Public Finance:

Essay for the Encyclopedia of Public Choice

by

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1. Scope of the Field

Public Finance is the branch of economics that studies the taxing and spending activities of government. The term is something of a misnomer, because the fundamental issues are not financial (that is, relating to money). Rather, the key problems relate to the use of real resources. For this reason, some practitioners prefer the label *public sector economics* or simply *public economics*. Public finance encompasses both *positive* and *normative analysis*. Positive analysis deals with issues of cause and effect, for example, "If the government cuts the tax rate on gasoline, what will be the effect on gasoline consumption?" Normative analysis deals with ethical issues, for example, "Is it fairer to tax income or consumption?"

Modern public finance focuses on the microeconomic functions of government, how the government does and should affect the allocation of resources and the distribution of income. For the most part, the macroeconomic functions of government--the use of taxing, spending, and monetary policies to affect the overall level of unemployment and the price level--are covered in other fields.

2. Methodological Basis

Mainstream economic theory provides the framework for public finance. Indeed, it would not be unreasonable to view public finance as just an area of applied microeconomics. As is the case in other fields of economics, the normative framework of

public finance is provided by *welfare economics*, the branch of economic theory concerned with the social desirability of alternative economic states.[1] Much of welfare economics focuses on the conditions under which the allocation of resources in an economy is *Pareto-efficient*, defined as an allocation such that the only way to make one person better off is to make another person worse off. Pareto efficiency seems a reasonable normative criterion--if the allocation of resources is not Pareto efficient, it is "wasteful" in the sense that it is possible to make someone better off without hurting anybody else. A stunning result of welfare economics is that if two assumptions are satisfied, then an economy will achieve a Pareto-efficient allocation of resources without any government intervention. The assumptions are: 1) All producers and consumers act as perfect competitors; that is, no one has any market power. 2) A market exists for each and every commodity. In a way, this result formalizes an old insight: When it comes to providing goods and services, free enterprise systems are amazingly productive.

Suppose for the moment that these two assumptions are satisfied. Does the government have any role to play in the economy? Only a very small government that protects property rights and provides law and order would seem appropriate. However, even if an allocation of resources is Pareto-efficient, it may not be socially desirable. A society may be willing to trade some efficiency in return for a fairer distribution of resources among its members (although "fairer" may be hard to define). Hence, even if the economy is Pareto efficient, government intervention may be necessary to achieve a fair distribution of real income.

Furthermore. real world economies may not satisfy the two assumptions required for Pareto efficiency. The first assumption is violated when firms have market power and

[1] Bator (1957) provides a classic exposition of welfare economics.

raise their prices above competitive levels. Monopoly is an extreme example. The issues associated with market power are generally dealt with in the field of Industrial Organization, not Public Finance. The second assumption is violated when markets for certain commodities do not emerge. After all, if a market for a commodity does not exist, then we can hardly expect the market to allocate it efficiently. For example, there is no market for clean air. In effect, individuals can use up clean air (that is, pollute) at a zero price. That particular resource is not used efficiently.

Nonexistence of markets occurs in a variety of situations; each one opens potential opportunities for the government to intervene and improve welfare. In effect, then, the list of market failures provides the public finance agenda.

3. Public Expenditure

The theory of welfare economics focuses our attention on market failure and distributional considerations as reasons for considering governmental intervention. This section illustrates these issues.

3.1 Public Goods

A *public good* has two characteristics. First, once it is provided, the additional cost of another person consuming the good is zero--consumption is *nonrival*. Second, preventing anyone from consuming the good is either very expensive or impossible--consumption is *nonexcludable*. A classic example of a public good is national defense. One person's consumption of the services provided by the army does nothing to diminish another person's consumption of the same services. Further, excluding any particular

person from the benefits of national defense is all but impossible. In contrast, a private good (such as food) is both rival and excludable.

To see why the market may not provide public goods in efficient amounts, note that, for a private good, the market in effect forces each person to reveal what his true preferences are. If the value of the commodity to a person is greater than or equal to the market price, he buys it; otherwise not. There is no incentive to hide one's true preferences. In contrast, people have incentives to hide their true preferences for public goods. Each person knows that once national defense is provided, he can enjoy its services, whether he pays for them or not. Therefore, he may claim that defense means nothing to him, hoping that he can get a "free ride" after other people pay for it. Everyone has the same incentive, so that defense may not be funded, even though it is in fact beneficial. In short, the market cannot be relied upon to provide a public good in efficient amounts; some kind of collective decision making process may be better (Samuelson (1954)).

While important, this finding does not provide a firm set of guidelines for deciding when the government rather than the private sector should provide some commodity. The result depends in part on whether the public and private sectors pay different amounts for labor and materials, the extent to which the government can address the diversity of tastes for the commodity among the citizenry, and whether or not government provision will have a more favorable (somehow defined) impact on the distribution of real income. Whether public or private provision is better must be decided on a case by case basis. The fact that this can be difficult is reflected in the ongoing

political debates in many countries about the merits or *privatization*--taking services that are supplied by the government and turning them over to the private sector.

