THE ECONOMIC EFFECTS OF GOVERNMENT EXPENDITURES

Laurence J. Kotlikoff

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Abstract

This paper discusses conceptual problems of distinguishing "expenditure" policy from "tax" policy and "deficit" policy.  The paper argues that each of these concepts is ill-defined and does not provide a useful basis for examining the government's underlying fiscal policies.  The fundamentals of fiscal policy involve changes in marginal incentives, inframarginal  intra- and intergenerational redistribution, and direct government consumption. The paper reviews some of the effects of these fundamental policy choices on economic growth.

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Government expenditures encompass a number of different types of payments. These include purchases of current consumption goods and services, transfer payments to individuals, businesses, non-profit organizations, and other governmental bodies, gross purchases of financial and tangible assets and interest payments. Few of these accounting entries correspond to fundamental economic policy variables that might be perturbed within a well-articulated model of economic behavior. Consequently, an analysis of the economic affects of government expenditures requires identifying those components of government expenditures that represent more fundamental policy variables and indicating the relationship of other expenditure components to such variables.

The first section of this paper considers the relationship of government transfer payments to the tax structure; as pointed out by Surrey (1973) and others, from a microeconomic perspective, these forms of government expenditures appear indistinguishable from explicit taxation. Indeed, one could envision eliminating all such expenditures from the U.S. budget and generating the same economic environment by simply rewriting the tax code. Alternatively, one could eliminate most elements of government taxation and achieve identical results by altering expenditure policy.

Obviously if two economies can have identical microeconomic structures, but report radically different levels of taxation and government spending, comparisons of economies on the basis of their levels of taxation and expenditures will provide little, if any, insight. The fact that much of "expenditure policy" can be subsumed under "tax policy" and vice-versa suggests the need for a new vocabulary in describing government policies.

Section two raises similar concerns about distinguishing "expenditures" from "deficits" In the U.S., federal government retirement systems have enormous unfunded liabilities. These unfunded liabilities are several times the size of official liabilities. Indeed, if one calculates U.S. government net worth ignoring these and other implicit liabilities, the government's net worth is positive.[1] Between 1960 and 1977 the implicit annual deficits associated with simply the U.S. social security retirement system averaged over 7 percent of GNP.[2]

Ultimately, deficits, whether explicit or implicit, can be identified as features of government policies that redistribute economic resources across generations. "Deficits," so defined, can arise from changes in the intergenerational distribution of transfer payments or from changes in the intergenerational pattern of taxation. Such changes in the intergenerational structure of expenditure and taxation can, and often do, occur with no changes in official reported deficits. As in the case of distinguishing expenditures from taxes, conventional accounting definitions of deficits provide inadequate and potentially misleading descriptions of underlying government policy.

Section three considers the impact of intragenerational redistribution on capital formation. This subject has received little attention in recent years, and virtually no attention from the perspective of neoclassical intertemporal growth models. Redistribution from the "rich" to the "poor" is the nominal objective of many structural features of the U.S. fiscal system . While much of this redistribution appears to be from the lifetime rich to the lifetime poor, some of this redistribution is surely from the temporarily rich to the temporarily poor. Indeed from the perspective of models of infinitely-lived,

altruistic families, "the lifetime rich" and "the lifetime poor" may simply be temporarily rich and poor representations of essentially equally wealthy dynastic families.

Redistribution to the temporarily poor as opposed to the permanently poor seems an important distinction because permanent differences in economic status are more likely to be correlated with fundamental differences in inter-temporal preferences and human capital endowments.

In addition to redistributing to the "poor", the U.S. fiscal system transfers resources between single individuals and married couples, and between families with children and families without children. A number of "tax" and "expenditure" systems are involved in this redistribution, and their net impact remains to be calculated. Since intertemporal consumption and labor supply decisions are likely to depend on these demographic factors, determining the size of this redistribution is important for understanding the government's influence on capital formation and labor supply.

Of the four categories of expenditures listed above, government con-sumption corresponds most closely to a fundamental policy instrument. Section four examines the potential effects of government consumption on economic growth. While conceptually distinct from other fundamental policy variables, permanent changes in government consumption will necessarily be associated with changes in the time path of tax receipts net of transfer payments. This conclu-sion follows from the arithmetic of the government's intertemporal budget constraint. As a consequence, analysis of the effects of permanent and, indeed, most temporary changes in government consumption requires specifying those changes in other policy variables that will finance the new time path of govern-ment consumption.

