

REVENUE STRUCTURE, FISCAL ILLUSION, AND BUDGETARY CHOICE

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Economists are increasingly coming to understand and to recognize how the performance of a market economy depends upon, among other things, the stock of knowledge possessed by participants concerning such items as product prices and wage rates.¹ Analogously, it would seem reasonable that the performance of the public economy would depend upon the stock of knowledge possessed by voters about such items as tax-prices of public output. This paper examines one facet of the impact of fiscal institutions upon taxpayer knowledge, *viz.*, the impact of alternative degrees of complexity in the revenue structure upon the stock of taxpayer knowledge concerning tax-prices of public output. The central question addressed in this paper is whether a choice between financing public output from a single tax or from a variety of smaller taxes will affect the stock of taxpayer knowledge about tax-prices, and, through this, affect public budgetary choices.

The analysis developed in this paper is a conceptual and empirical exploration of one aspect of the theory of fiscal illusion.² The central theme of this literature is

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¹See, for instance, the early treatments by Stigler (1961), (1962), and the recent surveys by Hirshleifer (1973) and Rothschild (1973).

²The seminal work on fiscal illusion is Puviani (1903). For English-language surveys, see Buchanan (1960, pp. 59-64), (1967, pp. 126-43). For a survey of fiscal illusion as it pertains to state and local finance, see Goetz (1975).

that the institutional manner in which citizens are required to pay for government can affect taxpayer perceptions of the price of government, and, hence, the size of the public sector. This literature contains several strands. One strand argues that income tax payments made under withholding will seem less costly than income tax payments made directly by taxpayers to government.³ A second strand suggests that, during inflationary periods, individuals will object less strenuously to an increase in public expenditure when that expenditure is financed by progressive income taxation than when it is financed by proportional income taxation.⁴ Another strand hypothesizes that debt finance will seem less costly than tax finance, due to a failure by citizens to account fully for the future tax liability implied to the resort to debt finance.⁵ Still another strand claims that indirect taxation will appear to taxpayers as less costly than direct taxation.⁶

To this point, statements about the budgetary consequences of fiscal institutions that are grounded on the presence of fiscal illusion have not found wide acceptance. There seem to be three reasons why fiscal illusion has not played a significant role in the agenda of fiscal analysis. One reason is that fiscal analysis has been predominately normative, being focused on such optimality concerns as the minimization of excess burden and the optimal degree of progressivity in an income tax. Fiscal illusion becomes pertinent to fiscal analysis only when the focus is shifted to the positive explanation of the workings of real-world institutions, although, of course, such positive analysis may be valuable in suggesting reforms in real-world institutions. A second reason is that fiscal illusion has been widely interpreted as implying irrational individual behavior, as individuals are viewed as responding to matters of form rather than of substance. Therefore, a line of analysis that invokes fiscal illusion is generally viewed by economists with no more fondness than one that invokes money illusion.⁷ Essentially, this objection to fiscal illusion conveys the sense that there is little conceptual basis for describing just how it is possible that a citizen's perception of the cost of government can be influenced by the manner in which he is required to pay for government. A third reason is that

³For an empirical examination, see Wagstaff (1965). On more general issues pertaining to income taxation, see Gensemer, Lean, and Neenan (1965) and Schmolders (1961).

⁴This theme is developed in Buchanan (1973) and Buchanan and Dean (1974). For empirical evidence favorable to this point, though developed for a somewhat different purpose, see Oates (1974).

⁵See, for instance, Vickrey (1961).

⁶Moreover, references are also made to the possibility of illusion on the expenditure side of the account. For instance, Feldstein (1974, p. 153) alludes to the possibility that "the public's perception of different programs with the same actual progressivity may not be the same."

⁷Oates (1974) expresses clearly this suspicion of arguments based on fiscal illusion. Nonetheless, his empirical evidence supported the hypothesis that the rate of growth in public expenditure varies directly with the elasticity of the revenue system, which implies that differences of form in the manner in which revenues are raised can influence budgetary outcomes.

fiscal illusion has seemed largely devoid of empirical content. It is often asserted that certain institutions create fiscal illusion, and assumed that the impact is significant, but beauty is indeed in the eye of the beholder, and a willingness to resort to arguments based on fiscal illusion may reveal more about the speaker than the real world.

This paper addresses both conceptual and empirical issues pertaining to fiscal illusion. The first section explores generally how it is possible that taxpayer perceptions of the cost of government can be influenced by the method used to finance public output. The second section considers specifically how the complexity of a revenue structure is likely to influence taxpayer perceptions of the cost of government, with such changes in perception generating changes in public budgets. The third section examines empirically the budgetary impact of alternative degrees of revenue complexity. The paper concludes by discussing some implications of, as well as caveats to, the analysis.

