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THE IMPACT OF THE INTEREST ON FEDERAL DEBT
UPON THE DISTRIBUTION OF INCOME
IN THE UNITED STATES

by

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CHAPTER I

INTRODUCTION

The existence of a large national debt has long been a source of controversy, chiefly over whether or not it constitutes a burden, in one sense or another, on society. Fortunately, however, this paper deals with one of the less controversial aspects of the national debt: the income redistribution effects resulting from the levying of taxes in order to pay interest on the debt. According to Professor Abba Lerner, whose writings on the subject of the national debt have long epitomized prevailing opinion, "the benefits from interest payments on the national debt do not accrue to every individual in exactly the same degree as the damage done to him by the additional taxes made necessary." He goes on to state that, "the growth of the national debt . . . may increase the inequality of distribution," of income. "This is because richer people can buy more government bonds and so get more of the interest payments without incurring a proportionately heavier burden

of the taxes."¹ Lerner recognizes that this need not necessarily be the case if the taxes levied to pay interest are more progressively distributed than are the debt holdings. Professor Paul Samuelson, in his famous textbook, states that "the principal problems of an internal debt have to do with the transfer payments of interest that must be made to some people and the taxes that are levied upon all people for this purpose." "To the degree that the people involved are different and that the interest receivers are wealthier, more thrifty, or deemed less in need of income, there will be redistributive effects to reckon with."² Both Lerner and Samuelson seem to imply that the interest benefits are more progressively distributed against income than the tax burden. Professor Musgrave does not share their view. According to him, "considering the postwar Federal debt in the United States and applying the distribution of the average tax dollar, it appears that the incidence of the tax-interest circuit is more or less neutral: . . ."³ Neutral apparently means that the tax and interest distributions are roughly the same. A

¹Abba P. Lerner, "The Burden of the National Debt," in Income, Employment and Public Policy, Essays in Honor of Alvin Hansen (New York: W. W. Norton, 1948), pp. 260-61.

²Paul A. Samuelson, Economics (New York: McGraw-Hill, 1967), p. 347.

³Richard A. Musgrave, The Theory of Public Finance (New York: McGraw-Hill, 1959), p. 613.

similar view is held by the Commission on Money and Credit.⁴

What are the implications of the existence of a given federal debt? Interest must be paid. To pay the interest, taxes must be collected Expenditures for interest payments, to be sure, do not transfer an equivalent amount of resources from private to public uses; they represent a transfer of funds from taxpayers to bondholders. But all taxpayers are not recipients of interest. Consequently, there does occur some redistribution of income from taxpayers to debt holders. It is frequently assumed that this redistribution is strongly in favor of the upper income groups to the detriment of the lower income groups. In fact, the debt has come to be fairly widely held, and the federal tax structure is fairly progressive. Consequently the transfer of income from taxpayers to debt holders resulting from interest payments appears to have no significant effect on the distribution of income by income group. (Italics mine.)

The object of the present study is to measure as carefully as possible the distribution among the income classes of the interest benefits and tax burden arising from the need to pay interest on the national debt. In view of the various statements cited above about the presumed redistributive effects of the debt, the basic conclusion of this study that an income transfer from upper to lower income groups takes place is rather unique.

Other Aspects of the Public Debt

Attention is focused in the present study entirely on income redistribution effects of the debt. However, other aspects of the

⁴The Report of the Commission on Money and Credit (Englewood Cliffs: Prentice-Hall, 1952), pp. 96-97.

public debt, especially the question of what constitutes the burden of the debt, has been the primary concern of writers on the subject of the debt in recent years. The debt burden controversy has seen Buchanan, Bowen, Davis and Kopf, Modigliani and others challenge most of the precepts of received debt theory, as epitomized in the writings of Lerner.⁵ The standard view is that the full cost of public borrowing falls on the generation alive at the time the debt is incurred because of the foregone opportunities for use of the real resources involved.⁶ Buchanan challenges this view as being erroneous due to its alleged failure to take account of individual gains and losses of utility resulting from the need to levy taxes in order to pay interest on the debt.⁷ The utility sacrifice imposed on future generations by the need to pay involuntary taxes to voluntary holders of the debt effectively transfers the burden of the debt, according to Buchanan, to the future. Professor Shoup rebuts Buchanan by noting that if we look upon people as choosing voluntarily, through their elected representatives, to borrow now and pay taxes later, the taxes that are imposed

⁵James M. Buchanan, Public Principles of Public Debt, (Homewood Illinois: Richard D. Irwin, 1958), especially Chapter IV. W. G. Bowen, R. G. Davis and D. H. Kopf, "The Public Debt: A Burden on Future Generations?," in J. M. Ferguson, ed., Public Debt and Future Generations, (Chapel Hill: Univ. of North Carolina Press, 1964), pp. 67-74. Franco Modigliani, "Long-Run Implications of Alternative Fiscal Policies and the Burden of the National Debt," in Ferguson, op. cit., pp. 107-138. Lerner, op. cit., Passim.

⁶Lerner, op. cit., pp. 256-257.

⁷Buchanan, op. cit., Chapter IV, Passim.

in the future to pay interest on the debt are no burden because they are essentially self-imposed.⁸

Messrs. Bowen, Davis and Kopf have also succeeded in transferring the burden of the debt to future generations. They first define the burden of the debt as the foregone consumption of private goods imposed on any particular generation consequent to the public borrowing and spending.⁹ Then they proceed to argue that people owning government bonds can sell them and consume the proceeds, thus redeeming any consumption sacrifice entailed in the original purchase of the bond. Thus, the consumption sacrifice "burden" of the debt can be postponed indefinitely, as long as each generation can sell its bonds to succeeding generations and consume the proceeds. According to Bowen, Davis and Kopf, anything that short-circuits this process of successive recoupment will impose a burden on the generation that purchased bonds but did not transfer them to future generations in a manner that enabled it to consume the proceeds, e. g., bequeathal, debt retirement, etc.

Still another type of debt burden is discussed by Modigliani, who raises the possibility that future generations may suffer on account of a reduced level of capital formation caused by public debt issue. To the extent that purchases of government bonds come out of saving,

⁸Carl Shoup, "Debt Financing and Future Generations," in J. M. Ferguson, op. cit., pp. 214-218.

⁹W. G. Bowen, et al., op. cit., p. 68.

the stock of private capital passed onto future generations, and their potential private consumption, is less.¹⁰

Mishan, in defense of the orthodox view of the debt, points out that the manner in which the proceeds of debt finance is spent is the really crucial question.¹¹ The Buchanan, Bowen, Davis and Kopf, and Modigliani debt burdens on the future are all seriously undermined once account is taken of the return on the public project that was financed with debt issue, as compared to the return on the displaced private project (if any). This net return must be set against the taxes levied to pay interest in the Buchanan model, any loss of private consumption in the Bowen, Davis and Kopf formulation, and any lost output due to reduced private capital formation in Modigliani's framework. In each case, the debt burden can disappear if the benefits of the public project are sufficiently great. Note, too, that none of these alternative burden arguments asserts that real resources can be shifted through time, or that the opportunity cost of public borrowing takes place at some time other than when the debt is created and the funds spent--two of the foundation stones of received debt theory.

Meade, in his discussion of the public debt, stresses the fact, long recognized by adherents to the standard view of the debt (such

¹⁰Modigliani, op. cit.,

¹¹E. J. Mishan, "How to Make a Burden of the Public Debt," The Journal of Political Economy, LXXI (December 1963), pp. 529-542.

as Lerner), that a real cost is imposed on society in the form of reduced incentives to work and invest as a result of the frictions caused by the higher taxes needed in order to pay interest on the debt.¹²

Mention should also be made of Musgrave's concept of public debt as a means of distributing the cost of public expenditures among different generations.¹³ Taxation imposes the entire cost of a project on the taxed generation. But Musgrave likens debt issue to a consumer loan, where the cost of expenditure is postponed by borrowing and repaid in installments. By taxing future generations for debt service, and floating new loans and retiring old ones, the cost of a project can be more equitably allocated among the beneficiaries. This does not mean that real resources are shifted through time; the initial period is still the point of resource withdrawal for society as a whole. Musgrave's approach is thought to be especially applicable to municipal finance.

The preceding overview of various discussions of the public debt cannot be regarded as anything more than a capsulization of the views of the respective writers. Very many extensions and qualifications of their ideas have been omitted. Our only purpose is to show that the concern of writers in the area of the public debt in recent years

¹²J. E. Meade, "Is the National Debt a Burden?," in Ferguson, op. cit., pp. 19-44.

¹³Musgrave, op. cit., Chapter XXIII.

has been with issues other than measurement of the income redistribution effects of the debt. In order to examine previous attempts at such measurement we must turn to the work of two hitherto unmentioned economists.

Prior Measurements of the Redistributive

Effect of the Debt

The most ambitious prior attempt to measure the income redistribution effects of the debt was made by Donald C. Miller, in a published University of Illinois doctoral dissertation covering the year 1945.¹⁴ Jacob Cohen, in a brief (nine page) article in The Journal of Finance, measured the reshuffling of income among classes in the year 1946.¹⁵ Although Cohen and Miller analyzed adjacent years, their conclusions were quite different. Cohen found the over \$5,000 income class (his highest class) paying about fifty-five percent of the federal tax burden, while receiving only thirty-nine percent of the interest.¹⁶ Miller, on the other hand, found that the over \$5,000 income class (also the highest class) paid about fifty-six percent of the tax burden (when, like Cohen, the corporation income tax is assumed borne by stockholders) while receiving about

¹⁴ Donald C. Miller, Taxes, The Public Debt, and Transfers of Income (Urbana: University of Illinois Press, 1950).

¹⁵ Jacob Cohen, "Distributional Effects of the Federal Debt," The Journal of Finance, VI (September 1951), pp. 267-275.

¹⁶ Ibid., p. 270.

fifty-nine percent of the interest benefits.¹⁷

Aside from the fact that Miller's work is somewhat outdated, there are several shortcomings in his data and technique:

1) In allocating the personal income tax, Miller uses the Treasury Department's Statistics of Income as his source.¹⁸ This is a doubtful procedure because the income classes used in the Statistics of Income are adjusted gross income classes as defined in the tax laws, not money income as used in defining his income classes. The variety of exemptions, deductions and exclusions from any ordinary definition of money income that are needed to arrive at adjusted gross income make the use of this concept to calculate the personal income tax burden by income class questionable. Cohen uses the same procedure as Miller.¹⁹

Another difficulty encountered in the use of Treasury Tax data is that the tax paying unit (which is what "adjusted gross income" classes contain) does not always correspond to the spending unit classification (roughly similar to a consumer unit) used by Miller in setting up his income brackets.²⁰ Husbands and wives, as well as children, often file separate returns. No adjustment for secondary earners (e.g., children) is made by Miller.²¹ But the separate

¹⁷ Op. cit., p. 133.

¹⁸ Ibid., p. 14.

¹⁹ Cohen, op. cit., p. 272.

²⁰ Miller, op. cit., p. 15.

²¹ Ibid., p. 16.

filing of returns by couples is adjusted for by using matched returns for 1936,²² which used an income concept different from either adjusted gross income or money income. His technique of adjustment consisted of assigning a descending proportion (from the lowest to the highest income classes) of the tax liability of separate (non-joint) returns in each of his five income classes (all of equal size) under \$5,000 to the over \$5,000 class.²³ The descending percentages are designed to adjust for movement within the under \$5,000 classes by separate returns being filed by couples. The result is assumed to be a reasonably accurate picture of the personal income tax burden by family money income class. But as Miller admits, "the adjustment values chosen are for the most part arbitrary, and no evidence is presented to prove their validity"²⁴ About twenty-eight percent of the total personal income tax liability in 1945 was accounted for by separate husband and wife returns.²⁵

2) Miller's treatment of the incidence of the corporation income tax makes two alternative assumptions: that the tax is borne entirely by stockholders; and that one-third is shifted forward to consumers while the remaining two-thirds is borne by stockholders.²⁶ In allocating that part of the corporate tax presumed to fall on stockholders,

²² Ibid., pp. 16-21.

²³ Ibid., p. 24.

²⁴ Ibid., p. 25.

²⁵ Ibid.

²⁶ Ibid., pp. 33-34. That part of the corporate tax shifted forward, as well as the excise taxes, was allocated according to consumption by "adjusted gross income" class.

Miller relies on the distribution of dividends by adjusted gross income classes, from the Statistics of Income.²⁷ The same questions raised over the use of this source for allocation of the individual income tax apply equally in this case, too. Indeed, the Statistics of Income for 1945 did not list dividend income separately from interest income, so Miller had to employ a 1943 dividend distribution; but the income concept used in that year was different from the one used in 1945.²⁸ He believed that underreporting in lower income classes (under \$5,000) and a declining share of dividends in these same classes would tend to offset the effects of separate returns, different income concepts and different years on the overall distribution of dividends by income class.²⁹ In the present study, the portion of the corporation income tax falling on capital is allocated according to the ownership of stock by consistent money income classes. This is done mostly to avoid use of Statistics of Income data. It does, however, involve the implicit assumption that the rate of profit on corporate capital is roughly the same for all income classes. Miller's use of dividends as an index of allocation implies the assumption (which he recognizes) that corporations paying taxes but not dividends are randomly distributed in terms of ownership among the income classes. There is little to choose between these two assumptions, but the use of the stock ownership index does avoid the problem of incomparable measures of income.

²⁷ Ibid., p. 37.

²⁸ Ibid.

²⁹ Ibid., p. 40.

3) Less attention than in the present study is devoted by Miller to the allocation of the interest benefits of the national debt. No direct information was available to him about the amount of interest allocable to corporations, individuals and state and local governments--all three categories having been lumped together by the Treasury.³⁰ Only the total amount of federal securities owned by each category and the maturity structure of the combined total of all three was available. (About one-third of the debt was held by these three categories together in 1945.)³¹ The total amount of interest earned by each type of security and therefore on the combined holdings of all three categories was derived from the overall maturity structure. This total was then apportioned among the three investor categories basically according to the amount of each type of security attributed to each, which was determined partly by the nature of the security and partly on the basis of surveys of who bought what type of security during World War II.³² Certain admittedly arbitrary adjustments were made to overcome difficulties caused by the assumption, inherent in allocating the interest according to the proportion of principal owned, that the same rate of interest was earned by each investor category on its holdings; and also to make the sum of estimated interest benefits agree with known outpayments by the

³⁰ Ibid., p. 96.

³¹ Ibid., p. 92.

³² Ibid., pp. 98-101.

Treasury.³³ In our study, much more complete information about the ownership and maturity structure of debt owned by individuals, corporations and state and local governments is available and utilized. The category corporations used by Miller includes, in addition to ordinary non-financial corporations, savings and loan associations, dealers and brokers, non-profit organizations (the two latter categories are ultimately treated by Miller as part of individual holdings for purposes of allocation by income class of the interest) and (presumably, not being considered elsewhere) corporate pension trust funds. Each of these four categories is examined separately in the present study.

4) The federal interest flowing through the U.S. Government Trust Funds and Agencies, as well as that received by state and local governments is not considered by Miller.³⁴ Only that part of the interest received by the Federal Reserve Banks that was used to pay statutory dividends to member banks is considered by him.³⁵ All of these aspects of interest allocation are dealt with here.

5) Interest allocated to owners of unincorporated businesses is distributed among the income classes by using proprietorship income received by adjusted gross income classes.³⁶ These income classes, as noted above, are not comparable to the ordinary money

³³ Ibid., pp. 103-105.

³⁵ Ibid., pp. 94, 119.

³⁴ Ibid., p. 90.

³⁶ Ibid., p. 113.

income classes used by Miller. A separate index of ownership of proprietorships, partnerships and closely held corporations, drawn up using compatible income definitions, is employed in the present work.

6) Miller's allocation of the interest attributable to the owners of commercial bank time deposits is based on an index that includes deposits at mutual savings banks, savings and loan associations, credit unions and postal savings, as well as deposits at commercial banks.³⁷ His allocation of the interest earned by mutual savings banks' depositors uses the same index, while the savings and loan interest is lumped in with the amount attributed to ordinary non-financial corporations.³⁸ Separate indices of ownership for each of these categories is employed in the present study.

7) Fire and casualty insurance companies are treated like ordinary non-financial corporations by Miller, even though their motives for holding debt are quite different and many are mutual companies.³⁹ In addition, the rate of interest earned on federal securities by the fire and casualty companies was assumed to be the same as that for life insurance companies.⁴⁰

8) The rate of interest earned on debt held by persons, private trust funds and unincorporated businesses was assumed to be

³⁷ Ibid., p. 115.

³⁹ Ibid., p. 120.

³⁸ Ibid., p. 120.

⁴⁰ Ibid., p. 121.

the same by Miller.⁴¹ Interest earned by private trust funds was allocated among the income classes using Statistics of Income receipt of income from estates and trusts by adjusted gross income class, without adjustment.⁴²

9) Miller completely ignores the allocation of accrued bond interest, such as that paid on Series E savings bonds.⁴³ This represents an omission of about \$400 million, while the total amount of interest being allocated is \$2.8 billion.⁴⁴ The omission of accrued interest probably has the effect of overstating the amount of interest of the type considered by Miller going to the lowest income classes. This is due to the fact that personal interest receipts are allocated among the income classes according to ownership of U. S. Securities, and most of the debt owned by the lower income groups is of the Series E discount type of bond, whose interest (except for bonds cashed-in during the year) is excluded from the discussion by Miller.

Cohen's treatment of the redistributive effects of the national debt utilizes some very simplifying assumptions. His most crucial assumption is that the ownership of the entire federal debt, institutionally-owned as well as directly held securities, was distributed

⁴¹Ibid., p. 127.

⁴²Ibid., p. 128.

⁴³Ibid., p. 101.

⁴⁴Ibid., pp. 101, 131.

among the income classes in the same way as were liquid asset holdings, i.e., demand deposits, time deposits and government securities of individuals.⁴⁵ He believed that the widespread ownership of claims against mutual savings banks, savings and loan associations and insurance companies offset the concentration of ownership of claims against commercial banks (which owned twice as much debt as savings banks and insurance companies combined) and corporations. This means that Cohen does not analyze the flow of interest through any financial intermediaries so as to determine the shares attributable to owners, depositors, policyholders, etc. Cohen (like Miller) does not consider the debt held by U. S. Government Trusts, the Federal Reserve Banks and state and local governments.⁴⁶

On the tax side, Cohen relies totally on Treasury tax data, calculated in terms of adjusted gross income classes and taxpaying units, while at the same time allocating the interest benefits according to spending units by money income classes, without adjustment.⁴⁷ Indeed, the allocation of the tax burden in Cohen's article is virtually identical to that by Miller, e.g., the personal income tax is allocated according to adjusted gross income classes; excise and customs taxes are allocated according to consumption by adjusted gross income classes, as is the portion of the corporation income tax assumed

⁴⁵Cohen, op. cit., pp. 267-270. ⁴⁶Ibid., p. 273.

⁴⁷Ibid., p. 272.

shifted forward; that part of the corporation income tax deemed to fall on capital is distributed according to the receipt of dividends by adjusted gross income classes, etc.⁴⁸ The only difference between Cohen and Miller on the tax side is that Cohen's alternative assumption about the corporation income tax shifts one-half of the tax forward, while Miller shifts only one-third forward.⁴⁹

Summary

Because Miller and Cohen use essentially the same method to allocate the federal tax burden, both attribute the same proportion of the total to the upper income groups (over \$5,000 income class), fifty-six and fifty-five percent, respectively.⁵⁰ It is Cohen's assumption about the debt being distributed among the income classes in the same way as liquid asset holdings that leads him to assign only thirty-nine percent of the interest benefits to the upper classes. Miller's assignment of fifty-nine percent of the benefits to the over \$5,000 income class indicates some slight redistribution in favor of the upper classes. Curiously, our findings are more in accord with those of Cohen than of Miller, i.e., a redistribution of income in favor of the lower classes. This in spite of the fact that Miller's technique is more like ours than is Cohen's.

⁴⁸ Ibid., p. 272.

⁴⁹ Ibid.

⁵⁰ No account of the different classes under \$5,000 is taken here because \$5,000 was the dividing line between upper and lower income classes in Miller and Cohen.

All in all, Miller and Cohen did creditable jobs in analyzing the redistributive effects of the debt, given the resources available to them at the time. But based on the preceding discussion of their efforts, a reexamination of the situation does seem warranted. In addition, shifts in the structure of debt ownership, changed money income classes, revisions in the tax system, and much more complete and detailed data sources make such a reexamination imperative.

CHAPTER II

ANALYTICAL FRAMEWORK AND OUTLINE OF METHOD

This chapter describes the technique used to measure the impact of the payment of interest on the national debt upon the size distribution of income. The plan is to compare the distribution by income class of interest payments with the distribution of the federal tax burden according to the same income classes. Implied in this procedure are several things that should be made explicit. We take as being given the structure of debt ownership and taxes for a particular year, 1962, and impute among the income classes the interest benefit and tax burden due to the debt for that specific situation only. No comparison is attempted between the given debt and tax structure and any alternative situation. Failure to consider alternatives is due to the lack of appropriate data. Also, the method employed is concerned solely with the initial impact of the tax and interest distributions upon the income classes, not with any subsequent repercussions on the level and distribution of income that undoubtedly occur in an interdependent market economy. Objection to the imputation scheme employed here may be raised on the grounds

that it does not specify with what we are comparing the existing distribution of interest and taxes. That is, it is sometimes argued that the proper measurement of income redistribution must posit the alternatives that are being compared. The measurement of income redistribution is held to be essentially a comparative exercise: what exists as compared to what would otherwise exist. Only the difference between the two situations being regarded as the true measure of income redistribution. Under this differential approach, the appropriate way to measure the income redistribution effect of the debt would be to compare the actual interest and tax distributions with what the income and tax distributions are presumed to be in the absence of the need to pay interest on the debt. Since a variety of possible alternatives to the existing tax and interest structure are conceivable, and there being no information upon which to base a selection among them, the futility of the differential approach becomes apparent. In terms of the differential approach, the imputational method is seen as implicitly comparing the actual interest, tax and income distributions with a situation in which the overall level of income is the same, but differs only in its relative distribution among the income classes: the income of taxpayers would be greater by the amount needed to pay interest to bondholders, whose income would be correspondingly less. Only in this case, according to the differential incidence approach, is all of the interest actually received and all of the taxes actually paid for

debt interest a pure income redistribution. While the greater rigor and sophistication of the differential approach is unquestioned, the fact that it cannot generally be made operational precludes it from use here. We are therefore forced to fall back upon an examination of how the interest and taxes arising from the debt were actually distributed in 1962, without speculating about how a change in any of the parameters would affect the system.

A concrete example will serve to better illustrate the issues involved in the choice between the differential and imputational techniques. In considering the federal interest paid to U.S. Government Trust accounts in Chapter V, the amount of this interest used to pay social security benefits is regarded as an interest benefit of the debt. According to the imputational approach, this interest was paid by the Treasury and received by someone and must therefore be considered as a benefit of the debt. The differential approach, however, would argue that such interest flowing through the social security system should be counted as an interest benefit only if the level of social security payments would change pari passu with any change in the amount of interest payments received by the social security system. If social security payments are regarded as being autonomously set by Congress, and the payroll taxes used to finance the system adjusted accordingly, then any change in interest payments on the debt is not likely to affect the level of benefits paid to social security recipients. Interest from the debt held by the

trust funds then merely serves to determine the level of taxation needed to support any given level of benefits, with any change in interest being reflected in a changed level of taxes rather than of benefits. Under these circumstances, the differential incidence approach would classify none of the interest used to finance social security payments as an interest benefit of the national debt, because the payments would presumably be unaffected by any change in the interest flow. Furthermore, any change in the tax structure necessitated by the changed interest flow would have to be taken into account before arriving at any judgement about the redistribution of income effected. Even though the present writer is sympathetic to the above interpretation about how the social insurance system operates in the United States, the dearth of information about relevant alternatives that is needed to utilize the differential method render it useless for our purposes. The actual interest flow must therefore be considered the relevant criteria of interest benefit.

One further aspect of the analytical framework should be noted and that is the fact that use of the overall tax burden distribution implies that interest on the federal debt is paid out of the "average" tax dollar, rather than any specific tax or marginal adjustment thereof. This assumption has its origin in the fact that interest is paid out of general Treasury revenues.

The next section describes the method used to actually allocate the interest benefit and tax burden among the income classes in 1962.

Outline of the Method

The study consists of two parts, Part I dealing with the allocation among the income classes of the federal interest estimated to have been paid on the national debt during 1962. Chapters III through XII make up Part I. Part II allocates the federal tax burden levied to raise the interest among the income classes, and occupies Chapters XIII through XIX. 1962 was the year chosen for study mainly because Projector and Weiss' Survey of Financial Characteristics of Consumers covers that year.¹ This survey paid special attention to the upper income groups and proved to be an invaluable source of proxies for allocating the interest and taxes among the income classes, e.g., ownership of government securities, bank deposits, stockholdings, etc. We use the same nine income classes in this study as are employed in the Survey.

The income classes used are as follows:

1.	\$	0	-	2,999	6.	\$	15,000	-	24,999
2.		3,000	-	4,999	7.		25,000	-	49,999
3.		5,000	-	7,499	8.		50,000	-	99,999
4.		7,500	-	9,999	9.		100,000	-	and over.
5.		10,000	-	14,999					

Contained in each of these money income classes are consumer units (defined below).

¹Dorothy S. Projector and Gertrude S. Weiss, Survey of Financial Characteristics of Consumers (Washington: Board of Governors of the Federal Reserve System, 1966).

The Allocation of Interest

In allocating the interest, all types of holders of the federal debt, except foreigners (whose interest is considered a leakage and perhaps a "real" burden), are considered: commercial banks, individuals, U.S. Government Trust Funds and Agencies, The Federal Reserve Banks, non-financial corporations, state and local governments, insurance companies, mutual savings banks, savings and loan associations, dealers and brokers, non-profit organizations, and corporate pension trust funds. Each of these categories of ownership is treated in a separate chapter (the last four in one chapter, however).

First of all, the total amount of interest earned by each category of debt holder had to be determined. This was done in basically two ways. In some cases the amount of interest involved was directly ascertainable from industry sources or governmental agencies. This was the case for commercial banks, mutual savings banks, U. S. Government Trust Funds and Agencies and the Federal Reserve Banks. In these cases the amount of interest was a known, accurate sum. For the remaining categories of ownership, however, the amount of interest received had to be estimated. The method employed estimated the maturity structure of each category of ownership (from Treasury surveys) and applied the appropriate rate of interest to the amount of each issue held, e.g., bills, notes, bonds, etc. This technique was utilized to estimate the amount of interest received by individuals

(the maturity structure of whose holdings, however, was derived from the Survey of Financial Characteristics), corporations, state and local governments, insurance companies, savings and loan associations, dealers and brokers and corporate pension trust funds. Table 2-1 shows the amount of debt held by each category of ownership as of December 31, 1962 and 1945, as well as the amount of interest estimated to have been received by each category during 1962.

Having determined the amount of interest earned by each investor category, it was then necessary to trace the flow of this interest through these various institutions, and thence to allocate it among the income classes. Naturally, this involved consideration of the presumed method of operation of each of these institutions so as to be able to attribute the various participating groups with their appropriate share of the interest, e.g., stockholders, depositors, policyholders, taxpayers, etc. For individuals, it was assumed that they benefit directly from the interest that they receive. Once each of the participating groups in each institution was allocated its share of the interest, it then had to be distributed among the money income classes. This distribution was carried out using a variety of indices of interest benefit, e.g., ownership of stock, time deposits, life insurance, etc., by income class. These indices are derived mostly from the Projector and Weiss

TABLE 2-1

THE NATIONAL DEBT: OWNERSHIP AND INTEREST

Category of Ownership	Ownership				Amount of Interest Earned by Each Category in 1962
	1962 Amount	Percent	1945 Amount	Percent	
Commercial Banks	\$67.2 bill.	22.1	\$90.8 bill.	32.6	\$2,112.0 million
Individuals	65.2	21.4	64.1	23.0	2,010.3
U.S. Govt. Trusts	55.6	18.3	27.0	9.7	1,641.5
Federal Reserve	30.8	10.1	24.3	8.7	1,039.0
Corporations	20.1	6.6	22.2	8.0	419.3
State & Local Govt.	19.5	6.4	6.5	2.3	686.9
Foreign	15.3	5.0	2.4	0.9	No Estimate
Insurance Co's	11.5	3.8	24.0	8.6	433.5
Mutual Savings Banks	6.1	2.0	10.7	3.8	206.0
Savings and Loan Assn.	5.6	1.8)			201.4
Dealers and Brokers	4.3	1.4)			99.1
Corporate Pensions	2.3	0.8)	6.6	2.4	79.0

TABLE 2-1--Continued

Category of Ownership	Ownership				Amount of Interest Earned by Each Category in 1962
	1962 Amount	Percent	1945 Amount	Percent	
Non-Profit	\$ 0.5 bill.	0.2)			\$ 40.0 million
TOTAL	\$304.0 bill.	100.0	\$278.7 bill.	100.0	\$8,968.0

Note: Throughout this dissertation, the total amount of debt outstanding includes the following amounts that total to the \$304 billion shown above for 1962: public marketable debt, \$203.5 billion; public non-marketable, \$52.7 billion (current redemption value; all other issues listed at par); special issues (for trust funds of the government), \$43.4 billion; matured and non-interest bearing, \$4.2 billion; and guaranteed securities, \$517 million. Wherever possible, interest calculations exclude interest on guaranteed issues.

