

**LINKING RESOURCES TO GOVERNMENT SERVICES: IS THERE A FUTURE FOR  
BENEFIT-BASED FINANCING?**

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**Abstract**

This essay examines local governments' use of charges and other benefit-based methods of financing and providing public goods and services relative to other methods that are based on general taxation or ability to pay. It discusses the characteristics and limitations of benefit-based methods from both a theoretical and practical perspective, and it examines local governments' use of charges relative to other sources of revenue over different time periods. The essay concludes with an assessment of opportunities for and issues with using benefit-based financing to deliver more public goods and services in the future.

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## **LINKING RESOURCES TO GOVERNMENT SERVICES: IS THERE A FUTURE FOR BENEFIT-BASED FINANCING?**

### **I. Introduction**

In his classic text of public finance, Richard Musgrave (1959) describes the field's three fundamental questions or issues. First, what goods and services should governments provide? Second, how much should be spent on these activities? Third, how should governments pay for these activities? Musgrave's questions are normative in the sense that they ask what government should do, but they can be rephrased to ask what governments actually do. This paper is about both perspectives on the third question more than the other two questions, but answers to the third question have significant relevance for which goods and services government provides and at what levels. More specifically, this essay examines local governments' use of charges and other benefit-based methods of financing and providing public goods and services relative to other methods that are based on general taxation or ability to pay. It discusses the characteristics and limitations of benefit-based methods from both a theoretical and practical perspective, and it examines local governments' use of charges relative to other sources of revenue over different time periods using Census of Governments data (US Census Bureau). The essay concludes with some assessments of opportunities for and issues with using benefit-based financing to deliver more public goods and services in the future.

Not all methods of paying for local government goods and services can be neatly classified as being based on *benefits received* or *ability to pay*, but general taxes that pay for goods and services that are widely distributed among citizens within the jurisdiction are viewed as closer to the ability-to-pay end of the continuum than the benefits-received end. Similar to a competitive market system, a strict benefit-based financing method levies charges or taxes based on the benefits received by citizens. This method also provides public goods and services only to the citizens who pay for them and at the level citizens are willing to pay for.

As suggested by the labels of benefits received and ability to pay, the normative implications of financing government activities using revenues on different ends of this continuum are significant. From a normative perspective, benefit-based financing yields more efficient outcomes in terms of citizens receiving the level and bundle of public good and services that they desire (allocational efficiency). Ability to pay financing, such as progressive income taxes, results in a more equitable distribution of the burden of paying for public goods and

services according to the criteria of non-regressive taxation (Tresch 2014, 96-98; Brennan and Buchanan 1980). Although property taxes can be viewed as a benefit-based tax (Fischel, 2001), others disagree (Zodrow, 2001) on several grounds but, primarily, because it is a general tax that is used to fund many public goods and services for which it is hard to assign unique benefits. By comparison, government user charges, which are considered to be the method of financing that is closest to the ideal of benefit-based financing, provide financing for one service or good only to those who pay for it (Duff, 2004).

Financial trends show that local governments have reduced their reliance on property taxes greatly since the mid-20<sup>th</sup> Century, and have increased their reliance on charges and other funding sources (Bartle 2011; Benton, 2010). Some also speculate that the severe recessions of 2001 and 2008 have exacerbated these trends and portend the continuation and even intensification of these trends into the future (Gordon and Rueben, 2010; Martin et al, 2012). If true, such trends could represent a significant shift in the basis of local government financing and service provision from general taxation to benefits received in which resources are tied to specific public goods and services, and services are delivered only to the entities pay for them. This essay will examine the extent to which this is likely to happen and how these methods might be implemented more broadly by local governments.

The next section of this essay will examine the characteristics of benefit-based methods of financing and providing public goods and services, and also the conditions under which these methods are appropriate. As explained here, these methods work best under some circumstances and will not work under others due to the nature of the public goods and services provided. This, alone, limits the extent to which local governments can effectively use these methods in the future. The third section explains the different types of benefit-based financing that are implemented by government. Section four explains the pros and cons of using these methods and conditions that motivate government to increase their reliance on these methods. Section five reviews how the revenue structure and charges levied by local governments, especially municipalities, have changed over time and as a result of the two recessions of the 2000s to provide a picture of whether and how these governments have migrated to benefit-based financing. Although somewhat incomplete, these trends and the inappropriateness of using benefit-based financing for many goods and services provide a basis for speculating about whether and how these local governments are likely to migrate to benefit-based financing in the

future. Section six of the essay examines local governments' capacity to use these methods and whether they will design them in a manner that is appropriate and produces efficient results.

## **II. Characteristics of Benefit-Based Financing Relative to Other Methods**

As a mechanism for providing and paying for public goods and services, charges and other forms of benefit-based financing are levied according to the benefits that each recipient receives. In his theory of government finance, Buchanan (1949) emphasized the advantages of this mechanism that directly links resources to the benefits that governments provide. Theoretically, this linkage allows the government to provide public benefits more efficiently and in a manner that better satisfies citizens' demands compared to a system in which the government or political process determines the level and quality of benefits that citizens should have according to some vague and ill-defined notion of 'public utility.' Similar to a market system in the private sector, direct benefit financing provides government with signals about citizens' willingness to pay, which allows public goods and services to be valued or priced at the marginal cost of their production. Acting on this information, government can allocate scarce public resources to their most highly valued uses according to the relative amounts that people, in the aggregate, are prepared to pay.

Benefit-based financing also enhances government accountability by making it more responsive to differing preferences and changes in the demand for publicly provided goods and services and through earmarking of resources for specific uses. Buchanan (1967, 1963) argues that citizens become more knowledgeable of how much government costs them when the charges or taxes they pay are linked directly to particular benefits that are earmarked for specific purposes. Finally, benefit-based financing can be viewed as a fair method of distributing public goods and services because citizens pay only for the benefits they desire (Duff, 2004).

