FISCAL POLICY IN THE 'THIRTIES: A REAPPRAISAL

By E. Cary Brown*

The question of how effectively fiscal policy promoted recovery in the 'thirties has agitated a good fraction of the profession at one time or another. The advent of the second world war shifted attention away from this question, and the insight and improvements gained from the major developments in national income measurement and analysis have not been properly reapplied to this highly interesting period. Some recent studies have been made of the dynamic aspects of fiscal policy in the 1937 recession.¹ But I would like to re-examine the direct annual static effects of fiscal policy on demand in the 'thirties, ignoring specific timing problems.

Some measure of the contribution of fiscal policy to effective demand will be needed for this purpose. Early work in this field² developed the concept of net-income-creating expenditures of government—a major forward step towards a more careful measurement of the direct effects of fiscal policy. But, important as was this early concept, it has a number of weaknesses in measuring the impact of fiscal policy on total demand. A reformulation is made in Section I. The findings from the application of this revised concept are set forth in Section II.

I. Concept of Fiscal Contribution to Effective Demand³

Governmental financial activities make many and varied contributions to demand for goods and services. Government expenditures directly increase demand for output; taxes decrease private demand

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² See especially H. H. Villard, Deficit Spending and the National Income (New York, 1941), Parts III and IV, and his references to the earlier work of others, notably the work of L. Currie and M. Krost, and G. Colm and F. Lehmann.

for it. Monetary activities—open market and similar lending-borrowing actions, and changes in reserve requirements—can also affect rates of private demand. These initial shifts in demand in turn lead to induced changes in private spending. The resulting multiplied effects on income depend among other things on the relationship of governmental taxing and spending to national income. Finally, governmental financial activities can give rise to variations in private demand through substitution effects induced by changes in relative prices or in expectations, and these may either contract or expand private demand still further. It is impossible to include all of these effects in a measure of fiscal contribution to total demand. Some narrowing is necessary.

1. The concept we will use excludes monetary activities entirely, to the extent this is feasible, by omitting all governmental as well as private lending and borrowing activities. Earlier studies included some of these activities and excluded others.

2. Modern income analysis distinguishes between the way in which government purchases, taxes, and transfers, respectively affect demand, whereas the older studies lumped them all together. The income effects of taxes and transfers are now understood to result from changes in disposable income and profits. In assuming that taxes and government purchases affect total demand equally without regard to sign, the older studies either assumed a private marginal propensity to spend of unity, or made no adjustment for the portion of taxes or transfers coming out of saving. In our concept this obvious correction will be made.

3. The initial effect of fiscal policy on total demand for goods and services at any particular income level depends on tax-transfer yields and purchases of goods and services. These amounts in turn result from a movement along given tax-transfer and expenditure schedules (automatic policies) and shifts in such schedules through legislation or other governmental action (discretionary policies). The initial effect on total demand (the multiplicand) can be converted into an induced change in income by applying the proper multiplier.

These concepts are illustrated in Figure 1. The middle schedule \((C + I)\) relates the amount of private demand for output to various levels of income. The lower schedule \((C + I - aT)\) represents the previous schedule less the reduction in private demand from the net tax yield (taxes less transfer payments). The vertical distance between these schedules \((AB\text{ at }OV_1)\) represents the reduction in private demand \((aT)\) resulting from the tax-transfer schedule \((T)\). To this schedule showing the reduced private demand is added government purchases \((AC\text{ at }OV_1)\), assumed to be autonomous. The difference between this highest schedule \((C + I + G - aT)\) and the initial one \((C + I)\) represents the amount by which the government has shifted
the total demand schedule \((BC \text{ at } OY_1)\) through fiscal action—the combined effect of spending and taxing. This initial shift in demand has given rise to induced changes in income and demand for output and a new equilibrium \(OY_1\) is the only one consistent with the new aggregate demand schedule. In Figure 1, \(OY_1\) is greater than \(OY_0\), the equilibrium consistent with the aggregate demand schedule \((C + I)\), but it need not necessarily be.

It is clearly a matter of convenience whether we measure the total effects of the government budget on income \((OY_1 \text{ less } OY_0\) in Figure 1) or the effects of the government budget in shifting the demand schedule \((BC \text{ at } OY_1 \text{ in Figure 1})\). If we want the effect on equilibrium output, however, we must estimate not only the shift in the demand schedules attributable to the budget, but must also know how private demand schedules behave with changes in income. While our knowledge of the initial effects of taxes (and transfers) on demand could certainly be improved on, it is in a considerably less precarious state than quantitative notions of the multiplier. The former depends essentially on the relationship of spending to disposable income and profits, while the latter depends in addition on the relationship of disposable income and profits to national product or income. If we limit our study, then, to the multiplicand—the vertical shift in aggregate demand—we can avoid this latter problem.5

