gave the private controllers an opportunity to expand their business, and it also presented an opportunity for cost comparisons.

Robert Poole (1982) reviewed this situation, and concluded that the public air traffic control system had indeed had a troubled history, with outdated technology, a lack of cost-effectiveness, unresponsiveness to users needs, an absence of long-range planning, political interference and labor problems.

Poole indicated that, for comparable towers (the smallest FAA authorization), the FAA spends about $1 million to install and about $275,000 per year to operate and maintain. Private firms were providing the same services for about $120,000 per year, including amortization of their original capital investments. Poole also reported that, when a private

provider took over the operation of the Farmington, New Mexico tower in 1981, their contract was for $99,000 per year. Prior to that time, the FAA had operated the tower for $287,000 annually.

Ambulance Service

Robert Poole (1980) reported that a number of private ambulance services exist in the U.S. and that they typically provide better service at lower cost than public systems. Typical of the cost savings is Newton, Massachusetts. It recently switched from a public operation to private provider, the savings is $500,000 per year (Hanke, March 29, 1984). It should also be noted that private ambulance service is extremely popular in Europe. Although comparative cost data are not present, both Stewart (1982) and Frazier (1981) report on the nature, scope and growth of these private services.

Banking

David Davies (1981), the author of the Australian airline studies, has also conducted a careful evaluation of private and public banking in Australia. The two largest trading banks in Australia are the Commonwealth Trading Bank, which is government-owned, and the Bank of New South Wales, which is privately owned. These, along with five other smaller private banks, account for 92 percent of Australia's total trading bank assets. As is the case with Australia's airlines, the public bank and the private ones operate under similar constraints set by the government.

Davies found that the public bank was less efficient than the private

ones. The average of annual data for the period 1962-1972 showed that, relative to the private banks, the public bank typically had a higher ratio of expenses to net earnings and lower ratios of profits to assets, of profits to expenses, of profits to employees, of profits to deposits and of profits to capital.

Birth Control

Studies by Ciszewski (1978) and Davies and Lavis (1977) found that private birth control organizations were more cost-effective than public operations. For example, Ciszewski found that private organizations in Bangladesh were twice as effective as public ones, while Davies and Lavis found that private operations in Sri Lanka were five times more effective than public operations.

Custodial Services and Building Maintenance

J. Peter Grace (May 1, 1984) indicated that the Grace Commission's evaluation of the federal government's custodial services revealed that the General Services Administration employs about 17 times as many people and spends about 14 times as much as private firms to deliver comparable building maintenance.

Bennett and DiLorenzo (1983) report that facilities maintenance at selected military facilities was reduced by 35 percent, when these functions were transferred to private contractors. They also reported savings in custodial services, when supplied by private firms rather than the military.

These savings ranged from 5 to 25 percent. Savas (1982) reported that five New York City schools experimented with private custodians and saved 13.4 percent.

In Germany, Blankart's (1979) analysis revealed a similar situation to that in the U.S. He reported that private custodial services for government offices in Hamburg were between 30 and 80 percent less costly than public custodians. And for the federal post office system, private custodians were between 30 and 40 percent less costly than public ones.

Day Care Centers

Public day care centers (federally funded nonprofit organizations) are reported to be more costly than those operated by user fee finance in the private sector. Bennett and DiLorenzo (1983) reported that the monthly public day care center costs per child were $188 compared to $102 for the private centers. They also reported that the primary reason for this cost differential was higher staff-to-child ratios and higher wages in the public centers. Of particular interest is the fact that the quality of service in both the public and private centers was deemed to be comparable.

Education

Much the same as day care centers, other educational institutions exhibit similar patterns. Public institutions have higher staff-to-student ratios and higher costs per student. For example, Orzechowski (1977) found that public colleges employed 40 percent more labor than private colleges

of the same size. Savas (1982) reports that the public City University's cost to produce a degree student was $103,061, while the comparable private institutions' cost was $18,570. Savas also reports that the public versus private per pupil cost differential in New York City was $4,785 versus $4,512, and in the City's handicapped schools the differential was $6,196 for the public versus $4,730 for the private.

These cost differentials might be explained by lower quality in private schools. However, Bennett and Johnson (1981) review evidence that suggests that increased expenditures per student have had no impact on the quality of graduates, and that large cost differentials between public and private schools exist, even after other factors that determine the quality of graduates are statistically controlled.

Electricity

Contrary to some of the other functional areas reviewed, there has been a great deal of systematic analysis of electric utilities in the U.S. These studies support the notion that private firms are more productive than public firms. And that these comparative cost differential exists in spite of the fact that private utilities' pricing and investment policies are heavily regulated.

Typical of the productivity and cost studies is a comparison of federal and private hydroelectric plants, which was reported by Bennett and DiLorenzo (1983). Table 2 summarizes the results for comparable private and public operations.

Table 2

Cost per Kilowatt Hour (Kwh) in Public and Private Hydroelectric Plants

Type of Plant	Avg. Employment/Plant 1973-75	Avg. Employment/Generator 1973-75	Cost/Kwh
Public	14.4	4.1	$3.29
Private	9.7	2.8	$2.79

Louis De Alessi (1974; May/June 1974; 1980; 1983) has conducted research to test various aspects of the property rights theory of the firm by using data from the electric utility industry. All of De Alessi's work stresses that the crucial difference between private and public (political is the term De Alessi prefers) firms is the fact that assets of publicly owned enterprises are not transferable. Hence, the consequences of publicly owned enterprises' future actions are not capitalized into the current transfer prices of the public enterprise assets because there are no transfer prices. This results in a situation where the ultimate "owners" of public enterprises, the taxpayers, have little incentive to monitor the enterprises' activities. This results from the fact that taxpayer "owners" cannot sell the assets that they "own". Therefore, they have little incentive to monitor those activities that determine the value of assets. Unlike a private enterprise—where shareholders have an incentive to monitor a private enterprise's behavior, so as to maximize the present value of an

enterprise's assets—public enterprises do not face the same type of monitoring behavior, and, therefore, tend to behave in ways that are quite different from private firms. In short, the managers of public firms have greater opportunity to engage in discretionary behavior than do managers of private firms.

Another way of looking at the property rights theory of the firm and its implications is to say that the more private property is attenuated, then the more managers can engage in discretionary behavior on their own personal account, and the more inefficient the firm will be. So, we would expect to find private, unregulated firms to most closely approximate efficiency norms, the regulated, private firms less so, mutual companies less so, and public enterprises even less so.

Given this theoretical background, De Alessi (1980) reviews the literature that tests a variety of hypotheses that can be derived from the property rights theory of the firm.

First, we would expect that public enterprises have less incentive to set prices (rates) at wealth-maximizing levels. Evidence, from studies about this hypothesis, indicates that both average and marginal prices are lower for public than private electric enterprises. However, this may, to some degree, be explained by the fact that public enterprises are exempt from paying taxes.

Second, we would expect private firms to adopt more complex rate structures than public firms, ones that reflect the demand and cost conditions that are related to various customer classes. We would expect these of complex structures, since they would more closely approximate

wealth-maximizing rate structures than less complex structures. De Alessi (1980) found that, using 1970 data from a sample of 20 matched pairs of composite private and public firms, the private firms have more price schedules and that these private rate schedules more closely reflect cost and demand conditions than do public schedules.

Third, we would expect public enterprises to price their output in a way that is more sensitive to those with political power than private firms. Evidence indicates that public enterprises favor commercial and industrial users, who have considerable political power, relative to the same class of users who purchase power from private companies. Public enterprises also tend to attempt to cross-subsidize users who are voters by "over-charging" users who live outside the public firm's political jurisdiction.

Fourth, theory would lead us to believe that managers of public firms would be less willing to change prices in response to changes in cost and demand conditions than managers of private firms, since the effects of correct (or incorrect) decisions are not capitalized into the transfer price of public assets and errors of commission are easier to detect than errors of omission. Not surprisingly retail electric prices are more rigid in public than in private electric utilities.

Fifth, public electric enterprises should be expected to be more highly capitalized than private ones. Indeed, the ratio of peak demand to total capacity typically is lower for public than private firms.

Sixth, the cost of capacity would be expected to be lower for private than public firms. The econometric work reviewed by De Alessi (1980) confirms this hypothesis.

Seventh, total operating costs would also be expected to be lower for private firms. They were. When total operating costs were disaggregated cost differentials favoring private enterprises were found in all categories, but they were not significant in the fuel cost category.

Eighth, we would expect private firms to adopt new innovations at a more rapid rate than public electric enterprises. Data from 257 firms for the period 1961-1969 confirm that private firms adopted cost-reducing technology more rapidly than public firms.

Ninth, on the theory that monitoring is less severe for public than for private firms, we would expect managerial tenure to be longer for public than private electric enterprises. Based on a random sample of 100 private and 100 public firms De Alessi (May/June 1974) did find strong evidence to support the hypothesis that tenure was longer for public firms.

The systematic empirical research on public and private electric enterprises confirms a wide variety of hypotheses derived from the property rights theory of the firm. All of these findings confirm the fact that public managers have more discretionary power to behave more on their own personal account than do private managers, and that the discretionary behavior engaged in detracts from the norm of economic efficiency.

Before concluding our discussion of electric utilities, we should mention yet another set of studies that is related to our discussion of privatization. Studies by Bellamy (1981) and Primeaux (1974;1977) deal with the role that competition can play in so-called natural monopoly situations. In the U.S., contrary to popular belief, there are twenty-three cities, located in 10 states, in which two utilities compete directly with each

other. These companies have separate staffs, generating facilities, distribution lines and meters. They do, however, in most cases, share some of the same poles from which they string their own distribution lines.