Source: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the U.S., 1964 (Washington: U.S. Government Printing Office, 1964), pp. 293, 404, 463; Treasury Bulletin, February 1963, p. 70; Federal Reserve Bulletin, March, 1963, p. 353.

Survey of Financial Characteristics, but also from a Bureau of Labor Statistics, (BLS) Survey of Consumer Expenditures, described below. All the indices from the Survey of Financial Characteristics are based on ownership of some wealth component as of December 31, 1962. The use of an end-of-year stock concept to allocate an interest flow is not ideal, but it is the best technique available data will permit. The BLS survey covers expenditures made during 1960-61, close enough to the year under consideration so as not to be the cause of any concern. Table 2-2 shows the various indices of allocation employed, and how much interest from each investor category was allocated according to each index.

Interest allocated includes direct cash payments by the Treasury and accrued interest on discount (Series E-type savings bonds) bonds, on the grounds that one's economic position is enhanced equally by a cash payment received or an increase in wealth that is cashable without risk at any time. Only a part of the interest attributed to each income class is a direct cash receipt, even if we consider only cash outpayments by the Treasury, because most of the interest is received by institutions (e.g., banks) that pay only a part of it out directly. Commercial banks, for example, use some of the interest they receive to provide services free-of-charge to demand depositors. This constitutes an implicit interest benefit.

No adjustment was made for the possible movement of consumer units among the income classes as a result of the imputation of

TABLE 2-2

INDICES OF INTEREST ALLOCATION

INDEX OF ALLOCATION	Categories of Ownership (Amounts in Millions)							
	Comm- ercial Banks	Indi- viduals	U.S. Govt. Trusts	Federal Reserve Banks	Corpora- tions	State & Local Govt.	Insur- ance Co's	Mutual Savings Banks
Individual Ownership of U.S. Securities		\$2,010.3						
Social Insurance Benefits			\$720.8			\$88.2		
Publicly Traded Stock	\$571.1			(\$11.6) ^e	\$419.3		\$148.6	
Closely-Held Businesses (Managed)	\$531.4							
Closely-Held Businesses (Not Managed)	\$ 72.2			(\$15.4) ^f				
Commercial Bank Time Deposits	\$611.2							

TABLE 2-2

USES OF INTEREST ALLOCATION

Categories of Ownership (Amounts in Millions)							Other ^a	TOTAL
Li- als	U.S. Govt. Trusts	Federal Reserve Banks	Corpora- tions	State & Local Govt.	Insur- ance Co's	Mutual Savings Banks		
								\$2,010.3
	\$720.8			\$88.2			\$21.0	\$ 830.0
		(\$11.6) ^e	\$419.3		\$148.6			\$1,139.0
								\$ 531.4
		(\$15.4) ^f					\$99.1	\$ 186.7
								\$ 611.2

TABLE 2-2--Continued

INDEX OF ALLOCATION	Categories of Ownership (Amounts in Millions)							
	Comm- ercial Banks	Indi- viduals	U.S. Govt. Trusts	Federal Reserve Banks	Corpora- tions	State & Local Govt.	Insur- ance Co's	Mutual Savings Banks
Mutual Savings Bank Deposits			\$14.7					\$206.0
Savings and Loan Deposits								
Consumption	\$24.5 (\$319.7) ^b			\$174.5				
State and Local Tax Burden	\$100.6					\$416.1		
Life Insurance			\$147.6				\$189.4	
Demand Deposits	\$151.7							
Social Insur- ance Contribu- tions						\$135.5		
Disability Income						\$47.1		

TABLE 2-2--Continued

Categories of Ownership (Amounts in Millions)							Other ^a	TOTAL
U.S. Govt. Trusts	Federal Reserve Banks	Corporations	State & Local Govt.	Insurance Co's	Mutual Savings Banks			
\$14.7					\$206.0		\$ 220.7	
						\$201.4	\$ 201.4	
	\$174.5					\$ 40.0	\$ 239.0	
			\$416.1				\$ 516.7	
\$147.6				\$189.4			\$ 337.0	
							\$ 151.7	
			\$135.5				\$ 135.5	
			\$47.1				\$ 47.1	

TABLE 2-2--Continued

INDEX OF ALLOCATION	Categories of Ownership (Amounts in Millions)							
	Comm- ercial Banks	Indi- viduals	U.S. Govt. Trusts	Federal Reserve Banks	Corpora- tions	State & Local Govt.	Insur- ance Co's	Mutual Savings Banks
Wealth							\$57.3	
Automobiles							\$38.2	
Trust Funds	\$10.2							
Pension Plan Equity								
SUB TOTAL	\$2,072.9	\$2,010.3	\$883.1	\$174.5	\$419.3	\$686.9	\$433.5	\$206.0
U.S. Govt. & Foreign	\$ 66.1		\$758.4 ^d	\$837.5				
TOTAL	\$2,139.0 ^c	\$2,010.3	\$1,641.5	\$1,039.0	\$419.3	\$686.9	\$433.5	\$206.0

^aOther includes Savings and Loan Associations, Dealers and Brokers, Non-Profit Organizations and

^bThis amount is allocated as an alternative assumption and is counted once to avoid doublecounting.

^cIncludes \$27 million in Federal Reserve dividends received by commercial banks in 1962.

TABLE 2-2--Continued

Categories of Ownership (Amounts in Millions)							Other ^a	TOTAL
Individuals	U.S. Govt. Trusts	Federal Reserve Banks	Corporations	State & Local Govt.	Insurance Co's	Mutual Savings Banks		
					\$57.3		\$ 57.3	
					\$33.2		\$ 33.2	
							\$ 10.2	
							\$ 58.0	
10.3	\$883.1	\$174.5	\$419.3	\$686.9	\$433.5	\$205.0	\$419.5	
	\$758.4 ^d	\$837.5					\$1,662.0	
10.3	\$1,641.5	\$1,039.0	\$419.3	\$686.9	\$433.5	\$205.0	\$419.5	
							\$8,968.0	

Loan Associations, Dealers and Brokers, Non-Profit Organizations and
 as an alternative assumption and is counted once to avoid doublecounting.
 Federal Reserve dividends received by commercial banks in 1962.

Corporate Pension Trust Funds.

TABLE 2-2--Continued

^d\$15 million in interest that was ignored is included in this sum.

^{e, f} These two sums represent the \$27 million in Federal Reserve dividends attributed to the commercial bank's capital and included in the interest earned by commercial banks. \$15.4 million of it was distributed according to the ownership of closely-held corporations not managed by the consumer unit, and \$11.6 million according to the ownership of publicly traded stock.

interest income. Nor was any deduction made for portfolio expenses incurred in earning this interest (which are likely very small), on the grounds that the beneficiaries of the interest allocated benefit from such expenses in proportion to the amount attributed to them. Finally, no allowance for taxes is made when distributing the interest because the calculation of the tax burden by income class in Part II will pick-up the amount of taxes paid out of interest income automatically, along with the taxes paid out of all other sources of income. To deduct taxes on the interest allocation side of the analysis, and then to also impute the tax burden by income class would result in attributing the same taxes twice.

Allocation of the Tax Burden

The distribution of the tax burden by income class was fairly straightforward. The individual income tax was assumed unshifted and apportioned among the classes according to Commerce Department estimates. In considering the corporation income tax, a discussion of why it is assumed to be borne by the owners of capital precedes its allocation among the income classes based on the ownership of stock. (Incidentally, many of the indices used to allocate the interest benefit are also used to allocate the tax burden.) Federal excise and customs levies are assumed shifted forward like a sales tax and apportioned according to consumption by income class. Only the amount of surplus of payroll taxes over expenditures for the trust

funds financed by federal employment taxes is considered to be the relevant portion of federal payroll taxes. This is due to the fact that only this surplus, which was used to buy Treasury securities, could have found its way into the Treasury to be used to pay interest on the debt. Two alternative assumptions are employed in allocating the relevant portion of payroll taxes; one that employees bear the entire burden, in which case the tax is allocated based on the distribution of social insurance contributions by income class; the other assumption is that the employer's share is shifted forward to consumers, and is allocated according to consumption by income class (with the employee share still being distributed according to social insurance contributions). Estate and Gift Taxes are attributed entirely to the \$100,000 and over income class.

The basic conclusion that emerges from comparing the interest benefit and tax burden distributions is that a substantial redistributive effect in favor of the two lowest income classes (under \$5,000) results from the need to pay interest on the national debt. These two classes are attributed with about one-fourth of the interest benefit, yet bear only one-tenth of the tax burden. For the remaining seven income classes, there is a slight excess of tax burden over interest benefit for each, providing in total the source of the net interest benefit to the two lowest classes. These conclusions hold under all the alternative assumptions employed, except that they are

slightly modified if full forward shifting of the corporation income tax is assumed. Even though shifting of the tax is rejected, the quantitative effect of full-forward shifting on the basic findings is examined for the sake of completeness. The result is that the two lowest income classes still receive a substantial net redistribution of income in their favor, but that now so do the two topmost income classes, with both groups gaining at the expense of the middle classes (\$5,000-50,000).

Indices of Allocation

In this section the construction of the indices of allocation shown in Table 2-2 is described. Except in rare instances (the personal income tax, for example), the allocation of the interest benefits and tax burden by income class requires the use of a proxy index for the presumed benefit or burden being distributed. Instead of developing each index as we go along, it has been decided to present their derivation all in one place and then simply to utilize each one as needed. The indices are presented in the descending order of their quantitative importance as allocators of interest.

Each index is presented in terms of the percent of the total proxy attributable to each of the nine income classes. The percentage distribution is arrived at by weighting the mean amount of each proxy attributed to each income class by the number of consumer units in each class--except for the state and local tax burden; the origin of

this index is given in the explanation accompanying that table. For the purpose of placing consumer units in each income class, income is defined as the total before-tax money income received by all members of the consumer unit during 1962.^{3,4} Units reporting negative income in 1962 are included in the data for all units, but are not shown separately.⁵

The income definition employed does not include capital gains. It is not possible to generalize about the overall effect that inclusion of capital gains income would have on the relative distribution of taxes as compared to interest. It would appear to make the distribution of the tax burden and the interest benefits more progressive against income. Inclusion of capital gains would tend mostly to raise the income of consumer units at the upper end of the income scale. Since income is only increased as a result of the inclusion, this gain is no one else's loss and consumer units would tend to move only

³Projector and Weiss, op. cit., p. 49. Included are the following components of income: wages, salaries, commissions, net income from unincorporated businesses or profession (farm and non-farm)-- both single proprietorships and partnerships, dividends, interest, net rental income, pensions and social security and any other periodic payments.

⁴Ibid. A consumer unit is defined as a family, i.e., a group of two or more persons living together who are related by blood, marriage or adoption; or as an unrelated individual, i.e., a non-institutionalized person not living with any relative. This is the Census Bureau definition of a consumer unit.

⁵Ibid. They are included in the lowest income class.

upwards in the income strata. The proportion of units at the high end would tend to increase. Because the tax burden allocation already includes taxes on capital gains, any upward movement by consumer units would not entail a greater tax liability for them. Thus, the proportion of the given total tax burden attributable to the upper income classes is increased by the upward movement of consumer units, each with a given tax bill. As for the distribution of interest benefits, as long as any of the consumer units that move upward in the income scale receive some federal interest, a greater proportion of it will be allocable to the upper classes. While both the tax and interest distributions would thus become more progressive upon the inclusion of capital gains in income, there is no basis for judging the comparative strengths of the increased progressivity-- which is what must be known in order to evaluate the effect on the overall redistribution of income.

Let us now turn specifically to the construction of the indices of allocation. Because repeated use is made of the number of consumer units in each income class, for the purpose of weighting the mean amount of items attributed to each class, Table 2-3 shows the number of consumer units in each class.⁶

⁶ Projector and Weiss, op. cit., p. 151.

TABLE 2-3
 NUMBER OF CONSUMER UNITS IN EACH INCOME CLASS
 1962

Income Class	Number of Consumer Units	Percent Distribution
1. \$ 0- 2,999	16.3 million ^a	28.1
2. 3,000- 4,999	11.4	19.7
3. 5,000- 7,499	12.2	21.1
4. 7,500- 9,999	9.0	15.5
5. 10,000-14,999	6.2	10.7
6. 15,000-24,999	2.0	3.5
7. 25,000-49,999	0.5	0.9
8. 50,000-99,999	0.2	0.3
9. 100,000-and over	<u>0.1</u> ^b	<u>0.2</u>
TOTAL	57.9 million	100.0

^aIncludes 0.2 million units with negative income.

^bResidual after subtracting the number of units in all the other classes from 57.9 million.

1) Individual Ownership of the Federal Debt

Table 2-4 shows the percentage distribution by income class of ownership of U.S. Government Bills, Certificates, Notes, Bonds and Saving Bonds. This index is constructed by utilizing the mean amount of each type of security held by consumer units in each income class.⁷ Marketable issues are valued at par, non-marketable E, F and J bonds are reported at par also.

⁷Projector and Weiss, op. cit., p. 123.

TABLE 2-4

PERCENTAGE DISTRIBUTION OF INDIVIDUALLY HELD FEDERAL DEBT
1962

Income Class	(1)	(2)	(3)	(4)	(5)
	Savings Bonds	Bills	Certificates	Notes	Bonds
1. \$ 0- 2,999	14.4	0.0	30.8	0.0	0.0
2. 3,000- 4,999	14.4	0.0	0.0	0.0	1.6
3. 5,000- 7,499	13.7	0.3	0.0	0.0	2.1
4. 7,500- 9,999	15.6	0.0	0.0	0.0	11.4
5. 10,000-14,999	17.2	0.0	0.0	1.5	11.8
6. 15,000-24,999	12.0	0.3	0.0	56.9	19.0
7. 25,000-49,999	5.2	7.8	2.6	14.7	19.1
8. 50,000-99,999	4.6	86.6	7.8	21.1	18.8
9. 100,000-and over	2.9	5.0	58.8	5.8	16.2
TOTAL	100.0	100.0	100.0	100.0	100.0

2) Social Insurance Benefits

The percentage distribution of social insurance benefits in Table 2-5 is based on a Bureau of Labor Statistics survey of consumer expenditures and income in 1960-61.⁸ The mean level of before-tax income in the BLS survey is used to assign mean social insurance benefits to each of the nine income classes used here on account of the fact that the BLS income classes are defined in terms of after-tax income. For the first three classes in Table 2-5, the mean

⁸ U.S. Department of Labor, Bureau of Labor Statistics, Survey of Consumer Expenditures, 1960-61, Detail of Expenditure and Income, Total U.S., Urban and Rural, Supplement 3, Part A to BLS Report No. 237-93 (Washington: U.S. Government Printing Office, May 1966), pp. 12-13.

amount of benefits consists of a weighted mean of mean benefits, because more than one of the mean income levels appearing in the BLS study falls into each of the first three classes. The weights used are the number of consumer units contained in each BLS class. In addition, the mean amount of social insurance benefits is assumed to be the same for each of the top four income classes in Table 2-5. This assumption results from data limitations, but is not unreasonable given the ceiling that exists on social insurance benefit payments.

TABLE 2-5

DISTRIBUTION OF SOCIAL INSURANCE BENEFITS BY INCOME CLASS

Income Class	Percent of Benefits
1. \$ 0- 2,999	46.4
2. 3,000- 4,999	22.2
3. 5,000- 7,499	13.5
4. 7,500- 9,999	8.3
5. 10,000-14,999	7.9
6. 15,000-24,999	1.2
7. 25,000-49,999	0.3
8. 50,000-99,999	0.1
9. 100,000-and over	<u>0.1</u>
TOTAL	100.0

3) Ownership of Stock and Business Equity

Tables 2-6 through 2-9 present four different indices of ownership of business enterprise, based on data from Projector and Weiss.⁹

⁹ Ibid., pp. 45-46, 110, 118, 125.

Table 2-6 shows the distribution of ownership of publicly traded stock, which consists of common and preferred stock (other than that of closely held corporations), stock in mutual funds and investment clubs, plus net credit balances at security dealers and less loans secured by these stocks. All stocks were valued at December 31, 1962 market prices.

TABLE 2-6

OWNERSHIP OF PUBLICLY TRADED STOCK BY INCOME CLASS
1962

Income Class	Percent of Stock Owned
1. \$ 0- 2,999	2.7
2. 3,000- 4,999	2.9
3. 5,000- 7,499	6.1
4. 7,500- 9,999	8.6
5. 10,000-14,999	10.5
6. 15,000-24,999	7.7
7. 25,000-49,999	13.2
8. 50,000-99,999	12.0
9. 100,000-and over	<u>35.2</u>
TOTAL	100.0

In Table 2-7, the distribution of ownership of equity in partnerships (farm and non-farm) and closely-held corporations, in which no member of the consumer unit surveyed played a role in management, is shown.

TABLE 2-7

OWNERSHIP BY INCOME CLASS OF EQUITY IN FARM AND NON-
FARM PARTNERSHIPS AND CLOSELY-HELD CORPORATIONS IN
WHICH NO MEMBER OF THE SURVEYED CONSUMER
UNIT WAS ACTIVE IN MANAGEMENT
1952

Income Class	Percent of Equity Owned
1. \$ 0- 2,999	0.0
2. 3,000- 4,999	11.0
3. 5,000- 7,499	3.2
4. 7,500- 9,999	7.2
5. 10,000-14,999	3.5
6. 15,000-24,999	8.6
7. 25,000-49,999	3.7
8. 50,000-99,999	24.7
9. 100,000-and over	<u>37.7</u>
TOTAL	100.0

Table 2-8 shows the percentage distribution of ownership of equity in farm and non-farm proprietorships, partnerships and closely-held corporations that some member of the consumer unit surveyed played a role in managing.

In Table 2-9 a composite index of business ownership is presented, composed of publicly traded stock and equity in not managed firms. The mean amount of each is added together for each income class and the sum is the mean amount of equity assigned to consumer units in each class.

TABLE 2-8

OWNERSHIP BY INCOME CLASS OF EQUITY IN FARM AND NON-FARM PROPRIETORSHIPS, PARTNERSHIP AND CLOSELY-HELD CORPORATIONS MANAGED BY SOME MEMBER OF THE SURVEYED CONSUMER UNIT
1962

Income Class	Percent of Equity Owned
1. \$ 0- 2,999	9.5
2. 3,000- 4,999	5.8
3. 5,000- 7,499	11.2
4. 7,500- 9,999	8.3
5. 10,000-14,999	10.7
6. 15,000-24,999	8.2
7. 25,000-49,999	12.5
8. 50,000-99,999	22.3
9. 100,000-and over	<u>11.5</u>
TOTAL	100.0

TABLE 2-9

OWNERSHIP BY INCOME CLASS OF PUBLICLY TRADED STOCK AND EQUITY IN PARTNERSHIPS AND CLOSELY-HELD CORPORATIONS NOT MANAGED BY THE CONSUMER UNIT SURVEYED
1962

Income Class	Percent of Ownership
1. \$ 0- 2,999	3.6
2. 3,000- 4,999	6.5
3. 5,000- 7,499	6.4
4. 7,500- 9,999	8.6
5. 10,000-14,999	10.3
6. 15,000-24,999	8.2
7. 25,000-49,999	12.8
8. 50,000-99,999	11.4
9. 100,000-and over	<u>32.2</u>
TOTAL	100.0

4) Savings Deposits

Separate indices of ownership of savings deposits at commercial banks, mutual savings banks and savings and loan associations are presented in Tables 2-10, 2-11 and 2-12, respectively. The mean amount of deposits at each type of institution owned by consumer units in each income class was employed in order to construct each index.¹⁰ Deposits include ordinary time deposits, as well as certificates of deposit and Christmas and vacation club deposits.

TABLE 2-10

OWNERSHIP OF SAVINGS DEPOSITS AT COMMERCIAL BANKS
1962

Income Class	Percentage Distribution
1. \$ 0- 2,999	15.7
2. 3,000- 4,999	14.4
3. 5,000- 7,499	14.2
4. 7,500- 9,999	13.3
5. 10,000-14,999	19.1
6. 15,000-24,999	9.7
7. 25,000-49,999	6.4
8. 50,000-99,999	4.7
9. 100,000-and over	2.5
TOTAL	100.0

¹⁰ Ibid., pp. 45, 122.

TABLE 2-11

OWNERSHIP OF SAVINGS DEPOSITS AT MUTUAL SAVINGS BANKS
1962

Income Class	Percentage Distribution
1. \$ 0- 2,999	15.6
2. 3,000- 4,999	12.1
3. 5,000- 7,499	12.2
4. 7,500- 9,999	18.9
5. 10,000-14,999	17.0
6. 15,000-24,999	13.7
7. 25,000-49,999	4.9
8. 50,000-99,999	3.9
9. 100,000-and over	<u>1.7</u>
TOTAL	100.0

TABLE 2-12

OWNERSHIP OF SAVINGS DEPOSITS AT SAVINGS AND LOAN
ASSOCIATIONS
1962

Income Class	Percentage Distribution
1. \$ 0- 2,999	17.5
2. 3,000- 4,999	12.5
3. 5,000- 7,499	16.9
4. 7,500- 9,999	15.3
5. 10,000-14,999	17.7
6. 15,000-24,999	10.8
7. 25,000-49,999	6.6
8. 50,000-99,999	1.3
9. 100,000-and over	<u>1.4</u>
TOTAL	100.0

5) Consumption

The percentage distribution of consumption by income class in Table 2-13 is based on the Bureau of Labor Statistics survey of consumer expenditures noted earlier.¹¹ Table 2-14 below presents all the relevant data needed to explain the construction of Table 2-13.

TABLE 2-13
CONSUMPTION BY INCOME CLASS

Income Class	Percent of Consumption
1. \$ 0- 2,999	10.8
2. 3,000- 4,999	14.6
3. 5,000- 7,499	22.0
4. 7,500- 9,999	21.1
5. 10,000-14,999	18.7
6. 15,000-24,999	6.5
7. 25,000-49,999	2.3
8. 50,000-99,999	1.8
9. 100,000-and over	2.2
TOTAL	100.0

Column 1 in Table 2-14 shows the same nine income classes used elsewhere in this study, and column 2 the number of consumer units contained in each (from Table 2-3). In column 3 the mean before-tax level of income found in each of the BLS after-tax

¹¹U.S. Department of Labor, Bureau of Labor Statistics, Survey of Consumer Expenditures, 1960-61, Detail of Expenditure and Income, Total, U.S., Urban and Rural, op. cit., pp. 2-3.

income classes (not shown) appears, and is matched with the income class in column 1 in which it falls. Associated with each level of income in 3 is a mean level of consumption, shown in column 4 as the unasterisked values. This is how the consumption estimates for the first five and the seventh income classes was arrived at. However, for the first three income classes, the mean amount of consumption in column 4 (and income in 3) is a mean of mean amounts. This is because more than one BLS before-tax level of income and consumption fell into each of these three income classes. Three fell into the first class and two each into the second and third.

TABLE 2-14

BASIC INFORMATION FOR THE DISTRIBUTION OF CONSUMPTION
BY INCOME CLASS

(1) Income Class	(2) Number of Consumer Units (millions)	(3) BLS Mean Income	(4) BLS Mean Consumption	(5) Projector & Weiss Mean Income
1. \$ 0- 2,999	16.3	\$ 1,577	\$ 1,909	\$ 1,576
2. 3,000- 4,999	11.4	4,334	4,035	3,970
3. 5,000- 7,499	12.2	6,771	5,655	6,219
4. 7,500- 9,999	9.0	9,716	7,426	8,630
5. 10,000-14,999	6.2	13,585	9,538	11,960
6. 15,000-24,999	2.0	-	10,259*	17,758
7. 25,000-49,999	.5	27,749	14,255	34,534
8. 50,000-99,999	.2	-	29,016*	61,207
9. 100,000-and over	<u>.1</u>	-	70,873*	158,166
TOTAL	57.9			

*Fitted by least squares regression.

Consumption estimates for the sixth, eighth and ninth income classes were derived by fitting at least squares linear regression to the income and consumption data in columns 3 and 4, for the first five and the seventh income classes. The data was first plotted on graph paper and the points connected freehand; this indicated that a linear regression would do no great violence to the facts. The resulting equation is:

$$\text{Consumption} = \$2,593 + .4317 (\text{Income})$$

$$(\$595) \quad (.004)$$

$$R^2 = .90$$

The mean income of the sixth, eighth and ninth income classes (column 5) from Projector and Weiss¹² was inserted into this equation to get the starred consumption estimates shown in column 4. Any error introduced by the use of this regression equation is likely to be in the direction of overestimating consumption for the two topmost income classes. This is because the consumption/income ratio probably declines as income rises and we have extrapolated the straight line function beyond the range of available observations. But the importance of such an error is small on account of the small number of consumer units falling into these classes, and hence the small proportion of total consumption attributable to them.

¹²Ibid., p. 149.

6) State and Local Tax Burden

TABLE 2-15

STATE AND LOCAL TAX BURDEN BY INCOME CLASS

Income Class	Percent of Tax Burden
1. \$ 0- 2,999	9.7
2. 3,000- 4,999	14.5
3. 5,000- 7,499	21.2
4. 7,500- 9,999	19.8
5. 10,000-14,999	16.6
6. 15,000-24,999	7.9
7. 25,000-49,999	3.9
8. 50,000-99,999	2.7
9. 100,000-and over	3.5
TOTAL	100.0

The percentage distribution of the state and local tax burden by income class shown above in Table 2-15 is the mean of the percentage tax burden for each class calculated from two different sources, one a study by J. R. Beaton, the other a study by George A. Bishop.¹³ The mean of the tax burden calculated from each study separately is used because neither source uses data that is entirely comparable to that used in the present work. For example, Bishop's study is for the year 1958, while Beaton's deals with 1959.

¹³ J. R. Beaton, "Family Tax Burdens by Income Level," National Tax Journal, XV (March, 1962), pp. 14-25; George A. Bishop, "The Tax Burden by Income Class," National Tax Journal, XIV (March, 1961), pp. 41-58.

In addition, the income concept which is utilized in setting up the classes in 2-15 is the money income of consumer units during 1962. Bishop's tax burden estimates are based on family personal income; Beaton calculates the tax burden on the basis of family personal income, for a four person urban family. It should be noted, however, that the personal income concept is very similar to the money income concept used here, differing mostly in that the former contains such non-money items as the rental value of owner-occupied homes and the value of food and fuel consumed on farms. Another problem encountered in the use of these two studies (which appear to be the only recent ones of this type), is the fact that neither uses income classes corresponding to those in 2-15. Beaton, for example, selects certain levels of family personal income and calculates the tax burden at each level for a four person urban family during 1959. Because of all these difficulties, we must accept the results somewhat cautiously. Fortunately, less than six percent of the total interest benefits allocated in this study rely upon the state and local tax burden (Table 2-2).

The next part of the discussion explains how the percentage tax burden shown in 2-15 was derived from Beaton and Bishop's work, starting first with Bishop.

Table 2-16, column 1 reproduces the same nine income classes used throughout this study. Column 2 shows the income classes in

TABLE 2-16
BISHOP STATE AND LOCAL TAX BURDEN

(1) Income Class	(2) Rate of Tax from Bishop and Income Class from which it was derived.		(3) Amount of Tax
1. \$ 0- 2,999	16.4%	under 2,000	\$4,213 million
2. 3,000- 4,999	12.8	\$2,000- 3,999	5,793
3. 5,000- 7,499	9.9	6,000- 7,999	7,731
4. 7,500- 9,999	9.0	8,000- 9,999	6,990
5. 10,000-14,999	7.9	10,000-14,999	5,858
6. 15,000-24,999	7.5)		2,664
7. 25,000-49,999	7.5)		1,295
8. 50,000-99,999	7.5)		918
9. 100,000-and over	7.5)	15,000-and over	<u>1,186</u>
			\$35,648 million

Source: George A. Bishop, *op. cit.*, p. 51, for column 2. Column 3 is derived in the text.

