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CHAPTER 8

GOVERNMENT OFFSETS TO CYCLICAL LOSSES IN PERSONAL INCOME

THE severity of the Great Depression and the slowness and partial character of the recovery before World War II brought to the fore governmental schemes designed to inject purchasing power into the income stream at ebbs in the economic tides. At much the same time there developed a literature on "built-in" stabilizers of income—quasi-automatic programs—that come into play to bolster income when it begins to sag and to restrain the rise in income when inflationary pressures become serious. It is not our purpose to review or appraise this literature.¹ Our aim is an empirical one: to determine whether the programs we can readily analyze are in fact countercyclical and to measure their importance during the recent past in supporting personal income once it begins to fall. We have selected three programs for discussion: the farm price-support program, unemployment compensation and related programs, and the federal personal income tax. Only the second and third lend themselves readily to measurement.

Agricultural Programs

In recent years the federal government's program for maintaining farm income has had two main facets: cash benefits and price support.²

Cash benefits are paid directly to farm operators, primarily to encourage conservation practices and to provide incentives for production control through withdrawal of acreage from cultivation for specified crops. Did these benefit payments follow a countercyclical course with respect to net farm income after World War II? If so, the year-to-year change in volume of cash disbursed should be opposite in direction to the annual change in the net income of farm operators. This is a minimum condition if the program is to

¹ For a discussion of these problems and a brief bibliography see A. G. Hart, *Money, Debt and Economic Activity* (2nd ed., Prentice-Hall, 1953, Chapter 28).

² Both programs were initiated in 1933. During the 1930's the main objective was to raise the income of farmers—countercyclical only in a broad sense—and during the war years it was to expand production. It seems appropriate, therefore, to look for countercyclical behavior only in the postwar years. However, see pages 94-96 for a brief comment on the complications that arise from countercyclical measures when cycles in net farm income do not conform to cycles in general business.

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qualify as countercyclical. According to the data in Table 28, the annual changes in net income and in cash benefits were opposite in direction in only two out of the six year-to-year changes. Cash

TABLE 28
Farm Proprietors' Net Income and Retained Government Benefit
Payments, 1945-1951
(millions of dollars)

	<i>Net Income</i>	<i>Government Benefit Payments</i>
1945	12,528	659
1946	14,790	688
1947	15,589	277
1948	17,666	227
1949	12,776	161
1950	13,348	249
1951	15,568	251

Source: Net income of farm proprietors: *Survey of Current Business*, Dept. of Commerce, July 1952, Table 1, pp. 12-13. Government benefit payments retained by farm operators: *Farm Income Situation*, Bureau of Agricultural Economics, August-September 1952, Tables 9 and 13, pp. 35 and 39.

benefits failed to increase during the first year that net farm income showed a decline (1949), and increased by only \$88 million in the second year (1950), when net income was reduced by \$4,318 million below the 1948 peak. Moreover, in 1951, when net farm income again increased, cash benefits remained virtually unchanged. We conclude that this program has not been an important offset to loss of farm income in the postwar period. This was partly intentional, of course, since some of the objectives of the program are long-run, not short-run, in character.

In the price-support program, farmers receive cash directly from nonrecourse loans made or guaranteed by the Commodity Credit Corporation of the Department of Agriculture and from its direct purchases of commodities. The CCC, however, on occasion disposes of some or all of its holdings through the commercial market in competition with farmers. The inventories of the CCC represent the net purchases (purchases less sales) plus the collateral acquired from farmers defaulting on loans. The federal government's cumulated investment (actual and contingent) in the price-support program on a given date is the sum of the loans held by the CCC, loans held by private lending agencies with CCC guarantee, purchase agreement obligations, and inventories of the CCC.

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This investment by the federal government is *not* a measure of the financial benefit received by farmers (offset to loss of net income) from the price-support program. A measure of this benefit would be the difference between (1) actual farm receipts from sales in commercial markets plus sales to and net loans from the CCC and (2) what farm receipts would have been from commercial sales without a price-support program—assuming that farm production expenses are the same with or without price supports. Since 2 is a hypothetical quantity, it is bound to be characterized by large errors of estimate, and for this reason no annual estimates of this offset to loss of farm net income have been attempted.³ However, *changes* in the government's investment in price-support operations are an *indicator* of the direction of change in the amount of the offset provided by this program to loss in net farm income. If the change in the government's investment rises or falls, we may infer that the amount of the offset does the same. By analyzing changes in the government's investment, therefore, we can determine whether the program has in fact been operating in a countercyclical manner.

The offset provided by this program (Chart 21 and Table 29) has shown a higher degree of countercyclical conformity since the war than the crop control program, but the conformity has been less than perfect. If this device were a fully effective stabilizer of farm income, the series on quarterly changes in the amount of the government's outstanding investment would rise when farm income recedes and decline when farm income expands. Assuming that the investment is to be liquidated sometime in the course of the cycle, we might expect that the changes in total outstanding investment would pass from positive to negative values sometime in mid-expansion, and from negative to positive values sometime in mid-contraction. By this test, the program has shown only partial countercyclical conformity. The peak in quarterly changes in the government's investment (based on a four-quarter moving average to eliminate seasonal fluctuations) occurred at the end of the fourth quarter of 1948, although the contraction of farm income continued until the fourth quarter of 1949. Similarly, in the following expansion, the trough in the decline of the government's investment was reached at the end of the fourth quarter of 1950, although farm income continued to expand until the fourth quarter of 1951. Finally, the change from negative to positive values occurred very shortly after the peak

³ In note 4, below, such an estimate for 1949 is presented for its illustrative value.