Although benefit-based financing seems to be a desirable on several dimensions, these methods are not appropriate or workable for government goods and services that are more public than private. On a continuum of pure public to pure private goods, public goods have two primary characteristics that preclude the use of benefit-based financing. One characteristic is non-exclusion in which all citizens benefit from the good if it is provided, and the government cannot exclude people from benefiting that do not pay for the good. In this case, the benefits of non-excludable goods and services are shared among all citizens, and the benefits to individual citizens cannot be established or determined easily. As with private goods and services, benefit-

based financing only works when the benefits to citizens can be clearly established and are not shared (Samuelson 1955).

The second characteristic is non-exhaustion or non-rivalry, which means that the provision of the good to some citizens does not preclude or lessen the provision of the good to other citizens, and the costs of providing the good or service to all citizens is the same as providing the good or service to one citizen. This characteristic sets up a problem of free-ridership in which citizens have no incentive to pay for a good or service voluntarily if they receive the benefits of the good or service without paying. In this case, unlike pure private goods, the government cannot rely on citizens' willingness to pay to provide signals about their preferences for or the benefits they receive from public goods and services. Thus, benefit-based financing also does not function well when the good or service has this characteristic.

The classic example of a pure public good is national defense against an external enemy. If a defense system is established, it will cost the same whether it protects one person or many people, although the total costs of national defense will become greater as the population increases beyond a series of fixed levels. More importantly, citizens who do not pay to support national defense cannot be excluded from benefiting from it, and the costs or price of national defense cannot be used to judge the benefit citizens receive. Examples of pure or almost pure public goods at the local level are public health services to fight contagious diseases, services to handle harmful natural events, such as weather warning systems and stormwater management, and police services.

Although many local public services such as education and roads, provide significant unique benefits to citizens that consume it, and are somewhat exhaustive, the goods have significant positive spillovers to citizens that do not use the service. A well- educated population provides well-educated workers to the private sector, and good roads stimulate jobs and economic development. Such spillovers of benefits make it hard to determine and assign charges or levy taxes in a manner that reflects the unique preferences of citizens for these goods and service and the benefits they receive. If consumed voluntarily, goods and services that have positive spillovers will not be provided at the level required to maximize public benefit, and so the good or service will be under-provided. Education is also viewed as a 'merit good' by many, which is considered to be so valuable that it should be provided to people regardless of their willingness to pay or benefits received (Musgrave, 1959, footnote 37 and 58). Health care is

another potential merit good that has fewer positive spillovers and public features compared to education, but is distributed according to need when provided publicly.

Both merit and public goods are best financed by methods of taxation that are based on the ability to pay or other principle rather than the principle of benefits received. Scholars of public finance recognized early in the field's development that the benefits principle is not an appropriate or workable method of providing and financing many public goods and services. In such cases, goods and services must be financed with taxes that are levied more broadly according to a different principle, and the ability-to-pay principle became the equity norm for broad-based tax design (Musgrave, 1959, chapter 5; Tresch, p. 173). This principle is based on the concept of vertical equity (or regressivity) in which taxpayers pay for public goods and services according to their ability, which was measured with property values early in our country's history, and has been measured with income since the early 20<sup>th</sup> century. According to this concept of fairness, taxpayers with greater income or other measures of ability to pay should bear a greater burden in paying for public goods and services. Horizontal equity is a second conceptualization of fairness in which taxpayers in similar circumstances should pay similar amounts of tax. In this case, benefit-based financing has horizontal equity to the extent that people who receive the same level and quality of public benefit pay the same amount in charges or taxes, but this method does not have vertical equity.

Generally speaking, revenues that are collected from citizens according to the ability to pay principle, such as progressive income taxes, or other broad-based taxes, such as retail sales taxes, are usually deposited into a general fund that finances a bundle of goods and services provided to all citizens. Based on citizens' preferences expressed at the voting booth, the government determines taxpayers' preferences for all the goods and services being financed from this fund and the burden that will be placed on taxpayers to support these benefits. Compared to benefit-based financing in which citizens' payments are earmarked for the benefits they receive, the taxes citizens pay in a broad-based system are diffused over many goods and services, which obscures the relationship between taxes paid and benefits received (Thirsk and Bird, 1994). Because taxpayers and government have less knowledge of how resources, preferences, and benefits are connected in broad-based financing systems, neither are likely to understand the true costs of the goods and services provided in this way, and resources are less likely to be allocated

or produced efficiently. Thus, it seems that government should provide and finance public goods and services using benefit-based methods wherever it is appropriate.

## **II. Types of Benefit-Based Financing**

Stated simply, it is the ability to exclude people from benefiting from publicly provided goods and services and to allocate costs and payment according to individual benefit that makes the provision of some goods and services amenable to direct benefit financing (Rea, Sparrow, and Gupta 1984). Direct benefit financing of public goods and services can take many forms, but the most common is charges or fees for services such as water, sewer, and garbage collection. Although the actual charge may be a flat fee per household rather than a charge that reflects the benefit and level of services received (e.g. amount of garbage collected), it is possible- at least in theory- to identify distinct, non-shared benefits that individual households receive from many services such as clean water, adequate sewers, and timely garbage pick-up.

Scholars also distinguish between user charges that are levied on consumption of a public good or service, and benefit taxes that are compulsory and levied on citizens based on their perceived or measured benefit from the public goods and services provided (Duff, 2004). User charges are more similar to prices for goods and services in a competitive market system than a benefit tax, and but few public goods and services that are financed with charges are provided in a competitive market in which consumption is truly voluntary. For instance, most citizens are required by government to dispose of their garbage and wastewater appropriately, so they must pay for these services in some manner. User fees, also called license taxes, are often distinguished from user charges when applied to goods and services that are truly voluntary, but where government is the monopoly provider, such as building inspection fees (Bird and Tsiopoulous 1997). Other government services for which charges are appropriate, such as higher education, are partially financed with general taxes that are levied based on the ability to pay principle. These services are often distributed, in part, according to merit or need because citizens value this outcome over one produced entirely by user charges (Duff, 2004).