Conventional wisdom has it that two or more firms competing in a "natural monopoly" situation will be wasteful because there will be an unnecessary duplication of facilities. Bellamy (1981) and Primeaux (1974; 1977) test this conventional wisdom by using data from the cases where two electric utilities actually competed with each other. Using standard statistical techniques, Primeaux normalized for all the factors that cause electric prices to vary. These included such things as income, the extent of residential versus commercial and industrial sales population density, climatic conditions, and so forth. This left him with a model that measured the extent to which price variations were explained by either the existence or nonexistence of competition.

Primeaux found that, contrary to the conventional wisdom, marginal electric rates were 16 to 19 percent lower in the competitive than in the comparable cities served by only one utility, and the average prices in the competitive cities were 33 percent lower. Bellamy found similar results in an analysis of Lubbock, Texas, a city with two utilities, and the surrounding area. Residents in the comparable situation, who were outside Lubbock's competitive service area, paid 20 percent more for their power than did the residents of Lubbock.

In addition, Bellamy found further evidence of the benefits from competition. The cost of constructing a coal-fired, 500-1,000 megawatt generating unit was almost 60 percent lower in Lubbock than the average for Oregon,

Wisconsin and Pennsylvania.

The electric utility industry in the U.S. has provided an excellent opportunity to test a variety of property rights and competitive market theories. And the tests have confirmed that private enterprises perform in a more efficient manner than public enterprises. Moreover, the evidence seriously challenges the widely held belief that competition, in so-called "natural monopoly" environments, is wasteful.

Fire Protection Service

The private provision of fire protection service in the United States is a growing industry. According to the Private Sector Fire Association, a private trade organization, 17 private companies now operate in 14 states (Poole, 1976; Smith, 1983).

Although Poole (1976) and Smith (1983) have reported that cost-savings that accompany switching from public to private fire companies have typically been 20 to 50 percent, Ahlbrandt (1973; Fall 1973) has conducted a careful econometric analysis of the private versus public cost issue. Hence, we present the results of Ahlbrandt's work in some detail. Using 1971 data from 44 different public fire companies in Washington state, Ahlbrandt regressed per capita operating costs on the following variables: population, area served, assessed value of structures, percent of dwelling units that lacked full plumbing facilities, wage index, fire insurance index, number of aid vehicles, number of volunteers, number of paid full-time personnel, number of fire stations, and whether personnel were all volunteer, all paid or a combination of the two. Using the parameters from this equation,

Ahlbrandt estimated the average cost of fire protection service in six communities in Arizona, five which were served by public fire companies and one, Scottsdale, which was served by a private enterprise. Ahlbrandt then compared his cost estimates for the five public firms to their actual average costs. His estimates were found to be accurate and justified his estimating procedures.

Ahlbrandt then compared the actual average cost of the private Scottsdale operation with his estimate of what the Scottsdale cost would have been if Scottsdale would have been served by a public enterprise. He found that Scottsdale's actual cost was 50 percent lower than what he estimated it would have been with a public provider, thus, confirming the conclusion derived from the property rights theory of the firm and also the less rigorous analyses reported elsewhere in the literature.

It is interesting to emphasize that, while the cost of the private Scottsdale operation is about one-half what it would be with a public operation, the quantity and quality of service, as measured by fire insurance ratings, was superior to what it would have been with a public system. One reason for this is the private company's incentive to prevent, not fight, fires. If there are no fires the private company saves operating costs and increases its profits.

The question is, "how do the private companies save so much money, while delivering the same service?" Private fire companies, for one thing, are much less capital intensive than public ones. For example, private companies do not use "gold plated," overdesigned trucks. In fact, some of the private operations have actually built their own trucks, using modified standard commercial trucks as a foundation. In addition, private companies

rely much more on an effective mix of full-time and part-time paid reservists, lowering their total wage bills. The private companies also have much less labor trouble. For example, between 1975 and 1980 unionized public companies averaged 12 strikes per year, while no strikes were recorded with private fire enterprises.

Forestry

There are over 90 million acres of publicaly owned commercial forest lands in the U.S. that are managed by the U.S. Forest Service. These lands generate negative cash flows of about $1 billion per year (Hanke, Winter 1982). Private timber firms, on the other hand, typically generate positive cash flows.

Blankart's (1979) analysis of forest lands in West Germany reveals the same picture. He reported that public forests had negative cash flows of 30 DM per hectare, while private forests registered positive cash flows of 15 DM per hectare.

The inefficient management of public forest lands results from nonoptimal cutting practices, inappropriate rotation ages and excessive costs. For example, the cost of preparing a sale of stumpage by the U.S. Forest Service is typically $80-$100 per 1000 board feet, while the same activity on private lands is accomplished at a cost of $10 per 1000 board feet.

Public employees have little incentive to react to cost and demand conditions. Furthermore, the taxpayer "owners" have little incentive to monitor public employees. The results are gross inefficiency and the

dissipation of natural resource rents on public forest lands.

Grazing Lands

The Bureau of Land Management manages and leases about 155 million acres of commercial public grazing land in the U.S. This land generates negative cash flows of about $100 million annually, while comparable private range typically generates positive cash flows (Hanke, Winter 1982). In addition, the condition of public grazing land is worse than comparable private land.

Public grazing lands, not surprisingly, are not managed in a wealth-maximizing manner. Much the same as with public forest lands, public grazing lands are grossly mismanaged.

Hospitals and Health Care

Despite the fact that a substantial amount of evidence has been accumulated to demonstrate the superior efficiency of private, when compared to public, hospitals, there is still a considerable debate on the issue of comparative efficiency (Hanke, December 22, 1983). The evidence presented below suggests that the debate, which is at times quite emotional, about the efficacy of public versus private hospitals could benefit from a objective review of comparative cost data. We first review some of the scholarly property rights research.

Clarkson (1972) tested the hypothesis, derived from property rights theory, that states that public enterprises are more regulated by bureaucratic rules and less regulated by market forces. Clarkson found that private hospitals have less explicit bylaws than public hospitals. He also found that private, as contrasted to public, hospitals are less likely to

have formal budgets approved by their governing boards, to utilize the Hospital Associations standardized accounts, to have written staff regulations, to have regular staff meetings, to have staff committees, to restrict surgical privileges to staff surgeons only and to limit hospital privileges to staff only. In short, Clarkson found that public hospitals spent a great deal more time following many more bureaucratic rules than did private hospitals. Whereas, private hospital administrative staffs spent much more time actually monitoring activities, including night duty, than did their public counterparts. In addition, Clarkson found that administrators of public hospitals are more inclined to grant across-the-board pay increases than privates. Based on 1966 data for 26 separate worker classifications, private hospitals exhibited much more wage variability than public operations.

Rushing's (1974) analysis also supports the property rights theory of the firm. He found, with the use of regression analysis, that public hospital administrators increased the proportion of administrators to "productive" personnel as hospital occupancy increased, whereas the private hospitals did just the reverse. These findings are the same as those for public and private educational institutions. In both cases, public administrators, relative to private ones, can more easily engage in discretionary behavior on their own personal account because monitoring of wealth-maximizing behavior, or the lack thereof, is not as great. As occupancy or enrollments increase, administrators rationalize their increase in the administrative staffs, so that they can actually ease their own work loads.

Wilson and Jadlow (1978) constructed, with a linear programming model, an optimal production frontier for nuclear medicine. Then, by using regression

analysis and data for 1,200 hospitals, they determined whether public or private hospitals were systematically closer to the efficiency norm. They found the private hospitals had lower efficiency divergencies than did public hospitals.

The federal Veterans Administration (V.A.) operates the largest health care system in the U.S. The V.A. operates 172 hospitals, 93 nursing homes, 227 outpatient clinics, 16 domiciliary units, 73 extended care wards in hospitals and 50 satellite clinics.

The V.A. system has been extensively studied (Lindsay, 1975; 1976; President's Private Sector Survey on Cost Control, 1983). The President's Private Sector Survey on Cost Control (PPSS), as did Lindsay, found that the V.A. system was highly inefficient, when compared to either not-for-profit or for-profit private hospital systems.

For example, sample PPSS data on construction costs (Table 3) show marked differences between V.A. hospitals and not-for-profit university hospitals.

Table 3

Construction Costs V.A. and University Hospitals

Hospital	Year Completed	No. of Beds	Construction Cost/Bed
Duke University	1980	616	$ 97,400
University of Florida	1983	452	122,800
University of Louisville	1982	264	115,200
University of Chicago	1980	470	117,900
University of Utah	1981	300	140,000
V.A. Bronx, N.Y.	1980	702	153,000
V.A. Albuquerque, N.M.	1983	445	208,000
V.A Minneapolis, Minn.	1984	725	298,000
V.A. Houston, Texas	1986	986	320,000

The construction costs for V.A. nursing homes were found to also be much higher than for comparable not-for-profit and profit nursing homes. For example, the PPSS compared the construction costs for six V.A. nursing homes with five comparable nursing homes constructed by a private firm that operates a chain of nursing homes. Table 4 summarizes this comparative construction cost data.

Table 4

Construction Costs V.A. and Private Nursing Homes

Nursing Homes	Construction Cost/Bed		
	High	Low	Average
V.A.	$113,000	$38,000	$61,500
Private	21,600	12,400	15,900

Overadministration, a factor that is predicted by using the property rights theory of the firm, plagues the V.A. construction program. The PPSS found that—when compared to the Hospital Corporation of America, the largest private hospital system in the U.S.—the V.A. construction administration staff is about 16 times larger, while the construction programs that they administer are roughly the same. As a result, administration costs account for eight percent of the total construction costs in the V.A. system and only two percent for the private, Hospital Corporation of America. It is important to mention that the V.A.'s overadministration of the construction projects does not result in more rapid completion of projects. In fact, the length of time between project initiation and completion is seven years for the V.A. and two years for the Hospital Corporation of America.