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in farm income, and the converse change occurred after the trough in farm income.

From the point of view of stabilization, one might say that the program responded too promptly to cyclical developments, exerting its maximum countercyclical effect in early expansion and early contraction, instead of toward the end of these phases. This tendency is clearly revealed in the figures on the government's total outstanding investment in the program, which reached its peak and troughs almost synchronously with the trough and peaks of farm income, rather than roughly half a phase later, as an ideal program might be expected to do. Thus, in effect, the program failed to provide increased support to the agricultural market during the worst stages of the contraction, and operated to damp the ensuing revival at its inception rather than when it was well under way. These observations, of course, apply only to a single contraction and revival, and it is not therefore clear whether this limited success in stabilization is an inherent feature of the mechanics and objectives of the program, or merely reflects circumstances peculiar to the postwar period. It must be repeated that since we do not measure the absolute amount of the offset, we cannot say anything about its relative importance in compensating farmers for the loss of income.⁴

⁴ As already noted, the amount of the offset is difficult to measure because of the necessity of determining what prices and commercial sales would have been without the price-support program. George Mehren has attempted such estimates for 1949 ("Comparative Costs of Agricultural Price Support in 1949," Papers and Proceedings, *American Economic Review*, May 1951, pp. 717-746). Using his estimates of prices and commercial sales with and without price-support operations, we can prepare a rough estimate of the offset for 1949:

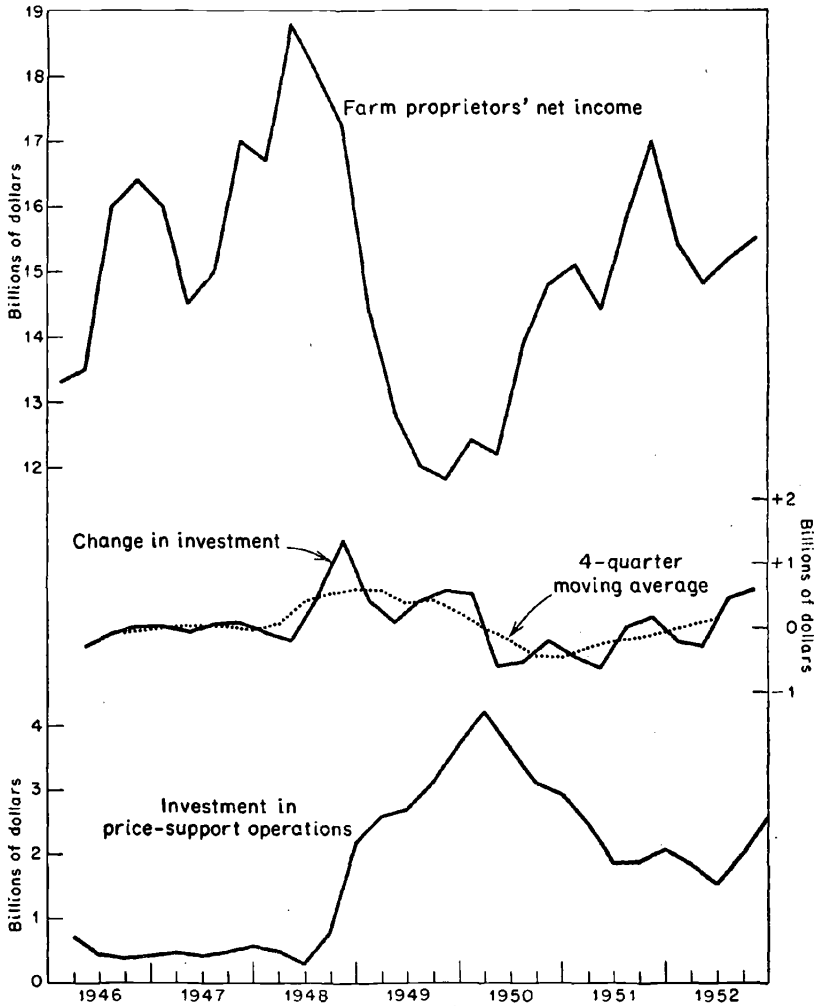
	(millions of dollars)
a. Farm receipts with price-support operations	
Actual commercial sales (from Mehren)	17,437
Sales to CCC (<i>Agricultural Statistics</i> , 1950, Dept. of Agriculture, Table 756)	917
New loans minus repayments (<i>ibid.</i> , Table 755)	1,850
Total	20,204
b. Farm receipts without price-support operations	
Hypothetical commercial sales (from Mehren)	16,066
c. Offset to loss of net farm income (a - b)	4,138
d. Hypothetical loss in net farm income between 1948 and 1949 if there had been no price-support operations (change in net income of farm operators between 1948 and 1949 [see Table 28] minus c)	9,028
e. Offset as per cent of loss in net farm income (c ÷ d)	46%

Because of the potentially large margins of error that must attach to estimates of hypothetical prices and commercial sales without price supports, our computation must be taken as having only illustrative value.