4 In simple linear cases the expansion of output from government purchases is:

\[
\frac{G}{P} \frac{1}{1 - b},
\]

where \(G = \text{government purchases in money terms, } P = \text{a price index to a base of 1, and } b = \text{the marginal propensity to spend national product.}\)

The contraction of output from taxes less transfers is:

\[
\frac{aT}{P} \frac{1}{1 - b},
\]

where \(T = \text{taxes less transfers, and } a = \text{marginal propensity to spend disposable income and profits.}\)

The total net expansion is:

\[
\frac{G - aT}{P} \frac{1}{1 - b}.
\]

Since we are interested in the shift in the demand schedule itself, we can determine this by dividing the preceding expression by

\[
\frac{1}{1 - b}.
\]

The preceding expression is then:

\[
\frac{G - aT}{P}.
\]

5 Although not entirely. A minor adjustment discussed in Section II, 2 of Appendix A depends on the marginal propensity to spend national income.
4. The size of the vertical shift in the demand schedule, however, depends on the income level at which it is measured. It is usually assumed that government purchases are autonomous, and we follow that assumption here. But taxes and transfers vary with income. Assuming for simplicity that the marginal propensity to spend \((a)\) is constant, Figure 2 shows the shift in the demand schedule attributable to fiscal policy. The \(G\) schedule represents autonomous government purchases. The \(aT\) schedule represents the relationship to income of the demand-reducing effects of taxes less transfers. The net direct effect on demand is represented by the distance between the two schedules. It is positive, or expansionary, for income levels below \(OY_1\), and negative, or deflationary, above income level \(OY_1\).
The older studies measured the shift in the demand schedule in any particular year from the observed level of income, whatever it might have been. In the period beginning in 1929, income varied from a full-employment level to various fractions of it. Hence, their method of measurement picked up two kinds of change: shifts in the demand schedule because of legislative changes in tax-transfer schedules, and movements along given schedules.

This weakness is illustrated in Figure 3, where two different tax schedules, $T_1$ and $T_2$, are assumed to be in operation at observed in-

![Figure 3](image-url)

comes of $OY_1$ and $OY_2$, respectively. The direct expansionary effect of the $G$ schedule and the tax schedule $T_1$ at income level $OY_1$ is $CD$, while that of $T_2$ at $OY_2$ is $AB$—a larger amount than $CD$. The innocent observer might think fiscal policy to be more expansionary under schedule $T_2$ than under $T_1$, simply because at the observed level of income the effect on demand is larger. Yet at any given level of income, private demand associated with that income is smaller under schedule $T_2$ than $T_1$, assuming the same relationship between private income after tax and spending to continue. Indeed, to maintain a particular equilibrium level of output, private demand out of private disposable income would have to be autonomously higher under $T_2$ than under $T_1$. Put in another way, disposable private income would be smaller under $T_2$ at any particular level of income. Therefore, the mere continuation of the old spending relationship to disposable income that held under schedule $T_1$ would be inadequate to bring equilibrium income up to its level under schedule $T_2$.

An important test of fiscal policy, therefore, is whether it was more
or less expansive or more or less contractive from one year to another at some particular level of income. But, if the shift in the demand schedule attributable to fiscal policy is to be measured consistently from one level of income rather than from the variable incomes actually observed, which shall it be? For purposes of policy, that of "full employment" seems the most relevant income level. Our test then becomes whether total full-employment demand is enhanced or reduced by fiscal activity.\(^5\)

5. In this study we have treated government expenditures (both purchases and transfers) as autonomous. Taxes have been roughly adjusted to full-employment levels by separating them into two categories—"fixed" and "variable." The "fixed" taxes are assumed to be autonomous and the variable to increase proportionately with income. Various assumed and constant marginal propensities to spend out of transfers and taxes have been used. These problems are discussed further in Appendix A. Considerable refinement could be made in these crude procedures, and we hope they will be undertaken. However, a fairly wide range of assumptions have been tried in these computations, and it is doubtful that refinements would upset any of the major findings.

6. A still further adjustment is necessary to appraise the significance of fiscal policy in relative terms. Since the economy was growing

\(^5\)In commenting on this paper, R. A. Musgrave suggested an alternative measure which relates the contribution of fiscal policy in any one year to what it should have been to secure full employment.

The income provided by the budget less income that would have arisen in the absence of the budget would be:

\[
\frac{G}{1 - b(1 - t)} - I \left( \frac{1}{1 - b} - \frac{1}{1 - b(1 - t)} \right),
\]

where \(t\) = proportional rate of tax in a particular year. The measure of performance may then be written:

\[
M = \left( \frac{G}{1 - b(1 - t)} - I \left( \frac{1}{1 - b} - \frac{1}{1 - b(1 - t)} \right) \right) \frac{Y_f - Y_w}{Y_f - Y_w}
\]

where \(Y_f\) = full employment income and \(Y_w\) = level of income that would have arisen without a budget. If \(G\) is at a high enough level so that

\[
Y_f = \frac{G + I}{1 - b(1 - t)}
\]

fiscal policy would be performing perfectly. \(M\) would equal 1, since

\[
Y_w = \frac{I}{1 - b}
\]

A coefficient of less than 1 would show inadequate performance. Obviously, other income levels than \(Y_w\) could be appropriate for comparison.