Special assessments are the broadest example of benefit taxes that are not user fees. Special assessments are a method of funding improvements to properties and sometimes services that benefit only property owners within a designated area, called a special assessment district (SAD), rather than all property owners or citizens within the jurisdiction. These districts have different names, including community facilities districts (Arizona), assessment districts

(California), special service area (Illinois), special improvement districts (Ohio), and local improvement districts (Washington) (Wang and Hendrick, forthcoming). Oftentimes the SADs are residential, but they can be commercial or industrial. Business improvement districts (BIDs) that are used by many local governments to finance economic development projects and other services to commercial and industrial areas within their boundaries are often financed with special assessments. Special assessments are a form of land-secured financing (Misczynski,, 2012) and, similar to SADs, have many other names in different states (Allen and Newstreet, 2000).

Special assessments usually take the form of additional property taxes that are added to the general property tax levy or bill on each parcel within the SAD. The additional taxes may be ad valorem or based on the physical characteristics of the parcels and, therefore, are non ad valorem. As a method of benefit-based financing, special assessments are particularly appropriate for property-based goods and services, especially capital improvements, in which the value or benefit of the services or improvements is capitalized into the property values of specific parcels. Although local government has good information on property values, it is often difficult to determine projected increases in property values from improvements and services in SADs that have very dissimilar properties. In such cases, governments tend to use non-ad valorem special assessments that allocate the costs of the improvements based on characteristics such as front footage or the size of the property. In SADs with similar properties where the costs of the improvements are more equal, special assessments are more likely to be based on the value of the property (Fishel, 2001; Wang and Hendrick, forthcoming).

It should also be noted that general property taxes are sometimes viewed as representative of benefits received from local government services according to several arguments. One is based on Tiebout's (1956) claim that households sort themselves into metropolitan jurisdictions such that the marginal benefit of public services to each household equals its marginal cost. Thus, the household will pay the property tax that best reflects the benefits they receive from a broad mix of public goods and services. Another argument, which is more ad hoc, is that the benefits of public goods services are positively associated with the value of one's property and the taxes paid on the property, especially if the good or service is property based, such as capital improvements, sewers, and even police. Indeed, this ad hoc argument that tax paid reflects benefits received might also be applied to income tax, which taxes wealth, but certainly not sales



taxes, which are a tax on the value of purchases. Personal wealth, in this case, is a more reasonable measure of benefit from public services than value of personal purchases (Sjoquist and Stephenson, 2010).

#### **IV. The Case for More Benefit-Based Financing in the Future**

Research on local government finance has identified three reasons for these governments' migration away from property tax and greater reliance on charges and other funding sources since the mid mid-20<sup>th</sup> Century. First, is the public's dislike of the property tax and the visibility of their property tax burden. Governments are constrained from increasing their reliance on property taxes due to the unpopularity of these taxes and pressures from citizens to avoid increasing "the worst tax" (Fisher, 1996). Although inelastic and stable, property taxes, which are paid in a lump sum, are very visible to taxpayers (Oates, 2001; Carroll, 2009) compared to sales taxes in which the burden on taxpayers (as a percentage of income, for instance) is less known.

The public's dislike of property taxes is evident from the nation-wide imposition of local tax and expenditure limitations (TELEs) by states beginning with Proposition 13 in California in 1978, which is the second explanation for why local governments have migrated away from the property tax (Hoene, 2004). The TELEs implemented by most states target property taxes and take the form of limits on rates, assessed value, or tax levy increases. There is a large body of research on the effect of TELEs on local governments that is summarized by Brunori et al. (2008), and Stallmann et al. (2017). This research shows that TELEs reduce the rate of growth in property taxes (Dye and McGuire, 1997; Dye et al, 2005) and increase reliance on non-property taxes and property tax burden (Sun, 2014; Skidmore, 1999; Shadbegian, 1999). Because special assessments are as visible to tax payers as general property taxes, compared to user charges and license taxes, it is logical to expect local governments to migrate to these other direct benefit financing tools to finance their growth, development, and increased demand or need for local public services.

Fiscal stress is the third reason given for governments migrating away from property taxes and towards direct-benefit financing as a means of recovering the costs of more services that are appropriate for such methods (Edgerton, et al, 2004). As recessions, declining state aid, and pension obligations threaten local governments' ability to fund services at current levels, they seek to tap more sources of revenue in the past. However, given the advantages of direct-benefit

financing as discussed previously, government officials' use of these methods may be motivated by as much by these advantages as by the ability to generate additional revenue from them.

Although benefit-based financing has advantages, it has some distinct disadvantages other than it is not appropriate for all public goods and services. It will not result in productive efficiency unless the market is competitive market, which is rarely the case with public services. On the other hand, direct benefit financing with earmarking will result in allocative efficiency if the consumption of the good or service can be accurately monitored (or at least satisfactorily approximated) and the marginal costs of providing the good or service can be reliably measured (or satisfactorily approximated). A third condition that is sometimes added is that the demand for the good or service is responsive to changes in charges and tax levies, but even where this condition does not apply, direct benefit financing can be established for cost recovery, which may be the fairest means of financing according to the benefit principle (Bird and Tsiopoulous 1997).

Ultimately, all three conditions for applying benefit-based financing are about information gathering and the degree to which the beneficiaries of the public good or service can be identified and their benefits precisely measured. Underlying all conditions is an expectation that government has the capacity to collect and process this information and can allocate costs correctly among those who pay. To the extent that individual governments do not have this capacity and cannot or do not design the user charges, user fees, and benefit taxes according to costs and benefits received, these methods should not be used. The less capacity government has to approximate and link benefits, costs, and levies or charges to individual citizens, the more general taxation is a better option for providing public goods and services, even if the good or service is exhaustive and benefits are not shared. In this case, attempting to apply the benefit principle under conditions of poor information will simply distort benefits and costs, and ability to pay may be a more reasonable principle upon which to distribute public resources. But applying the ability to pay principle correctly also requires good information about citizens' financial abilities.

On the other hand, if the individual benefits of the good or service can be reasonably determined and governments have the informational capacity and can design the tools correctly, then governments can be expected to increase reliance on these methods in the future as technology improves their capacity (Duncan et al, 2016) and the motivation for finding

alternative and supplemental revenue sources remains high. Over 25 years ago, Downing's (1992) analysis suggested a potential for increasing charges in many cities by over 200 percent for hospitals and solid waste. Parking, sewerage, and park and recreation are other areas where he determined that charges could be increased significantly based on an examination of charges collected for city services relative to spending and consideration of the appropriateness of charges for specific services.

