FISCAL ILLUSION IN PUBLIC FINANCE:

A THEORETICAL AND EMPIRICAL STUDY

by

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ABSTRACT

Title of Dissertation: FISCAL ILLUSION IN PUBLIC FINANCE:
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This study of fiscal illusion begins by surveying

existing studies of its nature and consequences; finding no

consensus upon its definition proposes a comprehensive one:

"the misperception by one or more individuals of the value

of one or more fiscal parameters." No specifications of

source, locus, nature, duration, variables affected, or

direction of bias are presumed, and none are precluded. The

issue of aggregation of individual perceptions, often

preempted as definitional, is found to be crucial in

interpreting the existing literature.

The theoretical portion of the study uses the standard

consumer choice model and the median voter model, again

finding that the method of aggregating individual choices is crucial. It demonstrates that high average and total levels of fiscal illusion can be consistent with efficient social outcomes and that survey evidence is inappropriate for assessing the importance of fiscal illusion. It further finds that the impact of fiscal illusion on individual welfare provides a source of potential gain for agents who can dispel that illusion in individuals who may be decisive for the outcome of the collective choice process.

An examination of the incentives of various agents to dispel illusion concludes that, though the existing literature evinces a recurrent concern that fiscal illusion results in misallocation of resources to and within the public sector, especially through the public officials' manipulation of citizens' perceptions, there exists a considerable array of forces that have significant power to limit the ability of such illusion to impose important burdens upon the electorate.

The work concludes with an empirical study of the fiscal illusion hypothesis, in which estimates of the dollar magnitudes of the state tax "windfalls" resulting from the federal Tax Reform Act of 1986 are calculated and, in the estimated model, are found to exert no significant impact upon either the levels of state expenditures or changes in those levels. Because the windfalls are exogenous, this finding is free from the simultaneity issues that have

compromised existing empirical studies of fiscal illusion.
The results are consistent with the proposition that
existing forces effectively limit the sway of fiscal
illusion.

DEDICATION

With thanks to my loving and generous family

for the countless sacrifices

that made this work possible

ACKNOWLEDGMENT

To Wallace E. Oates,

who provided invaluable encouragement and direction,

yet never constrained,

whose own work provided a model of the highest caliber,

my great appreciation and esteem

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CHAPTER ONE

INTRODUCTION AND SURVEY

I.   Fiscal Illusion in Broad Perspective

Over time a substantial literature on the subject of
fiscal illusion has developed, describing, measuring, and
analyzing various aspects of fiscal illusion, and often
addressing the concern that widespread voter misperception
of fiscal parameters distorts fiscal choices and is subject
to manipulation by public officials to further their own
self-interest at the expense of the public interest.

In the earlier writings in this country, authors such
as Downs and Galbraith were concerned that imperfect
information would result in suboptimal levels of public
provision of goods and services, with benefits subject to a
greater degree of underperception than costs.[1] In contrast,
the early writings of Puviani and the more recent work of
the public choice school have emphasized hidden burdens of
taxes and overestimation of benefits, resulting in
supraoptimal levels of public provision of goods and

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[1]Downs and Galbraith tend to convey a sense of
impotence in the face of the disparity of knowledge.
Interestingly, they themselves (especially Galbraith) act as
agents who inform the public of their illusions; they do
not, however, attribute particular significance to the
considerable number of other agents who play this same role.

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services and unduly large budgets. As yet, the direction and even the existence of such bias in the size of the public sector remain unresolved questions.

II. Manifestations of Fiscal Illusion

Sharing the common element of a misperception of fiscal variables, five manifestations of fiscal illusion have received particular attention in the literature.[2] An awareness of these concrete examples provides a helpful foundation for the more abstract treatment in the rest of this work that encompasses all manifestations of fiscal illusion.

Since Puviani's recognition, early in this century, "that the total tax load on an individual can be fragmented so that he confronts numerous small levies rather than a few significant ones," making the individual less conscious of the sacrifice that he undergoes in support of government services,[3] Buchanan (1960, 1967), Wagner (1976), and many others have addressed the issue of revenue complexity, in which the illusion takes the form of voters underperceiving the tax burden when a complex variety of tax instruments is employed to fragment the total tax burden. In consequence, a higher degree of complexity of the revenue system is

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[2] Oates (1988b) surveys and assesses this literature.

[3] Puviani's analysis is described in Buchanan (1960, 135).

associated with a larger public budget. Studies by Munley and Greene (1978), Clotfelter (1976), Pommerehne and Schneider (1978), Baker (1983), and Breeden and Hunter (1985) have explored this form of illusion in a variety of settings.

In renter illusion, the common empirical finding that local jurisdictions with higher proportions of renters have higher levels of per capita expenditures on local public goods is interpreted as evidence of a form of fiscal illusion in which renters, because they do not accurately perceive the property tax component of their rental payments, believe that the tax price they pay for local public services is lower than it actually is. The consequence of this posited illusion is that they vote for higher levels of public provision of goods and services, which is reflected in higher levels of public expenditure. Studies by Bergstrom and Goodman (1973), Peterson (1975), Martinez-Vasquez (1983) and others have addressed this form of fiscal illusion.

A third form treats an income elastic tax structure as a source of fiscal illusion. In this case individuals fail to perceive the full burden of the "automatic" increases in taxes as incomes rise, allowing expenditures to rise beyond the level voters would prefer if they perceived the full burden. Buchanan (1967), Oates (1975), Craig and Heins (1980), DiLorenzo (1982), Baker (1983), Breeden and Hunter

(1985), and Wagner (1976) have explored this form of illusion.

In the case of debt illusion, fiscal illusion takes the form of an underperception of the discounted value of the future tax burdens attributable to current public expenditures that are financed by debt rather than by current taxes.[4] Such illusion should be manifested in the capitalized property values, which have been studied by Epple and Schipper (1981) for evidence of this form of fiscal illusion.

In the case of the flypaper effect, a term coined by Arthur Okun to denote the commonly observed phenomenon that "money sticks where it hits," lump-sum intergovernmental grants are seen to increase the level of expenditures of the fiscal agencies that receive them rather than being returned to the taxpayers to the degree they would prefer. The illusion takes the form of a false perception, fostered by budget-maximizing public officials, that the grant money, which does reduce the _average_ tax-price of local public goods, reduces the more economically relevant _marginal_ tax price of the local public goods. This form of fiscal illusion has been the subject of studies by Courant, Gramlich and Rubinfeld (1979) and Oates (1979).

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[4]While this should result in higher public expenditures when debt is incurred, allowing testing within the same general framework as the other forms of illusion, the debt studies have taken an alternate approach.

DiLorenzo has also considered an intriguing additional manifestation of fiscal illusion in which profits of municipally-owned utilities are used to subsidize local public spending, increasing the level of expenditure on local public goods because of the taxpayers' failure to perceive accurately that these profits could be returned to the citizens in the form of lower taxes.

Throughout the literature of fiscal illusion, descriptive and empirical, ad hoc definitions of the term fiscal illusion and hypotheses about its nature and consequences abound, varying with the manifestation being observed and with the individual observer of that manifestation. In addition, the existing treatments have utilized little of the theoretical apparatus of formal economics beyond Downs's demonstration that the small impact of a single vote and the high cost of obtaining and assimilating information would result in a high degree of "rational ignorance" among voters. The numerous empirical studies stand almost as islands, having little in the way of a unifying conceptual foundation. Oates (1988b, 20) argues that the existing empirical work is flawed in its effort to detect and measure fiscal illusion by two particular problems: endogeneity of the illusion variable and competing hypotheses, particularly the hypothesis that the transaction costs of modifying budgetary parameters may account for the disparity between optimal, "rational" fiscal

decisions and the actual results observed. In his view, compelling empirical support for the existence and importance of fiscal illusion has not yet been established. These limitations of the existing literature provide scope for worthwhile contributions to the study of fiscal illusion and have provided the impetus for this work.

III. Overview of This Work

The next chapter presents a survey of the definitional variations found in the existing literature and analyzes some substantive implications of assumptions embodied in those definitions. It proposes a definition that will better serve the needs of those who seek to understand the phenomenon of fiscal illusion and to assess its import. Chapter Three applies fundamental theoretical tools of economic analysis to the concept of fiscal illusion, deriving additional insight into the nature and significance of fiscal illusion from the individual's consumer choice model and from the median voter collective choice model. Chapter Four explores a number of forces that limit the impact of fiscal illusion from both the consumer's and the supplier's perspective, many of which have received little attention in the existing literature. Finally, Chapter Five presents an empirical study of the fiscal illusion hypothesis, in which estimates of the dollar magnitudes of the state tax "windfalls" that resulted from the federal Tax

Reform Act of 1986 are calculated and, in the estimated model, are found to exert no significant impact either upon the levels of state expenditures or upon changes in the levels of spending. Because the windfalls are exogenous, this finding is free from the simultaneity issues that have compromised existing empirical studies of fiscal illusion. The results are consistent with the proposition that existing forces effectively limit the sway of fiscal illusion.

CHAPTER TWO

DEFINING FISCAL ILLUSION

I.   Existing Definitions and a Survey of

the Issues Implicit in Them

A search of the substantial literature on fiscal

illusion for explicit and implicit definitions of the term

fiscal illusion turns up few formal definitions and many

variations in the concept to which the term is applied.

Further exploration of this terminological imprecision in

the existing literature reveals much more than just minor,

technical concerns; the definitional vagueness reflects a

deeper lack of precision in the analysis of the subject and

is evidence of the need for a coherent, unified

understanding of fiscal illusion in all its manifestations

that can make a more uniform definition possible.

The common thread in those definitions that do appear

is that one or more fiscal parameters are perceived

imperfectly in a way that can generate a distorted, welfare-

reducing allocation of resources between the public sector

and the private sector.[1] Within this framework, the

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[1]Illusion-induced distortions within the public sector
seem of equal concern but have not been treated in the
literature. Oates's inclusive phrase "distort fiscal
choices" is an appealing one.

variations proliferate, diverging with respect to the source; the locus, nature and duration; the variables affected; and the direction of bias.

Writers may or may not attribute the source of fiscal illusion to an agent who intentionally promotes illusion and may or may not further specify such an agent's motivation or intent in creating the illusion. Puviani was careful to impute no intent to the agent, specifying explicitly an "as if sort of theoretical structure," operating under the hypothesis that "the government always acts to hide the burden of taxes from the public and to magnify the benefits of public expenditures." (Buchanan 1960, 60) For West and Winer the illusion is clearly intentional; they define fiscal illusion as "contrived" imperfect knowledge and note that McCulloch and Mill saw it as a valid governmental exercise to offset the naturally occurring illusion of public underestimation of benefits. West and Winer further explicitly posit a motive for the public official to be the source of illusion: maximization of the size of the public sector through illusion is an objective that permits the maximization of the political agent's utility. They also explicitly posit accurate perception on the part of the source of the illusion. For some observers the agent's greater accuracy of perception is a necessary characteristic of fiscal illusion, but in general writers do not raise the possibility of misperception on the part of such an agent.

Observers of fiscal illusion may also differ as to <u>the</u> <u>locus of the misperception</u>, varying in the degree of specificity as well as the type of individual who misperceives. They may find the locus in "individuals" (Pommerehne and Schneider), "renters," "the consumer-taxpayer" (DiLorenzo), "individual citizens" (Goetz), "the electorate" (Oates), the average voter (Downs), "consumer-voters" (Munley and Greene), the "median voter," (West and Winer) or the "voter-taxpayer-beneficiary" (Buchanan) -- or they may fail to specify <u>who</u> misperceives. As suggested above, it is conceivable that misperception may extend to a self-interested agent who tries to manipulate voter misperceptions to his own benefit, conceivable even that his own misperception may exceed that of the voters. Whether such an agent may also misperceive and how he is to be distinguished from the individual-citizen-voter-taxpayer-consumer-beneficiary are subjects that are not addressed. Observers also differ as to <u>the nature of the imperfection</u> <u>in the misperception</u>: for West and Winer it is merely imperfect knowledge, for Oates it is biased perception, and for Buchanan, who explicitly rules out mere ignorance, it is "false conception," but in general the nature of the misperception is not specified in any precise way. Writers further differ as to <u>whether the misperception persists over</u> <u>time</u>. Some simply do not address this concern, but both Oates and Carter consider it a necessary characteristic,

while West and Winer view it as an empirical issue.

Definitional differences occur with respect to <u>the</u>
<u>variable which is misperceived</u>, sometimes according to the
different categories of fiscal illusion addressed earlier
(complexity of revenue source, renter illusion, debt
illusion, etc.), but, further, within a given category
writers often disagree on the precise specification of the
variable. So, for one just "the tax price" of the public
good or service is the concern (DiLorenzo's "true tax-price
of local public goods and services," Carter's "price of
collective activities," Martinez-Vasquez's "tax-costs" and
Munley and Greene's reference to Wagner's "perceived prices
of the public good"). Another, like Oates, may specify the
marginal tax price, and yet another may stress the
subjective burdens and benefits of public expenditures and
receipts as Pommerehne and Schneider alone do in referring
to "the size of the burden of taxes and other public
receipts and of the benefit returned for public
expenditures."

Further differences[2] are found in the specification of
<u>the fiscal variable which is ultimately affected</u> by the
misperception (which may or may not be the same as the
variable which is misperceived) and in <u>the direction of the</u>
<u>impact</u>, even when the affected variable is the same. Thus,

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[2]These may not be conceptually "definitional," though
they are treated as definitional by some authors.

many focus on the effect that misperception of the tax price has upon the level of expenditure. Within this group, Munley and Greene and Pommerehne and Schneider emphasize that expenditure can go in either direction; Carter, Buchanan, and Wagner, on the other hand say increases in expenditure result. While for Oates fiscal illusion "may distort significantly fiscal choices by the electorate," Buchanan's use of the term implies a fiscal phenomenon that is distorted. While the term "systematic" is used by several writers, including Goetz, Oates, and Pommerehne and Schneider, to describe the misperception, nowhere is that term operationally defined.

The lack of a consensus on the definition of fiscal illusion handicaps attempts to assess the existing body of work on it. The failure of observers to define the concept consistently and precisely or to develop a theory of fiscal illusion has allowed untenable preconceptions to be maintained. Exploration of the definitional variations brings important issues concerning the assessment of the extent and significance of fiscal illusion into focus, and provides an important foundation for the development of a theory of fiscal illusion.

II. Implications of Definitional Issues: Aggregation

One situation in which the definitional imprecision reflects serious analytical issues lies in the specification

of _who_ misperceives. Since different individuals can be
expected to have different degrees of misperception, whose
misperception should count and how heavily should it count?

Some insight into this question can be gleaned by
considering how differing subjective valuations, possibly
originating from differing degrees of information, are
weighted in other institutional frameworks. By
distinguishing between the market's behavior and the
behavior of the average individual who participates in that
market, Frederic Mishkin (1981, 295) has demonstrated that,
"Not all market participants have to be rational in order
for a market to display rational expectations." He then
directly applies this insight to market forecasts,
demonstrating that the presence of irrationality in survey
forecasts does not in itself imply that market forecasts are
also irrational. Though Mishkin's analysis and testing are
conducted in the context of financial markets' efficiency in
predicting inflation and short-term interest rates, his
ideas are directly and importantly applicable to the
analysis of fiscal illusion, particularly to attempts to
assess its importance. While empirical studies attempting
to assess its importance have been less than compelling,
observers have generally presumed it to be important, and
seldom has anyone arisen to question that presumption of
significance.

The pervasive sense of the importance of fiscal illusion seems to stem from two main sources. One source is the "casual empiricism" of a long succession of writers who, since the early 20th century, have expressed concern over the failure of voters to evaluate accurately the various costs and benefits of fiscal choices.[3] Though not always expressly formulated in such terms,[4] the concern they express is over the pervasiveness and the high average level of inaccuracy in appraising information relevant to fiscal choices. The same impression of widespread ignorance and the potential it creates for bad fiscal outcomes generates concern in observers today. Each of us can point to ample numbers of friends and colleagues who have but little awareness of the civic decisions, local, state, and national, around us. Many of us are concerned that we ourselves have too little knowledge of the issues.

A second source of the compelling interest generated by the idea of fiscal illusion is the analytical support provided by Anthony Downs's work demonstrating that, for an

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[3]They generally report observations of an ill-informed public, but not of someone actively, successfully misinforming the public. It is the ignorance itself, rather than the damaging manipulation of that ignorance, that is usually the focus. They do find a net, damaging impact on the fiscal variable of concern, usually the level of public expenditures.

[4]At times the concern is expressly stated this way, as when Tullock (1977, 287) discusses the idea that "the average individual gravely underestimates the cost to him of individual government services."

individual, being uninformed is optimal in view of the costs of information and the small _average_ impact of an individual's vote.[5] Because of this small average impact, voters rationally choose to expend little time and energy in becoming informed and therefore exhibit a high average level of ignorance. In both of these sources, there is an emphasis on the high average level of inaccurate or imperfect information. In the citizenry, even in the much smaller and significantly less ignorant subset of voting citizens, the total amount of ignorance seems overwhelming. Certainly, it seems, so much ignorance cannot be consistent with wise political decisions.

The germ of an important caveat to this inference can be derived from Mishkin's analysis of the work of financial market researchers, who found widespread irrationality in survey forecasts of both inflation and short-term interest rates and who concluded that the survey results are inconsistent with the rationality of market expectations and with the efficiency of financial markets. What Mishkin demonstrated is that this finding of irrationality in the survey forecasts does not in itself imply that _market_

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[5]Some limitations of this analysis's use of the average impact upon the outcome has been recognized in treatments that evaluate the voter's marginal impact by showing that in close elections, voting participation increases; as yet, though, the question of whether close elections increase the accuracy of voters' perceptions of fiscal parameters has not itself been explored.

forecasts are also irrational. The crucial issue is how individual perceptions are aggregated. What determines survey results is average behavior of the participants; each individual's perception receives an equal weight. In contrast, what dominates market results is the marginal participant's behavior; his perception alone is the determining one. ". . . [M]arket efficiency does not require that all participants in the market are rational and use information efficiently" (Mishkin 1981, 297). The single condition that Mishkin does find necessary to ensure that "the market will behave as though expectations are rational despite irrational participants in that market" is that "unexploited profit opportunities [be] eliminated by some [italics mine] participants in a market" (Mishkin 1981, 295). Thus, the arbitrage of even a single participant can dominate the market outcome; the high levels of average and total ignorance in themselves need have no effect at all upon the market outcome.[6]

Caution is warranted in assessing fiscal illusion. High levels of average and total ignorance among citizens and the presence of widespread misinformation do not

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[6]Though an efficient outcome will result, the pattern of ignorance/rationality will have distributional effects for those individuals involved -- both those who misperceive values and those others who overcome their imperfect perceptions. Incentives to avoid (or to overcome) such misperceptions will be affected by those distributional consequences.

necessarily imply biased fiscal outcomes. Judgments about whether they can be consistent with wise political decisions must rest upon the analysis of the mechanism by which individual perceptions are aggregated within the fiscal arena. Great care is needed in determining whose misperceptions should count and how heavily to weight various individuals' differing degrees of misperception. Chapters Three and Four of this work address that issue. Moreover, with an awareness that our "sense" of the importance of fiscal illusion may be based on a logical fallacy, the case for its significance must be made on more scientific grounds. Compelling empirical support for the existence and importance of fiscal illusion is needed. Chapter Five provides some new empirical findings.

These insights have immediate application in appraising some of the issues in the literature of fiscal illusion. For example, Buchanan's "presumption that fiscal choice should result from individual behavior which is as rational as is possible," (if the term rational is taken to mean free of illusion, and if the term individual behavior is taken to mean the behavior of all individuals -- and Buchanan does not suggest any other interpretation), is questionable. Mishkin's insights suggest that not all individuals' behavior need be rational for the efficient provision of public goods and services. It may well be that a high level

of misperception, of individual "irrationality," is in fact consistent with rational collective choice. Further, should we find that illusion does distort fiscal choices, we must not simply look to whatever measures will raise average awareness of fiscal variables; such measures will not necessarily improve the outcome. Again we must identify those particular agents whose awareness will have the greatest impact at the least cost.

These insights shed light in other corners. A curious thing has happened to the term fiscal illusion over the years: its articles have disappeared. James Buchanan (1960, 59-64) began by writing of "the fiscal illusion," of "a fiscal illusion," and of "fiscal illusions," as if the referent were a phenomenon, one that fooled people, as does the magic trick that is performed by the illusionist on stage. Today's writers generally speak instead of "fiscal illusion," and the reference is to the misperception within the minds of those who observe the phenomenon rather than the phenomenon itself. This definitional difference is related to the aggregation issue set forth above. Buchanan's "fiscal illusion" implies that individuals' perceptions have an aggregated, collective impact that distorts the value of some fiscal parameter, though he does not specify how that aggregation is achieved. Today's "fiscal illusion" goes back one step to the disaggregated

perceptions within the individual observers' minds. The aggregation process, and often its result as well, are thus left unspecified.

The distinction between the two referents is not always maintained, however. Buchanan's statement that "as a normative proposition, all fiscal illusions must be removed," seems perfectly reasonable,[7] given the understanding that his referent is the phenomena themselves.[8] But the statement is misleading and suggests either inappropriate remedies or an irremediable source of nonoptimality, if one understands the term fiscal illusion to refer to the misperceptions in the minds of the observers.

The need for a better understanding of the aggregation issue is also apparent in the current literature. In the April 1987 issue of Public Finance Quarterly, Cullis and Jones attempt to resolve the debate between the starkly contrasting views of those who posit that overestimation of costs and underestimation of benefits lead to an

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[7]with the reservation that it be possible to remove the illusion at a cost that is less that the costs associated with the continuance of the illusion.