This measure is clearly more satisfactory in relating fiscal policy to the need for it. But its magnitude depends on the multiplier, reliance on which I have tried to avoid even at the cost of some loss of significance.
throughout the 'thirties, a given effect on demand in real dollars in 1929 would have less relative impact in later years. We have interpolated between 1929 and 1942 to estimate the full-employment level of income for successive years in this period and have found a growth rate of slightly more than 3 per cent per year since 1929. All real dollar shifts in demand have then been expressed as percentages of full-employment income. A constant fiscal contribution to total demand means that the shift in the aggregate demand schedule that we attribute to fiscal policy is a constant per cent of full-employment income. In absolute terms it is an amount growing at about 3 per cent per year.

II. Summary of Findings

The results of the statistical manipulations discussed in Section I are presented in Table I. The general reader's attention is directed to Column 14 for the main findings of the study. Statistical qualifications are considered in more detail in Appendix A, and a sample computation can be found for 1933 in Appendix B.

Subject to all the limitations of analysis and procedure discussed previously and in Appendix A, certain broad findings seem to stand out:

1. The direct effects on aggregate full-employment demand of the fiscal policy undertaken by all three levels of government was clearly relatively stronger in the 'thirties than in 1929 in only two years—1931 and 1936—with 1931 markedly higher than 1936. (Table I, Column 14, and Figure 4). These were years in which large payments were made under the veterans' adjusted compensation programs—programs passed by Congress over the vigorous opposition of both the Hoover and Roosevelt administrations.7

If they were eliminated, 1931 would remain clearly above 1929, but 1936 would fall below it. In three other years—1930, 1932, and 1939—the expansionary effect of fiscal policy was somewhat higher than in 1929, while in 1934 and 1935 it was virtually the same. In two years—1933 and 1937—fiscal policy was markedly less expansionary than in 1929, and in 1938 slightly less so.

The trend of the direct effects of fiscal policy on aggregate full-employment demand is definitely downward throughout the 'thirties. For recovery to have been achieved in this period, private demand would have had to be higher out of a given private disposable income than it was in 1929. Fiscal policy, then, seems to have been an unsuccessful recovery device in the 'thirties—not because it did not work, but be-

### Table I. Effect of Fiscal Policy on Aggregate Demand Schedule
(Money figures in billions)

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>G in Current Prices</th>
<th>T in Current Prices</th>
<th>Actual G/P _p</th>
<th>Actual T/P _p</th>
<th>F.E. T/P _p</th>
<th>Initial Shift in Full-Employment Demand when ( a = )</th>
<th>Adjustment for Divergence between Cost of Public and Private Goods</th>
<th>G/P _p</th>
<th>when ( b = )</th>
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#### Notes
- **Sources for Table I:**
  - **Column 1:** Government purchases in current prices
  - **Column 2:** Taxes less transfers in current prices
  - **Column 3:** Actual government purchases in 1947 prices
  - **Column 4:** Actual taxes less transfers in 1947 prices
  - **Column 5:** Full-employment taxes less transfers in 1947 prices
  - **Column 6:** Initial shift in full-employment demand
  - **Column 7:** Adjustment for divergence between government and consumer prices

- **Sources:**
  - Column 2 + Consumer Price Index, 1947 = 100.
  - Column 20 + 22.
  - Column 3 minus 5 multiplied by the assumed marginal propensity to spend disposable income (e).
  - Column 1 + Consumer Price Index, 1947 = 100.
  - Column 9 minus Column 3 multiplied by the assumed marginal propensity to spend GNP(b).
### Table I (Continued)

<table>
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<th>Net Shift in Demand As Per cent of F.E. GNP</th>
<th>Real GNP</th>
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<tr>
<td>13-17</td>
<td>Net shift in demand at full employment, expressed as a per cent of full-employment GNP</td>
<td>Combinations of Columns 6 through 8 and Columns 10 through 12 divided by National Income, Table 9, Line 9, Federal Income, Table 40, Column 4—20.</td>
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<tr>
<td>18</td>
<td>Actual gross national product in 1947 prices</td>
<td>National Income, Table 40.</td>
</tr>
<tr>
<td>19</td>
<td>Full-employment gross national product in 1947</td>
<td>GDP = $1395.3 e^{\delta(t-1939)}, developed by interpolation between 1929 and 1942, prices.</td>
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<td>Fixed taxes in 1947 prices</td>
<td>Federal National Income, Table 9, Lines 12, 14, less Column 26.</td>
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<td>Actual variable taxes in 1947 prices</td>
<td>State and local: National Income, Table 9, Lines 26, 39, 40, 42; less Table 9, Lines 24, 25, plus Column 26. All data + Consumer Price Index, 1947=100.</td>
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<td>Full employment variable taxes in 1947 prices</td>
<td>Column 21 x Column 19—Column 18.</td>
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<td>Grants-in-aid for transfers in current prices</td>
<td>James A. Maxwell, op. cit., Table 1, Line 1a, p. 4. Data for fiscal year assumed to apply to relevant calendar year.</td>
</tr>
</tbody>
</table>
cause it was not tried. While differing in many details, this finding bears out Hansen's conclusions reached in 1941: "Despite the fairly good showing made in the recovery up to 1937, the fact is that neither before nor since has the administration pursued a really positive expansionist program . . . . For the most part, the federal government engaged in a salvaging program and not in a program of positive ex-

