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THE STABILIZING EFFECTIVENESS

OF BUDGET FLEXIBILITY

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Such terms as "budget flexibility" and "built-in stabilizers" have come to be accepted currency in economic discussions, particularly in the purchase of freedom from recession. As often as not, however, the currency engraving is fuzzy and ill defined. And, most generally, the currency circulates without established values.

The study reported on here attempts, first, to disclose and measure those segments of federal budget revenue and expenditure programs which are flexible and which change automatically in response to changes in gross national expenditures and income: that is, built-in movements within previously defined programs, as opposed to changes in programs that require explicit, new administrative or legislative action. Second, estimates are made of the extent to which these induced budget changes act as stabilizers, in that they, in turn, have a repercussive, determining influence on the amount of change in gross national income and expenditures.[1]

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The broad method used is suggested by the purpose of the study. A clearly defined federal budget, with all its attendant revenue and expenditure programs, was established, and definite patterns and rates of economic change were postulated.

1. When the study began, there was some uncertainty as to

This paper draws on a number of basic studies and estimates contributed by Benjamin Caplan, Sam Cohn, Thomas Leahey, Robert Masucci, Karl Nygaard, Louis Paradiso, and Carl Winegarden. The paper has benefited, especially, from suggestions made by Mr. Caplan. The treatment of the subject, however, is the responsibility of the author alone, and does not necessarily reflect the views of the organization with which he is associated.

1 In order to identify the flexible components of the federal budget and to estimate their degree of flexibility and stabilizing effectiveness with the greatest possible thoroughness and accuracy, it has been necessary to use rather elaborate assumptions, procedures, and calculations. These details, clearly relevant to an appreciation of the estimates, cannot be dealt with here in any extended form. This paper must of necessity be little more than a partial summary of the study and its findings.

how the federal tax system would be altered. It was decided to use the then-existing tax law with certain modifications recommended by the President on May 20, 1953; namely, that:

a. The excess-profits tax would be removed on January 1, 1954
b. The reduction in the regular corporate tax rate from 52 to 47 per cent, scheduled to go into effect on April 1, 1954, would be rescinded
c. The reductions in excise taxes, which would take place April 1, 1954 under present law, would be rescinded pending the development of a better system of excise taxation

This modified tax system was assumed to continue in effect through fiscal years 1954 and 1955.

2. On the expenditure side, the programs contained in the August 27 review of the 1954 budget were taken for fiscal 1954. In the absence of an official budget for fiscal 1955, we arbitrarily settled on an expenditure level of $66 billion. These expenditures were regarded as taking place under conditions of an expanding high-employment economy, with prices stable at the level of the first half of 1953.

3. The revenue and expenditure estimates, translated into national income account equivalents, were incorporated in three models of gross national product designed to trace high-employment, moderate downturn, and recession conditions. In the case of the last two models the government revenue and expenditure estimates were adjusted to reflect the postulated economic conditions. The adjustments, however, were regarded only as first approximations to the induced movement of revenues and expenditures. These comprehensive models served as the basis for more exhaustive and accurate estimates of revenues and expenditures. The models, in turn, were then recast to include the more accurate estimates of government transactions, and to reconcile all other expenditure and income calculations.

4. Flexible expenditure programs were defined and classified as follows:

a. Appropriations or major programs in which changes in expenditures could occur without requiring either action by Congress or the exercise of administrative discretion. This type of flexibility is exemplified by permanent, indefinite appropriations, such as interest on the public debt, expenditures from the social insurance trust funds, and programs in which suppliers could change delivery schedules for goods under contract.

b. Programs which would require supplemental appropriations by Congress in order to carry out expenditure commitments made under existing policies and enabling legislation. It was assumed that such additional authorizations would be enacted to meet the requirements resulting from additional case loads or other factors in "open-end" programs, such as public assistance grants to states and veterans' pension and readjustment benefits.

c. Programs financed by public debt authorizations, whether or not additional borrowing authority would be required to make expenditures under existing policies and enabling legislation. It was assumed that additional authorizations would be made as required. This applies to farm price support operations (Commodity Credit Corporation) and to the mortgage purchase program (Federal National Mortgage Association).

d. Programs in which changes could occur as a result of administrative discretion, to the extent that funds were available without further Congressional action. This would include a speedup in letting contracts, an increase in the rate of construction on river, harbor, and reclamation projects, or other changes in existing policies (including policies mentioned in b and c above).

e. Programs in which expenditure levels could be changed by changes in the prices of goods and services purchased.

5. The gross national product models were not derived from any fixed set of economic relationships, but were built up on a step-by-step judgment basis. In the case of the recession model, we attempted to surmise just how the general economy and its components might move, time- and amplitudewise, and what other characteristics the recessionary development might have. This was done, however, with the fullest possible regard to past experience and relationships and to the peculiarities of the economy at the onset of the hypothetical recession. It cannot be stressed too strongly that all models are regarded as purely hypothetical parts of a technical study, and not in any way as suggesting possible future developments. The more basic assumptions and characteristics of the recession model are:

a. Unemployment is assumed to reach 8.0 million over a two-year period.

b. Labor force growth is assumed to slow down, with a net reduction in the participation rates of teen-agers, elderly men, and adult women. The labor force, at the end of two years, is

put at 68.1 million, compared with 67.2 million in the first half of 1953.

c. Farm employment is assumed to rise from 6.3 to 6.8 million farm workers.

d. Factory hours fall about 5 hours to a below-standard work-week (i.e. from 41.0 to 35.9 hours) and overtime virtually disappears. The private nonfarm workweek is assumed to fall 3.2 hours (from 39.8 to 36.6 hours).

e. The growth in private nonfarm product per man-hour is kept at about .5 per cent per year (i.e. from an index of 100.0 to 101.8 in two years).

f. Despite sharply decreased hours of work, the foregoing assumptions entail a net reduction of 5.7 million private nonfarm jobs (from 49.1 to 43.4 million).

g. The consumer price index is assumed to show an average decline of $\frac{3}{8}$ per cent per month, or an over-all 9 per cent decline for the two-year period. The post-1929 fall was at the rate of .5 per cent per month during the first 24 months.

h. Wholesale prices are assumed to fall at a rate $1\frac{1}{2}$ times that of retail prices, or 12 per cent over the two-year period. The post-1929 fall in wholesale prices was at twice the rate of consumer prices.

i. Farm prices are assumed to fall 14 per cent over the period.

j. Private wages and salaries per man-hour are assumed to fall at half the rate of consumer prices.

k. Corporate profits plus inventory valuation adjustment are assumed to move with the private nonfarm gross national product, at a marginal rate of roughly one-fourth.

l. At the onset of the recession, dividends are less than one-half of corporate profits after taxes. They are assumed to rise to about three-quarters of profits by the end of the period.

m. The personal saving rate, out of disposable income, is assumed to fall to roughly 4.0 per cent.

n. Farm and government gross products were estimated separately, and added to the private nonfarm gross product, derived on the basis of the assumptions listed above, to yield a total gross national product.

o. Personal consumption expenditures were estimated from an income account consistent with the estimated gross national product and other assumptions listed.

p. With estimated government and consumer expenditures, gross investment outlays were obtained, residually. Inventory

changes were estimated on the assumption of keeping the ratio of total inventories to sales or gross nonfarm product roughly the same as in the first half of 1953. The remaining sum of gross private domestic investment was distributed over construction and producers' durable goods on what appeared to be a most reasonable basis.

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The concept of flexibility in budget revenue and expenditure programs can be clearly and meaningfully defined in a number of alternative forms. It may be expressed as the amount of induced, absolute dollar change in a given revenue or expenditure program following an absolute dollar change in some external variable, such as gross national expenditures. Alternatively, it may be measured in elasticity terms: the percentage change in revenue, for example, relative to a percentage change in gross national expenditures. Or budget flexibility may be stated in terms of change in the average effective tax rate in response to a change in the external variable.

Similarly, the notion of the stabilizing influence of budget flexibility can be given reasonably clear alternative definitions. But these alternatives include arbitrary elements and differences in meaningfulness which make the selection of one definition a matter of some moment. In testing the stabilizing effectiveness of flexibility, the calculation is basically in terms of what the gross national expenditure level would be with a given budget flexibility, as compared with what the level would be in the absence of the given flexibility, or with some other degree of flexibility. This, however, at once suggests measurement against some assumed bench-mark dependent upon the definition of flexibility employed. To illustrate with the case of revenue flexibility, the test involves comparing gross national expenditures under the actual tax system with what such expenditures would be if some other, hypothetical tax system were in existence.

Thus the income or expenditure level obtained with an actual tax system may be compared with the income level that would result under a hypothetical tax system designed to keep total revenues completely unchanged or inflexible. In terms of the alternative definitions of flexibility described above, this hypothetical tax system would have zero absolute, zero elasticity, and perverse effective-rate flexibility in response to changes in the external variable. Another hypothetical tax system may be one in which the average ef-

fective tax rate remains unchanged with changes in income. That is, effective-rate flexibility is zero, absolute flexibility is positive, and elasticity flexibility is equal to one.

Instead of using such hypothetical tax systems as bench-marks for testing the stabilizing effectiveness of the present tax system, it has been suggested that some other actual tax system, such as that in effect in 1929, or 1937, or 1948, might be used as a bench-mark. Some technical difficulties arise in this sort of calculation, but, more important, the approach involves a conceptual difficulty which militates against its use. Apart from differing general levels of economic activity, which is a relevant consideration, the structural and interrelationship pattern of an economy is clearly influenced or shaped by the particular, existing tax system. It seems awkward, at the least, to place the present tax system, for example, into the economic environment of 1929, which was shaped in some degree by the actual tax system of that year.

The bench-mark used in this study is that given by assuming zero effective-rate flexibility, which is equivalent to the unit elasticity flexibility of a proportional tax system. That is, the stabilizing effectiveness of the present tax system is tested by comparison with what, say, the effect on income would be if tax revenues changed in direct proportion to changes in gross national income.

The detailed, precise definition of stabilizing effectiveness used here is most readily given in algebraic form.