Since the effects of changes in government consumption differ depending on the choice of accommodating changes in other policy variables, one cannot identify the effects of government consumption per se; just as there is need for a new vocabulary to describe the common underlying features of expenditure, deficit, and tax policy, there is need for new terminology to characterize necessarily interdependent changes in sets of policy variables.

1. Government Subsidies and Transfers - The Relationship to the Tax Structure.

In the U.S. federal government transfer payments now represent 54 percent of total federal expenditure. For state and local governments the percentage is much smaller, only 9 percent. The comparable figures in 1960 were 35 percent for the federal government and 11 percent for state and local governments.

Currently, the federal government accounts for 92 percent of all transfer payments by U.S. governments. The bulk of federal transfer payments, 75 percent, are direct transfer payments to individuals; 3 percent are transfers to enterprises, and the remaining 22 percent are transfer payments to state and local governments.[3] Most of the federal transfers to state and local governments are ultimately paid to individuals in the form of medical, housing and general welfare support. In 1979, the most recent year with complete data, 46 percent of federal expenditures were direct or indirect (via state and local governments) transfer payments to individuals.[4] Of these expenditures, over two-thirds were paid to the elderly in the form of old age medical benefits, and social security, civil service, military, and veterans retirement benefits. The majority of the remaining funds were paid to the unemployed and disadvantaged.

In addition to these explicit government transfer payments, the U.S. treasury publishes a list of implicit expenditures, entitled tax expenditures, close to three quarters of which are ascribed to individuals. Tax expenditures are defined as "revenue losses attributable to provisions of the federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, or preferential rate of tax or a deferral of tax liability."[5] Total 1981 tax expenditures of $214 billion may be compared with explicit 1981 expenditures of $727 billion.

Roughly speaking, if these exclusions, exemptions, deductions, credits, etc. had been eliminated from 1981 Federal tax law and explicit payments had been made in their stead, one might have observed quite similar economic outcomes, except the government would have reported outlays of over $900 billion and an additional $200 billion or so in revenues. Simple changes in government bookkeeping, in this case, could increase reported government expenditures by close to 25 percent with no necessary economic effects.

One might hope that adding officially reported tax expenditures to explicit expenditures would provide an adjusted figure for total expenditures, the value of which could not be altered without affecting economic behavior. Unfortunately, such is not the case; the definition of tax expenditures is highly arbitrary. The Congressional Budget Act of 1974 defines income tax provisions resulting in tax expenditures as exceptions to the "normal structure" of the individual and corporate income taxes. The notion of the "normal structure" of these taxes is subject to multiple interpretations. Indeed, in the 1983 budget, the Accelerated Cost Recovery System rather than straight line depre-

ciation was adopted as a "normal" feature of the individual and corporate income taxes. This change eliminated approximately $12.3 billion dollars in tax expenditures.[6]

Even if the "normal structures" of the U.S. individual and corporate income taxes were unambiguous, the choice of these tax systems as the base against which to measure deviations is quite arbitrary. The current structure of U.S. taxation is better described as a hybrid mixture of wage and consumption taxation than as a system of individual and corporate income taxes. Use of either a wage or consumption tax as the "normal" tax structure from which to assess deviations would result in radically different estimates of tax expenditures, and radically different estimates of adjusted total expenditures.

The inability to produce an economically meaningful definition of government expenditures as distinct from the tax system is an immediate implication of microeconomic theory. The traditional theory of households making consumption and labor supply decisions and firms making production decisions relates behavior to endowments and marginal incentives. Endowments and marginal incentives are affected by both "expenditure" and "tax" policies, and, in most cases, particular endowments and marginal incentives associated with "expenditure" policy can be replicated using "tax" policy, and vice-versa.

Social security's transfer payments to retirees between 65 and 72 provides a good illustration. Although there is an on-going debate as to the exact marginal work incentives associated with social security's earnings test and benefit formula, one simple model is that workers between age 65 and 72 receive benefit payments that are reduced by 50 cents for every dollar above the social security earnings ceiling, currently $6,000. The structural features of these

social security expenditures could be replicated under the individual income tax
by providing a refundable tax credit equal in magnitude to each elderly
taxpayer's social security benefit and then simply taxing at an additional 50
percent rate all labor earnings in excess of $6,000 and below twice the credit.
Interestingly, the U.S. earned income tax credit, a provision of "tax policy,"
is structured essentially in this manner. Workers with labor earnings above
$5,000 who have children receive a $500 tax credit which is reduced by 12.5 per-
cent for every dollar earned between $6,000 and $10,000.