![Figure 4. Effect of Fiscal Policy on Full-Employment Demand](source: Column 14, Table 1.)

expansion." It is in sharp contrast to Smithies' view: "My main conclusion on government policy from the experience of the 'thirties is that fiscal policy did prove to be an effective and indeed the only effective means to recovery."

2. The federal government's fiscal action was more expansionary throughout the 'thirties than it was in 1929 (Table I and Figure 5). In 1929, its fiscal action resulted in a substantial net drag on total demand. But this changed sharply in 1931 to an expansionary effect (although here again the vetoed veterans' adjusted compensation should be borne in mind). Expansion continued throughout the period except for the sharp drop in 1937, which represented a shift in demand of over 2½ per cent of GNP in one year. It was followed by expansion-

---

ary activity on a fairly large scale, but not of sufficient size to approach
that of 1934-36. ¹⁰
3. State and local governments’ fiscal policy was expansionary
through 1933, but decreasingly so. By 1934, it had fallen clearly below
1929 and remained in an almost neutral position throughout the rest
of the period. The federal government’s policies were little more than
adequate in most years of the ‘thirties to offset these contractive effects
of state and local governments.¹¹ Indeed if we take the seven years

![Figure 5. Effect of Fiscal Policy on Full-Employment Demand](source: Column 14, Table 1)

from 1933 on, in only two was the federal share significantly more than
enough to offset state and local shrinkages.
4. The primary failure of fiscal policy to be expansive in this period
is attributable to the sharp increase in tax structures enacted at all
levels of government. Total government purchases of goods and serv-

³⁰ This finding also differs from Maxwell’s interpretation: “In lesser depressions—1921, 1938, 1949—recovery was rapid without the assistance of positive fiscal policy. Indeed in 1938 the fiscal policy was probably perverse.” J. A. Maxwell, Fiscal Policy (New York, 1955) p. 99. Both the federal government and all governments combined show an increase in expansionary activity in 1938 and 1939 as compared with 1937.
³¹ Here again our findings differ from Smithies’. He writes: “The single factor operating in the opposite direction was the expansionary fiscal policy of the federal government, which considerably more than offset the contraction in the construction programs of state and local governments which occurred after 1929, and afforded a strong positive stimulus to national income and thereby increased the rate of private consumption and investment.” Op. cit., p. 24.
ices expanded virtually every year, with federal expansion especially marked in 1933 and 1934 (Figure 6). But full-employment tax yields more than kept pace. Our rough estimates show that in 1929, a year of full employment, all governments combined had a deficit (federal surplus and state and local deficit), while 1933 to 1939, except for 1936, were years of surplus or approximate balance at full employment. The changes made in the tax structure in this period were marked,

![Figure 6. Governmental Purchases & Taxes (At Full Employment)](image)

but their quantitative impact has been masked by the sharp fall in total income and tax yields. The federal Revenue Act of 1932 virtually doubled full-employment tax yields and essentially set the tax structure for the entire period up to the second world war. Since the highly deflationary impact of this tax law has not been fully appreciated, some of its major provisions are briefly noted here.12

The Revenue Act of 1932 pushed up rates virtually across the board, but notably on the lower- and middle-income groups. The scope of the act was clearly the equivalent of major wartime enactments. Personal income tax exemptions were slashed, the normal-tax as well as surtax

rates were sharply raised, and the earned-income credit equal to 25 per cent of taxes on low incomes was repealed. Less drastic changes were made in the corporate income tax, but its rate was raised slightly and a $3000 exemption eliminated. Estate tax rates were pushed up, exemptions sharply reduced, and a gift tax was provided. Congress toyed with a manufacturers' sales tax, but finally rejected it in favor of a broad new list of excise taxes and substantially higher rates for the old ones. While some of these excises were later repealed, most remained throughout the decade. Somewhat later in the 'thirties, processing taxes made further temporary inroads on demand, and the social security taxes began in 1937 to exert a pronounced effect.