[8]Nowhere in this selection does Buchanan explicitly define fiscal illusion. His uses of the term are consistent with the interpretation of his definition as an inaccurately perceived objective phenomenon that alters people's behavior.

"underexpanded" public sector and those who believe that underestimation of costs and overestimation of benefits cause it to be "overexpanded."[9] It is clear that the question of whether misperception has an impact upon the size of public budgets involves an implicit mechanism whereby individual perceptions are aggregated to generate a collective decision upon budget size.

The evidence brought to bear on this issue, however, is direct survey evidence on individual fiscal perceptions taken from a study of the public's comprehension of expenditure and taxation measures in the United Kingdom, in particular the main things governments spend their money on and where governments get the money to pay for services. Cullis and Jones conclude that the survey evidence suggests "a thick but fairly evenly spread layer of ignorance over the public sector," and, further, that the evidence does not support the dominance of either overall optimistic or pessimistic tax illusions or aggregate bias in the knowledge of taxes and expenditures. They add that "the general lack

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[9]of linguistic and conceptual interest is that in the opening paragraphs Cullis and Jones, like the early writers, refer to "fiscal illusions" in the sense of "tricks," fiscal phenomena that mislead people, such as the use of a complex tax structure to obscure the tax burden. This usage implies that the phenomenon embodies an aggregated impact of individual misperceptions, but no aggregation mechanism is specified. (In the article, Cullis and Jones use the term "aggregated" to refer to totals of expenditures and revenues as distinct from their components or structure. My usage is that of the earlier part of this chapter, referring to the combining of individuals' perceptions.)

of knowledge supports only the argument that rational voters
will not invest time and effort in the accumulation of
information," Downs's proposition. The aggregation
mechanism of the survey that is their source of evidence,
however, weights all individuals' perceptions equally, in
contrast to the aggregation mechanism of the decision-making
process that determines fiscal outcomes. This disparity
needs to be explicitly addressed. As the earlier argument
of this section suggested, the disparity makes the evidence
used by Cullis and Jones irrelevant to the question they are
trying to answer. This evidence in no way demonstrates that
the decisive voters will not invest time and effort in the
accumulation of information, but only that voters on average
will not. Neither bias in overall illusion nor the thick
"layer of ignorance" can provide evidence on the dominance
of illusion in fiscal outcomes. Because it fails to address
the impact of the illusion upon the outcome of the
collective choice mechanism, this study, at best,
contributes nothing to the empirical assessment of the
importance of fiscal illusion; at worst, it misleads.

III. Implications of Definitional Issues:
The Source's Motivation and Knowledge

Another major analytical issue which manifests itself
in the definitional variations lies in the predominant
assumption that political agents know the fiscal reality and

that they intentionally distort that reality to further their own ends. Two related points may be developed concerning fiscal agents' intent to distort reality.

The first point is that selfish intent can be consistent with the public good. Like Adam Smith's butchers and the financial markets' arbitrageurs, fiscal agents may under some circumstances serve others in pursuing their own self-interest; furthermore, they may do so not by proliferating fiscal illusion but by limiting its sway. The potential and actual competition of other political agents may prevent the actualization of one agent's own ends at the expense of the general populace. The mechanism by which individual perceptions are aggregated in the fiscal arena is again crucial to this issue. Chapter Four extends this analogy between market and political competition and examines its role in the outcome of the public choice mechanism.

The second point is that the narrowing of the definition of fiscal illusion to situations in which political agents who are its source perceive fiscal reality more accurately than their constituents artificially isolates the analysis of fiscal illusion from important, closely related situations.[10] It is possible that the

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[10]Even an assumption that their knowledge is more accurate than that of their constituents involves, again, an aggregation issue (with the average of the constituents' knowledge the implicit assumption).

political agent misperceives reality, and that in an attempt to distort this misperceived "reality" in order to benefit himself, he may in fact bring others closer to the truth. Alternatively, he may misperceive reality and, in trying with good intent to inform, create damaging fiscal illusion. For example, one could argue that the War on Poverty was led by public officials who mistakenly perceived that its measures would generate greater benefits than they in fact did, and that in persuading the citizens that those greater benefits did exist in an effort to improve the nation's wellbeing, they in fact created fiscal illusion that effectively reduced the nation's wellbeing instead. In this case of fiscal illusion the promulgators of the illusion were almost certainly subject to the illusion themselves. To the extent that they benefited selfishly from their illusion-based actions, in accordance with the Niskanen/ Buchanan point of view, they had less incentive to find the truth themselves. Selfish incentives reinforced altruistic ones, as the programs intended to "do good" provided jobs and perquisites for the do-gooders. The fiscal illusion we have the most to fear from may well be that which all agents believe in, where we are all ignorant of the truth.[11] Downs

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[11]In a different context, one could argue that those who mistakenly believed that expansive fiscal and monetary policies would reduce unemployment and increase output without a seriously damaging rise in inflation, in trying (with the intent of informing the public and promoting the general welfare) to promote those policies, created serious fiscal illusion that ended only with the Fed's 1979

argues that public officials have better incentives and opportunity to know reality, but this argument belongs to the analysis of illusion. To rule out these other possibilities in the definition of the term rather that subjecting them to analysis is inappropriate. Exploring the forces that helped unveil those illusions may illuminate the mechanisms by which illusion works.

Further, fiscal illusion may have no conscious "source." It may simply exist, an accidental byproduct of the world of phenomena and perception. It may nonetheless have serious consequences; it may, moreover, be amenable to human actions to counteract its deleterious effects. The importance and the policy implications of fiscal illusion are separable from the nature and intent of its source. Indeed, Chapter Four will discuss "demand" forces that place limits on the sway of fiscal illusion independently of any "provider" or "source" of illusion. Narrowing one's concern to an agent who intentionally acts as a source of illusion, or even to that illusion which emanates from a human source, whether unwittingly or intentionally, is a valid exercise, but it should not obscure the existence and possible importance of other "sourceless" illusion.

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reversion to strict limits on the expansion of the money supply.

IV.   A Proposed Definition of Fiscal Illusion

A more restrained definition of fiscal illusion avoids preempting these valid issues. The simple definition of fiscal illusion I propose is "the misperception by one or more individuals of the value of one or more fiscal parameters." No specifications of source, locus, nature, duration, variables affected, or direction of bias are presumed, and none are precluded. The one or more individuals may include ordinary citizens and practicing politicians alike. The misperception may be greater in one individual than another. It may be used intentionally to mislead others in order to promote one individual's own selfish interest at the expense of others, but need not do so. Its existence may be consistent with the good of all.

This broad definition of fiscal illusion serves all uses served by the variations of the definition currently in use. In encompassing them, it emphasizes their common features and the analytical elements that are applicable to them all. Further, since fiscal ignorance cannot be operationally distinguished from illusion, the proposed definition encompasses it along with all other potential sources of misperception.

Establishment of a consensus on this comprehensive and workable definition would fill one void in the literature of fiscal illusion. It would promote the clarification of the implicit assumptions of various studies and the appropriate

qualifications of the results that those assumptions imply. Understanding of the conceptual issues that resulted in this definition would allow more accurate interpretation of the existing literature; consensus on a uniform, broadly applicable definition would avoid ambiguity in current and future discussions of fiscal illusion.

This comprehensive definition also provides the thrust for the broad view of the effects of fiscal illusion and of the limitations on its sway found within this work.

V. A Special Case

Within the universe of possible manifestations of fiscal illusion encompassed by the proposed definition, there is one set that has been the source of particular concern in the illusion literature. That concern is that public officials who know the true values of fiscal parameters will intentionally distort citizens' perceptions of them in order to benefit themselves at the public's expense. This is indeed a special case in that it presumes many specific attributes of the illusion situation:

> that politicians have a more accurate perception of
> > the fiscal parameters,
>
> that politicians can effectively manipulate
> > citizens' perceptions,
>
> that greater inaccuracy in citizens' perceptions is
> > what will be to the politician's benefit, and

that the manipulation is to the citizens' detriment. The seriousness of this concern will be specifically addressed in Chapters Four and Five, but the more general definition of fiscal illusion proposed here and the ensuing analysis do, appropriately, encompass alternative assumptions about each of these aspects of the illusion situation.

The importance of a more general treatment may be seen in an example. If a public official accurately perceives that a higher pay scale for public school teachers will be the best way to achieve an unanimously desired improvement in the quality of the educational system, but the public underestimates the importance of those salaries, and if the public official then educates the citizens about current pay scales and the pay scales in competing jurisdictions and occupations so that they too clearly perceive the need for increases and vote both to increase the educational budget to provide for the pay raises and to reelect the politician who has brought about this result, then everyone gains. In this case a politician benefits by manipulating citizens' perceptions in ways that generate greater accuracy in their perceptions and result in an increased level of government expenditures, and everyone is better off as a result.

The study of fiscal illusion should encompass this special case as well, not only for logical completeness but also for a very real practical reason. Any proposals that

attempt to alleviate the concern in the first special case by reducing the politician's ability to mislead the public need at the same time to maintain the politician's ability to pursue a mutual interest by improving the accuracy of citizens' perceptions in the second special case. They are opposite sides of the same coin. We need to ask whether we can limit the power to "manipulate" in the one case without restricting the ability to "persuade" in the other. We may further ask whether we do not gain if the politician sees that he can achieve the same result at a lower cost by misleading the people and does so. Indeed, as mentioned earlier, Mill and McCulloch argued that illusions created by public officials may improve wellbeing by counteracting the public's misperceptions of the benefits of public goods.

From this point of departure we move on to the theoretical analysis of fiscal illusion, broadly construed and broadly applicable.

CHAPTER THREE

FISCAL ILLUSION AND THE CONSUMER OF PUBLIC GOODS:

A THEORETICAL APPROACH

It seems curious that the analysis of fiscal illusion generally proceeds without the use of the standard tools of microeconomic theory. Buchanan's discussions describe the instruments of fiscal illusion and posit that they allow increases in governmental expenditures without describing how the tools have their impact upon the citizens' decision-making processes or how they conform to the utility-maximizing principle for the person who promulgates the illusions. Wagner bases his analysis on philosophical and psychological theories that are not an integral part of economic analysis. West and Winer derive a new set of diagrams specifically tailored to the variables they are concerned with. Pommerehne and Schneider use a statistical approach that is not explicitly grounded in theory. In this sort of ad hoc analysis, behavioral assumptions that are implicit in diagrams or statistical models can have consequences for the results that are not readily understood. The tools of basic microeconomic theory have the substantial advantage that their long and widespread use

has revealed many of their subtle implications and
limitations. Placing the issue of fiscal illusion in a
median voter context and examining it with even elementary
tools of analysis clarifies some important issues and
illuminates some important relationships.

I. Cost Illusion within the Perspective of the Consumer
Choice Model and the Median Voter Model

The standard median voter model with single-peaked
preferences can be illustrated in a diagram like that in
Figure 3-1. The level of provision of public goods and
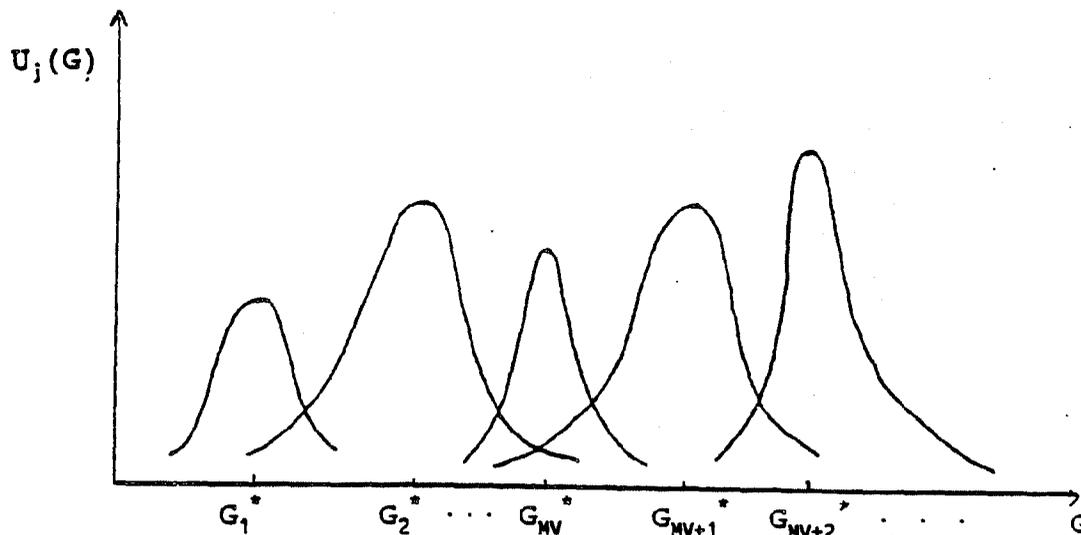
FIGURE 3-1

services is shown on the horizontal axis. The utility of
the individual voters is shown on the vertical axis; levels
of utility for different individuals need not be comparable.
$U_j(G)$ and its characteristic shape are derived from the
individual's indifference map. G_j^* is individual j's most

preferred level of provision of public goods and services.

It is worth noting that this depiction differs from the standard diagram, which measures the level of the budget, B, on the horizontal axis, with $U_j(B)$ measured vertically. Although much of the discussion of fiscal illusion focuses on the level of expenditure on public goods and services, using the level of provision of the public goods and services makes the theoretical analysis more tractable: it allows us to maintain the standard approach to the indifference curve analysis of consumer choice[1] and to keep the terminology of the median voter analysis consistent with it. Different levels of the budget may be assumed to correspond to different quantities of the public good, $B = f(G)$, with $\partial B/\partial G > 0$, i. e., with a positive, though not necessarily linear, relationship between the quantity of the public good and the expenditure on it. The exact relationship will depend upon the resource prices and the production function that relates the amounts of purchased inputs to the output of G.

The focus on the level of expenditure also generally obscures the question of how that level of expenditure is related to the level of public revenues. It is usually

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[1]In the consumer choice model, it is the real opportunity cost that is embodied in the possibilities frontier relating G and X_j. Use of B instead of G would embody assumptions about price that would need to be explicitly stipulated and would limit the applicability of the model.

implicitly assumed that they are equal and, further, that
tax shares are constant and do not vary with the level of
expenditure. In this analysis the tax shares are assumed to
be implicit in the level of expenditure (though not
necessarily constant), as if the decision of how to finance
is one with the decision to spend. If financing decisions
are separable and variable, the analysis would require
further modification.

To view the significance of fiscal illusion for the
collective choice situation depicted in Figure 3-1, a good
starting point is the choice model for the typical
individual whose utility curve appears in the median voter
diagram. It will allow us to determine $U_j(G)$ in the absence
of illusion, which will provide a useful point of reference
for the discussion of the effects of fiscal illusion.
Figure 3-2 depicts individual j's choice space, containing
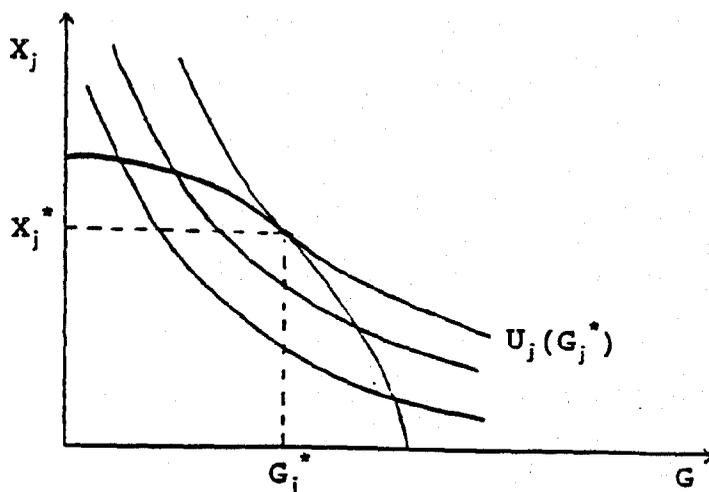
FIGURE 3-2

alternative combinations of the public good and some composite private good, X; the usual convex indifference curves are shown. They reflect the nature of the utility function that registers the level of satisfaction generated by any combination of private goods and publicly provided goods amd services. The opportunity frontier reflects the production function that measures the output of those publicly provided goods and services obtainable from alternative combinations of inputs. It is drawn concave to the origin, reflecting the increasing marginal tax cost of additional units of G to individual j.

Further discussion of this treatment of the opportunity locus is in order. The alternative combinations of the two types of goods and the tradeoff between them are shown in real terms. In the usual framework of the market, these are derived from the market prices of the goods and the individual's income, which are all measured in dollar values. Standard choice theory assumes that prices are givens for the individual; except in the special case in which there is a degree of monopoly power, the price does not change as the number of units the individual chooses to consume varies. As a consequence of these assumptions, the budget constraint is then depicted as a straight line. This usual budget line of constant slope is implied by those, e.g., Wagner, who posit an illusion mechanism in which misperception of the _price_ of the public good causes a non-

optimal quantity to be consumed. In fact, much of the literature of fiscal illusion is couched in the terminology and the conceptual framework of prices and quantities that are like those observed in a competitive market.

Two difficulties arise from this approach to prices and quantities as applied to public goods and services; both stem from the fact that units of the public good are not always clearly defined. Seldom is a public good a homogeneous one that, like shirts or automobiles, can be varied in quantity by replicating individual units; instead, with outputs like parks, flood control, or police services, variation in quantity generally takes the less precise form of a more extensive provision, either in quality or in quantity, of something voters value. Thus the concept of price, a payment <u>per (homogeneous) unit</u>, is hard to define here and should be conceived of, instead, as an increment in the tax payment of the individual in question as the level of provision of the public good increases. The units on the quantity axis are likewise to be conceived of as measuring increases in the level of provision of the public good. In applied work, the specification of units gives rise to some particularly difficult measurement problems, and a small literature has arisen concerning these problems.[2]

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[2]Jackson and Barnett (1987) attempt to resolve the difficulties in the measurement of public service outputs in the context of local government provision of local public services characterized by face-to-face provision.

The second difficulty is that while a price in a
competitive market is a constant average and marginal
payment made by the buyer that does not vary with the
individual's choice of the number of units to purchase
because he is such a small part of the market, for a public
good the average and marginal tax cost to the individual is
more likely to vary with the number of units consumed.
Assuming that tax shares are constant, marginal tax cost to
individual j might be expected to increase due to a rising
marginal opportunity cost of the public good as more and
more resources that are less well-suited to its provision
must be employed in its provision. Elasticity of resource
supplies is the underlying determining force in this
element. Such a rising marginal tax cost gives rise to the
concave opportunity locus depicted here. A second possible
source of a rising marginal opportunity cost is a tax share
which is not constant but which, for individual j, rises
with the level of provision of public goods.[3]

With this possibilities curve superimposed on
individual j's indifference map in Figure 3-2, the point of
tangency between the opportunity locus and his indifference
curve, at G_j^*, X_j^*, generates the highest level of utility

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[3]Economies of scale could alter at least part of this
picture, reducing the concavity of the opportunity locus, or
even, if extensive enough, resulting in a convex opportunity
locus.

attainable by j, $U_j(G_j^*)$. Other levels of $U_j(G)$ can be read from the intersections of the opportunity locus with the indifference curves as the level of G is varied. This rising, then falling, though not necessarily symmetric, pattern of U_j can be graphed on axes relating U_j to the level of G.[4] The same sort of optimizing process, with the resulting, characteristic $U_j(G)$ curve can be carried out for each voter and displayed in Figure 3-1. The altitudes of the individual utility curves for the different voters depicted in Figure 3-1 are not commensurate among voters, but this limitation does not affect how the curves function in the model.

We can introduce illusion into this optimization process in a variety of ways. Consider first the effects of cost illusion, in which the individual perceives only a fraction of the true tax cost.[5] The perceived tax cost depends upon the perceptions of the prices and amounts of purchased inputs used to provide the public goods and services and upon the perception of the amounts of taxes

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[4] Strictly convex indifference curves and concave (or straight) budget lines will generate only single-peaked $U_j(G)$ curves.

[5] This is the case that has been most fully explored in the literature. It is also possible that perceived tax costs overstate the true tax costs -- that taxpayers perceive marginal taxes as higher than they really are. In that case analogous results would be expected.

paid. In this case, except at the X intercept itself, the
perceived transformation curve lies further from the origin
than the actual transformation curve, and a new tangency
point is shown.[6] The illusion-altered perception generates
three different consequences:
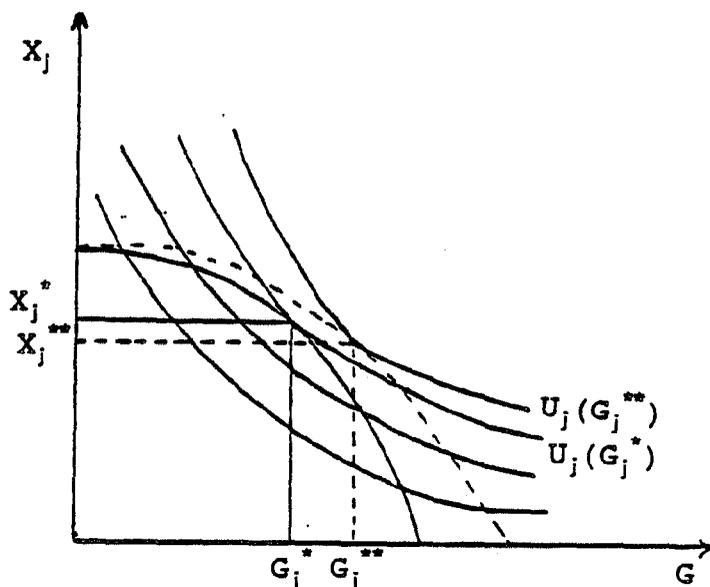
FIGURE 3-3

1) The individual sees himself as able to

achieve a higher level of utility than

he is able to achieve in reality. In

fact, for any given level of G except 0,

the associated $U_j(G)$ perceived as

attainable rises.