I. Revenue Structure and Fiscal Perception

How is it possible for a taxpayer's perception of the price of public output to be influenced by the method used to finance public output? It is necessary to explore this general question before considering specifically the ability of the degree of complexity of a revenue system to modify taxpayer perceptions of the cost of government, and, thereby, the size of the public budget.

There would seem to be little, if any, scope for a consideration of the formation of price perceptions with respect to individual choice in a market setting. Consider, for instance, a person whose monthly demand for dry cleaning can be described by

$$(1) \quad X = 21 - 8P,$$

with X denoting the number of garments dry cleaned per month, and P the price per garment. If the price were \$2, five items would be cleaned monthly, and if the price were \$1.875 (two for \$3.75), six items would be cleaned per month. The phenomena pertaining to market choice are starkly simple: price is price, and that would seem to be about all there is to the matter. There would seem to be no point in distinguishing between "perceived" price and "real" price.

Although the formation of perceptions of market price by buyers seems generally to present few problems, it is useful to consider the formation of such perceptions at this time, for such a consideration serves to introduce the line of analysis to be pursued subsequently. For this purpose, the analytical framework developed by Kant (1788), particularly his distinction between *noumenon*, or things in themselves, and *phenomena*, seems especially helpful. The former represents the unchanging structure of the universe, the world of ultimate reality. The latter represents the sensible perceptions or appearances of objects, as distinct from the object as object in itself. In other words, and for purposes of this paper, we may distinguish two realms. On the one hand, there is a material or physical realm in which resources are extracted from buyers. On the other hand, there is a

sensory or phenomenal realm in which buyers form a hypothesis about price, and then act or choose accordingly. Perception then, entails the formation of a hypothesis about an object or a collection of objects – about price, in the case under examination in this paper.⁸ With respect to the price of garments, the perceptual problem seems starkly simple. The physical realm is one in which \$2 is extracted for each garment cleaned, and to speak of a distinction between the material realm in which resources amounting to \$2 are extracted from the buyer and the phenomenal realm in which the buyer forms a perception or hypothesis regarding cost, and then decides how many garments to have cleaned, sounds terribly pedantic.⁹

Suppose, however, that some legislator seized upon the idea that the existence of a cleanly clothed population was a public good. Further, suppose he were successful in persuading his fellow legislators as to their failure to provide this public good, with the result being that dry cleaning services became collectivized. To simplify the discussion, assume that all persons possess identical preferences, those described by Equation (1) above. Let the marginal cost per item be constant at \$2, so that each person would optimally demand that five items be cleaned per month. Consider a community of 10,000 persons, with each person receiving a monthly income of \$1,000. There is to be a collective choice on the size of the dry cleaning plant, with each person being given ration tickets for 1/10,000th of the capacity.¹⁰ The dry cleaning plant is to be financed by a proportional tax on income, with the chosen capacity rationed equally among the populace. If a tax rate of one percent were selected, each person would be paying \$10 monthly, and would be receiving ration tickets to have five items cleaned monthly (1/10,000th of the 50,000 capacity plant chosen).

The issue surrounding fiscal illusion and fiscal perception, however, is precisely whether a person who is being taxed at one percent of his income would *necessarily* reach the hypothesis that the unit price of government – of dry cleaning, in this example – was \$2. If he did reach this hypothesis, he would sense no desire for a change in the government's budgetary policy. If the hypothesis formed under income tax financing should differ from that formed under market pricing, however, the shift in the means of financing the service would generate a change in the quantity of the service demanded. For instance, should the hypothesis formed under tax finance be that the unit price of dry cleaning were

⁸On the formation of a perception about the material world as an act of forming a hypothesis, being, therefore, essentially the same type of activity as scientific exploration, see, for instance, Harris (1970) and Hayek (1952). Both Harris and Hayek, it is perhaps worth noting, conduct their analysis within this Kantian framework.

⁹Nonetheless, see Brown and Oxenfeldt (1972), for an examination of buyer misperceptions of price in retail grocery stores. They found evidence of misperceptions of the relative prices charged by different stores, though the magnitudes were considerably smaller than those reported in Section III, below.

¹⁰It is necessary to ration the excess demand that would result from a zero marginal price under tax finance, for each family would then demand 21 items to be cleaned per month.

\$1.875, the person would desire a larger amount of dry cleaning under tax financing than he would desire under market pricing.¹¹ In other words, should this person be subject to an income tax rate of one percent, with the proceeds used to finance the provision of dry cleaning services, he would sense an excess demand for dry cleaning services. And if all citizens in this world-of-equals should react identically to this change in the means of financing dry cleaning, the public facility would be enlarged so as to clean 60,000 garments monthly. That is, the public budget would rise from \$100,000 monthly to \$120,000.