With all values expressed in current prices, let

$Y =$ gross national expenditures or income

$C =$ consumption expenditures

$I =$ investment expenditures

$G =$ programed government expenditures for goods and services

$G_f =$ flexible government expenditures for goods and services

$Y_d =$ personal disposal income

$R =$ total tax revenues

$T =$ government transfer payments; broadly interpreted to include interest and subsidies minus current surplus of government enterprises

$S_b =$ business savings; including capital consumption allowance, undistributed corporate profits, corporate inventory valuation adjustment, excess of wage accruals over disbursements, and the statistical discrepancy

(1) $$Y = C + I + G + G_f$$

(2) $$Y_d = Y - R + T - S_b$$

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(3) $$C = a + c(Y - R + T - S_b)$$

where $c =$ marginal rate of change in consumer expenditures relative to disposable income

$a =$ constant in the consumption function

Setting

$R = rY$ where r is the average effective tax rate, measured as the ratio of revenues to gross national income

$T = tY$ where t is the ratio of transfer payments to gross national income

$S_b = d + sY$

$G_f = gY$ where g is the ratio of flexible government expenditures to gross national expenditures

then

(4) $$Y = a + c(Y - rY + tY - d - sY) + I + G + gY$$

(5) $$Y = \frac{a - cd + I + G}{1 - c(1 - r + t - s) - g}$$

The initial gross national expenditure, before a change in investment and/or programed government expenditures, would be

(6) $$Y_1 = \frac{a - cd + I_1 + G_1}{1 - c(1 - r_1 + t_1 - s) - g_1}$$

With a change in investment and/or government programed expenditures,

(7) $$Y_2 = \frac{a - cd + I_2 + G_2}{1 - c(1 - r_2 + t_2 - s) - g_2}$$

where the change in "autonomous" expenditures induces a change in r, t, and g. If r, t, and g are assumed to remain unchanged, the hypothetical gross national expenditure would be

(8) $$Y_{12} = \frac{a - cd + I_2 + G_2}{1 - c(1 - r_1 + t_1 - s) - g_1}$$

The actual change in gross national expenditures would be $Y_1 - Y_2$. If the average rates r, t, and g had zero flexibility, the hypothetical change would be $Y_1 - Y_{12}$. And, the difference between the hypothetical and actual changes may be expressed in the form

$$(Y_1 - Y_{12}) - (Y_1 - Y_2) = Y_2 - Y_{12}$$

This difference, the amount of further change in expenditures which is prevented by the built-in flexibility other than zero, may be measured relative to (a) the original level of expenditures

$$\frac{Y_2 - Y_{12}}{Y_1}$$

(b) the new actual expenditure level

$$\frac{Y_2 - Y_{12}}{Y_2}$$

(c) the hypothetical expenditure

$$\frac{Y_2 - Y_{12}}{Y_{12}}$$

or (d) the full, hypothetical change that might have taken place

$$\frac{Y_2 - Y_{12}}{Y_1 - Y_{12}} \text{ (see footnote 2)}$$

This last, which shows the degree to which the built-in flexibility offsets the change in investment and/or programed expenditures, is calculated for the present study.

Since

$$(9) \quad Y_1 - Y_{12} = \frac{\Delta(I+G)}{1 - c(1 - r_1 + t_1 - s) - g_1}$$

and

$$(10) \quad Y_2 - Y_{12} = Y_2 \left[\frac{c(r_1 - r_2) - c(t_1 - t_2) - (g_1 - g_2)}{1 - c(1 - r_1 + t_1 - s) - g_1} \right]$$

the stabilizing effectiveness of built-in flexibility, or the degree to which automatic flexibility offsets a change in investment and/or programed government expenditures, is shown by

$$(11) \quad \frac{Y_2 - Y_{12}}{Y_1 - Y_{12}} = Y_2 \left[\frac{c(\Delta r - \Delta t) - \Delta g}{\Delta(I+G)} \right]$$

This expression is identified as ϕ—the coefficient of stabilizing flexibility, or the flexibility offset to change in investment and/or

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[2] This is equivalent to the measurement used by Richard A. Musgrave and Merton H. Miller in their article on "Built-in Flexibility" (*American Economic Review*, March 1948, pp. 122–128). In that article, which deals essentially with revenue flexibility, the hypothetical decline is taken as that associated with a tax system which has zero absolute and elasticity flexibility, rather than zero effective-rate flexibility, assumed here. The relation between the two approaches is shown in the appendix to this paper.

programed government expenditures. The coefficient has boundary values of zero, when there is no change in the sum of average rates; and one, for perfect stabilizing flexibility or offset. Negative values may also be obtained, reflecting destabilizing or perverse flexibility.

In the case of a fall in investment and/or programed government expenditures, a decrease in the average tax rate and increases in the average transfer and flexible government expenditure rates (measured relative to gross national income) provide offsets to the deflationary change in outlays.

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As is apparent from equation 11, separate, additive subcoefficients of stabilizing flexibility can be calculated for the tax, transfer, and expenditure programs; and for components within each major program. The preliminary estimates available at this time are presented in Table 1. Coefficients are shown for half yearly changes in the recession model, for successive yearly changes in the period 1929–1932, and for the 1937–1938 change. All government expenditures for goods and services, in the latter historical periods, were taken as programed.

Though the figures are still tentative, their general magnitudes are probably accurate enough to permit evaluations; however, we are unable to undertake this evaluation in the present paper. This deficiency is partially remedied by the comments that follow.

Appendix

The relation between the approach used here and that employed by Musgrave and Miller may be shown as follows:

Summarizing the Musgrave and Miller method, using their notation and equation numbering,

(1) $$\Delta Y = \Delta I + c\Delta Y - c(r_1 Y_1 - r_2 Y_2)$$

"The income elasticity (E) of the tax yield (T) is"

(2) $$E = \frac{\Delta T Y_1}{\Delta Y T_1}$$

Solving equation 2 for ΔT and substituting for $(r_1 Y_1 - r_2 Y_2)$,

(3) $$\Delta Y = \Delta I \frac{1}{1 - c + cE\frac{T_1}{Y_1}}$$

TABLE 1

Stabilizing Effectiveness of Budget Flexibility

	Expression	Hypothetical			CALENDAR YEAR Actual			
		"1953"–II to "1954"–I	"1954"–I to "1954"–II	"1954"–II to "1955"–I	1929 to 1930	1930 to 1931	1931 to 1932	1937 to 1938
Change in investment and/or programed government expenditures for goods & services	$\Delta(I+G)$	13.6	14.4	14.3	5.0	5.3	5.6	2.9
				Billions of Dollars				
				Percentage Offset				
Revenues								
Personal tax & nontax receipts	ϕ_{rp}	.0811	.0600	.0672	−.0351	.0403	−.0038	−.0192
Federal	ϕ_{frp}	.0879	.0646	.0802	−.0053	.0578	.0190	−.0028
State & local	ϕ_{lrp}	−.0068	−.0046	−.0130	−.0300	−.0176	−.0228	−.0164
Corporate profits tax accruals	ϕ_{rc}	.2094	.1138	.1998	.0680	.0354	.0003	.0606
Federal	ϕ_{frc}	.2068	.1114	.1917	.0628	.0344	.0002	.0572
State & local	ϕ_{lrc}	.0026	.0024	.0082	.0053	.0012	.0001	.0034
Indirect business tax & non-tax accruals	ϕ_{ri}	−.0603	−.0721	−.0890	−.1861	−.1495	−.2091	−.0892
Federal	ϕ_{fri}	−.0125	−.0100	−.0106	−.0002	−.0035	−.0332	−.0067
State & local	ϕ_{lri}	−.0478	−.0621	−.0784	−.1860	−.1460	−.1760	−.0960
Contributions for social insurance	ϕ_{rs}	−.0809	−.0186	−.0257	−.0072	−.0087	−.0108	−.0460
Federal	ϕ_{frs}	−.0769	−.0131	−.0189	−.0028	−.0034	−.0042	−.0410
State & local	ϕ_{lrs}	−.0040	−.0056	−.0068	−.0044	−.0053	−.0064	−.0047
Subtotals								
Revenues	ϕ_{r}	.1493	.0830	.1524	−.1606	−.0824	−.2233	−.0936
Federal	ϕ_{fr}	.2053	.1530	.2424	.0545	.0853	.0182	.0201
State & local	ϕ_{lr}	−.0560	−.0699	−.0900	−.2151	−.1677	−.2052	−.1137

(continued on next page)

TABLE 1 (continued)

CALENDAR YEAR

	Expression	Hypothetical			Actual			
		"1953"—II to "1954"—I	"1954"—I to "1954"—II	"1954"—II to "1955"—I	1929 to 1930	1930 to 1931	1931 to 1932	1937 to 1938
Transfer payments								
All governments	ϕt	.1690	.2152	.2366	.0581	.2572	.0224	.1355
Federal	ϕft	.1452	.1916	.2031	.0316	.2133	−.0287	.0960
State & local	ϕlt	.0238	.0237	.0335	.0265	.0439	.0511	.0396
Subtotals								
Revenues and transfers	ϕrt	.3183	.2982	.3890	−.1025	.1748	−.2009	.0419
Federal	ϕfrt	.3505	.3446	.4455	.0862	.2986	.0468	.1162
State & local	ϕlrt	−.0322	−.0462	−.0565	−.1886	−.1238	−.1541	−.0741
Flexible expenditures for goods and services								
Federal	ϕfg	.0053	.0319	.0123	…	…	…	…
Programs (see pp. 78–79)								
4a	ϕfga	−.0017	−.0020	−.0025	…	…	…	…
4b	ϕfgb	.0009	.0009	.0010	…	…	…	…
4c	ϕfgc	.0113	.0116	.0128	…	…	…	…
4d	ϕfgd	.0784	.0802	.0895	…	…	…	…
4e	ϕfge	−.0836	−.0588	−.0885	…	…	…	…
Total								
Revenues, transfers, & expenditures		.3236	.3301	.4013	−.1025	.1748	−.2009	.0419
Federal	$\phi frtg$	.3558	.3764	.4578	.0862	.2986	.0468	.1162
State & local	ϕlrt	−.0322	−.0462	−.0565	−.1886	−.1238	−.1541	−.0741

Note: Preliminary estimates. Details will not necessarily add to totals because of rounding.

Substituting r_1 for $\dfrac{T_1}{Y_1}$,

$$(4) \qquad \Delta Y = \Delta I \frac{1}{1 - c(1 - Er_1)}$$

"As a convenient measure for the compensatory effectiveness of 'built-in flexibility' we may then write

$$(5) \qquad a = 1 - \frac{\Delta Y}{\Delta Y_a}$$

where ΔY refers to the change in income in the particular tax system under discussion (with its specific positive value for Er_1) and ΔY_a refers to a system where (E) is set equal to zero."

Substituting equation 4 in equation 5,

$$(6) \qquad a = 1 - \frac{1 - c}{1 - c(1 - Er_1)} = \frac{cEr_1}{1 - c + cEr_1}$$

Continuing now to establish the relation between the above approach and that used here, equation 2 may be stated as

$$(7) \qquad E = \frac{r_1 Y_1 - r_2 Y_2}{\Delta Y} \cdot \frac{Y_1}{r_1 Y_1} = 1 + \frac{\Delta r Y_2}{r_1 \Delta Y}$$

so that

$$(8) \qquad E - 1 = \frac{\Delta r Y_2}{r_1 \Delta Y} = \Gamma$$

If now ΔY is taken to refer to changes in income in a particular tax system with a flexible average effective rate (i.e. Δr has a value other than zero), and ΔY_a refers to a system where $E = 1$ or effective-rate flexibility is zero (i.e. $\Gamma = 0$, rather than $E = 0$), equation 6 becomes

$$(9) \qquad \phi = 1 - \frac{1 - c + cr_1}{1 - c + cEr_1} = \frac{cr_1(E - 1)}{1 - c + cEr_1} = \frac{cr_1 \dfrac{\Delta r Y_2}{r_1 \Delta Y}}{1 - c + cEr_1}$$

or

$$(10) \qquad \phi = \frac{c\Delta r Y_2}{\Delta Y(1 - c + cEr_1)}$$

which, from equation 4, is

$$(11) \qquad \phi = Y_2 \left[\frac{c\Delta r}{\Delta I} \right]$$

As to the comparative values of ϕ and a, equation 9 may be written

$$(12) \qquad \phi = \frac{cEr_1}{1 - c + cEr_1} - \frac{cr_1}{1 - c + cEr_1}$$

And, since $a = \dfrac{cEr_1}{1 - c + cEr_1}$, from equation 6

$$(13) \qquad \phi = a - \frac{cr_1}{1 - c + cEr_1}$$

where ϕ is clearly less than a.