Bishop's article from which the rates of tax applied to the column 1 classes are derived. Only a rough fit is possible. Note that the percentages shown in column 2 do not total to one hundred percent because that is not a distribution of the tax burden by income class, but rather an indication of the rates applicable to incomes, on the average, in each class. Bishop uses a \$4,000-\$5,999 income class which is not used here in Table 2-16 because it did not seem to fit any of the nine classes in column 1. As one might suspect, the least satisfactory estimates of tax burden are for the highest income

classes--Bishop's highest class being \$15,000 and over--because of the paucity of data. The total amount of state and local taxes paid by each of the nine income classes in column 1 is shown in column 3. These amounts are calculated by applying the rates in column 2 to the estimated money income of each of the nine income classes.¹⁴ The amounts shown in column 3 are the basis for estimating the tax burden by income class derived from Bishop's article, i.e., these amounts are expressed as a percent of the total amount. The resulting percentage distribution is presented as column 1 in Table 2-18.

Table 2-17, columns 4 through 7, indicate the manner in which the Beaton tax analysis is applied to the nine income classes. Because Beaton used income levels instead of classes to calculate the tax burden for his representative four person family, the mean income of the nine income classes in 4 is shown in column 5. The tax rates for each of Beaton's income levels is shown in column 6. These rates are held to be applicable to each of the classes in 4 against which they are matched, based on the mean income of each class in 4 shown in 5. The rates shown in 6 were then applied to the estimated aggregate money income of each of the nine income classes. Column 7 shows the results of this procedure, which was then used to calculate the percentage tax burden distribution based

¹⁴Aggregate money income for each income class was calculated by multiplying the mean amount of money income for each class by the number of consumer units in each class, from Projector and Weiss, op. cit., p. 149.

TABLE 2-17
BEATON STATE AND LOCAL TAX BURDEN

(4) Income Class	(5) Mean Income of Classes in Column	(6) Tax Rate from Beaton and Income Level Source	(7) Amount of Tax
1. \$ 0- 2,999	\$ 1,576	11.4%	\$ 3,000
2. 3,000- 4,999	3,970	10.9	4,000
3. 5,000- 7,499	6,219	10.5	5,000
4. 7,500- 9,999	8,630	9.9	7,500
5. 10,000-14,999	11,960	9.2	10,000
6. 15,000-24,999	17,758	9.0	15,000
7. 25,000-49,999	34,534	9.2	30,000
8. 50,000-99,999	61,207	9.0	50,000
9. 100,000-and over	158,166	9.0	50,000
TOTAL			\$37,649 million

Source: Column 5, Projector and Weiss, op. cit., p. 149. Column 6, J. R. Beaton, op. cit., p. 25. Column 7 derived in text.

on Beaton's work. This percentage distribution is shown in column 9 of Table 2-18.

Table 2-18 shows in percentage terms the distribution of the tax burden given in absolute amounts in Tables 2-16 and 2-17. The mean of the percentages from each income class in 2-18 is the figure assigned to each income class in Table 2-15.

The estimated total amounts of state and local taxes shown in column 3 of Table 2-16 (\$36,648 million) and in column 7 of Table 2-17 (\$37,649 million) agree favorably with the known aggregate

TABLE 2-18

BISHOP AND BEATON PERCENTAGE TAX BURDENS

Income Class	(8) Percentage Tax Burden Derived from Bishop	(9) Percentage Tax Burden Derived from Beaton
1. \$ 0- 2,999	11.5 percent	7.8 percent
2. 3,000- 4,999	15.8	13.1
3. 5,000- 7,499	21.1	21.2
4. 7,500- 9,999	19.1	20.4
5. 10,000-14,999	16.0	17.1
6. 15,000-24,999	7.3	8.5
7. 25,000-49,999	3.5	4.2
8. 50,000-99,999	2.5	2.9
9. 100,000-and over	<u>3.2</u>	<u>3.8</u>
TOTAL	100.0	100.0

Source: Columns 8 and 9 express in percentage terms the tax burden allocation shown in columns 3 and 7 of Tables 2-16 and 2-17, respectively.

amount of state and local taxes in 1962, \$42,738 million.¹⁵

7) Ownership of Life Insurance

Table 2-19 shows the percentage distribution of ownership of equity in life insurance policies. This distribution uses the net cash surrender value of life insurance policies owned by consumer units in each class.¹⁶

¹⁵ U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the U.S., 1964 (Washington: U.S. Government Printing Office, 1964), p. 424.

¹⁶ Projector and Weiss, op. cit., p. 147.

TABLE 2-19
OWNERSHIP OF LIFE INSURANCE EQUITY
1962

Income Class	Percent of Life Insurance Equity
1. \$ 0- 2,999	5.5
2. 3,000- 4,999	8.5
3. 5,000- 7,499	15.6
4. 7,500- 9,999	17.0
5. 10,000-14,999	21.5
6. 15,000-24,999	13.0
7. 25,000-49,999	3.5
8. 50,000-99,999	4.4
9. 100,000-and over	<u>6.0</u>
TOTAL	100.0

8) Demand Deposit Ownership

The percentage ownership of personal demand deposits shown in Table 2-20, is based on the mean amount of demand deposits owned by consumer units in each income class.¹⁷ Classified as personal demand deposit accounts are only those accounts used solely for personal affairs. Accounts used partly for business and partly for personal reasons are included in business equity.

¹⁷ Ibid., p. 118.

TABLE 2-20
OWNERSHIP OF DEMAND DEPOSITS
1962

Income Class	Percentage of Deposits Owned
1. \$ 0- 2,999	11.9
2. 3,000- 4,999	7.5
3. 5,000- 7,499	12.3
4. 7,500- 9,999	11.7
5. 10,000-14,999	13.4
6. 15,000-24,999	11.5
7. 25,000-49,999	9.9
8. 50,000-99,999	9.2
9. 100,000-and over	<u>12.6</u>
TOTAL	100.0

8) Social Insurance Contributions

The percentage distribution of social insurance contributions in Table 2-21 is obtained by using the mean amount that consumer units in each income class contributed to social security, railroad retirement or government retirement programs.¹⁸ For the first three income classes in 2-21, the mean amount of contributions consist of a weighted mean of mean contributions, because more than one BLS income level falls into each of these classes (the weights being the number of consumer units in the BLS income classes). Owing to

¹⁸ U.S. Department of Labor, Bureau of Labor Statistics, Survey of Consumer Expenditures, 1960-61, op. cit., pp. 12-13.

TABLE 2-21

SOCIAL INSURANCE CONTRIBUTIONS

Income Class	Percentage of Social Insurance Contributions
1. \$ 0- 2,999	4.6
2. 3,000- 4,999	14.2
3. 5,000- 7,499	25.5
4. 7,500- 9,999	24.9
5. 10,000-14,999	21.7
6. 15,000-24,999	6.5
7. 25,000-49,999	1.6
8. 50,000-99,999	0.7
9. 100,000-and over	0.3
TOTAL	100.0

the fact that the BLS's study is in terms of after-tax income classes, the average level of before-tax income in these various classes is used to assign the mean amount of contributions to each of the nine income classes in 2-21. Also, the mean amount of social insurance contributions is assumed to be the same for each of the top four income classes (but weighted by the different number of consumer units in each). This assumption is made necessary by data limitations, but is not unreasonable given the ceiling that exists on contributions to social insurance programs.

9) Equity in Retirement Plans

Table 2-22 shows the percentage distribution of ownership by

TABLE 2-22
OWNERSHIP OF EQUITY IN RETIREMENT PLANS
1952

Income Class	Percent of Equity
1. \$ 0- 2,999	0.2
2. 3,000- 4,999	4.3
3. 5,000- 7,499	18.1
4. 7,500- 9,999	22.0
5. 10,000-14,999	26.2
6. 15,000-24,999	20.5
7. 25,000-49,999	4.9
8. 50,000-99,999	2.2
9. 100,000-and over	1.6
TOTAL	100.0

income class of equity in pension plans. The equity involved is the amount that could have been withdrawn from retirement plans.¹⁹

10) Receipt of Disability Income

Table 2-23 presents the distribution by income class of disability income received, derived from the BLS 1960-61 Survey of Consumer Expenditures.²⁰ Because the income classes in the BLS survey are drawn up in terms of after-tax income, they are not directly comparable with the income classes used here. In order to overcome

¹⁹ Projector and Weiss, op. cit., p. 147.

²⁰ Op. cit., pp. 2-3, 12-13.

TABLE 2-23
DISTRIBUTION OF DISABILITY INCOME RECEIVED

Income Class	Percent of Disability Income Received
1. \$ 0- 2,999	8.2
2. 3,000- 4,999	10.5
3. 5,000- 7,499	16.2
4. 7,500- 9,999	19.0
5. 10,000-14,999	24.7
6. 15,000-24,999	15.3
7. 25,000-49,999	3.8
8. 50,000-99,999	1.5
9. 100,000-and over	0.8
TOTAL	100.0

this difficulty the average level of before-tax income in each BLS income class was used in linking our income classes to the classes in the BLS survey. For the first three income classes in Table 2-23, this meant that more than one BLS income level and associated mean amount of disability income fell into each class. The mean value of disability income that was used for these first three classes was therefore a weighted mean of these different mean values. Each of the mean values falling into the first three classes was weighted by the number of consumer units in the BLS class from which it came. In addition, data limitations required the assumption that the top four income classes in Table 2-23 received the same mean amount of disability income per consumer unit. This is probably not too far

off the mark in light of the ceiling that generally exists on such payments. Remember, too, that the relatively small number of consumer units in the top four classes (see Table 2-3), and hence the small weight given these classes in the construction of the index, minimizes any possible distortion resulting from this assumption. The procedure just outlined for handling the receipt of disability income from the BLS survey is the same as that employed in the construction of the index of Social Insurance Benefits (Table 2-5) and the Social Insurance Contributions index (Table 2-21).

11) Wealth Ownership

The definition of wealth used in constructing Table 2-24 includes equity in homes, businesses and professions, publicly traded stock, real estate (other than homes or property owned in connection with a business or profession), and businesses owned but not managed (closely-held corporations and partnerships); plus home mortgage and real estate debt (all from Projector and Weiss).²¹ The reason for including the last two items in this definition of wealth is that an index of distribution was needed to allocate the benefits attributed to policyholders of property and casualty insurance companies, and people generally insure the gross value of their property. Debt against other forms of wealth could have been included, but was

²¹ Op. cit., pp. 110, 119, 130.

TABLE 2-24
DISTRIBUTION OF WEALTH OWNERSHIP
1962

Income Class	Percent of Wealth
1. \$ 0- 2,999	8.5
2. 3,000- 4,999	8.5
3. 5,000- 7,499	13.0
4. 7,500- 9,999	14.9
5. 10,000-14,999	14.4
6. 15,000-24,999	9.4
7. 25,000-49,999	9.7
8. 50,000-99,999	9.1
9. 100,000-and over	12.5
TOTAL	100.0

omitted because it is much less important a proportion of the total value of other wealth items.

12) Value of Automobiles Owned

Table 2-25 shows the percentage distribution of the gross value of automobiles used for personal purposes only. Any part of the use of the automobile for business purposes is excluded (as are automobiles used entirely for business purposes). Gross value consists of current (December 31, 1962) market value.²²

²²Ibid., pp. 110, 130.

TABLE 2-25

DISTRIBUTION OF VALUE OF AUTOMOBILES OWNED
1962

Income Class	Percent of Value Owned
1. \$ 0- 2,999	6.6
2. 3,000- 4,999	12.6
3. 5,000- 7,499	22.0
4. 7,500- 9,999	23.3
5. 10,000- 9,999	21.6
6. 15,000-24,999	9.6
7. 25,000-49,999	2.7
8. 50,000-99,999	0.8
9. 100,000-and over	<u>0.8</u>
TOTAL	100.0

13) Trust Ownership

Trust ownership consists of an interest in assets held in beneficial trust.²³ Trusts in which a person had only income rights are not included.

²³ Ibid., p. 113.

TABLE 2-26
OWNERSHIP OF BENEFICIAL TRUSTS
1962

Income Class	Percent of Value Owned
1. \$ 0- 2,999	0.7
2. 3,000- 4,999	0.1
3. 5,000- 7,499	24.1
4. 7,500- 9,999	1.8
5. 10,000-14,999	2.4
6. 15,000-24,999	8.6
7. 25,000-49,999	45.3
8. 50,000-99,999	4.6
9. 100,000-and over	<u>12.3</u>
TOTAL	100.0

PART I

ALLOCATION OF THE INTEREST BENEFITS

CHAPTER III

COMMERCIAL BANKS

The allocation among income classes of the interest from U.S. Government securities received by the commercial banks in 1962 raises some of the thorniest issues to be discussed in this study.¹ An estimated \$2,139 million was earned by commercial banks on their holdings of Federal Securities in 1962. This estimate is calculated as follows: insured (by the FDIC) commercial banks earned \$2,093 million, a rate of return on their holdings of 3.17 percent.² During the same time period, uninsured commercial banks owned \$587 million in U.S. Securities.³ If it is assumed that uninsured commercial banks earned the same rate of return on their government securities, then \$18.7 million in Federal interest can be imputed to the uninsured commercial banks. In addition,

¹ Commercial banks are the largest holders of federal debt, owning about twenty-two percent of the total outstanding in 1962. This is a decline from the thirty-three percent they held in 1945.

² Federal Deposit Insurance Corporation, Annual Report for 1962, (Washington: U.S. Government Printing Office, 1963), p. 74.

³ Ibid., p. 122.

ninety-nine percent of the Federal Reserve Banks' income is derived from their holdings of Treasury issues.⁴ It is therefore necessary to include as part of the benefit from Federal interest accruing to commercial banks the \$27 million paid to member banks as a statutory six percent return on the Federal Reserve Stock that they own.⁵ These three amounts of interest total up to \$2,139 million estimate given above.

A method is needed for determining to whom the benefits of this more than two billion dollars in Federal interest received by the commercial banks in 1962 accrued. Any attempt to trace the flow of Federal interest payments through the commercial banks faces two fundamental problems. The first is one of the internal allocation of the interest that commercial banks receive among the three banking functions that provide the funds with which income earning assets are purchased, viz., demand deposits, time deposits and bank capital. The second problem is to determine, within each of these three functions, the disposition of the interest between depositors and bank owners.⁶

⁴Federal Reserve Bulletin, February 1963, p. 264.

⁵Ibid.

⁶In examining the flow of U.S. interest through the commercial banks, no use is made of the national income accounts estimate of implicit interest paid to bank depositors. This is because the estimate does not indicate what proportion of the implicit interest is attributable to U.S. interest. Nor does it indicate the allocation between demand deposits and time deposits, or allow for any profit. Of course, no account is taken in the estimate of explicit interest

Once the amount of interest attributable to depositors and bank stockholders has been determined, it must be allocated among the income classes.

Functional Allocation of U.S. Interest

Functional Cost studies designed to analyze the income and expense of each commercial bank function have been prepared for a number of years by several of the Federal Reserve Banks.⁷ The following attempt to distribute the Federal interest received by commercial banks draws heavily on procedures and data taken from these cost studies.

6 (Continued)
on time deposits. Finally, the estimate is not restricted to commercial banks, but includes all financial institutions (except insurance companies). See: U.S. Department of Commerce, Survey of Current Business (July, 1964), p. 18.

⁷The cost studies used here are as follows: Federal Reserve Bank of Boston, Functional Cost Analysis, Comparative Study 70 Banks 1962-1961; Functional Cost Analysis, 84 New England Banks 1964-1963, Functional Cost Analysis Comparative Study 86 New England Banks 1965-1964; Federal Reserve Bank of New York, 1962 Net Earnings Effect of Cost of Money on Earnings After Taxes (91 banks), Functional Cost Analysis 1963-1964 Comparative Study 66 Second District Banks with Deposits under \$50 million, Functional Cost Analysis, 171 Bank Comparative Study Deposits up to \$50 million 1965-1964 (no Federal Reserve Bank given), the 1964-65 comparative data covers 171 banks in the New York, Boston and Philadelphia Reserve district, 1965 data from 581 banks in eight Federal Reserve districts; Functional Cost Analysis Comparative Study 146 Banks 1964-196 (no Reserve bank source given), covers 146 banks in Boston and N.Y. Reserve districts in 1963-64 comparative study and 1964 data for 216 banks in Boston, N.Y. and Philadelphia Reserve districts; Federal Reserve Bank of Cleveland, 1965 Functional Cost Analysis Average Study of 62 Banks with Deposits under \$50 million. All of the preceding studies deal with

In order to determine the amount of Federal interest attributable to the demand deposit function, for example, it is necessary to know the composition of the asset portfolio acquired with demand deposits. However, it is unlikely that bankers segregate funds as they flow into their banks and then earmark assets acquired according to whether they are purchased with demand deposits, time deposits or capital funds. This is not to deny that the overall proportion of funds from each of these three sources influences the asset mix of a bank. The point is merely that it is difficult to assume (or to make such an assumption operational) that specific assets are acquired with funds derived from specific bank operations.⁸ The allocation of less

7 (Continued)
banks with total deposits under \$50 million. The next three studies deal with banks whose deposits were over \$50 million. Federal Reserve Bank of New York, Functional Cost Analysis 1963-1964 Comparative Study 34 Banks with Deposits over \$50 million; Functional Cost Analysis 61 Banks Comparative Study 1965-1964 (no Reserve bank source given, includes data for 1965 from 176 banks in eight districts and 1964-65 comparative data for 61 banks in the Boston, N.Y. and Philadelphia Reserve Districts); Functional Cost Analysis 1966 Average of 1022 Banks in Eleven Districts, 744 with Deposits up to \$50 million, 198 with Deposits Between \$50 and \$200 million and 68 with Deposits over \$200 million (no Reserve Bank source given). All of these studies consist of non-random samples. A comparative study refers to the fact that the same banks are examined in two different years.

⁸ It is possible to argue that such illiquid assets as real estate mortgages should be assigned totally to the time deposit function. See: Howard D. Crosse, Management Policies for Commercial Banks (Englewood Cliffs: Prentice-Hall, 1962), p. 144, who is one of the pioneers of the Functional Cost Analysis studies and who uses the "pool of funds" technique utilized in the present study. He also notes that time deposits are not as stable as sometimes thought, e.g. during the Great Depression many of the banking system's

liquid assets to the time deposit function (see n. 8) would raise the income attributable to that function, as compared to the "pool of funds" technique of asset allocation that will be employed, because of the higher rate of return on less liquid assets. In fact, the higher income may lead bankers to believe that the time deposit function is profitable when a pool of funds allocation would indicate a loss.

The Federal Reserve's Functional Cost Analysis (FCA) approaches the problem of asset allocation among the three bank functions by assuming that assets (such as U.S. Government issues, which is what interests us in the present situation) are acquired out of a common pool of funds, composed of demand deposits and time deposits (less reserves) and net capital (defined below).⁹ The relative asset composition of the portfolio acquired with demand deposits, time deposits and capital funds is the same, and equal to the relative composition of the bank's entire portfolio. The pool of funds assumption also implies that the proportion of U.S. Securities contained in the port-

8 (Continued)

troubles arose from time deposit withdrawals. Lower reserve requirements against time deposits necessitate a larger amount of asset liquidation than would an equivalent withdrawal of demand deposits; hence, the need for some liquid assets in the time deposit portfolio.

⁹A description of the pool of funds method of asset allocation is contained in a mimeographed letter from the Federal Reserve Bank of Boston, dated June 15, 1967, as well as in a personal letter from T. G. Morss, senior systems analyst at the Boston Bank, dated June 29, 1967. A briefer description also appears in each of the Functional Cost studies cited in n. 5.

folio of each bank function is the same--and equal to the proportion in the entire portfolio of the bank. What follows is a detailed description of the asset allocation procedure employed in the Functional Cost studies. This procedure is then applied in somewhat modified form to data for the commercial banking system in 1962.

The pool of funds technique is made operational by first determining the amount of portfolio funds provided by each bank function. The portfolio funds are derived from demand and time deposits, plus capital funds; but, not all of capital is available for asset acquisition, and legal reserves and working cash requirements prevent all deposits from being used to acquire assets. That part of capital funds available to purchase income earning assets is called Net Capital and is defined (using balance sheet information) as "total capital funds" plus "borrowing and other liabilities," less "all other assets." The amount of time deposits used to acquire portfolio assets is calculated by subtracting from the total amount of time deposits outstanding an amount of primary reserves ("cash and due from banks" on the balance sheet) equal to six percent of the total amount of time deposits. That is, ninety-four percent of time deposits is assumed to be used to acquire assets, the rest is legal and working reserves. What remains of primary reserves after the above deduction is subtracted from the total amount of demand deposits outstanding in order to arrive at the amount of demand deposit funds available for asset acquisition, called the demand deposit portfolio.

The sum of net capital, time deposit portfolio and demand deposit portfolio is the total portfolio funds of the bank (or banking system in this case). The net income from this portfolio (gross income less the costs of acquiring and maintaining the portfolio) is apportioned among the demand deposit, time deposit and net capital functions according to the proportion that each is of total portfolio funds. Using the pool of funds assumption, the net (of portfolio expense) U.S. Interest is distributed among the bank functions in the same way as is all portfolio income, viz., according to the relative proportion of demand deposits, time deposits and net capital.

In order to facilitate the analysis of the commercial banking system, a deduction from U.S. Interest for portfolio expense is made below; but it is later added back to the amount of interest attributed to each bank function, in accordance with our assumption that the recipients of net interest benefit from any portfolio expenses incurred. The reason for this somewhat awkward procedure is that the analysis of bank expenses is carried out in terms of portfolio income net of expense, so the treatment of that part of bank income derivable from federal securities must also be net of portfolio expense. Functional Cost Analysis data indicate that about twenty percent of gross portfolio income is consumed as portfolio

expense.¹⁰ The cost studies also indicate that 5.5 percent of portfolio expense is incurred in maintaining and acquiring the investment portfolio (which consists of stocks, bonds and other marketable issues). The remaining 94.5 percent of portfolio expense represents loan expense.¹¹ In addition, during 1962 about seventy percent of the investment portfolio of commercial banks consisted of U.S. Securities.¹² If it is assumed that seventy percent of the 5.5 percent is the investment portfolio expense due to Federal securities, then 3.85 percent of total portfolio expense incurred by commercial banks, or \$82 million (See Table 3-1), is chargeable

¹⁰ See the Sources and Distribution of Income section of the cost studies cited in n. 7 above. All of these studies except the comprehensive one for 1966 indicated about the same proportion of gross portfolio income taken as portfolio expense. The percentage in the 1966 study is lower, about fourteen percent. No apparent explanation for this much lower percentage can be offered except that perhaps banks have become more efficient.

¹¹ This is an average of the percentages from the two 1962 cost studies cited in n. 7. These two studies each deal with banks whose total deposits were under \$50 million. Estimates derived from them, while probably subject to error due to the non-random nature of the samples, are useful because an examination of cost studies for later years reveal little differences in the proportion of portfolio expense that is loan expense. The comprehensive 1966 cost study indicates that ninety percent of portfolio expense is loan expense--for all size banks. All the other studies indicate about the same ratio of loan expense to total portfolio expense. It should be pointed out that whether a figure of ninety or ninety-five percent is used, the impact on the final results of this study will be only on the absolute amount of interest distributed. The relative distribution among income classes will be unaffected. The same holds true for the percent of gross portfolio income that is consumed as portfolio expense.

¹² FDIC Annual Report for 1962, op. cit., pp. 134, 150.

to interest from U.S. Securities. After making this deduction for portfolio expense from gross U.S. interest, the resulting amount of net interest income is distributed among the three bank functions according to the proportion of total portfolio attributable to each.

All of the steps outlined above are applied to aggregate data for the commercial banking system in 1962 and presented in Table 3-1. Commercial banks with less than \$50 million in deposits are dealt with separately from those with more than \$50 million in deposits in order to facilitate later use of the Functional Cost Analyses.

Note that the total amount of net interest from U.S. Securities allocated in Table 3-1, \$2,030 million, is less than the \$2,139 million estimated above to have been received by commercial banks in 1962. This is because no account has yet been taken of the \$27 million in Federal Reserve dividends received by commercial banks, and because the amount shown is net of \$82 million in portfolio expense.

The amount of net federal interest credited to each bank function in Table 3-1 must now be distributed among bank depositors, and bank owners. After this has been accomplished, the amount credited to these two categories must be distributed among the income classes. Banks costs will be the basis for determining how much of the U.S. Interest received by commercial banks is channeled to depositors in the form of interest (including implicit interest in the form of services performed free of charge), and how much remains

TABLE 3-1

FUNCTIONAL ALLOCATION OF FEDERAL INTEREST
RECEIVED BY COMMERCIAL BANKS IN 1962
(Amounts in Millions)

	Bank Size (Total Deposits)				TOTAL
	Under \$50 Mil.	Percent	Over \$50 Mil.	Percent	
Gross Portfolio Income	\$3,535.9		\$6,974.1		\$10,510.0
Less: 20 Percent Portfolio Expense	<u>707.2</u>		<u>1,394.8</u>		<u>2,102.0</u>
Net Portfolio Income	\$2,828.7		\$5,579.3		\$ 8,408.0
<u>Functional Portfolio</u>					
Demand Deposits	\$34,345.8	47.7	\$75,347.7	51.6	\$109,693.5
Time Deposits	30,620.8	42.6	53,471.4	35.6	84,092.2
Net Capital	<u>6,966.6</u>	<u>9.7</u>	<u>17,213.8</u>	<u>11.8</u>	<u>24,180.4</u>
Total Portfolio Funds	\$71,933.2	100.0	\$146,032.0	100.0	\$217,966.1
<u>Functional Allocation of Net Income</u>					
Demand Deposits	\$1,350.8	47.7	\$2,878.8	51.6	\$ 931.4
Time Deposits	1,204.1	42.6	2,042.9	35.6	3,247.0
Net Capital	<u>273.8</u>	<u>9.7</u>	<u>657.6</u>	<u>11.8</u>	<u>4,229.6</u>
Total Net Portfolio Income	\$2,828.7	100.0	\$5,579.3	100.0	\$8,408.0
<u>U.S. Interest Income</u>					
Gross U.S. Interest Received ¹	\$850.9		\$1,261.1		\$2,112.0
Less: Portfolio Expense Estimated ²	<u>28.3</u>		<u>53.7</u>		<u>82.0</u>
Net U.S. Interest	\$822.6		\$1,207.4		\$2,030.0

TABLE 3-1 (Continued)

	Bank Size (Total Deposits)				TOTAL
	Under \$50 Mil.	Percent	Over \$50 Mil.	Percent	
<u>Functional Allocation of U. S.</u>					
<u>Interest</u>					
Demand Deposits	\$392.9	47.7	\$622.9	51.6	\$1,015.8
Time Deposits	350.2	42.6	442.1	36.6	792.3
Net Capital	<u>79.6</u>	<u>9.7</u>	<u>142.3</u>	<u>11.8</u>	<u>221.9</u>
Total U.S. Interest	\$822.7	100.0	\$1,207.3	100.0	\$2,030.0

Notes: ¹Gross U.S. Interest received of \$2,112.0 shown, plus the \$27 million in Federal Reserve dividends paid to commercial banks in 1962 yields the \$2,139 million in federal interest estimated to have been earned by commercial banks. The \$2,112 million includes \$33.1 million in federal interest estimated to have been received by uninsured commercial banks and banks that operated less than a full year (and were insured), all of which is attributed to banks with deposits under \$50 million.

²The portfolio expense deduction against U.S. Interest consists of 3.85 percent of the total portfolio expenses of commercial banks shown in 3-1, which is the fraction estimated to be attributable to the U.S. Securities portfolio. In addition, an extra \$1.1 million in portfolio expense is added to the amount attributed to banks with deposits under \$50 million, in order to arrive at the \$28.3 million shown for these banks in 3-1. This \$1.1 million is the amount of portfolio expense chargeable against the U.S. Interest earned by uninsured commercial banks and banks operating less than a full year, which is included in the under \$50 million category. It was necessary to make this addition because the total portfolio expenses shown in 3-1 (second line) apply to insured banks operating throughout 1962. The \$1.1 million is arrived at by assuming that portfolio expense is the same proportion of gross U.S. Interest for insured commercial banks as for uninsured banks and insured banks operating less than a full year (3.3 percent).