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[6]The analysis here is developed with only this very
general restriction on the relationship between the
perceived and the actual transformation curves. Some
further possibilities concerning the nature and extent of
the discrepancy between the two curves are developed later
in this chapter.

2) The optimizing level of G increases,
    under illusion, to G_j^{**}.

3) The level of private goods perceived as
    optimal, X_j^* may rise, fall, or remain
    the same.

The first two results are manifested directly in the $U_j(G)$
curve that appears in the median voter diagram. The third,
the behavior of X, raises one possibility that is worth
pursuing if the perceived optimal X_j^* increases. Such an
increase implies both that more resources are devoted to its
production and that, in reality, though not necessarily
under illusion, fewer are used in the production of G.
Viewed from a standard demand theory perspective,[7] this is
the case of inelastic demand for a good or service, a
decrease in the price of which results in a lower
expenditure on it. An illusion-induced perception of lower
cost that extends to all units of the public good may well
give rise to a willingness to vote only for a smaller level
of expenditures on purchased inputs for the provision of
those goods and services, in spite of a higher desired level
of G. If this is an accurate analysis, it would imply that
the budget-maximizing politician's own self-interest would
prevent him from creating an illusion of lower cost in all

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[7]though Chapter Four will argue that differences in the
institutional framework make that approach an inappropriate
one.

cases in which the demand is inelastic, yet this is the very case which studies find true for public goods in general. That this perception of a lower total cost for a higher level of output must be contradicted by reality suggests that it may be anticipated by the voters themselves, as is true even for the case in which X decreases, but not to the extent required by the greater level of G preferred, the case treated later in this chapter.[8]
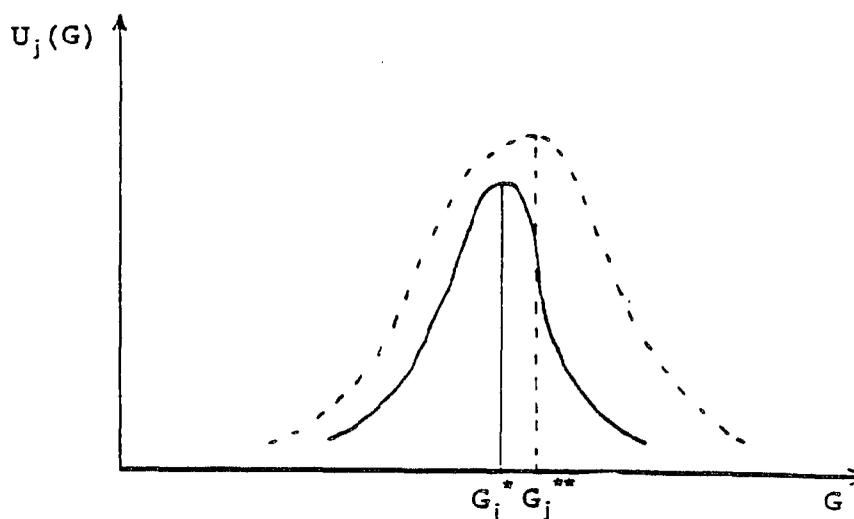
FIGURE 3-4

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[8]This possibility raises some troublesome issues for the empirical analysis of illusion. It suggests that misperception of price (cost) need not bias expenditures upward, as generally posited in the analysis and testing of hypotheses. The misallocation may still exist and be important without being manifested in the level of expenditure. This possibility is not important to the windfall case in this analysis, where the illusion is with respect to income rather than price, but it does raise questions about those studies whose illusion mechanism involves an underperception of price.

For individual j, the dotted $U_j(G)$ curve in Figure 3-4 embodies the first two effects of illusion: it lies above the original, solid curve for all values of G, and it reaches its maximum at a higher value of G. The greater the illusion, the greater the disparity between the illusion values and values based on accurate perceptions.

All individuals who are subject to the same sort of illusion will have similar shifts in their $U_j(G)$ curves. Though the degree of the shift will vary with the shape of the indifference curves and the severity of the illusion, the general position of the new curve will always reflect the first two results listed earlier.

II. Implications for the Importance of Illusion

In this context of the median voter model, it is possible at this point to demonstrate some important implications for those concerned with the effects of fiscal illusion upon the allocation of resources and the resulting level of social welfare. These underscore the previous discussion of the crucial importance of the method of aggregating individual choices that are subject to illusion.

It is possible that even very pervasive and substantial illusion may have no impact upon fiscal decisions. This proposition is easily demonstrated by example. Figure 3-5 reproduces Figure 3-1, depicting the solid $U_j(G)$ curves for a number of voters in the absence of illusion. Superimposed
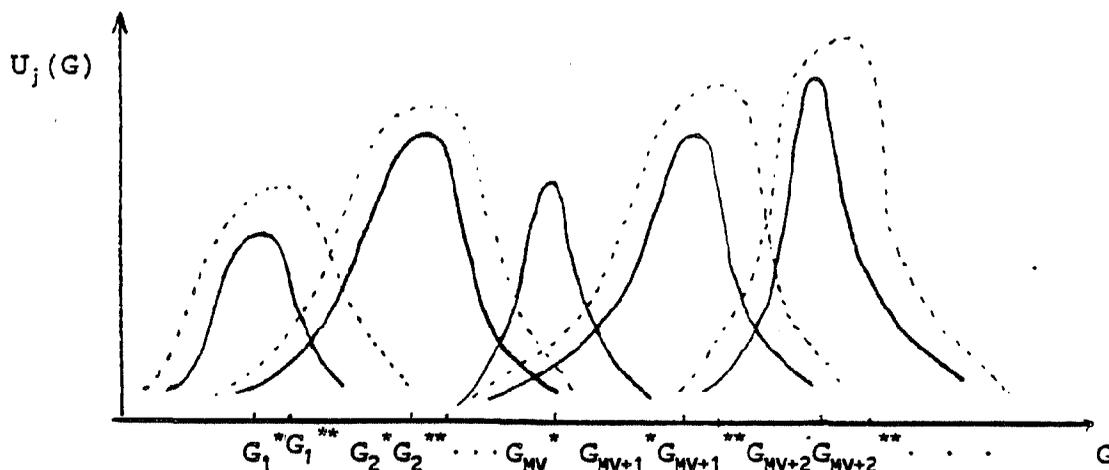
FIGURE 3-5

upon these are dotted $U_j(G)$ curves embodying a high degree

of illusion in a large number of voters. The single voter

who is free from illusion is the voter with the median of

the most-preferred outcomes. He casts the decisive vote in

this setting, and his illusion -- no illusion -- is

decisive. The outcome here is unchanged by illusion, in

spite of the pervasiveness and the high average level of

illusion, and even though the situation depicted here would

generate survey evidence of widespread and substantial

illusion.

Two elements affect the ability of fiscal illusion to

distort fiscal outcomes. The illusion must make a

difference in the level of provision of public goods and

services perceived as optimal. That element is present in

this situation: for individuals other than voter MV the

illusion has an impact, sometimes a great one, with G_j^{**}

lying well to the right of G_j^*. In addition to this, there

is a second element: the collective choice mechanism must give weight to those individuals whose illusion has a significant impact upon their perceived optimal level of G. In this example, the collective choice setting renders that potentially large impact of illusion ineffectual. If the individual is not decisive for the median voter situation, then, with respect to his effect upon the outcome allocation of resources to public goods, there is neither the need nor the incentive for him to alter his flawed perception or his voting behavior.[9]

Just as a high average level of illusion need not have an impact upon the median voter outcome, it is conceivable that a low level of total and average illusion may accompany an outcome that is significantly affected by illusion. Again, the proposition is easily demonstrated by example.
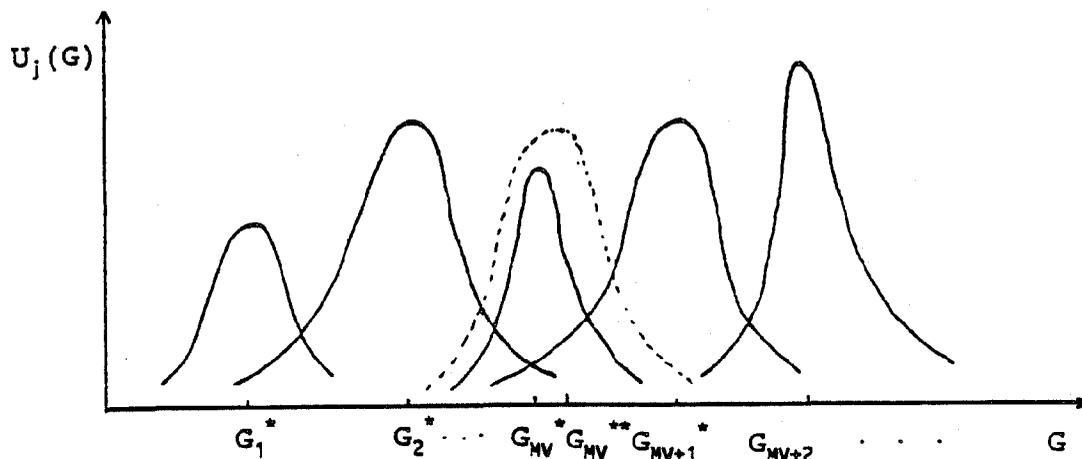

FIGURE 3-6

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[9]Chapter Four explores the existence of other incentives to reduce or eliminate his illusion.

In Figure 3-6 the single voter subject to illusion is the one with the median of the most-preferred outcomes. Subject to illusion, he chooses G^{**}, which becomes the new level of public goods for all individuals. His illusion alone has a decisive impact upon the outcome.[10] Once again, we may note that survey evidence would give a misleading impression of the importance of fiscal illusion.[11]

These two extreme cases are intended not as realistic paradigms but as illustrations of general precepts about average levels of illusion and survey evidence within a median voter framework. A more realistic view of the median voter spectrum will include a multitude of individuals, with a distribution (possibly a random one) of degrees of illusion.[12] In this case the sort of illusion depicted in Figures 3-5 and 3-6 may change the location of the median of the most-preferred outcomes. It may also change the

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[10]Similarly, it can be shown that perceptions which are on the average unbiased may result in distorted fiscal choices, and that perceptions which are biased on the average may not result in distorted fiscal choices. This is another manifestation of the definitional concerns with biasedness encountered earlier.

[11]Again, even in this situation, there are other forces that can be expected to place some limits upon the sway of illusion. These forces are the subject of Chapter Four.

[12]Chapter Four will argue that, while individuals with most-preferred outcomes far from the median of the most-preferred outcomes may indeed have an arbitrary illusion distribution, there are forces that limit the illusion of those voters close to it, who are most likely to have an impact upon the outcome.

identity of the individual to whose most-preferred outcome that median value corresponds, as well. In the more realistic case, there will be a group of individuals whose illusion is crucial to the outcome, and the analysis in the following pages will be applicable to that group of individuals.[13]

What these two simplified special cases serve to demonstrate is that the aggregation mechanism is of crucial importance to the impact of fiscal illusion upon the outcome and that the analysis of the incentives of the average voter may not be relevant to the forces impinging upon the much smaller group of potentially decisive voters whose valuations are crucial for the fiscal outcome. To paraphrase Mishkin's conclusion, it is not necessary that all individuals be rational for the political outcome to be rational.

III. The Welfare Effects of Illusion and Their Implications for Agents Who May Dispel Illusion

The case in which the individual who is subject to illusion does cast the decisive vote merits further examination. If his vote is decisive, the standard "fiscal

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[13]As before, it is only to the extent that this group of voters affects the average level of illusion that it or survey evidence is relevant to the outcome. In this case, though, with more individuals being potentially decisive, they will carry a heavier weight in the average.

illusion hypothesis" predicts that the outcome of the collective choice mechanism will reflect his choice of the higher level of G induced by the illusion of a lower price. There is a contradiction buried in this apparently simple result that should not be ignored. Though the voter perceives the budget line under the influence of illusion and makes his choice of G_j^{**} on the basis of that flawed perception, in reality the budget line remains as originally depicted. As seen in Figure 3-7, the choice of the higher
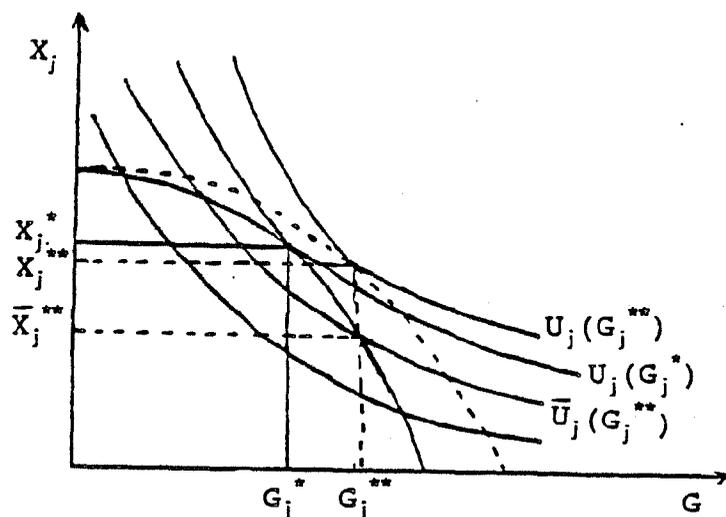
FIGURE 3-7

level of public goods requires the reduction of private goods consumed not just to the level expected in the illusion model, but further, to the level indicated by the actual opportunity locus, X_j^{**}. The true cost must be paid in actuality, regardless of how imperfectly it was perceived beforehand. Sustaining fiscal illusion requires that decisive voters not recognize this true cost even when it is

paid.[14] Initiating fiscal illusion requires that they not
anticipate these consequences. The ability of voters to
learn from experience can be expected to place limits on the
ability to sustain a significant misallocation burden
attributable to fiscal illusion, and the anticipation of the
consequences will place some limits on the ability to impose
even one-time burdens.

The greater the illusion, as illustrated by the further
outward movement of the opportunity locus in Figure 3-8, the
greater the true cost borne in terms of sacrifices of X. In
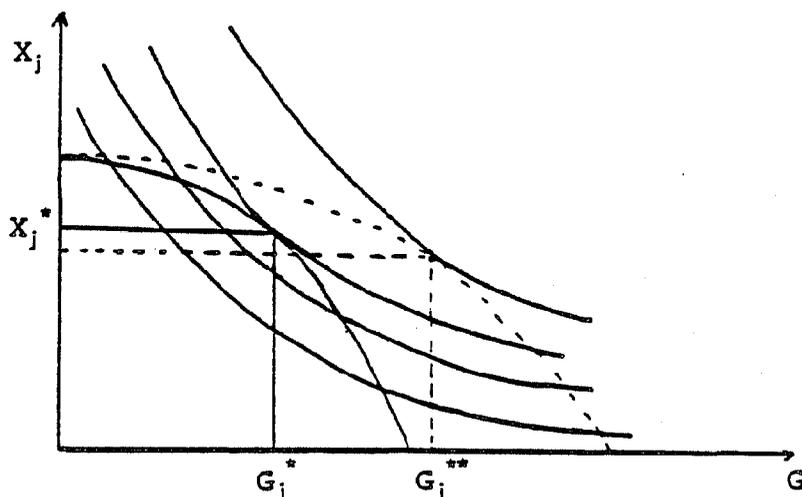
FIGURE 3-8

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[14]In line with the threshold possibilities suggested by
Oates, it is possible that if they pay only a small portion
of the cost, individuals will not perceive this difference
between the true and the perceived cost.
    Oates further suggests that the difficulties inherent
in the measurement of units of the public good, discussed
earlier, here give rise to the further possibility that
misperception of the number of units provided may offset the
misperception of price. While possible, there is no
particular reason to believe that these misperceptions would
offset, rather than reinforce, each other -- that quantity
would be overestimated while cost is underestimated.

the extreme case, if illusion were so great as to give the dashed curve as a perceived opportunity locus, the resulting G_j^{**} would be beyond the society's capacity to produce, even with a commitment of all resources to the public sector. Consequences of illusion this great seem not only recognizable after the fact but also foreseeable. Though lesser degrees of illusion may be more readily sustainable, the fact that they generate non-optimal allocations when they are implemented will be a source of the incentive and the power to eliminate them.

The damage that is done by illusion-determined choices is measured by the difference between $U_j(G^*)$ and $U_j(G^{**})$, which lies below it on the indifference map, as shown in Figure 3-9a. It is also manifested in the median voter diagram, as in Figure 3-9b, where the loss in utility for
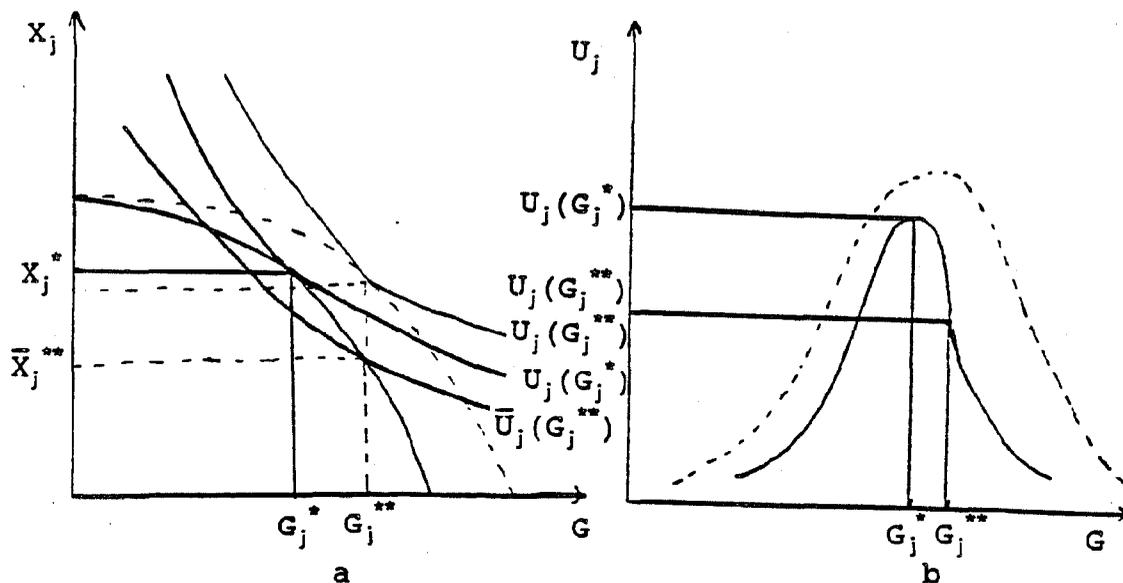
FIGURE 3-9

the decisive voter acting under illusion is the difference
in the height of the actual, solid $U_j(G)$ at its actual
maximum at G^* and at its lower height when G is increased
to G^{**}.

In both cases, the greater the illusion, the greater
the distance, i.e., the greater the cost of the illusion in
terms of forgone satisfaction. Since it is this damage that
provides the opportunity and the incentive to dispel
illusion, the greater it is, the more potent the seed of its
own destruction that it carries within itself. The benefit
to individual j of dispelling his illusion is commensurate
with this damage. The potential exists for any agent
capable of dispelling it to reap a part of that benefit for
himself in a transaction that is mutually beneficial to both
himself and individual j.

Who that agent may be and how he can internalize that
benefit will be explored more fully in the next chapter. It
has already been suggested that the individual voter who
suspects that he may be under illusion may himself be able
to learn the extent of this damage by experience or to
foresee it; in these cases he may be an effective agent for
dispelling his own illusion. He may become that rare
individual that appeared to Downs an aberration, whose
nonconformity with the expected high degree of rational
ignorance was not well explained within his model. One
segment in Chapter Four will specify conditions under which

voters find it in their own self-interest to become well-informed. As Downs perceived, these conditions are not commonly met, but they may be, and this case can be significant for the public choice outcome. As also explored in the next chapter, perhaps the most likely agent to be able to reap the benefit of dispelling illusion is the politician seeking the rewards of office. Other possible agents include private sellers of information, the press, and non-decisive voters who will also benefit from a lower level of G because of the nature of their own preferences. Any or all of these agents may dispel illusion, and competition among them may allot various roles in the process to each, depending upon their cost and effectiveness and upon the institutional framework.

One aspect of the situation that such an agent can perceive is that, because of the nature of the median voter mechanism for aggregating individual choices, eliminating the impact of illusion upon the outcome does not require that he counteract illusion in everyone, but only in the decisive voters.[15] What is needed is not information per se; what is needed is an outcome that is not distorted by illusion. Indeed, because information is costly, it would

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[15]Voters themselves may choose to leave suspected illusions unexamined because they know that their knowing will have no impact upon the ultimate decision or because they accurately perceive that the outcome will suit them reasonably well.

be a waste for all voters to be well-informed -- not just a private waste, but a social waste as well. A social mechanism that does not economize on information costs cannot be efficient. Unlike the private market where each individual determines his own level of a good and (as Downs has stressed) has the incentive to know, in the determination of G, not every individual is decisive, and those who are not have less need to know. The fact that they also have less incentive to know is not necessarily a problem. Significant amounts of the concern over political ignorance and apathy may be because we do not fully appreciate the mechanisms that are at work to limit the impact of fiscal illusion. The next chapter examines those mechanisms.