The change in the government deficit associated with the flexibility offsets may be shown in the following manner:

The government surplus (S) may be defined as

$$(1) \qquad\qquad S = R - (G + G_f + T)$$

$$(2) \qquad\qquad \Delta S = \Delta R - \Delta G - \Delta G_f - \Delta T$$

which can be expressed in the form

$$(3) \quad \Delta S = s_1 \Delta Y + \Delta s Y_2 = (r_1 \Delta Y + \Delta r Y_2) - (n_1 \Delta Y + \Delta n Y_2)$$
$$- (g_1 \Delta Y + \Delta g Y_2) - (t_1 \Delta Y + \Delta t Y_2)$$

where s and n are the ratios of the surplus and nonflexible government expenditures, respectively, to gross national expenditures. Equation 3 can be written as

$$(4) \quad \Delta S = s_1 \Delta Y + \Delta s Y_2 = Y_2(\Delta r - \Delta t - \Delta g - \Delta n)$$
$$+ \Delta Y(r_1 - t_1 - g_1 - n_1)$$

If $S_1 = 0$, $s_1 = 0$, and $r_1 - t_1 - g_1 - n_1 = 0$, so that

$$(5) \qquad \Delta S = \Delta s Y_2 = Y_2(\Delta r - \Delta t - \Delta g - \Delta n)$$

then with a decline in gross national product, a decrease in r $(\Delta r = r_1 - r_2 > 0)$ and increases in t, g, and n $(\Delta t = t_1 - t_2 < 0$; $\Delta g < 0$; and $\Delta n < 0)$ reduce the government surplus or increase the deficit.

Let $F = Y_2 [c(\Delta r - \Delta t) - \Delta g]$, which is the offset to the decline in investment and/or programed expenditures $(\Delta(I + G)$ in equation 11 of the text).

$$(6) \quad \Delta S - F = Y_2[(\Delta r - \Delta t - \Delta g - \Delta n) - (c\Delta r - c\Delta t - \Delta g)]$$

$$(7) \quad \Delta S - F = Y_2[(1 - c)(\Delta r - \Delta t) - \Delta n]$$

In ratio form

$$(8) \qquad\qquad \frac{\Delta S}{F} = \frac{\Delta r - \Delta t - \Delta g - \Delta n}{c(\Delta r - \Delta t) - \Delta g} > 1$$

with a decline in expenditures.

COMMENT

SAMUEL M. COHN, Bureau of the Budget

Lusher's interesting paper provides one possible measure of "budget flexibility"—a measure of the offset provided by "built-in stabilizers" to programed declines in investment and government purchases. The estimates he provides for ϕ, measuring the stabilizing effectiveness of built-in budget flexibility, are indeed interesting, and provide a base from which further analysis could lead to policy conclusions and decisions.

However, these estimates of ϕ and the conclusions derived can be no better than the underlying data and the estimates which were made to measure the responsiveness of the federal budget to assumed changes in economic activity.

The study of budget responsiveness that provides the basic figures for Lusher's paper includes only those government programs for which federal receipts or expenditures would change appreciably with a change in economic activity. In other words, it excludes the effects of government programs which do not currently influence the federal budget; for example, bank deposit insurance, mortgage insurance, savings and loan insurance, and loan guarantee programs. It also excludes the economic effects of a flexible monetary policy.

In summary, therefore, we have examined the changes in receipts and disbursements of the federal government which would occur with certain assumed changes in the economy, without adding any new antirecession programs. Estimates of the changes in some government programs were relatively easy to make. In other cases, however, many auxiliary assumptions and judgments were necessary, and these assumptions and judgments—although reasonable —are certainly debatable. I shall try to mention the important ones as I describe the estimates.

First, however, several general observations are in order. The estimates in my discussion are based on fiscal years; thus the fiscal year 1953 is the year that ended on June 30, 1953. They have to do with the federal budget, and are conceptually different from the income and product accounts of the federal sector which form the basis for Lusher's calculations. For example, my revenue estimates are in terms of collections and therefore lag the tax liabili-

The estimates and opinions presented are my judgments and are not necessarily the same as those of the Bureau of the Budget.

ties (accruals) which are included in the income and product statistics. It is by looking at the federal budget, rather than the national income accounts, that we can obtain a background against which political and administrative decisions would have to be made in response to various kinds of economic change. Quantitative changes in the federal budget are computed in terms of the consolidated cash statement, or receipts from and payments to the public. At the end of the discussion I shall reconcile the figures to show the change in the deficit of the conventional or so-called administrative budget.

My discussion will be limited to the fiscal year which Lusher has called, in quotation marks, 1955. Institutionally, present laws and government programs pretty much tie down the period of time to the actual fiscal year 1955. Lusher described the assumptions we made with respect to changes in present tax laws and with respect to the total of budget expenditures. Within limits, other assumptions could be made which might be just as reasonable. On the expenditure side of the budget, however, the limits are such that other reasonable assumptions for the fiscal year 1955 would not have appreciably altered the dollar estimate of the change in government expenditures due to the assumed change in economic conditions.

In discussing the change in the cash surplus (or deficit) resulting from the assumed change in economic conditions, I shall group the federal programs involved into five categories. These categories indicate differences in the degree to which the budgetary changes are really "built-in," and also indicate differences in the kinds of judgments which must be made in preparing the estimates. The five categories are (1) truly automatic changes—those occurring without the necessity for any executive or legislative decisions; (2) changes arising from needed supplemental appropriations—here executive and legislative decisions are required, but the area of discretion is very limited; (3) changes arising in programs financed by public debt authority—mostly government enterprises—where market conditions make for special problems; (4) changes resulting from price declines, and here very definite administrative decisions are required; (5) changes which can be accomplished by administrative discretion—within already appropriated funds and without changing program objectives—the administrative decisions required here might be more difficult to make than those in the fourth category.

In total the estimates show that under the assumed recession conditions the consolidated cash deficit for the fiscal year 1955 might be

Summary of Changes in Cash Surplus or Deficit between Expanding Economy
and Recession, "Fiscal Year 1955"

(*billions of dollars*)

Category	Increase in Cash Surplus (+) or Deficit (−)
1. Automatic	−19.2
2. Supplemental appropriation requirements	−1.2
3. Programs financed by public debt authorizations	−2.7
4. Effect of price declines	+3.2
5. Administrative discretion	−4.0
Total	−23.9

1. *True Automatic Changes.* As shown in the summary below,
over 80 per cent of the estimated automatic increase in the cash
deficit results from a decline in budget revenues.

Type of Automatic Change	Increase in Cash Surplus (+) or Deficit (−) (*billions of dollars*)
a. Decline in trust fund receipts	−1.2
b. Rise in trust fund expenditures	−2.5
c. Decline in budget receipts	−15.7
d. Decline in budget expenditures	+.6
e. Increase in cash payments, not elsewhere classified	−.4
Total	−19.2

$23.9 billion greater than under conditions of an expanding econ-
omy.

    a. Most of the change in trust fund receipts, taken as a whole,
results from reduced payroll tax collections, which are the
major source of receipts of these funds. With a decline in em-
ployment and in wages and salaries, "covered" payrolls would
decline, thus lowering tax collections, primarily in the old
age and survivors' insurance, railroad retirement, and unem-
ployment trust funds. A small decline would also occur in
the interest received on trust fund investments, since worsen-
ing economic conditions would reduce the amount available
for investment or—in the case of the unemployment trust fund
—necessitate the liquidation of investments to pay current
benefits.

    b. The increase in trust fund expenditures consists almost entirely
of increased benefit payments from the social security trust
funds. These would occur because of the greater number of
persons who would be eligible and who could be expected

to apply for benefits under existing laws. By far the largest increase is in the unemployment trust fund.

c. Estimates of budget receipts were based on the President's tax proposals of May 1953, which would rescind the reductions scheduled to occur April 1, 1954 in corporation income taxes and in excise taxes.[1] Since tax collections lag tax liabilities, the full impact of the economic change is not apparent in these estimates. Thus if economic conditions were to stabilize at the assumed recession level, tax collections in the fiscal year 1956 would be lower than in 1955. This is pointed out because the corresponding 1955 estimate on the national income and product basis is in terms of accruals (or liabilities) and is substantially lower.

d. Most of the automatic decline in budget expenditures under recession conditions is estimated to result from a slowdown of deliveries of military goods, despite attempts that might be made by the Department of Defense to keep military procurement on schedule. Estimates of such a slowdown were based on the *assumption* that most military contractors would try to stretch out this federal contract work under recessionary economic conditions so that they could maintain a nucleus of key technical and skilled personnel and thus improve their competitive position when civilian demand began to rise. This assumption was made after lengthy discussions with government experts in this field, but it is certainly debatable, since any contractors pressed for cash might tend to speed up deliveries in order to receive final contract payments earlier.

e. The increase shown above for "cash payments not elsewhere classified" consists largely of interest on redeemed savings bonds and of redemptions of notes of the International Bank and International Monetary Fund. Under recession assumptions it is estimated that there would be a rise in cash redemptions of savings bonds, particularly Series E bonds. As a result, interest paid out would increase. The increased interest payments (but not the repayment of borrowing) are considered cash expenditures. It is also expected that member nations of the IMF would have balance of payment difficulties requiring a greater supply of dollars, and we therefore estimated

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[1] After this study was prepared Congress deferred the scheduled reduction in corporation income taxes for one year. However, excise tax rates were reduced (resulting in an estimated revenue loss of $1 billion) and the internal revenue code was revised; these actions differed from the basic assumptions made in preparing the revenue estimates for this study.

that there would be net redemptions of IMF notes of $300 million under recession conditions, while no net redemption was estimated under the expanding economy assumption.

2. *Expenditure Changes from Supplemental Appropriations.* The programs included in this category are those in which a worsening of economic conditions would cause increases in the number of persons applying and qualifying for benefits under present law, thereby raising the financial requirements of the programs in terms of both benefit payments and administrative workloads. These programs differ from the trust fund programs mentioned under "true automatic changes" since appropriations for the latter are "indefinite," the amount available depending on the program requirements, while appropriations for the programs in this category are enacted in specific amounts. To meet the increased financial demands under the assumed recession, administrative and legislative actions would be required to obtain supplemental appropriations. Some time lag in obtaining the necessary actions might occur, but the supplemental appropriations would undoubtedly be enacted because the funds required to meet the increased program requirements are in effect legal and moral obligations of the government.