TABLE 3-1--Continued

The basis for allocating the net U.S. Interest among the three bank functions is the relative proportion of demand deposits, time deposits and net capital in the total portfolio of the banking system.

Source: FDIC Annual Report for 1962, op. cit., pp. 134-135, 146, 150. In calculating the functional portfolio, the average size of each balance sheet item for banks with deposits over and under \$50 million was estimated by taking yearend figures and deflating them by the ratio of average to yearend figures for the entire banking system. Using the resulting estimated averages for 1962, for smaller and larger banks, the demand deposit, time deposit and net capital portfolio was calculated. Net capital is defined as total capital accounts, plus "other borrowing and liabilities," less "all other assets." The time deposit portfolio is time deposits outstanding, less an amount of primary reserves ("cash and due from other banks") equal to six percent of time deposits. The demand deposit portfolio is demand deposits outstanding, less what remains of primary reserves after the deduction for time deposit reserves.

for bank stockholders as profits. Each bank function will be examined separately, beginning with the demand deposit function.

Demand Deposit Function

Commercial banks with 1962 deposits under \$50 million earned \$1,350.8 million in net portfolio income, while larger banks earned \$2,878.8 million--on their demand deposit portfolios (Table 3-1). If these amounts are expressed per one thousand dollars of the average amount of demand deposits outstanding at these banks in 1962 the respective figures are \$29.86 and \$26.52. The way in which this total net portfolio income is distributed between demand depositors and bank profits will be taken as indicative of the way in which that portion of it that is U.S. Interest is distributed. This is tantamount to assuming that bankers do not segregate the sources of revenue when paying expenses--once the total amount of revenue derivable from each function has been ascertained.

The principal expense of the demand deposit function is the cost of providing services to depositors. Demand deposit services provided to customers in excess of the charges levied represents an implicit form of interest. Information about the level of demand deposit expenses for 1962 are scanty. Two Functional Cost studies, one for banks in the Boston and one for banks in the New York Federal Reserve District, dealing with banks in the under \$50 million

deposit range are available.¹³ This dearth of information is the reason for carrying out the calculations for large and small banks separately in Table 3-1. The average cost of servicing demand deposits, as indicated in these two studies, is \$23.12 per thousand dollars of demand deposits (hereafter represented as \$23.12/\$1000 DD). How representative is this figure of the demand deposit expense incurred by all commercial banks in this deposit range during 1962? Consider a 1965 Functional Cost Analysis carried out by the Boston Reserve Bank for 86 banks in this same size classification.¹⁴ The level of demand deposit expense indicated in this study is \$25.25/\$1000 DD. This study is similar to the ones cited above for the year 1952, i.e., small size of banks, regionally confined sample space. Another 1965 FCA covering 581 banks in eight of the twelve Federal Reserve Districts indicates a level of demand deposit expense (for banks in the same size category) of \$24.36--quite close it would seem.¹⁵ An examination of the other cost studies cited in footnote 7 above reveals a fairly narrow range of estimates of demand deposit expense, within any given year and even between

¹³Federal Reserve Bank of Boston, Functional Cost Analysis, Comparative Study 70 Banks 1962-61 and Federal Reserve Bank of New York, 1962 Net Earnings Effect of Cost of Money on Earnings after Taxes (91 banks), op. cit.

¹⁴Federal Reserve Bank of Boston, FCA Comparative Study 86 Banks 1965-1964, op. cit., p. A4.

¹⁵FCA 171 Bank Comparative Study Deposits up to \$50 million 1965-1964, no Reserve Bank source given, op. cit., p. A4. Includes 1965 data for 581 banks.

years.¹⁶ Although the \$23.12/\$1000 DD is probably not precisely correct as an estimate of demand deposit expense, it seems close enough to the true value to be used in the present study. Any error in this estimate is likely to be in the direction of overestimating the cost. A very comprehensive FCA study for 1966, covering eleven Reserve Districts and 774 banks with deposits under \$50 million, indicates demand deposit expense of \$23.05/\$1000 DD.¹⁷ It seems unlikely that costs fell between 1962 and 1966. What is more likely is that the estimate of 1962 costs used here is biased upwards because it is based on banks located in the high wage and high cost northeastern United States. The possibility must be recognized, however, that technological and organizational improvements did lower the level of costs (or prevented them from rising in this case).

Part of the estimated \$23.12/\$1000 DD expense is offset by activity charges levied against deposit accounts. From aggregate data, an average level of activity charges of \$6.33/\$1000 DD was levied by banks in the under \$50 million deposit category during 1962.¹⁸

¹⁶In 1963 the range of demand deposit costs found in four studies examined was from \$23.71/\$1000 DD to \$28.53/\$1000 DD. In 1964 the range in five studies was from \$25.04/\$1000 DD to \$28.65/\$1000 DD.

¹⁷FCA 1966 Average 1022 Banks in Eleven Districts. No Reserve Bank source given, op. cit., p. A6.

¹⁸FDIC Annual Report for 1962, op. cit., p. 150. The \$6.33 is gotten by dividing the total amount of service charges collected in 1962 on deposit accounts by banks with deposits under \$50 million by the average volume of demand deposits outstanding (as estimated at the bottom of Table 3-1).

Therefore, net demand deposit expense for these banks is \$16.79/\$1000 DD. This net expense is chargeable against the net income of \$29.86/\$1000 DD earned by these banks in 1962. This leaves \$13.07/\$1000 DD as before tax profit. Not all that remains as profit is distributed to stockholders, part is added to surplus accounts. But it seems appropriate to attribute the entire amount to bank owners on the assumption that the capital value of their stock will ultimately reflect the increased surplus. In percentage terms, the preceding discussion means that 56.3 percent of net demand deposit portfolio income is expended in providing services to depositors in excess of charges that are levied, and 43.7 percent remains as a gross profit from demand deposits. The \$392.9 million in net U.S. Interest attributed to the demand deposit function of this group of banks in Table 3-1 is presumed to have been distributed in the same manner. Thus, \$221.2 million is attributable to demand depositors, \$171.7 million is left for bank stockholders.

We turn next to the examination of the demand deposit function of commercial banks whose total deposits exceeded \$50 million in 1962. Even greater problems of data inadequacy present themselves in trying to estimate the level of demand deposit expense here because no FCA studies for larger banks is available for 1962. A method must be devised to adjust the cost estimates for smaller banks used in the preceding paragraphs to allow for differences in

bank size. All of the FCA examined for the years following 1962 indicate a lower level of demand deposit expense for larger (over \$50 million in deposits) as compared to smaller banks. In the period 1963-1966, the level of demand deposit expense (per \$1000 DD) incurred by larger banks is about eighty percent of the cost to smaller banks (both gross of any service charges).¹⁹ This estimate is derived by comparing the level of demand deposit expense of larger and smaller banks located in the same geographic region in the same year.²⁰ Eighty percent of \$23.12 is \$18.50, which will be the level of demand deposit expense assumed for larger commercial banks in 1962. This level of expense must be reduced by the amount of service charges levied by larger banks per \$1000 DD in 1962, which is \$3.59.²¹ Thus, the net expense of demand deposits is \$14.91/\$1000 DD. This expense must be charged against the net portfolio income of \$26.52/\$1000 DD earned by this group of banks in 1962. This leaves \$11.61/\$1000 DD as the before-tax profit of the demand

¹⁹ The comparison is based on the following studies, all cited previously in n. 7: FRB of N.Y., FCA 1963-64 (66 banks), FCA 1963-64 (34 banks); FCA 1964-63 (146 banks); FCA 1964-65 (61 banks); FCA 1965-64 (171 banks). The easiest way to refer to these studies is to look at the year(s) involved and the number of banks surveyed and compare it with the list in n. 7.

²⁰ Ibid.

²¹ FDIC Annual Report for 1962, op. cit., p. 150. The \$3.59 is gotten by dividing the total amount of service charges on deposit accounts collected by banks with deposits over \$50 million by the average amount of demand deposits outstanding.

deposit function. In percentage terms, the allocation of net portfolio income is 56.2 percent to depositors, 43.8 percent to profit. Applying these percentages to the \$522.9 million in net federal interest earned by larger commercial banks from their demand deposit portfolio in 1962 (from Table 3-1) results in the following breakdown: \$350.1 million to depositors as implicit interest, and \$272.8 million as bank profit.

Summary of Demand Deposit Function

Table 3-2 summarizes the flow of the \$1,015.8 million in net federal interest flowing through the demand deposit function of commercial banks in 1962. A total of \$444.5 million is credited to commercial bank profits and \$571.3 million to owners of demand deposits as implicit interest.

TABLE 3-2

ALLOCATION OF FEDERAL INTEREST FLOWING THROUGH THE DEMAND
DEPOSIT FUNCTION OF COMMERCIAL BANKS 1962
(Amounts in Millions)

	Banks with Deposits over \$50 million	Banks with Deposits under \$50 million	TOTAL
Profit	\$272.8	\$171.7	\$ 444.5
Implicit Interest	<u>350.1</u>	<u>221.2</u>	<u>571.3</u>
TOTAL	\$622.9	\$392.9	\$1,015.8

Time Deposit Function

Following the procedure used in allocating the U.S. Interest earned by the demand deposit function of commercial banks, the way in which all of the net portfolio income attributable to the time deposit function is distributed between depositors and profits is taken to be indicative of how the federal interest portion is distributed. From Table 3-1, banks with total deposits under \$50 million are estimated to have earned \$1,204.1 million in net time deposit portfolio income, or \$35.96 per thousand dollars of time deposits (henceforth written as \$35.96/\$1000 TD).²² For banks with deposits over \$50 million, the corresponding figures are \$2,042.9 million and \$35.91/\$1000 TD. Against this income must be charged the time deposit expenses. The largest expense incurred by the time deposit function is, of course, the cost of interest paid to depositors. For smaller banks in 1962, the average cost of interest is \$29.40/\$1000 TD; the figure for larger banks is \$32.89/\$1000 TD.²³ Subtracting this interest cost from net portfolio income leaves \$7.54/\$1000 TD and \$3.01/\$1000 TD as the amount of portfolio income

²²As with demand deposits, income and expenses expressed per \$1000 TD is arrived at by dividing total income or expense by the average volume of deposits in 1962. The method used in estimating average deposits is explained in the Source section of Table 3-1.

²³FDIC Annual Report for 1962, op. cit., p. 150. The total amount of interest paid on time deposits by large and small banks is divided by the average volume of time deposits outstanding for each group.

remaining to pay other time deposit expenses, taxes and leave a profit (if any). The two FCA studies for smaller banks covering the year 1962 indicate a level of time deposit expense of \$5.75/\$1000 TD.²⁴ This is probably somewhat higher than the actual average figure for all commercial banks with deposits less than \$50 million in 1962, because both studies are confined to the high-cost northeastern United States. To illustrate this point, two New England (Boston Reserve Bank) Functional Cost Analysis (FCA) studies covering smaller banks in 1964-1963 and 1965-1964 are available for comparison with more comprehensive cost studies for the same years.²⁵ The indicated level of time deposit expense (exclusive of interest expense) in the two New England studies is \$5.94/\$1000 TD in 1964, whereas a cost study covering 216 banks in the New York, Boston and Philadelphia Reserve Districts indicates a cost of \$4.63/\$1000 TD.²⁶ Another study of 171 banks in the same three districts indicates a cost of \$4.80/\$1000 TD.²⁷ In 1965, the level of time deposit costs indicated by the New England FCA covering that year is \$6.05/\$1000 TD.²⁸ Compare this

²⁴ Federal Reserve Bank of Boston, FCA 1962-1961, op. cit., p. A8 and Federal Reserve Bank of New York., 1962 Net Earning Effect of Cost of Money on Earnings after Federal Taxes, op. cit.

²⁵ FCA 84 New England Banks 1964-1963, op. cit., FCA Comparative Study 86 New England Banks 1965-1964, op. cit., FCA Comparative Study 146 Banks 1964-1963, op. cit., FCA 171 Bank Comparative Study Deposits up to \$50 million, op. cit., p. A8 in each study.

²⁶ Ibid., the first three FCA's cited. ²⁷ Ibid., the fourth study.

²⁸ Ibid., the second study.

cost with the \$4.89/\$1000 TD indicated for 171 banks in the New York, Boston and Philadelphia Reserve Districts and the \$4.34/\$1000 TD indicated in a 581 bank, eight district, FCA for 1965.²⁹ In other words, time deposit expenses for banks throughout the entire country seem to be about seventy-five percent of the level of costs of banks located in the New England area. Incidentally, a comparison of the demand deposit expenses indicated in these same surveys reveals only a slight variation (around five percent) between New England and other regions, per \$1000 DD. Seventy-five percent of the \$5.75 in time deposit expense shown in the 1962 FCA is \$4.31/\$1000 TD--which will be the level of time deposit costs assumed to have been incurred by smaller banks in 1962. This expense must be charged to the \$7.54/\$1000 TD remaining after deducting the cost of interest from the net portfolio income of banks with deposits of less than \$50 million. The remaining \$3.23/\$1000 TD is credited to profit earned on time deposits. In percentage terms, the disposition is 91.3 percent to depositors as interest and service, and 8.7 percent to profit on time deposits. These percentages are similar to the payout ratios of mutual savings banks (see Table 10-1) and also tend to confirm doubt among writers in the money and banking field about the profitability of commercial bank time deposits.³⁰ A specific allocation of assets

²⁹Ibid., the fourth study.

³⁰See Leland J. Pritchard, Money and Banking (2nd ed.) (Boston: Houghton-Mifflin, 1964), pp. 602-616.

to the time deposit function, i.e., mostly illiquid assets, would tend to enhance the apparent profitability of this function (see p. 69 above).

From Table 3-1, the total amount of net Federal interest credited to the time deposit function of smaller banks is \$350.2 million. Allocating this sum in the same way as all of the time deposit net income of banks in this deposit range results in \$319.7 million attributed to time depositors, and \$30.5 million to bank profits.

The \$3.01/\$1000 TD remaining out of the net portfolio income of banks with deposits over \$50 million, after deducting depositor's interest expenses, indicates that little in the way of profit is due to this function. Indeed, no FCA examined indicates a level of time deposit expense low enough to allow any before-tax profit from this function. It therefore seems appropriate to attribute the entire amount of net time deposit portfolio income earned by larger banks in 1962 to depositors as interest and service. The higher rate of interest paid by larger banks, coupled with a slightly lower level of portfolio earnings, accounts for the differences in the time deposit function between large and small commercial banks. The entire amount of Federal interest credited to the time deposit function of larger banks in Table 3-1, \$442.1 million, is attributable to depositors.

Summary of Time Deposit Function

As a result of this analysis of the time deposit function of commercial banks, \$761.8 million in federal interest is credited to the owners of commercial bank time deposits and \$30.5 million to commercial bank stockholders in the form of gross profit. Table 3-3 summarizes this allocation of the \$792.3 million in net federal interest attributed to the time deposit function of commercial banks.

TABLE 3-3

ALLOCATION OF THE FEDERAL INTEREST FLOWING THROUGH THE
TIME DEPOSIT FUNCTION OF COMMERCIAL BANKS
1962
(Amounts in Millions)

	Banks with Deposits over \$50 million	Banks with Deposits under \$50 million	Total
Profit	..	\$ 30.5	\$ 30.5
Interest on Time Deposits ^a	<u>\$442.1</u>	<u>319.7</u>	<u>761.8</u>
TOTAL	\$442.1	\$350.2	\$792.3

^aIncludes implicit interest in the form of services performed without charge.

Net Capital Function

The analysis of the capital function of commercial banks is relatively straightforward. It is not necessary to analyze the disposition of all the income earned by the capital function, as was done with the demand and time deposit functions, because no

expenses are charged to capital.³¹

From Table 3-1, \$79.6 million in net federal interest is estimated to have been earned by the net capital function of commercial banks with deposits under \$50 million in 1962. Banks with deposits in excess of \$50 million are credited with \$142.3 million in federal interest earned by their net capital. To these sums must be added the profit from federal interest originating in the demand and time deposit branches of the commercial banking system, \$521.8 million and \$30.5 million respectively (from Tables 3-2 and 3-3). This yields a grand total of \$774.2 million as the amount of federal interest allocable to the stockholders of commercial banks as gross profit from interest on U.S. Securities.

Before summarizing what has been done thus far in distributing the Federal interest received by commercial banks, it will be useful to compare the cost estimates based on the survey data used in this study with known aggregate commercial bank operating expenses. Total commercial bank operating expenses amounted to \$8,543.7 million in 1962.³² If the estimated levels of demand deposit and time deposit expense, including interest to time depositors, is multiplied by the appropriate average volume of deposits (because the

³¹ Starting in 1966, however, FCA did begin to assess expenses against the capital function.

³² FDIC Annual Report for 1962, op. cit., p. 150.

expense estimates are per \$1000 of deposits) the resulting level of operating costs is \$8,295.4 million. This is rather close to the actual total in view of the fact that no account is taken in the estimated level of costs of the trust department functions of commercial banks, or of the safe deposit function. For example, the income of trust departments of commercial banks in 1962 is \$543.5 million.³³ The portion of this income that represents trust department expense could easily account for the discrepancy of \$248.3 million between estimated operating costs of commercial banks and the known aggregate amount.

Summary

Table 3-4 summarizes what has been accomplished thus far in the attempt to trace the flow of U.S. Interest through the commercial banking system. It shows the allocation of net Federal interest received by commercial banks in 1962 (large and small banks are included together).

We have thus far accounted for \$2,030 million of the \$2,139 million in federal interest estimated to have been received by commercial banks in 1962. Two further adjustments are needed before the entire amount is accounted for, the portfolio expense deduction (\$82 million) and the Federal Reserve dividend payment to commercial banks in 1962 (\$27 million).

³³ Ibid.

TABLE 3-4

ALLOCATION BETWEEN DEPOSITORS AND BANK PROFITS OF THE
NET FEDERAL INTEREST RECEIVED BY
COMMERCIAL BANKS IN 1962
(Amounts in Millions)

Bank Function	Banks with Deposits over \$50 million		Banks with Deposits under \$50 million		Total ^a
	Profit	Depositors	Profit	Depositors	
Demand Deposit	\$171.7	\$221.2	\$272.8	\$350.1	\$1,015.8
Time Deposit	30.5	319.7	-	442.1	792.3
Net Capital	<u>79.6</u>	<u>-</u>	<u>142.3</u>	<u>-</u>	<u>221.9</u>
TOTAL	\$281.8	\$540.9	\$415.1	\$792.2	\$2,030.0

^aFrom Table 3-1.

From Table 3-4, the total amount of net federal interest allocable to owners of demand deposits is \$571.3 million; to owners of time deposits \$761.8 million; and to the owners of bank capital \$696.9 for a total of \$2,030.0 million. We distribute the \$82 million in portfolio expenses estimated to have been incurred by commercial banks in managing their portfolio of government securities according to the amount of net interest allocable to each bank function. Thus, 28 percent goes to the demand deposit function (\$23 million); 38 percent to the time deposit function (\$31 million) and 34 percent to net capital (\$28 million). The addition of these sums to the net amount of interest already allocated to each function, plus an additional \$27 million in Federal Reserve dividends to the

capital function³⁴ yields the amounts of interest that must be allocated among the income classes shown in Table 3-5.

TABLE 3-5

AMOUNT OF FEDERAL INTEREST ATTRIBUTED TO OWNERS OF DEMAND DEPOSITS, TIME DEPOSITS AND CAPITAL AT COMMERCIAL BANKS
1962

Bank Function	Amount of Interest
Demand Deposits	\$ 594.3 million
Time Deposits	792.8
Bank Capital	<u>751.9</u>
TOTAL U.S. Interest Received by Commercial Banks in 1962	\$2,139.0 million

³⁴This dividend income is attributed solely to capital because it is assumed that one of the functions of the capital required to organize a bank is to provide for the purchase of stock in the Federal Reserve System, when and if a bank joins the system.

ALLOCATION AMONG THE INCOME CLASSES OF
FEDERAL INTEREST FLOWING THROUGH THE COMMERCIAL
BANKING SYSTEM IN 1962

In this section we allocate the federal interest attributed in Table 3-5 to owners of commercial bank time deposits, capital and demand deposits. We examine each of these categories separately and choose the various appropriate indices of allocation to distribute the amount of interest involved. At the end of the discussion of each category a summary allocation appears, and at the end of the chapter an overall summary of the allocation by income class of federal interest flowing through commercial banks in 1962 is presented.

It is possible to have considered time deposits, bank capital and demand deposits simultaneously (or separately) and added together the amounts to be allocated from each, according to the index of distribution involved, e.g., the ownership of publicly traded stock is used to distribute part of the interest on business-owned time and demand deposits as well as bank capital. Such a procedure would simplify the exposition if only a few different indices were used repeatedly. But in fact, eight different indices are employed in distributing the federal interest earned by commercial banks, and only one is used as often as three times, two are used twice and the rest only once each. So, little would be gained by asking the reader to wait until the end of the chapter to see the allocation among the income classes. Of course, the alternative procedure would result in no substantive change in the analysis.

Allocation by Income Class of Federal Interest
Credited to Commercial Bank Time Deposits

The \$792.8 million in Federal interest benefits attributed to commercial bank time deposits (Table 3-5) must be distributed among the money income classes. This entire interest benefit, however, cannot be attributed directly to individuals because (as Table 3-6 shows) various institutions also own commercial bank time deposits.

TABLE 3-6
COMPOSITION OF COMMERCIAL BANK TIME DEPOSITS
1962

Class of Holder	Amount	Percent
1. Individuals	\$76.1 billion	77.1
2. Businesses	12.8	13.0
3. State and Local Govt.	6.5	6.6
4. Foreign	2.6	2.6
5. Interbank	.4	0.4
6. U.S. Government	<u>.3</u>	<u>0.3</u>
TOTAL	\$98.7 billion	100.0

Source: Sum of lines 1 and 2, lines 3 through 6 and Total from FDIC Annual Report for 1962, op. cit., pp. 122-123. Lines 1 and 2 are listed in the Annual Report as an omnibus category, Individuals, Partnerships and Corporations--time deposits, and broken down into three subcategories--Savings Deposits, Deposits Accumulated for payment of personal loans and Other deposits of individuals, partnerships and corporations. This IPC category totals \$88.9 billion, which is the sum of lines 1 and 2 in the table. The division between individuals and businesses shown in the table is gotten by taking the total amount of savings accounts of individuals (from Projector and Weiss, op. cit., p. 61, not a survey figure but rather a flow of funds figure used by them) \$204.2 billion, and subtracting from this the total amount of savings accounts

owned by individuals in Mutual Savings Banks, Savings and Loan Associations, Credit Unions and Postal Savings of \$128.4 billion (from Statistical Abstract, 1964, op. cit., p. 465), leaving the residual figure of line 1. The remainder of the IPC total is Business ownership of time deposits at commercial banks, line 2.

Table 3-7 allocates the \$792.8 million in interest benefits attributed to commercial bank time deposits in accordance with the percentage ownership of such deposits by different investor classes (from Table 3-6). The \$611.2 million in interest from the federal debt credited to individuals in Table 3-7 is distributed among the money income classes according to the ownership of time deposits at commercial banks in Table 3-8.

TABLE 3-7

ALLOCATION OF FEDERAL DEBT INTEREST ATTRIBUTED TO TIME DEPOSITS AT COMMERCIAL BANKS ACCORDING TO THE PERCENTAGE OWNERSHIP OF SUCH DEPOSITS
1962

Ownership Class of Commercial Bank Time Deposits	Percentage Ownership of Time Deposits	Amount of Interest Benefit
Individuals	77.1	\$611.2 million
Businesses	13.0	103.1
State and Local Govt.	6.6	52.3
Foreign	2.6	20.6
Interbank	0.4	3.2
U.S. Government	<u>0.3</u>	<u>2.4</u>
TOTAL	100.0	\$792.8 million

Source: Percentages from Table 3-6. Total amount of interest is from Table 3-5.

TABLE 3-8

DISTRIBUTION OF INTEREST BENEFITS TO INDIVIDUAL HOLDERS
OF COMMERCIAL BANK TIME DEPOSITS ACCORDING
TO OWNERSHIP OF COMMERCIAL BANK TIME
DEPOSITS BY INCOME CLASS IN 1962

Income Class	Percentage Ownership of Time Deposits	Amount of Interest
1. \$ 0- 2,999	15.7	\$ 96.0 million
2. 3,000- 4,999	14.4	88.0
3. 5,000- 7,499	14.2	86.8
4. 7,500- 9,999	13.3	81.3
5. 10,000-14,999	19.1	116.7
6. 15,000-24,999	9.7	59.3
7. 25,000-49,999	6.4	39.1
8. 50,000-99,999	4.7	28.7
9. 100,000-and over	<u>2.5</u>	<u>15.3</u>
TOTAL	100.0	\$611.2 million

Source: Table 2-10 for percentage ownership of time deposits;
Table 3-7 for total amount of interest allocated.

The \$103.1 million attributed to Businesses in Table 3-7 must be allocated to individuals on the basis of some assumption about to whom the benefits of the investment of business funds flow. It is here assumed that the owners of businesses receive the federal interest benefits flowing through commercial banks in form of time deposit interest on business-owned commercial bank time deposits. The justification of the assumption that owners benefit from the firm's investment of funds springs from the traditional theory of the firm maximizing its profits. To the extent that non-financial firms

purchase income earning assets such as government securities or time deposits, they are engaged in an additional distinct economic activity, i.e., the lending and investing business. The earnings from such secondary activities as lending or investing are just as clearly attributable to the owners of the firm as are the profits from the firm's principal line of business. There seems to be little justification for assuming that the earnings from such lending and investing activities are applied to the costs of the firm's principal output--thereby benefiting the customers of the firm (in the form of lower prices) rather than its owners. The opportunity cost of any funds "necessary" to carry on the production of the principal output(s) is included in the normal profits of the firm as a cost of hiring circulating capital. Any surplus funds that are invested are part of a subsidiary economic activity. A fuller discussion of this matter awaits the reader in Chapter 7 of this study, which deals with corporate holdings of U.S. Governments. For the present, the reader is asked to accept the assumption that the owners of firms primarily benefit from the interest on business-owned time deposits.

In accordance with the preceding discussion, we must allot the \$103.1 million in interest credited to business firms in Table 3-7 to the owners of these firms. However, the category "Business" is too vague to permit an allocation of interest benefits and a further refinement of this category as between types of firms is needed. The \$12.8 billion (Table 3-6) in time deposits held by businesses

consist of four types of holdings: Negotiable and Non-negotiable Certificates of Deposit (CD's), Savings Certificates, Bank Savings Bonds and Open Account time deposits. The most common type of time deposit, the passbook savings account, is omitted from this list because legal regulations (both of the Federal Reserve and of the FDIC) permit only individuals and certain non-profit groups to hold such deposits.³⁵ Non-negotiable CD's, Saving Certificates and Bank Saving Bonds have been developed by commercial banks to attract the funds of smaller businesses and institutions.³⁵ Negotiable CD's, on the other hand, generally come in such large denominations (as of December 1962, ninety percent of outstanding negotiable CD's were of \$100,000 or larger denomination³⁷) that the businesses that purchase them are primarily large national corporations. Their size and negotiability has fostered the growth of an active secondary market in recent years. A Federal Reserve

³⁵Of the \$76.1 billion in time deposits allotted in Individuals in Table 3-6, \$71.2 billion is classified as "savings deposits," which may be held only by individuals and certain non-profit groups. The remainder of the time deposits allocated to individuals consists of CD's, Saving Certificates, etc. In Table 3-8, the time deposit basis for distributing interest benefits to individuals by income class includes all types of time deposits and hence is comparable with the definition in Table 3-6.

³⁵See the Federal Reserve Bulletin, April, 1966 for a discussion of the characteristics of commercial bank time deposits.