Governments should remember, however, that user charges and fees are regressive meaning that they are a greater burden for the poor, and that earmarking of revenues limits budget flexibility and increases the costs of production relative to financing multiple goods and services from the same pot of resources (Bird and Tsiopoulos, 1996). In this case, some of the disadvantages of these methods can be mitigated with the use of hybrid methods that merge benefit-based financing and earmarking with traditional financing and adjustments for beneficiaries' ability to pay. Governments' options for designing financing tools are not limited to either direct benefit financing or general taxation. Rather, there is a continuum of methods between these extremes. Hybrid alternatives can focus on cost recovery rather than marginal cost pricing. They can be designed to subsidize charges for public enterprises with aid or general taxes, and assess charges in a progressive or regulatory manner rather than as a method only for allocating costs according to benefits received.

The next section of this essay uses data on local governments nationwide to provide a picture of how governments' use of some of these methods has changed over different time periods and research on why this has occurred. Section VI looks in more depth at how governments have implemented benefit-based financing in practice and what this portends for using this method to a greater extent in the future.

## **V. Trends in the Revenue Structure of Local Governments**

This section uses Census of Governments data on different types of local governments to examine trends in methods of financing all local goods and services and specific services in municipalities.

### *V-A: Trends in Financing All Local Government Services*

Prior assessments of revenue trends in local governments show that as a percentage of revenue (counted as total revenue, general revenue, and own-source revenue), property taxes have declined greatly since the mid-20<sup>th</sup> Century (Benton, 2010; Bartle et al, 2003, 2011; Sun,

2012; Kim, 2017). By comparison, reliance on charges has increased as a percentage of these governments' revenue, which is particularly evident in municipal and county governments. Tables 1A and 1B show these trends a little differently than these other studies by removing significant enterprise charges from the denominator from the own-source revenue ratios<sup>1</sup>. Enterprises are excluded from these ratios because financial decisions about these services are made separately from financial decisions about governmental funds, and the expectation that enterprise services should be supported entirely by charges. Thus, excluding enterprise funds from calculations of trends in reliance on property taxes and other revenue sources presents a more realistic picture of changes in local governments' revenue structure for general operations.

[Tables 1A and 1B about here]

These tables show that property taxes as a percentage of own-source revenue minus enterprise charges has declined since 1972 for municipalities and 1982 for counties, but increased from 2007 to 2012 as a result of the Great Recession's impact on other governmental revenue sources (Hendrick, working paper). The tables also show that reliance on governmental charges has steadily increased for municipalities since 1972 and counties since 1982. Reliance on sales taxes have also increased steadily for counties since 1982, but the increase in sales taxes as a percentage of own-source municipal revenues has been somewhat irregular for municipalities since 1972, with the largest increases occurring from 1972 to 1982. The tables also show that enterprise charges as a percentage of all charges in these governments have decreased during these time periods. When viewed in conjunction with the increased reliance on charges for non-enterprises, this suggests that governments are charging for more services than in the past, and also charging more for services that are funded primarily by general taxes through the general fund.

Based on these trends and those found in prior studies, it seems reasonable to expect governments to increase their reliance on charges and sales taxes and decrease their reliance on property taxes to fund general operations in the future, but there are several caveats to this expectation. First, these trends are likely to vary significantly depending on whether the state

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<sup>1</sup> Enterprise charges are for water, sewer, transit, gas, electric, and hospitals. Airports and water ports are other enterprises that should be removed here, but the sources of data used to construct these tables do not show charges for these enterprises separately. In other studies, general revenue excludes charges for water, transit, gas, and electric, but includes other enterprises. Total revenue includes charges for all enterprises, and own-source revenue excludes intergovernmental aid.

allows counties and municipalities to levy sales and or income taxes and the stringency of the tax and expenditure limitations (TEs) on these governments. In a working paper, Hendrick (2018), shows that trends in reliance on revenue sources, including state aid, revenue diversification, per capita revenue sources, and per capita spending, vary greatly from 1997 to 2012 in municipalities that are in states that allow them to levy a sales or income tax compared to municipalities in states that limit them to a property tax. Specifically, median reliance on property taxes declined more in municipalities in property-tax only states, but median property taxes per capita in real dollars also increased more in these governments. Median federal and state aid per capita also decline by 34% in property tax only states, but only 13 percent in states that allow a municipal income and / or sales tax. In this case, the greater loss of aid in property tax only states has reduced municipalities' total revenue more than in states with municipal sales and income taxes, which has likely altered the revenue structure of the former indirectly compared to municipalities in other states that have replaced some of the lost revenue through increases in sales taxes.

Recent research by Kim (2017) also shows that reliance on property taxes in 2012 was much less in municipal governments that have a sales or income tax and that have more stringent TEs, and that reliance on property taxes it is greater in municipalities with more state aid. Reliance on charges is less well-explained by Kim's model, but it shows that reliance on charges is less in municipalities that are in states that allow local sales and income taxes and in states that have more stringent TEs. Reliance on charges is also less in municipalities that have higher property taxes per capita. Thus, municipalities seem to prefer general property taxes over charges that are likely to be earmarked for specific purposes, and they prefer other general taxes over property taxes. In another study that supports much of the prior research on the impact of TEs on municipal revenues, Sun (2014) shows that per capita sales taxes, income taxes, and charges are higher in municipalities that are in states with more stringent local TEs (from 1970 to 2006), and that property taxes per capita are also less in these states

The effects of the two recessions on local government finance is the second caveat to predicting greater use of benefit-based financing by these governments in the future. It is clear from the Hendrick study and others (Dye and Reschovsky, 2008; Cromwell and Ihlanfeldt, 2015) that many local governments increased property taxes, but also cut expenditures, especially capital spending, after the Great Recession. It is also important to recognize that the Great Recession lowered property values significantly in many states, which raised property taxes and

tax burdens governments that calculate property taxes by levy and not rate. It is less clear from prior research, however, how the two recessions affected local governments' use of user charges, user fees, and benefit taxes, although one study reports that municipalities raised fees and utility rates to cope with the Great Recession (Nelson, 2012).