Program or Agency Requiring Supplemental Appropriation	Increase in Cash Surplus (+) or Deficit (−) (billions of dollars)
a. Veterans' compensation, pensions, unemployment benefits, care, etc.	−.9
b. Defense Department drill pay	−.1
c. Public assistance grants	−.1
d. Post Office deficit	−.1
e. Other	a
Total	−1.2

a Less than $.1 billion.

a. Veterans' programs account for three-fourths of the estimated increase in expenditures under supplemental appropriations. The specific programs involved and the assumptions used are: (1) education and training benefits are expected to rise because the number of Korean veterans going to school would increase with a decline in employment opportunities; (2) eligibility under the compensation and pension program is determined in part by the annual income of veterans or their dependents— with declines in employment and income under recession con-

ditions, the average number of newly eligible veterans would be expected to rise and additional currently eligible veterans would undoubtedly apply for benefits; (3) unemployment compensation payments to Korean veterans would increase in the event of an economic decline; and (4) expenditures for the loan guarantee program would be expected to rise because defaults on loans would increase under the assumed recession.

b. The increase estimated for drill pay is based on the expectation that attendance of reservists would rise as employment and income fell.

c. With increased unemployment, expenditures for public assistance are also expected to rise.

d. Postal volume and postal revenue are estimated to fall somewhat faster than expenditures under recession conditions, thus increasing the postal deficit—which must be met from general revenues.

3. *Expenditure Changes (Net) in Programs Financed by Public Debt Authority.* Programs in this category are financed through enacted "authorizations to expend from public debt receipts" and are mainly carried out by wholly owned government corporations. Because these programs are of a business character, regular appropriations have been considered too cumbersome and inefficient for their ordinary operations. Therefore, the government agencies involved are usually authorized to conduct their activities on a "revolving fund" basis—i.e. they may spend their operating receipts as well as additional funds to the extent that their outstanding liabilities at any one time do not exceed the amount of the available public debt authorizations. Such authorizations are usually enacted in relatively large amounts, so that the agencies can carry on their activities for several years without the necessity for returning annually to Congress for additional funds. To the extent that this is true, the net expenditure changes estimated are somewhat similar in nature to the "true automatic" changes already discussed. They are grouped here, in a separate category, because (1) the estimates are much more difficult to make than those in the "true automatic" category and (2) there is some degree of administrative discretion involved unless one assumes that present program objectives are rigidly defined and will remain unchanged.

With changing economic conditions, changes would occur in the various markets in which these government enterprises play a role. The expenditure estimates, therefore, are based on a number of

specialized assumptions and judgments about these markets. In addition, they assume no change in present laws and program objectives.

Program or Agency Financed by Public Debt Authorization	Increase in Cash Surplus (+) or Deficit (−) (billions of dollars)
a. Federal National Mortgage Association	−1.0
b. Agricultural price supports	−.5
c. Export-Import Bank	−.5
d. Low rent housing	−.2
e. Defense Production Act	−.2
f. Insurance of housing mortgages and savings and loan deposits	−.1
g. Reconstruction Finance Corporation	−.1
h. Other	−.1
Total	−2.7

   a. The Federal National Mortgage Association is authorized to purchase FHA- and VA-insured mortgages of face value up to $10,000 so long as the Association's total holdings do not exceed $3,650 million.[2] FNMA net expenditures reflect sales and purchases of such mortgages plus earnings and repayments. It was assumed that under recession conditions, private lenders would be more reluctant to invest in mortgages and that therefore the FNMA would be called upon to provide mortgage funds necessary to meet housing demand not supplied by the private market, and to encourage private mortgage investment by providing a secondary market.

   b. Expenditures by the Commodity Credit Corporation for agricultural price supports (including the International Wheat Agreement) are determined by the level of price supports and the factors affecting supply and demand for the commodities under price supports. Assuming effective marketing quotas and acreage allotments, it is estimated that expenditures of the CCC would rise in a recession due to (1) a drop in cotton exports, (2) an increase in the subsidization of wheat export under the International Wheat Agreement, and (3) an increase in expenditures for the support of nonbasic crops. However,

   [2] Under the Housing Act of 1954 enacted during the Eighty-third Congress, second session (after this study was prepared), the FNMA is authorized to purchase FHA- and VA-insured mortgages of face value up to $15,000 and the limit on its total holdings has been changed.

it should be pointed out that expenditure estimates for this program are difficult to make under any conditions.[3]

c. The Export-Import Bank is authorized to make loans to foreign countries in order to facilitate and assist the export and import trade of the United States. Operating within its lending authority limit of $4.5 billion,[4] the Export-Import Bank could expand its loan program in response to increased need for funds by foreign countries in the event of a recession. In addition, decreased repayments on loans now outstanding might be expected. Thus net expenditures of the Bank might be expected to increase substantially over the level assumed in an expanding economy.

d. Most of the estimated net increase in expenditures for the low rent housing program results from an assumed increase in the ratio of government to private financing under recession conditions.

e. The rise in net expenditures under the Defense Production Act reflects increased purchases of aluminum, copper, titanium, and other materials for the stockpile as private consumption declines. Such purchases would, of course, be limited by stockpile objectives and the availability of funds.[5]

f. A recession could also be expected to produce additional defaults of mortgages insured by the government.

g. Net receipts of the Reconstruction Finance Corporation are estimated to fall as the liquidation of RFC assets might be hampered by the assumed economic recession.

4. *Expenditure Change Due to Price Declines.* Price declines during the assumed recession would result in lower costs to the government for many of the goods and services it purchases. Under present law the President (through the Bureau of the Budget) may establish budgetary reserves out of savings made possible after an appropriation becomes available. It was assumed that the President (through the Bureau of the Budget) would place savings

[3] New farm price support legislation, recently enacted by the Congress, is not expected to affect expenditures until 1956.

[4] This authority was increased by $500 million during the second session of the Eighty-third Congress.

[5] Since this paper was prepared, the President has approved a new long-term stockpile policy, which is being reflected in additional procurement and stepped-up deliveries for the stockpile. To finance increased procurement, a supplemental appropriation of $380 million was approved by the Eighty-third Congress, second session. These changes were not taken into account in the estimates presented here.

due to price declines in such reserves. Possible expansions of program objectives through the use of these savings is included in the next category, "administrative discretion."

Program or Agency Affected by Price Declines	Increase in Cash Surplus (+) or Deficit (−) (billions of dollars)
a. Defense Department	+2.4
b. Mutual Security Program	+.4
c. Atomic Energy Commission	+.1
d. Stockpiling of strategic materials	+.1
e. Various grants to states	+.1
f. Other (including civil works)	+.1
Total	+3.2

a. About three-quarters of the expenditure reductions due to price declines are estimated to be in the Department of Defense, resulting in large part from the assumed declines in the wholesale prices of metals, metal goods, and construction materials. Costs of procurement of major equipment and construction would be particularly affected.

b. In addition, it is estimated that expenditures for mutual security—representing in large part heavy (including military) equipment—could drop considerably in the event of a recession, as a result of declines in both foreign and domestic prices.

c–f. Expenditures for other agencies and programs would be affected, but to a smaller degree.

5. *Expenditure Changes through Administrative Discretion.* The estimates in this category are based largely on the following considerations: (1) Congressional appropriations are sometimes enacted for one year, sometimes for two years, and sometimes without any specific time limit; thus government agencies have some discretion with respect to the speed with which they undertake

Program or Agency Affected by Administrative Discretion	Increase in Cash Surplus (+) or Deficit (−) (billions of dollars)
a. Defense Department	−.8
b. Mutual Security Program	−2.8
c. Various grants to states	−.1
d. Farm programs	−.1
e. Stockpiling of strategic materials	−.1
f. Other	−.1
Total	−4.0

authorized programs and objectives. (2) The budgetary reserves established because of price declines could be made available to expand or expedite projects within the limits of the legislation authorizing and financing the work, the feasibility of management and administration, and the objectives of the particular activity.

a. The estimated increase in Defense Department expenditures results from an assumed administrative decision to initiate construction of projects already authorized and funded, but deferred because of general budgetary restrictions. An expansion would also be possible without additional appropriations in the Defense Department's industrial mobilization program, which provides for the building of additional plant capacity.

b. The program for which the largest change is estimated as a result of administrative discretion is the Mutual Security Program. For several years various factors have contributed toward keeping expenditures for military assistance below previously agreed-upon objectives. These factors include the imperfect availability of productive resources to meet program goals, budgetary restrictions, and the inability of foreign countries completely to absorb the military shipments (i.e. to support operating and maintenance costs). With a worsening of economic conditions, it would be reasonable to expect that more productive resources would be available to meet existing program goals and that budgetary restrictions would be eased, thus permitting a step-up in the foreign aid program within available funds. In making our estimates for this program, we assumed that the recipient countries would be able to absorb the additional aid sent to them. It is possible, however, that this would not be the case and that our estimates of increased expenditures are thereby overstated.

c–f. Discretionary expansions are possible in several other government programs, but the amounts involved are substantially smaller than in the Defense Department and the Mutual Security Program.

Almost all of the changes discussed above affect the budget surplus or deficit as well as the cash surplus or deficit. Only three of all the items mentioned do not affect the budget deficit. These three are in the category of "true automatic" changes, and are (1) trust fund receipts, (2) trust fund expenditures, and (3) cash payments, n.e.c. Together, they were estimated to increase the cash

deficit by $4.1 billion. Thus the increase in the budget deficit would be $19.8 billion ($23.9 minus $4.1) from the assumed expanding economy conditions to the assumed recession.

It is against the background of a deficit of this size that the political feasibility of the $4 billion increase in expenditures through administrative action (category 5) would be decided. There might well be serious opposition to such an increase in federal expenditures. On the other hand, pressing for increases would be the political, social, and economic effects of the unemployment that would accompany the assumed recession. These same factors would also influence the adoption of new legislation providing pump-priming antirecession expenditures. We have made no estimate for any such legislation.

BENJAMIN CAPLAN, Washington, D.C.

My discussion will concentrate on what might loosely be called the dynamics of the recession model from which Lusher derived his estimate of the coefficient of flexibility.[1] Clearly, the estimates as to the effectiveness of budget flexibility are no better or, perhaps more accurately, no worse than the reasonableness of the design of the basic model. As a problem in methodology, model building has great instructional merit, but we are primarily interested in its heuristic value—that is to say, we are interested in the model not as a dialectical exercise but as a guide to policy. Model making is no longer a novel exercise. The model must depict a realistic contingency that prudent policy makers should take into account.

In discussing the dynamics of this particular recession model, one obvious approach is to consider the dynamics of the individual assumptions, e.g. specific assumptions as to the behavior of wages or prices, or investment, or consumption over the time period postulated given the primary changes postulated. Equally obvious are some of the points that can be made, e.g. that the rate of decline in the individual variables would not take place in the even fashion postulated. But such questions, while important, are not basic unless it can be shown: (1) that the set of assumptions and interrelationships is internally inconsistent so that the model is fundamentally self-contradictory and therefore meaningless, or (2) that the degree of weakness postulated by the recession model is unrealistic.

The views expressed here are solely the personal views of the writer.
[1] The model was the joint product of a group of economists.

On the first point, those of us who prepared the model obviously did not think it was self-contradictory. We believe it depicted a possible situation in terms of assumed changes in the primary factors and historically reasonable interrelationships.