³⁷L. Crum, Time Deposits in Present-Day Commercial Banking, University of Florida Monograph 20 (Gainesville, Fla.: University of Florida Press, Fall 1963), p. 27.

survey at the end of 1962 puts the amount of Negotiable CD's (of \$100,000 or larger denomination) originally purchased by corporations at \$3.8 billion.³⁸ This amounts to thirty percent of the \$12.8 billion in time deposits attributed to business in Table 3-6. If we assume that the remaining seventy percent of business time deposits are held by smaller corporations, partnerships, etc., then we have two different bases upon which to distribute the interest benefits of business held time deposits. In the first case, large corporate holders of time deposits receive interest benefits which can be distributed among income classes according to the ownership of publicly traded stock. In the second case, time deposit interest benefits can be distributed according to the ownership of closely held corporation, partnerships, etc. The estimate of large corporation holdings possibly understates the amount they held because it includes only Negotiable CD's, whereas large corporations probably also held some of the other types of time deposits, e.g., open account time deposits. However, since no information exists about exactly how much large corporations own of time deposits, other than negotiable CD's, it seems best to merely assume that they own thirty percent of business time deposits--a figure based solely on their negotiable CD holdings.

³⁸ Federal Reserve Bulletin, April, 1963, p. 463.

Based on the preceding discussion, thirty percent of the interest benefits attributed to business in Table 3-7, or \$30.9 million, is distributed among the money income classes according to the ownership by income class of publicly traded stock. This is done in Table 3-9. Table 3-10 distributes the remaining \$72.2 million in interest benefits to business among the income classes according to the ownership of equity in closely held corporations and farm and non-farm partnerships not managed by the surveyed consumer unit.

TABLE 3-9

DISTRIBUTION OF INTEREST BENEFITS FROM TIME DEPOSITS OWNED
BY LARGE CORPORATIONS BASED ON THE OWNERSHIP OF
PUBLICLY TRADED STOCK BY INCOME CLASS
1962

Income Class	Percentage Ownership of Time Deposits	Amount of Interest Benefit
1. \$ 0- 2,999	22.7	\$ 0.8 million
2. 3,000- 4,999	2.9	0.9
3. 5,000- 7,499	6.1	1.9
4. 7,500- 9,999	8.6	2.7
5. 10,000-14,999	10.5	3.2
6. 15,000-24,999	7.7	2.4
7. 25,000-49,999	13.2	4.1
8. 50,000-99,999	12.0	3.7
9. 100,000-and over	<u>36.2</u>	<u>11.2</u>
TOTAL	100.0	\$30.9 million

Source: Table 2-6 for percentage distribution of stock ownership. Thirty percent of the interest attributed to Business-owned time deposits in Table 3-7 is the amount distributed above.

TABLE 3-10

DISTRIBUTION OF INTEREST BENEFITS FROM COMMERCIAL BANK
TIME DEPOSITS OWNED BY CLOSELY-HELD CORPORATIONS
AND PARTNERSHIPS BASED ON THE OWNERSHIP OF
SUCH FIRMS BY INCOME CLASS
1962

Income Class	Percentage Ownership of Equity in Firms	Amount of Interest Benefit
1. \$ 0- 2,999	0.0	\$ 0.0 million
2. 3,000- 4,999	11.1	8.0
3. 5,000- 7,499	3.2	2.3
4. 7,500- 9,999	7.2	5.2
5. 10,000-14,999	3.5	2.5
6. 15,000-24,999	8.6	6.2
7. 25,000-49,999	3.7	2.7
8. 50,000-99,999	24.7	17.9
9. 100,000-and over	<u>37.7</u>	<u>27.4</u>
TOTAL	100.0	\$72.2 million

Source: Table 2-7 for percentage ownership of equity. Seventy percent of the interest attributed to Business-owned time deposits in Table 3-7 is the amount distributed above.

The basis of this distribution could also have been the ownership by income class of equity in closely held corporations, sole proprietorships and partnerships that were managed by some member of the Projector consumer units surveyed. The reason for not using this basis is that firms not managed by some member are likely to be of a somewhat larger average size, and thus more likely to invest surplus funds in time deposits. Proprietorships, partnerships and small corporations are more likely to have surplus funds

siphoned off by owners into personal bank deposit accounts. This assumes that the not-managed units are less likely to distribute surplus funds among owners; surplus here taken to refer to funds in excess of current working capital needs. This seems logical, when viewed in terms of the difficulty of a firm repossessing such financial surpluses should they be needed in the future, where the owners are not also the day-to-day managers.

State and Local Governments are credited with earning \$52.3 million in time deposit interest derivable from the federal debt in 1962 (Table 3-7). The allocation of this interest among the money income classes can be approached from two points of view. On the one hand, it is possible to argue that the level of state and local taxes (and borrowing) is more or less given, and that whatever volume of expenditures that can be supported out of these revenue sources determines the level of government spending. The receipt of interest would then be regarded as permitting a higher level of expenditures than would otherwise be possible. Time deposit interest would be distributed among the income classes according to the receipt of the benefits of state and local government spending. This approach, however, does not appear to be as plausible as an alternative that regards the level of taxation (and borrowing) as the dependent variable. The level of expenditures is then more or less autonomously determined based on social needs. In this case it is the level of taxes that is less than otherwise

and the interest paid on time deposits should be distributed according to the burden of state and local taxes by income class. This is the assumption utilized in this study and carried out in Table 3-11.

TABLE 3-11

ALLOCATION OF INTEREST PAID ON TIME DEPOSITS OWNED BY
STATE AND LOCAL GOVERNMENTS ACCORDING TO THE
STATE AND LOCAL TAX BURDEN BY INCOME CLASS

Income Classes	Percent of Tax Burden	Amount of Interest
1. \$ 0- 2,999	9.7	\$ 5.1 million
2. 3,000- 4,999	14.5	7.6
3. 5,000- 7,499	21.2	11.2
4. 7,500- 9,999	19.8	10.4
5. 10,000-14,999	16.6	8.7
6. 15,000-24,999	7.9	4.1
7. 25,000-49,999	3.9	2.0
8. 50,000-99,999	2.7	1.4
9. 100,000-and over	<u>3.5</u>	<u>1.8</u>
TOTAL	100.0	\$52.3 million

Source: Table 2-15 for percentage distribution of the tax burden. The amount of interest distributed is from Table 3-7.

The \$20.6 million attributed to Foreign time deposits in Table 3-7 represents part of the "real" external transfer burden of the debt. The interest credited in Table 3-7 to U.S. Government-owned time deposits (\$2.4 million) is assumed to flow back to the Treasury and benefit no group of individuals. Interbank balances are credited with \$3.2 million in time deposit interest, an amount

so small that it will simply be ignored. Thus, \$26.2 million in federal interest attributed to the time deposit function of commercial banks is not considered further and may be regarded as a leakage from the stream of interest benefits.

Table 3-12 summarizes the distribution among the income classes of the \$792.8 million in interest from U.S. Securities earned by owners of time deposits at commercial banks in 1962.

TABLE 3-12

DISTRIBUTION AMONG THE INCOME CLASSES OF FEDERAL INTEREST
EARNED BY OWNERS OF COMMERCIAL BANK TIME DEPOSITS
1962

Income Classes	Percent of Interest	Amount of Interest
1. \$ 0- 2,999	13.3	\$101.9 million
2. 3,000- 4,999	13.7	104.5
3. 5,000- 7,499	13.3	102.2
4. 7,500- 9,999	13.0	99.6
5. 10,000-14,999	17.1	131.1
6. 15,000-24,999	9.4	72.0
7. 25,000-49,999	6.2	47.9
8. 50,000-99,999	6.7	51.7
9. 100,000-and over	<u>7.3</u>	<u>55.7</u>
TOTAL	100.0	
Total Interest Allocable Among Income Classes		\$766.6 million
Interest Leakage (Foreign, U.S. Treasury and Interbank Time Deposits)		<u>26.2</u> million
Total Federal Interest Earned by the Time Deposit Function of Commercial Banks, 1962		\$792.8 million

Source: Tables: 3-8, 3-9, 3-10, 3-11.

Allocation by Income Class of Federal
Interest Credited to Commercial Bank Capital

In Table 3-5, \$751.9 million in interest from U.S. Securities is attributed to owners of bank capital. Since no specific series on the ownership of bank stock by income class exists, it is necessary to find a suitable proxy. One possible indication of the ownership of bank equity by income class is the ownership of publicly traded stock, the same series used in Table 3-9 to distribute the benefits of time deposits owned by large corporations. This would be an adequate index of bank stock ownership if the shares of commercial banks were widely held and actively traded on organized security markets. Available evidence tends to indicate, however, that the market for bank stock is extremely thin and that most banks are rather closely held corporations.³⁹ However, the largest banks (those with deposits in excess of \$500 million) probably had a substantial number of shares traded (see n. 39); moreover, in 1962 the sixty-four largest banks in the United States held forty-one percent

³⁹The following summary of a recent survey by Westerlin for the House Banking and Currency Committee illustrates the point:

- 1) 56 percent of all banks have fewer than fifty shareholders.
- 2) 75 percent of all banks have fewer than ten thousand shares outstanding.
- 3) Officers and directors of 38 percent of all banks owned 51 percent or more of the bank's outstanding stock.

All data indicate the greatest concentration of ownership for smaller banks. Only very large banks had a substantial number of shares traded. See, House Banking and Currency Committee, The Market for Bank Stock (Washington: U.S. Government Printing Office, December, 1964).

of the total capital of all insured commercial banks.⁴⁰ Because no single proxy appears to be adequate, a dual basis for distributing the \$751.9 million in interest benefits to owners of bank capital will be used. Forty-one percent or, \$308.3 million, will be distributed among the income classes based on the ownership of publicly traded stock, while the remaining fifty-nine percent or, \$443.6 million, is distributed according to the ownership of equity in farm and non-farm proprietorships, partnerships and closely held corporations managed at least partly by some member of the consumer unit. These two distributions are shown in Tables 3-13 and 3-14.

TABLE 3-13

INTEREST BENEFITS TO BANK CAPITAL DISTRIBUTED ACCORDING
TO OWNERSHIP OF PUBLICLY TRADED STOCK
1962

Income Class	Percent of Stock Owned	Amount of Interest
1. \$ 0- 2,999	2.7	\$ 8.3 million
2. 3,000- 4,999	2.9	8.9
3. 5,000- 7,499	6.1	18.8
4. 7,500- 9,999	8.6	26.5
5. 10,000-14,999	10.5	32.4
6. 15,000-24,999	7.7	23.7
7. 25,000-49,999	13.2	40.7
8. 50,000-99,999	12.0	37.0
9. 100,000-and up	<u>36.2</u>	<u>112.0</u>
TOTAL	100.0	\$308.3 million

Source: Table 2-6 for distribution of stock ownership. The total amount of interest is forty-one percent of the interest attributed to bank capital in Table 3-5.

⁴⁰FDIC Annual Report for 1962, *op. cit.*, p. 134.

TABLE 3-14

DISTRIBUTION OF INTEREST BENEFITS TO BANK CAPITAL ACCORDING
TO OWNERSHIP OF CLOSELY HELD FIRMS IN WHICH THE
OWNERS PLAYED SOME ROLE IN MANAGEMENT
1952

Income Class	Percentage Ownership of Equity	Amount of Interest
1. \$ 0- 2,999	9.5	\$ 42.1 million
2. 3,000- 4,999	5.8	25.7
3. 5,000- 7,499	11.2	49.7
4. 7,500- 9,999	8.3	36.8
5. 10,000-14,999	10.7	47.5
6. 15,000-24,999	8.2	36.4
7. 25,000-49,999	12.5	55.5
8. 50,000-99,999	22.3	98.9
9. 100,000-and over	<u>11.5</u>	<u>51.0</u>
TOTAL	100.0	\$443.6 million

Source: Table 2-8 for the ownership of equity distribution. The total amount of interest is fifty-nine percent of the interest attributed to bank capital in Table 3-5.

Table 3-15 summarizes the distribution among the income classes of the \$751.9 million in federal interest attributed to the owners of commercial banks.

TABLE 3-15

DISTRIBUTION AMONG THE INCOME CLASSES OF INTEREST
ATTRIBUTED TO COMMERCIAL BANK CAPITAL
1962

Income Class	Percent of Interest	Amount of Interest
1. \$ 0- 2,999	6.7	\$ 50.4 million
2. 3,000- 4,999	4.6	34.6
3. 5,000- 7,499	9.1	68.5
4. 7,500- 9,999	8.4	63.3
5. 10,000-14,999	10.6	79.9
6. 15,000-24,999	8.0	60.1
7. 25,000-49,999	12.8	95.2
8. 50,000-99,999	18.1	135.9
9. 100,000-and over	<u>21.7</u>	<u>163.0</u>
TOTAL	100.0	\$751.9 million

Source: Tables 3-13 and 3-14.

Allocation by Income Class of Federal Interest
Credited to Commercial Bank Demand Deposits

Owners of commercial bank demand deposits are credited with \$594.3 million in interest benefits from the federal debt in 1962 (Table 3-5). As with the bank capital and time deposit interest benefits from the debt, the ultimate objective is to distribute this amount among the income classes. If it is assumed that the amount of interest benefits accruing to a demand deposit account is proportional to the size of the account, then the relative ownership of demand deposits can be taken to be indicator of the amount of

implicit interest received by demand deposit owners.⁴¹

TABLE 3-16A

DISTRIBUTION AMONG OWNERSHIP GROUPS BASED ON THE
OWNERSHIP OF DEMAND DEPOSITS OF THE IMPLICIT
INTEREST BENEFIT PAID ON DEMAND DEPOSITS
1962

Ownership Group	Percentage Ownership of Demand Deposits	Amount of Interest
Individuals, Partnerships and Corporations ^a	78.2	\$464.7 million
Interbank Balances	9.0	53.5
State and Local Govt.	7.4	44.0
U.S. Government	4.2	25.0
Foreign Banking	<u>1.2</u>	<u>7.1</u>
TOTAL	100.0	\$594.3 million

^aIncludes certified and travelers checks, on the assumption that individuals and businesses chiefly use these instruments.

Source: Total amount of interest from Table 3-5. Percentage ownership from Federal Reserve Bulletin, April 1963, p. 501.

⁴¹This may not be an accurate assumption if small accounts are very active (i.e., many checks written and processed, the advice of the bank is sought frequently, etc.). However, banks analyze their demand deposit accounts and usually levy an overactivity charge when the average size of the deposit balance appears too small to justify the volume of services being provided. The size of compensating balances required when a business loan is made is determined partly on how active an account is, which would also tend to make relative ownership of demand deposits indicative of the amount of service rendered. Government deposit accounts may receive more benefits than is indicated by their size, but this is purely conjectural.

TABLE 3-16B

DISTRIBUTION AMONG OWNERSHIP GROUPS OF THE IMPLICIT
INTEREST PAID ON DEMAND DEPOSITS AFTER ALLOCATING
INTEREST ON INTERBANK BALANCES AMONG THE
REMAINING OWNERSHIP GROUPS

Ownership Group	Amount of Interest
Individuals, Partnerships and Corporations	\$510.7 million
State and Local Government	43.3
U.S. Government	27.5
Foreign Banking	<u>7.8</u>
TOTAL	\$594.3

Source: The \$53.5 million paid as implicit interest on Interbank demand deposits in Table 3-16A is allocated among the remaining four categories based on the proportion of interest (net of Interbank interest) allocable to each of the remaining categories.

Interbank or correspondent balances are allocated \$53.5 million in implicit interest benefits in Table 3-16A. The correspondent banking relationship is one in which one commercial bank (usually located in an outlying area) maintains a deposit with another commercial bank, and in return the first bank receives check clearing, credit and investment services from the second bank. The size of balance kept at the bank with which the correspondent relationship is maintained is supposed to compensate that bank for the services it performs. (Presumably, the deposit is invested and the income

from the investment compensates the bank for the expenses it incurs in performing correspondent services; in this case the income is from that part of the correspondent balances invested in U.S. Government Securities.) It therefore seems logical to attribute the benefits ascribed to interbank balances to the other categories of demand deposit ownership--Table 3-16A.⁴² This implicitly assumes that part of the free services rendered by commercial banks to their demand deposit customers consists in services that require the use of the bank's correspondent facilities. Other customers of the bank that desired use of the bank's correspondent relations would presumably be required to pay a service charge, e.g., a time deposit customer who wished to purchase a government security or make a foreign remittance. Continuing with the assumption that the amount owned of demand deposits is indicative of the amount of implicit interest attributable to each category of demand deposit ownership, the \$53.5 million in implicit interest attributed to interbank balances in Table 3-16A is distributed among the other four categories of ownership (IPC, State and Local Governments, U.S. Government, and Foreign Banking) based on the proportion of interest (net of Interbank interest) allocable to each of the other four categories. The result of this step is shown in Table 3-16B.

⁴²No amount of this interest benefit is allotted to bank profit because the implicit interest attributed to demand deposits is net of profits.

Table 3-17 breaks down the \$510.7 million in interest assignable to the IPC category, according to the ownership of demand deposits included in the IPC category. Note that the Federal Reserve survey of the ownership of demand deposits that is utilized in Table 3-17 is as of January 1961--the survey date closest to the year 1962.

The four categories of demand deposit ownership, IPC, State and Local Government, U.S. Government and Foreign Banking, will be discussed in that order--which corresponds to their importance and complexity.

Table 3-17's sectoral breakdown of the IPC category shows business firms receiving 58.9 percent of the IPC interest benefit in 1962 and over half of the entire amount of implicit interest paid to demand deposits. This raises some fundamental question for the analysis, of the distributional effects of the federal debt. To whom should be ascribed the interest benefit attributed to business firms, the owners or customers of the firms? Does the implicit interest received by firms (amounting to \$300.8 million in 1962) result in higher profits, because costs are lower than they would be if banks charged fully for their services or, are product prices lower because costs are lower. In many ways, the situation is similar to the analysis of the incidence of a tax. It is not possible to examine the situation in the presence and in the absence of implicit interest payments and then compare the outcome in

order to arrive at a judgement as to whom the benefits of the implicit interest accrues. Several ways of viewing the situation will be discussed before a final decision is made.

TABLE 3-17

BREAKDOWN OF THE IPC CATEGORY OF DEMAND DEPOSIT OWNERSHIP
AND DISTRIBUTION OF THE INTEREST BENEFITS ACCORDING TO
THE PERCENTAGE OWNERSHIP OF DEMAND DEPOSITS IN
1961

Type of Demand Deposit Owner (IPC)	Percent of Demand Deposits Owned on Jan. 25, 1961	Amount of Interest
Corporate Business	45.4	\$231.9 million
Non-corporate Business	13.5	68.9
Individuals (personal)	29.7	151.7
Non-profit	4.8	24.5
Farm Operators	3.7	18.9
Trust Dept. of Banks	2.0	10.2
Foreign	0.9	4.6
TOTAL	100.0	\$510.7

Source: Federal Reserve Bulletin, April 1961, p. 405, for the percentage distribution of deposit ownership. The total amount of interest is from Table 3-16B.

In order to ascribe the implicit interest received by business firms to their owners it must be possible to demonstrate that the level of profits is higher than the opportunity costs of capital plus some risk premium that varies among industries (these two elements together are usually labeled "normal" profits). Time and space limitations obviously prevent a detailed examination of every industry

in the economy from being undertaken, but the conclusions drawn must be sufficiently general to permit a decision to be made as to whether owners or customers (or some combination of both) are the prime beneficiaries of the implicit interest paid by commercial banks. The traditional mechanism by means of which prices are equated to costs (including normal profits) is the existence of "excess" or "abnormal" profits in certain industries or firms. The migration of capital caused by the appearance of excess profits, in order to capture some of these profits, causes output to expand and product price to decline until stability in the number of firms in the industry where the excess profits appeared finally results. This will occur only when all super-normal profits are wiped out and price equals long run average cost. However, if it is contended that the payment by commercial banks of implicit interest results in firms' costs being less than prices in the long run, then some alternate mechanism of adjusting prices and costs must be posited. On the other hand, if all commercial banks pay implicit interest, then no firm or industry will be earning abnormal profits, on this account, due to the fact that all firms regardless of what industry they operate in will receive implicit interest. It appears that the fact that implicit interest is so widely received by firms effectively blocks the mechanism by which any surplus or excess profits could be squeezed out of product prices. Also, if markets

are imperfectly competitive or if firms do not seek to maximize profits, these are two additional reasons why excess profits may persist over long periods. Unlike time deposits, which are less liquid but yield an explicit return, demand deposits are held by firms primarily for their liquidity yield. That is, profit maximization dictates that part of a firm's assets be held in the form of demand deposits. If this is the case, demand deposit interest, like time deposit interest, is attributable to owners of firms because normal profit includes interest on invested capital. If the foregoing discussion is judged to be a valid analysis of the economic impact of implicit interest on demand deposits, the interest attributed to deposits owned by business firms must be credited to the owners of firms.

Against the argument presented in the preceding paragraph, it can be pointed out that firms' money costs are less than they would be if banks charged fully for their services and that product prices are therefore less than otherwise. In this case the implicit interest would be attributable to the customers of firms rather than their owners. Implicit interest permits firms to hire a larger amount of productive services with any given money outlay than would otherwise be possible. Money costs incurred by firms are less than they would be if commercial banks charged fully for their services. And if opportunity costs and risk premiums (which must be included in long-run prices if firms are to continue to operate) are unchanged,

then it seems logical to assume that product prices are less than would otherwise be the case, and the benefit of the implicit interest received by firms ought to be credited to individuals as consumers rather than as owners of firms. This view is reinforced when it is recognized that implicit interest does not involve the firm receiving funds directly that can be siphoned off into profits. Even more important, because banks have always paid implicit interest (since 1933 they have been forbidden to pay explicit interest; prior to that date they paid both), the situation never arose in which firms that once paid for demand deposit services suddenly found that banks would thenceforth provide these services free of charge. In such a situation, product prices might not fall pari passu with costs and surplus profits might arise. But because banks always performed these services free of charge, at no time could the cost of demand deposits have fallen while product prices remained unchanged. This analysis stresses the dynamic elements of price and cost changes and leads to the conclusion that customers of firms are the ultimate beneficiaries of the implicit interest paid on business-owned demand deposits.

It still remains to decide whether consumers or owners of firms benefit primarily from the implicit interest paid on demand deposits. Because the case for either interpretation is not entirely convincing, an eclectic approach seems appropriate. First, the

interest will be distributed according to the assumption that consumers benefit from it, using consumption by income class as the index of distribution. This is done in Table 3-18 where the \$18.9 million in implicit interest attributed to farmer-owned demand deposits (Table 3-17) is added to the \$300.8 million credited to business-owned deposits, on the assumption that food prices as well as other product prices are lower on account of implicit interest.

TABLE 3-18

DISTRIBUTION OF IMPLICIT INTEREST ON DEMAND DEPOSITS
OWNED BY BUSINESSES AND FARMS, ACCORDING TO
CONSUMPTION BY INCOME CLASS
1952

Income Class	Percent of Total Current Consumption	Amount of Interest
1. \$ 0- 2,999	10.8	\$ 34.5 million
2. 3,000- 4,999	14.6	46.7
3. 5,000- 7,499	22.0	70.3
4. 7,500- 9,999	21.1	67.4
5. 10,000-14,999	18.7	59.8
6. 15,000-24,999	6.5	20.8
7. 25,000-49,999	2.3	7.4
8. 50,000-99,999	1.8	5.8
9. 100,000-and over	<u>2.2</u>	<u>7.0</u>
TOTAL	100.0	\$319.7 million

Source: Table 2-13 for the consumption index; Table 3-17 for the total amount of implicit interest earned by on deposits owned by Corporate Businesses, Non-corporate Businesses and Farm Operators.

The alternative assumption, that owners of firms benefit from implicit interest is carried out in Tables 3-19 and 3-20. Table 3-19 distributes the \$231.9 million in implicit interest (Table 3-17) paid on demand deposits owned by corporate businesses in 1962. The basis for distribution is the ownership of publicly traded stock by income class. The implicit interest on demand deposits owned by non-corporate businesses and farm operators, \$87.8 million, is distributed in Table 3-20 according to the ownership by income class of equity in farm and non-farm sole proprietorships, partnerships and closely-held corporations managed by some member of the consumer unit. At the end of this chapter, the effect of each alternative assumption can be judged by comparing the overall distribution by income class of the U.S. Interest received by commercial banks in 1962, using first the consumption assumption and then the equity assumption as the basis of distribution.

The category Individuals in Table 3-17 is attributed with \$151.7 million in implicit interest on demand deposits. Individual owners are assumed to benefit from the implicit interest that is paid on the demand deposits that they own. Table 3-21 distributes the \$151.7 million according to the estimated ownership of demand deposits by income class.

The non-profit category of IPC ownership of demand deposits in Table 3-17 consists of such diverse institutions as religious organizations, educational institutions, fraternal groups, foundations,

TABLE 3-19

DISTRIBUTION OF IMPLICIT INTEREST PAID ON CORPORATE-
OWNED DEMAND DEPOSITS BASED ON OWNERSHIP
OF PUBLICLY TRADED STOCK
1962

Income Class	Percentage Ownership of Stock	Amount of Interest
1. \$ 0- 2,999	2.7	\$ 6.3 million
2. 3,000- 4,999	2.9	6.7
3. 5,000- 7,499	6.1	14.1
4. 7,500- 9,999	8.6	19.9
5. 10,000-14,999	10.5	24.3
6. 15,000-24,999	7.7	17.9
7. 25,000-49,999	13.2	30.6
8. 50,000-99,999	12.0	27.8
9. 100,000-and over	<u>36.2</u>	<u>84.3</u>
TOTAL	100.0	\$231.9 million

Source: Table 2-6. The total amount of interest is from Table 3-17.

etc. It is necessary to devise some method for allocating among the income classes the \$24.5 million in implicit interest paid on demand deposits owned by non-profit organizations. Receipt of implicit interest by non-profit groups probably has the effect of enabling them to carry on a higher level of activity than would otherwise be possible. In other words, revenue is the independent variable (e.g., contributions) that governs the scope of their activities. Implicit interest enables more to be done with every dollar of revenue received. Under this assumption, the benefit of implicit interest on

TABLE 3-20

DISTRIBUTION OF IMPLICIT INTEREST PAID ON NON-CORPORATE
BUSINESS AND FARM-OWNED DEMAND DEPOSITS BASED
ON OWNERSHIP OF SUCH FIRMS
1962

Income Class	Percentage Ownership of Equity in Firms	Amount of Interest
1. \$ 0- 2,999	9.5	\$ 8.3 million
2. 3,000- 4,999	5.8	5.1
3. 5,000- 7,499	11.2	9.8
4. 7,500- 9,999	8.3	7.3
5. 10,000-14,999	10.7	9.4
6. 15,000-24,999	8.2	7.2
7. 25,000-49,999	12.5	11.0
8. 50,000-99,999	22.3	19.6
9. 100,000-and over	<u>11.5</u>	<u>10.1</u>
TOTAL	100.0	\$87.8 million

Source: Table 2-8. Equity in firms refers to equity in farm and non-farm sole proprietorships, partnerships and closely held corporations that were managed by some member of the surveyed consumer unit. The total amount of interest allocated is from Table 3-17; the amount attributed to Non-corporate business and Farm Operator demand deposits is added together.

non-profit groups' demand deposits accrues to those who benefit from the activities of non-profit organizations. What is assumed here is that the benefits from the non-profit sector of the economy are distributed among the income classes according to the benefit derived from the profit sector, i.e., consumption. Table 3-22 distributes the \$24.5 in interest credited to demand deposits owned by non-profit organization in accordance with the percent of consumption attributed to each income class.

TABLE 3-21

DISTRIBUTION OF THE IMPLICIT INTEREST PAID ON PERSONAL
DEMAND DEPOSIT ACCOUNTS ACCORDING TO OWNERSHIP
BY INCOME CLASS
1962

Income Class	Percentage Ownership of Demand Deposits	Amount of Interest
1. \$ 0- 2,999	11.9	\$ 18.1 million
2. 3,000- 4,999	7.5	11.4
3. 5,000- 7,499	12.3	18.7
4. 7,500- 9,999	11.7	17.7
5. 10,000-14,999	13.4	20.3
6. 15,000-24,999	11.5	17.4
7. 25,000-49,999	9.9	15.0
8. 50,000-99,999	9.2	14.0
9. 100,000-and over	<u>12.6</u>	<u>19.1</u>
TOTAL	100.0	\$151.7 million

Source: Table 2-20 for the percentage distribution of demand deposit ownership. Total interest is from Table 3-17.

The \$10.2 million in implicit interest attributed to the Trust departments of commercial banks in Table 3-17 is distributed among the income classes according to the ownership of an interest in an beneficial trust in Table 3-23.