Tables 2 presents revenue trends for local governments from 1992 to 2012 that show the challenges that governments faced during the two recessions and how they responded. Table 2 shows percent change in own-source revenues (including utilities), state aid, property taxes, total non-property taxes, and all charges (including utilities), and it shows total spending for all five types of local government during this time period:. The table shows that, in real dollars, own-source revenue, state aid, and total spending all declined for most local governments from 2007 to 2012 after the Great Recession. State aid and growth in spending also declined for most local governments from 2002 to 2007 after the 2001 recession and compared to prior years. <sup>2</sup> On the other hand, percent change in real property taxes continually increased for all governments except school districts from 2007 to 2012. Charges also increased steadily from 1992 to 2012 for most local governments, although the growth slowed from 2002 to 2007 and 2007 to 2012. The surprise here, however, is the relatively high level of growth in other taxes besides property taxes, including license taxes, for all governments during the entire time period, except for general purpose governments which show a marked decline in other taxes from 2007 to 2012. These trends suggest that governments prefer to increase taxes, and especially other taxes, relative to charges, but that other taxes were greatly affected by the Great Recession compared to property taxes and charges.

[Table 2 About Here]

#### *V-B Trends in Financing of Specific Municipal Services*

Table 3 presents trends in per capita charges, operational spending (no capital or construction), and federal and state aid for municipal services that are likely to be separate enterprises or have significant user charges from 1997 to 2012. Because of the skewness of these distributions, the table reports median values for these variables, or means if the median values are all zero, and the per capita values are reported as real dollars. The table also shows the number of municipalities in which spending is greater than zero for all services, and the

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<sup>2</sup> The effects of recessions on local governments lag for at least one year after the recession starts.

number in which charges are greater than zero for some services. In effect, the table is showing the degree to which each service is covered by charges and intergovernmental aid.

[Table 3 About Here]

Table 3 shows that per capita charges for water, sewer, gas, electric, and hospitals are greater than per capita operational spending for all years, which may reflect the practice of including capital improvements costs within the charges levied for these services rather than the government ‘making a profit’ from the charges. The high per capita spending and charges for gas, electric, and hospitals are due to the provision of these services beyond the population of the municipality. On the other hand, per capita charges for solid waste and parks and recreation only partly cover operational spending, and per capita charges for highways and transit cover very little of operation spending for these services.<sup>3</sup> Thus, of the services reported in this table, charges can only be increased to cover more spending for solid waste, parks and recreation, highways, and transit.

Table 4 shows per capita revenues from various sources, including property and general sales taxes. The table shows an increase in per capita property taxes after the 2001 recession and Great Recession, but a decline in per capita sales taxes. Notice also the decline in per capita miscellaneous commercial charges, special assessments, and all license taxes, other taxes (not include property, sales, or personal income tax), and fines after the Great Recession. It is also notable that the number of governments assessing miscellaneous commercial charges increased significantly after the 2001 recession, and per capita license taxes, other taxes, and fines increased also significantly after that recession. Interest earning per capita also declined precipitously after the Great Recession, which undoubtedly affected these governments’ reliance on many revenue sources and increased pressure to raise general taxes and other revenues.

[Table 4 About Here]

It should also be noted that only non ad valorem special assessments are reported by the Census of Governments separately from other revenue sources. Ad valorem special assessments are reported as part of general property taxes, although they are benefit taxes. Unfortunately, there is not a lot of data on ad valorem special assessments, except in a few states. For instance, Hendrick and Wang (2017) show that many suburban municipalities in the Chicago metropolitan

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<sup>3</sup> Vehicle license fees are included in highway charges because many governments earmark these licenses for roads and transportation.

area use ad valorem special assessments, but these tools generate little revenue and do not fund many capital improvements or services. They are also used very little in one county where they are not widely understood, and they are not used in the most urban county of the region where non-ad valorem special assessments are more appropriate.

Based on these trends, it is apparent that many local governments are already providing most enterprises primarily through charges and increases in these charges will not supplement operations elsewhere in the government. It is also apparent that the two recessions diminished the revenue potential of general sales and other taxes, requiring local governments to increase property taxes. However, the trend toward greater use of benefit taxes, user fees, and increased charges in order to cover more of the costs of service delivery for non-enterprise services, such as solid waste and parks and recreation, seems evident. The next section of this paper will examine the use of direct benefit financing in practice in local governments, focusing on two issues: 1) governments' capacity to monitor and measure individual consumption or benefit of public services and the costs of delivering services, and 2) governments' ability or willingness to design these charges in a manner that yields efficient outcomes.

## **VI: The Application of Benefit Based Financing in Practice**

There is much written about how governments should design user charges “to get the prices right and impose the correct charges” (Bird and Tsiopoulos, 1997, p. 51). Textbooks and reports from public economics and financial management describe pricing principles and basic user charge and fee designs for government services generally. Publications from professional associations and commissions in specific services areas such as water, transit, libraries, and tollways apply these principles and elaborate on these designs in their service areas. Two basic pricing designs are recognized by this work. In marginal-cost pricing, charges are based on the cost of providing an additional unit of service. In markets where the service provided by governments is competitive, charges will be equal to marginal costs and resource will be allocated optimally. Marginal-cost pricing can be short-term, which recognizes only the variable costs in providing the service, or long term, which includes both fixed and variable costs. This method can also be structured to recognize different marginal costs for different service attributes, such as type of user or level of service output.

The second basic user charge design is average-cost pricing in which all costs or a portion of the costs of providing the service- fixed, variable, operational, and capital- are averaged



among all users. Marginal-cost pricing does not work under many conditions for government services, and average-cost pricing is often useful in these cases. But common knowledge suggests that governments often use average-cost pricing when marginal-price costing is possible and will produce efficient outcomes (Bird and Tsiopoulos, 1997). The goal in this case is cost recovery instead of the efficient allocation of service costs to users (and across services) in the case of marginal-cost pricing. Assessing flat fee charges across all users is the simplest form of average cost pricing, but, like marginal-cost pricing, user charges and fees can be assessed at a rate that varies by service attribute, such as type of user or level of service provided. In this case, distributional outcomes of average cost pricing may approximate those of marginal cost pricing with respect to allocating costs according to benefits received (or costs incurred), but these two basic designs have somewhat different informational requirements for governments.