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CHART 21

Farm Proprietors' Net Income, Investment in Price-Support Operations, and Change in Total Investment, 1946-1952



Source: Table 29.

Since the offset provided by the price-support operations is geared to cycles in net income of farm operators, the program would not be countercyclical with respect to personal income if the cycle in net farm income did not conform with the cycle in personal income. In recent decades there has been at least one instance, 1925 to 1926, when net farm income was declining while personal income was

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TABLE 29

Farm Proprietors' Net Income, Investment in Price-Support Operations, and Changes in Total Investment, 1946-1952

YEAR AND QUARTER		FARM PROPRIETORS' NET INCOME ^a (billions of dollars)	Inventories	Outstanding Loans and Purchase Agreement Obligations (millions of dollars)	Total Investment	
					Amount	Change from Previous Quarter
1946	1st	13.3	562	150	712	
	2nd	13.5	398	48	446	-266
	3rd	16.0	351	29	380	-66
	4th	16.4	291	120	411	+31
1947	1st	16.0	256	200	456	+45
	2nd	14.5	294	121	415	-41
	3rd	15.0	311	174	485	+70
	4th	17.0	286	279	565	+80
1948	1st	16.7	209	281	490	-75
	2nd	18.8	150	144	294	-196
	3rd	18.0	202	573	775	+481
	4th	17.2	322	1,841	2,163	+1,388
1949	1st	14.4	326	2,269	2,595	+432
	2nd	12.8	1,082	1,610	2,692	+97
	3rd	12.0	1,656	1,456	3,112	+420
	4th	11.8	1,725	1,976	3,701	+589
1950	1st	12.4	1,855	2,372	4,227	+526
	2nd	12.2	2,624	1,004	3,628	-599
	3rd	13.9	2,174	924	3,098	-530
	4th	14.8	1,926	979	2,905	-193
1951	1st	15.1	1,717	739	2,456	-449
	2nd	14.4	1,501	334	1,835	-621
	3rd	15.8	1,363	480	1,843	+8
	4th	17.0	1,265	756	2,021	+178
1952	1st	15.4	1,098	703	1,801	-220
	2nd	14.8	1,131	372	1,503	-298
	3rd	15.2	1,124	846	1,970	+467
	4th	15.5	1,118	1,443	2,561	+591

^a Seasonally adjusted annual rates.

^b End of quarter.

Source: Net income of farm proprietors: *National Income Supplement, 1951, Survey of Current Business*, Dept. of Commerce, Table 41, p. 205, and *Survey of Current Business*, July 1952, Table 41, p. 29, and February 1953, p. S-1. Inventories and outstanding loans and purchase agreement obligations: *Charts, multilithed*, Commodity Credit Corporation, December 1951, Table 7, for data for 1946 to 1950; and monthly issues of *Report of Financial Condition and Operations*, CCC, for data for 1951 and 1952.

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expanding. In such circumstances offsetting the loss in net farm income adds to the inflationary pressures in the economy at large. In the opposite situation—rising net farm income with declining personal income—this program would add deflationary pressures to an economy that was already contracting.

Unemployment Compensation and Related Payments

The offset to the loss of labor income provided by unemployment benefits has been less than complete, in part by legislative design. For administrative reasons and to prevent malingering, a waiting period is imposed, weekly benefits are computed at about half of the former weekly wage, and the number of benefit payments in a fifty-two-week period is limited. Moreover, not all unemployed persons are eligible to draw benefits, and it is not the intention of the system to compensate for loss of labor income resulting from the loss of overtime work, reduction in the normal workweek,⁵ or cuts in wage rates. By measurement, however, we can determine how much of the loss in labor income has been offset by unemployment benefits and related payments. Since it was not until 1939 that all states were paying unemployment compensation benefits,⁶ their adequacy can be tested only by the two recessions in labor income (wages and salaries) since 1938—those in 1945-1946 and 1948-1949—neither of which was severe or prolonged. Initially we eliminate from our analysis labor income originating in government, in order to circumvent the special problem of loss of labor income resulting from the demobilization of the armed forces.⁷

On this basis the first recession in labor income adjusted for seasonal movements began in February 1945; labor income continued to decline until October of that year, and by April 1946 had more than recovered the level of the initial peak. In the second recession the peak is September 1948, and the trough is October

⁵ In all states except Montana some partial unemployment is compensated. The provisions usually stipulate that when partial unemployment reduces the weekly wage of a worker below what his weekly benefit would be were he fully unemployed, the difference plus an increment varying from \$2 to \$8, depending on the state, will be paid as a benefit. See *Significant Provisions of State Unemployment Insurance Laws, October 1, 1951*, multilithed, Dept. of Labor, Bureau of Employment Security.

⁶ *Social Security Yearbook, 1941*, Federal Security Agency, 1942, Table 1, p. 168.

⁷ The system of compensation to unemployed veterans following discharge from service was an *ad hoc* arrangement that does not qualify as part of a built-in system of income stability.