There was, however, vigorous debate in the group over the second point: the realism or timeliness of such a model. The debate was reminiscent of the one which raged over the ill-fated postwar forecasts of a deflation. We, of course, have learned our lesson. The model was not intended as a forecast. If, however, the model is to help as a guide in formulating policy, the model should be realistic in terms of current and foreseeable trends even though it is not intended as a forecast. For this purpose no one would build a model showing a decline of about the same magnitude as that which occurred between 1929 and 1932. The arithmetic could be done but it would be irrelevant for policy purposes. (Parenthetically, I might add that the group prepared two other models: [1] of a more moderate downturn, and [2] of an expanding economy.)

The realism, and therefore relevance, of the recession model is important for another reason. As Cohn has pointed out, budget flexibility is a function of the composition of the particular government program in existence at a particular time. The effectiveness of budget flexibility is geared to the kind of forces in operation at the time it is needed, and the nature of the forces is partly dependent upon the kind of budget flexibility available at the particular time. There is a mutual interaction that is dependent on the historical conjuncture. Hence it is important to determine whether, with existing budget flexibility, it is still realistic to think in terms of a possible 8 million unemployed.

The criticism of the relevance of the recession model has a three-fold aspect: the historical position of the economy, the structural problem, and the stabilizing influence of market forces and liquidity factors. There is obvious overlap between these three categories but it will aid the analysis to separate them.

On the first point, the historical position of the economy, the argument runs along the following lines: The economy has been enjoying virtually uninterrupted full employment since 1941. More important, this has been true throughout the postwar period. In such a situation some easing is possible—witness 1949 and the current signs (1953). But the postwar momentum is still great— investment intentions still remain high, consumption should remain high, there is a scheduled decline in taxes, and any programed decline in government spending will be moderate. Hence any de-

cline in the economy at this stage would at worst be moderate and in no event as serious as the decline postulated by the recession model. Perhaps at some future time there will be a decline as serious as that postulated, but not now.

On the second point, that dealing with structure, a number of basic issues are raised: (1) High, relatively inflexible government expenditures for goods and services are strengthening the economy. In 1929 the ratio of such expenditures to gross national product was about 8 per cent, in 1937 about 13 per cent, in 1952 about 22 per cent, and in the first half of 1953 somewhat higher. We did not have this tremendous anchor before the war, when most economists would probably have predicted perpetual prosperity if the government accounted for over 20 per cent of the GNP at levels of high activity. Even with the estimated declines in programed federal expenditures, their level would still be high. (2) The economy is also being supported by built-in stabilizers such as revenue flexibility, transfer payment flexibility, and the familiar list of supports: deposit insurance, farm supports, FHA and VA mortgage insurance (which also permits flexible downpayment requirements), etc. (3) Many believe that psychological attitudes have changed, that continuous high-level prosperity has bred behavior patterns tilted toward higher minimum levels of investment and consumption than in the past. (4) Stronger unions will be able to prevent excessive cumulative downward price changes by maintaining stickier wage rates than in the past.

The final point which the critics of the recession model make deals with the strength of market forces and the influence of liquidity. These critics say that the market is strong because: competitive development of new products is encouraging higher investment and higher consumption; firms are watching inventory-sales ratios with greater care; moderate price reductions are proving effective in encouraging demand; the greater stickiness of wage rates is increasing the pressures to cut costs by new techniques of production.

In discussing the liquidity factor, some make great point of two items: the high level of liquid assets in the hands of individuals and business; and the expansion of such assets as a result of the substantial deficits which will occur in a downturn, on the reasonable assumption that monetary policy will then be geared to increasing the economy's liquidity. The combination of these two items plus the increase in real value of liquid assets resulting from some decline in prices would tend to lower liquidity preference and to

stimulate spending by both business and consumers. On the basis of these factors, it is believed that endogenous stabilizing factors will set in at an early enough stage of the downturn to prevent the type of recession postulated by the model.

Thus, while it is realistic to expect some weakening—indeed, the signs of such a weakening in economic activity are already clear— the stabilizing forces are, it is contended, strong enough to limit it to far less than 8 million unemployed and probably strong enough to initiate an early reversal and a further resumption of expansion.

In all this we are, of course, abstracting from that exogenous stabilizer, the Congress.

The list of potential stabilizing forces is indeed impressive, but it would be a mistake to ignore the possibility depicted by the re- cession model. I believe that the recession model is not an un- reasonable possibility in the light of current forces. I detect too much reliance in the discussions on the 1949 experience, which was primarily an inventory readjustment. The present situation appears to differ radically from that experience. For the first time since the end of the war we are approaching a situation in which several basic demand factors seem to be turning down simultane- ously. These are: consumer demand for durables; plant and equip- ment; residential housing; and government spending. Individually, the changes appear quite small, but that could be only the first impact. In addition, inventories are very substantial and could quickly become out of line with some further weakening of sales. Finally, we have had a very large increase in manufacturing ca- pacity. The combination of all these factors adds up, in my opinion, to a situation potentially more serious than 1949.

I have dwelt overlong on this debate for one major reason: it is clear that the policies needed to combat a downturn must be geared to the particular kind of downturn that may be coming. Of course, insofar as we can improve our automatic stabilizers, so much the better. But it seems clear to me that the trouble with them is that they are *ex post* and not *ex ante*, and that if a downturn is sub- stantial other specific policies will be necessary. We make a great point of revenue flexibility, for example, but all it amounts to is that when my income goes down, my taxes go down more than pro- portionately but I still have less income than before. Compared with some worse system of taxation, I am better off, but that is not my yardstick. I prefer to compare my position with where I was when I was *actually* better off.

Since policies must be related to the character of the anticipated

downturn, governments cannot avoid the frustrating experience of having to appraise current and foreseeable trends. If, for example, the recession model appears the more realistic, then government policies stronger than those needed to deal with a moderate downturn will be called for. All this is obvious, but it is why I thought it important to discuss the reasonableness of the recession model.

In all of this we must rely upon judgments, intention, and flair as well as scraps of data. This is unsatisfactory, but I suppose that it is the penalty we must pay for disobeying the commandments enunciated by W. H. Auden: "Thou shalt not sit / With statisticians nor commit / A social science." [2]

GERHARD COLM, Chief Economist, National Planning Association

David Lusher has done all of us a great service by suggesting a precise formulation of what built-in stabilizers may mean in the budget area and by following his concept through with computations.

What Do His Computations Tell Us? In case of a recession the decline in GNP will be mitigated by 30 to 40 per cent because of the stabilizing effect of revenues and expenditures of the federal government and state and local governments. This means that the actual decline in GNP will be 30 to 40 per cent less than it would be without the stabilizing effect of the budgets. Under conditions as they prevailed at the beginning of the depression of the thirties, government budgets aggravated the downturn by 10 to 20 per cent. What a stabilizing or aggravating effect is can best be seen by stating what in Lusher's approach would be a neutral revenue or expenditure system. If taxes and expenditures were to move exactly in proportion with GNP they would have neither a stabilizing nor an aggravating effect on the economy.

The fact that we had a 10 to 20 per cent aggravating effect in 1929–1930 and can expect a 30 to 40 per cent stabilizing effect under the present tax and expenditure system is quite reassuring. The only warning which must be expressed is this: These percentages are calculated to the last decimal, but we don't know what the 100 is to which these percentages refer. In other words, we do not know what the total decline would be if government expenditures and revenues were to fall in proportion to the drop in GNP. Even if the decline were only 60 percent of what it would

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[2] "Under Which Lyre, A Reactionary Tract for the Times," in his *Nones,* Random House, 1939, p. 70.

be without the built-in stabilizers, it could still be very discomfort-
ing. Half as big as big can still be very big!

We cannot apply these percentages to any of the current reces-
sion models because these are designed to take the stabilizing
effect of the budget into consideration.

*What Are the Respective Contributions of Government Revenues
and Expenditures to the Stabilizing Effect of the Budget?* Looking
at Lusher's figures in detail, it is surprising to see that the stabiliz-
ing effect of expenditures for goods and services is negligible com-
pared with that of revenue and transfer expenditures. It is .5 to 3 per
cent compared with a 30 to 33 per cent combined effect of revenue
and transfer expenditures.

This unexpected result occurs, I believe, because flexible ex-
penditures for goods and services are defined in a particular way
in the budget study which Lusher used in his computations. If I
understand it correctly, those expenditure programs were regarded
as flexible in which a change of $10 million or more can be expected
in response to a change in business conditions. As some of these so-
defined expenditure flexibilities are up, and others are down (be-
cause of assumed price declines), their net stabilizing effect is
negligible. Lusher considers the stabilizing effect of "programed"
expenditures as a factor influencing economic conditions as they
would be without budget flexibility. This is an entirely possible
approach, but it results in a treatment of expenditures different
from that used on the revenue side. It explains why Lusher's com-
putations show expenditures for goods and services to have only
a negligibly stabilizing effect.

Assume that government expenditures for goods and services
remain entirely stable measured in absolute dollars. Then their
proportion in a declining GNP would go up—they would be flexi-
ble if the same concept of flexibility were used that Lusher uses
with respect to revenue. If, for instance, expenditures for goods
and services of the federal government and state and local govern-
ments should remain stable at a level of $85 billion while private
expenditures contracted, they would make a very considerable
contribution to stabilization. Without going into the details of
computation it follows that approximately stable expenditures for
goods and services would contribute perhaps 20 to 25 per cent
to relative stability. Using a comparable approach for all elements
of the budget, it appears that revenues, transfer expenditures, and
expenditures for goods and services would make approximately the
same contribution to stability.

Is Use of a Uniform Multiplier Justifiable for All Parts of the Budget? Lusher's computations imply that every unit of budget flexibility—whether taxes of various kinds, changes in transfer expenditures, or changes in expenditures for goods and services— has the same stabilizing effect. He knows, of course, that an increase in unemployment benefit payments has probably a greater relative effect than a reduction in profits taxes of the same amount. It is entirely justifiable in a first approach to neglect these differential effects. However, it is necessary to be aware of this simplification. In a refinement of the study an attempt should be made to consider the differential effect of various kinds of budget flexibility.

A. G. HART, Columbia University

The volume includes two papers on the measurement of "built-in flexibility" in fiscal arrangements. But it still seems necessary to ask why we want such measurements, and how our mode of measurement can be linked to our objects.

Policy Context. The term "built-in flexibility" has a touch of paradox. It aims to express the fact that the skillful introduction of automatic-stabilizer characteristics into standing policy arrangements is up to a point a substitute for policy flexibility.

I doubt that any serious advocates of built-in flexibility have much hope of designing a policy that can make discretionary stabilization measures superfluous in all conditions. We are talking about arrangements that can *reduce the amplitude* of downswings or inflationary upswings set up by uncontrolled forces elsewhere in the economy (or by errors in discretionary policy!). In terms of the categories used in R. A. Gordon's paper, such arrangements may suffice in depressions where underlying investment opportunity is unimpaired. In such cases (as in 1949) the presence of built-in flexibility can enable business to sell more than it produces long enough to generate an inventory shortage—and without such deep price cuts to move stocks threatened with obsolescence as to make it impossible to move newly produced goods at remunerative prices. But in more deep-seated depressions the most we can expect of built-in flexibility is that it will limit the spread of depression from its original focus and keep the depression tolerably mild long enough so that some favorable development can pick us up— whether it be good discretionary policy or good luck.[1]

[1] Extreme advocates of price flexibility can reasonably claim that the monetary effects of built-in flexibility in fiscal policy should reduce the amplitude of price swings and (where they recognize such a thing) the time needed for prices to flex sufficiently.