In principle, one could envision redesigning the U.S. tax code to
incorporate the 46 percent of federal expenditures paid as transfers to indivi-
duals. If the redesign preserved current endowments and marginal incentives,
one would expect little, if any, change in economic behavior. Such a transfer
expenditure-equivalent redesign of the tax code, while of little practical
importance, would be an extremely educational exercise.

For the U.S. a transfer expenditure - equivalent tax code would reveal
effective income tax schedules that differ by age, sex, marital status, and
number of children. For the young and middle age, these schedules would involve
refundable tax credits, extremely high marginal tax rates at low levels of labor
earnings, moderate tax rates at middle earnings levels, and higher tax rates
thereafter. The high tax rates at low levels of earnings reflect the combined
earnings test of various federal welfare programs including Aid to Families
with Dependent Children (AFDC), Food Stamps (calculated on a cash-equivalent
basis), low income housing, and Medicaid (medical care to the poor, also calcu-
lated on a cash-equivalent basis). At certain low levels of labor earnings the
combined marginal tax rates of these programs easily exceed 100 percent.

Indeed, the Omnibus Budget Reconciliation Act of 1981 raised AFDC's implicit tax rate, by itself, from 66 percent to 100 percent.

The new tax schedules would also exhibit sharp kinks and discontinuities. Kinks would occur at each point that the benefits of one of the welfare programs or of the earned income tax credit were totally recaptured. Beyond that point that program's marginal tax rate would no longer affect the worker. Discontinuities arise in the case of Medicaid where a poor individual or family forfeits all eligibility for medical assistance under this program if their eligibility for AFDC terminates, i.e., if they earn above a specified dollar amount.

The transfer expenditure-equivalent tax schedules would differ by sex, marital status, and number of children because welfare benefits and marginal tax rates at particular levels of earnings are functions of these variables. These tax schedules would differ for the elderly because of their potential eligibility for Social Security benefits and supplemental security income.

For those who consider steadily increasing marginal tax rates a sine-qua-non for an equitable tax system, the presentation of these transfer expenditure-equivalent tax schedules might change their view of the degree of equity in U.S. fiscal affairs. These schedules would also shed light on the current U.S. debate concerning implementation of a flat tax. Those who object to such a scheme because marginal rates are constant rather than rising with income should be cognizant of the fact that effective marginal rates under current law fall rather than rise over significant ranges of earnings.

A figurative rewriting of the U.S. tax code to include federal transfer payments to individuals would also clarify the difference between the

current U.S. welfare system and recent negative income tax proposals designed to replace the welfare system. The negative income tax, in its simplest form, involves an identical dollar payment to all adults. Positive earnings are taxed at a constant rate until the net grant is zero. After the net grant has been taxed to zero, additional earnings are taxed under the federal income tax. The debate in the U.S. concerning the negative income tax has preceeded with little, if any, comparison of this proposal with the tax credits and effective tax rate schedules confronting the poor under the existing system. Such a comparison indicates that the negative income tax represents simply a modification rather than a radical departure from the underlying U.S. transfer-tax system. The primary difference between a negative income tax and our current system is the use of a single tax credit and tax rate schedule for all individuals regardless of demographic characteristics. There are valid arguments for and against categorical tax treatment, but given a decision on this issue, there remains the question of setting equitable and efficient credits and tax rates. For many demographic groups in the U.S., the combined implicit tax schedules of multiple, independently run welfare programs generate quite strange, and, presumably, highly inefficient, transfer expenditure-equivalent tax schedules.

Transfer expenditure-equivalent tax schedules would also provide alternative ways of describing simultaneous changes in "expenditure" and "tax" policy. For example, the Economic Recovery Tax Act of 1981 in combination with the Omnibus Budget Reconciliation Act of 1981 raised marginal tax rates at low income levels and lowered marginal tax rates at medium and higher income levels from the perspective of transfer expenditure-equivalent tax schedules.

2. The Relationship Between Expenditures and Deficits.

In 1979 U.S. federal expenditures on social security, railroad retirement, military and veteran retirement, and civil service retirement totalled $141 billion, over a quarter of the federal budget. These expenditures are financed on an unfunded or "pay-as-you-go" basis in which taxes from primarily young and middle aged workers are paid in the form of benefits primarily to elderly individuals. While these government programs represent the major source of retirement income for the majority of Americans, virtually no money was specially saved by the U.S. government to meet these benefit payments. According to recent estimates of actuaries of the social security, civil service, and military retirement systems, the trust fund needed under these programs to fully fund net benefit commitments to current adults is $3.5 to $6.5 trillion, depending on actuarial assumptions.[7] Restating this fact, under current law, the U.S. adult population holds implicit I.O.U.s on the Federal government that range from $3.5 to $6.5 trillion.