Another factor that contributes to the high V.A. construction costs is the V.A.'s use of standard, rather than performance specifications. Standard specifications define contracts so that contractors have no options in the use of materials, methods and workmanship, etc. Performance contracts, which are typically used by p. .vate hospitals, only identify the terms and degree of service required. Performance contracts, in short, allow the contractor to determine the best method to accomplish a given objective. This not only allows for cost-effectiveness in the construction phase per se, but it also reduces the contract administration staff.

These differing types of contracts bring us back again to the theory of property rights. A bureaucrat, not owning the assets of the bureau or agency, can increase his or her wealth by, among other things, increasing the number of public employees under his or her control. This results from the fact that civil servants' salaries are positively correlated to the number of employees that they manage and the total size of their bureau or agency's budget. So, the management level bureaucrats in the V.A.'s construction administration operations have an incentive to negotiate standard, rather than performance, contracts because the former require more V.A. personnel. The fact that these standard contracts lead to relatively high construction costs, of course, is of no concern to the public bureaucrats, since they do not own the V.A. and moreover the taxpayer "owners" have little incentive to monitor bureaucrats' activities.

The PPSS also evaluated operating costs. And, as was the case with construction costs, the V.A.'s operating costs were much higher than either not-for-profit or private for-profit hospitals and nursing homes. For

example, the average costs for an episode of acute inpatient care at V.A. hospitals was 69.8 percent higher for medical and 48.0 percent higher for surgical care than not-for-profit hospitals affiliated with medical schools.

The V.A. has claimed that the reason for their higher costs is the nature of their case-mix. For example, the V.A. treats more psychiatric and other chronic conditions which require long hospital stays. After adjusting a 1982 V.A. comparative cost study for deficiencies uncovered by the General Accounting Office, the PPSS found that the V.A.'s own analysis, which allegedly normalized the V.A. costs and not-for-profit hospitals' for case-mix, concludes that the V.A.'s operating costs were higher than the not-for-profits. For example, the not-for-profits had a 24.3 percent advantage for a medical episode, a 5.9 percent advantage for a surgical episode and overall a 15.5 percent advantage.

One reason for the comparatively high operating cost in the V.A. system is the relatively long lengths-of-stay (LOS) in the V.A. system. For example, the average LOS for the V.A. system was 27.3 days in fiscal year 1981, while the average in the private hospital system is 7.2 days. It is important to mention that the LOS cuts across all types of high-incidence diagnoses (see Table 5).

Table 5

Average LOS by Diagnosis for Males (50-64 yrs)
(in days of stay)

Type of Diagnosis	Average Length of Stay	
	V.A.	Not-for-Profit Teaching Hospital
Cancer of Trachea,Brochus,Lung	24.9	11.5
Diabetes Mellitus	24.1	9.4
Acute Myocardial Infection	18.6	19.4
Chronic Ischemic Heart Disease	15.7	11.0
Congestive Heart Failure	18.5	12.5
Hemorrhoids	8.0	6.9
Chronic Bronchitis	22.2	9.0
Pulmonary Emphysema	24.1	9.9
Stomach Ulcer without Hemorrhage or Perferation	21.5	9.0
Ulcer of Duodenum without Hemorrhage or Perferation	21.2	8.9
Inguinal Hernia without Mention of Destruction	12.5	6.1
Cirrhosis of Liver	24.4	13.0

The use of long LOS by public bureaucrats is, of course, something we would predict by using the property rights theory of the firm. The long LOS is an inviting technique for a bureaucrat to increase his total budget, employees under his command and consequently his salary.

Another factor contributing to public hospital inefficiency is the high level of medical supply inventories. The V.A. system's inventory levels

are 45 to 60 days. This is 33 to 50 percent higher than typical inventory levels for private hospitals. One reason for the lower private inventory levels is the fact that private owners must pay, either directly or indirectly, for the capital carrying charges on medical supply inventories. Therefore, if inventories for a given level of service are excessive in a private hospital, the asset value of the hospital declines and the private owners' wealth is reduced. Hence private owners have an incentive to monitor employees, so that inventories are properly managed.

Public hospital supply procurement is not cost-effective, when compared to private purchases of supplies. The V.A., in 1981, purchased 41.9 percent of its supplies at the local level through open market purchases. The remaining 58.1 percent were purchased through national contracts. By comparison, private systems purchase 75 to 85 percent of their supplies through national contracts. For the same products, this saves the private system 20 percent relative to what they would pay if they would have purchased locally in the same proportion as the V.A. system.

The V.A. system does contract out for some private nursing home care. The V.A. contracting cost averages $45 per day. For comparable service within the V.A. system, the cost is about 2.4 times higher or $109 per day.

Housing

Public housing projects are typically run-down and epitomize urban blight in the U.S. and in Europe. In addition, they are costly to construct and operate. For example, Weicher's (1980) research found that the cost of new public housing units is about 25 percent higher than comparable private

housing. The American Enterprise Institute's research also indicates that private management can lead to significant cost savings, when compared to public management. A switch to private management leads to reduced administrative costs, maintenance, and higher rental income through improved rent collection and reduced vacancy rates.

These cost data and property rights theory, which suggests that the owners of an asset will have a greater stake in maintaining its value than nonowners, lead one to conclude that the private provision of housing and private ownership of housing, even for the poor, would be a wise policy to pursue. (A separate issue is how this private supply policy is financed. For low income families, the private supply could be financed by public finance through vouchers, for example, or through a mixed system of public and private finance.)

A privatization policy has been followed by the current conservative government in Britain (Butler, 1984), with great success. During the past five years, over 500,000 public housing units have been sold to their former tenants. This has allowed the Conservative Margaret Thatcher to make large inroads among traditionally Labor-voting public housing tenants. Moreover, the former public housing units have been improved by their new private owners and neighborhoods have been improved.

Military Support and Maintenance

The U.S. Defense Department contracts with private providers for many base support and maintenance services. Bennett and DiLorenzo (1983) reported the results of a sample of these activities, and found that private providers

performed the same quality and quantity of services at an average cost savings of 15.1 percent, with savings that ranged from 0.1 percent to 35 percent.

J. Peter Grace (1984) reported findings that are consistent with those of Bennett and DiLorenzo. One of Peter Grace's detailed analyses is particularly revealing. Since 1960 the Air Training Command (ATC) has contracted with a private firm to perform base support services for Vance Air Force Base in Enid, Oklahoma. Performance standards in the contract specified what the private contractor was to do, but not how it was to do it. The private contractor by using less manpower, more specialized personnel, flexible procurement policies and a stable work force has been performing its contract at 22 percent less than federal employees. The private firm at Vance, for example, uses 40 and 27 percent, respectively, less manpower to maintain T-38 and T-37 training aircraft than does the ATC for its system-wide, remaining publicly maintained T-38 and T-37s. Using fewer personnel, the private firm also provides a higher quality service than does the public sector. The private firm only has 18.8 percent of the T-38s and 14.3 percent of the T-37s out of operation for maintenance on the average, compared to 21.5 percent and 15.4 percent, respectively, for the ATC public system. The private firm has 87.3 percent of its T-38s and 95.4 percent of the T-37s that it maintains fully mission capable, compared to 84 percent of the T-38s and 92.5 percent of the T-37s for the ATC publicly maintained planes.

Oysters

Property rights theory reveals that property rights are not neutral. Owners of private property use their property so as to maximize its transfer

price. This contrasts sharply with publicly owned resources. Studies of the oyster industry in the Chesapeake Bay verify the insights of property rights theory (Agnello and Donnelley, 1975). The Maryland portion of the Chesapeake is a publicly owned, common property resource. This once-pristine and productive natural resource has become over-used, depleted and politicized. This has been called the "tragedy of the commons."

Here is how the tragedy works. Suppose a group of youngsters is given a free soda and straws. We all know what happens next: the straws enter the soda, which is a common property resource; each youngster attempts to capture the maximum amount of soda as fast as possible; and the soda is depleted at a rapid rate.

Since, under these rules, each youngster knows that his friends will be "free-riders" and drink part of a new soda, without contributing to its purchase—none has an incentive to invest in another soda. The only way the soda supply can be maintained is if the youngsters talk an outsider into replenishing it.

In a similar way, the soda analogy accurately reflects the fate of the Maryland portion of the Chesapeake Bay and its users' behavior. Maryland's oyster beds are publicly owned commons. Hence, it is not profitable for the state's watermen to invest in developing, managing and protecting oyster beds. A Maryland waterman simply does not have the incentive to cultivate a crop that is available for others to harvest. In fact, watermen operating in this system have an incentive to harvest as fast as possible, before others capture and lay claim to common property resources. This explains why the Maryland portion of the Bay has become depleted, why oyster harvests

have declined over time, while at the same time Maryland's taxpayers have been required to invest considerable sums to replenish the oyster industry.

This situation is quite different in the Virginia portion of the Chesapeake Bay, where oyster beds are privately owned. In Virginia, the oyster beds are not depleted, the harvests have not been declining, harvesting equipment is more efficient, wages for watermen are higher and, instead of negative cash flows, the Virginia oyster beds generate positive cash flows (Agnello and Donnelley, 1975).

Parks and Recreation

Poole (1980) reports that contracting with private operation and maintenance of public parks is a rapidly growing activity. His studies show that private firms not only typically reduce maintenance costs by about 20 percent, but also improve service, when compared with public operation and maintenance.