3.2 Externalities

When the activity of one entity (a person or firm) directly affects the welfare of another in a way that is outside the market mechanism, that effect is called an externality. The classic example is a polluter, who imposes losses on other individuals by degrading the environment. In general, efficiency requires that individuals pay a price for any commodity that reflects its value in alternative uses. But there is no market for (say) clean air. Individuals treat it as if its price is zero, and hence use it in inefficiently large amounts.

There are a number of ways in which government intervention can potentially enhance efficiency in the presence of an externality. 1) It can levy a tax on the externality producing activity. Basically, the tax makes up for the fact that the price being faced by the polluter is too low. 2) It can create a market for the right to pollute. Recall that the fundamental problem is that there is no market for the resource being polluted. In some cases, the government can create such a market. The government announces it will sell permits to spew a given quantity of some pollutant into the environment. Firms bid for the rights to own these permissions to pollute, and the permissions go to the firms with the highest bids. Again, firms are forced to confront a cost for using up the resource. 3) It can simply order each polluter to reduce pollution by a certain amount. A major problem with such a command-and-control solution is that the reduction in pollution may be greater or less than the efficient amount. That is, the

reduction that the government orders may not be the same reduction that would occur if the firm were facing the true price of the resource.

In general, most countries rely on command-and-control mechanisms for dealing with environmental problems. However, in recent years market-oriented approaches have made some inroads. In the United States, for example, there is now an active market in allowances to emit sulfur dioxide into the air. An important area for future research is to see if it is possible to expand the scope of such policies, and to determine whether the efficiency gains that theory predicts actually occur (Stavins (forthcoming)).

3.3 Social Insurance

One way to obtain some protection against the uncertainties of life is to purchase insurance. In private insurance markets, people pay premiums to an insurance company, and receive benefits in the event of certain unlucky occurrences. In addition, a number of government programs also replace income losses that are consequences of events at least partly outside personal control. These programs, collectively referred to as *social insurance*, are among the largest components in the budgets of western governments.

Is there a rationale within conventional welfare economics for such substantial government involvement in insurance markets? There are reasons to believe that private insurance markets will fail to operate efficiently. To see why, note that we can expect an individual who knows he is especially likely to collect benefits to have an especially high demand for insurance, a phenomenon known as *adverse selection*. Due to adverse selection, in order to break even, the insurance company must charge a higher premium for individual coverage than it would if a random group of people were buying insurance. However, these higher premiums exacerbate the adverse selection problem. Only

individuals who know they are at great risk will pay the high prices. This, in turn, requires a further increase in premiums, and the pattern continues. The market fails to provide an efficient amount of insurance.[2] In essence, mandatory social insurance solves this problem by forcing everybody into one big group--the country.

Government retirement programs, which, in effect, provide insurance against the possibility that people will outlive the resources they have accumulated for retirement, are particularly important forms of social insurance. Typically, such programs have been funded on a *pay-as-you-go* basis, meaning that the benefits paid to current retirees come from payments made by those who are presently working. The problem is that in most countries, the ratio of retirees to workers will be increasing in coming years. Hence, other things being the same, it will be necessary either to increase the tax rate on current workers or reduce the benefits received by retirees. The best way to cope with this problem is a major academic and political controversy (Feldstein and Liebman (2001)). Considerable attention has been given to privatizing the systems. Under privatization, workers' contributions are earmarked for their own accounts. Workers then invest the funds in various financial assets, and finance their retirements out of the accumulations in the accounts. Major issues in privatization schemes include how to pay benefits to the current generation of retirees, and how to provide a socially acceptable living standard to individuals who are unable to accumulate enough wealth in their accounts during their working lives .

Other forms of social insurance are unemployment insurance and health insurance. Unemployment insurance provides benefits to workers who lose their jobs. The major problem is how to devise systems that provide protection but do not at the

[2] For a more general treatment of this phenomenon, see Akerlof (1970).

same time make unemployment too attractive (Meyer(1995)). One of the main issues in health insurance is the extent to which the government should directly provide insurance as opposed to providing people with incentives to purchase insurance on the private market. Various nations have come up with quite different solutions. In Canada, for example, health care services are produced by the private sector, with the reimbursements negotiated by the government. In the United Kingdom, health services are produced by the public sector through the National Health Service. In the United States, there is publicly provided insurance only for certain groups, basically the elderly (through Medicare) and for the poor (through Medicaid). A particularly contentious and important issue is the effect that the various systems have on people's health status (Fuchs (1998)).