If it so desired, the U.S. government could transform these unofficial I.O.U.s into official liabilities by simply issuing each adult a non-negotiable bond with a face value equal to the expected present value of net future benefits. Each year as the expected present value of net benefits changed for the adult population, the government could exchange the previously issued non-negotiable bond for a new non-negotiable bond with the revised face value. While nothing except government bookkeeping would be changed by handing the public these pieces of paper, the educational value of such an exercise could be quite large. Overnight, the government's official liabilities would increase by a factor of 3 to 6. If the government simultaneously reported an historic time

series indicating what the face value of these non-negotiable bonds would have been had they been issued in the past, one could calculate new official values for total past government deficits. Such an exercise would indicate that the budget deficits projected for 1983, 1984, and 1985, arising from recent U.S. legislation, are minor relative to the estimates of total deficits experienced in the past. These new figures would cast significant doubt on the notion that near-term projected deficits, as officially defined, are responsible for the high real interest rates now prevailing in the U.S.

Presumably, such a redefinition of official government liabilities would raise the question of classifying other implicit commitments to future expenditures as government debt. If one is willing to label implicit promises to pay future retirement and medicare benefits official liabilities, why not include implicit expenditure commitments to maintain the national parks, to defend the country, or to provide minimum sustainance to the poor.

An embroiled debate on the appropriate definition of government debt would likely lead some exasperated official to suggest eliminating the reporting, and, indeed, the concept of government debt entirely and simply rely on taxation. This official might also argue that one could switch from "deficit" to "tax" finance with no affect whatsoever on the economy. Under the assumption of perfect capital markets he (she) would be quite correct. Rather than raise additional funds by issuing treasury securities, the government could simply levy "a head" tax per adult promising to pay each adult in the following year an amount equal to the tax plus interest on the tax. If the adult died during the year the payment would be made to his or her estate. Those too poor to pay the head tax could borrow against next year's transfer payment to acquire the required funds.

Under this scenario the government would annually levy head taxes
equal to what is currently reported as the official debt. In addition, the
government would annually make transfers to each adult equal to the prior year's
head tax plus interest. The new official government books would show taxes
equal to expenditures and zero deficits.

Like government "expenditures," an economically meaningful definition
of government deficits is simply not to be found. Again, micro-economics provi-
des an immediate explanation. Neoclassical growth models involving government
policy contain four basic components; these are household intertemporal pre-
ferences, household intertemporal budget constraints, production technologies,
and the government's intertemporal budget constraint. Obviously, neither uti-
lity functions nor production functions involve government "deficits."
Household budget constraints do involve parameters of the fiscal system such as
tax (negative subsidy) rates, subsidy (negative tax) rates, and infra-marginal
net taxes (net transfers); but, as mentioned, examination of these budget
constraints does not even provide a way to distinguish "expenditures" per se.
One could, of course, combine certain terms labelled "expenditures" with certain
terms labelled "taxes" and call these "deficits" or "debt"; however, any such
definition of deficits or debt is arbitrary and affects neither the household's
maximization problem nor the predictions of the model.

The last hope for a meaningful definition of government debt lies in
the government's intertemporal budget constraint. Like the household's
constraint, the government's budget constraint can be reexpressed in various
ways. The U.S. government's current fiscal taxonomy suggests the following
description of the constraint: The present value of future taxes (as defined in

the National Accounts), plus the present value of increases in the stock of base money, plus the market value of government financial and tangible assets must be sufficient to cover both the present value of government expenditures (as defined in the National Accounts, but excluding interest payments) and the market value of official government debt (excluding debt held by the Federal Reserve).

In this expression gross official U.S. debt at market value appears explicitly on the right hand side of the equation. For the U.S. this figure equaled approximately $850 billion in 1980.[8] While this is one way to write the equation, one could equally well subtract the financial assets of the government from both sides of the equation and end up with a figure for net financial debt on the right hand side. This figure in 1980 equalled approximately $400 billion.[9] If one subtracted tangible as well as financial assets, one could define government debt as gross liabilities less gross assets; for 1980 the estimated value of this concept of debt is negative, approximately - $300 billion.[10]

These manipulations have already produced three different definitions of debt without even mentioning unfunded social security and other federal retirement liabilities. To include these implicit liabilities in the definition of debt in a manner that accords with the accounting practices of the social security, civil service, and military retirement actuaries, one need only combine those right-hand side expenditures that correspond to future benefit payments to current adults with those terms that correspond to the future contributions of current adults to federal retirement programs.