State and local government were also active in new revenue legislation throughout this period. The major changes were to find the state governments moving heavily into general sales and excise taxation, personal and corporate income taxes, and the gasoline tax.

In brief, then, it took the massive expenditures forced on the nation by the second world war to realize the full potentialities of fiscal policy. Until then, the record fails to show its effective use as a recovery measure. Indeed, the general expansionary policy seems stronger in the early part than in the later part of the decade.

APPENDIX A

STATISTICAL PROBLEMS OF MEASURING THE EFFECTS OF FISCAL POLICY

I. Full-Employment Output

Any measurement of full-employment output must necessarily be arbitrary. While net national product would be conceptually a more satisfactory measure of output for our purposes, we have used the Department of Commerce series on gross national product because it was available in constant prices. The year 1929 and the year 1942 were chosen as two full-employment years between which a growth rate of 3.15 per cent was interpolated. The growth rate may be overstated in the early years because of underreplacement of capital stock. But the error here is minor in terms of the rough approximations we are using.

Moreover, that weird concoction known as the capital-stock and declared-value-excess-profits tax was shortly enacted under the National Industrial Recovery Act, and this further raised the effective rate. Although most tax rates were substantially set in this period by the Revenue Act of 1932, corporate taxes were gradually pushed up to 19 per cent by 1939.

Studenski and Krooss, op. cit., pp. 431-35.

The year 1929 had unemployment of 3.2 per cent of the civilian labor force, while in 1942 it was 4.7 per cent.
II. Government Purchases of Goods and Services

1. Real purchases. Department of Commerce data on real government purchases of goods and services have generally been followed with the exception of their division of these expenditures between federal and state and local governments under grants-in-aid programs. The Commerce series separates purchases of goods and services from transfers, and in turn divides the latter between those affecting disposable income (such as relief or pensions) and those leaving private net worth unchanged (such as RFC loans and other lending activities). This latter group of activities are more akin to monetary changes and are omitted from our study.

Commerce attributes spending under grants-in-aid to the governmental unit actually making the purchase or the unit making the transfer payments to the ultimate recipient. Our assumption, necessarily an arbitrary one, is that expenditures are made jointly by two levels of government. For example, if matching grants are made for state highways, Commerce would count the entire purchase as made by the state, whereas we would count half for the state and half for the federal government. This procedure requires that we break down grants between those for transfer payments (such as relief) and those for purchases of goods and services (such as highways and construction). Those for purchases have then been added to federal purchases and subtracted from state and local purchases. Transfer payments are also treated this way.  

2. Adjustment for divergence between government and consumer prices. The use of the Commerce series in constant prices, as adjusted above, is convenient, but any deflation raises an awkward question of principle when prices of government purchases diverge from prices of private purchases. Purchasing power in the hands of the government then differs from purchasing power in private hands, even though the money income is the same. If all prices moved the same way, there would be no problem. But, because of this difference in real purchasing power between the government and the private sector, the shift in the demand schedule may be more or less than the real amount of government purchases alone: more, if private spenders are able to achieve a larger real income than did the government with the same money income; less, if prices of private purchases are relatively higher than prices of government purchases.

Since not all of the money income reaching private hands is spent, this initial difference in real income of government and private purchasers must be reduced by the amount of income saved. The proper savings ratio to use is that associated with total output rather than with disposable income.

The correction for the divergence in price movements is minor over the

---

16 This division was derived from J. A. Maxwell, op. cit., Table 1, p. 4. The data for fiscal years was assumed to apply to calendar years.

17 The precise correction can be derived as follows, where \( G \) = money government purchases, \( T \) = money taxes minus transfers, \( a \) = change in spending resulting from marginal tax changes, \( b \) = spending of marginal total output, \( P_p \) = price index to base of 1 of gov-
period considered, but sometimes it can be important. Generally, it reduced the expansionary effect of government purchases in the earlier years of this decade more than in later ones.

III. Taxes and Transfers

1. Money taxes and transfers. The Department of Commerce concept of taxes and transfers has been used, transfers being treated as negative taxes. This means that corporate taxes are reported as accrued rather than as paid, and the net revenues of government corporations are included, rather than their total revenues (with their total spending included in the spending totals).

In line with our view about grants-in-aid, the division of transfer payments between federal and state and local government has been altered. We have subtracted from state and local transfers that portion of grants for transfer payments and added this amount to federal transfer payments.18

2. Real taxes and transfers. There is no standard price index for deflating taxes and transfers. For want of anything better, we have used the consumer price index converted to a 1947 base. Consumer prices are probably a reasonably good deflator for most taxes and transfers, but they may be considerably wide of the mark for such things as corporate income taxes.