Ports

There are a large number of private ports in the world. For example, in 1979, there were 594 public ports and 230 private ones in the Philippines. Until 1982, there were 220 private terminals in the vicinity of the Port of Lagos. However, most private ports are industrial, wholly devoted to the transportation requirements of one shipper or one commodity. There are several private "common-user" private ports, however. For example, Felixstowe in the U.K. and Texas City in the U.S. are in this category (Bennathan and Wishart, 1983).

In addition to the fact that there are a number of private ports

throughout the world, there are also a number of services supplied at ports—such as pilotage, towage, berth allocation, dry docks, unballasting and bunkerage, cargo handling and storage—that are privately supplied.

Bennathan (undated) reported that evidence on private versus public ports and private versus public port services clearly shows the superiority of private provision. For example, Lagos, Nigeria, was experiencing a great deal of congestion in the mid-1970s, and it privatized 60 percent of its public port capacity to five liner conferences, which handled about two-thirds of Nigeria's general cargo imports and 90 percent of its break-bulk traffic. This led to a dramatic drop in waiting-time by the five private conferences. The median wait dropped to about ten days for the conference vessels, while it was about 300 days for those using the 40 percent of the port that remained public. However, Bennathan cautions that the data on private versus public ports have not been systematically analyzed and that most of the private ports are more specialized than public ones. He does note, though, that recent technological change with containerization, better scheduling techniques and faster turn-around time, should all favor private over public provision.

Postal Services

Even though private, first-class mail statutes prohibit private firms from competing with the U.S. postal service for this class of service, many private firms have begun to compete for other classes of service. These private providers have led the way in adopting innovative postal technology and have also been able to deliver a higher quality service at a lower cost than the U.S. Postal Service (Maldi, 1974 and Savas, 1982).

For example, United Parcel Service (UPS) handles twice as many parcels

as the U.S. Postal Service, charges lower rates, makes faster deliveries and has a damage rate that is 80 percent less than the public post office. In addition, UPS makes a profit, whereas the U.S. Postal Service has typically generated losses.

Further evidence of private enterprises relative efficiency in the field of postal service has been provided by Grace (1984). Grace reported that it cost the U.S. Postal Service, on the average, $0.24 per dollar of revenue generated to operate a postal window at a public post office. Alternatively, the U.S. Postal Service contracts out with private enterprise to operate postal windows at a much lower cost. For example, in 1981, the U.S. Postal Service in Tucson, Arizona had 23 private contract stations, and the cost per dollar of revenue generated at these stations was only $0.028.

Perhaps the best evidence of the relative quality and efficiency of private providers of postal service is attested to by the extremely rapid growth of private providers. Further deregulation in the postal field would, no doubt, lead to even more private firms and more growth in the private sector.

Prisons and Correctional Facilities

At present, there are about 150 counties and 39 states that are in litigation or under court order to improve their public prisons and/or correctional facilities. And between 60 and 80 percent of all the nation's public prison cells are designated as being "overcrowded."

Faced with the need to expand capacity on the one hand and the taxpayers' reluctance to finance new prisons on the other, public officials have begun to turn to the private sector. Since 1979, the Federal Bureau of Prisons has contracted out all of its halfway-house operations. Some states have done the same. The Immigration and Naturalization Service has begun to contract out for som of its lock-up facilities. In all, there are some 30,000 juvenile offenders housed in about 1,500 facilities that are owned and operated by private firms. In addition, Buckingham Security will

begin to design, build and operate the first full-service penitentiary for adult offenders in the near future.

The evidence reported (Poole, 1980) indicates that private firms have been able to built and operate low security facilities at costs that are 10 to 25 percent less than public facilities. Moreover, they can complete the design and construction of these facilities in six to twelve months as opposed to an average of five years for the public sector.

The reality of these private prison cost savings has recently been recorded in Houston, Texas, where a private firm built and now operates a 350-bed holding facility for the Immigration and Naturalization Service, for $24 per day per prisoner. This is about 35 percent lower than the public cost.

So, the trend toward private prisons and correctional facilities not only offers the possibility for rapid expansion of facilities, a real need for public officials facing court orders to build more capacity, but also capacity at a lower cost than public prisons.

Property Assessment

Robert Poole (1980) reported that about 10 percent of all property tax assessment work at the state and local level was conducted by private firms. Although some jurisdictions forbid private assessment work, Ohio requires private provision.

The quality of assessment work in Ohio, measured by the relationship between assessments and actual sales prices, is the best in the nation. Also, the average cost per assessment is 50 percent lower in Ohio than the U.S. average.

Railroads

The two nationalized railroads in the U.S. present somewhat different pictures. Amtrak's 1981 Annual Report showed a negative net worth of $599 million, whereas the Conrail, which is about to be privatized, has a positive net worth, as measured by market bids, of between one and two billion dollars.

Amtrak's negative net worth has resulted from rapid increases in operating losses, which grew from $150 million in 1972 to $750 million in 1981. On a per passenger basis, the losses jumped from $9.48 in 1972 to $38.30 in 1981 (Semmens, 1982).

The underlying cause of these losses was remarkably low productivity compared to similar private lines. Bennett and DiLorenzo (1983) reported that for 1979 a comparison of Amtrak with four private firms showed that Amtrak repaired 182,955 ties with an average work crew of 69, while the private firms repaired 684,338 ties with an average crew of only 26. Amtrak removed 71.8 miles of rail with an average crew of 129, while the average removed by the private firms was 344 miles with an average crew of 77. The average private firm surfaced 864 miles of track with an 18-man crew, compared to Amtrak's 141.4 miles with a 16-man crew. These comparative productivity data are summarized in Table 6.

Table 6

Output per Hour, by Function, Amtrak vs Private

Function	Amtrak	Private Firms				
		1	2	3	4	Average
Wood Tie Removal Ties/Labor Hour	0.5	2.10	2.39	2.29	2.18	2.24
Rail Renewal Track Ft/Labor Hr	1.13	5.52	4.42	6.75	Not Available	4.92
Surfacing Tract Ft/Labor Hr	21.17	Not Available	38.40	36.81	70.40	48.54

Although no comparative productivity for Conrail and private enterprises are presented, a word about the bidding for Conrail is in order. First, part of the attractiveness of Conrail is its commercial real estate or non-railroading assets. And, second, implicit in the private bids for Conrail is the fact that the private firms believe that they can enhance the value of Conrail's railroading assets. No doubt, this is due to the fact that the private bidders know that they can operate the Conrail system more efficiently than the public enterprise.

Refuse Collection

Comparative cost analyses for refuse collection have been many. Hirsch (1965), using 1960 data for 24 cities in the St. Louis, Missouri region, performed one of the earliest studies of private versus public refuse collection costs. Hirsch did not find a significant difference between private and public collectors. However, Savas (1977) reported results of a much more extensive study, which included a national sample of about 1,400 communities. Savas used 1975 data and developed regression equations to

predict costs. These equations controlled for total quantity of refuse, quantity of refuse per household per year, wage rates, households per square mile, temperature variation, frequency of collection and location of pickup points. The equations revealed that, for cities over 50,000 population, private collectors were about 30 percent less costly than public ones.

Less ambitious studies than Savas' confirm his general findings. Spann (1977) found that public collectors in Monmouth County, New Jersey were 70 percent more costly than private ones in the same county. Kemper and Quigley (1976) analyzed data from Connecticut, and found that municipal collection was 25 percent more expensive than contract collection. Bennett and Johnson (1979) compared the prices charged by 29 competing private providers operating in Fairfax County, Virginia with the prices charged by the county, which serves about one-third of the single-family residences within the county. The average annual county fee was $126.80, while the private firms charged between $48 and $148 annually for an average of $85.76, with only one firm charging more than the county.

Kitchen (1976) reported that private refuse collection was much less than public in the 48 communities that he studied in Canada. Private refuse collection was also found to be the most efficient in Switzerland (Pommerehne and Frey, 1977).

Security Services

The private security industry in the U.S. has a long history. All of our original local police functions were private. And, of course, Pinkerton and Wells Fargo were originally known for their security forces that handled stage coach runs. In fact, 1829 marks the establishment of the first public

police force in the Anglo-American world. This was when the London Metropolitan Police was established. Today, private security forces outnumber public ones in the U.S. by at least 2 to 1 (Savas, 1982).

The efficiency of private over public security is attested to by a 1976 study of New York. New York was able to contract out security for a total cost of $4 to $7 per hour per guard. The public cost per hour for a guard was $15, and this did not include any overhead or amortization costs (Savas, 1982).

Gage (1982) also reported similar results. For $90,000 annually, one-half the public cost, a private firm provided Reminderville and Twinsburg, Ohio with twice as many patrol cars and an emergency response time that was over seven times faster than the public alternative.

Ship Maintenance

Many of the Navy's support ships are similar and perform functions that are identical with the private merchant marine. Bennett and Johnson (1981) and Bennett and DiLorenzo (1983) reviewed comparative performance and cost data about the public and private fleets. They reported that private ships were typically on sea duty between two and three-and-one-half times more than the public fleet. So, the private output per ship was much higher than public output. Given that the output per ship was higher, we would expect that the total maintenance costs per ship would have been higher for the private fleet. However, this was not the case.

The average annual maintenance cost for a Navy support ship was $2 million, whereas a private ship was $400,000. Furthermore, more disaggregated data for eight specific equipment repair items revealed the public cost

for the identical job ranged from 3 to 52 times more expensive than private vessels. These cost data are also supported by data on days per year that are required for repair: naval support ships spent between 30 and 68 days per year in repair, whereas private vessels spent between 11 and 31 days in repair.