The ability of fiscal institutions to create fiscal illusion depends on the ability of such institutions to influence the hypothesis a person forms about the cost of government. The perceptual issue, then, is whether or not the hypothesis reached as to the operation of the material world of taxation will be influenced by the particular revenue structure used to extract resources. A tax system can be characterized as containing various "Fiscal Extraction Devices" (FEDs) which transfer resources from citizens to the Treasury. Differences in tax structures may be conceptualized as differences in the placement and operation of the FEDs, and these FEDs comprise the material realm in which resources are extracted to finance public output. Budgetary choice, however, is a product of the phenomenal or sensory realm in which a person forms a hypothesis about the price of public output.

The operation of the FEDs under a system of proportional income taxation would seem to be a relatively simple phenomenon, so the formation of a perception about the price of public output would seem to be relatively easy. A 20 percent rate of tax, for instance, could be represented by a FED such that, as the recipient stepped away from the pay window, moved in and claimed one dollar in five. More generally, it could entail a monthly bill for government, so citizens would pay for government in much the same manner they pay their utility bills. It would seem a simple matter to form a hypothesis about the price of public output in this setting, for there would exist a straightforward relation between the transference of \$X to the FED, and the receipt of a supply of public output.¹²

Suppose the operation of the FEDs were changed, with taxes now being withheld from the individual's pay check. Although the amounts extracted may be identical in both cases, there is no basis for insisting that an identical hypothesis will be formed concerning the price of public output. Considering the differences in the sense data as between the two methods of collecting income taxes, the attainment of different perceptions as to the cost of public output seems quite possible. In one case the taxpayer is *confronted* by a FED that demands payment.

¹¹The opposite desire would result, of course, should the reverse hypothesis about relative costliness be formed.

¹²It is assumed for expository simplicity that a single service is being supplied publicly. When governments provide a bundle of services jointly, additional issues arise concerning such matters as the information of a price-output perception, and the opportunity for price discrimination in the provision of public services. See, for instance, Wagner and Weber (1975).

In the other case the taxpayer is not confronted, but is only reminded that the FED has already taken a share of his income. Wagstaff (1965) has presented evidence showing that the aforementioned shift in the operation of the FEDs can influence the hypothesis a taxpayer will reach regarding the price of public output.¹³ The general principle to which Wagstaff's evidence attests is that sensory perceptions will be influenced by the structure and operations of the FEDs in the material realm, with such differences in perception, in turn, manifesting themselves through differences in personal choices regarding preferred budgetary size.

To sharpen the contrast in the *modus operandi* of the FEDs, consider the replacement of an income tax with a sales tax on the gross value of both consumer goods and capital goods. By making this substitution, the impact of the FEDs in the material realm is unchanged, for individuals pay the same amount of tax, regardless of the particular form in which the liability is assessed.¹⁴ However, there is no reason why the phenomenal realm must be constructed and interpreted identically, regardless of the revenue base. It is quite possible that the substitution of sales taxation for income taxation would modify the perceptual pattern formed regarding the cost of government, even though the tax extraction in the material realm are identical. To form a hypothesis as to the price of public output, a citizen must take the primary sense data and create a pattern or interpretation. With the income tax, the sense data are in the form of claims placed upon the citizen by the FEDs at the time income is received. With the sales tax, the sense data are in the form of price markups at the time purchases are made. With sales taxation, the FEDs appear to operate so as to inflate by, say, five percent the price of products as the consumer stands at the cash register.

As there are different ways of imposing an income tax, so there are different ways of imposing a sales tax. Rather than tax liability being assigned at the final stage in the production and distribution process, liability could be based on the value added at each level. Once again, the FEDs would make the identical pattern of extractions from individual citizens, but the sense data generated by the FEDs under value-added taxation would differ considerably from that generated under sales taxation. When taxes are placed on value added, some FEDs make their extractions at the manufacturing and wholesaling levels. In forming a hypothesis about the price of public output, the taxpayer would not have been exposed to the sense data of payments made to the FEDs at the time of purchase, as he would have been under general sales taxation. A shift to the value-added method of tax collection, then, would alter the sense data out of which a perception of the price

¹³One of Wagstaff's findings was that withholding reduced the accuracy of estimated tax payments, though without a systematic tendency toward either overestimation or underestimation. Another finding was that withholding led to a systematic underestimation of gross income, which suggests that withholding diminishes the sensed reduction in personal income resulting from the extractions of the FEDs.

¹⁴This equivalence between a proportional tax on gross income and a general sales tax is described in Mieszkowski (1967).

of public output must be formed.¹⁵ It would seem generally unlikely that an identical perception of the price of public output would be formed under retail sales taxation and under the value-added method of tax collection. A change in the placement and operation of the FEDs, then, seems capable of altering taxpayer perceptions of the price of public output.