I infer that we want essentially a measure of the ability of automatic stabilizers to reduce the amplitude of fluctuations. The question is whether to prefer measurements that are characteristics of complex economic models (involving a good deal in the way of assumptions about behavior of various sectors of the economy), or more naïve measurements that are more purely descriptions of the fiscal sector.

Naïve Measurements. For many purposes we are best off with measures that do not involve too many assumptions.[2] Here we want something that registers both the income elasticity of the magnitude we are studying (tax liability, or unemployment compensation, or whatever it may be) and also its large or small size relative to the total economy.

Mindful of the amplitude-reducing function of built-in flexibility, we can have recourse to what I hint at in *Money, Debt and Economic Activity:* [3] a coefficient that measures the extent to which the arrangement in question shifts the government budget toward deficit. For each arrangement we can set up a fraction of the dimensions

$$\frac{\text{Dollar increment of deficit}}{\text{Dollar increment of GNP}}$$

and these fractions can be added up.

This type of measurement leads to an argument a fortiori. If the fractions add up to .35 (to illustrate with a figure which seems to me of the right order of magnitude), this implies that investment can drop relative to saving by $3.5 billion without carrying GNP down by *over* $10 billion. Another way to put this is to take the reciprocal of .35 (that is, 2.86) as a multiplier, and say that a given drop in investment will not reduce GNP *by more than* 2.86 times the drop in investment. Implicitly, we assume that a drop of GNP will *lower or at least not raise* private saving.

Estimating Components of the Naïve Measurement. The worst of the problems of gauging built-in flexibility are evaded by this technique of naïve measurement. But serious difficulties remain. A few notes on the main components will map these difficulties.

Personal income tax: Joseph Pechman's estimates rely on time series analysis (see paper following). He shows clearly that the only aspect of progression markedly affecting the outcome is the jump

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[2] I still shiver over the reaction of the Congressman who wanted to know "whether a revenue estimate was based on assumptions, because if so, I don't believe it"! Obviously, without assumptions we can reach no conclusions; yet we must prefer estimates whose assumptions seem reasonable to the layman.

[3] Second edition, Prentice, Hall, 1953, p. 462.

from a zero rate on income covered by exemption to 20 per cent or so on surtax net income. We may agree with Pechman that tax liability works out much as if a flat tax applied to surtax net income —at 1954 rates, about 24 per cent. On historical grounds we may take it that adjusted gross income is a fairly uniform proportion of GNP—around 70 per cent.[4] But the relation of surtax net income to adjusted gross income is open to argument, and it must be analyzed in terms of the structure of the tax base. Pechman's marginal coefficient of .6 to .7 for the proportion of variations in adjusted gross income that will show up in surtax net income seems too low from his own data if we allow for population growth.[5] On the other hand, to get this marginal coefficient as high as .7, we must apparently assume a larger relative variation in the incomes of those who remain taxable throughout an income fluctuation than in the incomes of those who are not taxable at all or are taxable only part of the time.[6] If we call the coefficient .69, the marginal relation of the tax to GNP is (.24) (.7) (.69), or about .116 ($\pm$.01).

Most estimates of the built-in flexibility of this tax run in terms of annual data. I have tried to use Department of Commerce quarterly figures on personal income and tax liability, with inconclusive

[4] Applying such a uniform proportion, however, implies that the sum of indirect taxes, corporate taxes, and corporate savings—less government transfers and interest—is also a uniform proportion of GNP—an assumption which cannot fit situations where drastic reshaping of the tax structure is considered.

[5] We want to compare alternative situations that might exist at a given date (population constant). If we reduce Pechman's figures for adjusted gross income and surtax net income at 1953 exemptions and deductions (Table 4) to a per capita basis, and then take the increments, the ratio of increase in surtax net income to increase in adjusted gross income in Table 5 will range from .64 to .80 instead of from .61 to .68, the 1946–1953 over-all change shows a ratio of .70 instead of .63, and the 1948–1949 decrease shows a ratio of .74 instead of 1.20.

[6] We may look at taxpayers in two groups. A group that is pretty sure to remain taxable can be marked off by using the data for adjusted gross income (AGI) and exemptions by marital status and sex for taxable returns covering the 1950 tax year (Treasury Press Service Release H-266, October 8, 1953, Table 3). In each status-and-sex group we can mark off the income classes for which AGI was at least double the exemptions. The group of taxpayers so defined reported .680 of all AGI, and with rough allowance for deductions seem to have enjoyed .87 of all surtax net income. On a slump of income the exemptions and *itemized* deductions would be unimpaired. Their standard (presumptive) deductions averaged about 6 per cent of their AGI. Since their AGI must slump by some 43 per cent to render them nontaxable, we may suppose that for moderate fluctuations of income their surtax net income (SNI) will vary by about 94 per cent of the variation in their AGI. If their AGI varies in proportion to total AGI, therefore, their SNI will fall by about .64 (i.e. .94 × .68) of the fall in AGI. The SNI of the remaining taxpayers amounts to only about 6 per cent of AGI, so that if most of it is wiped out, a general slump of AGI will reduce SNI by a trifle less than .70 of the fall in AGI.

results.[7] Quarterly data on withholding in relation to civilian wages and salaries seem to offer better holding ground, since we are able to adjust for changes in withholding rates and blow the receipts up into a withholding tax base by quarters since the spring of 1948. But here again the shape of the figures is not very illuminating—presumably largely because of difficulties in timing adjustments.[8] It should be noted, however, that if we blow up *Statistics of Income* figures on the amount of tax withheld each year, we find a withholding base equal to over 90 per cent of surtax net income for most years. In short, almost all of the built-in flexibility of the income tax is reflected in withholding and may be presumed to take hold currently.[9]

For the corporation tax we are probably well advised to ignore the progression of the tax at low levels of corporate income and to treat it (after the termination of the excess profits tax) as a flat rate on corporate profit. The prosperity level of corporate profit, in a noninflationary situation, may be put at .12 ($\pm$.01) of GNP. But the marginal relation to GNP depends on the situation in view. In Gordon's frame of reference a short slump arising in business policy toward orders and inventories, for example, implies allow- ance at the trough for the tax effects of inventory losses. On the other hand, if we got into a stabilized depression because of a flagging of investment opportunity, we would want to compare profits *not* much affected by inventory losses with prosperity profits. For

[7] On a seasonally adjusted basis the Commerce figures show a decline of personal tax liabilities from the last half of 1948 to the last half of 1949 amounting to about one-fifth of the $6.3 billion decline in the average level of GNP. On a seasonally unadjusted basis, however, Commerce shows no drop in personal taxes between these two half years. Similar oddities appear for other periods we might compare.

[8] The dates when withheld taxes enter the Treasury Daily Statement (or the Internal Revenue reports) are not tidily related to the dates of withholding. Treasury reports funds as they reach Treasury depositories—largely in the month of withholding, but with a lag of one to three months for amounts withheld by smaller employers. The Bureau of Internal Revenue reports funds as the Bureau gets *either* checks *or* deposit receipts for sums placed earlier in Treasury depositories.

On the whole a two-month lag of collections behind withholding seems the best simple adjustment. But on this basis, if we blow up receipts to a withholding base and subtract from civilian wages and salaries, we get a residue (approximation to withholding exemptions) which as late as early 1952 shows no growth over 1948! There are also some suspicious quarter-to-quarter jumps. The drop from the second half of 1948 to the second half of 1949 in civilian wages and salaries fails to show up in the withholding-base series.

[9] The timing of effects depends significantly on the time of year at which incomes slump, in view of the concentration of tax refunds in February through May of the ensuing year.

the first problem I would be inclined to put the marginal propensity of profits to slump at about .3 of any fluctuation in GNP, suggesting a tax-flexibility coefficient of, say, .135 ± .015. For the second I would be inclined to put the marginal propensity of profits to slump at .2, suggesting a tax-flexibility coefficient of .09 ± .01.

With unemployment compensation, again, the type of fluctuation affects the outcome. A fall in insured payrolls is likely to approximate half of any fall in GNP. But if the fall in payrolls represents reduced hours of work, it will lead to virtually no unemployment compensation; while if it represents layoffs with working hours of those still on the payroll little affected, compensation will be substantial. If we want a single-valued coefficient, we must give it a wide margin of error—say, .065 ± .020. By good fortune, this source of error is partly hedged by an offsetting error in estimating personal income taxes.[10] Social security contributions run around .025 of GNP and may be assigned a marginal coefficient of .025.

Commodity taxes may be assigned an income elasticity on GNP of around .8 (about half that of the personal income tax); property taxes and the like, an income elasticity for short fluctuations close to zero. For taxes other than income taxes, taken as a whole, we may write a flexibility coefficient on GNP of about .06 ± .01. While the built-in flexibility of government outlays seems doubtful, we may add up these coefficients for the whole fiscal system:

Personal income tax	.116 ± .010
Corporate tax	.090 ± .010
Unemployment compensation	.065 ± .020
Social security contributions	.025 ± .002
Commodity taxes	.060 ± .010
Sum of coefficients	.356 ± .052

In view of offsetting errors, we may write .36 ± .04. For an inventory fluctuation we would write .40 ± .04.

Full-Model Estimates. A more interesting but less secure way of estimating built-in flexibility is to think of fiscal instruments as part of a general equilibrium model, and to ask how much of the prospective amplitude of a fluctuation would be removed by a given policy change. This view is essentially relative; it would yield, for example:

[10] In the case where unemployment takes the form of short hours, most of the reduction of pay will come out of the withholding base and SNI; so that the contingency that points to the lower limit of the estimation range for unemployment compensation points to the upper limit for the personal tax.

$$\text{Flexibility of personal income tax relative to sales tax} = \frac{\text{amplitude of fluctuation arising from a given disturbance with sales tax in force}}{\text{amplitude of fluctuation arising from same disturbance with income tax in force}}$$

Alternatively, it can be looked at as a comparison of Keynesian multipliers (treated as derived magnitudes rather than assumptions) under two policy setups. The setup with the lower multiplier has the higher built-in flexibility (greater stability in face of a disturbance).