3.4 Income Redistribution

As noted above, even in the absence of market failures, government intervention in the economy may be necessary to achieve a "fair" distribution of real income. A key question in this context is whether the government needs to intervene directly in markets in order to enhance fairness. For example, should it impose ceilings on the prices of commodities consumed by the poor? The answer is no. Roughly speaking, it is a better policy for the government to redistribute income suitably and then let markets work. Put another way, the issues of efficiency and distributional fairness can be separated. If society determines that the current distribution of resources is unfair, it need not interfere with market prices and impair efficiency. Of course, the government needs some way to reallocate resources, and problems arise if the only available mechanisms for doing so (such as taxes) themselves induce inefficiencies. These issues are discussed below.

This whole area is complicated by the fact that there is no consensus on what a fair income distribution looks like. Some believe that the government should engineer complete equality. Others believe that society should move toward equality, but take into account the losses in efficiency that are engendered by taxing high-income people and subsidizing low-income people. Still others believe that attention to the distribution of income at a given point in time is misguided; what matters is whether there is social mobility over time. The idea here is that even if people at the bottom of the income distribution are quite poor, it may not be a major social problem if the identities of these people change over time (Atkinson (1983)).

In many countries, income distribution programs rely primarily on *in-kind transfers* --payments from the government to individuals in the form of commodities or services rather than cash. In-kind transfers include medical care, food, housing, and energy consumption. A natural question is why governments so not simply give the poor cash and let them spend the money as they want? One possibility is that policy makers care about the distribution of certain commodities rather than income per se. For example, they may want every family to consume housing of a given quality. In addition, in-kind transfers may help curb welfare fraud. In-kind transfers may discourage ineligible persons from applying because some well-off people may be willing to lie to receive cash, but be less willing to lie to obtain some commodity they do not really want. (Nichols and Zeckhauser (1982)). Finally, in-kind transfers are attractive politically because they help not only the beneficiary but also the producers of the favored commodity. Thus, for example, agricultural interests can be expected to support programs for subsidizing food consumption by the poor.

One of the most contentious issues in this area is how income maintenance policies affect the behavior of the poor. Most attention has been focused on work effort--do beneficiaries reduce their work effort and if so, by how much. In the belief that welfare reduces work effort, several countries have introduced work requirements--in order to be eligible for welfare, recipients have to agree to accept work or job-training programs. The efficacy of such programs is not yet well understood. Another open question is whether income maintenance programs lead to the creation of a "welfare culture"--children brought up in households receiving welfare come to view it as a way of life and hence are unlikely to acquire the skills necessary to earn a living. It is indeed the case that a mother's participation in welfare increases the probability that her daughter eventually also ends up on welfare. However, it is not clear whether the exposure to welfare "causes" the daughter to go on welfare, or if other correlated aspects of the family environment are responsible (Blank (1997)).

3.5 A Caveat

We have discussed a number of situations in which the government can improve welfare by enhancing efficiency and fairness. However, the fact that the market-generated allocation of resources is imperfect does not mean the government is necessarily capable of doing better. For example, in certain cases the costs of setting up a government agency to deal with some market failure could be greater than the cost of the market failure itself. Moreover, governments, like people, have only imperfect information, and hence can make mistakes. Finally, it is not clear that government decision-makers will have maximizing social welfare as their goal; we return to this theme at the end of this essay. Hence, it is best to think of welfare economics as helping

us identify situations in which government intervention *may* enhance efficiency and fairness; whether it actually will needs to be evaluated on a case by case basis.

4. The Theory of Taxation

Taxes are the most important source of revenue for modern economies. The theory of taxation explores how taxes should be levied to enhance economic efficiency and to promote a "fair" distribution of income. Just as in the case of expenditures discussed in Section 3, welfare economics provides the underlying analytical framework. Various aspects of the theory are discussed in this section.

4.1 Tax Incidence

Policy debates about taxation are usually dominated by the question of whether it burden is distributed fairly. To discuss this normative issue requires some understanding of the positive question of how taxes affect the distribution of income. A simple way to determine how taxes change the income distribution would be to conduct a survey in which each person is asked how many dollars he or she pays to the tax collector each year.

Although such an approach is convenient, it is quite likely to produce misleading answers. To see why, suppose that the government levies a tax of one dollar on the sellers of a certain commodity. Suppose that prior to the tax, the price of the commodity is $20, and that after the tax is levied, the price increases to $21. Clearly, the sellers receive as much per unit sold as he did before. The tax has not made them worse off. Consumers pay the entire tax in the form of higher prices. Suppose that instead, the price increases to $20.25. In this case, sellers are worse off by 75 cents per unit sold;

consumers are worse off by 25 cents per unit sold. The burden of the tax is shared between the two groups. Yet another possibility is that after the tax is imposed, the price stays at $20. If so, the consumer is no worse off, while the seller bears the full burden of the tax.

The *statutory incidence* of a tax indicates who is legally responsible for the tax. All three cases above have exactly the same statutory incidence. But the situations differ drastically with respect to who really bears the burden. The *economic incidence* of a tax is the change in the distribution of private real income induced by the tax.