II. Revenue Complexity, Fiscal Illusion, and Budgetary Choice

As a general principle, a taxpayer's perception of the price of public output will vary with the particular means used to finance public output. Instead of financing government from a single revenue source, suppose government is financed by utilizing many sources simultaneously. This section examines whether it matters if public revenues are raised from a simple, single-base revenue structure, or if they are raised from a complex, multi-base revenue structure.

In the simplest fiscal setting, only one type of FED exists, and it operates openly and clearly. In a complex fiscal setting, FEDs are numerous, are often inconspicuously placed, and sometimes operate according to poorly defined rules. Even for such a simple tax form as a sales tax, records must be kept and computations made – neither of which is necessary for an income tax – before an accurate hypothesis can be formed regarding the price of public output. But let a government levy simultaneously a sales tax with various exemptions, a variety of excise taxes, some perhaps collected at the wholesale level, sundry license fees bearing little or no relation to services rendered, and a tax on the profits of business corporations. The formation of an accurate perception regarding the price of public output would be vastly more difficult under this more complex revenue structure.

As the fiscal environment becomes more complex, the location of FEDs expands spatially, and their activities increase temporally. There will be a greater number of FEDs, on the one hand, and their extractions from any given citizen will become more spread out over time, on the other hand. The degree of simplicity of a revenue structure is roughly synonymous with concentration, spatially and temporally, in the extractions made from citizens. The more concentrated the revenue structure, the fewer the pieces of sense data that must be molded into a pattern to form a hypothesis as to the price of public output.¹⁶ The simplest revenue structure would be one in which all extractions during some time interval were made by one FED at one point in time.

Besides temporal and spatial variation, the FEDs may also differ in their obtrusiveness. For instance, income taxation under withholding would seem to be less obtrusive than income taxation in the absence of withholding. And value-added taxation would surely be less obtrusive than either form of income taxation. In

¹⁵It is worth noting that the "sense data" are not *given*, but must be *recognized* for what they are. In dealing with taxation, this problem of recognition is often simple, as the FEDs announce their presence. It is not so simple, however, for taxes based on value added, as well as for such taxes as manufacturer's excise taxes.

¹⁶On this approach to the complexity of phenomena, see Hayek (1964).

other words, in some cases a taxpayer cannot help but be aware of the sense data. This would certainly be true of income taxation in the absence of withholding. In other cases a taxpayer may find it extremely difficult to ascertain the presence of the sense data in the first place. A value-added method of tax collection would seem to possess this characteristic, as would manufacturer's excise taxes, to say nothing of such business related taxes as that on corporate income. As fiscal phenomena become more complex — as a revenue structure come to contain a multitude of FEDs — the formation of perceptual patterns or hypotheses becomes more difficult, as does the recognition of the sense data in the first place.¹⁷ An increase in the complexity of a revenue structure, then, raises the cost of inquiring into the nature of the material realm in which the FEDs make their extractions. The resulting reduction in the amount of exploration undertaken means that the accuracy of a taxpayer's perception of the price of public output will lessen.

The accuracy of a person's perception of the cost of government, then, will vary inversely with the complexity of the revenue structure. But what will be the feedback effects of such illusion on the fiscal environment itself? If change in the complexity of a revenue structure modifies a citizen's perception of the cost of government, some discernable change in such fiscal variables as desired budgetary size must result. But what, specifically, is the likely budgetary consequence of increased revenue complexity? This depends on the change in the hypothesis formed regarding the price of public output. If, as a result of added complexity, the hypothesis is shifted in the direction of a larger cost of government, lower budgets would result. And the contrary budgetary impact would result should the hypothesis be shifted in the direction of a lower cost of government.

Suppose there are 10 FEDs, each of which makes 10 extractions annually, giving 100 instances annually of citizen contact with the FEDs. What will be the salient characteristics of the hypothesis formed regarding the price of public output, given that the FEDs differ both in the size of their extractions and in their degree of obtrusiveness? Abstraction is an integral element in the formation of perceptions, and it is a process in which some elements of the sense data are ignored entirely in order to focus on a few features felt to be of especial importance. The process of abstraction would generally lead to some FEDs being noticed only slightly, with others being ignored entirely. It would be relatively costly to incorporate as sense data the activities of such FEDs as these in forming a hypothesis about the price of public output. Moreover, the relatively high cost of incorporating as sense data the activities of some FEDs is exacerbated by the lessened importance of accurate perceptions in collective choice. In market choice an individual normally has a personal interest in forming a correct hypothesis.¹⁸ In collective choice, by contrast, this personal interest in the formation of perceptual hypotheses is considerably weaker because the link between the hypothesis one forms and the resulting change in one's relation to the physical world is relatively

¹⁷On the especial difficulties created by complex phenomena, see Hayek (1964).