Although cast in the framework of illusion with respect to the cost or benefits of the provision of public goods and services, with the level of those goods and services subject to a median voter model of collective choice, the discussion in this chapter can be generalized to any issue that generates single-peaked preferences in a median voter analysis. Thus, more broadly conceived, it will serve the more general discussion of limits on fiscal illusion in Chapter Four.

IV.   Illusion Thresholds

While the foregoing analysis provides a good working
model, one aspect of it bears further exploration. Although
it is clear that the opportunity locus that embodies
illusion will lie to the right and above the actual
opportunity locus, the precise nature and extent of the
impact of illusion are less easy to specify. One
interesting possibility is suggested by Oates (1988b, 68).
In his view there may be threshold effects that allow
illusion to persist over a certain range of values of the
illusion variables but eliminate it at higher levels as its
effects become manifested more clearly; or, more generally,
the effect of illusion may vary in magnitude with budgetary
levels. The effect of this hypothesis upon the misperceived
opportunity locus of Figure 3-3 is to reduce its outward
displacement at higher levels of G. Such a reduction could,
if the awareness is changed radically or suddenly enough,
result in a kinked or even a convex form for the opportunity
locus, with the possibility of associated complications of
the tangency condition. A kinked perceived opportunity
locus would not affect the uniqueness of the tangency
condition for the individual; in the case of convexity,
multiple tangencies or paradoxical outcomes are possible,
with the exact results depending upon the particular shapes
and locations of the opportunity locus and the indifference
curves.

When we broaden the picture to include many voters, the case of the kinked perceived opportunity locus opens some interesting possibilities. Figure 3-10 illustrates this situation. The kink implies that people with a variety of tastes and preferences but with the same perceived possibilities curve will tend to cluster at one perceived optimal level of G, G, with fewer finding their optima at outlying levels of G. Tangency will occur at the kink for indifference curves of a wide range of
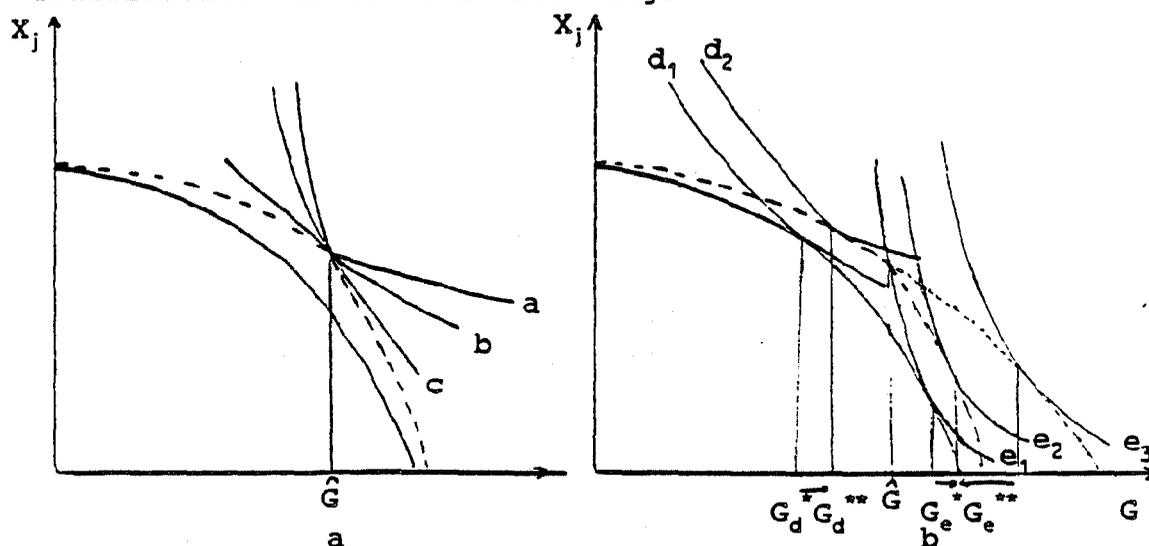
FIGURE 3-10

slopes, as illustrated in curves a, b, and c, shown in Figure 3-10a. Further, since the perceived locus is flatter than the actual locus for G < G, as in the previous case, individuals with $G_j^* < G$ will have G_j^{**} closer to G than they would in the absence of illusion, as illustrated for individual d in Figure 3-10b. Individuals with $G_j^* > G$, as illustrated for individual e in Figure 3-10b, will face a

steeper perceived opportunity locus and reach their optimum
with a higher level of G than in the absence of illusion,
but lower than if the threshold effects had not been
introduced. For the individual, this result is not
surprising; it is merely a more abstract and formal way of
looking at the fact that limits to the misperception of
fiscal variables will limit the distorting effects of
illusion upon fiscal choices of the individual. That this
result generates a greater consensus on the optimal level of
G is an outcome that is less obvious.

Placed in the setting of the median voter model, the
possibility of a kinked perceived opportunity locus proves
interesting. If a number of individuals have differing
tastes and preferences, as revealed in different slopes of
their indifference curves, but identical (mis)perceived
opportunity locuses, the result may be a consensus on the
desired level of G that, within the median voter context,
would give a clustering of G_j^{**} values that could affect the
political outcome and could make that outcome stable. This
consensus effect may make it more likely that some agent
could enlighten this group of individuals, dispelling the
illusion and altering the outcome.

While this is an interesting possibility, it is
somewhat restricted by the assumption of uniformity in the
perceived transformation curves. One way to ease that
restriction is to include curves of individuals whose

incomes and associated X_j intercepts differ but for whom the kink still occurs at the same level of G. This seems a realistic possibility if the location of the kink is determined by the visibility of G in the community or is triggered by certain levels of expenditure. This change does not alter the preceding results or the general appearance of Figure 3-10; it merely adds more voters' U_j curves to the graph and increases the scope of the consensus. Another way to ease the restriction is to allow for groups of citizens with common budget lines (or sets of budget lines with a common value of $\hat{G}$). This situation would result in groups of clustered voters, with similar effects upon the stability of the political outcome and the possibilities for dispelling the illusion.

This exploration of threshold effects anticipates the further development of the issue of awareness later in this analysis. There it is viewed within a general context of economic costs and benefits of sustaining illusion that suggests a more gradual boundary between illusion and accurate perception, a slow dawning of awareness rather than a sudden awakening. That analysis allows greater scope for individual variations in all the factors that underlie the particulars of the curves that generate the perceived desired level of G for different individuals. While that approach would suggest that kinks are unlikely, it would still involve an increase in the curvature of the perceived

opportunity locus and result in some degree of the clustering found here.

V.   Benefit Illusion

Fiscal illusion includes misperception of the benefits of public goods and services as well as their cost. West and Winer have incorporated both into their model, stressing the need to view the level of cost illusion together with the level of benefit illusion in order to evaluate the net impact of fiscal illusion, since the two may partially or completely offset each other. Mill and McCulloch also focused on the relationship between these two categories of illusion, arguing that it was desirable to create an illusion of lower cost in order to counteract a naturally-occurring benefit illusion caused by a tendency to underestimate the benefits of public goods.[16] The analysis of benefit illusion reveals interesting parallels and divergences from the preceding analysis of cost illusion.

Though underestimation of the benefits of public goods and services is certainly conceivable, and was the focus of Galbraith and his followers, as well as of Mill and McCulloch, the case that has dominated the literature assumes that the benefits of public goods and services are overestimated relative to those of private goods and

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[16]West and Winer (1980, 607) alone seem to have noted their contribution to this field.

services. Figure 3-1, which illustrates the individual's choice between public and private goods when fiscal decisions are made in the absence of illusion, once again serves as a point of reference for discussing the effects of illusion. In the case of benefit illusion it is the utility function that associates different levels of the publicly provided good with the levels of utility of the consumers of those goods that may embody illusion. To illustrate its effects, the indifference curves may be rotated downward from their vertical intercepts, as depicted by the dotted curves in Figure 3-11.[17] The indifference curves will pivot
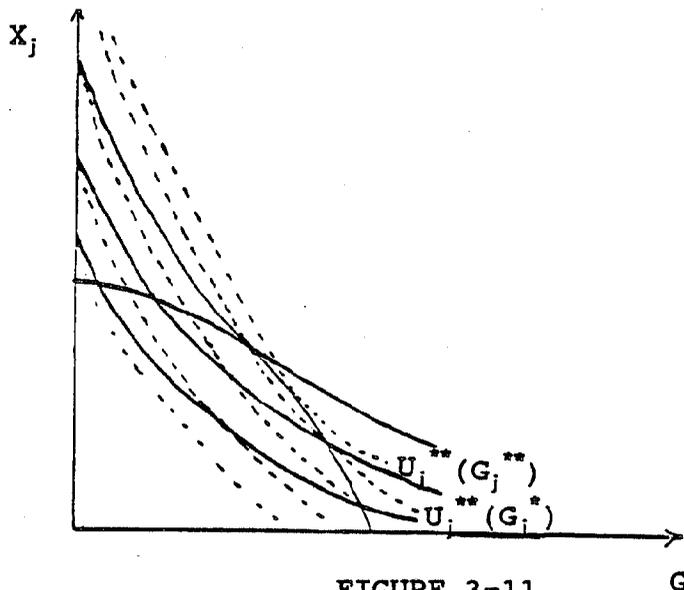
FIGURE 3-11

inward, indicating that the individual is willing to accept fewer units of G as compensation for any given reduction in

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[17]Inclusion of the vertical intercepts allows a clearer presentation of the relative levels of utility that are important to the conclusions drawn from this analysis.

X when he is subject to the illusion that the benefits of G are greater than they are in reality.[18] At any given point in the commodity space, the indifference curve passing through that point will be steeper than it was in the absence of illusion.

When the transformation frontier is superimposed on the new indifference curves, tangency will occur to the right of the non-illusion tangency because of the steeper slope of the indifference curves. We can again consider the effects of the illusion:

1) The individual sees himself as able to achieve a higher level of utility than he is able to achieve in reality. This provides his incentive to opt for G_j^{**}, since $U_j^{**}(G_j^{**}) > U_j^{**}(G_j^{*})$, as seen in the dotted indifference curves. Furthermore,

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[18]This can be a puzzling matter. Though it sounds almost as if he is happier, easier to please, it is because he thinks there are benefits that <u>are not really there</u>. For example, he may believe that schools are providing valuable skills and experiences that will enrich the lives of the students and make them more productive, when in fact they fail to generate these outcomes; or he may feel that increased jail capacities make his neighborhood safer than they in fact do. He feels safe when he is not. He mistakenly perceives the level of satisfaction that would result if the public goods and services really gave more benefits.

How to evaluate the individual's subjective valuation is a matter that is open to question. This element could complicate the comparison of the levels of U_j. For this analysis the illusions are considered to provide a lower level of satisfaction than the real thing.

for any given level of G except 0, the

associated $U_j(G)$ perceived as

attainable, $U_j^{**}(G_j)$, rises.[19]

2) The optimizing level of G increases,

under illusion, to G_j^{**}.

3) The optimizing level of X must fall to

X_j^{**}.

Only in the third effect, not explicit in the median voter

diagram, do we find a difference from the results in the

cost illusion case. In this case, cost is perceived

accurately, and X_j^{**} must decrease with the increase in G_j^{**}.

Once again the first two effects are manifested

directly in the $U_j(G)$ curve of the median voter diagram, and

in exactly the same way, so that Figure 3-4 depicts this

case of benefit illusion as well as that of cost illusion.

As before, the individual perceives a higher level of

satisfaction with G_j^{**} than with G_j^*. Once again, however,

the curves that depict reality reveal a reduction in

satisfaction in the illusion situation. While the

individual is not directly confronted by the contradiction

inherent in the cost illusion, the level of satisfaction

that he actually attains is lower than he expected it to be

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[19]This can be seen the fact that any given combination
of X and G that is on the frontier generates unchanged
satisfaction from the X but enhanced perceived satisfaction
from the G.

and lower than would be possible in the absence of
illusion.[13] He would in reality prefer more private goods.
As before, the impact of this discrepancy upon political
outcomes will depend upon the method of aggregating
individual preferences. Again, some recognition of the
underlying reality may come directly from the feedback of
this contradiction between expectations and reality, or it
may come from some source with the potential to derive some
gain from eliminating the illusion. It is to this latter
concern that we now turn.

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[13]Perhaps this, with a twist, is part of what happened
with the Great Society programs of LBJ. A gradual
disillusionment with the programs that set out to eradicate
the problems of poverty and ignorance dawned upon the nation
as the anticipated benefits did not materialize.

CHAPTER FOUR

LIMITATIONS ON THE ECONOMIC IMPACT OF FISCAL ILLUSION

Chapter Two argued for a broad definition of fiscal
illusion that encompasses all situations in which one or
more individuals misperceive one or more fiscal parameters.
At the same time it recognized that one special case has
been the source of particular concern and has motivated a
large part of the research into the subject. The concern is
that because citizens perceive fiscal parameters
imperfectly, public officials can manipulate their
perceptions to the citizens' detriment and to the
politicians/bureaucrats' benefit. In the usual scenario,
this involves an increase[1] in the size of government
expenditures, from which the politician gains some (usually
unspecified) benefit and the citizens incur a loss.

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[1]The increase must be defined relative to some
standard. Clotfelter attributes the standard of perfect
perception of costs to Wagner (1976) and Buchanan (1967).
Optimal perception of costs seems a more appropriate
standard because it allows knowledge to be treated as a
variable, whose level can be adjusted in accordance with
costs and benefits. This standard does become difficult to
handle, however, because the benefits of increased knowledge
to the individual and to society may diverge, as may the
costs of acquiring that knowledge, and because the
relationship between the individual and the social benefits
and costs will depend upon how the individuals' perceptions
are aggregated.

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In assessing this concern, a careful examination of the existing limitations on the capacity of public officials to manipulate citizens' perceptions to the citizens' detriment is warranted, including a reexamination of the politician's role. Downs's exposition of how the attenuation of a voter's incentives to acquire knowledge leaves him more vulnerable to manipulation in the political sphere than in the market, while valuable, has dominated the analysis of fiscal illusion to the exclusion of other important considerations.

This exploration of the limits on fiscal illusion begins with the primary agent, the politician in a median-voter setting, and the possibility that he may better achieve his own ends by dealing with fiscal illusion on the part of voters in a way that is both efficient and socially optimal. It then turns to other important, related factors that limit that vulnerability of the political decision-making process to distortions induced by fiscal illusion. Several factors on the "demand" (that is, roughly, the citizens') side, are examined; then, beyond the politician's role within the median voter setting, additional limiting factors on the "supply" (roughly, the public officials') side are examined.

I. The Politician's Role in Dispelling Illusion

Among the factors that may place limits upon the impact

of fiscal illusion are the incentives of politicians. It is possible that these agents operating within the institutions of public choice may reap private gain by limiting the impact of fiscal illusion upon the political outcome rather than by promulgating illusion. Their impact may be compared to that of the arbitrageurs who, in the Mishkin analysis, reap private gain by mitigating the impact of individuals' irrationality upon the achievement of efficient outcomes in financial markets. Indeed, it is not the financial markets alone that offer a paradigm for the aggregation of differing evaluations of benefits and costs in a way that efficiently deals with problems of misperception: markets for ordinary goods and services also offer instructive parallels in this regard.

Differences in Valuations in a Market Setting
and in a Public Choice Setting

We begin with an examination of the phenomenon of differing evaluations of costs and benefits among the individual participants in private markets and of how those differences play themselves out in that institutional setting; we then consider how differing evaluations are dealt with in a public choice setting. This discussion will provide the foundation for the analysis of the mechanisms and agents that are important when illusion is a source of those differences in individual valuations both of private

goods and of public goods.

What a market for a good or service does is to effect trades whenever differing evaluations of a product offer the possibility of a Pareto improvement, embodied in a voluntary trade. In Figure 4-1 the market demand curve embodies the marginal evaluations of successive units by individual consumers, registering the benefits final users derive from consuming the good. They are ranked in decreasing order. The market supply curve shows marginal costs, measured in dollars, of successive units. These marginal costs are also individual evaluations of the good, this time in terms of the sacrifices entailed in making

P

$S = \Sigma MC_n = \Sigma MRT_{XY}$

MRS_{XY}^j

MRT_{XY}^n

$D = \Sigma MU_j = \Sigma MRS_{XY}$

Q
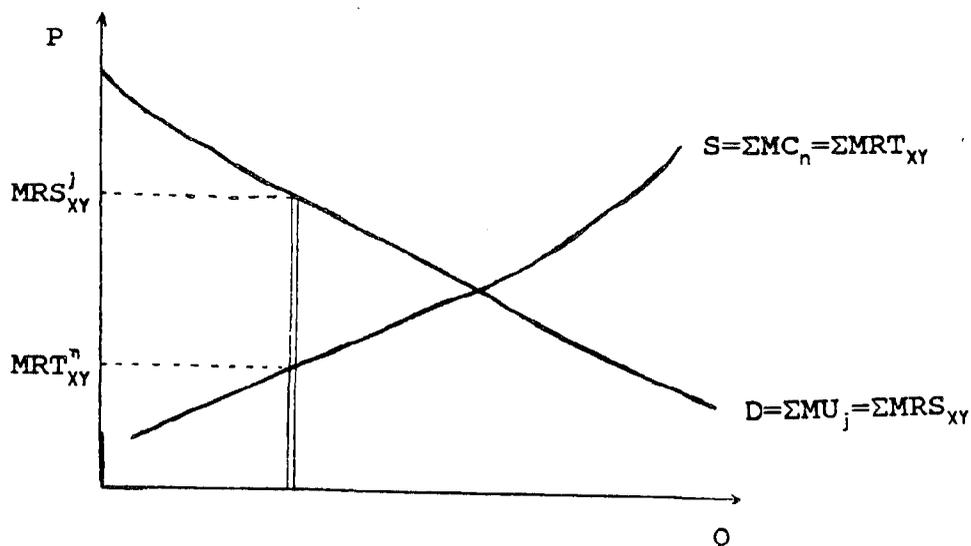
FIGURE 4-1

the good available; implicitly they represent an evaluation of the benefits of the alternative uses of the resources devoted to making the good available. These marginal evaluations of providers are ranked in increasing order. We

may note here that these valuations can incorporate illusion,[2] a point we want to return to later. In the market, individuals who, in effect, trade, do not directly compare the subjective evaluations of the buyer and the seller of some particular unit. Unlike a barter mechanism, the market mechanism does not require that they seek out a disparity in valuations that offers a wedge of net gain that can be shared in order to provide motivation for the individuals to consummate the trade. Rather, the terms of trade are established impersonally in the equilibrium price, which equates the quantity supplied with the quantity demanded in a Walrasian way, with bids to buy and offers to sell ultimately determined by Marshallian marginal evaluations, but without a direct comparison of those evaluations. For each individual producer and consumer, that readily observable equilibrium price provides the information and the incentive to take advantage of the underlying differing evaluations to maximize his own wellbeing. In doing so, each pursues his own independently determined course of action.[3] The end result is that no unexploited differences in evaluations remain.

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[2]This may even be as a result of deliberate fraud, in a special case, but its significance is independent of the source or its intent.

[3]Transaction costs affect the individual's participation in the market and may prevent some trades that would be beneficial in the absence of transaction costs.

Trades of this nature occur differently in a market with arbitrage.[4] Here there is an agent, the arbitrageur, who consummates trades by buying from individuals with lower valuations and selling to those with higher valuations until no unexploited differences are left.[5] The arbitrageur has a role to play when individual transaction costs, including information costs, are great. It is part of his role to make up for the limited information of the participants. It is worth noting that he does so not by providing the individuals with all the information needed to enable them to effect the transaction themselves; rather, he need only present to the individual with a non-marginal valuation a "deal" that individual can judge as better for himself. In deciding this, all of the individual's own directly known or easily accessible (and thus cheap) information is brought to bear as he compares his own valuation with the dollar price offered by the arbitrageur. The buyer's decision-making process is the same as that of the individual purchaser of a good or service in a normal product market. The outcome of no unexploited differences in evaluations is the same. Only the mechanism by which that outcome is achieved differs, and this difference will be important to us later.

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[4]Markets with brokers that reduce information and transactions costs for the transacting individuals are also amenable to this analysis.

[5]Again, the transaction costs of arbitrage may qualify this result.

Differences in valuations also occur in a public choice setting. Individuals differ in their subjective evaluations of the costs and the benefits of public goods, and these differences could again be depicted in a graph like Figure 4-1. In the case of a public good, however, there is no parallel to a market without arbitrage because the individual is not able to act independently on public goods. There is no price established by competitive bidding upon which he can base his quantity decision, acting as an independent agent with only his own self-interest at stake in the decision. Since the very nature of public goods is that they are non-excludable and non-rival, a collective choice must take place. The individual's method of implementing his valuation of the public good then is different, and there is a different mechanism for aggregating individual preferences.

Chapter Three showed the determination of the individual's preferred level of public goods within the established consumer choice model. Based upon the costs and benefits of the public good, as he perceives them, he takes independent, self-interested action to implement his preferences about publicly provided goods and services. In this, there is a common element in the two choice mechanisms. The action by which he implements his valuation in the public goods sector differs, however. In the median

voter model, the individual considers the options open to
him and chooses how to vote (or not vote), based upon which
option will result in a level of provision of public goods
that maximizes the utility he will attain.