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1949; by May 1950 the level of the initial peak had been exceeded. The loss in labor income in a given month (quarter) is the difference between labor income in the peak month (quarter) and the given month (quarter). We accumulate the loss between the initial peak and trough and between the initial peak and the return to the level of the initial peak. The relative loss in labor income is the cumulative loss expressed as a percentage of the labor income that would have been disbursed if labor income in the peak month (quarter) had been maintained in all months (quarters) comprised in the recession or recession and recovery.

The cumulative amounts paid out each month (quarter) as unemployment benefits and general assistance minus the amounts paid out in the month (quarter) of the payroll peak—all computations based on seasonally adjusted data—constitute the offset to loss of labor income.⁸ The relative offset is the cumulative offset expressed as a percentage of the cumulative loss in labor income.

In the first of these contractions of private wages and salaries, compensation to the unemployed offset only 6 per cent of the payroll loss; but in the second contraction, it offset as much as 17 per cent (Chart 22 and Table 30). If we cover the period between the peak and the return to the level of the initial peak, the relative offsets are much higher, 12 per cent in the first period and 20 per cent in the second. In the 1945-1946 contraction and recovery, general assistance accounted for about 2.5 per cent of the offset, and in the 1948-1950 period for about 8 per cent. This suggests that the longer the recession and recovery period, the more important is general assistance in offset payments.

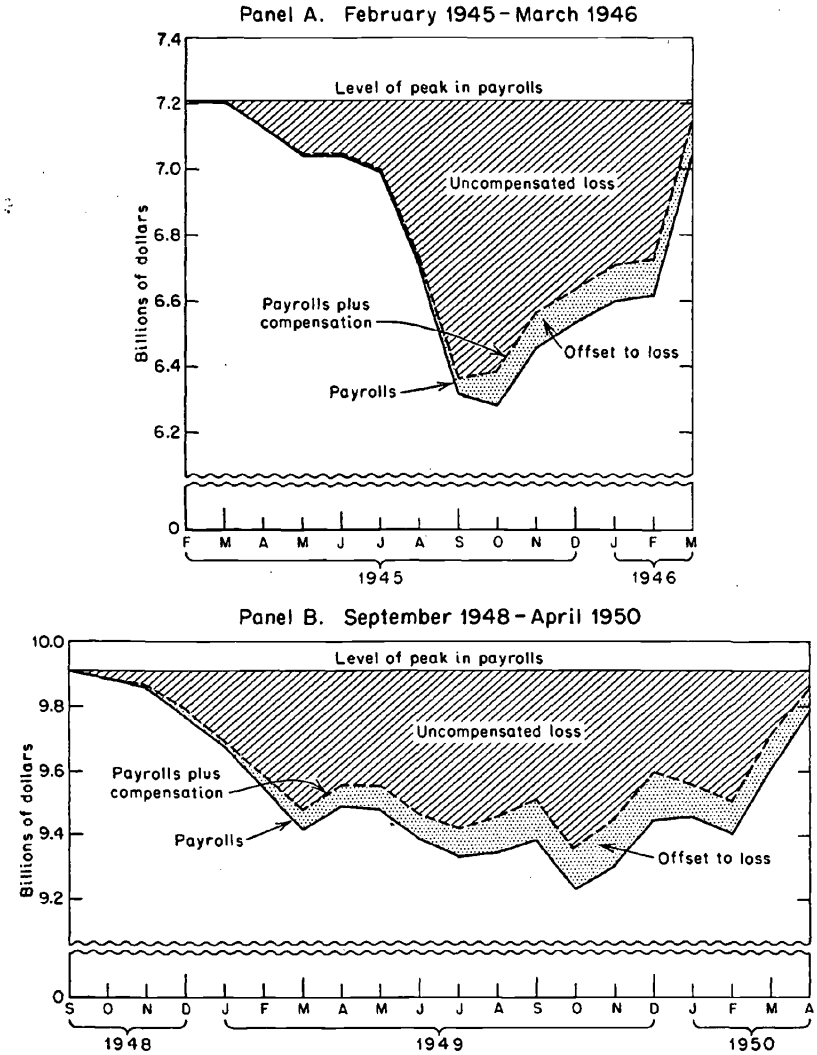
For some purposes it is more appropriate to compare compensation to the unemployed with the loss in all payrolls (private and government) or with the loss in disposable income (excluding compensation to the unemployed). The offset to loss in total payrolls has been computed for 1948-1950 on a monthly and quarterly basis, and the offset to loss in disposable income on a quarterly basis (Tables 31 and 32).

⁸ Unemployment benefits include those paid to railroad employees as well as to all other covered workers. We include general assistance, despite the fact that assistance payments are often received by unemployables, because unemployed workers ineligible for unemployment benefits may also receive general assistance. Moreover, assistance payments may be extended to supplement unemployment benefits that are deemed too low to provide a family with minimum subsistence. Like benefits, general assistance payments increase during contractions and decrease during expansions.

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CHART 22

Private Payrolls and Compensation to Unemployed, 1945-1946 and 1948-1950



Source: See Appendix G, section 1.