¹⁸Moreover, the phenomena are simpler.

remote. Therefore, the value to a citizen of forming an accurate hypothesis is less in collective choice than in market choice.¹⁹

The process of abstraction, then, is one in which a subset of the FEDs is selected for inclusion in the formation of a perception regarding the cost of government. The remaining FEDs are ignored: "out of sight, out of mind," as the saying goes. As a logical possibility, a citizen could overestimate the cost of government when he is confronted with a complex revenue structure. Suppose, for purposes of illustration, that a citizen incorporates 67 percent of all FEDs into his purview in forming his abstraction. If the hypothesis formed by the citizen should be erroneous by 50 percent or more in the upward direction, he would overestimate the cost of government. Such a substantial error, however, while possible, seems unlikely. Error will generally decline with the attention given to discerning the consequences of a particular FED. Generally, those FEDs that extract the largest amount of resources would be given the largest attention, which diminishes the probability of such large errors.

An increased complexity in a government's revenue structure, then, is generally likely to diminish a citizen's hypothesized cost of government. In Figure 1, P_2 represents the perceived price of public output under a simple revenue structure. The desired public output would be X_2 , which would imply a budget of OP_2aX_2 . Under the complex revenue structure the perceived price would be P_1 which would yield a desired rate of public output of X_1 . While the citizen prefers X_1 under the complex revenue structure, and perceives the price to be P_1 the FEDs actually will extract P_2 per unit of X . Therefore, the citizen operating within the complex revenue structure will prefer X_1 , sensing that the unit price is P_1 , and that government is costing him OP_1cX_1 . However, the FEDs are really extracting P_2 per unit of output, giving a total extraction of OP_2dX_1 . The size of the divergence between P_1 and P_2 would itself be expected to vary inversely with the simplicity, S , of the revenue structure. An increase in S , then, should lead to a reduction in public expenditure, according to the preceding analysis of revenue structure and fiscal illusion.

III. Empirical Evidence on Fiscal Illusion and Budgetary Choice

A primary empirical hypothesis advanced above was that a resort to a more complex revenue structure will lead to an expansion in public expenditure. This proposition regarding the budgetary consequences of the degree of revenue complexity was tested by estimating a model of public expenditure for the 50 largest American cities, using data available in the 1967 Census of Governments and the 1970 Census of Population. Cities that possessed dependent school systems were excluded because the incorporation of local education into city functions in these handful of cities would grossly violate the underlying conceptual experiment, which is one of taking a government and altering the complexity of its revenue structure, holding constant other relevant features that determine expenditures.

¹⁹This point is developed in Tullock (1967, pp. 100-14). See also, Downs (1957) and Olson (1965).

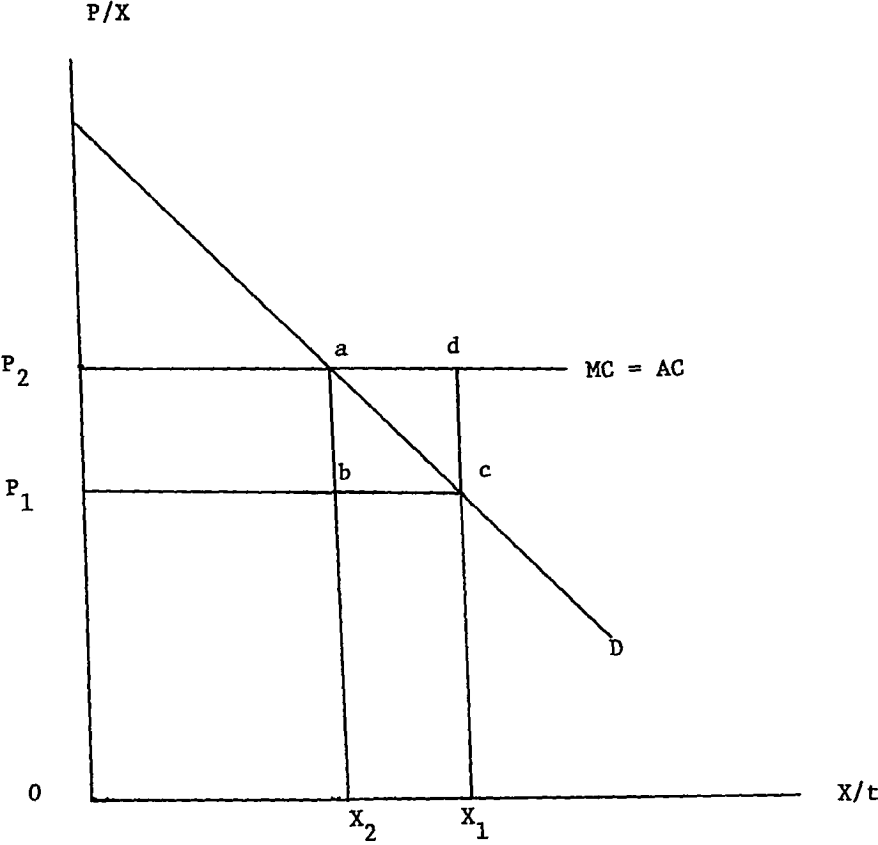


Figure 1

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For each city, the dependent variable, total current expenditure, was estimated as a function of the following independent variables:

- X₁: total personal income,
- X₂: intergovernmental revenue,
- X₃: percentage of population below poverty line,
- X₄: average salary of city employees,
- X₅: local expenditure as a percentage of state and local expenditure within the state,
- X₆: city population as a percentage of SMSA population,
- X₇: population density, and
- X₈: simplicity of the city's revenue structure.