A fifth way to rewrite the budget constraint in which debt and asset terms per se would not appear is to express the government's gross official debt as the present value of future interest plus principle payments and to express the government's assets as the present value of capital income plus receipts from the sale of these assets. This version of the constraint involves simply an equality in present value between all future government receipts and all future government expenditures.

While this fifth formulation of the government's budget constraint defines away deficits, the economic problem typically associated with deficits, namely their deleterious affect on capital formation, cannot be defined away. A variant of this fifth expression clarifies the government's fundamental intergenerational redistribution policies that can affect capital formation. The fifth expression can be rewritten by combining all taxes and transfer terms on the left-hand side of the equation and leaving government consumption expenditures on the right-hand side. The budget constraint now appears as an equality between the present value of net taxes and the present value of government consumption. The annual payments that are combined to form the present value of net taxes can be indexed by various socio-economic characteristics of the taxpayer (transferee). For purposes of discussing the conventional questions of deficits and capital formation, age is the critical variable for indexing annual net tax payments.

To isolate pure intergenerational redistribution from changes in marginal incentives, one can assume that the annual net tax payments made by (received by) particular cohorts are lump sum payments. The assumption that government consumption is zero further simplifies the discussion. Under these

conditions the government is free to choose any sequence of lump sum net taxes levied on particular cohorts in particular years, provided the present value of these net taxes is zero. Since the sequence of intergenerational net taxes may affect capital formation, and, therefore, interest rates, the zero present value of lump sum net taxes must be consistent with the paths of interest rates they engender. While this general equilibrium requirement places limitations on the scope of intergenerational redistribution, there remains an infinite set of sequences of cohort-specific net taxes from which the government can choose. The set includes conventional, "deficit-financed", "tax" cuts in which lower net taxes in the near term are offset by higher net taxes in the future. Within this framework the introduction of an unfunded retirement program is modeled as a reduction in the time path of lump sum net taxes paid by those cohorts who are old during the initiation of the program. To pay for the lower net taxes on initial elderly generations, net taxes on young and future generations must be increased.

In the case of the U.S. Social Security System, the higher net taxes on the young and future generations are imposed in a subtle manner; young and future generations are required to make payroll "tax" contributions to the system; in exchange, they are implicitly promised future Social Security bene-fits. If the present value of these Social Security benefits is less than the present value of "tax contributions, the young and future generations experience larger net taxes over their lifetimes. Such increases in the net taxes of young and future generations are predicted by general equilibrium growth models provided the economy's return on capital exceeds its rate of population plus productivity growth.

While the U.S. Social Security System combined changes in convention-
ally defined expenditures with changes in conventially defined taxes, "deficit"
policy can be effected simply by changing the age distribution of conventionally
defined expenditures. Actually, determining ex-post whether the government
adjusted conventionally defined taxes or conventionally defined expenditures in
response to the introduction of a new fiscal policy is quite difficult. For
example, in the U.S., Medicare payments to the elderly may have been financed by
smaller government scholarships and loan subsidies to students, by reduced
mortgage subsidies to young home buyers, or by a variety of other expenditures
made to, or on behalf of, the young and middle aged. While it may be hard to
convince legislators that they are effectively running deficits when they decide
to support programs like Medicare at the expense of programs like school
lunches, such is indeed the case.

The economic consequences of lump sum intergenerational redistribution
depend on the intertemporal preferences of society. In the strict Modigliani-
Brumberg (1954) life cycle model particular cohorts are concerned with their own
lifetime consumption and leisure and that of their young children. Their welfare
is totally independent of the welfare of their far distant decendents or,
indeed, the welfare of their children once they have reached adulthood.

In life cycle economies marginal propensities to consume and enjoy
leisure in the current period arising from changes in lifetime resources depend
on the cohorts' age. For cohorts not yet born, these marginal propensities are
obviously zero. For cohorts currently alive, marginal consumption and leisure
propensities steadily rise with age. Cohorts at the very end of their lives
will immediately consume any net transfer they receive, because they are con-
cerned solely with their last year's consumption and leisure. Younger cohorts

will "spend" on consumption and leisure only a fraction of any net lifetime
transfer in the current year, saving the remainder to "purchase" additional
consumption and leisure in the future. This smoothing of "purchases" of
consumption and leisure over multiple periods results in lower marginal consump-
tion and leisure propensities the greater the number of remaining years of life.
In such an economy, lump sum net transfers to the old from the young and from
unborn, future cohorts will raise aggregate consumption and leisure and, there-
fore, lower national output and national saving. In addition to inheriting
larger lifetime net tax burdens, young and future generations may be further
adversely affected by the general equilibrium consequences of changes in
national capital formation. The decline in capital formation will likely be
associated with higher real returns to capital and lower real returns to labor.
Since the elderly are capital rich, while the young and future generation are
endowed primarily with human capital, these general equilibrium changes in fac-
tor returns will accentuate rather than mitigate the partial equilibrium changes
in the intergenerational distribution of welfare.