The \$4.6 million in interest on foreign-owned (IPC) demand deposits still remains in Table 3-17 to be allocated. This sum, like foreign-owned time deposits, will be considered as a leakage from the system and ignored. In addition, Table 3-16B attributes \$7.8 million to Foreign Banking demand deposits. This amount,

TABLE 3-22

DISTRIBUTION ACCORDING TO CONSUMPTION BY INCOME CLASS
OF THE IMPLICIT INTEREST PAID ON DEMAND DEPOSITS
OWNED BY NON-PROFIT ORGANIZATIONS
1962

Income Class	Percent of Consumption	Amount of Interest
1. \$ 0- 2,999	10.8	\$ 2.6 million
2. 3,000- 4,999	14.6	3.6
3. 5,000- 7,499	22.0	5.4
4. 7,500- 9,999	21.1	5.2
5. 10,000-14,999	18.7	4.6
6. 15,000-24,999	6.5	1.6
7. 25,000-49,999	2.3	0.6
8. 50,000-99,999	1.8	0.4
9. 100,000-and over	<u>2.2</u>	<u>0.5</u>
TOTAL	100.0	\$24.5 million

Source: Table 2-13 for the percentage distribution of consumption. Total interest allocated is from Table 3-17.

too, will be ignored. Table 3-16B also attributes \$27.5 million in implicit interest to demand deposits owned by the U.S. Government. As with time deposits owned by the Federal Government, the amount will be ignored. Thus, a total of \$39.9 million in implicit interest paid on foreign and U.S. Government demand deposits is not allocated among the income classes.

Only the \$48.3 million paid on demand deposits owned by state and local governments (Table 3-16B) remains to be allocated of the \$594.3 million in federal interest flowing through commercial

TABLE 3-23

DISTRIBUTION OF THE IMPLICIT INTEREST PAID ON DEMAND
DEPOSITS OWNED BY BANK TRUST DEPARTMENTS BASED
ON TRUST OWNERSHIP BY INCOME CLASS
1962

Income Class	Percentage Ownership of Interest in Beneficial Trust	Amount of Interest
1. \$ 0- 2,999	0.7	\$ 0.1 million
2. 3,000- 4,999	0.1	0.0
3. 5,000- 7,499	24.1	2.5
4. 7,500- 9,999	1.8	0.2
5. 10,000-14,999	2.4	0.2
6. 15,000-24,999	8.6	0.9
7. 25,000-49,999	45.3	4.5
8. 50,000-99,999	4.6	0.5
9. 100,000-and over	<u>12.3</u>	<u>1.3</u>
TOTAL	100.0	\$10.2 million

Source: Percentage distribution of Trust ownership is from Table 2-26. The total amount of interest is from Table 3-17.

banks as implicit interest in 1962. The allocation of this \$48.3 million is carried out in Table 3-24, using as the index of distribution the state and local tax burden by income class. This way of treating implicit interest received by state and local governments is analogous to the treatment of the time deposit interest received by these units of government. The free demand deposit services provided by commercial banks is assumed to permit a lower level of taxation to support any level of government spending.

TABLE 3-24

DISTRIBUTION ACCORDING TO STATE AND LOCAL TAX BURDEN BY
INCOME CLASS OF THE IMPLICIT INTEREST PAID ON DEMAND
DEPOSITS OWNED BY STATE AND LOCAL GOVERNMENT
1962

Income Class	Percentage of Tax Burden	Amount of Implicit Interest
1. \$ 0- 2,999	9.7	\$ 4.7 million
2. 3,000- 4,999	14.5	7.0
3. 5,000- 7,499	21.2	10.3
4. 7,500- 9,999	19.8	9.6
5. 10,000-14,999	16.6	8.0
6. 15,000-24,999	7.9	3.8
7. 25,000-49,999	3.9	1.9
8. 50,000-99,999	2.7	1.3
9. 100,000-and over	<u>3.5</u>	<u>1.7</u>
TOTAL	100.0	\$48.3 million

Source: Table 2-15 for the tax burden. Table 3-16B for the total amount of interest.

Table 3-25 summarizes the allocation among the income classes of the \$594.3 million in federal interest attributed to owners of demand deposits at commercial banks in 1962.

Summary

The final summary of the allocation by income class of the \$2,139 million in federal interest earned by the commercial banking system in 1962 is shown in Table 3-26. Included there is a comparative allocation of the interest, one showing the overall distribution when implicit interest on business-owned demand deposits

TABLE 3-25

SUMMARY OF ALLOCATION BY INCOME CLASS OF
IMPLICIT INTEREST PAID ON DEMAND DEPOSITS
1962

Income Class	Consumption Assumption ¹		Equity Assumption ²	
	Amount	Percent	Amount	Percent
1. \$ 0- 2,999	\$ 60.0 million	10.8	\$ 40.1 million	7.2
2. 3,000- 4,999	68.7	12.4	33.8	6.1
3. 5,000- 7,499	107.2	19.3	60.8	11.0
4. 7,500- 9,999	100.1	18.1	59.9	10.8
5. 10,000-14,999	92.9	16.8	66.8	12.0
6. 15,000-24,999	44.5	8.0	43.8	8.8
7. 25,000-49,999	29.4	5.3	63.6	11.5
8. 50,000-99,999	22.0	4.0	63.6	11.5
9. 100,000-and over	<u>29.6</u>	<u>5.3</u>	<u>117.0</u>	<u>21.1</u>
SUBTOTAL	\$554.4 million	100.0	\$554.4 million	100.0
Interest on U.S. Government & Foreign owned demand deposits				
	<u>39.9</u>		<u>39.9</u>	
TOTAL Federal Interest Paid on Demand Deposits \$594.3 million			\$594.3 million	

¹The consumption assumption distributes the implicit interest on business-owned demand deposits according to consumption by income class.

²The equity assumption distributes the implicit interest on business-owned demand deposits according to the ownership of business equity by income class.

Source: Tables 3-18, 3-19, 3-20, 3-21, 3-22, 3-23 and 3-24.

is attributed to consumers and one showing the allocation when owners of firms are assumed to benefit from this interest.

TABLE 3-26

ALLOCATION BY INCOME CLASS OF FEDERAL INTEREST
RECEIVED BY COMMERCIAL BANKS DURING 1962

Income Class	Consumption Assumption ¹		Equity Assumption ²	
	Amount	Percent	Amount	Percent
1. \$ 0- 2,999	\$ 212.3 mil.	10.2	\$ 192.4 mil.	9.3
2. 3,000- 4,999	207.8	10.0	172.9	8.3
3. 5,000- 7,499	277.9	13.4	231.5	11.2
4. 7,500- 9,999	263.0	12.7	222.8	10.7
5. 10,000-14,999	303.9	14.7	277.8	13.4
6. 15,000-24,999	176.6	8.5	180.9	8.7
7. 25,000-49,999	173.5	8.4	207.7	10.0
8. 50,000-99,999	209.6	10.1	251.2	12.1
9. 100,000-and over	<u>248.3</u>	<u>12.0</u>	<u>335.7</u>	<u>16.3</u>
TOTAL	\$2,072.9 mil.	100.0	\$2,072.9 mil.	100.0
Interest on U.S. Government, Foreign and Interbank Time Deposits				
	26.2		26.2	
Interest on U.S. Government & Foreign Demand Deposits				
	<u>39.9</u>		<u>39.9</u>	
Total Federal Interest Earned by Commercial Banks				
	\$2,139.0 mil.		\$2,139.0 mil	

¹The consumption assumption distributes the implicit interest on business-owned demand deposits according to consumption by income class.

²The equity assumption distributes the implicit interest on business-owned demand deposits according to the ownership of business equity by income class.

Source: Tables 3-12, 3-15, 3-25.

CHAPTER IV

INDIVIDUALS

Individuals held directly \$65.2 billion of the federal debt at yearend 1962 (Table 2-1), which represented twenty-one percent of the total debt outstanding at the time. This is the second largest category of debt ownership. \$46.9 billion of individually held debt in 1962 consisted of savings bonds, non-negotiable instruments such as the familiar Series E Savings Bonds. The remaining \$18.3 billion was held in the form of marketable Treasury issues such as bills, bonds, notes, etc.¹ The amount of interest paid on individually owned debt must first be determined, then distributed among the income classes.

The Treasury does not indicate the amount of interest paid to each category of debt holder (e.g., commercial banks, insurance companies, individuals, etc.), but rather the amount paid on each type of security outstanding (e.g., savings bonds, bills, etc.). It

¹Statistical Abstract of the U.S., 1964, op. cit., p. 401.

is therefore necessary to estimate the amount of interest paid to individual holders of the debt. Because U.S. Savings Bonds may legally be held only by individuals, the entire amount of interest attributed to this type of security by the Treasury is credited to individual ownership. The amount of accrued discount on savings bonds in 1962 was \$1,397 million.² This sum includes both cash interest payments to individuals redeeming their savings bonds as well as interest accrued but not paid out on bonds not redeemed during that year. The reason for including both cash and accrued interest is that an individual's financial position is enhanced equally whether he receives a cash payment from the government or a claim against it that is cashable without risk at any time. To deny the validity of the preceding statement would force us to assume, for example, that an individual benefits from interest on his savings deposit in a bank only when he withdraws it in cash, not when it is credited to his account. Indeed, we would be forced to abandon all forms of accrual accounting and resort to cash accounting.

The amount of interest paid on marketable issues is less easily determined than the interest on non-marketable issues because the composition of the marketable portfolio of individuals is not known, but must instead be estimated. The total amount of marketable issues held by individuals (as of December 31, 1962)

²Ibid.

is broken down by type of issue in Table 4-1, based on the relative proportions of ownership found in Projector and Weiss' survey.³ Because of the substantial amount of underreporting encountered in this survey, the relative holdings could not be directly estimated. Witness the fact that when the mean amount of each type of issue indicated as being held by consumer units in each income class of the survey is weighted by the number of consumer units in each class, a total of \$8 billion in marketable securities and \$27.1 billion in non-marketable securities results. These figures do not compare with the known aggregate amounts of \$18.3 billion and \$46.9 for marketable and non-marketable issues, respectively. This underreporting is no doubt due to the well-known reluctance of individuals to voluntarily reveal the true extent of their wealth or income.

Next, we must estimate the amount of interest earned by individuals on their personal holdings of U.S. Securities. As noted previously, the total amount earned in 1962 on non-marketable issues is \$1,397 million. For the marketable issues, the amount of interest received must be estimated by applying the average rate of interest paid by the Treasury on each type of issue during 1962 to the

³ Projector and Weiss, op. cit., p. 123. The relative proportion of each type of security is derived by taking the mean amount of each type of security held by each income class and weighting it by the number of consumer units in each class. The sum over all classes is the estimated total of each type held by individuals.

TABLE 4-1
INDIVIDUALLY-OWNED MARKETABLE DEBT BY TYPE OF ISSUE
1962

Type of Issue	Amount of Issue	Percent
Bills	\$8,456 million	46.2
Bonds	6,533	35.7
Notes	2,818	15.4
Certificates	<u>493</u>	<u>2.7</u>
TOTAL	\$18,300 million	100.0

Source: Projector and Weiss, op. cit., p. 123 for the percentage breakdown, which was derived by taking the mean amount of each type of security held by each income class and weighting it by the number of consumer units in each class. The sum over all classes is the estimated total of each type held by individuals. The resulting proportions were then applied to the \$18.3 billion in marketable issues owned by individuals.

amount of each type held (Table 4-1). Unfortunately, because we have the breakdown by type of issue only as of December 31, 1962, it is necessary to apply these rates of interest to yearend holdings, rather than average holdings throughout the year. But the effect of this shortcoming may not be as great as one might suspect because individual ownership of the debt is probably not as volatile as are other categories of ownership, e.g., commercial banks. Table 4-2 shows the estimated amount of interest earned by each type of directly held federal security in 1962.

TABLE 4-2
 AMOUNT OF INTEREST EARNED BY EACH TYPE OF
 INDIVIDUALLY-OWNED FEDERAL DEBT ISSUE
 1962

Type of Issue	Amount of Interest
Savings Bonds	\$1,397.0 million
Bills	239.8
Bonds	258.1
Notes	100.6
Certificates	<u>14.8</u>
TOTAL	\$2,010.3 million

Source: The following rates of interest were applied to the amount of each type of issue shown in Table 4-1: bills, 2.84 percent; bonds, 3.95 percent; notes, 3.57 percent; and certificates, 3.01 percent. The bill rate is the mean of the 3 mo. and 6 mo. rates. Federal Reserve Bulletin, July 1963, p. 974. Savings Bond interest is from the Statistical Abstract 1964, op. cit., p. 401.

The \$2,010.3 million in federal interest earned by individuals on their personal debt holdings (Table 4-2) must now be allocated among the income classes. This is done in Table 4-3 based on the ownership of individually held debt by income class. The percentage distribution used as the basis of allocation is derived from the same survey mentioned above. Note the inordinately large proportion (30.8 percent) of certificates attributed to the \$0-2,999 income class in the lower part of Table 4-3. This is the result of the

TABLE 4-3

DISTRIBUTION ACCORDING TO THE OWNERSHIP BY INCOME CLASS
OF INTEREST ON INDIVIDUALLY-OWNED U.S. SECURITIES
1962

Income Class		Amount (millions)				
		Savings Bonds	Bonds	Bills	Notes	Certificates
1.	\$ 0- 2,999	\$201.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
2.	3,000- 4,999	201.0	4.1	0.0	0.0	0.0
3.	5,000- 7,499	191.0	5.4	0.7	0.0	0.0
4.	7,500- 9,999	219.0	29.5	0.0	0.0	0.0
5.	10,000-14,999	240.0	30.5	0.0	1.5	0.0
6.	15,000-24,999	168.0	49.0	0.7	57.2	0.0
7.	25,000-49,999	73.0	49.3	18.7	14.8	0.4
8.	50,000-99,999	64.0	48.5	207.7	21.2	1.2
9.	100,000-and over	<u>41.0</u>	<u>41.8</u>	<u>12.0</u>	<u>5.8</u>	<u>13.2</u>
TOTAL		\$1,397.0	\$258.1	\$239.8	\$100.6	\$14.8

Income Class		Percent				
		Savings Bonds	Bonds	Bills	Notes	Certificates
1.	\$ 0- 2,999	14.4	0.0	0.0	0.0	30.8 ^a
2.	3,000- 4,999	14.4	1.6	0.0	0.0	0.0
3.	5,000- 7,499	13.7	2.1	0.3	0.0	0.0
4.	7,500- 9,999	15.7	11.4	0.0	0.0	0.0
5.	10,000-14,999	17.2	11.8	0.0	1.5	0.0
6.	15,000-24,999	12.0	19.0	0.3	56.9	0.0
7.	25,000-49,999	5.2	19.1	7.8	14.7	2.6
8.	50,000-99,999	4.6	18.8	86.6	21.1	7.8
9.	100,000-and over	<u>2.9</u>	<u>16.2</u>	<u>5.0</u>	<u>5.8</u>	<u>58.9</u>
TOTAL		100.0	100.0	100.0	100.0	100.0

^aThe 30.8 percent of certificates attributed to the lowest income class is the result of a very small (\$4) mean amount of holdings being weighted by a huge number of consumer units (over 16 million). As indicated in the text, the \$4 is not statistically different from

zero; therefore the interest that would be attributed to the first class based on the percentage of certificates indicated as being held by that class is instead credited to the ninth class in the upper part of the table.

Source: Statistical Abstract, 1964, op. cit., p. 401 for the total amount of interest on savings bonds. The interest totals for the marketable issues are from Table 4-2. Table 2-4 is the source of the percentage ownership by income class of each type of issue.

very tiny (\$4) mean amount of holdings attributed to this class being weighted by a huge number of consumer units (16.3 million or, 28 percent of the total) in constructing the table. According to the Federal Reserve Board's Division of Research and Statistics, the source of the survey,⁴

The problem is that, even with the specially designed sample used for the Survey of Financial Characteristics of Consumers, the ownership of U.S. Government Certificates is so narrow that our estimates are based on the holdings of a very small number of sample cases. Although we did not compute any standard errors associated with the means for particular income classes, it can be inferred from what information we have on these holdings that the mean in question, \$4 for the \$0-2,999 income class, is not significantly different from zero.

Based on this statement, none of the \$14.8 million in interest earned on individually held certificates is credited to the first income class in Table 4-3. The amount involved (\$4.6 million) is instead added to the interest allocated to the topmost class.

⁴Personal letter from Erling T. Thoresen, Economist, Consumer Credit and Finances Section, Division of Research and Statistics, Board of Governors of the Federal Reserve System, Washington, D.C., April 1, 1969.

Table 4-4 summarizes the distribution by income class of the federal interest earned by individuals on their personal holdings of U.S. Government securities during 1962.

TABLE 4-4
TOTAL INTEREST RECEIVED BY EACH INCOME CLASS FROM
INDIVIDUAL OWNERSHIP OF U.S. SECURITIES
1962

Income Class	Amount	Percent
1. \$ 0- 2,999	\$201.0 million	10.0
2. 3,000- 4,999	205.1	10.2
3. 5,000- 7,499	195.8	9.7
4. 7,500- 9,999	243.5	12.4
5. 10,000-14,999	272.0	13.5
6. 15,000-24,999	275.3	13.7
7. 25,000-49,999	156.2	7.8
8. 50,000-99,999	342.6	17.0
9. 100,000-and over	<u>113.8</u>	<u>5.6</u>
TOTAL	\$2,010.3 million	100.0

Source: Table 4-3, where the interest attributed to each income class is added horizontally in the upper part of the table.

CHAPTER V

U.S. GOVERNMENT TRUST ACCOUNTS

Let us begin the analysis of the income distribution effects of Treasury interest payments on debt owned by federal trust and investment accounts by considering the genesis of these holdings. Trust funds are simply government accounts established to finance specific programs such as Social Security. Earmarked revenues (such as Social Security payroll taxes) are channelled into these accounts and used to finance the program for which the fund was established. In addition, many independent government agencies, such as the Federal Deposit Insurance Corporation, accumulate substantial funds as part of their operations and most of these funds are invested in Treasury Securities. When current receipts of trust funds or agencies exceed expenditures the surplus is available for investment in U.S. Government obligations.¹ The interest and principal on such obligations provide claims against the Treasury for future revenue needs.² Moreover, to the extent that current

¹Only a small proportion of the assets of trust funds and agencies is held in the form of cash.

²The accumulation of surpluses by most of the funds is actuarially required in order to assure adequate resources to meet all future claims.

trust fund and agency receipts, exclusive of interest received on securities already owned, exceed expenditures and the surplus is used to purchase Treasury issues, the trusts and agencies are helping to finance general government spending. For example, general government expenditures may partly be financed out of Social Security taxes when this trust fund's tax receipts exceed expenditures and the surplus is invested in U.S. Governments. There is nothing inherently wrong with this procedure. All it means is that contributors to trust funds are required to purchase indirectly part of the public debt. This may result in a more widespread ownership than would result from solely voluntary purchases of debt. Any surplus of trust or agency receipts over expenditures used to buy U.S. Securities that results from the receipt of Treasury interest simply means that the interest took a roundtrip from the Treasury. When, on the other hand, current (non-interest) receipts of trust funds and agencies fall short of expenses, the deficit is covered by interest from the Treasury and (if necessary) by redemption of Government Securities owned. Such a situation means that general Treasury revenues, paid out as interest on the U.S. Debt, is helping to finance activities that benefit those for whom the trust funds and agencies carry out their activities. This is the redistributive effect of servicing the debt owned by trust funds and government agencies.

At the end of 1962, U.S. Government Trust and Agency accounts owned \$55.6 billion of the outstanding debt, 18.3 percent of the total.³ This represents a doubling from the \$27.0 billion (9.7 percent) that they owned right after WW II.⁴ Only eleven of the many trust and agency accounts hold almost all of the debt held by the non-Treasury Federal Government. Table 5-1 shows the eleven funds that together owned 55.1 billion of the \$55.6 billion involved. The following discussion deals only with these eleven accounts because of the large number of small accounts that own the remaining \$500 million.

The funds are grouped together in Table 5-1 roughly according to type. The first three funds, Social Security, Railroad Retirement and Civil Service Retirement, comprise the Federal Government's old age, survivors and disability welfare programs. Railroad Retirement and Civil Service Retirement are similar to the Social Security programs of the government, but the former covers workers in the transportation industry and the latter the Federal Government's own employees. The unemployment trust fund is the vehicle for financing the Unemployment Insurance program that is largely administered by the states. Veteran's Life Insurance actually represents three different but quite similar trust funds set up to finance insurance

³ Table 2-1.

⁴ Ibid.

for veterans of the First and Second World Wars and the Korean War. Civil Service Life Insurance is an insurance program for Federal Government employees. The Highway Trust Fund receives and disburses the earmarked federal gasoline tax in order to finance road construction. The FDIC and the Federal Savings and Loan Insurance Corporation insure bank deposits (the latter insures Savings and Loan deposits) against bank failures. The Home Loan Banks provide liquidity to the housing mortgage market by providing lending and rediscounting facilities to members (such as Savings and Loan Associations). The Postal Savings System is a post office savings account system similar to that used in many foreign countries. It pays very low interest rates and has been declining in importance for a number of years.

Table 5-2 lists the receipts and expenditures of the eleven funds. The Social Security fund had current (1962) expenses \$2,039.5 million greater than current (non-interest) receipts. \$582.7 million of that deficit was covered by interest from the U.S. Treasury, the rest by asset liquidation. This \$582.7 million represents a transfer from taxpayers at large to Social Security beneficiaries. A similar deficit of \$141.3 million was realized by the Railroad Retirement trust fund. \$138.1 million of that deficit was covered by interest from the Treasury. The Civil Service Retirement Fund had a surplus, similarly calculated, of \$710 million.

TABLE 5-1
 TRUST FUND AND GOVERNMENT AGENCY
 OWNERSHIP OF FEDERAL DEBT
 December 31, 1962

Fund or Agency	Amount in Millions
1. Old Age, Survivors and Disability Insurance (Social Security) Trust Fund	\$19,316
2. Railroad Retirement Trust Fund	3,408
3. Civil Service Retirement and Disability Trust Fund	12,415
4. Unemployment Trust Fund	6,265
5. Veterans Life Insurance ^a	6,868 ^b
6. Civil Service Life Insurance	271 ^b
7. Highway Trust Fund	223 ^b
8. Federal Deposit Insurance Corporation	2,627
9. Federal Savings and Loan Insurance Corporation	638
10. Federal Home Loan Banks	1,531
11. Postal Savings System	547 ^b
TOTAL	\$55,109

^aActually consists of three trust funds: U.S. Government Life Insurance Trust Fund (WW I), National Service Life Insurance Trust Fund (WW II) and Veteran's Special Life Insurance Trust Fund (Korean War).

^bEstimates based on mean of 1962 and 1963 fiscal year figures.

Sources:

1. Social Security Administration, Social Security Bulletin, "Trust Fund Operations, 1962," (Washington: U.S. Government Printing Office, May, 1963), p. 18.
2. Ibid., p. 22.
3. Ibid., p. 23.
4. Ibid., pp. 21-22.
5. U.S. Veteran's Administration, Annual Report, 1962 (Washington: U.S. Government Printing Office, 1962), pp. 274-278; 1963, pp. 205-299.
6. U.S. Civil Service Commission, Annual Report, 1962 (Washington: U.S. Government Printing Office, 1963), pp. 49 and 54.
7. U.S. Budget Bureau, Budget of the U.S., Appendix 1963 (Washington: U.S. Government Printing Office, 1963), p. 212.
8. Federal Deposit Insurance Corporation, Annual Report for 1962 (Washington: U.S. Government Printing Office, 1963).
9. Federal Home Loan Bank Board, Annual Report, 1962 (Washington: U.S. Government Printing Office, 1963), p. 72.
10. Ibid., p. 65.
11. U.S. Congress, 88th Congress, 2nd Session, House Document 251, Report of Operations of the Postal Savings System (Washington: U.S. Government Printing Office, 1963), p. 3.

This surplus along with the \$323 million in interest received by this fund is mostly returned to the Treasury in the form of security purchases. The income redistribution that results from the operation of the Social Security and Railroad Retirement funds is measured by the \$720.8 million combined interest that they received which was used to pay benefits. This sum is distributed among the income classes in Table 5-3 according to the receipt of Social Insurance benefits.

TABLE 5-2

INCOME AND EXPENDITURES DURING 1962 OF THE ELEVEN PRINCIPAL
TRUST FUNDS AND AGENCIES OWNING FEDERAL DEBT
(in millions)

Fund or Agency	Income Than Interest	Other Treasury	Expen- ditures	Surplus or Deficit ^a	Treas- ury Interest
1. OASDI (Social Security)	\$12,744.2	\$14,783.7	-\$2,039.5	\$582.7	
2. Railroad Retirement	917.7	1,059.0	- 141.3	138.1	
3. Civil Service Retirement	1,820.0	1,111.0	+ 710.0	323.0	
4. Unemployment	3,576.0	3,316.0	+ 260.0	198.0 ^c	
5. Veteran's Life Insurance ^b	723.9	870.9	- 147.0	206.8	
6. Civil Service Life Ins. ^b	148.5	100.8	+ 47.7	11.7	
7. Highway Trust Fund ^b	3,127.0	3,139.0	- 12.0	4.0	
8. FDIC	76.6	12.9	+ 63.7	84.6	
9. Federal S & L Ins. Corp.	57.9	8.8	+ 49.1	16.9	
10. Federal Home Loan Banks	95.7	95.2	+ .5	45.3	
11. Postal Savings System ^b	.6	15.3	- 14.7	<u>15.4</u>	
				\$1,626.5	

^aSurplus or Deficit Excluding Treasury interest.

^bFigures based on mean of 1962 and 1963 fiscal year data.

^cIncludes interest on assets other Treasury securities.

Sources:

1. Social Security Administration, Social Security Bulletin, "Trust Fund Operations, 1962," May 1963, op. cit., pp. 18, 21.

2. Ibid., p. 22.

3. Ibid., p. 23.
4. Ibid., pp. 21-22.
5. U.S. Veteran's Administration, Annual Report, 1962, op. cit., pp. 274-278; 1963, pp. 295-299.
6. U.S. Civil Service Commission, Annual Report, 1962, op. cit., p. 43 and p. 51.
7. U.S. Budget Bureau, 1963 Budget, op. cit., p. 271.
8. FDIC, Annual Report for 1962, op. cit., p. 19.
9. Federal Home Loan Bank Board, Annual Report, 1962, op. cit., p. 72.
10. Ibid., p. 69.
11. U.S. Congress, 88th Congress, 2nd Session, House Document 261, Report of Operations of the Postal Savings System, op. cit., p. 3.

The Unemployment trust fund, the FDIC, the Federal Savings and Loan Insurance Corporation, the Home Loan Banks and the Civil Service Life Insurance trust fund all had net surpluses of current receipts (excluding Treasury interest) over expenditures. Hence, no income transfer resulted from servicing the debt that they owned and no further consideration of them is necessary. The \$4 million in interest received by the Highway Trust Fund is sufficiently small so that it can safely be ignored.

The remaining two accounts, Veteran's Life Insurance and the Postal Savings System, both had deficits that were covered by Treasury interest payments. The three funds that comprise the Veteran's Life Insurance category in Table 5-2 were all in deficit, with a

combined total of \$147.6 million. This deficit was entirely covered by interest on U.S. Securities owned by the three trust funds. The \$147.6 million is distributed among the income classes as a transfer effect of servicing the debt. This is done in Table 5-4, where the index of benefit is the ownership of life insurance by income class. \$14.7 million of the deficit of the Postal Savings System was covered by Treasury interest in 1962. This amount is distributed among the income classes in Table 5-5 according to the ownership of savings deposits at mutual savings banks.

To summarize, the eleven trust and agency accounts discussed in this chapter received a total of \$1,626.5 million in Treasury interest (Table 5-2). All but \$883.1 million was returned to the Treasury in the form of additional security purchases. Tables 5-3, 5-4 and 5-5 allocate among the income classes the \$883.1 million that is the amount of income that was redistributed in the process of paying interest on the debt owned by the eleven funds and agencies. About \$15 million was earned on the \$500 million of trust fund holdings not considered in this study. This sum is ignored.

Table 5-6 presents a summary of the allocation by income class of the \$883.1 million in interest on the debt flowing through the trust funds and agencies in 1962 that is attributable to individuals.