On the basis of monthly data, the ratio of offset to loss in total payrolls was 20 per cent (peak to trough) and 24.5 per cent (peak to level of initial peak), as compared with 17 and 20 per cent respectively in the case of private payrolls. This is because government payrolls continued to increase during this recession, so that the

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TABLE 30

Cumulative Loss in Private Payrolls and Cumulative Compensation to Unemployed, from Seasonally Adjusted Monthly Data, 1945-1946 and 1948-1950
(dollars in millions)

	Peak to Trough, Feb. 1945- Oct. 1945	Peak to Initial Peak Level, Feb. 1945- Mar. 1946	Peak to Trough, Sept. 1948- Oct. 1949	Peak to Initial Peak Level, Sept. 1948- Apr. 1950
Loss in private payrolls	\$2,958	\$5,750	\$5,008	\$7,450
Total compensation to unemployed	\$173	\$698	\$832	\$1,504
Unemployment benefits	168	682	776	1,383
General assistance	5	16	56	121
Total compensation as percentage of payroll loss	5.8%	12.1%	16.6%	20.2%
Unemployment benefits	5.7	11.9	15.5	18.6
General assistance	.2	.3	1.1	1.6

Source: Appendix G, section 1.

loss in total payrolls was smaller than in private payrolls, and the given offset was relatively higher.⁹ In this period the relative offset based on quarterly data is slightly lower than the offset based on monthly data.¹⁰

That the cumulative payroll loss on a quarterly basis is generally less than on a monthly basis is clear. Since the peak value is the basis for computing the loss, the lower the peak value, the lower the loss. The value of the peak month by definition is higher than the monthly average for the quarter in which the peak month falls

⁹ The amount of the offset differs slightly in Tables 30 and 31 because the 1948 peak occurs a month later and the terminal date a month earlier in the latter table.

¹⁰ Using quarterly data and dealing with the identical period, Ida Merriam estimates the ratio of the offset of unemployment compensation (state and railroad) to the loss in civilian wages and salaries as 24.3 per cent ("Social Security Programs and Economic Stability," *Policies to Combat Depression*, to be published by Princeton University Press for the National Bureau of Economic Research, Table 2). This is identical with the relative offset presented above in Table 31. Our computations, however, are based on total payrolls including pay to the military, which continued to rise during this period (see above, page 53), and on compensation to the unemployed that includes general assistance. That is, if the only differences were those in definition of payrolls and of compensation to the unemployed, the relative offset computed by Mrs. Merriam would be lower than ours. The identity of the results indicates the presence of other differences, which we presume to be differences in the seasonal adjustment of payrolls and of compensation to the unemployed.

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TABLE 31

Cumulative Loss in Total Payrolls and Cumulative Compensation to Unemployed, from Seasonally Adjusted Monthly and Quarterly Data, 1948-1950
(dollars in millions)

	PEAK TO TROUGH		PEAK TO INITIAL PEAK LEVEL	
	Monthly, Oct. 1948- Oct. 1949	Quarterly, 4th 1948- 3rd 1949	Monthly, Oct. 1948- Mar. 1950	Quarterly, 4th 1948- 1st 1950
Loss in total payrolls	\$4,275	\$3,183	\$5,992	\$5,192
Compensation to unemployed	\$857	\$595	\$1,466	\$1,261
Compensation as percentage of payroll loss	20.0%	18.7%	24.5%	24.3%

Source: Appendix G, section 1.

TABLE 32

Cumulative Loss in Disposable Income and Cumulative Compensation to Unemployed, from Seasonally Adjusted Quarterly Data, 1948-1950
(dollars in millions)

	Peak to Trough, 3rd 1948- 3rd 1949	Peak to Initial Peak Level, 3rd 1948- 4th 1949
Loss in disposable income ^a excluding compensation to unemployed	\$6,453	\$8,928
Compensation to unemployed	\$749	\$1,179
Compensation as percentage of disposable income loss	11.6%	13.2%

^a Including realized net capital gains.

Source: Appendix G, section 1.

(unless the three monthly values are identical, which rarely happens). Hence the loss computed from quarterly data will be smaller than the loss computed from monthly data. By the same reasoning, the payroll loss computed from annual data will be smaller than the loss computed from quarterly data.

In the case of the offsets, the effect of the shift in the time unit is not so clear. A priori, one would expect compensation to the unemployed to be at a minimum in the peak payroll quarter and hence the difference between the monthly average compensation in the peak payroll quarter and compensation in the peak payroll month probably to be negligible. However, the monthly average for the

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quarter could be either larger or smaller than compensation in the peak payroll month and the differences need not be small. In this particular period (the fourth quarter of 1948 to the first quarter of 1950) the monthly average for the quarter of the payroll peak was larger than the offset in the peak payroll month and by a significant amount. This resulted in a smaller relative offset since the proportionate reduction in the offset exceeded that in the cumulative payroll loss.

Using annual data, we compute the loss in total payrolls between 1948 and 1949 at \$982 million and the offset payments in 1949 at \$1,097 million. That is, the offset exceeded the loss by 12 per cent. Thus the time unit is an important element in measuring the relative offset.

Finally, we note that compensation to the unemployed offset 12 per cent of the loss in disposable income (excluding compensation to the unemployed) that occurred during the contraction in disposable income from the third quarter of 1948 to the third quarter of 1949 (Table 32). If we cover the period from the initial peak until the same level is regained (the third quarter of 1948 to the fourth quarter of 1949), the offset amounts to 13 per cent of the loss in disposable income.