The principle alternative specification of preferences in dynamic
neoclassical models (Barro 1974) assumes living generations consider the welfare
of their decendents in making current economic decisions. Living generations,
in these models, influence the welfare of future generations by altering their
own intergenerational transfers. In these models changes in the intergenera-
tional pattern of government lump sum net tax payments have no effect on the
economy (assuming perfect capital markets), because changes in private intergen-
erational transfers offset the government's redistribution of resources across
generations. Unlike life cycle models, dynamic altruistic models predict zero

economic effects from changes in the generational distribution of conventionally defined expenditures, assuming such changes do not alter marginal incentives.

Determining which of these two specifications of intertemporal preferences best describes economic behavior is critical for evaluating "the economic effects of government expenditures." Simulation models of unfunded social security expenditures in life cycle economies predict a 15 to 25 percent long-run reduction in capital formation when calibrated using U.S. data (Kotlikoff (1979), Auerbach and Kotlikoff (1981)). For future generations the associated reduction in welfare is equivalent to a 5 to 10 percent reduction in lifetime resources in a world of no social security.

Some perspective on the size of these implicit deficits is gained by considering the comparable explicit deficit required to produce a 15 to 25 percent reduction in the economy's long run capital stock. Findings in Auerbach and Kotlikoff (1980) suggest that a 10 to 20 year cut in income tax rates of roughly 15 percent would generate similar consequences for capital formation. The accumulation of official debt associated with such prolonged tax cuts is equal in value to between 25 and 50 percent of the economy's long run capital stock.

Martin Feldstein has pioneered theoretical and empirical research on the effects of unfunded intergenerational transfers on capital formation. His initial estimates (Feldstein (1974)) that the U.S. Social Security System reduced U.S. savings by almost 40 percent stimulated a series of additional studies of this subject (Barro (1978), Darby (1978), Leimer and Lesnoy (1980), Feldstein (1980), Auerbach and Kotlikoff (1981)). Subsequent results have been mixed. Much of the problem in precisely determining the effects of intergenerational transfers in national saving reflects the lack of cohort-specific time

series data on consumption, net taxes, net worth, and human capital. If such data were available one could test whether the consumption of one cohort was significantly influenced by the economic resources of other cohort, or, equivalently, whether aggregate household consumption depends on the intercohort distribution of resources.

3. Intra-generational Redistribution and Capital Formation

The government's choices in redistributing resources among different members of the same cohort are also constrained by its intertemporal budget. To consider the policy options available with respect to such redistribution, it is convenient to index lump sum net tax payments not only by the household's age, but also by its socio-economic characteristics. One characteristic of particular interest in the household's endowment of human capital. Households that are endowed with a lower than average level of human capital and, therefore, receive lower than average wages per unit time, can be classified as permanently poor within a life cycle model. Assuming their progeny are also endowed with less than the average amount of human capital, such households could be labelled permanently poor from the perspective of growth models with "infinitely-lived" altruistic families.

Under the assumption of perfect capital markets, one can construct examples for either life cycle or "infinitely-lived" altruistic economies in which redistribution from the permanently rich to the permanently poor has no impact on national saving, output, or any other macro-economic variables. The Cobb-Doublas utility function is one set of preferences that generates this result. For this utility function the marginal propensity to consume out of lump sum transfers (taxes) is independent of the wage rate. In addition,

although the marginal change in actual labor supply arising from a given lump sum transfer (tax) depends on the wage rate, the marginal change in human capital supply (actual labor supply measured in effective units of human capital) is independent of the wage rate. A lump sum tax on high wage workers lowers their consumption by an amount equal to the consumption increase of low wage workers receiving the lump sum transfer. In addition, the high wage workers increase their labor supply, but by less than the low wage workers lower their labor supply. Since high wage workers are more productive per unit time than low wage workers, these changes are consistent with a constant effective supply of labor to the economy.