The example above suggests that the economic incidence problem is fundamentally one of determining how taxes change prices. In the conventional supply and demand model of price determination, the economic incidence of a tax depends on how responsive supply and demand are to prices.[3] In general, the more responsive supply is to price relative to demand, the greater the share of the tax that will be shifted to consumers. Intuitively, the more responsive demand is to price, the easier it is for consumers to turn to other products when the price goes up, and therefore more of the tax must be borne by suppliers. Conversely, if consumers purchase the same amount regardless of price, the whole burden can be shifted to them. In cases where the responses of supply and demand to price are well understood, then fairly reliable estimates of the economic incidence of a tax can be obtained. In some areas, the behavioral responses are not well understood, and incidence analysis is on less firm ground. For example, there is still great controversy over the burden of taxes on

[3] For a treatment of tax incidence in other models of price determination, see Fullerton and Metcalf (forthcoming)

corporations--to what extent are they borne by owners of capital, and to what extent by laborers? This is an important topic for research.

4.2 Excess Burden

Taxes impose a cost on the taxpayer. It is tempting to view the cost as simply the amount of money that he or she pays to the government. However, this is only part of the story. A tax distorts economic behavior--in general, consumers buy fewer taxed goods and more untaxed goods than otherwise would have been the case. Their decisions are not based entirely on the merits of the commodities themselves. In the same way, business owners make investments based in part on tax considerations, as opposed to economic fundamentals. Because a tax distorts economic activity, it creates a loss in welfare that actually exceed the revenues collected. This is referred to the *excess burden* of the tax.

In general, the more responsive behavior is to the tax, the greater the excess burden, other things being the same. Intuitively, because excess burdens arise because of distortions in behavior, the more that behavior is capable of being distorted, the greater the excess burden. Another important result is that the excess burden of a tax increases with the square of the tax rate--doubling a tax quadruples its excess burden, other things being the same. This means that, in general, it makes sense to spread taxes over as large a group of commodities as possible--a small tax on a number of commodities has a smaller excess burden than a very large tax on one commodity.[4]

This discussion suggests that, just like the incidence problem discussed above, the excess burden of a tax depends on the behavioral response to the tax. Estimating such behavioral responses and computing excess burdens is an important role for public

finance economists. Some estimates suggest that the excess burdens for real-world tax systems are quite high. One recent survey suggested that in the United States, the average excess burden per dollar of tax revenue is 18 cents. While any particular figure must be taken with a grain of salt, virtually all estimates suggest that the tax system is highly inefficient in the sense of generating large excess burdens (Jorgenson and Yun (2001)).

The fact that a tax generate an excess burden does not mean that the tax is bad. One hopes, after all, that it will be used to obtain something beneficial for society either in terms of enhanced efficiency or fairness. But to determine whether or not the supposed benefits are large enough to justify the costs, sensible policy requires that excess burden be included in the calculation as a cost to society.

4.3 Optimal Taxation

Public finance economists have devoted a great deal of attention to the problem of the design of optimal taxes. Of course, this is a normative issue, and it cannot be answered without a statement of ethical goals. To begin, suppose that the goal is to raise a given amount of money with the smallest amount of excess burden possible. There are a variety of ways to characterize the result. One of the most elegant is the rule that as long as goods are unrelated in consumption (that is, are neither substitutes nor complements), then the more responsive demand is to price, the lower should be the tax rate on that commodity. The intuition behind this rule is straightforward. Efficient taxes should distort decisions as little as possible. The potential for distortion is greater the more responsive the demand for the commodity is to its price. Therefore, efficient

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[4] For a proof, see Auerbach and Hines (forthcoming).

taxation requires that relatively high rates of taxation be levied on goods whose demands are relatively unresponsive to their price.

This result strikes many people as ethically unappealing. For example, the demand for food is relatively unresponsive to changes in its price. Is it really desirable to tax food at relatively high rates? Most people would argue that it is not desirable, because their ethical views indicate that a tax system should have *vertical equity*: It should distribute burdens fairly across people with different abilities to pay. Public finance economists have shown how to modify the efficiency rule to account for the distributional consequences of taxation. Suppose, for example, that the poor spend a greater proportion of their income on commodity X than do the rich, and vice versa for commodity Y. Then even if the demand for X is less responsive to price than the demand for Y, optimal taxation may require a higher rate of tax on Y than X. True, a high tax rate on Y creates a relatively large excess burden, but it also tends to redistribute income toward the poor. As in other areas of public finance, the optimal policy depends on the extent to which society is willing to tradeoff efficiency for fairness (Auerbach and Hines (forthcoming)).

With its focus on efficiency and fairness issues, the theory of optimal taxation falls directly within the framework of conventional welfare economics. There are other criteria for tax design that are not reconciled so easily with welfare economics. The main one is *horizontal equity*, the notion that people in equal positions should pay equal amounts of taxes. One problem with implementing this principle is defining equal positions. The most common criterion is income, but wealth and consumption are also possible. A problem with all three measures, however, is that they are the outcomes of

people's decisions. Two individuals may have exactly the same wage rate, but one chooses to work 1000 hours per year while another chooses to work 2000 hours per year. Despite the fact that they have different incomes, in a meaningful sense they are in "equal positions" because their potential to earn income is the same.