Because the business contractions of 1944-1946 and 1948-1949 were mild, these measures of relative offset have limited value. It would be more helpful to know the effectiveness of this type of offset when the loss of labor income is substantial. Some light is thrown on this question by data for certain states where, during the 1948-1949 contraction, the loss in labor income was relatively larger than in the country as a whole. The varying generosity of benefit payments among state laws, however, somewhat blurs this comparison.

For this analysis (Table 33), we have selected twelve of the twenty-three states in which payrolls, based on annual estimates, declined between 1948 and 1949, and prepared *quarterly* estimates of payrolls (wages and salaries) in the private sector and of offsets to loss in payrolls for 1948, 1949, and 1950.¹¹ The amount of payroll loss and of offsets during the recession and recovery were computed as described above.

There is some evidence of an inverse relation between the relative

¹¹ For sources of data and methods of estimation see Appendix G. For the analysis of the state data we are obliged to use data unadjusted for seasonal variations since the data are insufficient for reliable seasonal determination.

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TABLE 33

Loss in Private Payrolls, Compensation to Unemployed,
and General Assistance, from Seasonally Unadjusted Quarterly Data, 1948-1950,
and Change in Number Exhausting Benefits, 1948-1949,
United States and Twelve States
(per cent)

	QUARTERS COVERED		LOSS AS % OF PEAK PAYROLLS ^a	COMPENSATION AS % OF LOSS	GENERAL ASSISTANCE AS % OF COMPENSATION	PERCENTAGE INCREASE IN NUMBER EXHAUSTING BENEFIT RIGHTS
	1948	1950				
South Carolina	4th	- 2nd	6.0	13.6	2.2	174
California	3rd	- 2nd	7.6	14.1	6.9	40
New York	4th	- 3rd	9.2	9.4	13.4	66
Michigan	4th	- 2nd	10.0	8.9	7.7	137
Kentucky	4th	- 2nd	10.3	9.0	2.8	144
Pennsylvania	4th	- 3rd	10.4	10.9	11.5	134
Rhode Island	4th	- 3rd	10.5	15.8	18.3	122
Connecticut	4th	- 3rd	10.9	9.2	5.7	241
Alabama	4th	- 2nd	11.1	7.8	.9	106
Ohio	4th	- 3rd	11.4	8.3	6.7	167
Illinois	4th	- 3rd	13.1	5.7	9.6	88
West Virginia	4th	- 4th	13.7	6.7	3.8	217
Twelve states			10.2	9.2	9.5	
United States	3rd	- 2nd	4.3	20.3	9.7	

^a This measure of relative loss in payrolls is the actual loss as a percentage of what would have been disbursed if payrolls in the peak quarter had been maintained in all quarters covered in the table.

Source: Percentage increase in number exhausting benefit rights based on annual data in *Handbook of Unemployment Insurance Financial Data, 1938-1951*, processed, Dept. of Labor, Bureau of Employment Security, revised November 1952, Table C-12. For other data see Appendix C, section 2.

payroll loss and the relative offset from compensation to the unemployed.¹² The relationship is most apparent at the extremes of the array. Thus the relative payroll loss is least in South Carolina and California, and the third and second largest relative offsets occur in these states. At the other extreme are Illinois and West Virginia, with the two largest relative payroll losses and the two smallest relative offsets. The least relationship is found in Rhode Island, with the seventh largest payroll loss and the highest offset. This is explained in part by the relatively high share of general assistance in total compensation of the unemployed. The right to general assist-

¹² The coefficient of rank correlation for these two variables in the twelve states is $-.73$.

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ance, unlike the right to unemployment benefits, is not limited to a specified number of weeks in a given period.

The inverse relationship between relative payroll loss and offset finds support in a comparison of the total loss and total offset of the twelve states and of the United States. In the twelve states the relative payroll loss is 10.2 per cent and the relative offset 9.2; the comparable percentages for the United States are 4.3 and 20.3. The relative payroll loss is less for the United States than for any of the selected states because the United States total includes states with payroll gains or negligible losses as well as the twelve selected states.

The explanation for the inverse relationship between relative payroll loss and offset is to be found in the following considerations. There appears to be a direct association between relative payroll loss and the percentage rise in the number of unemployed exhausting benefit rights before re-employment. This relationship among the twelve states is clouded by the inclusion of South Carolina and Illinois (Table 33). If these two states are excluded as being atypical, the coefficient of rank correlation is $+ .65$. The continued unemployment of those exhausting benefit rights either is uncompensated or is compensated under a general assistance program at a lower rate than that of unemployment benefits. Finally, the inference seems warranted that because of the interdependence of the various segments of the economy the relative increase in the number laid off by employers not subject to unemployment compensation laws varies directly with the relative payroll loss.

These considerations, together with our evidence, suggest that in more severe business recessions the relative offset under present laws would be decidedly less than it was in the 1948-1949 recession.

Federal Personal Income Tax

The third program, the federal personal income tax, is not directed toward bolstering the income of any particular economic group; in the past decade at least it has affected virtually the entire population. The broadening of the tax base and the sharp elevation of effective tax rates which accompanied World War II and its aftermath have enhanced the power of the tax program to reduce fluctuations in personal income after taxes, i.e. disposable income. The proportional and progressive elements in the tax structure can cause this effect without any change in tax rates and exemption levels.