Streets, Highways and Bridges

The original turnpike systems (highways) in the United States were financed, built, owned and operated by private companies. Today, we do not have any of these systems that are open for public transport. Furthermore, there are no foreign private highways.

However, private periodic maintenance—regravelling for gravel roads, and surface dressings or seal for paved roads—of highway systems is widespread in the U.S., Europe and in the LDCs. Private routine maintenance—vegetation control, cleaning ditches and culverts, patching potholes and emergency repairs—although not as widespread, is also a common practice. Harral, Henriod and Graziano (1982) reported that contracting out for periodic and routine maintenance was significantly more efficient than comparable public enterprise.

Prior to conducting their comparative cost analysis, Harral, Henriod and Graziano (1982) noted that while the cost of contracted work and the performance of the private contractors (output) is available, even in LDCs, it is not available for most public entities, so that comparative analyses are difficult to conduct. For example, public bureaus and agencies usually only keep records for some of the resources they consume, as distinct from the output they produce. Also, the economic cost of public investment in

plant and equipment and its amortization is usually not recorded. However, Harral, Henriod and Graziano overcome these difficulties in their studies.

Harral, Henriod and Graziano's (1982) in depth study of Brazil's experience with contracting is most revealing. In 1970 the Brazilian National Highway Department began to contract with private firms for highway maintenance. By mid-1981, the size of the network maintained by the public sector was reduced by 75 percent, and there were 264 contracts for private maintenance. Two types of contracts were used in Brazil: cost-plus contracts and performance (unit price) contracts. In the former, the government specifies what should be done, how it should be accomplished, and then compensates the private contractor on a cost-plus basis as their contracts are completed. This method is more efficient than the public sector because contracting offers a great deal more flexibility with regard to labor force size. The private sector can accommodate peaks and low points in the demand for maintenance services over the year, whereas the size of the public sector's labor force is much more rigid.

Alternatively, performance contracts simply specify the task to be accomplished, without directing the private firms as to the method that must be used to accomplish the task. This approach not only has the advantage of labor force flexibility mentioned above, but it allows for larger reductions in public sector design and planning staffs and increased flexibility for the contractor to perform the contract in the most efficient way possible. After all, this is how the contractors can increase their profits which will eventually be, through the competitive bidding process, passed along to the taxpayers.

As we would expect the private performance contracts led to the most

efficient method of operation, then come the private cost-plus arrangements, and then the public sector, which is the least efficient. For example, Harral, Henriod and Graziano (1982) compared public versus private (performance contracts) road maintenance costs by disaggregating road maintenance into the 19 categories that performance contracts are let on. They found that the private performance contracts, on a weighted average basis were 37 percent less costly than public provision.

Harral, Henriod and Graziano (1982) also reported similar results for Argentina, Kenya and the U.S. In Nigeria, the results were even more dramatic because virtually no maintenance was occurring, prior to private contracting.

Even though there are no private highway systems, there are some bridges that are privately owned and open to public access. The Ambassador Bridge, linking Detroit to Canada, is owned by a private company. There are some private bridges in Florida. The Progresso Bridge that crosses the Rio Grande, from Texas to Mexico, is also private. These, and other private bridges, not only make a profit but are better maintened than publicly owned bridges (McDermott, 1982).

Local private streets also exist in the U.S. cities. For example, St. Louis has some private streets. The privatization of streets in St. Louis is effected by deed restrictions attached to each property on the street. These restrictions require that title to the street by vested in an incorporated street association to which all property owners must belong. Deeds also restrict property uses and require property-owners to pay association fees which cover the cost of maintaining the street.

The private streets, when compared to public streets in the same areas,

are better maintained, are much safer (public streets in the areas had between 26 and 52 percent more crime in the period 1966-1973) and property values are much higher (Gage, 1981). The explanation for this is rather straightforward and based on property rights theory. By forming a street association, the shareholders (property-owners) are able to transform what was a public common property resource into a private resource which it pays to invest in as well as monitor because the street-owners capture any gains (or losses) generated by a good (or bad) street through increased (or decreased) capital values for their property.

Towing

Savas (1982) reported that towing of illegally parked cars is much less costly, when contracted out to private firms. New York's police department estimated that it cost the city $65 per car to make a tow. The costs dropped to $30 per tow with a private contractor.

Urban "Public" Transport

Until rather recently, conventional wisdom in the U.S. was that urban "public" transport must be provided by public enterprise because private enterprise was inefficient and not up to the task of providing this service. In addition, most thought that these public systems should operate with fixed routes, large operating units and larger vehicles. These attitudes are slowly changing as public systems generate ever larger operating deficits and provide poorer service, when measured in terms of the waiting time required by passengers (Poole, 1980; Walters, 1979).

The problems faced by public systems in the U.S. are epitomized by New York City's subway system. Most forget that the system was originally developed and operated by private companies. However, price controls made it impossible to operate these private companies at a profit and still maintain quality services. Hence, they were municipalized (Ramsey, 1983).

This switch, from private to public, could have been anticipated. As Pashigan (1976) reported, private systems are taken over by public ones earlier when "public" system users had more voting strength and regulation was less stringent under state than local jurisdiction, conditions that existed in New York City. Pashigan's research also indicated that the diversion of passengers from "public" transit to private autos was greater, with publicly owned "public" transit than with private, indicating that privately owned "public" systems outperform public ones.

Now let's look at New York's system. In 1982, the subway system had an operating deficit of about $1 billion and the system had, after years of deficits and neglect, reached a state of extreme physical deterioration. Ramsey (1983) pointed out that the problem is simple: costs, mainly labor costs, per passenger mile have risen much faster than user revenues, subsidies and general inflation.

Between 1968 and 1979 the number of riders on the system fell by 35 percent. During the same period, the number of full-time employees (excluding transit police, capital engineers and CETA employees) fell by under 2 percent, and wages paid transit employees rose about twice as fast as inflation. The result was a dramatic rise in labor cost per passenger, from 20¢ to 63¢.

Ramsey stated that the economic power of the transit union and its

political leverage relative to the average voter-taxpayer explain the rapid increase in system costs and increasing deficits that are covered by subsidies from local governments, the state of New York and the federal government. He also pointed out that this would not happen under private ownership because a private firm, among other things, would substitute capital for labor, if it was faced with rapidly rising labor costs, and would have to rely on users for revenues.

The response of private firms to a different set of incentives leads to their relative efficiency, both in the U.S. and abroad. For example, public buses in New York generated $16,694 in annual revenues per employee, whereas the figure for comparable private lines in the metropolitan area was $26,279 (Ramsey, 1983). In Australia, private urban bus systems were 50 percent more cost effective than public ones (Roth, 1984). The pattern is similar in Germany, where the nationwide average cost for public buses was 160 percent more per kilometer than the contract price for comparable private bus service (Blankart, 1979).

The urban "public" transit sector is one of the few sectors in which systematic research has been conducted on the relative efficiency of public versus private modes in the LDCs (Roth, 1982; 1984; Walters, 1979). Perhaps the reason for this is the rapid growth and diversity of private "public" transport in the LDCs.

Roth (1984) reported that in Abidjan, Ivory Coast the private sector operate Gbakas (14 or 22 seat vehicles) on two routes that compete with public transport buses. The private sector carries about 200,000 passengers annually on these routes, whereas the public buses carry 160,000 passengers. The

public buses operate with a large deficit, while the Gbakas operate with substantial profits and are growing in capacity (one private route grew 75 percent and the other 21 percent over the past three years). One reason for the private profits, as opposed to the public deficits, is labor productivity; the Gbaka employees produce three times as many vehicle miles as do public employees. The other reason is capital productivity; the private load factors range from 73 to 85 percent, whereas the average public load factor is only 45 percent.

Roth (1984) also reported on the evolution of urban "public" transit in Buenos Aires, Argentina. The public system in Buenos Aires had deteriorated to the point where quality of service was so low and the operating deficits so large that the public enterprise, with the exception of subways, was dissolved. The private sector has filled the void with a wide variety of efficient and profitable services. For example, 13,000 micro-buses, with 23 seats, operate in Buenos Aires. Labor productivity is exceptionally high, with each micro-bus employing three people, for driving plus maintenance, each producing 1.3 to 1.6 million passenger miles annually, so labor productivity is about 480,000 passenger miles per employee annually.

Cairo is another city that is witnessing rapid growth in private "public" transit (Roth, 1984). While the public system is running with an operating deficit of about $50 million per year, the private operators are typically generating profits and expanding capacity.

Calcutta provides yet another clear example of the superiority of private "public" transit. In Calcutta, private buses account for about two-thirds of all bus trips. They operate on comparable routes with the

public buses and charge the same fares. Yet, the private buses turn a profit, while the public buses generate operating losses that amount to about $12 million annually (Roth, 1984).

The publicly owned bus system in Khartoum, Sudan is so deteriorated that only about one-half of its buses can be put on the streets at one time. The service is so poor that waits can run into hours on public bus routes. In addition the system operates with large deficits. As a result, the private sector has filled the void with about 3,300 profitable Bakassi (Roth, 1984).

Roth (1984) summarized the findings of a World Bank study about the comparative costs of private versus public transport in Puerto Rico. Private "publicos" (14 seat) cost $60-65 per day to operate and generated revenues in excess of their costs, whereas the public buses cost $154 (exclusive of interest and depreciation) to operate and generated about $173 per day. Hence, the public bus system was only viable if the buses (capital) were "free".