All of these variables except X₈ have been found in varying degrees in the literature on the determinants of public expenditure.²⁰ Variables X₁, X₂, and X₃ are demand-side variables. X₄ and X₅ are supply-side variables with the former reflecting differences in labor prices among cities and the latter reflecting differences among states in the relative assignment of functions between state and local governments. X₆ and X₇ cannot be given a simple demand-side or supply-side interpretation. X₆ was included because city expenditures might be affected by the relative importance of suburban areas in the SMSA. X₇ picks up several elements, including such things as the higher cost of land in denser areas, as well as possibly greater demands for such services as police and fire.

The simplicity of the revenue structure, which is described by X₈, is defined by a Herfindahl index of concentration applied to the city's revenue structure.²¹ With respect to revenue structures, the Herfindahl index of simplicity is defined as

$$(2) \quad S = \sum_{i=1}^4 R_i^2,$$

where R_i^c is the share in total city revenue generated by a particular source of revenue. In the sample of cities used here, a city's general revenue from own sources was separated — by the Census Bureau — into four major categories: (1) property taxation; (2) general sales taxation; (3) selective excise taxation; and (4) charges and fees (*excluding* utility revenue). The mean value of S was .44, and particular values ranged from .265 in Phoenix to .815 in Indianapolis. The Herfindahl index is not, of course, a perfect measure of the simplicity of a revenue structure. For instance, a revenue system in which all revenues are raised through a corporate income tax would be accorded the same index of simplicity as a revenue system in which all revenues are raised through a personal income tax. Nonetheless, the variable does seem to be a workable measure, for it does capture much, though certainly not all, of what is involved in labeling one revenue system as being simpler

²⁰See, for instance, Bergstrom and Goodman (1973), Borcharding and Deacon (1972), Henderson (1968), Johnson and Junk (1970), and Weicher (1970).

²¹For a description of the Herfindahl index and its properties, see Stigler (1968, pp. 39-38).

TABLE 1

Variable	Coefficient	S.E.	t-Value
Constant	1,527	39,543	.039
X ₁ (income)	.000025	.0000018	14.33
X ₂ (intergov. rev.)	1.34	.1126	11.90
X ₃ (poverty pop.)	995	884	1.126
X ₄ (local salaries)	-34,621	28,901	-1.20
X ₅ (local/st. + local exp.)	15,833	54,987	.288
X ₆ (city/SMSA pop.)	8,660	17,305	.500
X ₇ (pop. density)	6.46	1.64	3.94
X ₈ (simplicity of rev. struc.)	-61,293	23,039	-2.66

F(8,41) = 315.593

R² = .984

SEE = 17,965

than another.

The model of the relation between revenue structure and public expenditure was tested by estimating the regression equation

$$(3) E_j = a_0 + \sum_{i=1}^8 a_i X_{ij} + e_{ij},$$

where E_j denotes total current expenditure in city j , the a_i 's are coefficients for the eight independent variables, and e_{ij} is the error term.

The results are shown in Table 1. Four variables are significant at the .01 level: income, intergovernmental revenue, population density, and the simplicity of the revenue structure. The variable of interest here, X_8 , is significantly negative, which indicates for this sample of cities that an increased simplicity or concentration in the revenue structure is associated with a reduced level of public expenditure. A Durbin-Watson test for linearity was run, taking income as the independent variable with which the residuals are ordered. The result was $d = 1.92$, which indicates the absence of serial correlation and the appropriateness of the linearity assumption. Moreover, Gorrings's test for heteroscedasticity was performed, and the results indicated the absence of heteroscedasticity.²²

Not only is the coefficient of X_8 statistically significant, but also the impact on public expenditure of changes in the degree of simplicity of revenue structures would appear to be substantial. Suppose the value of S for each of the 50 cities in the sample was increased to the .815 found in Indianapolis. The predicted consequence of such a shift in revenue structures would be a 22.36 percent reduction in public expenditure, with annual current expenditure declining from \$5.134 billion to \$3.986 billion. Moreover, should the value of S be increased to 1.0 in each of the 50 cities, the predicted reduction in public expenditure would be 33.06 percent of the present level. The point of emphasis in this presentation of numerical computations, of course, should reside not in the particular magnitudes *per se*, but rather in the suggestion that the phenomena under consideration are statistically significant, and likely to be of substantial empirical importance.