As long as the income tax is a percentage of personal income

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(i.e. proportional to income) and not an absolute amount, the amount of taxes paid by individuals will decline in periods of contraction in personal incomes. If the tax structure is progressive as well as proportional, the amount of personal taxes will decline further because the average effective tax rate falls during business contractions. During business expansions the tax program will produce contrary results.

This stabilizing effect might, of course, be negated if Congress lowered tax rates during business expansions or raised them during contractions. Congress in fact followed just such a course during some of the expansion years of the 1920's and during the Great Depression (Table 34). However, despite the rise in effective tax rates during the Great Depression, the average effective rate declined. On the other hand, a lowering of effective tax rates during a business contraction, which occurred in the 1920-1921 and 1923-1924 contractions, reinforces the stabilizing effect of a progressive income tax.

We shall now measure, for periods of contraction since 1920, the importance of (1) the total offset provided by the income tax system in relation to the loss in disposable income (personal income after taxes) and (2) the offset attributable to the progressive feature alone. These measures are carried out for four contraction periods, 1920-1921, 1929-1933, 1937-1938, and 1948-1949. (In the business contractions of 1923-1924, 1926-1927, and 1944-1946 there was no decline in annual disposable income.) For the first three contractions we are obliged to use annual data, but for the 1948-1949 contraction we use seasonally adjusted quarterly data.

To measure the total offset in relative terms, we express the cumulative decrease in personal income tax liabilities from the peak to the trough year (or quarter) as a percentage (Table 35, column 6) of the cumulative loss in disposable income in the same period. To estimate the loss in income for a given year (column 5), we calculate what the disposable income would have been if tax liabilities had remained at the peak figure (column 3), and then subtract the given year from the peak year.¹³ In measuring the relative offset attributable to the progressivity feature, we find the average effective tax rate in the peak year (or quarter) and apply this rate to personal income in the given year. This gives us what tax liabilities would have been if the average tax rate had remained

¹³ This loss is, of course, equal to the actual loss in personal income before taxes.

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TABLE 34

Individual Income Tax Liabilities for Two Groups
of Taxpayers, 1913-1951
(dollars)

		INDIVIDUAL INCOME TAX LIABILITY FOR MARRIED PERSONS WITH TWO DEPENDENTS WITH A NET INCOME OF:	
		\$5,000	\$100,000
P	1913	10	2,510
T	1914	10	2,510
	1915	10	2,510
	1916	20	3,920
	1917	64	16,164
P	1918	156	34,982
T	1919	104	31,158
P	1920	104	31,158
T	1921	68	31,126
	1922	68	30,076
P	1923	51	22,557
T	1924	26	22,535
	1925	8	16,029
P	1926	8	16,029
T	1927	8	16,029
	1928	8	15,739
P	1929	3	14,846
	1930	8	15,739
	1931	8	15,739
T	1932	68	30,036
	1933	68	30,036
	1934	48	30,162
	1935	48	30,162
	1936	48	31,997
P	1937	48	31,997
T	1938	48	31,997
	1939	48	31,997
	1940	75	42,948
	1941	271	52,160
	1942	592	63,479
	1943	730	67,803
P	1944	755	68,565
	1945	755	68,565
T	1946	589	62,301
	1947	589	62,301
P	1948	432	45,643
T	1949	432	45,643
	1950	452	47,208
	1951	520	51,912

P = peak; T = trough.

Source: Peaks and troughs are those in the National Bureau of Economic Research business cycle chronology. Other data are from *Annual Report of the Secretary of the Treasury on the State of the Finances for the Fiscal Year Ended June 30, 1950*, Dept. of the Treasury, 1951, Table m, p. 247.

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TABLE 35
 Offsets to Loss in Disposable Income through Operation of Federal Personal
 Income Tax in Selected Contraction Periods, 1920-1949
 (dollars in billions)

	Personal Income ^a (1)	Federal Personal Income Tax Liabilities (2)	Disposable Income at Peak Taxes (1 - Peak in 2) (3)	Total Offset: Reduction in Taxes (Peak in 2 - 2) (4)	Loss in Income (Peak in 3 - 3) (5)	Total Offset as % of Income Loss (4 ÷ 5) (6)	Average Effective Tax Rate at Peak (2 ÷ 1) (7)	Tax Liabilities at Peak Rate (1 × 7) (8)	Reduction in Taxes Due to Progressivity of Tax System (8 - 2) (9)	Offset from Progressivity as % of Income Loss (9 ÷ 5) (10)	Change in Effective Tax Rates (11)
1920	\$69.1	\$1.1	\$68.0	\$.4	\$ 14.0	2.9%	1.59%	\$.9	\$.2	1.4%	Lowered
1921	55.1	.7	54.0	.5	13.1	3.8	1.17	.8	.3	2.3	Raised
1929	85.2	1.0	84.2	.8	25.8	3.1		.7	.5	1.9	No change
1930	72.1	.5	71.1	.7	41.3	1.7		.5	.2	.5	Raised
1931	59.4	.2	58.4	.6	42.4	1.4		.5	.1	.2	No change
1932	43.9	.3	42.9	2.6	122.6	2.1		.5	1.1	.9	No change
1933	42.8	.4	41.8	.3	5.7	5.3	1.54	1.0	.2	3.5	No change
1929-1933				.3	1.9	15.8	7.50	3.9	.2	10.5	No change
1937	71.3	1.1	70.2	.3	2.2	13.6		3.8	.1	4.5	No change
1938	65.6	.8	64.5	.3	2.6	11.5		3.8	.1	3.8	No change
1948 4th Q	53.3	4.0 ^b	49.3	.3	6.7	13.4			.4	6.0	
1949 1st Q	51.4	3.7	47.4	.3							
1949 2nd Q	51.1	3.7	47.1	.3							
1949 3rd Q	50.7	3.7	46.7	.3							
1948-1949 4th Q-3rd Q				.9							