Perhaps one of the clearest examples of the failure of public transport is the case of Bangkok (Roth, 1984). In the early 1970's Bangkok had 24 private franchised bus companies. They operated 2,000 buses profitably. In 1976, Bangkok implemented a municipalization plan which had been recommended by European consultants. Shortly after the switch to a public system, fares were increased by 20 percent, but inefficiency plagued the public system, and by 1979 the public system was incurring losses of $25 million annually. By 1984, the fares were double the 1976 levels and the accumulated debt of the public system was $185 million.

The most sophisticated economic analysis of comparative efficiency of public versus private "public" transit was performed by Sir Alan Walters (1979).

In 1974-75 Kuala Lumpur allowed 400 private mini-buses to enter the "public" transit market. Although they only accounted for about 17 percent of the total bus capacity, they carried half the passenger miles.

Walters carefully calculated the net benefits from this new private mode of transport. It is important to mention that Walters included reduced passenger waiting time on the benefit-side of the ledger. The net benefits of this new private mode of transport, which operated with average profits of about 37 percent on capital, were significant. Net benefits totaled about $10 million annually or about one percent of per capita income.

Wastewater

Wastewater provision in the U.S. is a particularly interesting area, since it reveals how budget and tax policies can influence the provision of public service. Federal involvement in the wastewater treatment issue dates back to the 1950s. President Eisenhower believed that water pollution control was important and should be financed by those causing the pollution.

Congress, taken with the argument that the federal government should subsidize the construction of wastewater facilities, opposed the president. In 1956 it overrode his veto and passed the Federal Water Pollution Control Act.

The original program was rather modest—$50 million a year was appropriated for the entire country and a limit of $250,000 was placed on any single project. But succeeding Congresses raised the ante dramatically, and the program grew out of control. By 1972 Congress had amended the act and increased the annual authorization to $4.5 billion a year, an 8900-percent increase over the 1956 level,

with the federal government picking up 75 percent of the cost for eligible projects. In less than three decades, the so-called "Construction Grants Program" has now ballooned into the nation's largest public works effort.

While the program might be well intended, it basically has become a giant, wasteful, pork-barrel operation. Independent professionals have critized it. In fact, the National Commission on Water Quality has recommended its end, and last year the Water Pollution Control Federation called for its orderly phaseout.

The amendments to the program enacted under the Reagan administration in 1981 lowered the total annual authorization to $2.4 billion a year and reduced the coverage and the federal cost-share to 55 percent of eligible projects.

New tax laws in 1981 offered two provisions which greatly enhance the attactiveness of private investment in wastewater facilities: investment tax credits and the accelerated cost recovery system. These translate into lower costs and prices for goods and services provided from new private investments.

The arithmetic of reduced subsidies for public projects and tax benefits for private investments tilted the balance toward the private ownership, construction and management of wastewater services. The key factor that tipped this balance was the inherent cost advantage associated with the private supply of wastewater services.

Because of construction and operating efficiencies, the costs of private supply typically run 20 percent to 50 percent lower than public supply (Hanke, July 21, 1983). These cost savings result from the fact that it only takes about two to three years to design and construct a private plant, whereas a

public plant requires seven to eight years. In addition, public plants must follow the U.S. Environmental Protection Agency's design criteria, which result in "overdesigned" plants. The public plants must also often pay construction workers wages that are higher than market wages because of the requirements of the Davis Bacon Act. Lastly, competition and private ownership put pressure on private firms to efficiently operate plants, whether they be public plants that have been contracted out for operation or plants that are privately owned.

Of particular importance in the wastewater field is the fact that private operators have an incentive to operate plants properly under performance contracts. One of the major problems in the LDCs is the fact that plants are "overdesigned" and are too capital intensive, even more so than the public plants in the U.S. After these complex plants are built, usually with financing from international organizations, the contractors leave them to be operated by local public works employees. All too often, the plants are never operated properly and never generate an improvement in effluent quality. The private operators not only operate at a lower cost, but also produce an improved effluent quality.

One of the most recent examples of how private wastewater plants save money is found in Chandler, Arizona, a 45,000 person community located 35 miles southeast of Phoenix. This plant was designed, financed, owned and is operated by Parsons Corporation. The City of Chandler has determined that it will save 37 percent relative to what it would have cost to build and operate a public plant. Furthermore, Chandler will preserve its debt capacity for other purposes.

Recently the tax committees of Congress have expressed concern over the tax benefits that private firms receive for providing wastewater services to tax-exempt entities. Some members of the committees want to close the alleged tax loopholes of investment tax credit and rapid depreciation. They argue that this will save the government money. However, the tax benefits, which are granted to wastewater plants and are the same as any other private investment, amount to about 25 percent of the present value of the cost of a private wastewater plant. So, one can argue that the "cost" to the federal government of a private plant is 25 percent of the plant. However, if these tax benefits were disallowed and the plants were built publicly, with a construction grant, the federal government would pay 55 percent of the plants' cost and the plant would cost about 50 percent more to build. So, the arithmetic is clear: let us assume the private plant cost $10 million, than the tax benefits would equal $2 million; alternatively, a public plant would cost $15 million and the federal grant would be $8.25 million (Hanke, July 21, 1983).

The point here is that the inherent advantage of private provision can either be enhanced or crippled by tax and budgetary (cost-sharing) considerations. These factors must always be carefully considered when attempting to assure that public services and infrastructure are supplied at the least cost.

Water Supply

Crain and Zardkooki (1978) used 1970 data from a sample of 24 private and 88 public water enterprises in the U.S. to construct an econometric cost model for water supply. They established that the private operating costs were about 25 percent less than for the public operations. Further, they

found that this was caused by relatively low labor productivity in the publics and also an underutilization of public enterprises' capital. Morgan (1977) generated similar results with a different data set.

Monod (1982) indicated that private ownership, as well as private operating and maintenance agreements, exist in LDCs. Not only do these private arrangements provide service at a lower cost than public enterprises but they provide a higher quality of service.

Hanke (1981) found that, in accordance with the property rights theory of the firm, customer cross-subsidization was more common in public than in private operations. This creates unusual problems in LDCs, problems that ultimately result in central water systems not being extended to low income areas. Many water users in LDCs purchase water from water carriers at prices that exceed the cost of supplying water to these users from a central system. This indicates that the users would be willing and able to have water supplied to them by a central system on a self-financed, profitable basis. However, the central systems are often publicly owned, and the public systems are not extended because customers who are already connected are rightfully concerned that they will be required to cross-subsidize new, low income users. As a result existing users object to the extension of public systems to low income areas. Thus, by having a private system, with few cross-subsidies, higher quality central system service can often be supplied to low income residents, when it would have not been possible with a public system.

Weather Forecasting

Bennett and DiLorenzo (1983) reported that the weather service was

contracted out at National Airport in Washington, D.C. The contract contained incentive for accurate forecasts, with payments being reduced for below average forecasts in any month and grounds for contract default if two consecutive below average months occur. The cost savings from this privatization was 37 percent and the quality of the forecasts improved.

TYPES OF PRIVATIZATION

To obtain the cost savings and efficiency that accompany private enterprise, public supply must be replaced by private supply. Privatization is the process whereby public operations are transferred to the private sector. There are various types of privatization.

Complete Privatization

With complete privatization, public assets, infrastructure or service functions are transferred to a private entity or individual. After complete privatization, the new private owners become fully responsible for use, maintenance and management of the property or service involved.

In the U.S. complete privatization has been used at all levels of government. New York City, for example, has recently sold significant quantities of real assets (land, buildings and furniture) (Hanke, March 29, 1984). The current federal administration has announced that it intends to engage in complete privatization for surplus assets (Hanke, Winter 1982). However, this policy has moved ahead slowly because, in part, the federal government has not yet determined what assets are "surplus." In the area of infrastructure, as another example, streets in St. Louis and waterworks in Hershey, Pennsylvania have recently been privatized. Service functions, such as debt collection and property tax assessments have also been turned over to private enterprise.

In foreign countries, complete privatizations have taken place at an accelerating pace, but they have been largely focused on what are normally thought of as commercial activities (Brittan, 1983; Glade, 1983; Meislin,

1984). Since we are focusing on public infrastructure and services, we will not discuss the particular opportunities and problems associated with privatizing these so-called commercial enterprises.

Real assets held in the public sector's portfolio are often difficult to privatize because public bureaucrats have a strong bias to hoard assets. For one thing, those who are charged with managing these assets perceive privatization as a threat to their job security. A second factor that contributes to asset hoarding by bureaucrats is the fact that government officials do not have to pay capital carrying charges or rents for the assets they control. This means that no costs have to be budgeted for holding public assets. Once assets are under government ownership and control, they are viewed by bureaucrats as being free, since nothing must be given up for the assets' use and retention. Hence, asset hoarding generates bureaucratic benefits, in the form of job security, and is, at the same time, perceived by bureaucrats to be a costless activity.

The first step in eliminating the asset hoarding bias is to impose economic criteria to classify assets as being surplus. One approach is to specify that all commercial public assets must yield a target rate of return. If they fail to do so, then the assets would be required to be privatized.

The objective of holding a portfolio of commercial assets should be to earn a target rate of return. Therefore, the first step that a public entity should take in designing an asset management program is to classify its assets and determine which assets are "commercial" and subject to review. The next step should then be to determine what an appropriate target rate of return should be.

We suggest, for example, that a target rate of return of 10 percent (real) be used in the U.S. This real rate reflects the real rate earned before taxes on private sector investments, and has been recognized by the federal government as the opportunity cost of private investments displaced by public taxes. The rationale for the suggested real rate of 10 percent is quite simple: assets earn this rate in the private sector; therefore, if they are earning below this target in the public sector, there should be opportunities for privatizing them; and this transfer from lower to higher yielding uses would improve the productivity of the assets which are classified as surplus and privatized.