There is, of course, no reason to expect the rich and the poor to have identical preferences, let alone identical Cobb-Douglas preferences. If, for example, both the rich and the poor have Cobb-Douglas utility functions, but the rate of time preference for the poor exceeds that for the rich, the poor will exhibit greater marginal propensities to consume than the rich out of transfers. Lump sum redistribution to the poor will, in this case, raise current consumption and lower national saving. In addition to the increase in consumption there is a decrease in effective labor supply in this example, and therefore, in national output. This decline in output further reduces national saving. Assuming this redistribution is on-going, there will be a permanent reduction in the economy's ratio of capital to effective labor supply in life cycle models and, at least, a temporary reduction in "infinitely-lived", altruistic growth models.

The "poor" and "rich" may also differ fundamentally with respect to the inclusion of the consumption and leisure of future generations in their intertemporal utility. If, for example, the "poor" have life cycle preferences,

while the "rich" have infinitely-lived, altruistic preferences, transfers between these two types of families will affect aggregate saving and labor supply even if both types of families have intertemporal utility functions that are identical in form.

In this setting, the "poor", life-cycle families receiving transfers may characteristically have lower marginal propensities to consume than the "rich", infinitely-lived, altruistic families making the transfers. Consider, for example, the case of an on-going lump sum tax on all "rich", young workers coupled with a lump sum transfer to all "poor", young workers. The "rich", young altruistic workers share their reduction in resources with older family members currently alive. Since the altruistic family will face an identical tax each year in the future, the reduction in current consumption could plausibly equal the tax, ignoring labor supply responses. For the "poor" life cycle worker, the increase in resources is spread over consumption in old age as well as consumption when young. Hence, the "poor" young workers will presumably increase their current consumption by less than the amount of the tax.

In this example, the consumption of "poor" old life cycle households is unaffected by taxes and transfers on the young. The effects of redistribution from "infinitely lived", altruistic households to life cycle households would, however, be considerably different if the lump sum transfer was paid to old life cycle families rather than to young life cycle families. As described in the previous section, old life cycle families have larger marginal propensities to consume than young life cycle families. Since the impact of intragenerational redistribution depends on the ages of the taxpayers and transferees receiving and making payments, it appears impossible to clearly distinguish the effects of intra as opposed to intergenerational transfers.

Similar differences in marginal propensities to consume both goods and leisure can arise because of family size and the age distribution of family members. Transfers from young single adults with no children to young married couples with children in a life cycle model provides a good example. Young, married, life cycle couples presumably include the consumption of their young children in their utiity function. In comparison with single individuals, couples with children are likely to consume a greater fraction of their lifetime resources at young ages because of this provision for their children. Consequently, such families should exhibit larger marginal propensities to consume out of transfers than those hypothetical single individuals making the transfers. Both the number and ages of children of transferees will determine marginal family consumption propensities at different ages of the parents. An ongoing policy of redistribution from single, childless individuals to married couples with children can generate permanent reductions in a life cycle economy's degree of capital intensity in much the same way on-going redistribution from the young to the old alters capital intensity. While the quantitative impact of U.S. intergenerational transfers on U.S. saving remains in doubt, there is at least widespread awareness of the size of the intergenerational transfers involved. In the case of intragenerational transfers, no comparable research has yet been conducted to even measure the extent of this form of redistribution.

4.     Economic Effects of Government Consumption.

Between 1960 and 1980 the ratio of U.S. federal government expenditures to the net national product rose by over 30 percent.  Surprisingly, this increase in federal outlays has been associated with a decline in the share of net national product consumed by the federal government.  Federal government consumption, defined as expenditures on non-durables and services, averaged 8.3 percent of net national product in the 1960s and 7.0 percent in the 1970s.[11] Consumption by state and local governments, on the other hand, increased from 8.4 to 11.9 percent of net national product.

As implied by the government's intertemporal budget constraint, current increases in government consumption must be financed either by larger current or future net taxes or lower levels of future government consumption. The effects of changes in government consumption on the private economy depend both on the substitutability of government for private consumption and the particular method used to finance changes in government consumption.

One can easily construct a model in which government consumption has no affect whatsoever on the economy.  Such a situation would arise if government and private consumption were perfect substitutes, if government consumption were inframarginal, and if lump sum taxes were levied on the specific recipients of government consumption expenditures.  In such a world, permanent or temporary changes in government consumption would alter private consumption dollar for dollar leaving total national output, consumption, and saving unchanged.

An alternative assumption is that government consumption provides the private sector with either no additional utility or that the additional utility afforded is completely independent of private consumption and leisure decisions.