3. Full-employment taxes and transfers. All transfer payments were assumed to be autonomous. Without question many of the transfer-payment programs would have been terminated or reduced as full employment was

\[
G_{p} + b \left( \frac{G}{P_p} + b^2 \frac{G}{P_p} + \cdots \right) = G_{p} + b \left( \frac{1}{P_p} \right).
\]

The contraction of equilibrium output from the tax is:

\[
a_{T} + b \left( \frac{a_{T}}{P_p} + b^2 \frac{a_{T}}{P_p} + \cdots \right) = \frac{a_{T}}{1 - b}.
\]

The net expansion is:

\[
\frac{G}{P_o} + \frac{1}{1 - b} \left( \frac{bG}{P_p} - \frac{a_{T}}{P_p} \right).
\]

The upward shift in the aggregate demand schedule from the operation of the budget can be identified by dividing the preceding expression by

\[
\frac{1}{1 - b}.
\]

The shift in demand is then:

\[
\frac{G}{P_o} (1 - b) + \left( \frac{bG}{P_p} - \frac{a_{T}}{P_p} \right) = \frac{G}{P_o} - \frac{a_{T}}{P_p} + b \left( \frac{G}{P_p} - \frac{G}{P_p} \right).
\]

The first two terms of this expression are the real direct shifts in spending schedules. The third term is a correction factor for the divergence between government and consumer prices. It is zero when these prices move identically.

18 Maxwell, op. cit., Table 1, p. 4.
neared. But since we are interested in the full-employment effect of the actions actually taken, we are treating all autonomous programs as genuine shifts in the demand schedule. Most of these programs in this period were for relief or for veterans, hence the error in our assumption is probably small.

Taxes, however, cannot be treated as autonomous, since tax schedules are enacted that will automatically collect more revenues as employment expands. In principle, we should make an estimate of every tax at the full-employment level of income. This undertaking would be quite beyond our resources. Instead, taxes have arbitrarily been divided between those responsive to output changes—primarily income, commodity and sales—and those that are not—primarily property. Those that expand with output are assumed to increase proportionally, and the others are assumed fixed in amount. This assumption of proportionality is a simple one that should be more informative than making no adjustment at all. Some refinement could be made by lagging income taxes one year, but this improvement would be minor. The result probably overstates the responsiveness of sales taxes and some of the large excises, notably tobacco and beer. But it also understates the response of income taxes, especially those on corporations.

There is unmistakably some considerable understatement in this procedure. Column 22 of Table II shows full-employment taxes to be falling from 1929 to 1933, despite the fact that the economy had grown and the tax rate structure raised. This same phenomenon appears in 1937 to 1939.

IV. Rates of Spending of Marginal Income

1. Marginal propensity to spend private disposable income and profits. The effects of taxes and transfers on spending will undoubtedly differ depending on the kind of tax or transfer and the income group to which it applies. Corporate income taxes would be expected to have widely different effects from personal income taxes. Moreover, the effects of taxes on spending may vary cyclically.

Aside from such general comments, it is perplexing to know what magnitudes can reasonably be used in a study such as ours. For consumption there is relatively close agreement. Ferber's study shows that the consumption of marginal disposable income ran between 80 and 85 per cent for the period 1929-40 in most of the empirical consumption functions.20 Klein and Gold-

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20 We compared yields in 1933 with 1940—a year in which the approximate 1933 full-employment income would have been achieved under our assumptions. The procedure adopted underestimated the increase in yield from income taxes by a large margin. A rough check of commodities subject to excise taxes showed that durable goods appeared to have an income elasticity in excess of 1, hence the increase in excise taxes on radios and refrigerators, cars, tires, sporting goods, and jewelry, was probably understated. On the other hand, yields were overstated by this procedure in the case of excise taxes on tobacco, drugs, toilet preparations, electrical energy, telephone and telegraph, gasoline, and admissions. General sales taxes probably increased nearly proportionally with income, given the usual exclusion of food, housing, medical and clothing. Our belief, on the basis of this consideration, was that the income tax understatement exceeded the excise-tax overstatement.

berger’s recent study of the United States shows somewhat lower figures than this depending on type of income: 81 per cent for wage income, 60 per cent for nonwage nonfarm income, and 51 per cent for farm income.21

But a measure of the direct effects of taxes and transfers on investment is certainly highly controversial. Tinbergen found a marginal propensity to invest profits of 33 per cent for the period 1919-32.22 In Klein’s early work there was no distinction made between, say, corporate income and personal income taxes, because the former were lumped together with corporate saving.23 More recently Klein and Goldberger have made an attempt to separate out various taxes and ascertain their effects. They found that an increase in corporate taxes would decrease investment by 76 per cent of the yield, and consumption by an additional 8 per cent.24 By their analysis even larger decreases would be found for taxes on unincorporated proprietors. These values seem extremely high and undoubtedly should be used with caution.