TABLE 5-3

DISTRIBUTION AMONG THE INCOME CLASSES OF THE FEDERAL
INTEREST RECEIVED BY THE SOCIAL SECURITY AND RAIL-
ROAD RETIREMENT TRUST FUNDS ACCORDING TO
THE RECEIPT OF SOCIAL INSURANCE BENEFITS
1962

Income Class	Percent of Social Insurance Benefits Received	Amount of Interest
1. \$ 0- 2,999	46.4	\$334.6 million
2. 3,000- 4,999	22.2	160.0
3. 5,000- 7,499	13.5	97.3
4. 7,500- 9,999	8.3	59.8
5. 10,000-14,999	7.9	56.9
6. 15,000-24,999	1.2	8.6
7. 25,000-49,999	0.3	2.2
8. 50,000-99,999	0.1	0.7
9. 100,000-and over	<u>0.1</u>	<u>0.7</u>
	100.0	\$720.8 million

Source: Table 2-5 for the percentage distribution of social insurance benefits, and Table 5-2 for the total amount of interest allocated.

TABLE 5-4

DISTRIBUTION AMONG INCOME CLASSES OF U.S. INTEREST
RECEIVED BY VETERANS LIFE INSURANCE TRUST FUNDS
BASED ON THE OWNERSHIP OF LIFE INSURANCE
BY INCOME CLASS
1962

Income Class	Percent of Life Insurance Owned	Amount of Interest
1. \$ 0- 2,999	5.5	\$ 8.1 million
2. 3,000- 4,999	8.5	12.5
3. 5,000- 7,499	15.6	23.0
4. 7,500- 9,999	17.0	25.1
5. 10,000-14,999	21.5	31.8
6. 15,000-24,999	13.0	19.2
7. 25,000-49,999	8.5	12.5
8. 50,000-99,999	4.4	6.5
9. 100,000-and over	<u>6.0</u>	<u>8.9</u>
TOTAL	100.0	\$147.6 million

Source: Table 2-19 for ownership of insurance, Table 5-2 (Item 5) for the total amount of interest allocated.

TABLE 5-5

DISTRIBUTION AMONG INCOME CLASSES OF U.S. INTEREST
RECEIVED BY THE POSTAL SAVINGS SYSTEM ACCORDING
TO THE OWNERSHIP OF TIME DEPOSITS AT MUTUAL
SAVINGS BANKS
1962

Income Class	Percent of Deposits	Amount of Interest
1. \$ 0- 2,999	15.6	\$2.3 million
2. 3,000- 4,999	12.1	1.8
3. 5,000- 7,499	12.2	1.8
4. 7,500- 9,999	18.9	2.8
5. 10,000-14,999	17.0	2.5
6. 15,000-24,999	13.7	2.0
7. 25,000-49,999	4.9	0.7
8. 50,000-99,999	3.9	0.6
9. 100,000-and over	<u>1.7</u>	<u>0.2</u>
TOTAL	100.0	\$14.7 million

Source: Table 2-11 for the percentage distribution of ownership of time deposits at mutual savings banks. Table 5-2 for the total amount of interest allocated.

TABLE 5-6

SUMMARY ALLOCATION OF U.S. INTEREST FLOWING
THROUGH U.S. TRUST FUNDS AND AGENCIES
1962

Income Class	Amount of Interest	Percentage Distribution
1. \$ 0- 2,999	\$345.0 million	39.2
2. 3,000- 4,999	174.3	19.7
3. 5,000- 7,499	122.1	13.8
4. 7,500- 9,999	87.7	9.9
5. 10,000-14,999	91.2	10.3
6. 15,000-24,999	29.8	3.4
7. 25,000-49,999	15.4	1.7
8. 50,000-99,999	7.8	0.9
9. 100,000-and over	<u>9.8</u>	<u>1.1</u>
TOTAL	\$883.1 million	100.0

Source: Tables 5-3, 5-4, 5-5.

CHAPTER VI

FEDERAL RESERVE BANKS

At yearend 1962, the twelve Federal Reserve System banks held \$30.8 billion of the national debt (10.1 percent of the total), an increase from the \$24.3 billion (8.7 percent) that they held in 1945.¹ A total of \$1,039 million in interest was received by the Reserve banks during 1962 on the U.S. Securities that they owned.² Most of this interest was, however, returned to the Treasury via various bookkeeping transactions. The task of this chapter is to allocate among the income classes that portion of the interest attributable to individuals.

Earlier measurements of the income redistribution effects of interest payments on the debt ignored the interest flowing through the Federal Reserve.³ Such a treatment is improper in the opinion of the present writer. If no one benefited from this interest flow or, if the distribution of the benefits and costs were identical,

¹ Table 2-1.

² Federal Reserve Bulletin, February, 1963, p. 264.

³ See Miller, op. cit., pp. 93, 119, and Cohen, op. cit., p. 273.

then ignoring the interest received by the Federal Reserve might be appropriate. But neither of these situations exist. People do indeed benefit from the services of the central bank that are financed by interest payments on the debt it holds. And the distribution of these benefits is not the same as the distribution of the taxes imposed to raise the interest. The plan here is to first get a numerical measure of the amount of these benefits. And then an appropriate index for allocating this amount among the income classes is chosen and utilized.

Amount of Benefits

Table 6-1 shows the sources and uses of Federal Reserve Income in 1962. Interest on U.S. Government Securities is the only real source of income. On the outgo side, the \$799.4 million in interest on Federal Reserve Notes paid to the Treasury represents interest paid by the Treasury to the Federal Reserve that is returned to the Treasury. This is a purely bookkeeping transaction because no persons benefit directly or indirectly from interest payments that are returned to the Treasury.⁴ The item current expenses in Table 6-1 (\$176.1 million) is the cost of running the Central Bank. The amount transferred to surplus (\$45.5 million) is used to build-up

⁴That is, no benefit arises because of the need to service the debt. The funds returned represent tax monies (or borrowed funds) collected by the Treasury that are sent on a round-trip to the Federal Reserve and then spent on other governmental activities.

TABLE 6-1
SOURCES AND USES OF FEDERAL RESERVE INCOME
1962

Sources:

Interest on U.S. Securities	\$1,039.3 million
Other Income	<u>9.2</u>
Total Current Income	\$1,048.5

Uses:

Interest on Federal Reserve Notes	799.4 million
Current Expenses	176.1
Transferred to Surplus	45.5
Dividend Payments to Member Banks	27.4
Net Deductions from Income	<u>0.1^a</u>
Total Current Income	\$1,048.5 million

^aRounded up from \$56,000.

Source: Board of Governors of the Federal Reserve System, Forty-Ninth Annual Report of the Board of Governors of the Federal Reserve System Covering Operations for the Year 1962 (Washington: Board of Governors of the Federal Reserve System, 1963), p. 136.

the capital accounts of the System. However, since most surplus funds are used to purchase Treasury issues, this amount is actually returned to the Treasury. The \$27.4 million in dividends paid to member banks of the Federal Reserve System is the statutory six percent return on their holdings of stock in the Federal Reserve Banks. Net deductions from income is the net capital loss on open market operations in 1962. The latter sum, plus current operating expenses and dividends paid to member banks is the amount of

Federal interest received by the Federal Reserve Banks that was not returned to the Treasury ('net' interest receipts). Because the \$27.4 million in dividends is allocated among income classes in the chapter about Commercial Banks, no further mention of it is necessary here. The items current expenses and net deductions from income, totaling \$176.2 million, is the cost of providing the benefits of a central bank in 1962. Up to this point we have assumed that the Uses of funds in Table 6-1 were financed solely with Federal interest. Actually, interest on U.S. Securities provided 99.1 percent of Federal Reserve income in 1962.⁵ For the sake of accuracy, the cost of providing for a Central Bank in 1962 was covered only 99.1 percent by Treasury interest payments. Therefore, \$174.5 million is the amount of federal interest used to provide for the benefits of the Federal Reserve System. This is the amount to be allocated among the income classes.

Index of Allocation

Benefits arising from the operations of the Federal Reserve are different from those arising from the payment of interest to other holders of the debt. Individuals benefit directly from the interest paid to them on their personal holdings of Treasury securities.

⁵Therefore the amount of all outgo items in Table 1 consists of 99.1 percent of Treasury interest and 0.9 of other Federal Reserve Income. This distinction is ignored in the text until the end of the discussion only in order to simplify the exposition.

Interest paid to banks and insurance companies, for example, can be attributed to individuals according to their ownership of bank deposits and bank capital or equity in insurance policies, wealth and stockholdings. But the nature of the services provided by a central bank make it difficult to ascertain the amount of benefit attributable to different individuals. In the language of public finance economics, the services of the Federal Reserve are largely indivisible and therefore affected with a high degree of publicness, as compared to private goods that are provided in unequal amounts to individuals by the operation of the exclusion principle in the marketplace. The private sector could not provide the proper amount of central bank services, the need for which seems obvious in light of modern income determination theory. The profit motive to expand the money supply would be too great during prosperity and too weak during depression. In addition, people are unlikely to offer an adequate demand price for a commodity whose benefits they could largely enjoy even if they made no contribution to its cost--a situation resulting from the quasi-public nature of the service involved. The benefits of a central bank extend beyond the banking and financial community with which it deals directly. Generally speaking, the effect of the functioning of a central bank is to enhance the performance of the private sector of the economy, e.g., by attempting to maintain full employment and stable prices. Participation in the benefits of the private sector would seem to be a reasonable

proxy for the benefits that an individual derived from the operation of the Federal Reserve System. And consumption is a good indicator of the benefits received from the private sector. Income is an alternative index that could be used to allocate the benefits of the Federal Reserve System. But the idea that people benefit from governmental activities in proportion to the amount of their private consumption is an old and equally valid concept. As Hobbes states in his Leviathan,⁶

for what reason is there, that he which laboureth much,
and sparing the fruits of his labour, consumeth little,
should be more charged, then he that living idly, getteth
little, and spendeth all he gets; seeing the one hath no
more protection from the Commonwealth, then the other?

Therefore, the distribution of consumption by income class is the index of allocation used in Table 6-2 to apportion the \$174.5 million in benefits arising from the payment of interest on debt owned by the Federal Reserve System.

⁶ Thomas Hobbes, Leviathan (New York: E.P. Dutton, 1950), p. 298.

TABLE 6-2

ALLOCATION OF THE INTEREST BENEFITS OF THE FEDERAL RESERVE
 BASED ON THE DISTRIBUTION OF CONSUMPTION BY INCOME CLASS
 1962

Income Class	Percent of Consumption	Amount of Interest
1. \$ 0- 2,999	10.8	\$18.8 million
2. 3,000- 4,999	14.6	25.5
3. 5,000- 7,499	22.0	38.6
4. 7,500- 9,999	21.1	36.8
5. 10,000-14,999	18.7	32.6
6. 15,000-24,999	6.5	11.3
7. 25,000-49,999	2.3	4.0
8. 50,000-99,999	1.8	3.1
9. 100,000-and over	<u>2.2</u>	<u>3.8</u>
TOTAL	100.0	\$174.5 million

Source: Percentage distribution of consumption from Table 2-14.
 The total amount of interest allocated is obtained from the text
 above.

CHAPTER VII

CORPORATIONS

This chapter deals with the distribution among the income classes of the interest earned on U.S. Government securities owned by non-financial corporations. At the end of 1962, such corporations held \$20.1 billion worth of U.S. Securities or, 6.6 percent of the total outstanding.¹ The amount of interest earned on these holdings amounted to \$419.3 million in 1962 (a return of about 2.1 percent per annum).² To whom should this interest income be attributed, the owners of firms or their customers? The answer to this question depends on whether the effect of such interest income is to raise the profits of firms or to lower the

¹Table 2-1. This figure represents a decline from the \$22.2 billion (8 percent of the total) held by corporations at the end of WW II.

²U.S. Treasury Department, Internal Revenue Service, Statistics of Income, 1962 Corporation Income Tax Returns (Washington: U.S. Government Printing Office, 1966), pp. 216-219. This amount represents the fully or partly taxable interest on government obligations earned by active corporations in 1962, other than banks, insurance companies and other financial institutions. Since state and local government obligations are tax exempt, it is here assumed that this amount represents interest on U.S. Government issues. The relatively low rate of return reflects the short term nature of the issues held by corporations.

prices of the products they produce. A similar problem presented itself in the Commercial Banking chapter in regard to the distribution of the implicit interest paid on corporate-owned demand deposits. The problem was resolved there by using each assumption separately, i.e., that customers or owners benefit, so that the differential impact of each on the overall distribution of interest could be measured. Such a treatment of the data does not seem called for in the present situation because the burden of evidence presented below seems to indicate that the main effect of this interest income is to enhance the profit position of corporations.

A Treasury survey of debt ownership indicates that at the end of 1962 about eighty percent of corporate-owned government securities were of one year or less maturity.³ This would indicate that corporate holdings are primarily designed to satisfy the liquid asset needs of firms. The implication is that the asset demand for cash (what Keynes called the precautionary and speculative demand) has probably largely been taken over by short-term interest bearing securities that are very liquid, such as government bills. Recent studies of corporate holdings of U.S. Securities tend to confirm

³ Federal Reserve Bulletin, June, 1965, p. 859. This survey covered corporations owning about one-half of the debt held by non-financial corporations.

this view.⁴ Part of the corporate demand for government securities is to accrue in advance such things as tax liabilities. Such behavior reduces the net tax payable by a firm and thus raises profits, even after allowing for the tax on the interest earned.⁵ Any reduction in the amount of tax paid per dollar of profit would tend to raise the amount available for distribution to owners or reinvestment in the firm. Corporate ownership of governments has also been linked to the business cycle. Large firms tend to accumulate U.S. Securities during recessions and sell them off during business upswings-- a pattern of behavior not accounted for by interest rate movements.⁶ However, variations in the expected rate of return on real investment within the firm, along with the growth of internal capital financing, does seem to offer a plausible explanation. Internally generated funds are accumulated in the form of government securities (and other short-term liquid assets) when the business outlook is dim and are disposed of in order to help finance real investment

4

See E. Bloch, "Corporate Demand for Government Securities," American Economic Review, LIII (December, 1963), pp. 1058-1077. Also see A. W. Heston, "An Empirical Study of Cash, Securities and Other Current Accounts of Large Corporations," Yale Economic Essays, II (Spring 1962), pp. 117-68.

⁵ Suppose that \$100 in taxes is accrued in advance at 3 percent per year rate of interest. Even allowing for a fifty percent rate of tax on the interest earned, the net tax payable is \$98.50 because of the extra \$1.50 that has been earned. See Bloch, ibid., p. 1061.

⁶ Ibid., pp. 1052-1070.

when prospects brighten. Profit maximization is consistent with such action because a rise in the expected return on real investment raises the opportunity cost of holding assets in the form of government debt instruments. For example, suppose that entrepreneurs require a rate of return on real investment at least twice that being paid on riskless government securities. During recessions, the expected return on real investment falls to less than double the government bond yield and businessmen regard the risk of real investment as too great in light of the prospective return. They therefore choose to invest funds accumulated from internal sources (depreciation allowances, inventory liquidation, etc.) in government securities. Profits are higher than they might otherwise be due to the fact that interest is earned on funds that perhaps in the past would have been held in the form of idle balances.⁷ Thus, the cyclical behavior of corporate holdings of U.S. Securities is also designed to enhance the profitability of corporations and interest earned by them on government issues is properly attributable to the owners of firms. Much of the preceding analysis is based on Bloch's article cited above, and some comment about it is in order.

⁷ In the commercial banking chapter, the net demand deposit expense of commercial banks in 1962 is estimated at between \$14.91 and \$16.97 per \$1000 of demand deposits. This represents an implicit interest rate of about 1.5 percent per annum, less than the 2.1 percent estimated to have been earned by corporations on their government holdings.

His study is confined to the manufacturing sector of the economy (which held over half of the government issues owned by non-financial corporations). Moreover, the two effects of tax accrual and business cycle fluctuations in governments is present only for the largest manufacturing corporations (assets over \$100 million).⁸ For smaller manufacturing corporations, only the seasonal tax-accrual effect was found, presumably because the smaller cash flow of these corporations did not permit them to accumulate federal securities as readily as the largest corporations. For non-manufacturing, non-financial corporations, Bloch mentions in a footnote that all of their holdings behave in an essentially seasonal pattern, with no cyclical component.⁹ This factor, however, does not seem crucial for the present argument. The main point is that all non-financial corporations seem to seek to hold government securities for essentially short-run purposes. It seems unlikely that any interest earned on the short-term, highly volatile holdings of government securities by corporations would be applied against the costs incurred in producing their products and result in lower product prices ascribable to the customers of firms.¹⁰

⁸ Bloch, op. cit., p. 1062.

⁹ Ibid.

¹⁰ It should be noted that if one accepts the view (which the present writer rejects) that the corporation income tax is shifted forward, similar reasoning would presumably require the assumption that the interest benefit from U.S. Securities is also shifted forward, i.e., benefits consumers. Furthermore, it would also seem to imply that the interest benefit on corporate-owned demand and time deposits is attributable to consumers.

The absolute and relative decline since 1945 in the amount of government securities held by non-financial corporations is probably due to the increased use of other money market instruments, of liquidity comparable to government issues but yielding a higher rate of return. Increased holdings by corporations of negotiable Certificates of Deposit, finance company commercial paper and foreign money market issues attests to this development.¹¹ This decline in government holdings is part of a broader pattern of change in the composition of corporate liquid assets. Firms have tended to economize on their cash holdings and acquired larger and more diversified portfolios of income earning assets.

Next, it is necessary to allocate among the income classes the \$419.3 million in U.S. interest earned by non-financial corporations during 1962. No allowance is made for any payment of corporation income taxes out of this sum because the federal corporate income tax is considered separately in the tax allocation section of this study. In addition, state and local corporation income taxes are ignored here and elsewhere because the rates involved are so low, the most common rate being four or five percent.¹²

¹¹ Ibid., pp. 1074-75.

¹² Bernard P. Herber, Modern Public Finance, (Homewood, Ill.: Richard D. Irwin, 1967), p. 257.

Table 7-1 distributes among the income classes the \$419.3 million in federal interest received by non-financial corporations in 1962. Ownership of publicly traded stock by income class is the proxy for distribution employed in 7-1.

TABLE 7-1

DISTRIBUTION AMONG THE INCOME CLASSES OF THE INTEREST
RECEIVED BY CORPORATIONS ACCORDING TO THE
OWNERSHIP OF PUBLICLY TRADED STOCK
1962

Income Class	Percent of Stock Owned	Amount of Interest
1. \$ 0- 2,999	2.7	\$ 11.3 million
2. 3,000- 4,999	2.9	12.2
3. 5,000- 7,499	6.1	25.6
4. 7,500- 9,999	8.6	36.1
5. 10,000-14,999	10.5	44.0
6. 15,000-24,999	7.7	32.3
7. 25,000-49,999	13.2	55.3
8. 50,000-99,999	12.0	50.3
9. 100,000-and over	<u>36.2</u>	<u>152.2</u>
TOTAL	100.0	\$419.3 million

Source: Percentage distribution of stock ownership from Table 2-6. The total amount of interest allocated is from 1962 Corporation Income Tax Returns, op. cit., pp. 216-219.

CHAPTER VIII

STATE AND LOCAL GOVERNMENTS

As of December 31, 1962, state and local governmental units held \$19.5 billion of the federal debt.¹ This amount represents 6.4 percent of the total debt outstanding at that time, a sharp increase from the 2.3 percent (\$6.5 billion) that they held at the end of World War II.²

The Census Bureau's Compendium of Government Finances (1962 Census of Governments) gives a breakdown of state and local holdings of U.S. Securities, according to the purpose for which they are held, e.g., pension funds, debt retirement, etc.³ But because the census figures are for governments whose fiscal year ended sometime in 1962, rather than on a calendar year basis, the aggregate holdings of U.S. Securities by state and local governments indicated in that source is \$20.3 billion.⁴ This discrepancy is overcome by applying the percentage breakdown of the motives

¹Table 2-1.

²Ibid.

³U.S. Census Bureau, Census of Governments 1962, Vol. IV, Compendium of Government Finances (Washington: U.S. Government Printing Office, 1964), p. 38.

⁴Ibid.

for holding U.S. Securities from the census to the average holdings during 1962, based on beginning and end-of-year figures, of state and local governments. This procedure results in the following breakdown, by motive, of the debt owned by state and local governments:

Employee Retirement and Pension Funds	\$5,806 mil.
Other Trust Funds	1,222
Offset to Debt (Bond Sinking Funds)	1,585
Bond Funds (Proceeds of new issues)	3,744
Other Non-Trust Funds	<u>6,742</u>
	\$19,100 mil.

Note that the \$19.1 billion is less than the \$19.5 billion held on December 31, 1962 because the former figure is an average for the entire year.

Interest Estimate

The next step in analyzing the state and local holdings of debt is to determine the amount of interest earned. Because no direct information about the amount of interest received is available, it is necessary to make an estimate. The procedure used in estimating the amount of interest is to ascertain the maturity structure of the U.S. Securities owned by these governments and then to apply the proper rate of interest to each class of security held. The source of this maturity structure is the Treasury's survey of debt ownership.⁵ This survey includes two categories

⁵U.S. Treasury Department, Bulletin, February, 1962, p. 63; February, 1963, p. 70.

for state and local governments: Pension and Retirement Plans and General Funds. In order to calculate the interest earnings, the maturity structure of these two categories must be matched with the motives for holding debt indicated above, so as to derive the maturity structure of the various motives. Pension and Retirement Plans in the Treasury survey are assumed to correspond to the Employee Retirement and Pension Funds, the Other Trust Funds and the Offset to Debt motives for holding debt, mainly because of the long-term nature of all of these motives. The Treasury's General Fund category is taken to be representative of the remaining two motives for state and local debt ownership: Bond Funds and Other Non-Trust, because of the short-term nature of these motives. In order to derive the maturity distribution of the Pension and Retirement Plans and the General Fund categories in the Treasury survey, the mean of yearend 1961 and 1962 holdings of each type of security (e.g., bills, notes, etc.) included in each of these categories was calculated. This resulted in a percentage breakdown of the average holdings of the two categories by type of issue. Because the Treasury conducts a survey, not an enumeration, it was necessary to first get a percentage breakdown of holdings and then apply it to the known aggregate holdings of \$19.1 billion. The resulting maturity breakdown of the Treasury's Pension and Retirement Plans category was then applied to the \$8,613 million in U.S. Securities

held by state and local governments for Employee Retirement and Pension Funds, Offset to Debt and Other Trust Fund motives (from page 163). The maturity structure derived for the Treasury's General Fund category was applied to the other two state and local motives for holding debt, Bond Funds and Other Non-Trust, total \$10,486 million (page 163). At this point we have the estimated maturity structure of the average holdings by state and local governments of U.S. Securities in 1962. To calculate the amount of interest earned on these holdings it is only necessary to apply the appropriate average rate of interest paid by the Treasury to the amount of each type of issue held.⁶ This procedure results in the amounts shown in Table 8-1 being estimated as the interest earned by state and local governments on their various holdings of debt in 1962.

Allocation Among the Income Groups

The amounts of interest shown in Table 8-1 must now be allocated among the income classes. The category Offset to Debt is a type of bond redemption sinking fund, Bond Funds are the proceeds

⁶The interest rates used are as follows: bills, 2.84 percent (mean of 3 and 6 mo. rates); bonds, 3.95 percent; notes, 3.57 percent; certificates, 3.01 percent; and non-marketable, 3.36. All but the non-marketable rates are from the Federal Reserve Bulletin, July, 1963, p. 974; non-marketable rate from the Treasury Bulletin, February, 1963, p. 30.

TABLE 8-1

FEDERAL INTEREST EARNED BY STATE AND LOCAL
GOVERNMENTS DURING 1962

Motive for Ownership	Amount of Interest
Employee Retirement and Pension Funds	\$223.7 million
Other Trust Funds	47.1
Offset to Debt	61.5
Bond Funds) 354.6
Other Non-Trust) _____
TOTAL	\$686.9 million

of new bond issues by state and local governments that are placed in an interest earning form prior to being spent, Other Non-Trust is assumed to be general governmental revenues that are placed in an income earning form, much as corporate treasurer's manage temporarily idle funds, so as not to forego any interest income. It seems logical to assume that the \$416.1 million in federal interest attributed to these three categories tends to reduce the cost of government, to state and local taxpayers, and thus should be distributed according to the state and local tax burden by income class. This is based on the assumption that it is the level of expenditure that is the independent variable and that the level of taxes (or borrowing) is adjusted accordingly. The effect of the interest is to raise the non-tax revenues of state and local governments and make possible a lower level of taxes per dollar of expenditure. If one rejects the hypothesis that expenditures are the independent variable and assumes instead

that spending is determined by the level of taxes, then the interest should be distributed among the income classes according to the receipt of the benefits so financed. Such an assumption, to be made operational, would require an investigation into the nature and distribution of state and local government services by income class. Aside from the effort involved in such a task, and the dubious merit of trying to attribute the services of all types of government programs to classes of individuals, it seems unlikely that the receipt of interest income (which is a tiny fraction of state and local revenue), per se, is going to cause a higher level of spending. It seems much more plausible that the level of spending is the determining variable and that the receipt of interest merely makes lower the necessary tax burden to accomplish that spending. Accordingly, Table 8-2 distributes the \$416.1 million in U.S. Interest earned by state and local governments on their holdings of U.S. Debt in the form of Offset to Debt, Bond Funds and Other Non-Trust, based on the percentage distribution of the state and local tax burden by income class.

Table 8-1 attributes \$223.7 million in interest to Employee Retirement and Pension Funds. It was possible in Chapter V to allocate the interest earned by the several social insurance funds of the Federal Government among the income classes according to the receipt of social insurance benefits. This procedure is not fully applicable in the present situation, however, because--unlike

TABLE 8-2

DISTRIBUTION ACCORDING TO THE STATE AND LOCAL TAX BURDEN
BY INCOME CLASS OF U.S. INTEREST RECEIVED BY THE GENERAL
FUND^a CATEGORY OF STATE AND LOCAL DEBT OWNERSHIP
1962

Income Class	Percent of Tax Burden	Amount of Interest
1. \$ 0- 2,999	9.7	\$40.4 million
2. 3,000- 4,999	14.5	60.4
3. 5,000- 7,499	21.2	89.3
4. 7,500- 9,999	19.8	82.4
5. 10,000-14,999	16.6	69.0
6. 15,000-24,999	7.9	32.8
7. 25,000-49,999	3.9	16.1
8. 50,000-99,999	2.7	11.2
9. 100,000-and over	<u>3.5</u>	<u>14.5</u>
TOTAL	100.0	\$416.1 million

General Fund includes Offset to Debt, Bond Funds and Other Non-Trust categories.

Source: The tax burden distribution is from Table 2-15; the total amount of interest allocated is from Table 8-1, Offset to Debt, Bond Funds and Other Non-Trust categories.

the federal trust funds--state and local Employee Retirement and Pension Funds did not need U.S. Interest to cover current disbursements. That is, the federal trust fund's current revenues (exclusive of U.S. Interest) fell short of current outlays in 1962 and the resulting 'deficit' was covered (partly) by interest payments from the Treasury. State and local pension systems, on the other hand, had current non-investment income more than adequate to cover all disbursements. To illustrate, during 1962 state and local retirement

systems had total revenues of \$4,221 million (including \$888 million of income from all types of investments), while disbursements were only \$1,664 million.⁷ It would seem illogical to attribute all investment income, including the \$223.7 million in U.S. Interest, only to current pensioners because contributions alone could have covered outlays to them. A more satisfactory approach would seem to be one that assumes income from investments was pooled with current contributions in order to meet the claims of current pensioners and build the equity value of those who will retire in the future--the current contributors. In accordance with the preceding discussion, the \$223.7 million in U.S. Interest earned by state and local Employee Retirement and Pension Funds in 1962 represents 5.3 percent of the total revenue of these funds in that year. The same percent of their current disbursements of \$1,664 million or, \$88.2 million, is the amount of federal interest attributable to current pension recipients in 1962, while 5.3 percent of the surplus of total revenue over disbursements ($\$4,221 - 1,664 = 2,557$) or, \$135.5 million is the amount of interest used to increase the equity value of these pension systems.⁸ Table 8-3 allocates the \$88.2 million credited

⁷ Statistical Abstract 1964, op. cit., p. 296. Figures given are mean of fiscal 1962 and 1963.

⁸ Conceivably, some part (or all) of this surplus could be used to buy more U.S. Government Securities.