Both pricing mechanisms require that governments have good information about service demands (or benefits) and how the number of users will change as fees or charges change. Both mechanisms also require good information about costs, but marginal costs should also take account of opportunity costs in order to allocate costs efficiently. By comparison, average costs take account of accounting costs only (Duff, 2004). Relatively speaking, obtaining good information on demands and how the number of users of a service change as charges change is more difficult than obtaining good information on unit costs (Bird and Tsiopoulos, 1997). Additionally, many public services for which benefit-based financing is appropriate have relatively inelastic demand, and demand can be easily estimated by the number of citizens, households, or other widely available indicator of service usage by the public. Marginal-cost pricing will not work using this approach, but estimating demand or benefits in this manner is very useful for producing a flat fee. Although this method is not likely to allocate costs according to benefits, especially if usage varies among users, average-cost pricing is the most frequent method employed by government for many services (Koenig and Goforth, 1993).

Although governments are likely to have more information on costs than demands, the costs of many public sector activities can be difficult to define or estimate at the level necessary to allocate accurate average costs using more than a flat fee approach. In most cases, governments know how much is spent for line-items in an agency's budget, but far fewer governments know how much it costs to deliver specific services in that agency or services that are delivered by multiple agencies. Governments may also not assess or allocate indirect costs

correctly to services for which they charge or assess fees for the purposes of cost-recovery. Looking at different texts and reports on pricing design for specific services shows that much of their content focuses on methods of cost assessment and allocating costs to the cost components of the service (American Water Works Association, 2017; National Association of Flood and Stormwater Management Agencies, 2006; Transportation Research Board, 2011). One critical question that arises in this case is whether local governments have the capacity to collect good information on costs or determine costs using their accounting and information systems such that they can produce a more accurate and efficient pricing system for services than a flat fee. Even today, many of the properties in Chicago are not metered for water and sewer, but are charged for these services based on building size, lot size, and number of sinks and toilets.

To the extent that governments do not have the capacity to determine accurate costs and demands or benefits, increasing dependence on user charges and benefit taxes in the future may not constitute a progression towards true benefit-based financing. Rather, it could portend a progression towards earmarked fees and taxes that have little to do with benefit received. For instance, the City of Chicago levies an additional ‘utility tax’ on water and sewer charges to make mandated pension payments for employees throughout the city. In this case, water and sewer charges are not the most defensible basis for levying a general tax for paying city employees’ pensions or a good indicator of the benefits citizens receive from employee pensions.

To the extent that governments do have this capacity, then another important question is whether governments’ capacities are likely to improve in the future as technology improves? For instance, the use of smartcards for transit services that records transactions, collects charges, and provides transit agencies with information on the transaction and user has allowed these agencies to improve their pricing structure greatly (Yoh et al., 2016). More recently, many governments have embraced cloud computing for data collection on service demand and delivery, and to provide timely information to the public about service events. Chicago’s open data portal is a good example of the use of this tool and its benefits for both the city and citizens (<https://data.cityofchicago.org/>). Blockchain technology also holds promise to record and secure transactions, contracts, and information exchanges of many kinds over a wide range of processes involving both tangible and intangible assets (Ølnes et al, 2017).

Although governments may be motivated to improve their capacity to collect cost and demand information due to improved technology or other pressures such as greater use of

contracting for service production, governments are less likely to incur the costs of such investments when faced with fiscal scarcity, including recessions. But even where governments have the capacity to apply more accurate average cost pricing or marginal cost pricing, they may not do this for political reasons. Many studies have noted that levels of user charges and fees are often determined by political factors and the budgetary needs of the government for both enterprises and general fund services, rather than being fully grounded in the costs, demands, and objectives for these services (Tyer, 1989; Bunch and Drucker, 2003; Downing and Frank, 1988; Shoup, 2004). In some cases, increases in charges are vetoed by elected officials or delayed until emergencies occur that require significant increases in charges to resolve (Hendrick, 2011, p. xx). Other studies note that public officials can be risk averse in setting charges, believing that, for instance, flat fees for transit are better than variable rates because they are more worried about the riders they will lose (Yoh et al., 2016) and that high impact fees, special assessments, and parking fees will dampen economic growth and activity (Cervero, 1988; Marsden, 2006). Thus, many governments underprice their services.

Unfortunately, there is little in-depth investigation of local governments' uses of a broad range of user charges, how they are designed, and whether the application of user charges has improved as a basis for predicting whether governments will increase their use of true benefit-based financing. It is apparent that the Canadian government collects thorough data on charges and fees from its local governments, which has been used by many to conduct investigations of the use of user charges in these governments (Duff, 2004, Bird and Tsiopoulos, 1997). There was also investigation of local charges and fees in Great Britain in the 1980s in response to the 1986 Green Paper- *Paying for Local Government* (Department of the Environment, 1986) that proposed some radical changes to the way in which UK local government was financed. Some of these changes involved significantly increasing the use of user fees and charges at the local level (Bailey, 1986; Smith and Squire, 1986).

In the US, by comparison, most investigations of the use of user charges and other direct benefit financing methods and how they are designed are specific to particular services and take the form of surveys, case studies, or other qualitative methods of gathering information. Examples of such studies that can be found within the public administration journals are more descriptive than prescriptive and include the following: a survey of 107 cities nationwide on public parking charges (Auchincloss et al, 2015); a survey municipal and county officials in

California about fees and special assessments for building new roads (Cervero, 1988); stormwater fees, special assessments, and hybrid taxing and fee methods in selected cities in the US (Grigg, 2012); fees for local roads and streets in 34 selected cities (Voulgaris, 2016); and interviews of transit officials in transit agencies in California and a nationwide survey of transit operators about transit fares (Yoh et al., 2016). Many more studies of user charges and benefit taxes can be found in journals and reports from associations and groups that target specific government services that rely on charges to deliver services, such as the *Journal of the American Water Resources Association*, *Journal of Park and Recreation Administration*, *International Federation of Library Associations Journal*, and the Transportation Research Board.