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Notes to Table 35

Column

^a Including realized capital gains and losses.

^b Beginning with 1949 the military pay of all members of the armed forces was subject to federal income tax. According to our estimates, if this tax provision had been in effect in 1948, about \$.05 billion would have been added to the federal tax liabilities given above for the fourth quarter of 1948.

Q = quarter.

Column

Source

1 For annual data see Table 22. Quarterly data estimated by multiplying the ratio of seasonally adjusted quarterly personal income estimates to annual personal income (both from *National Income Supplement, 1951, Survey of Current Business*, Dept. of Commerce, Table 45, p. 209, and *Survey of Current Business*,

Source

July 1952, Table 45, p. 30) by the National Bureau of Economic Research annual estimates of personal income including net capital gains.

Annual data from the preliminary report of *Statistics of Income for 1949*, Part 1, Bureau of Internal Revenue, pp. 9 and 51-53. Quarterly data estimated by multiplying ratio mentioned above by annual federal income tax liabilities. This procedure makes no allowance for the possibility that the annual income-size structure implicit in quarterly totals probably varies from quarter to quarter during a cyclical contraction. We do not know how to adjust for this factor and merely note that the statistical procedure used serves to minimize the amount of the offset. See Table 34.

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at the peak level (column 8). Subtracting from this the actual tax liabilities gives us the amount of offset due to progressivity (column 9), which is then expressed as a percentage (column 10) of the loss in disposable income.

In the first three contractions the offset from the federal personal income tax did not exceed 5.3 per cent of the loss in disposable income (column 6)—a consequence of the narrow tax base and low effective rates of that period. Because of the broader tax base and higher rates that have characterized the postwar period, the relative offset was larger in the 1948-1949 contraction—13 per cent of the loss in disposable income—but still of a minor order of magnitude. The amount accounted for by the progressivity feature varied from about two-fifths to two-thirds of the entire tax offset (column 9 \div column 4). The latter fraction was registered in the 1937-1938 contraction; in the 1948-1949 contraction, progressive rates accounted for only 44 per cent of the tax offset,¹⁴ or in absolute terms for \$400 million.

This finding agrees with the inferences drawn by Melvin I. White from his analysis of illustrative figures. He concludes that "The automatic reduction in [tax] revenue that can be provided by a progressive rate schedule would be insufficient to cope with the deflationary pressures that accumulate in more than minor business contractions."¹⁵

We can indicate also the combined offset to the loss in disposable income during the 1948-1949 contraction provided by the "built-in" stabilizers—compensation to the unemployed and the tax program. Here income loss is defined as what the loss would have been if there had been no compensation to the unemployed and if income tax

¹⁴ Differences in the relative importance of progressivity in 1937-1938 (67 per cent) and in 1948-1949 (44 per cent) are due to several factors: relative severity of the contractions, extent of shift in inequality of income during contractions, and the relative progressivity of the tax structures. The decline in personal income in the 1937-1938 contraction (8.0 per cent) was more than three times the decline in the 1948-1949 contraction (2.5 per cent). In the former contraction there was a shift toward greater equality, since the top 1 per cent received 13.27 per cent of total income in 1937 and 11.63 per cent in 1938 (Table 24). We do not have comparable figures for 1948 and 1949, but there is reason to doubt that a similar shift occurred, since salaries of corporate officers did not decline and dividend and interest payments continued to rise during the contraction in those years. Moreover, for incomes above \$5,000 the 1937-1938 schedule of tax rates is more progressive than the 1948-1949 schedule (see R. A. Musgrave and Tun Thin, "Income Tax Progression, 1929-48," *Journal of Political Economy*, December 1948, Chart vi, p. 506).

¹⁵ Melvin I. White, *Personal Income Tax Reduction in a Business Contraction*, Columbia University Press, 1951, p. 16.

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liabilities had remained at peak levels. Based on quarterly data, the loss in disposable income during the 1948-1949 contraction would have been \$7,449 million (Tables 32 and 35), and the combined offset was \$1,649 million (\$749 million from compensation to the unemployed and \$900 million from the tax program)—that is, 22.1 per cent of the loss in disposable income was compensated. This is the direct offset; our calculation makes no allowance for the “multiplier” effect of the offsets, nor do we stop to consider whether the entire fiscal and monetary policy of the federal government on balance added to or subtracted from these direct offsets.