Things are complicated further by the fact that adjustments in market prices may render some horizontal inequities more apparent than real. Suppose, for example, that in one type of job a large part of compensation consists of amenities that are not taxable--pleasant offices, access to a swimming pool, and so forth. In another occupation, compensation is exclusively monetary, all of which is subject to income taxation. This would appear to be a violation of horizontal equity, because the person in the job with a lot of amenities has too small a tax burden. But, if both arrangements coexist and individuals are free to chose, then the net after-tax rewards (including amenities) must be the same in both jobs. Otherwise, people would leave the job with the lower net after-tax rewards. In short, the fact that amenities are not taxed is not unfair, because the before-tax monetary compensation falls by just enough to offset this advantage. Put another way, introducing taxation for such amenities would *create* horizontal inequities (Feldstein (1976)).

We conclude that horizontal equity is a rather amorphous concept. Yet it has enormous appeal as a principle of tax design. Notions of fairness among equals, regardless of their vagueness, will continue to play an important role in the development of tax policy.

5. Revenue Raising Instruments

Public finance economists have used the theoretical framework discussed in Section 4 above to analyze the various revenue sources used by modern governments. This section discusses briefly some of the key issues associated with each kind of tax.

5.1 Income Tax

Taxes on income play a major role in the fiscal systems of all western countries. A starting point for the analysis and evaluation of real world income tax systems is a definition of income. Traditionally, public finance economists use the so-called *Haig-Simons* definition: Income is the money value of the net increase in an individual's power to consumer during a period. This is equal to the amount actually during the period plus net additions to wealth. Net additions to wealth--saving--must be included in income because they represent an increase in potential consumption. Importantly, the Haig-Simons criterion requires the inclusion of *all* sources of potential increases in consumption, regardless of whether the actual consumption takes place, and regardless of the form in which the consumption occurs. While not uncontroversial, the Haig-Simons definition provides a useful guide.

The Haig-Simons definition encompasses those items ordinarily thought of an income: wages and salaries, business profits, rents, royalties, dividends, and interest. These forms of income are relatively easy to measure and to tax. However, in other contexts, implementing the Haig-Simons criterion can lead to major problems. [5] Some examples follow:

- Only income net of business expenses increases potential consumption power. But distinguishing between consumption and costs of obtaining income can be

[5] Bradford (1986) provides a careful discussion of issues relating to the implementation of an income tax.

difficult. To what extent is a desk bought for an office at home just furniture, and to what extent is it a business expense?

- A capital gain is the increase in the value of an asset--say, a share of stock--during a period of time. From a Haig-Simons point of view, a capital gain is income whether or not the stock is actually sold, because the capital gain represents an increase in potential to consume. However, captial gains and losses may be very difficult o measure, particularly when the assets are not sold. Indeed, in general, no attempts are made to tax capital gains of assets that have not actually been sold.
- In-kind services are not easy to value. One important example is the income produced by people who do housework rather than participate in the market.

Such difficulties in implementing a Haig-Simons concept of income are of great practical significance. To the extent that income that comes in certain forms cannot be taxed, individuals' decisions are biased in the direction of taking their income in those forms. Thus, for example, there is a bias in favor of capital gains (which are taxed only when the asset is sold) as opposed to dividend income (which is taxed as it is earned). Such biases create efficiency losses to the economy. Further, complicated rules are often needed to determine whether a certain type of income falls in a category that is favored by the tax system. Capital gains again provides a good example; it is not always obvious whether the return that an individual receives from a company is a dividend or a capital gain. Such complexity leads to substantial compliance costs.

In additions, several forms of income that would be administratively relatively easy to tax are partially or altogether excluded from the income tax bases of most

countries. An important example is the return on saving that is deposited in retirement accounts. Indeed, given the extent to which income that is saved in various forms is excluded from taxation, it is a misnomer to characterize these systems as income taxes. They are more a hybrid between income and consumption taxes.

5.2 Corporation Income Tax

Corporations are independent legal entities and as such are subject to taxes on their incomes. Most public finance economists believes that it makes little sense to levy a special tax on corporations. Only real people can pay a tax; hence, it would make more sense to tax the incomes of corporation *owners* via the personal income tax. Again, this distinction is of more than academic importance. Treating the corporation as a freestanding entity for tax purposes leads to important distortions in economic activity. To see why, note that when a corporation earns income it is taxed once at the corporate level, and then again when it is paid out to shareholders in the form of dividends. In effect, then, corporate income that is paid out in the form of dividends is double taxed. This biases businesses against organizing in corporate form. Moreover, double taxation of corporate income effectively increases the tax rate on the return to corporate investments. This reduces the volume of investment undertaken by corporations, although there is substantial disagreement about the magnitude of this effect.