When we consider the mechanism by which the various
individual valuations are combined in this model, a parallel
with the arbitraged market emerges, in which the politician
plays a role like that of the arbitrageur. It is up to him
to judge the voters' valuations and to offer them a "deal"
that they can recognize as better for them. The "deal" that
is to his advantage to offer is the median of the most-
preferred outcomes (MMPO). It will give him the majority
vote and the consequent claim to the rewards of office,
whatever those rewards may be. Just as the market generates
or the successful arbitrageur hones in on the market-
clearing price for the marginal unit and promotes the
attainment of the "achieve-all-trades-with-MU-of-buyer≥
marginal-cost-of-seller" outcome, the politician promotes
the MMPO outcome.[6] The politician who wins is the one who
most accurately evaluates this median value. In a world of
perfect knowledge on the part of voters, that is the essence
of the story. In attempting to win by associating himself

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[6]It is important to note that we cannot say that the
median-voter outcome is optimal in the sense that the market
outcome is. The most that we will be able to claim for the
politician's successful role is that it leaves the median-
voter outcome unaffected by any illusion that generates
damages greater than the cost of dispelling that illusion.

with the MMPO, the politician may find it useful to use surveys, polls, and other formal or informal means of ascertaining the MMPO more accurately, as long as their cost is justified by the increase in accuracy they permit. Politicians who do not play this role efficiently are eliminated by the voting process.

Both the market and the voting mechanisms aggregate individual evaluations to arrive at an outcome that reflects the underlying individual evaluations of costs and of benefits.[7] Neither choice mechanism (market or political) eliminates the differing evaluations. Arbitrageur and politician alike offer individuals a transaction that reconciles those differing individual evaluations. Like the arbitrageur, the politician need not change the individual evaluations; he needs instead to offer the median of the most-preferred outcomes that takes those evaluations into account. Fiscal illusion resides in those evaluations, but does not exhaust them. It is to this component of subjective evaluations -- to illusion -- that we now turn our attention.

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[7]The market mechanism brings evaluations of costs and benefits directly to bear on each unit; in the voting mechanism those evaluations are combined into a judgment about the level of public goods provision that will maximize the individual's utility.

Illusion as a Component of Subjective Evaluations:

The Crucial Role of the Aggregating Mechanism

In the determination of the amount of a public good, just as with a private good, the consumer's perception of the benefit to himself may or may not be accurate, and it may differ from the perceived benefit of other voters. Differences in perceived benefit may arise from differences in subjective assessments of the utility provided by the good as well as from differences in perceiving the actual nature of the good. The latter may involve fiscal illusion, but the former does not. It is the latter that the literature of fiscal illusion addresses; there it is isolated as the sole focus of the analysis of fiscal illusion. This analysis attempts to achieve a fuller understanding of the impact of differences in perception that are grounded in fiscal illusion by placing them in the more general context of how disparate valuations of all sorts are aggregated by different mechanisms.

The perceived cost of the public good also may or may not be accurate. As fully recognized throughout the literature of fiscal illusion, an indicator of the relevant cost information is not as readily available to the individual as the market price of a private good, which communicates to him the marginal cost of the last unit produced. Though this is not the marginal cost of the unit he may actually consume, since units are fungible, this

difference is not important for the equilibrium allocation or for his utility-maximizing choice.[8] Still, individuals may not perceive the cost of a private good accurately, and their inaccuracies be the source of differences in the perceived cost among different participants in the market. In the case of public goods, while the actual cost function embodies a non-subjective evaluation, based on resources used and their prices, individual perceptions of it may differ because of this sort of misperception: fiscal illusion may also be a component of the perception of cost.

When the market is the aggregating mechanism, the marginal valuations conform to established relationships,

$$MU = P = MC, \text{ or}$$

$$MRS_{xy} = P_x/P_y = MRT_{xy},$$

that result in optimal balancing of supply and demand forces and effect the optimal level of mutually beneficial trades. These relationships are not affected by the differing valuations of non-marginal participants in the market, "illusory" or not. Unless misperception affects the marginal uses or production, the individual alone sustains any loss of satisfaction from its impact. It is only in the case and to the extent that it affects the market price that anyone else gets hurt (or helped) by it; only then is there

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[8]Since the marginal costs of the inframarginal units are important for the level of wellbeing for the provider who is involved in the market trade, their influence is still brought to bear upon the outcome.

a social concern that goes beyond the private concern.

Thus, most illusion is immaterial to the market outcome and

the efficient allocation of resources.

Figure 4-2 depicts this situation for the case in which

the individual is subject to a positive benefit illusion.

The individual consumer buys whenever

subjective evaluation + illusion ≥ price
(pos or neg)
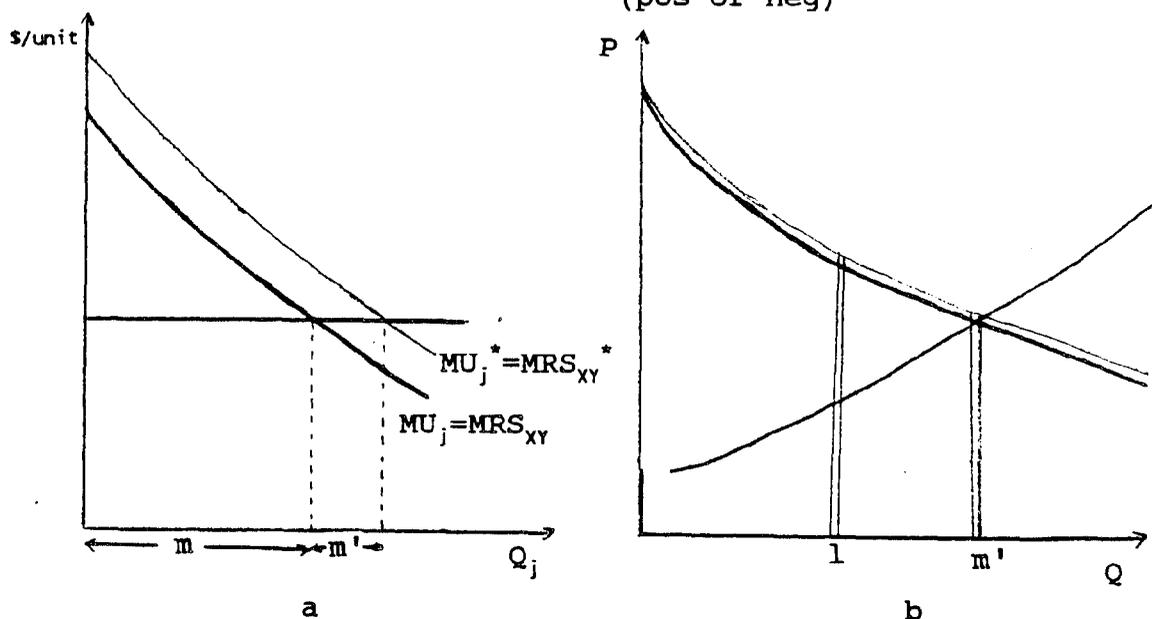
FIGURE 4-2

Note that though he is subject to illusion concerning all

the units purchased, most of the purchase decisions (the m

units shown in Figure 4-2a) remained unchanged by the

presence of illusion. The level of satisfaction that he

attains will not be as great as that which was anticipated

because of the illusion. This disparity presumably does

dispel the illusion as he consumes the good and gains

firsthand experience of it. For most units, where marginal consumer surplus is normally positive, only a loss in anticipated consumer surplus results from illusion.

As shown in Figure 4-2b, the benefit illusion involved in the purchase of unit 1 affects only the buyer of that unit. In contrast, benefit illusion that gives rise to the purchase of the marginal units labeled m' may have external effects: it may raise the price, albeit by an almost imperceptibly small amount. Aggregated over all the buyers and sellers, it redistributes consumer surplus to the recipients of profit in what may be a substantial amount because of the number of units involved. Nevertheless, the effect upon the allocation of resources to the production of this product is small, resulting in only m' additional units of output. Viewed in the context of the whole market, we see a very small impact of this consumer's illusion on the market price, since he is such a small part of that market; in contrast, the relatively large impact upon his own wellbeing gives him an incentive to eliminate his marginal illusion, whenever the cost of doing so is less than the loss in satisfaction he incurs as a result of the illusion.[9]

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[9]For cost illusion, a similar diagram for producers would show a small impact on the market price but a large impact upon the individual producer and his level of profit, giving him an incentive to eliminate his marginal illusion.

This result, that illusion matters to the market determination of the level of output of the good or service if and only if the participant with marginal valuation has that valuation because of illusion, neatly parallels the median-voter situation analyzed in Chapter Three. In the political realm, illusion may again be a component of the voters' evaluations of costs and benefits. The voting mechanism aggregates those subjective, individual evaluations with a similar outcome: only marginal illusion matters to the level of provision of the public good or service.

Since in the arbitraged market and in the political mechanism, special agents function to arrive at outcomes that reflect the differing evaluations of individuals, it is appropriate to ask whether those agents' decisions would be less likely to be affected by illusion than those of other participants in the market. In a product or financial market the arbitrageur will bear the losses generated by the errors that such illusion fosters. Arbitrageurs are subject to competitive market forces. Those who provide bad information, who promote greater illusion, are eliminated from the market, partially by their clients' ability to foresee and evaluate for themselves the falsehood of their claims, but even more by the ability of other arbitrageurs to offer a better deal and to provide whatever information will allow clients to recognize that better deal. The

arbitrageur's profit is the economic incentive for him to engage in this activity and to pursue it until its marginal return equals the marginal sacrifice that providing it entails.

How does illusion on the part of voters affect the politician subject to competition from other politicians? At first glance, it may appear that illusion need not help or hinder him, for if he can estimate it accurately, he can still win by associating himself with the illusion-incorporating MMPO level of public goods, and he will win as long as the illusion lasts. There seems to be no particular incentive either to create or to dispel illusion as long as he can accurately estimate it. There is, however, a potential area of vulnerability in this position. It was demonstrated in Chapter Three that if illusion distorts the outcome, it will have a damaging effect on the individual voters' wellbeing. This reduction in individual ophelemity will alter the perception of the costs and benefits of the public good and the corresponding MMPO. If the politician fails to adjust to those changing perceptions of the voters, and to persuade the marginal voters that he has made that adjustment, he may lose his majority and with it the rewards of office. It is here that we see an additional endogenous source of changing voter perceptions: competing politicians. Their impact makes the damaging effect on individual wellbeing important beyond the possibility of the

individual's independent recognition or anticipation of that loss. That loss from illusion-influenced choices is a wedge, analogous to arbitrage potential, which the competing politician can use to his own private gain.

How can the politician use this wedge to benefit from dispelling illusion? One way is to provide information that allows voters to dispel their illusion. By doing so, he may advocate a MMPO that truly maximizes voter wellbeing, thereby garnering votes that will stay with him. If he fails to dispel illusion, a competitor can do so and achieve a more stable consensus on the MMPO.

In taking this course, the politician's role is much like that of the market's arbitrageur. In the political realm, he is the primary agent for eliminating marginal illusion and its impact upon the collectively determined outcome. His concern is with those whose illusion has an impact on the MMPO; he needs to provide information only when it is marginal, when it has an impact upon the outcome. His incentive to do so is that he may more reliably receive the majority vote and the consequent rewards of office.[10]

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[10]Individually, given a perception of costs, politicians have the incentive to increase perceived benefit to their own ends. One might argue that politicians may just compete against each other to see who can create the greatest illusion, rather than dispelling it. The politician will indeed do whichever benefits him the most, but he is subject to the limits placed upon him by competition. Reality is a crucial anchor in that competition. To the extent that the politician truly provides greater benefits, he can attract more voters, but the ability to increase perceived benefits through illusion

Once this principle for maximizing true wellbeing of
the voters is established, on the basis that it has a more
reliable appeal that cannot be eliminated by a rival
politician, it follows rather easily that the politician
will have the incentive to dispel illusion efficiently, in
terms of the resources and methods he uses to do this, in
terms of targeting the voters whose illusion matters, and in
terms of extending such activities until the marginal return
in increased voter wellbeing equals the marginal cost of
dispelling illusion.[11]

It is crucial to recognize that though the voter
himself may not seek out the information because of Downsian
factors, the politician subject to the competition of other
actual and potential politicians is the wellspring of the
gathered-up incentive.[12] His whole set of rewards rides

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is limited by his competitors' ability to gain by dispelling
those illusions.

[11]President Carter, in a televised conversation with
Bill Moyers, recounted an example concerning an important
piece of trade legislation. Among other measures in support
of it, he sent his workers out to the garden club meetings
in the cities in a crucial senator's state to influence, by
informing and persuading, just such a vote with a high
marginal impact. Even at a national level, these forces so
abstractly described were at work: this president really
was expending resources to dispel ignorance/illusion in
voters with a marginal impact that was likely to be
decisive.

[12]Do competitive "market" forces affect the delivery of
politicians' services? Some suggest that barriers to entry
may limit the effectiveness of competition. Certainly
information and training barriers to entry for financial
arbitrageurs must be very high, too, yet competition in
arbitrageurs' services is certainly effective. Part IV of

upon his swinging the marginal votes.

There remains some concern that the politician might want to promote illusion that would move voters closer to his view. We might first ask why he would choose that option. If he does, it is in his dual role as an ordinary citizen-voter rather than in the role of the politician; an assumption that he has ends other than the rewards of office needs to be made. In this case, if it is cheaper to promote illusion than to dispel it, illusion might win out, particularly in the short run, where the damages are not made evident by the disparity between the outcome and the expectation of the voter. While it may require more information to provide a proposal based on the maximization of actual satisfaction, there being one right level and an infinity of possible wrong ones, it would seem as a matter of chance easier to hit on a wrong one. But this is not to say that one would <u>foster</u> it by illusion-creation. The case for that action is not clearly drawn. It may appear that in the short run one can fabricate an illusion out of thin air, while dispelling it takes support -- data, information, voter attention. On the other hand, counter-assertions might be equally easily fabricated and equally effective. A past reputation for reliability and accuracy, can give an edge to valid counterassertion. Indeed, one may propose

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this chapter explores this concern further.

based on truth first, and not let opponents get primacy.

Another intriguing possibility is that of fraud. Darby
and Karni (1973) have discussed the "optimal amount of
fraud" in the context of product and service markets,
stressing the importance of what they call "credence
qualities" in markets where information requirements are
large and complex, and the information is not directly
accessible to the consumer. When the public official
generates fiscal illusions by design in order to promote his
own wellbeing, the issue is really one of fraud, and it is
reasonable to ask why a politician would engage in this
indirect sort of fraud, when he can defraud the public by
more direct means. One answer is that the latter course may
have some probability of incurring legal retribution, and
that it may result in public ignominy. Still, at some level
of reward, these consequences may be willingly incurred.
Creation of fiscal illusion may be seen as lying within a
spectrum of fraudulent practices that politicians may engage
in. A second possibility is that the politician may share
the illusion that he promulgates, unlike the defrauder,
misleading the public without the intention of doing so.
The damage done is the same in both those cases.

The important point in the Darby and Karni analysis is
that in the case of fraud, the optimal amount of fraud is
not no fraud at all but rather the amount that balances the
marginal damage resulting from fraud against the marginal

cost of eliminating that fraud.

While the politician's role is foremost among the factors that place limitations on the economic impact of fiscal illusion, there is a whole array of additional factors that influence citizens and public officials, distinctly underplayed in the existing literature, that work to circumscribe the damage wrought by fiscal illusion.

II. "Demand" Factors

1) Even with a limited incentive to obtain information that is costly, the contradiction between the illusion-generated expectations and the possibilities offered by the real world was seen in Chapter Three to suggest that the voter might directly perceive the negative impact of fiscal illusion upon his wellbeing after the fact, preventing illusion from being maintained, or even anticipated by the voter.

Instances of these forces at play are readily gleaned from coverage of governmental issues in any area of the country. Voters in North Arlington could recognize more or less readily that the benefits of a proposed regional park there, or a national War on Poverty program, or a flood control project on marginal land in Arlandria would not provide the promised level of benefits. Citizens of Baltimore were justifiably skeptical about early cost estimates for twin downtown stadiums; sheltering the

homeless in D.C. clearly required more resources than stated in early proposals to fund that program; many Fairfax County citizens saw early on that the proposed merit pay program for teachers would necessitate reductions in the provision of other county services, a sacrifice some were unwilling to make.

Since this sort of direct perception is a relatively "low cost" source of information, particularly when the illusion has a large effect upon the perceived optimal allocation and is therefore most important,[13] it may place an important limit upon the extent of illusion.

2) Though the citizen's incentives to obtain information and to use that information in voting seem limited by the small average impact of his vote, many other factors also impinge upon his judgment about the degree of information necessary for his vote to serve his own best interest.

Chapter Three expounded the importance of the collective choice mechanism in determining the impact of the individual's fiscal illusion upon the fiscal outcome. The effect of his illusion depends upon a) how much impact it

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[13]This awareness -- that is directly perceived by the voter and grows as the magnitude of the impact of illusion upon budgetary size grows -- is related to the concerns in Oates's discussion of threshold effects. As discussed earlier, one approach to this limiting force is to embody it directly in the voter's perceived opportunity locus.

has on his level of wellbeing and b) how his decision is weighted by the collective choice mechanism. What he judges is the amount of information needed for him to cast his vote. He may need very little to know that he lies far to the right of the G_{MV} and the implication of that position for his vote on a particular issue. Even sustaining a high level of fiscal illusion may not alter the relationship between his vote and the median vote or the outcome.

Certainly this is readily apparent for the taxpayer who has three children in the public schools and plans to retire to Florida when they leave home: he will best serve his own interest by voting in favor of tax increases to lower the pupil/teacher ration even if he suspects that the cost will be far more than expected and the level of benefits far lower than purported, and more information will not help him cast a more satisfactory vote. Illusion maintained under these circumstances is optimal; use of resources in becoming better informed would be wasteful.

In other circumstances, however, the voter may indeed feel that a well-informed vote best serves his own interest. If his preferences are such that his optimal level of G is close to the median preference -- the very instance in which his illusion may matter most -- he may well perceive the possibility that he, himself, could be the decisive voter and that his illusion could be decisive for the outcome. In

this case the full weight of the illusion loss in utility[14] is balanced against his cost of acquiring information, of dispelling his illusion. As also discussed in Chapter Three, the greater the divergence of the political choices caused by the illusion, the greater the reward to him of a "correct" decisive vote, and the greater the corresponding incentive to acquire accurate information.

It is certainly not far-fetched to envision a citizen, perhaps oneself, seeing a close election that will determine the master plan for county roads over the next decade and planning to vote because he _may_ make a difference, quite possibly reading the paper during the week before the election to find out more about the costs and the benefits and perhaps chatting with his neighbors about the issue.[15]

Further, though there is, after the fact, only a single decisive voter, with a very small likelihood of being any one particular individual, the ex ante prospect may be less clear. Civics books, Ann Landers columns, cocktail party chatter -- all provide examples of real instances in which a single person's vote decided the outcome of an election or referendum. Especially since it takes time to become

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[14]If we alter the analytical assumptions to allow the utility of others to enter into his utility function, the external benefit to them will be incorporated accordingly.

[15]We may also readily envision politicians and special interest groups finding such individuals and attempting to disseminate information among them.

informed, the perception that one's vote might make a difference will be important some time before the election, when other voters' probable actions are less clear than they are when the vote is actually cast. The possibility of making a difference, weighted by the importance of that difference to one's ultimate wellbeing, may provide some incentive to gain information.

3) Other factors may cause the citizen to consider a well-informed vote to be in his own best interest. He may feel that greater knowledge enables him to influence the votes of others more effectively, increasing his impact at the polls beyond that of his own individual vote.[16]

As a parent with a strong interest in the local schools who is involved with the PTA and through that organization becomes informed about school bond referenda, a voter may put up informational signs in his yard and suggest to his childless neighbors that voting for the bond referenda will benefit them also by enhancing local property values.

To the extent that elections act as opinion polls that exert an independent influence on the outcome, greater information

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[16]In this role of swaying others he may also, in contrast, choose to purvey illusion, if he feels that doing so will better serve his interest. This possibility of the voter as the source of illusion is a minor but an interesting one. It suggests the further possibility that he may unknowingly purvey illusions that he himself is subject to.

may enable him to register an opinion that will better serve his own ends, an opinion that will have a nonzero impact, albeit a small one.[17]

4) Knowledge of fiscal parameters is relevant to a variety of decisions the individual makes outside the political arena. One such decision is the choice of the community one resides in.[18] More complete information about fiscal parameters allows a more accurate evaluation of the relative merits of alternative locations, with a resulting increase in the level of wellbeing attainable. Particularly in a setting of high marginal tax rates, possibilities for tax-avoidance also give individuals incentives to eliminate illusion -- to perceive tax burdens, at least, more accurately in order to allocate resources more optimally to avoid them.[19] Perception of tax burdens and expenditure

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[17]Again in this role he may instead foster illusion, intentionally or unwittingly.

[18]Oates (1988b, 76-77) suggests the importance of such "Tiebout" decisions and cites evidence from Epple and Schipper (1981) supporting the hypothesis that future tax liabilities associated with local public debt are capitalized into local property values.

[19]Wagner's analysis of the revenue complexity hypothesis suggests that voters have more difficulty perceiving the features of a more complex revenue system accurately, and that the resulting misperceptions allow a greater tax burden to be exacted from them. Perhaps a more compelling argument is that splitting a total tax amount into a number of smaller levies decreases the incentives to avoid any particular levy, increasing the ability to tax and to spend when other limits on that ability are not effective. In those cases, perhaps it is the greater

benefits also enters into private decisions about work and leisure by affecting the perceived real tradeoff between leisure and goods and services. It also enters into the evaluation of the relative merits of owning and renting one's own housing, as well as of locating in a community with a high or low proportion of rental housing. Further, because people function as producers as well as consumers in their lives, there is a whole set of decisions they make in their roles as producers that are affected by fiscal illusion. These include, but extend far beyond, the leisure/work choice already mentioned. Entrepreneurs who are misled by fiscal illusion into producing in wasteful communities find it harder to get workers to live there and pay high taxes that do not generate much value. Business taxes that are not productive raise costs without providing benefits to compensate the producer for those higher costs incurred. If bad fiscal illusion raises a firm's costs above those in competing communities that propagate less illusion, the firm has an incentive to relocate.