Using our suggested economic test, to determine which assets should be held in a government's portfolio, we must simply determine whether they yield a real rate of return that exceeds or falls short of the 10 percent target. If the assets yield less than 10 percent, they should be classified as surplus and privatized.

To determine the yield on public assets, we must determine the value of the assets held and their respective cash flows. In the private sector, the determination of asset values, cash flows, and yields on assets is a rather simple exercise. First, we take the price of a company's stock at the beginning period. Second, assume that all dividends paid (positive cash flows) are invested back into the firm by purchasing shares of stock at the market price after dividends have been paid. Therefore, the change in investors' wealth for the period in which the annual rate of return is calculated will increase or decrease by virtue of price appreciation or depreciation of the stock and the greater number of shares held because

of the reinvestment of dividends. The rate of return calculated by this method is simply the average rate of return, which, if realized every year, from the beginning period to the ending period, would result in the same rate of increase in wealth in each period. Since the investor, the stockholder, will not, in all probability, experience the same rate of increase in wealth each period, the calculated rate of return must be interpreted as an average.

In the public sector, however, the determination of rates of return is not so simply. Market data for the determination of asset values often either do not exist or are unreliable. Moreover, with no standard set of accounts to determine cash flows, the task of determining yields is further complicated. These difficulties, of course, must be overcome before we can apply economic criteria to the determination of what are surplus assets.

With these problems in mind, we suggest the following procedure for determining the asset values that are necessary to compute rates of return. The only reliable way to determine values is through market processes. Therefore, governments must always be willing to receive and should encourage good faith offers for all of the assets that they are reviewing under their asset management programs (Hanke, 1983).

As it receives initial offers, the government must decide whether to recommend the sale or retention of the property in question. If the government recommends a sale, then the rate of return calculation is not relevant, and the property should be classified as surplus and prepared for sale. If the government should refuse the initial offer, the value of the highest offer made during the initial year of the program should be used

to value the asset for purposes of computing rates of return. To insure that this process operates smoothly and offers are forthcoming, the government should be required to pay a relatively small percentage of the offer price to the highest bidder in any year. This payment can be viewed as an appraisal fee, and it should be counted as a negative cash outlay in the cash flow calculations for the property in question. To prevent speculators from making a business of bidding for assets just to obtain an appraisal fee, a bond must be posted. It should be sufficient to assure purchase, if the government decides to accept the offer.

After the first year of this process, the assets that have not been designated as surplus will have been assigned an asset value equal to the highest bid received in the first year. To determine the rate of return on the retained assets, the highest price offered during the second year should be used to value the asset in that year. The difference between the value of the asset at the end of the first and second year represents the capital gain (or loss) associated with retaining the asset in the government's portfolio for one year. If there were no cash flows associated with the retention of the asset, we would have the basic information required to compute the asset's rate of return. For example, if the highest bid in the first year was $100 million and the highest bid in the second year was $120 million, then there would be a capital gain of $20 million, and the nominal rate of return would be equal to 20 percent. If the annual rate of inflation is 10 percent, then the real rate of return would be 10 percent. Now, when applying our criteria, there will be outlays for appraisal fees that will be paid to the highest bidder each year. Moreover, there will

usually be other cash outlays and, in some cases, receipts associated with the assets under review. The cash flows should then be added to or subtracted from the asset's value, to yield a net asset value. In this case, it is this net asset value that should be used to compute the asset's rate of return. For example, if the original asset value was $100 million, the highest bid price in the second year was $120 million, and there was a negative cash flow of $10 million in the second year, then the net asset value in the second year would be $110 million. The nominal rate of return in this case is 10 percent, and if the annual rate of inflation is 10 percent, then the real rate of return is zero. (Table 7 offers an example of the mechanics of this rate of return formula.)

The calculation of rates of return by this process should be carried forward on an annual basis. If, in the future, the real rate of return is less than our suggested 10 percent, then the assets should be designated as surplus and sold to the highest outstanding bidder. The process of receiving bids, paying appraisal fees to the highest bidders, calculating yields and designating assets as surplus should be carefully monitored, and each year a report on the asset management program should be issued.

Table 7

Target Rate of Return Calculations

	Year 1 (Base Period)	Year 2	Year 3	Year 4	Year 5
Asset Value (High Bid Price)	$1,000	$1,200	$1,500	$1,600	$1,400
Cumulative Capital Gain	N.A.	+ $200	+ $500	+ $600	+ $400
Cumulative Cash Flow*	N.A.	- $10	- $20	- $30	-$40
Net Asset Value	$1,000	$1,190	$1,480	$1,570	$1,360
Nominal Rate of Return**	N.A.	19.0%	21.66%	16.23%	7.99%
Annual Inflation Rate	N.A.	7.0%	6.0%	5.0%	4.0%
Real Rate of Return	N.A.	12.0%	15.66%	11.23%	3.99%
High Bid Price (Asset Value)		$1,180	$1,366	$1,551	$1,729
Necessary to Generate a 10% Real Rate of Return					

N.A. = Not Applicable

*Note that the interest charges associated with covering negative cash flows should be set at the opportunity cost of displaced private investments. If positive cash flows should exist, then, for purposes of rate of return analysis, we should assume that the positive cash flows would be reinvested at the opportunity cost interest rate. These calculated interest returns should be, of course, added to the positive cash flows that are derived directly from the assets that are being evaluated.

**The nominal rates of return are average annual rates of return. They are computed in the following manner: to compute the rates of return for the fifth year, we compute the rate of return that would result in the original asset value ($1,000) growing over a four-year period to a net asset value in the fifth year ($1,360). This rate is equal to 7.99 percent.

The second step in eliminating asset hoarding requires that some incentives be built into the process, so that bureaucrats, who have a concern for their job security, do not perceive privatization as a threat. At present, bureaucrats do not receive any benefits when public assets are privatized, since the proceeds from the liquidation of public assets are not earmarked for use by the department or agency that initiates the sale. This incentive problem could be overcome in a variety of ways. First, a small portion of the sale receipts could be used to compensate public employees who are no longer required after privatization. This compensation could come as severance pay. Also, the purchaser of the public assets could be encouraged, to the extent that new private jobs were created, to offer displaced public employees the right of first refusal for the new private jobs. Both of these approaches have been used successfully at the local level in the U.S.

In addition to holding large amounts of real assets, the public sector also engages in many commercial activities that can be performed in a cost-effective way in the private sector. Given the comparative cost data that we have reviewed, as well as the theory of private versus public provision, it would appear that there is great scope for complete privatization of these types of activities.

At the state and local level in the U.S., budget considerations are the prime moving force for privatizing service functions. At the federal level, although there has been a move toward adopting privatization rhetoric, there has not been too much movement toward implementing privatization of commercial functions. One of the major obstacles is again the bureaucrats' fear of losing their jobs, if the activities that they are engaged in are privatized.

To reveal the seriousness of the job hoarding behavior by bureaucrats and the problems associated with using economic analysis to implement privatization, we review briefly the experience with a policy and procedures that have been in place since 1955 in the federal establishment to determine whether it is cost-effective to produce commercial goods and services in the public or private sectors. The Office of Management and Budget's Circular A-76 is the document that describes the procedures to be followed to determine whether commercial activites should be carried out by the federal government or private enterprise.

Circular A-76 has not been widely used (Hanke, June 6, 1984). Moreover, even if it were rigorously applied, A-76 would not generate appropriate comparative cost estimates, since it gives an undue cost advantage to existing federal commercial activities. For example, for a private firm to win-out over the federal government, the private firm must submit a bid that is 10 percent lower than the public cost, as calculated by A-76. And the public cost is a "theoretical" cost, not a real audited cost figure. Moreover, this public cost does not, among other things, properly include indirect cost figures. For example, indirect wage costs are computed at 20.4 percent, while they are known to exceed 50 percent of wages.

This brings us to a concluding observation concerning complete privatization of public services. Due to the biases associated with public sector job hoarding, it is very difficult to gain the cooperation of public sector bureaucrats in implementing complete privatization. Perhaps the best method to use in implementing the privatization of public service supply is to outlaw public provision in cases where there are private providers

who are willing to supply the goods and services in question. The U.S. Senate is currently debating such an approach (S. 1746).

The assumptions that underlie this approach are that, based on theory and available empirical evidence, private supply is more cost-effective than public supply. Given the difficulties in establishing bureaucratic procedures for privatizing public services, it is appropriate to simply outlaw public production of services. Reliance for privatization is, therefore, fully placed with the legislators and the political processes, rather than with public bureaucrats and bureaucratic processes.

Partial Privatization

With partial privatization, a public entity retains ownership of assets or infrastructure involved in the production process but the operating and maintenance portion of the production process is privatized. This type of privatization has occurred in everything from the operation and maintenance of government office buildings to water and wastewater plants.

In this context, the competitive bidding and contestable markets analysis presented above are relevant. For the best results, the operating contracts should remain contestable and turn-over at rather frequent intervals. Moreover, the winning bidder should be the firm that will provide the operation and maintenance of a given quantity and quality of service at the lowest price over the contract period.

Temporary Privatization

With temporary privatization, a public entity sells assets or

infrastructure to a private entity who then leases them back to the public entity. At the same time, the lessor gives the public entity the option to repurchase the assets or infrastructure at the termination of the lease. The city markets and some fire stations in Baltimore, Maryland provide examples of the types of assets that have been refinanced on this basis.