I have used 80 per cent as the average of the marginal propensities to spend

---


out of taxes and transfers. However, computations are presented for 70 and 90 per cent for those preferring these magnitudes. Such variations do not change the pattern of fiscal effects nor our conclusions in any significant way (Figure 7), provided it is accurate to assume these marginal propensities constant over the entire period of the 'thirties. Variations over the cycle could produce a different pattern from the one shown here, but there seems to be no generally accepted view on the reasonableness of making an adjustment for such variations.

2. Marginal propensity to spend gross national product. As we noted above, the adjustment of government purchases for the divergence between government and consumer prices required the use of the marginal propensity to spend gross national product. One would expect this parameter to be lower than the marginal propensity to spend private disposable income. We have used 60 per cent in the major tables and figures, but other percentages have been computed—80 per cent and 100 per cent—to bring out the size of the adjustment (Figure 8). Since tax rates were lower in the 'thirties than the more recent period, a 60 per cent rate would not be out of line with recent computations of multipliers of around 2.

V. Magnitude of Adjustments

A summary of the magnitude of the various adjustments is shown in Table II. Starting with the budget deficit in current prices as shown by Commerce, Column 1, Columns 2 to 4 show successive adjustments in the form of increments to be applied cumulatively to the figures in Column 1 in order to obtain finally the shift in full-employment demand as we have used the term. This result is shown in Column 5 of Table II, and it would be the same amount as
shown in Column 14, Table I if it were divided through by full-employment output.

Table II shows that the adjustment for prices, Column 2, affects the size of the budget deficit, adding relatively constant amounts in each year, except for 1931 and 1937. A larger amount is added in 1931, primarily because in that year our method shows net taxes to be lowest of the period. In 1937, on the other hand, a big jump in taxes from the preceding year was recorded.

The conversion of taxes to full-employment levels, Column 3, has a markedly time-related effect. The adjustment in the early years is much lighter than in later years. As the economy approached higher levels of income in the later

![Graph]

Source: Table I, Columns 15,16,17. a = Marginal propensity to spend disposable income and profits, b = Marginal propensity to spend gross national product.

**Figure 8**

years of the depression, tax burdens also rose to hold up the magnitude of this adjustment.

The conversion of budget deficits into demand shifts acts in the opposite direction, but it does not entirely eliminate the downward pitch of the decade's trend. The rising trend of Column 4 is due almost entirely to the adjustment made for divergencies between the price trends of government and consumer purchases.²⁵

Further emphasis is given to this downward slope when these absolute amounts are converted into percentages of full-employment GNP. It was grow-

²⁵ See Columns 10-12, Table I.
ing throughout the period, starting at $149 billion and ending at over $200 billion in 1947 prices.

APPENDIX B

SAMPLE COMPUTATION FOR 1933

In order to facilitate the understanding of these computations and the development of alternatives based on other assumptions, the 1933 data are worked out in detail in this Appendix, referring in each case to the columns of Table I. The references to the Department of Commerce, National Income, 1954 edition, are abbreviated to NI; the reference to the particular table follows, separated from the particular line where the figure is found by a period. The money figures are in millions of dollars unless otherwise noted.

Column 1: Governmental purchases at current prices

Federal
(NI-9.3) $2,018
Grants-in-aid for goods (Column 23 below) 501 $2,519

State and local
(NI-9.19) $6,013
Grants-in-aid for goods (Column 23 below) -501 5,512

Total (NI-2.15) $8,031

Column 2: Taxes minus transfers in current prices

Federal
Taxes (NI-8.2) $2,670
Transfers (NI-9.12, 9.14, 9.17) -1,466
Grants-in-aid for transfers (Column 25 below) - 1 $1,203

State and local
Taxes (NI-8.22 less 8.44) $6,655
Transfers (NI-9.24, 9.25, 9.28) -1,179
Grants-in-aid for transfers (Column 25 below) + 1 5,477

Total $6,680

Column 3: Government purchases in 1947 prices

Federal
(NI-40.16) $4.3 billion
Grants-in-aid for purchases (Column 24 below) + .9 $5.2 billion

State and local
(NI-40.17) $10.6 billion
Grants-in-aid for purchases (Column 24 below) - .9 9.7 billion

Total (NI-40.15) $14.9 billion

Column 4: Actual taxes minus transfers in 1947 prices

Consumer price index in 1947 = 1.73
Consumer price index in 1933
Federal  
Column 2—1,205×1.73  
$ 2,081  
State and local  
Column 2—5,475×1.73  
9,475  
Total  
$11,556  

Column 5: Full-employment taxes minus transfers in 1947 prices  
Federal  
Column 22 plus Column 20  
$ 4,720  
State and local  
Column 22 plus Column 20  
12,086  
Total  
$16,806  

Column 6: Initial shift in full-employment demand  
Federal  
Government purchases in 1947 prices (Column 3)  
$5.2 billion  
Full-employment taxes in 1947 prices (Column 5) times .7  
3.3  
$1.9 billion  
State and local  
Government purchases (Column 3)  
$9.7 billion  
Full-employment taxes (Column 5) times .7  
8.5  
1.2  
Total  
$3.1 billion  