This whole spectrum of individual choices can be made more effectively if the individual, acting as producer or as consumer, evaluates fiscal parameters accurately; to the extent that the costs of obtaining accurate information are

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difficulty of effective tax avoidance, rather than fiscal illusion, that explains any correlation between measures of revenue complexity and expenditure levels.

justified by these benefits, he has further incentive to obtain information rather than remaining prey to his illusions. He may discover or "produce" the information himself or obtain it from another source, as discussed in the next section. It is worth noting that one sort of "information" he has the incentive to "produce," in his private as well as his voting decisions, is an evaluation of bureaucratic bias or manipulation. Citizens may not be the gullible individuals they are sometimes pictured to be, easy prey for scheming politicians.

5) Numerous individuals do as citizens have such private incentives to analyze the costs and benefits of illusion themselves. If there are economies of scale in this analysis or comparative advantage in its provision, it is possible that private enterprises can sell more accurate information on costs and benefits. The press is one such organization, a profit-seeking one. Not only major newspapers like The Washington Post, The Baltimore Sun, and The New York Times, but also The Fairfax Journal, and community papers such as The Gazette out of Great Falls find profit to be made in providing information, often in an entertaining way, that helps to dispel fiscal illusion. Television and radio newscasts, local and national, and broadcast and print columnists and editorial writers also perform this function.

Other such enterprises with economies of scale or comparative advantage in providing information are voter organizations that may be constituted as non-profit organizations for tax reasons and receive some subsidy thereby but which must to some extent conform to the cost/benefit constraints that private enterprises must conform to. They include organizations like the local Franklin Area Citizens' Association, taxpayer coalitions like the Montgomery County Citizens' Task Force, and the local and national League of Women Voters. They serve a variety of clients, including citizens who want to vote more effectively, individuals who want to improve the sorts of private decisions seen in item 4), politicians who can gain power with the information, and potential politicians.

In each of these instances, illusion is limited by using information supplied by an outside party. A supply/demand relationship is involved in this institutional framework, which offers individuals the possibility of reducing the illusion they are subject to by patronizing a supplier of information.

Thus we see that citizens, consumers or "demanders" of both public goods and fiscal illusion, do have some important incentives to deal with illusion optimally, incentives that play themselves out in different institutional settings. The strength of their incentives to

eliminate illusion varies directly with the damage done --
both because of the impact upon their own wellbeing and
because of their impact within the collective choice
mechanism --when their illusion is sustained. Besides these
factors that limit fiscal illusion on the "demand" side,
there are also important forces that work primarily on the
incentives of the public officials, the "producers" or
"suppliers."[20] The primary force, the politician who
competes for the rewards of office, whose role has already
been analyzed, is augmented by other "supply" forces.

III. Additional "Supply" Factors

1) The usual analysis implicitly treats citizens and
politicians/bureaucrats as separate and independent
entities.[21] This treatment extends the useful dichotomy
(between agents that are providers and agents who are
consumers) that pervades the whole of microeconomic theory
to allow for a third group of agents, likewise viewed as
separate and independent of the other agents.[22] Obscured in

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[20]The somewhat arbitrary nature of the distinction
between the "supplier" and the "consumer" has already made
its appearance in items 3) and 5) and will be addressed
explicitly at a later point.

[21]Tullock (1974) provides an exception to this
generalization in his recognition that politician-
bureaucrats use their power as voters to reinforce their
power as politicians. He neglects, however, the analogous
possibility of citizens' using their potential power as
politicians to enter the "industry" on the supply side.

[22]One would expect the analysis of their maximizing

this approach is the potential for citizens to cross the dividing line and become politicians or bureaucrats whenever the rewards of that activity outweigh the rewards of private economic activities within the household or within the firm. This potential is the source of additional limits on the impact of fiscal illusion.

In this third sector, parallel in many ways to the business sector, the possibility of new entries into the "industry" of publicly provided goods and services, should in theory tend to drive down the excess of rewards over costs there, the pure "profit," to the level of that of private industry. This "profit" has some of the same elements of being an economically necessary reward to an entrepreneurial factor that generates net economic benefit by its activity. If it is a scarce factor, it may receive a pure rent, one that would have a distributional impact but not a direct allocational one. When there are barriers to entry in the public sector (e.g., when machines dominate as in Chicago or when two major political parties dominate as in national elections), competition, whether for candidacy for public office or for positions in the bureaucracy, is possible within the political unit in power. The greater the rewards of the monopoly power, the greater the incentive for competitors to overcome the barriers to entry. It is

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behavior to parallel the constrained optimization analysis applied to producers and consumers.

not just the suspect motivations of the self-interested

politicians that are brought to bear upon public issues,

but, by this extension, the motivations and abilities of the

multitude of "potential politicians" as well.

2)   Besides the political competition within

jurisdictions, the effect of Tiebout sorting is to mimic the

results of competition among jurisdictions, providing an

additional force that places limits upon the politician's

ability to promote fiscal illusion.[23]

Mutual benefit is the basis of transactions. The

decision of a household or a business firm to locate in one

jurisdiction or another depends, among other things, upon

the degree to which it can extract for itself the surplus

generated by that decision. To the extent that the benefits

of efficiently provided public goods and services exceed

their costs, this surplus is available to induce individuals

to locate or to remain within the jurisdiction. While this

surplus is generally available on a take-it-or-leave-it

basis for households, it is increasingly used as a tool in

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[23]The incentives of the jurisdictions are not made
clear in Tiebout's work. The existence of alternatives has
the same impact upon the consumer's decisions as if they
actively competed, though they are not seen to compete
intentionally in the same way that profit-maximizing firms
do. Actively competitive behaviors may be explained by
monopoly power of the jurisdictions, which seek to maximize
their rents, rents which may be reduced by competition from
other jurisdictions that tends to return those rents to the
citizens.

active negotiations between government officials and business firms that are considering location within the community.

To the extent that a jurisdiction eliminates the costs associated with fiscal illusion, households and businesses will find it more attractive to locate there. Once again, as in the case of the competition among politicians seen in item 6), the outcome is not the complete elimination of illusion, but Tiebout competition will promote the elimination of those illusions that can be dispelled at a cost less than the damage they do. Further, once again competition among the suppliers of the public goods and services tends to return the surplus value to the citizens.

3) The three preceding constraining factors on the supply side assume a given set of jurisdictions with given political systems or institutional structures. As West and Winer (1980, 620-621) note, competition with respect to institutional structure, both within a given jurisdiction and among jurisdictions, can provide incentives to offer fiscal accuracy as an alternative to fiscal illusion. The ability to choose and alter the political system limits the sway of fiscal illusion. If the institutional structure allows the damage done by fiscal illusion to be greater than the cost of changing the institutional structure, individuals have the incentive either to institute such

changes or to move to a jurisdiction with a different political mechanism.

Institutional structure is an implicit force in Buchanan's early writings (1960, 1964a, 1967), which primarily expand upon the writings of Puviani and Faisani. He reflects the situational framework they employ. In it a ruler uses the misperceptions of the populace to his own ends, and in it the only threat to his power to do so is the potential uprising of the people to overthrow of the government by revolution. The people have no other means of changing fiscal variables, and the ruler has no competitors seeking to gain his power for themselves. Docile submission and social upheaval seem to be the only two modes of action available to the people who are misled by the illusions. Within this structure the existence and importance of fiscal illusion may indeed by easier to document, but its relevance for modern Western democracies is certainly questionable.

The effect of institutional structure upon the ability of the government to deviate from the median preference about a fiscal parameter is a central concern in the work of Pommerehne and Schneider (1978). They examine three different institutional structures (direct democracy, representative democracy with referendum, and representative democracy without referendum), finding a significant influence on the extent of fiscal illusion. This is an important finding and suggests a broadening of the scope of

the inquiry to encompass the conditions which cause those institutional differences. One possibility is that the choice of a political system that reduces fiscal illusion may generate other costs that are greater than those of fiscal illusion. West and Winer argue that "the current system reflects a choice (subject to the costs and benefits involved) between institutions or governments that maximizes the utility of the median voter, given the behavior of the government under each alternative. Otherwise we should have observed some other budgetary process."[24]

4) Just as prices act as signals in markets where information is costly, so signals can convey information to citizens about costs and benefits of government expenditures in a way that allows them to economize on costly information. Politician stances are one such signal. So are the stances of other voters or of other political observers (either of which may under the right circumstances cross that very permeable line that divides citizens from politicians). Again, such signals may summarize a great deal of complex information, and because of the concomitant loss of information reduce but not eliminate the distortions caused by illusion. There is again an "optimal amount of fraud," from the viewpoint of the voter as well as from that

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[24]West and Winer (1980, 611). A similar argument has been attributed to Dr. Pangloss.

of the politician, credence qualities playing an important role. Similarly, a vote for a reliable politician may convey as accurate a signal about relevant voter preferences as a more accurate but also much more costly detailed analysis by that citizen of the intricacies of the budgetary choices to be made.

IV. Summary and Implications

In summary, though the existing literature evinces a recurrent concern that fiscal illusion results in misallocation of resources to and within the public sector, especially through the public officials' manipulation of citizens' perceptions, we have seen a considerable array of forces that have significant power to contain the ability of such illusion to impose significant burdens upon the electorate. Foremost among these is the political agent who competes for the rewards of office. Beyond this, "demand" side forces include 1) the possibility, varying in strength with the effect of illusion upon wellbeing, that the citizen will perceive the contradiction between the perceived level of wellbeing under illusion and the level actually attainable; 2) the possibility of his being the decisive voter and consequently of his illusion alone determining the outcome; 3) his effect upon opinion polls or upon the positions of other voters and the resulting impact upon the final outcome; 4) the importance of accurate perception of

fiscal parameters for private decisions (such as choice of community of residence, tax avoidance, work/leisure decisions, owning/renting housing, entrepreneurial activities); and 5) the potential of securing information efficiently from outside sources. On the "supply" side, additional forces limiting the amount of illusion that can be generated include 1) competition from potential politicians whenever the rewards exceed those available from private economic activities within the household or in the business sector; 2) alternative illusion levels offered by other jurisdictions; 3) alternative levels of illusion offered by other potential institutional arrangements within the same jurisdiction; and 4) the availability of signals that transmit information efficiently.

I would not be inclined to suggest that fiscal illusion does not exist and have an impact, in spite of the many limitations on that impact, but it may be that the existing limits are largely effective and that they are economically efficient in that the costs of further decreasing the amount of illusion would be greater than the benefits of the resulting decrease. If, however, fiscal illusion is indeed found to distort fiscal choices in a way that significantly lowers social welfare, then it is to the operation of these limiting forces that we may look in trying to reduce those distortions. Some indication of the extent of fiscal illusion is needed to suggest how hard to pursue such

remedies.

At this stage, it seems that the issue of the impact of
fiscal illusion upon budgetary outcomes can be resolved only
through empirical methods, and it is to this that we turn in
Chapter Five. It will be seen that the existing empirical
studies that have sought to document the existence and
importance of fiscal illusion are seriously flawed,
particularly by the possible endogeneity of the illusion
variable. The state tax "windfalls" from the federal Tax
Reform Act of 1986 provide a unique opportunity to test for
fiscal illusion in the case of an exogenous illusion
variable.

CHAPTER FIVE

THE EMPIRICAL INVESTIGATION OF FISCAL ILLUSION
AND NEW EVIDENCE FROM THE 1986 TAX "WINDFALLS"

I. Existing Econometric Evidence on Fiscal Illusion
and Its Theoretical Context

Through most of the history of the concept of fiscal illusion, theory and casual observation lent ready credence to the existence and importance of the phenomenon; the preceding chapters have given cause to reconsider this ready acceptance. It is only more recently, with the new technical possibilities that advances in computer capabilities have opened, that fiscal illusion has been the subject of formal econometric analysis. In the past fifteen years a series of econometric studies has examined the hypothesis of fiscal illusion in a variety of specific manifestations. Oates (1988b) summarizes and assesses this literature. Following Oates, Chapter One noted many of the significant studies, grouping them according to the variable that is misperceived into the five categories of complexity of the tax structure, renter illusion with respect to property taxation, income elasticity of the tax structure, debt illusion, and the flypaper effect.

Most of the studies surveyed have employed the

theoretical framework for the estimation of demand functions for local public goods pioneered by Borcherding and Deacon (1972) and Bergstrom and Goodman (1973).[1] In that original work on the demand for local public goods, a multiplicative demand function was posited for the median voter relating the level of public goods demanded by that voter, G^*, to his income, Y, and the tax price, T, of those goods:

$$G^* = aT^{\alpha}Y^{\beta}. \tag{1}$$

His tax price is the product of his tax share, t, and the price that must be paid for him to consume an additional unit of the public good. That unit price in turn depends upon the cost of an additional unit of the public good and the degree to which it is nonrival in consumption. A congestion parameter, γ, whose value ranges from 0 for a pure public good to 1 for a pure private good, is incorporated into the equation, with

$$G^* = GN^{-\gamma}. \tag{2}$$

When both sides of the demand equation are multiplied by the unit price of the public good and logarithms are taken, the result is an equation of the form

$$\ln E = \ln a + (\alpha + 1)\ln P + (\alpha + 1)\gamma \ln N + \alpha \ln t + \beta \ln Y$$
$$+ v,$$

$$= c + \sigma \ln N + \alpha \ln t + \beta \ln Y + v, \tag{3}$$

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[1] A recent paper by Oates (1986) summarizes and assesses this body of work; the remainder of this section follows his analysis.

which allows the estimation of α, β, and σ from cross-sectional data. Further assumptions, involving some troublesome practical compromises, are needed to link median-voter income and tax share with available income and tax statistics.[2]

Virtually all of the subsequent empirical studies have followed this early pattern. Typically, a model of the form:

$$E = \alpha X + \beta F + \epsilon \qquad (4)$$

is posited, relating E, the level of government expenditures, to X, a vector of independent variables not affected by illusion, to F, a vector of variables subject to fiscal illusion, and to the usual disturbance term, ϵ. Rejection of the hypothesis H_0: $\beta_F = 0$[3] is construed as evidence that the illusion imparts a significant bias to the level of public expenditures and that the resulting misallocation of resources reduces the level of wellbeing. Yet, in spite of the many and varied studies undertaken, Oates argues that the failure to deal with the possible

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[2]The presumption that aggregate information correlates readily to the data relevant to the individual voter who happens to have the median preference is a cause for some concern. It may be argued that a better approach is to use the aggregate data and test for its significance.

[3]One variant of this general scheme occurs in the flypaper case, where grants-in-aid are seen as increases in income which, without illusion, should have the same impact on the dependent variable as ordinary increases in income; in this case the null hypothesis takes the form $\beta_F = \beta_Y$, where β_Y is the coefficient on ordinary income.

endogeneity of the illusion variable and to discriminate among competing hypotheses seriously compromises the existing results: in his view, compelling empirical support for the existence and significance of fiscal illusion has yet to be found.

II. The Theoretical Context of This Empirical Study

This study of fiscal illusion considers the changes in prospective state tax revenues generated by the Tax Reform Act of 1986, the so-called "windfalls," as a source of fiscal illusion and tests the illusion hypothesis within the same theoretical and empirical structure established in the existing literature, though with some modifications.

The framework for the empirical analysis of expenditures and the role of fiscal illusion just presented incorporates the same variables seen to be significant in the consumer choice theoretical framework developed in Chapter Three. One factor in the median voter's choice of the level of public goods, G, was the perceived tradeoff between public and private goods, i.e., the perceived cost of public goods, C, in terms of private goods forgone. Another was his income and wealth, which likewise exerted their effect on the budget constraint that determined his optimal combination on his indifference map. This income factor is embodied in the level of private goods available to him if he were to spend all his income on them, X_j; given

the prices of private goods, X_j is determined by his money income. Grants-in-aid, R, also provide a source of funds that expand the budget space; these grants may be partially determined by the level of G and by a variety of other exogenous variables that reflect the demographic characteristics and other factors important in determining the size of grants from federal agencies to the states. The contours of the indifference map, embodying his tastes and preferences, T_j, are also an important force in determining his optimal combination of public and private goods. Thus far, then, we have

$$G_j = f(C, R, X_j, T_j), \text{ with} \tag{5}$$

$$R = g(G_j, \text{ other exogenous variables}), \tag{6}$$

formulated in real terms.

Given the prices of the goods and services, the real quantities in these equations can be translated into nominal values, the form in which the statistical observations are available. Levels of state government provision of goods and services are then measured in terms of expenditures, E, while C, R, and X_j are now measured in dollar terms, with X redenominated as Y, or income.[4] The functional form will also change to reflect the use of nominal variables. This

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[4]The discussion in Chapter Three of the difficulty in specifying units and prices of the public good is relevant here. Separating out the price and quantity components of public expenditures, while conceptually easy, has been a difficult quest in practice.

general formulation, then, fits clearly within the Borcherding-Deacon/Bergstrom-Goodman framework; some further adaptations of that approach appropriate to the empirical work of this study are discussed later.

This study also has a particularly close relationship to two cases that have been the subject of numerous studies in the existing literature: the flypaper hypothesis and the revenue elasticity hypothesis. These have in common the idea that when additional revenues not consciously appropriated to public uses through legislated tax increases become available, fiscal illusion on the part of the voters allows public officials to use those revenues to increase public expenditures to serve their own ends rather than disposing of them as the voters would prefer. In the flypaper case, the additional revenues come from intergovernmental grants; in the revenue elasticity case, they are generated by progressive elements in the tax code which increase tax revenues by a higher percentage than the income increases that give rise to them. In both cases, the additional revenues are "automatic" in that they do not result from the conscious actions of the voters or their representatives. Were these revenues returned to the taxpayers in the form of a tax cut, the taxpayers would use them as any other income increase, according to their tastes and preferences and according to the structure of prices they face in the marketplace and in the collective choice

mechanism. Collective goods and services provided by the government would be but one of many sources of satisfaction they would choose to obtain with their additional funds.

The studies of the effects of these two sources of automatic revenue increases have found that they do not have the same impact on levels of government spending as ordinary increases in income, supporting the hypothesis of fiscal illusion: that public officials have the ability to retain these revenues for public uses because of fiscal illusion on the part of the voters, who do not correctly perceive that the funds could be returned to them in the form of a tax cut. Persuasive as this rationale is, the possible endogeneity of the grants-in-aid variable and of the tax-structure elasticity variable requires careful econometric treatment; in both cases the causation may be reversed, with expenditures partially determining the amount of grant monies received and the degree of revenue elasticity built into the tax structure. As yet, the econometric problems presented by the endogeneity of the revenue elasticity variable have not been dealt with in a compelling way. The flypaper studies have been more careful to correct for the endogenous portion of grants-in-aid. Oates (1988b, 78) argues, however, that competing hypotheses, particularly the Romer-Rosenthal agenda control hypothesis, may account for the econometric results.

The windfalls generated by the 1986 Tax Reform Act

provide a unique opportunity to examine the issue of fiscal
illusion for the case of an exogenous illusion variable.
Though widely perceived as costless boons, the "windfalls"
do not in fact represent "manna from Washington" (Gold,
431). Like the revenues from grants-in-aid and from an
income-elastic tax structure in a period of rising incomes,
the windfalls are "automatic" changes in state government
revenues, but, in contrast, these changes are an unintended
byproduct of national legislative action, independent of the
states' decisions concerning the level of expenditures. Has
fiscal illusion allowed the politician-bureaucrats the
leeway to direct these changes in revenues to their own ends
rather than the citizens' interest? The next section
examines the origins and characteristics of the windfalls
themselves. It is followed by econometric testing of the
hypothesis of fiscal illusion for these exogenous,
"automatic" revenue changes.

III. The Tax Reform Act of 1986 and the "Windfalls"

The Tax Reform Act was passed by the U. S. Congress in
1986 to promote fairness by lessening the transfer of
economic power to those with economic advantages in areas of
tax-preferred activities, to reduce the costs of complying
with complex and obscure tax provisions, and to enhance the
efficiency of decision making by minimizing the tax
consequences of individual choices. For the federal

personal income tax, it significantly lowered marginal tax rates, simplified procedures, and broadened the tax base. Enacted in response to the concerns of the national legislature over these issues of fairness, simplicity, and efficiency, the act has a largely unintended impact upon state tax revenues. This impact can be understood better by considering its effects in terms of two distinct components, one caused by automatic state tax revisions triggered by the changes in the federal tax code, another by behavioral changes induced by the new federal tax treatment of various economic activities.

Part of the impact upon state tax revenues, then, results from how the Federal tax code is reflected in state codes. Even if individual households and firms made no changes in their behavior, tax revenues for states would change if provisions in state codes link state tax liabilities to elements of the federal tax code that were altered. Because of a concordance of value judgments and to diminish costs of compliance for the individual and for the state -- recordkeeping and computational costs, administrative and enforcement costs -- many states do in fact choose to link in some way to the federal tax structure. The most common individual provisions that state codes couple to[5] include

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[5]The table and footnotes in Appendix A of the U.S. Advisory Commission on Intergovernmental Relations study (1987) describe these linkages. Tannenwald (1987) also

the standard deduction,

itemized deductions,

the dollar amount of the personal exemption,

the number of personal exemptions,

the treatment of long-term capital gains,

the IRA deduction,

the two-earner deduction,

the state and local income tax deduction,

the state and local property and sales tax
deduction,

the personal interest expense deduction,

federal credits, and

federal itemizing status.