The incidence of the corporation tax is highly controversial. In one highly influential model due to Harberger (1962), the tax on corporate capital leads to a migration of capital from the corporate sector until after-tax rates of return are equal throughout the economy. In the process, the rate of return to capital in the noncorporate sector is depressed so that ultimately all owners of capital, not just those in the corporate

sector, are affected. The reallocation of capital between the two sectors also affects the return to labor. Most public finance economists believe that the burden of the corporation tax is split between labor and capital, although the is significant disagreement about the exact division.

If corporate income were untaxed, individuals could avoid personal income taxes by accumulating income with corporations. Evidently, this would lead to serious equity and efficiency problems. The question is whether there is a way to integrate personal and corporate income taxes into a single system so as to avoid the distortions associated with double taxation. The most radical solution to this problem is called *full integration*. Under this approach, all earnings of the corporation during a given year, whether they are distributed or not, are attributed to stockholders just as if the corporation were a partnership. The corporation tax as a separate entity is eliminated. This approach has not been implemented in any country, in part because of administrative problems. The *dividend relief approach* is less extreme. With it, the corporation can deduct dividends paid to stockholders. Although this approach eliminates the double taxation of dividends, it still maintains the corporation tax as a separate entity. Variants on this approach are used in a number of European nations.

5.3 Consumption Taxes

The base of a consumption tax is the value (or quantity) of commodities sold to a person for *actual* consumption, as opposed to an income tax, whose base is the change in *potential* consumption. Consumption taxes tax a variety of forms. A *retail sales tax* is levied on the purchase of a commodity. In the United States, retail sales taxes are not a

significant component of revenue at the national level, but they are at the state level. Even there, though, the rates generally do not exceed 7 percent or so.

In Europe, the most important type of consumption tax is a *value-added tax (VAT)*. The *value-added* at each stage of production of a commodity is the difference between the firm's sales and the purchased material inputs used in production. If a firm pays $100 for its material inputs and sells its output for $150, then its value added is $50. A VAT is a percentage tax on value added at each stage of production. For example, if the VAT rate were 10 percent, then the firm's tax liability would be $5. Note that the total value of a commodity when it is finally sold is equal to the sum of the value-added at each stage of production. Hence, a VAT of 10 percent applied to each stage is equivalent to a 10 percent tax on the final product. In Europe, VAT rates are as high as 25 percent. With rates of such levels, evasion is likely to be a problem for retail sales taxes; VATs are easier to administer, which accounts for their popularity.[6]

A distinguishing feature of both VATs and retail sales taxes is that the tax liability does not depend on the characteristics of the buyer. Whether one is rich or poor, the rate is the same. This prompts concerns over equity, which have been dealt with by applying lower rates to commodities such as food and medicine. But this may not be an effective way to deal with equity concerns. For example, even if it is true that food expenditures on average play an especially important role in the budgets of the poor, there are still many upper-income families whose food consumption is proportionately very high. In recent years, public finance economists have given a great deal of attention to the problem of designing *personal* consumption taxes. Such taxes require individuals to file

[6] See Cnossen (1998) for a discussion of issues relating to the implementation of VATs.

tax returns and write checks to the government, allowing tax liabilities to depend on personal circumstances.

One example is a *cash-flow* tax. Each household files a return reporting its annual consumption expenditures during the year. Just as under the personal income tax, various exemptions and deductions can be taken to allow for special circumstances, and a progressive marginal rate schedule applied to taxable consumption. From an administrative viewpoint, the major question is how to compute annual consumption. Taxpayers would report their incomes, and then subtract all saving. To keep track of saving, qualified accounts would be established at various financial institutions. Whether a cash-flow tax is administratively feasible is very controversial.[7] Many analysts believe that its record-keeping requirements would make it very difficult or impossible administratively.

5.4 Wealth Taxes

Wealth is the value of the assets an individual has accumulated as of a given time. Wealth taxes do not play a major role in the fiscal systems of any western countries. One justification of taxing wealth is that it is a good measure of an individual's ability to pay taxes. This is a controversial issue. Suppose that a miser has accumulated a huge hoard of gold that yields no income. Should she be taxed on the value of the hoard? Some believe that as long as the miser was subject to the income tax while the hoard was accumulating, it should not be taxed again. Others would argue that the gold *per se* generates satisfaction and power for the individual, and should therefore be subject to tax. Perhaps the major problem with this argument is that many rich people have a substantial component of their wealth in *human* capital--their stock of education,

skills, and so on. However, there is no way to value human capital except by reference to the income it yields. This logic points back to income as the appropriate base.