Columns 7–8: Same as Column 6, but using .8 and .9 for marginal propensity to spend  

Column 9: Government purchases in 1947 consumer prices  
Federal  
(Column 1) $2,519×1.73  
$ 4,358  
State and local  
(Column 1) $5,512×1.73  
9,536  
Total  
$13,894  

Column 10: Adjustment for divergence between prices paid by government and consumers  
Federal purchases  
1947 prices paid by consumers (Column 9)  
$4.4 billion  
1947 prices paid by government (Column 3)  
5.2  
Difference  
Times .6  
$−0.5  
State and local purchases  
1947 prices paid by consumers (Column 9)  
$9.5 billion  
1947 prices paid by government (Column 3)  
9.7  
Difference  
Times .6  
$−0.1  
Total  
$−0.6  

Columns 11–12: Same as 10, using .8 and 1 as marginal propensity to spend output
Column 13: Net shift in demand as per cent of full employment GNP

<table>
<thead>
<tr>
<th></th>
<th>In 1947 prices</th>
<th>As % FE GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Column 6 plus Column 10)</td>
<td>(Divided by Column 19)</td>
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<tr>
<td>Federal</td>
<td>$1.4 billion</td>
<td>0.8%</td>
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<tr>
<td>State and local</td>
<td>1.1</td>
<td>0.7</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$2.5 billion</strong></td>
<td><strong>1.5%</strong></td>
</tr>
</tbody>
</table>

Columns 14–17: Same as 13, using various values for marginal propensities to spend
Column 18: Actual GNP in 1947 prices (NI-40.1) $103.7 billion
Column 19: Full-employment GNP in 1947 prices
\[ GNP_{1933} = GNP_{1947} \times \frac{149.3}{103.7} \]
$169.1 billion

Column 20: Fixed taxes minus transfers in 1947 prices

<table>
<thead>
<tr>
<th></th>
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</tr>
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<tbody>
<tr>
<td>Taxes</td>
<td>0</td>
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<tr>
<td>Transfers</td>
<td></td>
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<tr>
<td>Transfer payments (NI-9.12)</td>
<td>$ 698</td>
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<td>Grants-in-aid for transfers (Column 25)</td>
<td>1</td>
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<td>Net interest paid (NI-9.14)</td>
<td>517</td>
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<td>Net taxes in current dollars</td>
<td>$-1,216</td>
<td>$-2,104</td>
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<td>Net taxes in 1947 dollars: $-1,216 \times 1.73</td>
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Column 21: Actual variable taxes less transfers in 1947 prices

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<tr>
<td>Motor vehicle licenses (NI-8.26, 8.39)</td>
<td>$ 285</td>
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<td>Business property (NI-8.40)</td>
<td>3,962</td>
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<td>Business non taxes (NI-8.42)</td>
<td>248</td>
<td>$4,495</td>
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<tr>
<td>Transfers</td>
<td></td>
<td></td>
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<tr>
<td>Transfer payments (NI-9.24)</td>
<td>$ 759</td>
<td></td>
</tr>
<tr>
<td>Grants-in-aid for transfers (Column 25)</td>
<td>-1</td>
<td></td>
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<tr>
<td>Net interest paid (NI-9.25)</td>
<td>653</td>
<td>1,411</td>
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<td>Net taxes in current dollars</td>
<td>3,084</td>
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<td>Net taxes in 1947 dollars $3,317 \times 1.73</td>
<td>5,335</td>
<td>$3,231</td>
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Column 22: Full-employment variable taxes less transfers in 1947 prices

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Actual</td>
<td>$4,185</td>
<td>4,140</td>
</tr>
<tr>
<td>(Column 21)</td>
<td></td>
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<tr>
<td>Full-employment GNP</td>
<td>169.1/103.7</td>
<td>169.1/103.7</td>
</tr>
<tr>
<td>Actual GNP</td>
<td>169.1/103.7</td>
<td>169.1/103.7</td>
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<tr>
<td>Full employment variable taxes</td>
<td>$ 6,824</td>
<td>6,751</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$13,575</strong></td>
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</table>
Columns 23 and 25: Grants-in-aid for purchases in current prices
Federal total (NI-9.13) $502
For transfers (Maxwell, op. cit., Table 1, Line 1a) 1 $501

Column 24: Grants-in-aid for purchases in 1947 prices
Federal in current prices (Column 23) $501

\[
\times \frac{1947 \text{ Prices to State and Local Governments}}{1933 \text{ Prices to State and Local Governments}} (NI-40.15) \quad \frac{884}{___}
\]

Column 26: Grants-in-aid for transfers in 1947 prices
Federal in current prices (Column 25) $1

\[
\times \frac{1947 \text{ Consumer Prices}}{1933 \text{ Consumer Prices}} \quad \frac{2}{___}
\]