In addition, some states allow a deduction for the federal tax liability. Further, particular combinations of these and other individual provisions form the basis for state tax collections when states couple to federal definitions of gross income, adjusted gross income, taxable income, gross tax liability, or actual tax liability. Because each state chooses its own method of linking from the myriad of possible combinations of particular provisions, the impact of this linkage varies widely over the states.

The impact of the Tax Reform Act upon state revenues has a second component that applies to all states, whether

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discusses many of these possibilities.

or not they link to federal income tax provisions. By
altering the relative after-tax prices of different economic
activities, the federal tax changes generate systematic
adjustments in individuals' behavior. Indeed, it was a
major purpose of the federal tax reform to make economic
activity more rational and ultimately to generate greater
satisfaction for individuals by removing distortions in
relative prices introduced by a patchwork of individual tax
provisions accumulated over the years.[6] These changes in
behavior, by affecting the allocation of resources to
activities that are taxed at the state level, have an impact
upon the amounts of state taxes collected. Even if a state
has no income tax, other sources of state revenues may be
affected because the federal tax code changes generate
behavioral changes that affect other taxed activities.
These behavioral responses and their impact are particularly
difficult to analyze and predict.[7]

Tannenwald effectively introduces a framework for the
linkage to the federal code and the many possible variations

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[6]Even changes in the tax provisions that have a small
or even zero estimated impact on tax revenues can be very
important sources of enhanced wellbeing by changing
behavior, as, for example, when lower tax rates allow an
individual to attain a higher indifference curve by
increasing the individual's optimal quantity of labor
supplied and leaving his tax liability unchanged.

[7]The ACIR estimates of personal income tax windfalls
used in this study attempt to incorporate such behavioral
changes.

it embodies by describing the process an individual goes through in computing his federal income tax liability:

(1) adding up his wages salaries, interest, dividends, rents, royalties, and other includable items to determine his gross income,

(2) subtracting from this figure certain costs of earning income and other allowable items to get his adjusted gross income,

(3) further subtracting personal exemptions and either a standard or itemized deduction to obtain his taxable income,

(4) applying a set of rates to his taxable income to obtain his gross tax liability before tax credits, and

(5) subtracting any tax credits he is eligible for to determine his actual tax liability to the federal government.

The specific provisions of the Tax Reform Act of 1986 can be introduced into this broad framework. Its general thrust is that it significantly lowers tax rates for individuals and vastly simplifies them, while broadening the tax base. Changes in filing requirements raise the income level for which a return is required: many individuals have been removed from the tax rolls. Overall, tax liabilities are about six to seven percent lower. These general effects resulted from the many specific provisions that change the computation of an individual's federal income tax liability.

As Tannenwald concluded, "TRA alters the rules at every stage of the process."

The determination of the individual's <u>gross income</u> has been altered by the Act's limitation of the ability to shift income to a child to a maximum of $1000 per child. This change raises gross income and ultimately the federal tax liability of the individuals affected by it.

The adjustments to gross income involved in calculating <u>adjusted gross income</u> (AGI) have been greatly restricted by the Act, with AGI and federal tax liabilities increasing as a consequence. These changes include

> the repeal of the partial exclusion of dividends,
>
> the repeal of the exclusion of unemployment compensation,
>
> the repeal of the two-earner deduction,
>
> the inclusion of the full amount (rather than just 40%) of net capital gain as income,
>
> the phasing out of IRA deductions for middle- and high-income earners,
>
> the limitation of the deductibility of certain business expenses, including employees' meals and entertainment expenses and business-related travel expenses,
>
> the restriction of the deductibility of losses from passive activities and of offsets of credits from passive activities, and

the repeal of the exclusion of scholarship aid for

nondegree students, and of scholarship

amounts for room and board or travel, and of

pay for services required by all degree

students.

Exemptions and deductions used to determine <u>federal</u>
<u>taxable income</u> were also thoroughly reworked. Personal
exemption amounts have almost doubled, from $1080 in 1986 to
$1950 in 1988 (and on up to $2000 in 1989), though they are
phased out at higher levels of income, and though no longer
can one claim one's own exemption while being claimed as a
dependent by another. Standard deduction amounts are
substantially higher for 1988 and after and have replaced
the zero bracket amount that had been built into the tax
table and the tax rate schedule. Additional standard
deductions for those over 65 or blind largely offset the
additional exemptions lost by those individuals. All these
changes together tend to reduce amounts of taxes owed.

For those who itemized deductions in the past, much of
the advantage of itemizing has been lost with the
elimination or limitation of special provisions. These
changes include

the restriction of deductibility of mortgage

interest,

the phasing out, over four years, of the

deductibility of other personal interest,

the repeal of the deductibility of state and local

sales taxes,

the restriction of moving expense deductibility to

itemizers only,

the restriction of the deductibility of charitable

contributions to itemizers only,

the limitation of deductibility of medical and

dental expenses to amounts over 7½%

(rather than 5% as before) of adjusted gross

income), and

the qualification that other miscellaneous

itemized deductions are deductible only if

they exceed 2% of adjusted gross income.

Tax liabilities tend to rise as a result of each of these changes.

The tax rates applied to taxable income to determine the gross tax liability have been significantly lowered. The rate structure has been vastly simplified, from fifteen brackets in 1986 to two, 15% and 28%, in 1988 (though the phaseout of the 15% rate and the personal exemption at higher incomes effectively creates four brackets for each taxpayer). In addition, the repeal of income averaging simplifies the procedure and increases the tax liability for those individuals affected. Also affecting the actual tax liability is the repeal of the partial credit for political contributions.

Each change generates behavioral adjustments; each affects the linkages with state tax codes. The combined impacts of all these changes and their repercussions are embodied in the changes in the state tax revenues that resulted.

IV. Estimates of State Tax Windfall Amounts

For each of the fifty states, estimates of the personal income tax windfall amounts, both total and per capita, have been calculated and are presented in Table 1. As the table indicates, estimated windfalls vary widely in per-capita terms, ranging from a high of $64.37 in Colorado to a low of -$32.64 in Vermont. The wide variations reflect different state populations and incomes, as well as different ways and degrees of linking with the federal tax code.

0%

Seven states (AK, FL, NEV, SD, TX, WA, WY) have no personal income tax, so that there can be no impact upon personal income tax collections. (Figures above the states show ACIR percentage estimates of the windfalls.) Even they may have differences in total tax collections because of the effects of behavioral adjustments to federal provisions upon other state sources of revenue.[8] Another four states

-1%

(NH, NJ, PA, TN) do tax personal income but do not base the amount on the federal tax code in any way. For these states, again, there should be only the effects of

---

[8] They are listed by ACIR as having no windfall.

TABLE 1

TOTAL AND PER CAPITA TAX WINDFALL AMOUNTS

			W^9	WPC^{10}
1	Connecticut		33075.6	10.37
2	Maine (ME)		6742.6	5.74
3	Massachusetts	(MA)	-72346.0	-12.41
4	New Hampshire		-248.5	-0.24
5	Rhode Island		-31531.4	-32.34
6	Vermont		-17655.8	-32.64
7	Delaware		39370.5	62.20
8	Maryland		154363.8	34.59
9	New Jersey		-20525.9	-2.69
10	New York		1042407.4	58.65
11	Pennsylvania		-26556.8	-2.23
12	Illinois (IL)		185175.5	16.03
13	Indiana (IN)		13268.6	2.41
14	Michigan (MI)		32482.4	3.55
15	Ohio		194381.9	18.08
16	Wisconsin		-44781.3	-9.36
17	Iowa (IA)		170000.0	59.63
18	Kansas		93145.3	37.85
19	Minnesota (MN)		19485.9	4.62
20	Missouri (MO)		200964.6	39.67
21	Nebraska		-31664.5	-19.82
22	North Dakota		-8804.2	-12.97
23	South Dakota		0	0.00

[9]Total windfall amounts are in thousands of dollars. These values were calculated on the basis of the preliminary percentage estimates of the U.S. Advisory Commission on Intergovernmental Relations and 1986 state income tax figures. The ACIR estimates reflect the assumption that state legislatures do not alter state tax laws in any way in response to federal tax reform. Data for four states (Iowa, South Carolina, Arizona, and New Mexico) not available from the ACIR study were supplied from National Conference of State Legislatures figures.

[10]Per capita windfall amounts are in dollars per person. These figures are based on the figures in the first column and on population figures from the U.S. Bureau of the Census for July 1, 1986 (provisional).

24	Alabama (AL)	7572.9	1.87
25	Arkansas (AR)	-10197.4	-4.30
26	Florida	0	0.00
27	Georgia	19451.9	3.19
28	Kentucky	24596.8	6.60
29	Louisiana	128138.1	28.47
30	Mississippi (MS)	10904.5	4.15
31	North Carolina	-22067.5	-3.49
32	South Carolina	-4536.5	-1.34
33	Tennessee	-674.3	-0.14
34	Virginia	195684.5	33.81
35	West Virginia	4785.9	2.49
36	Arizona	110000.0	33.16
37	New Mexico	54000.0	36.51
38	Oklahoma	123776.3	37.45
39	Texas	0	0.00
40	Colorado	210304.8	64.37
41	Idaho	-2559.7	-2.55
42	Montana	32721.0	39.95
43	Utah	85793.2	51.53
44	Wyoming	0	0.00
45	California	227361.2	8.43
46	Nevada	0	0.00
47	Oregon	0	0.00
48	Washington	0	0.00
49	Alaska	0	0.00
50	Hawaii	-4677.9	-4.40

behavioral adjustments to the federal changes upon other
state revenues to contend with.

Between this extreme of independence from the federal
tax code and the opposite extreme of complete, automatic
linkage to it, the degree to which states are affected will
vary, in general according to the stage at which they
link to the federal code, and in part, to which particular
aspects of each stage they have chosen to couple their
code.

<u>1%   -2%   11% 4%   -1%</u>
Five other states (AL, ARK, CT, MS, NC) couple to more
or less isolated specific provisions of the federal code,
and there is considerable variation in this group.
Mississippi, whose estimated windfall is about
$10 million, automatically couples to federal itemized
deductions, to state and local income and property and sales
tax deductions, and to the personal interest expense
deductions. On the other hand, North Carolina's only link
is to the IRA deduction as of January 1983.

Four states couple to federal taxable income, but
<u>-1% <1% <1%</u>
three (ID, OR, SC) do so as of a specific date, while only
<u>19%</u>
one, Utah, does so automatically. Automatic coupling
incorporates almost all of the base-broadening provisions,
including those in deductions and exemptions, so that the
estimated impact on Utah is substantial, $89 million. Those
which couple as of a specific date will require a conscious
decision to update their linkage to reap a windfall.

Without that vote, little windfall impact will accrue.
<pre>   ne   2%   1% -1% 1%   ne   3%   2%</pre>
Twenty-five states (AZ, CA, GA, HA, IN, IO, KY, ME,
<pre>1%   1% -2%</pre>
MN, WV, WI) couple to adjusted gross income, but of these,

eleven do so as of a specified date, and like those states

above, will experience little windfall without conscious

legislative action to update their references. The
<pre>   22% 10% 7%   16% 28% 8%   1%   18%</pre>
group of fourteen states (CO, DE, IL, KA, LA, MD, MI, MO,
<pre>19% ne   9%   7%   18% 9%</pre>
MT, NM, NY, OH, OK, VA) which couple automatically to AGI

shows the greatest windfall impacts for the most states.

Only Massachusetts couples to federal gross income, but

it does so as of a specific date, so that without action to

update its linkage, its windfall is also small. Though the

changes in rates do affect the gross federal tax liability,

no states couple to this alone.
<pre>   -9% -12% -11% -11%</pre>
Those states (NEB, ND, RI,   VT) which use federal tax

liability as the basis for their state tax automatically

incorporate all provisions of the Tax Reform Act and are

directly affected by the lowering of the tax rates and the

simplification of the tax rate structure that tend to

decrease individuals' tax liabilities to the federal

government. Since federal tax liabilities have decreased in

these states -- the broader base less than offsetting the

impact of the lower rates -- windfall amounts in these

states are negative.[11]

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[11]Some states allow a deduction for federal income tax
paid. These too automatically incorporate the federal
changes to the extent that this provision affects their tax

V. The Tax Windfalls as a Test of the Illusion Hypothesis

The general formulation of the demand equation for public goods discussed on pages 97-99 can be augmented and rewritten in a linear regression formulation that is suited to the statistical analysis of the impact of the state tax windfalls, while consistent with the literature on the demand function for public goods in a median voter context and with the body of empirical work on fiscal illusion that already exists. For this linear, cross-sectional regression analysis, then, the budgeted expenditures of the state are related to the windfalls and the other relevant variables in the following model:

$$E_i = \beta_0 + \beta_1 Y_i + \beta_2 W_i + \beta_3 R_i + \beta_4 C_i + \beta_5 S_i + \beta_6 N_i$$
$$+ \beta_7 U_i + \beta_8 D_i + \epsilon_i, \tag{7}$$

where

E_i = the budgeted expenditure of the ith state

(FY 1988), in thousands of dollars per capita,

Y_i = personal income for residents of the ith state

(1986), in thousands of dollars per capita,

W_i = estimated windfall amount for the ith state,

as presented in Table 1, in dollars per

capita,

---

revenues. There are fifteen such states (CO, DE, KA, LA, MO, MT, OK, AZ, IO, KY, MN, UT, OR, ND, AL), including three (OK, MN, ND) with this in an optional setting, and two (DE, OR) with a partial deduction. See ACIR Appendix A for details.

R_i = intergovernmental revenue of the ith state

from the federal government (1986), in dollars

per capita,

C_i = an indicator of the cost of providing public

goods as measured by average October earnings

of the employees of the ith state, per full-

time employee (1985), in dollars,

S_i = an indicator of the state's share in providing

public goods, as measured by the percentage of

state and local general revenue of which the

ith state was the final recipient (1984),

N_i = the population of the ith state (1986), in

thousands,

U_i = percentage of the ith state's population

living in metropolitan areas (1985),

D_i = population density for the ith state (1985),

in persons per square mile of land area.

The data used in running the regression[12] reflect the
information available to lawmakers early in 1987 as they
deliberated the first budgets to be passed after the fall
1986 enactment of the Tax Reform Act. It is in the
resulting budgets for FY1988, covering expenditures from
approximately mid-1987 to mid-1988, that the impact of the
windfalls could first be expected to show itself.

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[12]The data sources are given in the Appendix.

The Bergstrom-Goodman/Borcherding-Deacon approach employed a multiplicative demand function. The linear formulation used in other studies and used here avoids two econometric problems: the specification of the properties of the disturbance term in a way that maintains the desirable properties of the estimators,[13] and the fact that negative values of the windfalls preclude their transformation into logarithmic form.[14]

The use of per capita figures reflects the recognition that state governments provide not only pure public goods but also goods and services which are at least partially private, having significant divisibility among the individuals who consume them. Munley and Greene (1978) established the implications of this consideration early on by demonstrating that Wagner's findings (1976) supporting the revenue complexity hypotheses evaporated when the specification of the equation was altered to allow for the possibility of congestion. Other empirical work supports

---

[13]ϵ multiplied into demand function has two untenable implications: that per capita expenditure has negative values whenever the disturbance term has a negative value (assuming constant term is positive; the reverse, if it is negative) and that, if $E(\epsilon) = 0$, $E(Y) = 0$. e^{ϵ} multiplied in avoids those problems, but the relationship between e^{ϵ} and ϵ is nonlinear, and if e^{ϵ} is assumed to have the standard, desirable properties, then its logarithmic transformation is heteroskedastic.

[14]The linear specification may be conceptually more appropriate also. At least in the case where the windfall amount is zero or negative, a multiplicative demand function would imply zero or negative expenditure levels.

the hypothesis of significant congestibility of local public goods, with congestion parameter estimates generally approaching unity. Even though recent work has suggested that these estimates may be biased upward, the existence of significant congestion provides solid ground for the use of per capita figures for empirical work.

Y_i and R_i reflect the ability to pay for public goods. The recognition of the endogeneity of R further differentiates this treatment from most of the work on the demand for public goods, even though the existence of simultaneity has long been recognized, with Gramlich's (1977) survey noting this point in the work of Oates and of Pogue and Sgontz. The endogeneity of R is made explicit in equation (6), which shows R as a function of G and "other exogenous variables." Outside exogenous variables used in this study include the percentage of the population seventeen years and under, the percentage of the population sixty-five years and older, federal surface area, highway mileage, percentage black and Spanish-origin minorities, and percentage of persons below the poverty level. These items are important in the various formulas used to determine grant levels for programs administered by federal agencies. Such examples as the Department of Transportation's highway safety grants and urban formula capital grants, Health and Human Services's medicaid and child support and welfare programs, Labor's summer youth employment programs,

Education's school program improvement grants, and Agriculture's food programs for children are among the many examples of programs whose formulas use these variables in determining grants to individual states. As discussed later, the impact of the endogeneity has implications for the estimation technique appropriate for equation (7) rather than its form.

The C_i variable is an indicator of the cost of the public goods. In the Bergstrom-Goodman/Borcherding-Deacon analysis, if there are constant returns to scale, and production functions are identical across states, and if capital is mobile across states but labor is not, then unit costs across states will vary with the price of labor. Though a standard assumption in the literature on local public goods, the uniformity of the production function has been called into question by the work of Hamilton (1983) and of Schwab and Zampelli (1987) that views community characteristics as "inputs" in the production function. If this factor is significant, the misspecification would bias not only the estimated coefficient on income but the others as well. Though a persuasive argument has been advanced, a convincing case for the direction and extent of this impact has yet to be made; further techniques for incorporating this view into the demand for public goods without the hobbling assumption of a linear expenditure system must be developed before this insight is usable. The assumption of

constant returns to scale within each jurisdiction, also standard, is less likely to be restrictive in an analysis like this one that uses state governments rather than local governments as the cross-sectional units.

Consistent with the use of per capita figures to reflect the assumption that the goods and services provided by the state have a significant private-good component, the inclusion of N_i allows for the effect of the publicness of those goods in making per capita provision cheaper as population increases. To the extent that public goods are nonrival in consumption, a larger population allows their cost to be spread among a larger number of taxpayers, decreasing the tax price to the individual, whatever the tax structure of the community. N_i may also capture possible effects of economies of scale in production of the goods, though, as discussed in conjunction with the production function, these are generally assumed to be negligible. Another interpretation of the N_i variable is as an indicator of the rigidities of the public choice mechanism, as large numbers of citizens increase the difficulty of arriving at a consensus. Unlike the other two population effects, such rigidities may exert an upward pull on the expenditure level. Borcherding (1977) has suggested this possibility, attributing the influence of population size to its enhancement of the power of bureaucrats whose budget-maximizing behavior fits the pattern described by Niskanen.

Oates (1988a) also sees a possible positive impact of population on expenditures from a different source, arguing that more populous jurisdictions tend to expand the range of services offered. His argument is in the context of public goods provided by local governments rather that those provided by states, where this "zoo effect" may be less relevant.

For this study, the regression equation should incorporate an additional variable reflecting the fact that the state government is the cross-sectional unit. The division between state and local governments of the responsibility for providing public goods varies greatly among states and is a major factor in explaining the level of state expenditures (NASBO, 3). The "share" variable, S_i, allows for this effect.

Besides these factors generally agreed to affect decisions about the amount of public goods, U_i and D_i are included as "tastes and preferences" or "need" variables that vary across states and may affect the amounts of public goods desired. The constant term will also reflect the net impact of the nonrandom component of other "taste" variables.

The W_i variable introduces the windfalls as a potential determining factor in the level of expenditures. This variable is of particular interest in this study because of the windfalls' potential susceptibility to fiscal illusion,

being widely perceived as generating costless additions to state coffers; it is of particular interest in the illusion literature as a whole because it is an illusion variable whose values are exogenously determined. This feature distinguishes the windfalls from the sources of illusion in the existing econometric studies. Further desirable characteristics make W_i an appealing object of study. The matrix of its partial coefficients of correlation with the other variables reveals no close correspondences; this should facilitate the isolation of the effect of the windfalls from the effects of the other independent variables. Moreover, as analyzed in the preceding section of this study, the W_i variable itself shows the high degree of variation from state to state needed to determine its effect upon the dependent variable.

The hypothesis of interest from the standpoint of fiscal illusion focuses on the value of β_2. It is worth noting that the hypothesis appropriate for the windfall case differs from the hypothesis of the studies that examine grants-in-aid for evidence of fiscal illusion. In those studies the additional funds represent additional revenues that come into the state's treasury primarily from sources outside the state. These "automatic" increases in state government revenues truly increase the total income of its residents; in the absence of illusion, this income could be returned to the taxpayers in the form of tax cuts, as an

increase in their disposable incomes. In the absence of illusion, then, these additional revenues should induce the same increases in state public as increases in income from other sources do, and the corresponding null hypothesis is that the coefficients on both of those revenue variables are the same.