IV. Conclusions, Caveats, and Implications

This paper has examined a proposition that has long lingered in the back waters of fiscal analysis, *viz.*, that the *structure* by which revenues are raised can affect taxpayer perceptions of cost, thereby generating a change in levels of public expenditure. In addition to exploring the underlying conceptual foundations, this paper has brought some empirical evidence to bear on the theory of fiscal illusion. While the empirical results reported here are consistent with the implications of the conceptual framework, the results are from a sample of large cities at one point in time, and other sets of data could convey different results, so opportunities exist for additional empirical investigation, in addition to further exploration into the conceptual foundations.

²²This test is described briefly in Johnston (1972, p. 219).

While it would not be incorrect to say that an increase in the complexity of a revenue system increases the cost of acquiring information about tax prices, it would seem to be somewhat misleading. In acquiring information about the price of say, automobiles, the cost involved is that of searching the various sellers in order to ascertain their quoted prices. Matters are not so simple when it comes to the determination of the tax-prices of services provided by government. While a private firm presents a price quotation in terms of some numeraire, a government makes no such quotation. Instead, it imposes a variety of financing instruments, and imposes them at various places in the economic process. The cost of information is more like that of finding eggs at an Easter egg hunt, only some of the eggs are well hidden because the person who placed the eggs does not want them all discovered, and, moreover, the locator does not have strong incentive to search diligently because he cannot keep, at least directly, the fruits of his search. Therefore, while it is possible to refer to revenue complexity as increasing the cost of securing information, the problem of securing information about tax-prices is qualitatively different from the problem of securing information about market prices, being more on the order of scientific investigation than of persistent footwork.

A quite different interpretation of the empirical results could possibly be advanced. It could be argued that the choice of a revenue structure is made so as to minimize the excess burden generated by the revenue system. The larger the level of public expenditure, the more fragmented must revenue structures become in order to minimize the excess burden of collecting the given revenue. This difference in interpretation involves, among other things, two alternative conceptions of the actions of public officials: the budget maximization hypothesis implies that public officials are as self-interested as ordinary people, whereas the burden minimization hypothesis implies that public officials are ethically superior in that they act only to advance the interest of their constituents. In this paper, no effort has been made to explain the existence of a particular revenue structure. Rather, I have taken the revenue structure as given, and examined the consequences. The actual emergence of a revenue structure is obviously a complex process, and a successful modeling of this process could perhaps yield insight regarding these two contrasting perspectives. At this time, however, the criterion of conformability with a satisfying theory of the working of democratic political systems would seem to suggest that the interpretation given in this paper is the more credible one.²³

On further reflection, it is not at all clear that the two interpretations differ significantly, despite the apparent incompatibility. Consider a government that presently is collecting all of its revenues through a proportional income tax, and is deciding whether to generate additional revenue by increasing the rate of tax on income, or by instituting a general sales tax. Consider a claim that the sales tax should be introduced because it would generate less of an excess burden than would result from a further increase in the rate of tax on income: Does not such a claim

²³Using the terminology popularized by Kuhn (1962), selection among the "budget maximizing" and the "excess burden minimizing" interpretations is a matter of choosing between alternative paradigms for interpreting political phenomena.

mean that if the sales tax were imposed, rather than the income tax increased, taxpayer awareness of, and, hence, hostility to the transfer of real income to government would diminish? In other words, citizens will make less total effort to avoid taxation if the extractions are taken from two or more bases than if the entire amount is extracted from a single base. That is, the reactions of citizens, including their political reactions, will depend upon the form in which the bill for government is presented, which is what the theory of fiscal illusion, examined in this paper is all about.²⁴

The policy implications of the findings in this paper would, of course, depend on one's values.²⁵ To the extent that it is felt that budgetary choices will be made more appropriately as citizens come to understand better and perceive more clearly the real budgetary impact of government, the analysis points toward the adoption of relative simple revenue structures as an element of a fiscal constitution. As Henry Thoreau suggested nearly a century before Henry Simons, "simplify, simplify."

REFERENCES

- Bergstrom, T. C., and Goodman, R. P. "Private Demands for Public Goods." *Am. Econ. Rev.*, 63 (June 1973), 280-96.
- Borcherding, T. E., and Deacon, R. T. "The Demand for the Services of Non-Federal Governments." *Am. Econ. Rev.* 62 (December 1972), 891-901.
- Brown, F. E., and Oxenfeldt, A. R. *Misperceptions of Economic Phenomena*. New York: Sperr & Couth, 1972.
- Buchanan, J. M. *Fiscal Theory and Political Economy*. Chapel Hill: University of North Carolina Press, 1960.
- _____. *Public Finance in Democratic Process*. Chapel Hill: University of North Carolina Press, 1967.
- _____. "Inflation, Progression, and Politics." In *Inflation, Economic Growth and Taxation*, proceedings of the 29th session (1973) of The International Institute of Public Finance (Barcelona: Ediciones Alba, S. A., 1975), pp. 45-66.
- _____, and Dean, J. "Inflation and Real Rates of Income Tax." *Proceedings of the National Tax Association*, (Columbus: National Tax Assoc., 1975), pp. 343-50.
- Downs, A. *An Economic Theory of Democracy*. New York: Harper and Row, 1957.