Some nations levy taxes on wealth only when it is transferred at the time of the death of the owner. These are referred to as *estate taxes*. Estate tax proponents argue that it is a valuable tool for creating a more equal distribution of income. Further, many believe that ultimately, all property belongs to society as a whole. During an individual's life, society permits her to dispose of the property she has managed to accumulate as she wishes. But at death, the property reverts to society, which can dispose of it at will. Opponents argue that it is fundamentally wrong to argue that a person holds wealth only at the pleasure of "society," or that "society" ever has any valid claim on personal wealth.[8]

A controversial issue is the incentives created by an estate tax. Suppose that an individual is motivated to work hard during his lifetime to leave a large estate for his children. The presence of an estate tax might discourage his work effort. On the other hand, with an estate tax, a greater amount of wealth has to be accumulated to leave a given after-tax bequest, so the tax might induce the individual to work harder to maintain the net value of his estate. Consequently, the effect of an estate tax on a donor's work effort is logically indeterminate. Similarly, one cannot predict how the tax will affect the amount of saving. There is currently very little in the way of empirical evidence on these incentive issues.

To the extent that an estate tax reduces saving, it may actually *increase* inequality. If there is less saving, then there is less capital investment. With less capital with which

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[7] The difficulties and advantages of this system are discussed in Pechman (1980).
[8] See Gale and Slemrod (2000) for further details.

to work, the real wages of workers decrease and under certain circumstances, the share of income going to labor falls. To the extent that capital income is more unequally distributed than labor income, the effect is to increase inequality. This scenario is hypothetical. It simply emphasizes a point made above in a variety of different contexts--to understand the impact of a tax, one must take into account how taxpayers respond to it.

5.5 Deficit Finance

In addition to taxation, the government's other major source of revenue is borrowing. The *deficit* during a time period is the excess of spending over revenues. The *national debt* at a given time is the sum of all past budget deficits. That is, the debt is the cumulative excess of past spending over past receipts. Future generations either have to retire the debt or else refinance it. It would appear, then, that future generations must bear the burden of the debt. But the theory of incidence tells us that this line of reasoning is questionable. Merely because the legal burden in on future generations does not mean that they bear a real burden. Just as in the case of tax incidence, the answer depends on economic behavior.

Assume that the government borrows from its own citizens. One view is that such an internal debt creates no burden for the future generation. Members of the future generation simply owe it to each other. There is a transfer of income from those who do not hold bonds to the bondholders, but the generation as a whole is no worse off int he sense that its consumption level is the same as it would have been.

This story ignores the fact that economic decisions can be affected by government debt policy. According to the *neoclassical model of the debt*, when the government borrows, it competes for funds with individuals and firms who want the money for their

own investment projects. Hence, debt finance leaves the future generation with a smaller capital stock, other things being the same. Its members therefore are less productive and have smaller real incomes than otherwise would have been the case. Thus, the debt imposes a burden on future generations, through its impact on capital formation. The key assumption in this argument is that public spending crowds out private investment. Whether crowding out actually occurs is a controversial issue; the empirical evidence is mixed (Elmendorf and Mankiw (1999)).

A further complication is introduced when we consider individuals' transfers across generations. Suppose that when the government borrows, people realize that their heirs will be made worse off. Suppose further that people care about the welfare of their descendants and do not want their descendants' consumption levels reduced. What can they do about this? They can save more to increase their bequests by an amount sufficient to pay the extra taxes that will be due in the future. The result is that nothing really changes. Each generation consumes exactly the same amount as before the government borrowed.

The striking conclusion is that private individuals undo the intergenerational effects of government debt policy so that tax and debt finance are essentially equivalent. This view is sometimes referred to as the *Ricardian model* because its antecedents appeared int eh work of the 19th century economist David Ricardo. (However, Ricardo was skeptical about the theory that now bears his name.) Some public finance economists have challenged the plausibility of the *Ricardian model*. They believe that information on the implications of current deficits for future tax burdens is not easy to obtain. Another criticism is that people are not as farsighted and not as altruistic as

supposed in the model. A number of statistical studies have examined the relationship between budget deficits and private saving. The evidence is rather mixed, and the Ricardian model has both critics and adherents among professional economists.

From time to time, events such as natural disaster and wars lead to temporary increases in federal government expenditures. An old question in public finance is whether such expenditures should be financed with taxes or borrowing.

6. Fiscal Federalism

The analysis so far has assumed that a nation has one government that sets tax and expenditure policies. In contrast, many countries have a federal system, which consists of different levels of government that provide public goods and services and have some scope for making decisions. The subject of *fiscal federalism* concerns the activities of the various levels of government and how they relate to each other. A key question is the optimal allocation of responsibilities among different levels of government. Posed within the framework of welfare economics, the question is whether a centralized or decentralized system is more likely to enhance efficiency and equity (Oates (1999)).

Among the disadvantages of a decentralized system is that individual communities may ignore the externalities they create. Suppose, for example, that some jurisdiction provides excellent public education for its children. If some of the children eventually emigrate to other jurisdictions, the other communities benefit from having a higher quality work force. But in deciding how much education to provide, the jurisdiction only considers its own welfare. Therefore, it may provide an inefficiently low amount of education. More generally, if each community cares only about its own

members, then any positive or negative externalities it creates for other communities are overlooked. According to the standard arguments made above, resources are allocated inefficiently.