In this case the impact on private decisions of government consumption depends entirely on any associated changes in the intra and intergenerational time path of net taxation.

In the simple case of an economy characterized by a single, "infinitely-lived" altruistic family, any increase in the present value of government consumption will alter current levels of private consumption and leisure, since only the level, not the timing of the associated higher net taxation (assuming it is lump sum) affects household behavior. An announcement, today, for example, of a future permanent reduction in government consumption will lead to more current private consumption, and less current labor supply as households begin immediately to spend their anticipated future tax cuts. While national saving will fall in the short run, additively separable representations of this type of utility function imply that the economy will eventually return to its former capital-labor ratio and its former factor returns. The new steady state equilibrium will feature a smaller capital stock and a smaller supply of labor, but a potentially higher level of private consumption. If the permanent reduction in government consumption occurs immediately rather than several years in the future, the economic transition will be somewhat different, but the same steady state will ultimately prevail.

The fact that decreases (increases) in rates of government consumption are associated in these models with a decline (increases) in long-run capital formation contradicts the view that government consumption crowds out investment. In the case of life cycle models permanent increases in government consumption are also consistent with increased capital formation if the associated new time path of net taxation is appropriately chosen. In particular,

increased government consumption financed by lump sum taxes on the old can produce a reduction in private consumption that exceeds the increase in public consumption. In a simple two period model, for example, the consumption of the old falls by the full amount of the tax, but the consumption of the young declines and their labor supply increases in anticipation of meeting the additional tax burden when old.

If the lump sum tax levied to finance the greater government consumption is assessed on the young, the traditional crowding out of private capital will occur. In this case, the young absorb part of the higher tax burden by reducing their consumption when old. The reduction in consumption when young and the increase in the labor supply of the young is typically insufficient to offset the decrease in public saving.

The difficulty of determining the impact of government consumption in the absence of specifying precisely the concommitant changes in taxation is no less true for distortionary taxation than for lump sum taxation. Auerbach and Kotlikoff (1980) simulate the extent of crowding out in a life cycle model in which a proportional income tax is used to finance government consumption. They find that long run crowding out of investment by permanent increases in government consumption is 21 cents for every dollar of government consumption if the government maintains a balanced budget; it is 32 cents if the government keeps tax rates constant for 5 years and balances its budget (inclusive of interest payments on the accumulated debt) thereafter. If tax rates are held constant for 20 years and raised, thereafter, to balance the budget, the crowding out of investment is 80 cents per dollar of additional government consumption.

## Conclusion

This paper has stressed conceptual problems of distinguishing "expenditure" policy from "tax" policy and "deficit" policy. Expenditures, taxes, and deficits are each ill-defined concepts and do not provide a useful basis for examining the government's underlying fiscal policies. The fundamentals of fiscal policy involve changes in marginal incentives, inframarginal intra and intergenerational redistribution, and direct government consumption. However, even this characterization of the government's fiscal instruments is problematic because these "instruments" cannot, in general, be independently applied or separately defined: government-instituted changes in marginal incentives typically involve inframarginal redistribution; intergenerational transfers often have affects that could equally well be attributed to intragenerational transfers; and most changes in government consumption require simultaneously altering marginal incentives and/or engaging in inframarginal redistribution of resources across and within generations.

Descriptions of fiscal policy in terms of its affects on marginal incentives, its pattern of net transfers, and its direct absorption of resources provides more insight than the traditional classification of "expenditure", "taxes" and "deficits"; but this new vocabularly also invites missuse if the necessarily interdependent application of these policies is not fully understood and articulated in predicative statements about government intervention in the private sector.

NOTES

1. _1982 Economic Report of the President_, Tables 4-5, p. 104.

2. Ibid.

3. These are 1981 figures taken from U.S. Department of Commerce, The Survey of Current Business, Vol. 62, No. 4, April 1982, p. 13.

4. U.S. Department of Commerce, Special Supplement, National Income and Product Accounts, 1976-79, July 1981, p. 33. Federal Grants-in-aid to state and local governments allocated to income support, social security, and welfare, veterans benefits and services, urban renewal and community development and labor training and services are counted here as transfer payments to individuals.

5. _Special Analysis, Budget of the U.S. Government_, Special Analysis G, 1981, p. 207.

6. Unofficial treasury estimate.

7. _1982 Economic Report of the President_, pp. 104 and 317.

8. _Ibid._, p. 104.

9. _Ibid._

10. _Ibid._

11. _Ibid._, p. 116.