²⁴See, for instance, the brief discussion in Wagner (1973, pp. 230-32).

²⁵It is possible, of course, that citizens might systematically underestimate the benefits from public output. If so, a fuller knowledge of the cost of government may or may not be consistent with normative criteria of efficiency, depending on the relative degree to which costs and benefits are underestimated. Such normative considerations of efficiency, however, have not been central to this paper, which has, instead, focused on the positive analysis of fiscal institutions.

- Feldstein, M. S. "Distributional Preferences in Public Expenditure Analysis." In *Redistribution Through Public Choice*, edited by H. M. Hochman and G. E. Peterson, pp. 136-61. New York: Columbia University Press, 1974.
- Fenstermaker, B. L., Lean, J. A., and Neenan, W. B. "Awareness of Marginal Income Tax Rates Among High-Income Taxpayers." *National Tax Journal* 19 (September 1965), 258-67.
- Goetz, C. J. "Fiscal Illusion in State-Local Finance." In *Budgets and Bureaucrats*, edited by T. E. Borcherding. Durham: Duke University Press, forthcoming.
- Harris, E. E. *Hypothesis and Perception*. London: George Allen & Unwin, 1970.
- Hayek, F. A. *The Sensory Order*. Chicago: University of Chicago Press, 1953.
- _____. "The Theory of Complex Phenomena." In *The Critical Approach to Science and Philosophy: Essays in Honor of K. R. Popper*, edited by M. A. Bunge, pp. 332-49. Glencoe: The Free Press, 1964.
- Henderson, J. M. "Local Government Expenditures: A Social Welfare Analysis." *Rev. Econ. Stat.* 50 (May 1968), 156-63.
- Hirshleifer, J. "Where are We in the Theory of Information?" *Am. Econ. Rev.*, Proceedings, 63 (May 1973), 31-39.
- Johnson, S. R., and Junk, P. E. "Sources of Tax Revenues and Expenditures in Large U.S. Cities." *Quarterly Review of Economics and Business* 10 (Winter 1970), 7-16.
- Johnston, J. *Econometric Methods*. 2nd Edition. New York: McGraw-Hill, 1972.
- Kant, I. *Critique of Pure Reason*. 2nd Edition, 1788. Translated by N. K. Smith. New York: Modern Library, 1958.
- Mieszkowski, P. M. "On the Theory of Tax Incidence." *Jour. Pol. Econ.* 75 (June 1967), 250-62.
- Oates, W. E. "'Automatic' Increases in Tax Revenues - The Effect on the Size of the Public Budget." In *Financing the New Federalism*, edited by W. E. Oates, pp. 139-60. Baltimore: Johns Hopkins University Press, 1975.
- Olson, M. *The Logic of Collective Action*. Cambridge: Harvard University Press, 1965.
- Puviani, A. *Die Illusionen in der öffentlichen Finanzwirtschaft*. 1903. Translated by M. Hartmann and F. Rexhausen. Berlin: Duncker and Humblot, 1960.
- Rothschild, M. "Models of Market Organization with Imperfect Information: A Survey." *Jour. Pol. Econ.* 81 (No. 6 1973), 1283-1309.
- Schmölders, G. *Das Irrationale in der öffentlichen Finanzwirtschaft: Problem der Finanzpsychologie*. Hamburg: Rowohlt, 1960.
- Stigler, G. J. "The Economics of Information." *Jour. Pol. Econ.* 69 (June 1961), 213-25.
- _____. "Information in the Labor Market." *Jour. Pol. Econ.* 70 (October 1962, Supplement), 94-105.
- _____. *The Organization of Industry*. Homewood, Ill.: Irwin, 1968.
- Tullock, G. *Toward a Mathematics of Politics*. Ann Arbor: University of Michigan Press, 1967.

Vickrey, W. "The Burden of the Public Debt: Comment: *Amer. Econ. Rev.* 51 (March 1961), 132-37.

_____, and Weber, W. E. "Competition, Monopoly, and the Organization of Government in Metropolitan Areas." *Journal of Law and Economics*, forthcoming.

Wagstaff, J. Van. "Income Tax Consciousness Under Withholding" *So. Econ. Jour.* 32 (July 1965), 73-80.

Weicher, J. M. "Determinants of Central City Expenditures: Some Overlooked Factors and Problems." *National Tax Journal* 23 (December 1970), 379-96.

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