Typically, the lessor enters into an operating agreement with the public entity at the time of the sale lease-back. Hence, the assets are temporarily privatized and partial privatization takes place. Even in cases where partial privatization does not accompany temporary privatization, convenants are placed in the leases, so that the public entity is required to maintain and operate the assets at certain quality standards that are set by contract and monitored by the private lessor.

If the leases are structured properly, governmental units can raise working capital in a cost-effective way and reduce their operation and maintenance costs by the combination of partial and temporary privatization. Although this approach is still rather novel in the U.S. and requires relatively sophisticated financial-legal transactions, it is rapidly growing in popularity.

AN EVALUATION OF PRIVATIZATION

The theory and evidence presented in the economic literature suggest that all types of privatization offer attractive options.

The theoretical support for privatization rests on the fact that property rights are not neutral. The extent to which property rights are attenuated will affect behavior of an enterprise's managers and employees, and therefore, the overall performance of the enterprise. Specifically, as the rights to an enterprise's assets become more attenuated, the managers and employees will begin to shirk and engage in more activities on their own account because the owners' payoff from monitoring becomes reduced as their rights are attenuated. Consequently, waste, inefficiency and reduced asset values accompany property rights attenuation.

Empirical comparative cost data about private and public enterprises strongly support property rights theory. For a wide range of so-called public infrastructure and services, primarily in the U.S., public enterprise costs are significantly higher than the private costs of supplying the same quantity and quality of output.

Both theoretical and empirical cost considerations favor privatization. Financial and budgeting considerations, therefore, make privatization attractive. In addition to offering the possibility of supplying the same goods and services at lower costs—which can result in reduced public budgets and more budget control—privatization offers the possibility of raising funds for current public operating budgets.

Political objectives can also be achieved by privatization. For example, the public provision of infrastructure and services brings with it

the politization of economic decisions. Often special interests who have a hand in political decisions become so dominant that politicians find privatization an effective way to de-politicize the provision of goods and services. For example, privatization has been used to help loosen the constraints that public unions put on public budgets and ultimately taxpayers.

Economic development can also be promoted by privatization. In addition to providing infrastructure and services at lower costs, privatization allows for assets held by public entities, particularly land and buildings that are idle or put to low-valued uses, to be put into production or higher-valued uses. With the lower and better controlled public budgets, that result from privatization, public authorities can lower tax rates, and this will increase the after tax yields on private investments. Consequently, private investment and growth will be stimulated.

Even with these positive factors favoring privatization, there appears to be one major impediment: public bureaucrats. The incentives for public bureaucrats to hoard public assets and public jobs is very strong. Bureaucratic behavior that promotes these objectives is, therefore, not only observed, but extremely difficult to monitor and control. After all, the bureaucrats have a considerable advantage in manipulating bureaucratic processes within the public sector. Whereas, politicians, who could ultimately control or constrain these processes must do so at a very high cost; one that is usually not worth incurring, unless a crisis or exogenous constraints are placed on politicians. Consequently, bureaucrats can often make the implementation of privatization difficult.

Since bureaucrats must usually be part of the privatization process, thought must be given to changing their incentives, so that bureaucrats look more favorably on privatization. In addition, it should be mentioned that the payoff to politicians for monitoring can be altered, and this will become more likely as the benefits from privatizing so-called public infrastructure and services becomes better and more widely understood. For example, internal constraints on politicians can be generated by tax revolts, voter rejection of bond referenda or financial market discipline on bond issues and other public financing mechanisms. In addition to internal constraints, the politician's payoff can be greatly altered, particularly in the LDCs, by external constraints, which are imposed by international organizations, such as the I.M.F.

For privatization to move ahead at an accelerated pace, all of these factors must be given due consideration. Furthermore, in the context of LDCs, the most promising candidates for privatization are those countries that are under external constraints to put their public budgets in order. In these cases, it appears that international organizations can actively assist local politicians in privatizing their public sectors. To date, international organizations, although they have been active in imposing constraints, have not been active in promoting and assisting in privatization efforts that could assist local politicians in meeting externally imposed constraints.

In addition to these considerations, we should mention that it has been alleged that privatization would be particularly difficult in the LDCs because private financial markets are not well organized, private

entrepreneurial talent is limited and there are often no firms that engage in the private provision of so-called public infrastructure and services. Although the professional literature reports that little privatization activity has occurred in these functional areas in LDCs, we should note that those cases that have been reported, particularly in the transportation field, have been most successful, and have apparently overcome the alleged problems mentioned above.

It is worth noting that perhaps the largest factor that differentiates the LDCs from other countries in the area of the privatization of public infrastructure and services is the international organizations that supply aid and assistance to the LDCs. These international organizations have been designed to administer assistance to the LDCs by having the LDCs' politicians and public bureaucrats apply for aid that, if granted, is funneled through the public sector to support public enterprises. Aid, therefore, plays into the hands of the bureaucrats' biases to provide goods publicly. Moreover, traditional aid greatly reduces the incentives for politicians to promote policies, such as privatization, that would fall outside the normal program offered by international organizations. So, in addition to the general bureaucratic and political impediments that can slow the privatization process in developed countries, the LDCs face an additional problem: the programs of the international organizations that act to bias public infrastructure and supply toward public enterprise and away from private enterprise.

Before concluding our evaluation of privatization of public infrastructure and services, it is important to note that the propensity of

politicians to impose price controls on these goods and services, once they are supplied by private enterprise, can create serious problems and dramatically hinder the ability of private firms to perform. In the U.S., for example, price controls are one of the major reasons why so many activities that were originally supplied by private firms are now supplied by public entities (Hanke, November 1982). The problems occur in the following way: private firms raise nominal prices, either because of mandated service improvements or due to inflation; this brings forth demands for the politicians to control prices; after price controls, the private firms find that the only way they can maintain profit margins is to reduce the quality of services (Carron and MacAvoy, 1981; MacAvoy, 1981); as service declines, the public becomes anxious and demands that the private firms be taken over by a public entity because the private firms are not capable of providing reliable service.

The point here is that deregulation, without price controls, is an important factor that must accompany any privatization projects. Market demand and supply should be allowed to control prices for successful private provision of public infrastructure and services. If, for political reasons, it is determined that market-determined prices are too high and certain groups of individuals within the service area cannot afford to pay for privately supplied services, price controls should be avoided. In these cases, public finance, through the use of vouchers, given to needy groups, should be considered as a mechanism to assist needy individuals in their purchase of "necessary" goods and services whose prices are determined in deregulated, open markets.

CONCLUDING OBSERVATIONS AND RECOMMENDATIONS

The following observations and recommendations about privatizing so-called public infrastructure and services are offered with particular focus on A.I.D.'s mission and program objectives. The purpose is to examine ways in which A.I.D. can promote its objectives through privatization.

Property rights theory has been solidly established over the past 15 years, and it sheds considerable light on the question of private versus public enterprise efficiency. The strong theoretical conclusion is that private enterprise should be more efficient (cost-effective) than public enterprise. This conclusion results from the fact that incentives for attaining efficiency and waste avoidance become less pronounced as property rights become more attenuated.

The theoretical base for establishing and implementing privatization of public infrastructure and services exists and is solid. Therefore, the payoff to A.I.D. from conducting additional work in the area of theory would be modest, at best.

The comparative cost data for private versus public provision of infrastructure and services confirms the theoretical conclusion that private firms are more efficient than public enterprises. However, most of the reported data are from the U.S. With the exception of work on transportation, which has been conducted by researchers at the World Bank, few comparative cost data are available from the LDCs. Even though comparative cost data from the U.S. experience is convincing and can be useful to debunk myths about private provision, assist in telling the privatization story and educate those with an interest in privatization—many from the LDCs might still

remain skeptical about the relevance of these data for the LDCs. Clearly, more comparative cost data from the LDCs would be valuable.

A high priority item for A.I.D. should, therefore, be the support of the systematic collection, analysis and reporting of comparative cost data on the private versus public costs of public infrastructure and services in the LDCs.

The economic theory and comparative cost data that do exist strongly favor privatization. Privatization will allow for more output to be produced per dollar of input. Hence, either the same quality and quantity of output that existed prior to privatization can be produced with fewer resources, or the same resources can be used and the quality and/or quantity of output can be increased. Consequently, privatization of so-called public infrastructure and services is a desirable policy that should be encouraged by A.I.D.

A.I.D., particularly with the establishment of the Bureau of Private enterprise (B.P.E.), is positioned to assist in the privatization of public infrastructure and service projects. The B.P.E. should broaden its approach promoting commercial private enterprises, so that it includes privatization projects for public infrastructure and services. The adoption of such a policy would:

(1) Promote the B.P.E.'s objective of promoting private enterprise.

(2) Promote A.I.D.'s goal of assisting LDCs in reducing and controlling public budgets.

(3) Promote the elimination of waste and inefficiency in the LDCs, which would ultimately allow for better resource utilization and more rapid growth rates.

(4) Promote and assist in the experimentation with new modes of private provision for infrastructure and services that are normally thought of as being solely under the purview of the public sector. These will provide valuable demonstration projects and generates data for the comparative cost studies suggested above.

In summary, A.I.D. should simultaneously begin a two-pronged program in privatization of public infrastructure and services. First, it should support comparative cost studies of private versus public supply of public infrastructure and services in the LDCs. Second, it should promote and assist private enterprises who wish to engage in the provision of public infrastructure and services. This second aspect should be carefully monitored, so that it can supply high quality data for comparative cost studies. Such an integrated two-pronged program would not only focus on A.I.D.'s immediate policy goal of promoting private enterprise, but it would also lay a more substantial foundation that will assist future privatization efforts in the LDCs.

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