## **VII Conclusion**

Returning to the broader question of whether local governments are likely to increase their reliance on benefit-based financing in the future, this essay argues that the more precise question is whether local governments are likely to increase their reliance on *effective* benefit-based financing in the future. In other words, are there opportunities for government to increase their use of benefit-based financing in a manner that yields revenues from individual citizens according to benefits received or willingness to pay and that allocates spending efficiently?

Analysis of spending and charges for local governments in section V show that municipalities are already charging more than what they are spending for government enterprises, which are the public services that are most appropriate for benefit-based financing. The same is probably true of other local governments that provide enterprise services such as water, sewer, gas, electric, hospitals, and parking. Thus, charges cannot be dramatically increased by governments for these services. The primary issue for governments in this case is whether they can improve the pricing of these services to produce more efficient outcomes. This essay has shown that, although technology and techniques for establishing more efficient charges are available, it is not clear whether governments have improved the design of user charges and collection of information to produce accurate pricing of their enterprises. Indeed, there appear to be many governments in which budgetary needs in non-enterprise areas drive charges in enterprise areas higher or where political preference drives enterprise charges lower than what is needed to fully fund operations and capital investment.

With respect to the other service areas that provide exclusive benefits to users- transit, solid waste, airports, water ports, highways, libraries, fire, and parks and recreation- all have

characteristics that make charges an undesirable method of financing 100 percent of these services. Solid waste, for instance, has significant positive spillovers in terms of improving the cleanliness of neighborhoods and reducing disease and vermin. The reported figures show that charges for solid waste have increased since 1997 and constituted 86 percent of operational spending in 2012. Thus, there is not much room for increasing charges for this service further and doing so may reduce the public benefit by encouraging unapproved disposal of solid waste. Similarly, use of charges for parks and recreation, which some view as a merit good, has increased and represented about 65 percent of operational spending in 2012, but half the municipalities shown in Table 3 do not charge for these services. On the other hand, charges for transit and highways are very low relative to spending, which suggests that use of benefit-based financing could increase significantly in these areas, although these services have features that make them unsuitable for financing operations and capital spending entirely through charges. Unless user charges are applied thoughtfully and appropriately in these service areas to account for both individual and public benefits, such charges may be no different than a non-ad valorem tax that is earmarked for a specific purpose.

Use of special assessments to finance capital spending is another way in which benefit-based financing could increase in local governments in the near future, especially if the special assessments are ad valorem and administered through the regular property tax system. Ad valorem special assessments are more appropriate for financing public infrastructure in single-use commercial, residential, and industrial areas than urban areas with mixed land use. Ad valorem special assessments have been used to finance new public infrastructure, improvements to existing infrastructure, and on-going services in business improvements districts, residential subdivisions, shopping centers, and industrial parks. The primary hindrance in their greater use is that many states require voter or property owner approval to implement them, which is often difficult to obtain given the public's dislike of property taxes (Wang and Hendrick, forthcoming).

Overall, then, it does not appear that the method of financing local government will change dramatically from general taxation deposited into a general fund to accurate and effective benefit-based financing that is earmarked for specific services. Although recent trends show an increase in charges or user fees for non-enterprise public services, this method is inappropriate for pure public goods and does not produce efficient outcomes when used alone to finance goods

and services that have distinct individual benefits but significant public or merit value. In fact, implementing numerous charges and fees for these types of services in a manner that is not based on accurate information about economic benefits and costs may be more misleading to both government and citizens than general taxation.

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## Local Government Revenue Trends, 1972 – 2012

### Sum of Revenues for All Governments

TABLE 1A

<b>MUNICIPALITIES</b>				
	% Own-Source Revenue (no enterprise charges) <sup>1</sup>			% Enterprise charges of all charges <sup>1</sup>
Year	Property taxes	Sales Taxes	Charges	
1972	50.4	14.7	9.9	77.9
1977	46.7	17.3	11.1	78.9
1982	36.4	19.0	12.1	80.4
1987	32.7	18.8	11.9	79.4
1992	36.5	18.3	13.7	76.9
1997	33.2	19.7	15.5	74.9
2002	33.1	20.1	15.9	73.8
2007	32.0	18.8	15.3	72.4
2012	37.3	20.1	16.7	73.1

TABLE 1B

<b>COUNTIES</b>				
	% Own-Source Revenue (no enterprise charges) <sup>1</sup>			% Enterprise charges of all charges <sup>1</sup>
Year	Property taxes	Sales Taxes	Charges	
1982	53.9	11.2	12.5	61.0
1987	49.0	12.6	12.7	56.3
1992	50.8	12.6	15.2	52.5
1997	46.1	14.8	17.9	51.9
2002	45.5	14.5	18.7	49.4
2007	45.8	14.6	18.0	49.6
2012	51.7	15.0	18.3	53.5

1: Enterprise charges are for utility (water, transit, gas, electric), sewerage and hospital Insurance trust is also excluded here

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**TABLE 2**  
**PERCENT CHANGE IN REAL DOLLARS, 2002=100**