Another disadvantage of a decentralized system relates to the fact that for certain public services, the cost per person falls as the number of users increases. Suppose that the more people who use a public library, the lower the cost per user. If each community sets up its own library, costs per user are higher than necessary. A central government, on the other hand, could build one library for the region, allowing people to benefit from scale economies. Of course, various activities are subject to different scale economies. The optimal scale for library services might differ from that for fire protection, and both surely differ from the optimal scale for national defense. This observation helps rationalize a system of overlapping jurisdictions--each jurisdiction can handle those services with scale economies that are appropriate for the jurisdiction's size.

Decentralized systems can also lead to inefficiencies with respect to raising revenues. Taxes levied by decentralized communities are unlikely to be efficient from a national standpoint. Instead, communities are likely to select taxes on the basis of whether they can be exported to outsiders. For example, jurisdictions that have a near-monopoly on certain natural resources such as coal may impose large taxes on these commodities, figuring that they will be shifted largely to coal users outside the community.

A major advantage to a decentralized system is that it allows communities to tailor their public services to the tastes of their residents. Tastes for public services, just like the tastes for all other commodities, vary across people. A centralized government

tends to provide the same level of public services throughout the country, regardless of the fact that people's tastes differ. It is inefficient to provide individuals with more or less of a public good than they desire if the quantity they receive can be more closely tailored t their preferences. Under a decentralized system, individuals with similar tastes for public goods group together, so communities are more likely to provide the types and quantities of public goods desired by their inhabitants.

Another advantage is that decentralized systems foster intergovernmental competition. If citizens can choose among communities, then substantial government mismanagement may cause citizens to chose to live elsewhere. This threat may create incentives to government managers to produce more efficiently and be more responsive to their residents.

Finally, a decentralized system may enhance experimentation and innovation in locally provided goods and services. For many policy questions, no one is certain what the right answer is, or even whether there is a single solution that is best in all situations. One way to find out is to let each community choose its own way, and then compare the results. For example, some jurisdictions might choose to provide innovative job-training programs for individuals who lose their jobs. If the innovations are successful, other jurisdictions can imitate them. If not, the costs to the country as a whole are small.

This discussion makes it clear that a purely decentralized system cannot be expected to maximize social welfare. Efficiency requires that those services that affect the entire country, such as national defense, be provided at the national level. On the other hand, it seems appropriate for goods that affect only the members of a particular jurisdiction to be provided locally. This leaves us with the in-between case of

community activities that create externalities that are not national in scope. While one solution would be to create a single regional government, a larger jurisdiction carries the cost of less responsiveness to local differences in tastes. An alternative method is a system of taxes and subsidies. The central government can subsidize activities that create positive externalities. In some countries, central governments give grants to communities that roughly follow this model.

7. Public Finance and Public Choice

Traditionally, the field of public finance has tended to convey a rather rosy view of government. With a tax here, an expenditure there, the state readily corrects all market imperfections, meanwhile seeing to it that incomes are distributed in an ethically desirable way. The implicit assumption is that the government is a neutral and benign force. In contrast, the field of public choice assumes that individuals view government as a mechanism for maximizing their self interest. Such a viewpoint can lead to rather different conclusions from those of conventional public finance.

A good example is provided by optimal tax theory. Suppose that in a certain society, there are three commodities, X, Y, and leisure. Labor is totally fixed in supply, and therefore, income is fixed. Note that a proportional tax at the same rate on X and Y is equivalent to a tax on income. Now, suppose that currently, this society levies a tax on X, but its constitution forbids taxing Y. Viewing this situation, a student of optimal tax theory might say something like, "You are running an inefficient tax system. You could eliminate excess burden if you taxed X and Y at equal rates--an income tax. I

recommend that you lower the tax on X and impose a tax at the same rate on Y. Set the rates so that the same amount of revenue is collected as before."

Suppose, however, that the citizens suspect that if they allow taxation of Y, their politicians will not lower the tax rate on X. Rather, they will simply take advantage of the opportunity to tax something new to make tax revenues as large as possible. Therefore, by constitutionally precluding the taxation of Y, the citizens may be rationally protecting themselves against an inefficiently large public sector. In other words, if government does not necessarily act in the interest of its citizens, then what looks inefficient from the point of view of optimal tax theory may be efficient in a public choice setting.[9]

In recent years, public choice has had substantial influence on the field of public finance. In both theoretical and empirical work, public finance economists study the incentives facing government decision-makers, and how these incentives affect policy outcomes. In making their own policy recommendations, there is a heightened awareness that a policy that emerges from the legislative process may look quite different from the original proposal, and one should take this into effect in formulating recommendations. In the future, one can expect both Public Finance and Public Choice to continue to enjoy the benefits of intellectual cross-fertilization.

[9] Holcombe (1998) provides further comparisons between optimal tax theory and a public choice approach.

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