This way of looking at things calls for explicit assumptions about two main problems—saving patterns and tax shifting—on which economists cannot feel too confident. I have amused myself, for all that, by setting up three illustrative models bearing on the income tax–sales tax comparison. In Model A, I assume roughly present taxes; in Model B, I assume the personal income tax to be replaced by a sales tax 100 per cent shifted to consumers; in Model C, I assume the personal income tax to be replaced by a sales tax absorbed 100 per cent by corporate and unincorporated profits. Model A yields a multiplier of 1.84, Model B a multiplier of 2.09, Model C a multiplier of 2.24. A comparison works out as follows:

Model	A	B	C
Multiplier	1.84	2.09	2.24
Forecast level of output (per cent of full employment GNP) if investment falls 10 per cent of full employment GNP	81.7%	79.2%	77.6%
Index: ratio of slump under Model C to slump under model in question	1.22	1.08	1.00

MELVIN I. WHITE, Brooklyn College

A procedure like that developed by Musgrave-Miller and Lusher seems to me indispensable to any attempt at assessing the automatic contribution of alternative fiscal structures to economic stabilization. By making the fiscal structure—characterized by the income elasticities of its components—an explicit variable in an income determination model, the effects of changes in the fiscal structure on other variables can be isolated. The Musgrave and Lusher measures of the contribution of automatic, or "built-in," flexibility isolate the effects on aggregate income, given a fixed decline in autonomous ex-

penditures and assuming constant consumption and business savings functions.[1]

I think, however, that the use of declines in aggregate income as the measuring (or dependent) variable does not yield the coefficient that is always the most useful for policy purposes. Certainly if there is any stabilization goal on which there is professional and lay consensus, it is that some policy must be adopted to prevent aggregate income from ever falling below a figure that is within a moderate range of the full employment level. Formulating the stabilization goal in this way implies that if built-in flexibility alone is sufficient to maintain aggregate income at or above the "floor" level, no other immediate fiscal action will be required. But if it is not, then supplementary action to offset or reduce the decline in autonomous expenditures will be necessary—such as deliberate expansion of public works, tax rate reduction in the low income brackets to stimulate consumption, etc. Thus in evaluating the effectiveness of the flexibility built into alternative fiscal structures, the relevant question may frequently not be how much aggregate income will fall in response to a given decline in autonomous expenditures, but rather how much supplementary action will be required to maintain an acceptable floor under aggregate income. This suggests that the effectiveness of built-in flexibility be measured in terms of the maximum decline in autonomous expenditures that ultimately can be permitted, given an acceptable maximum decline in aggregate income from an initial level.

Specifically, as an alternate to Lusher's coefficient, I propose the following measure, which can be identified as F:

$$F = \frac{(A_1 - A_2) - (A_1 - A_{12})}{(A_1 - A_{12})}$$

A, autonomous expenditures, is equal to the sum of Lusher's $I + G$. $(A_1 - A_2)$ is the maximum drop in autonomous expenditures consistent with a decline in gross national expenditures from their initial level, Y_1, to the floor level Y_2. (Since Y_2 is set in relation to the

[1] Actually, of course, their coefficients refer directly only to the differential results of shifting between a given structure and a hypothetical one. As Lusher points out, the hypothetical system in and of itself is of significance mainly as a bench-mark, and therefore it is the comparison of coefficients for the prevailing structure and for proposed modifications that will be of practical interest.

It is true that zero elasticity implies perverse changes in effective tax rates, which may be too unrealistic even for a bench-mark, except perhaps for excises. However, it may be noted that the bench-mark which Lusher has used, unit elasticity, implies that transfer payments and the flexible component of government expenditures are actually reduced when income falls.

full employment income, it would rise secularly as the full employment output of the economy expanded.) $(A_1 - A_{12})$ is the maximum hypothetical drop in autonomous expenditures consistent with the decline in gross national expenditures from Y_1 to Y_2, but with the bench-mark fiscal structure assumed in effect. Thus the expression F represents the percentage additional decline in autonomous expenditures that can be permitted under the actual fiscal structure over that permitted under the bench-mark structure.

Lusher's first three equations can be solved for $A = I + G$ as follows:

(1) $\quad A = Y - C - G_f = Y - [a + c(Y - R$
$$+ T - sY - d)] - G_f$$

(2) $\quad A = (1 - c + cs)Y + cR - cT - G_f - (a - cd)$

Defining elasticity in the usual fashion:

$$E_R = \frac{\Delta R}{\Delta Y} \cdot \frac{Y_1}{R_1} \text{ or } \frac{\Delta R}{\Delta Y} = E_R r_1$$

similarly,

$$\frac{\Delta T}{\Delta Y} = E_T t_1 \text{ and } \frac{\Delta G_f}{\Delta Y} = E_G g_1$$

(E_T and E_G normally being negative).

The actual decline in autonomous expenditures can then be expressed as:

(3) $(A_1 - A_2) = (Y_1 - Y_2)(1 - c + cs + cE_R r_1 - cE_T t_1 - E_G g_1)$

The hypothetical decline in A can be given either by setting the E's equal to zero, as in the Musgrave-Miller bench-mark:

(4) $\quad\quad (A_1 - A_{12})_M = (Y_1 - Y_2)(1 - c + cs)$

or by setting the E's equal to one, following Lusher:

(5) $(A_1 - A_{12})_L = (Y_1 - Y_2)(1 - c + cs + cr_1 - ct_1 - g_1)$

and the final form of the coefficient becomes: [2]

(6) $\quad F_M = \dfrac{(A_1 - A_2) - (A_1 - A_{12})}{(A_1 - A_{12})} = \dfrac{cE_R r_1 - cE_T t_1 - E_G g_1}{1 - c + cs}$

[2] For comparison, reference can be made to Lusher's equations 6 and 9, recalling that, for those equations, T, G, and S_b are not independently defined variables. For comparison with Lusher's first formulation, his equation 11, my expression can be reduced to:

$$\frac{Y_2(c\Delta r - c\Delta t - \Delta g)}{(Y_1 - Y_2)(I_1 + a - cd)}$$

or

$$(7) \qquad F_L = \frac{cr_1(E_R - 1) - ct_1(E_T - 1) - g_1(E_G - 1)}{1 - c + cs + cr_1 - ct_1 - g_1}$$

Either of the final forms of F would vanish should the elasticities of the actual structure reach the values of the respective bench-mark elasticities. The value of F varies directly with the effective rates at the initial level of income and with the degree of elasticity in the fiscal structure—the latter, of course, being greater the larger the figure for E_R is and the larger the negative figures for E_T and E_G are.

The relative advantage (or disadvantage) of any contemplated modification of the prevailing fiscal structure, so far as built-in flexibility is concerned, can be given by the formula

$$\frac{F_m - F_p}{1 + F_p}$$

where F_p is the coefficient for the prevailing structure and F_m the coefficient for the structure after modification. For example, if the prevailing structure has a coefficient of .30 and the suggested modifications would result in a coefficient of .43, then the modification would increase the permissible decline in autonomous expenditures by 10 per cent. Thus the coefficient can be construed—perhaps more readily than Lusher's—as measuring the relative built-in capacities of fiscal structures to *offset* the declines in autonomous expenditures.

It can be noted that for policy-making purposes, when absolute magnitudes—current and anticipated—are of immediate interest, equation 3 may become more useful than equations 6 and 7. If a decline, say, in autonomous private investment were anticipated for a forthcoming year, the difference between the amount of the anticipated decline and the expression $(A_1 - A_2)$ indicates directly the amount of offsetting expansion of autonomous government expenditures, or of induced rise in consumption resulting from tax reduction, that would be necessary to maintain the "floor" level under aggregate income.

C. Harry Kahn, National Bureau of Economic Research

Lusher's discussion raises a question as to the meaning of his coefficients. His method of measuring the stabilizing flexibility of budget revenues and expenditures against an assumed bench-mark brings up the problem of when changes in the government budget

are stabilizing and when not. No objection can, of course, be raised against the use of a bench-mark per se. It is only when this bench-mark is taken as the dividing line between what is stabilizing and what is destabilizing, or "perverse," that there arises ground for concern.

Lusher's coefficient of flexibility, ϕ, would indicate a neutral budget when the average rates of taxation and government expenditures relative to the gross national product each remain constant. If his coefficient, ϕ, has a positive value it merely indicates that the ratio of government expenditures to gross national product rose and/or the ratio of revenues to gross national product fell. What we have, then, is an assumption that the effect of governments' budgets on gross national product is neutral if the absolute amounts of both expenditures and taxes fall in proportion to the national product. This implies that any budget deficit will decline in size as gross national product declines. An initially balanced budget will be balanced at a lower level after the decline in gross national product. However, unless specific assumptions as to the behavior of investment have been made and unless government expenditures are assumed to consist entirely of transfer expenditures, considerations arising from the balanced-budget theorem suggest that an equivalent fall in government expenditures and taxes, such as occurs under the proportional tax-expenditure system used as a bench-mark by Lusher, is not neutral in its effect on the level of gross national product. Even when Lusher's ϕ has a positive value it does not rule out a declining level of government expenditures *and* a declining deficit.

To repeat, it is not my intention to question the use of a bench-mark and the logic underlying the coefficients derived therefrom. I believe, however, that Lusher's coefficients may lend themselves to misinterpretation, and I am concerned because Lusher himself appears to have taken his bench-mark to be the dividing line between stabilizing and destabilizing budget effects.

DANIEL M. HOLLAND, National Bureau of Economic Research

I am not sure that Lusher's claim that "Though the figures are still tentative, their general magnitudes are probably accurate enough to permit evaluations" can be strongly put forward. In particular, I find difficulty in evaluating the ϕ found for the corporation income tax.

One of Lusher's most startling findings is the very high coefficient

of stabilizing effectiveness of the federal corporation income tax. In every period of the hypothetical recession the corporation income tax has a stabilizing effectiveness at least twice as great as the federal personal income tax. This is an important conclusion, and one that is not completely expected. How firmly can it be held?

As I understand his procedure, Lusher measures the stabilizing effectiveness of the components of our revenue system by applying the same c (marginal rate of change in consumers' expenditures relative to disposable income) to each component of the tax system. The use of this technique means that the greater stabilizing effectiveness of the corporate income tax as compared with the personal income tax is to be found in greater rate flexibility of the former.

But, as Richard Goode points out elsewhere in this volume, "The reasoning that equates built-in flexibility of tax yield with automatic stabilization does not seem to be fully applicable to the corporate income tax. The identification is justifiable for the individual income tax on the plausible assumption that consumer expenditures ordinarily respond promptly to changes in disposable income. An analogous assumption regarding business investment is not admissible." Therefore, before we accept Lusher's finding on the relative stabilizing effectiveness of the corporation income tax, we must be convinced that it is reasonable to apply the same c to changes in the effective rate of corporate taxation (tax revenue related to gross national income) that is applied to other components of the tax system.

Setting aside this difficulty about the appropriate c, another problem remains. In pursuing this I have experimented a little with some of the findings presented to this conference.

Pechman finds that the built-in flexibility of the individual income tax base in terms of total adjusted gross income is .65 and the marginal tax rate is about .27. If total adjusted gross income runs at about .7 of GNP (the figure suggested by Hart), then for every $10 billion decline in GNP, personal income tax revenue will fall by $1.23 billion.

A set of arbitrary but currently reasonable figures would include GNP of $370 billion, personal tax collections of $30 billion, and corporate tax collections of $20 billion. With a $10 billion decline in GNP, Δr for the personal income tax will be

$$\frac{30}{370} - \frac{28.77}{360} = .001164$$

For the corporate income tax to have a ϕ twice as great as this, its Δr would have to be .002328. Therefore, corporate income tax collections will have to fall by $1.38 billion. (These figures conform fairly well with Lusher's model. With the corporate tax at 52 per cent, a decline in tax liability of $1.38 billion implies a fall of $2.65 billion in corporate profits. Lusher's model assumes that "Corporate profits plus inventory valuation adjustment . . . move with the private nonfarm gross national product, at a marginal rate of roughly one-fourth.")