	<b>Counties</b>	<b>Municipalities</b>	<b>Townships</b>	<b>Special Districts</b>	<b>School Districts</b>
<b>YEAR</b>	<b>OWN SOURCE REVENUE (INCLUDES UTILITIES)</b>				
1992-1997	11.1	10.0	10.3	11.8	9.8
1997-2002	11.2	6.8	9.2	11.9	10.4
2002-2007	8.2	9.7	2.6	10.4	8.3
2007-2012	-4.0	-2.0	-0.7	4.0	-7.5
<b>YEAR</b>	<b>STATE AID</b>				
1992-1997	12.9	7.6	4.5	50.0	16.6
1997-2002	15.4	16.0	9.8	24.1	18.6
2002-2007	-4.9	-8.6	-4.2	7.8	2.7
2007-2012	-6.1	-5.4	-11.2	-5.1	-7.5
<b>YEAR</b>	<b>TOTAL SPENDING</b>				
1992-1997	12.0	7.4	6.8	9.8	13.9
1997-2002	14.4	13.8	13.0	17.0	19.6
2002-2007	1.7	2.3	-1.1	12.7	3.0
2007-2012	-1.1	0.5	-1.0	5.4	-7.0
<b>YEAR</b>	<b>PROPERTY TAXES</b>				
1992-1997	0.2	-0.4	9.7	23.4	8.5
1997-2002	10.8	7.5	9.0	7.8	9.3
2002-2007	9.2	9.8	1.3	14.5	5.3
2007-2012	5.4	9.1	5.0	7.4	-1.3
<b>YEAR</b>	<b>ALL OTHER TAXES BESIDES PROPERTY</b>				
1992-1997	27.9	18.0	21.2	-19.3	33.2
1997-2002	13.5	8.6	22.1	55.2	35.1
2002-2007	14.8	15.8	17.2	33.9	12.8
2007-2012	-10.9	-7.2	-15.9	15.6	7.0
<b>YEAR</b>	<b>ALL CHARGES</b>				
1992-1997	28.7	14.2	9.5	15.6	8.4
1997-2002	12.5	6.4	13.2	12.1	17.2
2002-2007	5.6	4.7	1.4	8.9	6.0
2007-2012	3.2	5.8	-0.1	8.8	-7.3
<b>YEAR</b>	<b>NUMBER OF GOVERNMENTS</b>				
1992	3,043	19,279	16,656	31,555	14,422
1997	3,043	19,372	16,629	34,683	13,726
2002	3,043	19,429	16,504	35,052	13,506
2007	3,033	19,492	16,519	37,381	13,051
2012	3,031	19,519	16,360	38,266	12,880

**TABLE 3****Mean and Median Spending, Charges, and Intergovernmental Aid Per Capita in Municipalities**

Values are calculated for governments that spend more than zero \$ for services, real dollars, 2002 = 100.

Year	Water				Sewer			
	Per capita			Number of governments that spend > 0	Per capita			Number of governments that spend > 0
	median operat'l spending	median charges	mean federal and state aid <sup>1</sup>		median operat'l spending	median charges	mean federal and state aid <sup>1</sup>	
1997	103.63	129.83	9.45	13,585	70.63	91.12	0.01	12,244
2002	101.95	127.94	12.79	13,785	72.45	92.61	0.01	12,948
2007	98.99	125.15	15.31	13,927	71.37	92.56	15.36	13,523
2012	99.62	129.13	19.50	13,787	73.25	98.87	21.93	13,727
Year	Gas				Electric			
	Median per capita		fed and state aid is NR <sup>2</sup>	Number of governments that spend > 0	Median per capita		fed and state aid is NR <sup>2</sup>	Number of governments that spend > 0
	operational spending	charges			operational spending	charges		
1997	301.27	342.26		815	630.87	756.44		1,803
2002	312.54	351.25		934	607.22	707.72		1,885
2007	312.97	355.34		961	595.78	682.94		2,039
2012	212.29	234.86		893	649.52	758.60		1,943
Year	Hospitals				Transit			
	Median per capita		fed and state aid is NR <sup>2</sup>	Number of governments that spend > 0	Median per capita		mean federal and state aid per capita <sup>1</sup>	Number of governments that spend > 0
	operational spending	charges			operational spending	charges		
1997	1,010.01	1,040.49		242	20.78	4.36	40.67	598
2002	1,203.22	1,216.03		208	20.22	2.21	12.07	670
2007	1,496.81	1,604.15		156	16.93	1.23	12.24	805
2012	1,854.38	1,942.39		149	17.59	0.95	18.05	874
Year	Solid Waste <sup>2</sup>				Parking			
	Median per capita		Number of governments that charge > 0	Number of governments that spend > 0	Median per capita		Number of governments charges > 0	Number of governments spend > 0
	operational spending	charges			operational spending	charges		
1997	49.55	28.61	7,522	11,573	3.89	3.69	1,273	1,226
2002	46.93	29.63	7,792	11,958	4.15	4.16	1,366	1,044
2007	43.53	34.37	9,305	12,267	4.21	4.53	1,336	1,008
2012	42.96	36.58	9,850	12,321	4.24	4.80	1,300	1,044
Year	Highways				Parks and Recreation <sup>2</sup>			
	Per capita			Number of governments that spend > 0	Per capita		Number of governments that charge > 0	Number of governments that spend > 0
	median operat'l spending	mean charges & vehicle license <sup>1</sup>	median federal and state aid		median operat'l spending	mean charges <sup>1</sup>		
1997	63.58	1.56	27.72	17,844	22.16	13.47	5,373	12,244
2002	64.63	1.37	27.95	17,587	24.67	15.21	5,838	12,948
2007	58.71	2.22	23.70	17,512	23.83	13.52	6,866	13,523
2012	57.10	2.38	19.85	17,641	23.09	16.19	7,651	13,727

1: medians equal 0

2: federal and state aid are not reported

**TABLE 4****Median Per Capita Revenues and Number of Municipal Governments with Values Greater Than Zero, real dollars, 2002=100**

	<b>Miscellaneous Commercial Charges</b>		<b>All License Taxes, Other Taxes, and Fines</b>		<b>Special Assessments- non ad valorem</b>	
<b>Year</b>	<b>median</b>	<b>number</b>	<b>median</b>	<b>number</b>	<b>median</b>	<b>number</b>
1997	4.88	392	12.99	14,417	10.76	3,426
2002	3.83	203	15.14	15,034	11.38	3,347
2007	3.86	2423	25.66	15,987	11.49	3,803
2012	3.24	2778	21.07	15,933	9.54	3,728
	<b>Interest Earnings</b>		<b>Property Tax</b>		<b>General Sales Tax</b>	
<b>Year</b>	<b>median</b>	<b>number</b>	<b>median</b>	<b>number</b>	<b>median</b>	<b>number</b>
1997	21.29	16,676	92.45	19,065	93.28	6,083
2002	19.12	17,580	94.15	19,405	92.90	6,150
2007	18.59	16,887	97.72	19,484	90.75	7,100
2012	4.20	14,983	103.39	19,489	88.52	7,677

Other taxes exclude property, sales, and personal income tax  
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