In contrast, the tax windfalls of this study do not represent an exogenous injection of income, as the term "windfall" misleadingly suggests. Rather, these are changes in state tax revenues that occurred when the federal government shifted the tax rules, altering the state's claim upon its residents' incomes. They are in fact "unlegislated tax changes" and should, in principle, have no effect on voters' preferred levels of expenditure. The appropriate form for the null hypothesis in the windfall case, corresponding to the absence of illusion, is $H_0: \beta_2 = 0$. Choices of different levels of state government expenditures and the corresponding taxes were possible before the Tax Reform Act of 1986 but such provisions were not enacted. In the absence of illusion, the choice of the voters should not change because of the "windfalls"; the unlegislated tax changes should be "returned" to the voters in the form of unchanged tax and expenditure levels. The alternative hypothesis, consistent with an illusion impact, is $H_1: \beta_2 > 0$, implying that higher windfalls are in fact related to higher spending levels.

To correct for the possible endogeneity of the grants-in-aid variable, with its implications of biased and inconsistent estimates for all coefficients and invalid conclusions from the associated tests of hypotheses, a two-stage least squares (2SLS) estimation technique was employed. Accordingly, in the second stage of the estimation process, an unbiased, consistent estimator of the exogenously determined component of R_i, $\hat{R}_i$, replaces R_i in the regression equation. This estimator has the additional desirable property of being uncorrelated with ϵ_i, so that in the second stage, least squares will give consistent estimates of all the coefficients. The values of $\hat{R}_i$ for this sample were determined in the first stage using additional outside exogenous variables noted earlier that are important in the various formulas used to determine grant levels for programs administered by federal agencies. Most of the previous studies of illusion have not modified the estimation procedures to correct for the possible endogeneity of grants-in-aid.

Results of the 2SLS estimation of equation (7) are presented in equation (8),

$$E = -3.306 + 0.053Y + 0.001W - 0.0004R + 0.001C + 0.034S$$
$$\quad (-7.28) \quad (1.53) \quad (0.54) \quad (-0.34) \quad (3.41) \quad (4.94) \qquad (8)$$
$$\quad + 0.000006N - 0.003U + 0.00004D$$
$$\quad \quad (0.51) \quad (-0.60) \quad (0.11)$$
$$R^2 = 0.75$$
$$n = 50$$

with t-values for the estimated coefficients shown in parentheses. Only the cost variable, the share variable, and the constant term are significant; each is significant at the 0.01 level. These results are consistent with most of the studies in the literature.[15] Of particular interest, $\hat{\beta}_2$, the estimated coefficient of the windfall variable was not significant.

There remains some concern that the impact of the relatively small windfalls could be swamped by the other forces determining absolute levels of expenditures in the earlier form of the regression equation. State expenditures per capita ranged from $454.21 to $4,237.45, with a mean value of $928.52, while the windfall per capita ranged from -$32.64 to $64.37, with a mean absolute windfall per capita

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[15]The fact that the estimated coefficient on income is not significant is of some interest. The usual assumption is that income is a significant determinant of state government expenditures and that public goods are normal (positive income elasticities) at least and possibly superior (income elasticities > 1). But a review of the existing empirical studies of fiscal illusion turns up some interesting results: as often as not the estimated coefficient on income is not significant, and, when it is, its values are difficult to interpret. (Curiously, almost all the support is associated with a multiplicative specification of the demand function.) One possible reason is that because of their redistributive effects, state government expenditures may not necessarily change in the same direction as income levels. If income decreases, individuals may prefer more expenditures on redistributive programs. Moreover, a rise in income could result in the need for fewer public goods (parks, schools, libraries) as people can afford more private goods (large yards, private schooling, books). The case, theoretical and empirical, for a positive and significant coefficient on income has not yet been conclusively made.

of $16.93.[16] The changes in state expenditures per capita
ranged from -$72.54 to $165.08, with a mean absolute value
of $52.20. These changes in state government expenditures
are more nearly commensurate with the changes in state
government revenues that the windfalls represent.
Accordingly, an alternative specification of the windfall
equation, in the spirit of a fixed-effects model, was
tested. In it the change in per capita expenditures was
regressed against the per capita windfall amounts (which
also represent changes, in the level of incomes), according
to the following model:

$$\Delta E_i = \beta_1 + \beta_2 W_i + \epsilon_i,\tag{9}$$

and with the resulting estimated equation:

$$\Delta E = 0.044 + 0.00004\ W\tag{10}$$
$$(5.48)\quad(0.14)$$
$$R^2 = 0.0004$$
$$n = 50$$

The findings for the fiscal illusion hypothesis confirm the
earlier results from equation (8). The estimated
coefficient of the windfall variable is not significant and
the equation has virtually no explanatory power, as
evidenced by the extremely low R^2. Whatever changes in
expenditures have occurred, they do not appear to be
explained by the windfalls.[17]

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[16]The mean value of W_i, or windfall per capita, was
$0.11. However, since there were both positive and negative
windfalls, the mean absolute windfall per capita of $16.93
is more relevant for comparing the magnitudes involved.

[17]The possibility that asymmetries in the effects of

VI. Some Further Thoughts on the Findings

The earlier chapters of this work provide theoretical

support for the proposition that fiscal illusion, widespread

though it may be, need not exert a decisive impact upon the

level and composition of government expenditures. The

empirical results of this study are consistent with that

view. The insignificance of the estimated coefficient of

the windfall variable is exactly what one would expect if

there are effective incentives for individual agents to

dispel illusion when that illusion has a distorting impact

upon collective decisions. The observation of communities

as they actually dealt with the windfall issue revealed a

variety of individuals whose self-interested actions

promoted legislative decisions that were based upon accurate

views of the nature and magnitude of the windfalls.

There are other possible explanations of the absence of

an observable windfall effect in the data that are

available. Uncertainty about the amount of the windfall has

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positive and negative windfalls might be masked within the
combined data was also considered. Accordingly, Equation
(9) was estimated separately for states with positive
windfalls and for states with negative windfalls. In each
case the earlier results were left unchanged: the
coefficient on the windfall variable was not significant and
the explanatory power of the relationship, as measured by
the R^2 value, was low. This was true even though the one-
tailed tests appropriate to these separate hypothesized
relationships narrow the confidence intervals, facilitating
the rejection of the null hypothesis, H: $\beta_2 = 0$.

been prominent in the states' deliberations. If state levels of expenditure do adjust to maximize expected utility, the presence of uncertainty will reduce the level of state expenditures that will maximize the expected value of that utility for a risk-averse constituency. Steven Gold (1987, 431) notes particularly that behavioral changes are a source of uncertainty, with taxpayer responses to the new treatments of capital gains, IRAs, interest income and expenses, and the benefits of incorporation difficult to predict.[18] Another possibility associated with the uncertainties in the W_i values is that the disposition of the windfalls may change as time removes more and more of them. Observation of the legislative and executive processes of the states as they have adopted their FY 1988 budgets confirms the awareness of uncertainty and its implications. As time passes, their actions may reveal more about the importance of this factor.

The rigidities of the decision-making process may also partially account for the results. 1987 was an eventful year for state tax reform. The groundwork for much of this reform had been laid by tax study commissions earlier in the 1980's. The unintended and unlegislated impacts of the 1986

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[18]Econometrically, the existence of even random, unbiased error in the W_i variable has implications for the test results. By increasing the variance of the estimator, it widens the confidence interval, making rejection of the null hypothesis more difficult.

federal tax reforms upon both revenues and economic behavior
provided a catalyst for state actions that had already been
contemplated (Gold, 431). Revision of the federal tax code
caused attention to be paid to budget issues and called for
state changes in response to divergences between federal
changes and state preferences. It is even possible that the
spur of having to deal with the windfall could cause state
expenditures to be inversely related to the windfalls, if
rigidities had previously checked the implementation of
opposing desires.[19] It is also possible that illusion and
rigidity could offset each other, giving a zero net impact,
if changes enacted by state legislatures included changes
decided upon earlier but not yet implemented in addition to
the responses to federal tax changes.

It is clear, however, that the absence of an observed
windfall impact is also consistent with the thesis that
there are effective limitations on the sway of fiscal
illusion.

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[19]In this case the appropriate alternative hypothesis
would take the form H_1: $\beta_2 \neq 0$, and the confidence intervals
for testing would be adjusted accordingly. Since the effect
of a two-tailed test is to widen the interval of test values
for which one accepts H_0, acceptance of the null hypothesis
for the one-tailed case implies its acceptance in the two-
tailed case.

VII. Additional Perspectives

on the Disposition of the Windfalls

The broad outlines of the disposition of the windfalls in the various states give a useful additional perspective on the empirical results already presented and discussed. States reacted to the windfalls in a variety of ways, with widely differing outcomes.[20]

The decisions about the windfalls were not made in isolation but in the context of other developments in state financial matters. Tax reform sentiments at the state level echoed national ones: increasing progressivity to correct for its diminution by years of inflation and reducing tax rates in states where they were especially high were notable trends. States' financial positions were not strong: year-end balances were low, continuing a downward trend over the decade. States which depended on farm and oil revenues had particularly severe problems. A state's disposition of its windfall depended upon its entire budgetary picture as well as upon the windfall itself.

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[20]It was, in fact, not necessary for the subject to be on the agenda of the states. It was partially for this reason that the statistical study undertaken here was formulated as it was, in terms of the effects upon state expenditures that could occur in the absence of any direct action by the legislatures. Further, it was felt that it would be hard to disentangle adjustments to the windfall from tax changes made for internal policy reasons.

Of those states with positive windfalls, fourteen chose to keep all, for a total amount of $935.5 million, while thirteen chose to return all, for a total of $1,853.4 million, and five chose to keep part.[21] Of the states that kept all, two raised taxes still further. Of these states, many were in distressed economic conditions, and the issue was often controversial. Idaho, with much controversy, chose not only to continue to conform automatically to federal changes but also to add two new tax rates, raising its top rate from 7.5% to 8.2%. Utah also increased progressivity while increasing its revenues. While Iowa and Kansas did conform to the new federal tax base, they deferred major income tax changes until the 1988 session. Those states which avoided the windfall did so by a variety of mechanisms, including rate reductions, increases in personal exemptions or personal credits, and increases in standard deductions. Ohio, for example, returned virtually all of its windfall by decreasing tax rates, by 7% in 1987 and 8% in 1988; in addition, it reduced its top bracket to offset higher effective rates resulting from base-

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[21]NCSL's report and table of state actions (NCSL, 54-58) are the source of much of this information. NASBO's Fiscal Survey of the States 1987 and the ACIR report (1988) were also useful. Information for two states, Kentucky and Michigan, was not available.

broadening.[22] Arizona took a different tack, adopting a
special deduction of 46% of federal tax paid or $475,
whichever is greater. Two states, Iowa and Massachusetts,
chose to break with the past by not conforming to the
federal code. Other states thoroughly overhauled their
personal income taxes, including Minnesota and New York,
which reduced the number of tax rates to two, Colorado,
which adopted a single tax rate, and West Virginia, which
adopted a new tax with no deductions and a top rate only
half of its former top rate.

As this broad picture of state actions on the windfall
adds perspective, a closer look at the processes also offers
additional insights. In the Washington D.C. area, it was
possible to observe closely the windfall developments in
three jurisdictions with positive windfall amounts,
Maryland, Virginia, and Washington, D.C., which had a
windfall of the exact same nature as the states. Virginia's
income tax revenues were projected to rise by 8%, Maryland's
by 9%, and the District's by 10%[23]. Ample scope for
misperception of these sums was evident from the first.
Dubbed "windfalls," a misleading term in the first place,

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[22]There were minor additional provisions for a child
care credit and a small increase in the property tax circuit
breaker for the elderly.

[23]This figure assumes that the District continued
updating as it had in the past.

these additional revenues were prominently referred to as a "cash bonanza," a "surprise bonus," an "automatic dividend for the states," a "boon for state budget makers." Maryland's governor-elect, William Donald Schaefer, called early on for the use of its additional $166 million in revenues to finance educational and social service programs to help the poor and the hard-core unemployed. Mayor Marion Barry proposed to keep half (originally more) of the windfall accruing to the District of Columbia, to meet "pressing social needs." Certainly, the possibility of illusion on the part of public officials seems to apply here. In contrast, Virginia's Governor Gerald L. Baliles took a different tack at the earliest stages, advocating the full return of the windfall.

The development of the issue from this initial point was interesting to watch in all jurisdictions, particularly so in Maryland and the District of Columbia, where the situation seemed to fit the classic case of public officials fostering illusion in order to expand public expenditures. Of the forces limiting the extent of fiscal illusion discussed in Chapter Four, many were seen at play. Articles in local newspapers exhibited a high degree of awareness of the unlegislated tax changes associated with the windfalls. Articles citing the studies of the National Conference of State Legislatures and of the Advisory Commission on

Intergovernmental Relations -- both agencies that owe their existence to a perceived and publicly-supported need for information on state fiscal matters -- appeared in the <u>Washington Post</u> and the <u>Wall Street Journal</u>. Citizen interest groups of a quasi-political nature also brought their influence to bear on the disposition of the windfall revenues. Columnists clarified the issues, as did individuals who wrote letters to the editors of local newspapers, stressing that the windfall represented a tax increase and calling for its return. Local columnist Judy Mann wrote:

> Already we are being treated to the spectacle of sticky-fingered politicians playing with this pot of gold that's suddenly appeared underneath the rainbow in state capitols across the country. In Maryland, Gov.-elect William Donald Schaefer has suggested that the state keep the $166 million it expects to find in the pot and use it to pay for programs to help the poor and the unemployed. This all sounds very high-minded, but if the state's lawmakers had to vote a direct tax increase of $166 million on the citizenry to finance these high-minded programs -- or a 9 percent tax increase on the taxpayers -- they wouldn't be able to get a quorum.
> . . .
> New York Gov. Mario Cuomo and Ohio Gov. Richard F. Celeste have pledged to give the money back by lowering the tax rates. That's the right thing to do. Anything less is clipping the taxpayers.

In the face of steadfast refusal by Maryland's governor to commit himself to returning the windfall, in spite of his primary campaign promises not to raise taxes, Maryland

legislators developed proposals to return at least a portion of the expected windfall, at least for one year. In an attempt to deal with the uncertainty of the magnitude of the windfalls that resulted particularly from the difficulty in estimating behavioral responses to the capital gains provisions of the Tax Reform Act, legislators considered actions that would be limited to the present year alone, until more was known. Various proposals for returning the money were explored, including a tax-credit on state income tax returns, an increase in the personal exemption that is taken by every taxpayer, an increase in the standard deduction taken by nonitemizers and a decrease in the capital gains tax. Strong sentiment for a return was felt among legislative leaders, one of whom said that he could defend a gasoline tax increase to his constituents but that he did not necessarily believe the same was possible with the income tax windfall.

When the issue came to a vote in Maryland, the legislature itself was split, with the House voting to return approximately 60% of the windfall (mainly through a $10 tax credit, increases in the standard deduction, tax breaks for single heads of households, and an earned income tax credit for the disadvantaged) but the Senate favoring a 90% return (that included a 40% capital gains deduction as well as increases in the personal exemption and standard deduction). Both plans exceeded the governor's final

attempt to return only about 28%. By the end of March, agreement to return about two thirds of the amount had been reached, primarily by increasing the personal exemption and standard deduction. In addition, an earned income tax credit of 50% of the federal credit was introduced for taxpayers with children, and the exclusion of 40% of capital gains from taxable income was retained for the computation of state income tax in spite of its being discontinued at the federal level. (Gold 439-440)

In all the legislative debate, it would be hard to make a case that the voters had been fooled. The debate was well reported in the press, and the view that the proceeds from federal tax revision represented an unlegislated tax increase was given prominence. Said Sen. John A. Cade, as reported in the Washington Post,

> I believe we should either give back or
> not take all . . . of the benefit from
> the federal tax changes. If programs
> require a tax increase, [the state]
> should face up to it and vote it up or
> down and not take money from a back-door
> source.

The fact that the issue did become publicized and did receive explicit attention in so many states can be seen as one manifestation of the strength of the forces that limit the impact of illusion when the potential damage of its distortions is great. There is a "catch-22" in the attempt to assess the impact of illusion. Chapter Two argues that much illusion is irrelevant to the political outcome and

that eliminating it would be wasteful. Such illusion can be expected to persist without distorting the political outcome. It is further argued in Chapter Four that significant forces do work to dispel illusion when its impact is potentially damaging to an important extent. Since these forces involve dispelling illusion in the group of voters that is likely to affect the outcome, the case can then be made that since the circumstances were well known to the public, no illusion existed. In this case it may be argued that the windfalls are not an "illusion variable" after all because the windfalls did receive a significant degree of publicity. It is my contention that this publicity is endogenous, that the potential for illusion did exist in the case of the windfalls, as was evident in the early reactions to it, and that its strong potential for the distortion of public choices to the significant detriment of the electorate elicited the publicity it received.

In the District of Columbia, Marion Barry spelled out his proposal for keeping half of the $295 million expected over the five years beginning in 1987, in a plan that would mean from 1% to 21.9% more in 1987 city income taxes for about one fourth of city taxpayers who earn $35,000 or more. Though the mayor's presentation of his plan emphasized the tax breaks many residents would receive, omitting the examples that showed the heavy burden upon middle-income families as well as the burden upon upper-income residents,

columnist Dorothy Gilliam called for details, stating that, "The main problem is that Barry has not made the case sufficiently for the pressing social programs that would justify his proposal for the windfall," while a Washington Post editorial concluded, ". . . the mayor's proposal is not a 'keeper' -- it's an official legislative request to the council for a tax increase." In an op/ed piece, D.C. Council member John A Wilson criticized the plan for falling too heavily on middle-income residents, saying, "I am not going to support any kind of tax increase in 1987." In a classic Tiebout argument he further cited the District's difficulty in attracting residents with incomes of $20,000 or over, emphasizing the effect on revenues of the exodus of middle-class taxpayers that could be expected from an even higher tax differential with the suburbs: "It is shortsighted to say that we will use that 'windfall' to finance programs if by so doing we drive out the very citizens who provide that financing through the taxes they pay each year." Citizens' groups urged the city to forgo what he called a "backdoor" increase.

In the end Virginia passed a "windfall rebate law," much like that originally proposed by Governor Baliles. It increased the personal exemption and standard deduction and made some rate reductions, to return $144 million of the expected FY 1987 windfall. The $29 million it retained, it did so explicitly to provide a reserve against errors in the

windfall estimates, unanticipated reductions in federal aid, or a worsening economic climate.

In an interesting coda, in the fall of 1987 Virginia legislators pressed for further action in the face of an announced $138 million surplus for FY 1986, and a projected additional $16 million surplus for FY 1987, "sounding the alarm" that a predicted $300 million-a-year windfall, largely from middle-class residents, would materialize if the current tax structure were maintained. Though the governor cautioned against either spending or returning it, the Lieutenant Governor, L. Douglas Wilder, urged that, "None of the so-called windfall should be kept by state government to spend."

VIII. Summary and Conclusions

The Tax Reform Act of 1986 created the tax "windfalls" -- automatic changes in state government revenues that were an unintended byproduct of national legislative action, independent of the states' decisions concerning their levels of expenditures and revenues. The literature of fiscal illusion suggests that because citizens do not clearly perceive important fiscal variables, public officials will be able to adapt such "automatic" revenue changes and other fiscal instruments to advance their own ends at the expense of the public interest. The existing attempts to provide empirical support for the existence and importance of fiscal

illusion as a source of bias in the allocation of resources within and to the government sector have been seriously compromised by the endogeneity of the illusion variables. The windfalls provide a unique opportunity to test the hypotheses of fiscal illusion for the case of an exogenous illusion variable.

This chapter presents estimates of the dollar magnitudes of the windfalls and, within the well-established theoretical and econometric approach to the specification of the demand for public goods, tests the hypothesis that the windfalls have exerted a significant influence upon the level of state government expenditures. The central finding is that the estimated coefficient of the windfall variable is not significant, a result that is consistent with the absence of any systematic effect of the tax windfalls upon the level of state government expenditures. This empirical finding is consistent with the theoretical support for the proposition that there are significant limitations upon the ability of fiscal illusion to exert a significant impact upon the level and composition of government expenditures.

APPENDIX
DATA SOURCES

Variable	Source[1]
E	National Conference of State Legislatures, <u>State Budget Actions in 1987</u> (Denver: NCSL, 1987), p. 72
Y	U.S. Department of Commerce, Bureau of Economic Analysis, <u>Survey of Current Business</u>, April, 1987, p. 34
W	Estimated from U.S. Advisory Commission on Intergovernmental mental Relations, "Preliminary Estimates of the Effect of the 1986 Federal Tax Reform Act on State Personal Income Tax Liabilities" (Washington, D.C.: ACIR, 1987), pp. 17-18 and U.S. Department of Commerce, Bureau of the Census, <u>State Government Tax Collections in 1986</u>, p. 3
R	U.S. Department of Commerce, Bureau of the Census, <u>State Government Finances in 1986</u>, p. 6
C	U. S. Department of Commerce, Bureau of the Census, <u>Statistical Abstract of the U. S.</u> (1987), p. 284
S	U. S. Department of Commerce, Bureau of the Census, <u>Statistical Abstract of the U. S.</u> (1987), p. 259
N	U.S. Department of Commerce, Bureau of the Census, "Press Release," December 31, 1986
U	U.S. Department of Commerce, Bureau of the Census, <u>Statistical Abstract of the U.S.</u> (1987), p. 27

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[1]Except as noted, all sources are Government Printing Office publications, Washington, D.C.

D   U.S. Department of Commerce, Bureau of the
Census, <u>Statistical</u> <u>Abstract of the U.S.</u>
(1987), p. 21

Data for the outside exogenous variables used in the
first stage were obtained from the 1986 <u>State and</u>
<u>Metropolitan Area Data Book</u> and from the 1986 and 1987
editions of the <u>Statistical Abstract of the U.S.</u>

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