When it comes to evaluating the meaning of ϕ, I am a little puzzled. Does it seem reasonable to conclude that a tax which "releases" $1.38 billion has twice the stabilizing effectiveness of a tax which "releases" $1.23 billions? How shall we, then, in concrete terms, evaluate the meaning of ϕ?

CHARLES L. SCHULTZE

In the last few paragraphs of his comment Holland presents a paradox apparently resulting from the relative ϕ's (flexibility coefficients) calculated by Lusher for the corporate and personal tax structure.

Assuming a $370 billion GNP, $30 billion in personal taxes, and $20 billion in corporate taxes, Holland then calculates the change in personal taxes attendant upon a $10 billion decline in GNP. This is found to be $1.23 billion and Lusher's Δr is then .001164;

$$\frac{30}{370} - \frac{28.77}{360} = .001164$$

Since Lusher calculates a corporate tax ϕ roughly twice as large as the personal tax ϕ, the corporate Δr would also have to be twice as great, i.e. .002328, and the decline in corporate taxes $1.38 billion;

$$\frac{20}{370} - \frac{18.62}{360} = .002328 \quad \text{(see footnote 1)}$$

Holland then asks how the stabilizing effectiveness of a tax which "releases" $1.38 billion can be twice as great as that of a tax which "releases" $1.23 billion.

This apparent paradox is easily resolved when it is remembered that Lusher's ϕ measures flexibility of the "actual" system *relative to a "zero flexibility" system in which all Δr's are zero as GNP*

[1] This checks out well with Lusher's model, which assumes a 52 per cent corporate tax rate and roughly a 25 per cent marginal rate of profits on GNP.

changes. Thus the relative ϕ's of two taxes are measures of the relative release of funds in the actual system (Lusher's Y_1 and Y_2) compared with the release which would have occurred in a zero flexibility system (Lusher's Y_{12}).

This can be shown from Holland's figures:

(1) Personal taxes, $\quad Y_1 = \dfrac{30}{370}$; $r = .08108$

Personal taxes, $\quad Y_{12} = \dfrac{29.19}{360}$; $r = .08108$, i.e. $\Delta r = 0$

Personal taxes, $\quad Y_2 = \dfrac{28.77}{360}$; $r = .079916$

Δ personal taxes, $\quad Y_{12} - Y_2 = \$.42$ billion

(2) Corporate taxes, $\quad Y_1 = \dfrac{20}{370}$; $r = .05405$

Corporate taxes, $\quad Y_{12} = \dfrac{19.46}{360}$; $r = .05405$, i.e. $\Delta r = 0$

Corporate taxes, $\quad Y_2 = \dfrac{18.62}{360}$; $r = .051722$

Δ corporate taxes, $Y_{12} - Y_2 = \$.84$ billion

Thus the release of corporate taxes in the "actual" system (Y_1, Y_2) is \$.84 billion greater than in the "zero flexibility" system (Y_{12}), while the release of personal taxes in the "actual" system is \$.42 billion greater than in the "zero flexibility" system. Hence, measured not in terms of their actual movements, but rather in terms of their difference from a hypothetical zero flexibility case, corporate taxes release twice as much in funds as personal taxes.

Earlier in his comment Holland questions the large ϕ for corporate taxes on the grounds that Lusher's model implies that corporate tax reductions have the same effect in stimulating expenditures as do personal tax reductions. He also quotes Goode on the same point.

Again remembering that Lusher's ϕ measures flexibility relative to a system in which all Δr's are zero as GNP changes, there is ample justification for his treatment of corporate tax reductions, given his model.

The corporate profit function in Lusher's model postulates a marginal rate of corporate profits on GNP greater than the average rate; i.e corporate profits $= CP = m + nY$, with m being a *negative*

constant. In the "actual" system, corporate tax rates are constant and corporate taxes $= R(m + nY)$. However, the zero flexibility system is defined as one in which Δr (r being measured in this case against Y) equals zero with changes in Y. Hence corporate taxes in $Y_{12} = p + R(m + nY)$ and p must be a *positive* constant equal to Rm so that $p + Rm = 0$; corporate taxes equal RnY; and the average rate of corporate taxes on GNP is thus constant. With a positive constant in the corporate tax equation we get a regressive corporate tax structure. As GNP declines in the Y_{12} system the greater than average fall in corporate profits is offset by an increasing average effective corporate tax rate resulting in a constant corporate tax yield relative to GNP.

However, in Lusher's set of equations the function for business saving is the same for both the "actual" and the "zero flexibility" systems, i.e. $b + sY$. Hence a different corporate tax function in the two systems is added to a business savings function which is the same in both systems, indicating that corporate profits *before taxes* in the two systems are different,[2] i.e. the m and n of the Y_1, Y_2 system are different from the m and n of the Y_{12} system.

The difference in corporate taxes between the two systems is thus seen to turn up in personal income and has the same effect as a difference in personal taxes in terms of its effect on consumption. Lusher has measured the flexibility contribution of corporate taxes by assuming that the difference between the actual corporate tax rate and the one implicit in a zero flexibility system would be reflected in a difference in profits before taxes and not in business savings. The validity of this thesis rests, of course, on the incidence of corporate taxes, with Lusher's equations postulating that, as between the two systems, the different rates of change in corporate tax yields with respect to changes in GNP are reflected in different rates of change in personal income with respect to changes in GNP.

Reply by Holland

I did not intend to imply that Lusher was incorrect within the context of his model. I hoped to elicit a more explicit and developed explanation of why this particular method of measuring stabilizing effectiveness was chosen in preference to and to the exclusion of others.

It still seems to me that in evaluating the stabilizing effectiveness

[2] We leave out the treatment of dividends for the sake of simplicity. Their inclusion would not alter the results.

of a tax the absolute amount by which it "buttresses" spending is a very relevant consideration, and one on which a set of relative rankings could be based. In these terms, with taxes ranked on the basis of their total stabilization effect rather than their stabilization effect relative to the proportional tax system bench-mark, the stabilizing effectiveness of the corporate and personal income taxes would not be as divergent as in Lusher's paper.

Something has been left out of ϕ, making it, in a sense, too refined. One salient piece of information—the relative importance of each tax in the revenue structure—is to some extent obscured, because ϕ deals only with offsets over and above those that a proportional tax system would provide. It is equally important to know how much of a given decline in GNP actually would be curtailed by each component of the tax system. The value for each tax would then be a function both of its flexibility of yield and its absolute size. In other words, is it not important to know that, given the contours of Lusher's model, in absolute terms the personal and corporate income taxes have just about the same strength in cushioning a potential decline in GNP? The greater revenue flexibility of the corporate tax is counterbalanced by the larger absolute amount of personal income tax.

Some special features of Lusher's model apparently help to account for the relatively high stabilizing effectiveness of the corporation income tax. For one thing, as Schultze points out, the "proportional" (with respect to GNP) tax system requires the unlikely (the adjective is mine) condition of a corporate tax structure regressive in relation to its own base. In the "actual" system, on the other hand, the corporate tax is proportional with respect to its own base. Therefore, is not the result in the "actual" system compared with an unreal base, and is not some of the strength of the ϕ of the corporation income tax explained by the fact that a proportional tax is contrasted with a regressive levy? The particular bench-mark chosen imparts unjustified vigor to the corporate tax's ϕ.

How is it that *"The difference in corporate taxes between the two systems is thus seen to turn up in personal income* and [have] the same effect as a difference in personal taxes in terms of its effect on consumption"? Schultze, in correspondence with me, has elaborated on the possibilities in this connection. As he explains it: "Undistributed corporate profits before tax (i.e. corporate profits before tax minus dividends) are different in his two systems precisely by the amount of corporate taxes. Personal income is sta-

tistically equal to GNP minus certain deductions, one of which, in Lusher's system, is corporate undistributed profits before tax. Since the decline in corporate undistributed profits *after* tax is the *same* in the actual as in the bench-mark system, and the corporate tax decline is *greater* in the actual than in the bench-mark system, the difference in tax declines shows up as a difference in the decline in corporate profits before tax (i.e. profits before tax decline *less* in the bench-mark system than in the actual system). This in turn means that personal income relative to GNP declines *more* in the bench-mark than in the actual system. This may be worked out in one or a combination of four ways (at least): (1) Wage rate changes may be different in the actual relative to the bench-mark system (rise more or fall less); (2) price changes may be different as between the two systems; (3) dividend changes may differ between the two systems; or (4) employers may be more willing to hold on to their labor force temporarily in the case of the actual system and its greater tax decline."

These various possibilities all imply something about corporate tax incidence. For example, (1) assumes the tax is shifted backward to the suppliers of services; (2) follows if the tax is shifted forward; and (4) implies, apparently, that the corporation income tax rests solely on distributed earnings. All these incidence assumptions are, of course, supportable. But what is probably the most valid assumption, particularly in the short run—that the incidence of the corporation income tax is primarily on profits—is not found in this list,[1] because it is ruled out by the postulated equality of after-tax corporate savings in the two systems. But if we take the incidence of the corporation tax to be (in whole or in part) on profits, then both dividends and retained earnings would be affected. In the case discussed by Schultze both would be higher in the "actual" then in the "proportional" system, so personal income in the "actual" system would not exceed personal income in the "proportional" bench-mark by as much as Lusher's model would have it.

It appears, then, that the failure to fit into the model what is probably the most widely accepted view of the incidence of the corporation income tax, is part of the explanation of its relatively high ϕ. Or to put it somewhat differently, as long as the incidence

[1] Richard B. Goode, who has devoted considerable time to this problem, recognizing that in view of all the complexities an unqualified answer is impossible, nonetheless concludes that "For both analytical and policy purposes, the most important conclusion is that the initial or short-run incidence is largely on corporate profits." Richard B. Goode, *The Corporation Income Tax*, Wiley, 1951, p. 72.

of the corporation income tax is to some degree on retained earnings, then the corporate tax's ϕ from Lusher's model is too high.

I would like to conclude on a note of agreement. A number of letters have passed between Schultze and myself, in the course of which some common ground has emerged. He has summarized the points on which we both agree as follows:

"1. The 'ϕ's' calculated by Mr. Lusher result from a comparison of income-generated tax yield changes in the 'actual' economic system with tax yield changes in a 'bench-mark' system where all taxes are proportional to GNP.

"2. The large 'ϕ' for corporate taxes results from two features of Mr. Lusher's model.

(a) He is comparing the actual corporate tax structure (taxes roughly proportional to profits) with a bench-mark system in which corporate taxes are regressive on profits (but proportional to GNP).

(b) An income-generated decline in corporate tax yields in the actual system is therefore relatively larger than a similarly generated decline in the bench-mark system. The difference between the two declines is reflected in a relative difference in personal income between the two systems.

"3. With respect to the incidence of corporate taxes this implies that differing marginal rates of corporate taxes lead to differing marginal rates of personal income relative to GNP, rather than to differing marginal rates of *after-tax* profits relative to GNP."