TABLE 8-3

ALLOCATION OF FEDERAL INTEREST ATTRIBUTED TO CURRENT STATE
AND LOCAL PENSION RECIPIENTS ACCORDING TO THE RECEIPT
OF SOCIAL INSURANCE
1952

Income Class	Percentage Distribution of Social Insurance Benefits	Amount of Interest
1. \$ 0- 2,999	46.4	\$40.8 million
2. 3,000- 4,999	22.2	19.6
3. 5,000- 7,499	13.5	11.9
4. 7,500- 9,999	8.3	7.3
5. 10,000-14,999	7.9	7.0
6. 15,000-24,999	1.2	1.1
7. 25,000-49,999	0.3	0.3
8. 50,000-99,999	0.1	0.1
9. 100,000-and over	<u>0.1</u>	<u>0.1</u>
TOTAL	100.0	\$88.2 million

Source: Percentage distribution of social insurance benefits from Table 2-5. The total amount of interest allocated is arrived at in the text from Table 8-1.

to current pensioners on the basis of the distribution of social insurance benefits by income class, a proxy for state and local retirement income. In Table 8-4, the \$135.5 million assumed to enhance the equity position of these retirement systems is allocated among the income classes based on the distribution of social insurance contributions, a surrogate for the benefit to those currently building-up their equity in state and local retirement plans.

TABLE 8-4

ALLOCATION OF FEDERAL INTEREST ATTRIBUTED TO OWNERS OF
EQUITY IN STATE-LOCAL RETIREMENT PLANS ACCORDING
TO SOCIAL INSURANCE CONTRIBUTIONS
1952

Income Class	Percentage Distribution of Social Insurance Contributions	Amount of Interest
1. \$ 0- 2,999	4.6	\$ 6.2 million
2. 3,000- 4,999	14.2	19.2
3. 5,000- 7,499	25.5	34.6
4. 7,500- 9,999	24.9	33.8
5. 10,000-14,999	21.7	29.4
6. 15,000-24,999	6.5	8.8
7. 25,000-49,999	1.6	2.2
8. 50,000-99,999	0.7	0.9
9. 100,000-and over	<u>0.3</u>	<u>0.4</u>
TOTAL	100.0	\$135.5 million

Source: Percentage distribution of social insurance contributions from Table 2-21. The total amount of interest allocated is arrived at in the text from Table 8-1.

There remains to consider in this chapter only the \$47.1 million in interest credited in Table 8-1 to Other Trust Funds of state and local governments. No information is given in the Census of Governments about what sort of programs are financed out of this category of trust funds. An examination of the social welfare expenditures of state and local governments, however, reveals that the most likely function of these trust funds is to finance workmen's

TABLE 8-5

ALLOCATION OF FEDERAL INTEREST RECEIVED BY "OTHER" STATE
AND LOCAL TRUST FUNDS ACCORDING TO THE RECEIPT
OF DISABILITY INCOME
1962

Income Class	Percentage Distribution of Disability Income	Amount of Interest
1. \$ 0- 2,999	8.2	\$ 3.9 million
2. 3,000- 4,999	10.5	4.9
3. 5,000- 7,499	16.2	7.6
4. 7,500- 9,999	19.0	8.9
5. 10,000-14,999	24.7	11.7
6. 15,000-24,999	15.3	7.2
7. 25,000-49,999	3.8	1.8
8. 50,000-99,999	1.5	0.7
9. 100,000-and over	<u>0.8</u>	<u>0.4</u>
TOTAL	100.0	\$47.1 million

Source: Table 2-23 for the percentage distribution of disability income, Table 8-1 (Other Trust Funds) for the total amount of interest allocated.

compensation programs.⁹ The best proxy found to distribute the \$47.1 million on the assumption that recipients of workmen's compensation are the prime beneficiaries is the distribution of the receipt of disability income by income class. This is the index of allocation used in Table 8-5.

Finally, Table 8-6 presents a summary of the allocation by income class of the federal interest flowing through state and local government units in 1962.

⁹ Statistical Abstract, 1964, op. cit., p. 281.

TABLE 8-6

SUMMARY ALLOCATION OF INTEREST RECEIVED BY STATE-LOCAL
GOVERNMENTS DURING 1962

Income Class	Amount of Interest	Percent
1. \$ 0- 2,999	\$ 91.3 million	13.3
2. 3,000- 4,999	104.1	15.2
3. 5,000- 7,499	143.4	20.8
4. 7,500- 9,999	132.4	19.3
5. 10,000-14,999	117.1	17.0
6. 15,000-24,999	49.9	7.3
7. 25,000-49,999	20.4	3.0
8. 50,000-99,999	12.9	1.9
9. 100,000-and over	<u>15.4</u>	<u>2.2</u>
TOTAL	\$686.9 million	100.0

Source: Tables 8-2, 8-3, 8-4 and 8-5.

CHAPTER IX

INSURANCE COMPANIES

The category Insurance Companies is credited with owning \$11.5 billion of federal debt in 1962 (3.8 percent).¹ This is a sharp decline from the \$24.0 billion attributed to insurance companies in 1945 (8.6 percent).² This decline in ownership is the net result of a rise in U.S. Governments owned by property and casualty insurance companies (from \$3.5 billion in 1945 to \$5.3 billion in 1962) being more than offset by the decline in the holdings of life insurance companies (from \$20.5 billion to \$6.2 billion in the same time period).³ Because of fundamental differences in the nature of their operations, life insurance companies are dealt with separately from property and casualty insurance companies.

Life Insurance Companies

The analysis of the flow of federal interest through life insurance companies requires a brief reconsideration of the principles

¹Table 2-1.

²Ibid.

³Institute of Life Insurance, Life Insurance Fact Book, 1967, p. 69 for life insurance companies; casualty and property insurers taken as a residual.

of life insurance. The funds that enable life insurance companies to acquire income earning assets arise primarily because some types of life insurance contracts incorporate a savings account feature. Such life insurance, in which the policyholder acquires an equity, is known by such names as whole life, straight life, limited payment life and endowment life insurance. Life insurance that does not contain any savings feature is called term insurance. It is the purest form of life insurance because it insures against the risk of the insured dying during a limited contract period by pooling the risks of many individuals. Term policies usually do not run for periods longer than five years, though they are often renewable almost automatically. Because of the probability element, term insurance is characterized by higher rates with advancing age, in order to provide a sufficient pool of funds to pay death claims on those policyholders in an insured age group that die within the contract period. Because of the adjustment of rates to mortality risk, and because of the rather short period of time involved in term insurance contracts, there is little need for policy reserves to help pay death claims. In fact, very small reserves are maintained by insurance companies to cover unforeseen emergencies with regard to term insurance. Basically, it is only necessary for the insurance companies to charge actuarially accurate premiums to any insured age group in order to assure adequate revenues to pay term

insurance death claims. Health and accident insurance, as well as property and casualty insurance, because of the pooling of risks involved, is essentially similar to term life insurance. About half of the life insurance in force in 1962 was term insurance.⁴ Whole life (and its variants) instead of insuring against the risk of death assumes the certainty of death of the policyholder during the contract period. Such contracts are issued for the lifetime of the insured. In other words, whole life policies assume that a death benefit must eventually be paid and incorporate a savings account in the policy to provide such payment. In addition, and of special importance for the present discussion, life insurance with a savings feature utilizes a level premium rate. This means that during the early years of the contract premium payments exceed the amount needed to pay benefit claims. This surplus provides the insurance company policy reserves that are used to acquire income earning assets and are the basis for policyholders' equity. This equity (plus compound interest derived from the assets acquired) is used to help pay benefit claims in the later years of the contract, when the level premium rate is too low to cover all benefits that must be paid out by the companies. Most of the insurance coverage in the early years of such policies is like term insurance because the policy

⁴ Ibid., pp. 19, 25.

has little equity value. However, the premiums during these years are greater than needed to purchase term insurance equal to the face value of the policy. The surplus mentioned above derives from this "overpayment" for insurance. With the passage of time, the savings account equity grows and the amount of pure insurance needed to pay the face value of the policy correspondingly declines. Ultimately, the savings portion equals the face value of the policy (the policy endows). This is how the certain claim against the policy for a death benefit can be paid.⁵ At the time of endowment, the death benefit (or annuity) represents the policyholders' savings plus accrued interest. The point of the preceding discussion is to demonstrate that the portion of U.S. Interest earned by life companies attributable to policyholders is attributable to them in accordance with their ownership of equity in life insurance policies.

Interest Estimate

Next, we turn to the calculation of the amount of federal interest earned by life companies during 1962. No direct evidence

⁵The above discussion is, of course, a simplification but closely approximates reality. For example, premiums vary with the age of the insured at the time the contract is written but remain at that level for the life of the contract. This reflects different mortality rates for different age groups and the number of years needed to endow a policy. The age of endowment is 100 for some policies (straight life), but could be twenty years after the contract is written (limited payment life). Premiums are higher in the second case in order to permit more rapid accumulation of the equity portion of the contract.

on this subject exists, so an estimate must be made. Utilizing the Treasury's survey of ownership of the debt, the percentage maturity structure of life company holdings derived from the survey is applied to the average total holdings of U.S. Securities by life insurance companies during 1962.⁶ This results in a breakdown by type of issue (bills, notes, etc.). When the appropriate rate of interest is multiplied by the amount of holdings of each type of issue a figure of \$236.8 million is arrived at (exclusive of interest on guaranteed issues).⁷

Interest Allocation

The estimated amount of interest must be divided between policyholders and stockholders of life insurance companies. Available information indicates that about eighty percent of the premium and net investment income of life insurance companies is attributable to policyholders in the form of benefit payments and additions to equity reserves.⁸ The remaining twenty percent is consumed as

⁶U.S. Treasury Department, Bulletin, February 1962, p. 63 and February 1963, p. 70 for survey of ownership of the debt. The maturity structure is derived from the mean of beginning and end of year figures. Average total holdings are also the mean of beginning and end of year figures, \$6,152 million during 1962, as compared to yearend holdings of \$6,200 million.

⁷The interest rates used are give in n. 6, Chapter VIII.

⁸Institute of Life Insurance, Life Insurance Fact Book, 1965, p. 55.

operating expenses (15 percent; agent's commissions and office expenses), taxes (4 percent)⁹ and dividends (1 percent). Let us assume that eighty percent of the federal interest received by life insurance companies is attributable to policyholders, \$189.4 million. Since operating expenses consist of agent's commissions and office expenses, it does not seem correct to charge such expenses against U.S. Interest income. Thus, the remaining twenty percent of federal interest can be taken to represent gross profit before taxes. Of the various types of taxes paid by life insurance companies, social security taxes, real estate taxes, state taxes on premiums, licenses and fees and federal corporate income taxes, only the latter would seem to properly be regarded as falling on investment income, including U.S. Interest. (The other taxes are presumably borne out of premium income.) Since federal corporate income taxes are considered separately in Part II of this monograph, we are here only concerned with the gross amount of profit from interest attributable to stockholders. Thus, the remaining twenty percent of the \$235.8 million in federal interest earned by life insurance companies in 1962, or \$47.4 million, is assumed to benefit the stockholders of these institutions. An examination of available data provides us with a crude check of the above

⁹ Direct investment taxes (such as real estate taxes) are excluded from this figure, but federal income taxes are included. See Ibid.

apportionment procedure. All U.S. Life Insurance Companies together paid \$582 million in federal corporation income taxes in 1962.¹⁰ In addition, two authorities on life insurance company taxation estimate that ninety percent of these taxes were borne out of investment income.¹¹ Ninety percent of \$582 million or, \$524 million would therefore seem to be a reasonable estimate of the amount of federal income taxes paid by life companies out of their net investment income in 1962. During that same year, \$5,044 million was the net investment income of these companies, including \$236.8 million in U.S. Interest. We have estimated here that about eighty percent of investment income or, \$4,035 million, is attributable (tax-free) to policyholders.¹² The remaining \$1,009 million is presumed to be gross investment profit before taxes. Assuming a 52 percent rate of corporate income tax, \$524 million is the estimated federal income tax liability on investment income-- exactly the same as the amount independently estimated above! Some confidence, therefore, may be placed in the allocation of \$189.4 million in federal interest to the policyholders of life

¹⁰Life Insurance Fact Book, 1965, op. cit., p. 56.

¹¹A. F. Whitman and H. E. Thompson, "The Impact of the 1959 Income Tax Act on Stock and Mutual Companies," The Journal of Risk and Insurance, XXXIV (June, 1967), p. 217.

¹²Tax-free in the sense that this sum is a deduction from income for life companies in calculating federal corporate taxes.

companies and \$47.4 million to their stockholders. Note, lastly, that any portfolio expenses attributable to federal interest income has been ignored in the sense that the basis of apportionment between profit and policyholders carried out above is derived from aggregate data using net (of investment expenses) investment income, and applied to gross U.S. Interest. Because the portfolio expenses of U.S. Securities are likely very small, any resulting error is definitely small. Moreover, we have assumed throughout this study that the benefit of the portfolio expense accrues to the beneficiaries of the net interest in proportion to the amount received.

The next step in the analysis of life insurance companies is relatively straightforward. Table 9-1 distributes the \$189.4 million allocated to policyholders according to the ownership of equity in life insurance policies (cash surrender value). The \$47.4 million credited to stockholders is apportioned among the income classes in Table 9-2 based on the ownership of publicly traded stock.

One final note on the treatment given here to life insurance companies should be made. In the following section of this chapter, dealing with property and casualty insurance companies, the mutual and stock companies are analyzed separately. A reader aware of the fact that both forms of organization also exist in the life insurance industry, may question this asymmetry of treatment. The cause is simply that available data on the life insurance industry

TABLE 9-1

DISTRIBUTION OF INTEREST ATTRIBUTED TO LIFE INSURANCE
POLICYHOLDERS ACCORDING TO THE OWNERSHIP OF
EQUITY IN SUCH POLICIES
1962

Income Class	Percent of Equity	Amount of Interest
1. \$ 0- 2,999	5.5	\$10.4 million
2. 3,000- 4,999	8.5	16.1
3. 5,000- 7,499	15.6	29.5
4. 7,500- 9,999	17.0	32.2
5. 10,000-14,999	21.5	40.8
6. 15,000-24,999	13.0	24.6
7. 25,000-49,999	8.5	16.1
8. 50,000-99,999	4.4	8.3
9. 100,000-and over	<u>6.0</u>	<u>11.4</u>
TOTAL	100.0	\$189.4 million

Source: Percentage distribution of insurance equity from Table 2-19. The total amount of interest allocated is obtained from the text.

does not provide separate treatment of stock and mutual companies, as does data for the property and casualty industry.

Property and Casualty Companies

Property and casualty insurance covers that segment of the insurance business that insures against losses due to fire, floods, earthquakes, accidents, riots, robberies, etc. It operates on the principle of pooling risks among large numbers of policyholders so as to spread the cost of losses. Funds for investment by property and casualty companies arise from premiums collected in expectation

TABLE 9-2

DISTRIBUTION OF INTEREST ATTRIBUTED TO STOCKHOLDERS OF
LIFE INSURANCE COMPANIES BASED ON OWNERSHIP OF
PUBLICLY TRADED STOCK
1962

Income Class	Percent of Stock Owned	Amount of Interest
1. \$ 0- 2,999	2.7	\$ 1.3 million
2. 3,000- 4,999	2.9	1.4
3. 5,000- 7,499	6.1	2.9
4. 7,500- 9,999	8.6	4.1
5. 10,000-14,999	10.5	5.0
6. 15,000-24,999	7.7	3.6
7. 25,000-49,999	13.2	6.3
8. 50,000-99,999	12.0	5.7
9. 100,000-and over	<u>35.2</u>	<u>17.1</u>
TOTAL	100.0	\$47.4 million

Source: Percentage distribution of stock ownership from Table 2-6. The total amount of interest allocated is obtained from the text.

of loss claims by policyholders, capital (in stock companies) and reinvestment of portfolio income.

These companies owned about \$5.3 billion of U.S. Securities at the end of 1962.¹³ No direct evidence exists about the total amount of interest earned on these securities during 1962. A figure of \$196.7 million is arrived at by estimating the maturity distribution

¹³No. 3 above. According to Best's Fire and Casualty Aggregates and Averages (New York: Alfred M. Best, 1963), pp. 54-55, 154-155, property and casualty companies held \$5,676 million of U.S. Securities on December 31, 1962. Why this discrepancy should exist is not apparent, except that Best's may include U.S. Agency securities.

of property and casualty company holdings and applying the proper rate of interest to each class of U.S. Security held. The procedure used is the same as that described for estimating the interest earned by life companies, except of course that the maturity distribution of property and casualty companies was used instead.¹⁴

Two major forms of organization, the stock company and the mutual company, account for over ninety-five percent of the property and casualty insurance industry, in terms of assets and the value of premiums written.¹⁵ During 1962, \$52.1 million of the U.S. Interest earned by property and casualty insurance companies was received by mutual companies, and \$144.6 million by stock companies, based on the relative ownership of U.S. Securities.¹⁶

Because there are no stockholders involved in the mutual form of business organization, all of the interest earned by these

¹⁴

See n. 6 for sources of maturity distribution and n. 7 for interest rates used. The mean holdings to which the percentage maturity structure was applied is based on beginning and end of year residual figures derived by deducting life company holdings from total insurance industry holdings.

¹⁵

Best's, op. cit., p. 155.

¹⁶

Ibid., pp. 55, 155. Relative ownership of the \$5,676 million in U.S. Securities indicated as being owned by the industry in Best's, see n. 13 above. This assumes the same portfolio composition of U.S. Securities for stock and mutual companies.

companies is attributable to their policyholders. The only tax paid by mutual property and casualty companies that is likely to be borne out of investment income is the federal corporation income tax.¹⁷ Since this levy is considered separately in Part II, no account of it need be taken here and the total amount of federal interest earned by mutual companies is imputed to policyholders. It should be noted, however, that such a treatment probably does introduce some error into the analysis, insofar as the treatment of mutual companies is concerned. If the corporation income tax is assumed to be borne by capital and is apportioned among the income classes based on stock ownership, that part of the impost falling on mutual companies will be improperly allocated. The probable error introduced by this situation is likely to be small because about twenty percent of the investment income of mutual companies (including U.S. Interest) was paid out as federal income taxes in 1962.¹⁸ And this means that about \$10 million of the \$52 million in interest earned by mutual companies would be involved. Note, too, that this sum will be distributed, but not correctly; this is less of an error than not being distributed at all.

¹⁷ The principal other tax paid is state taxes on gross premium receipts, sort of an excise on insurance premiums that should be attributed to that source of revenue, Best's, p. 155.

¹⁸ Ibid.

As for the \$144.6 million in federal interest earned by stock property and casualty insurance companies, it must be divided between policyholders and stockholders. A Commission on Money and Credit monograph about the property and casualty insurance industry states that about seventy percent of the investment income of stock companies is attributable to stockholders and that thirty percent is used to expand underwriting activities, which presumably benefit policyholders.¹⁹ Using this division as our basis of apportionment, \$101.2 million in interest is imputed to stockholders and \$43.4 million to policyholders.

The \$101.2 million in benefits to shareholders of stock companies must be distributed among the income classes. Ownership of publicly traded stock is the proxy used in Table 9-3 to distribute this sum.

When the amount imputed to policyholders of mutual and stock companies is added together, \$95.5 million is the amount

¹⁹ Property and Casualty Insurance Companies: Their Role as Financial Intermediaries, a monograph prepared for the Commission on Money and Credit, (Englewood Cliffs, N.J.: Prentice-Hall, 1962), p. 33. As usual, the amount attributed to stockholders is gross of taxes because the federal corporate income tax is considered separately, and other taxes paid by property and casualty companies do not likely fall on investment income. See n. 17 above. Nor is any account taken of portfolio expenses because they are assumed to benefit the recipients of net interest in proportion to the amount received.

TABLE 9-3

ALLOCATION OF FEDERAL INTEREST ATTRIBUTED TO THE STOCK-
HOLDERS OF STOCK PROPERTY AND CASUALTY INSURANCE
COMPANIES BASED ON THE OWNERSHIP OF PUBLICLY
TRADED STOCK BY INCOME CLASS
1962

Income Class	Percent of Stock Ownership	Amount of Interest
1. \$ 0- 2,999	2.7	\$ 2.7 million
2. 3,000- 4,999	2.9	2.9
3. 5,000- 7,499	6.1	6.2
4. 7,500- 9,999	8.6	8.7
5. 10,000-14,999	10.5	10.6
6. 15,000-24,999	7.7	7.8
7. 25,000-49,999	13.2	13.4
8. 50,000-99,999	12.0	12.1
9. 100,000-and over	<u>35.2</u>	<u>35.8</u>
TOTAL	100.0	\$101.2 million

Source: Distribution of stock ownership from Table 2-6. The total amount of interest allocated is obtained from the text.

of policyholders' benefit that must be allocated among the income classes. Since property insurance covers losses of property caused by fires, floods, riots, earthquakes, etc., while casualty insurance pertains to the liability claims insured against by owners of automobiles, businesses, homes, etc., that result from the use and ownership of such types of property, the appropriate index of benefit to distribute the interest among policyholders would seem to be the ownership of wealth and property. Because some forty percent of property and casualty insurance written (in value terms) is automobile insurance, forty percent of the \$95.5 million imputed to

policyholders, or \$33.2 million, is allocated among the income classes on the basis of automobile ownership (in value terms) in Table 9-4.²⁰ The remaining \$57.3 million in interest allocable to policyholders is distributed among the income classes in Table 9-5 according to the index of wealth ownership constructed in Table 2-24.

TABLE 9-4

DISTRIBUTION OF INTEREST ATTRIBUTED TO POLICYHOLDERS OF
AUTOMOBILE PROPERTY AND CASUALTY INSURANCE BASED
ON THE GROSS VALUE OF AUTOMOBILES OWNED BY
INCOME CLASS
1962

Income Class	Percent of Automobile Value	Amount of Interest
1. \$ 0- 2,999	6.6	\$ 2.5 million
2. 3,000- 4,999	12.6	4.8
3. 5,000- 7,499	22.0	8.4
4. 7,500- 9,999	23.3	8.9
5. 10,000-14,999	21.6	8.3
6. 15,000-24,999	9.6	3.7
7. 25,000-49,999	2.7	1.0
8. 50,000-99,999	0.8	0.3
9. 100,000-and over	<u>0.8</u>	<u>0.3</u>
TOTAL	100.0	\$33.2 million

Source: Percentage distribution of automobile ownership from Table 2-25. The total amount of interest allocated is obtained from the text.

²⁰ U. S. Dept. of Commerce, Bureau of the Census, Statistical Abstract of the U.S., 1966 (Washington: U.S. Government Printing Office, 1966), p. 480.

TABLE 9-5

DISTRIBUTION OF INTEREST ASSUMED TO BENEFIT POLICY-
HOLDERS OF PROPERTY AND CASUALTY INSURANCE
COMPANIES ACCORDING TO THE OWNERSHIP
OF WEALTH BY INCOME CLASS
1962

Income Class	Percent of Wealth Owned	Amount of Interest
1. \$ 0- 2,999	8.1	\$4.6 million
2. 3,000- 4,999	8.3	4.8
3. 5,000- 7,499	12.8	7.3
4. 7,500- 9,999	14.7	8.5
5. 10,000-14,999	14.3	8.2
6. 15,000-24,999	9.4	5.4
7. 25,000-49,999	9.5	5.4
8. 50,000-99,999	10.1	5.8
9. 100,000-and over	<u>12.7</u>	<u>7.3</u>
TOTAL	100.0	\$57.3 million

Source: Percentage distribution of wealth ownership from Table 2-24.
The total amount of interest allocated is obtained from the text.

CHAPTER X

MUTUAL SAVINGS BANKS

The portfolio of U.S. Government securities owned by mutual savings banks amounted to \$6.1 billion (or two percent of the total debt) at yearend 1962.¹ It is estimated that the mutual savings banks received a total of \$206 million in federal interest during 1962. This interest estimate is derived by assuming that uninsured (by the FDIC) banks earned the same rate of return on U.S. Securities as did insured banks. Insured banks received \$156 million in U.S. interest during 1962, a rate of return of 3.36 percent on their end of year holdings of \$4,639 million in U.S. Securities.² Applying this same rate of return to the \$1,489 million in U.S. Securities owned by uninsured banks at the end of 1962 yields \$50 million as their estimated federal interest income, which when added to the interest earned by insured banks results in the \$206 million figure cited above.³

¹ See Table 2-1.

² Federal Deposit Insurance Corporation, Annual Report for 1962, op. cit., p. 76.

³ Ibid.

In order to allocate the interest received by mutual savings banks among the money income classes it is necessary to first examine the nature of such institutions. Savings banks are properly regarded as financial intermediaries because they stand between the ultimate lenders and borrowers. They transfer ownership of existing funds from their depositors to deficit and equity issuing units in the economy, from whom savings banks acquire assets in the form of mortgages, bonds, stocks, etc. Unlike the operation of commercial banks, no creation of money results from this asset acquisition. Mutual savings banks have no stockholders and borrow virtually none of their funds, deposits and retained earnings being the only real source of investible funds. It is here assumed that the income earned by these banks is attributable entirely to their depositors. About three-fourths of the current income received by mutual savings banks in 1962 was paid directly to depositors in the form of interest (see Table 10-1). The remainder of income (of which U.S. Interest was only a part) was added to reserves or consumed as operating expenses. Even though reserves and expenses do not result in a direct cash flow to depositors, the benefit of income used for such purposes clearly redounds to them. Reserves strengthen the financial position of the banks and operating expenses are incurred so that the bank may carry on its operations, including the paying of interest and providing of service to depositors. In other words,

TABLE 10-1

DISPOSITION OF THE CURRENT OPERATING INCOME OF ALL
MUTUAL SAVINGS BANKS DURING 1962
(Amounts in Millions)

	Amount	Percent of Income
Interest Paid to Depositors	\$1,530.5	75.7
Current Expenses	294.8	14.5
Retained Earnings	167.3	8.2
Taxes	18.9	1.0
Net Non-recurring Deductions ^a	<u>10.8</u>	<u>0.5</u>
TOTAL INCOME	\$2,022.3	100.0

^aThis is a net figure arrived at by considering the following items: Net non-recurring expense \$2.4 million, Net profit on Assets (capital gains) \$34.8 million, Net transfer to valuation reserves \$43.2 million. The first and third items are charges against income (-) while the second is an addition to income (+). The algebraic sum of these non-recurring items is -\$10.8 million, shown in the Table as a net charge against income.

Source: National Association of Mutual Savings Banks, Mutual Savings Banking, May 1963, Facts and Figures supplement, p. 26 and May 1964, p. 27.

because there are no other claimants on the income of savings banks, such as shareholders, all of the benefit of their operations must be credited to owners of savings deposits at these institutions.

Naturally, that part of income that is U.S. Interest is assumed to be similarly attributable.

Table 10-2 distributes the \$206 million in federal interest earned by savings banks in 1962 among the income classes according to the proportion of mutual savings bank deposits owned by each class. Account is not taken of non-individual ownership of these deposits because corporations (except non-profit ones) are not permitted by law to own such deposits, and only \$30 million of the \$41.5 billion in deposit liabilities of mutual savings banks were owned by governmental units (mostly state and local) at yearend 1962.⁴

TABLE 10-2

ALLOCATION OF THE FEDERAL INTEREST RECEIVED BY MUTUAL SAVINGS BANKS ACCORDING TO THE OWNERSHIP OF DEPOSITS AT MUTUAL SAVINGS BANKS
1962

Income Class	Percent of Deposits Owned	Amount of Interest
1. \$ 0- 2,999	15.6	\$ 32.1 million
2. 3,000- 4,999	12.1	24.9
3. 5,000- 7,499	12.2	25.1
4. 7,500- 9,999	18.9	39.1
5. 10,000-14,999	17.0	35.0
6. 15,000-24,999	13.7	28.2
7. 25,000-49,999	4.9	10.1
8. 50,000-99,999	3.9	8.0
9. 100,000-and over	<u>1.7</u>	<u>3.5</u>
TOTAL	100.0	\$206.0 million

Source: Percentage distribution of ownership of deposits is from Table 2-12. The total amount of interest allocated is obtained from the text above.

¹⁰Ibid., p. 122.

CHAPTER XI

SAVINGS AND LOAN ASSOCIATIONS, DEALERS AND BROKERS, CORPORATE PENSION TRUST FUNDS AND NON-PROFIT GROUPS

The total holdings of U.S. Securities by these four categories of ownership was \$12.7 billion on December 31, 1962, 4.2 percent of the total outstanding debt.¹ This figure represents a rise from the \$6.6 billion or 2.4 percent held by these four categories (lumped together in Treasury figures under the heading "Other"), at the end of 1945.² The breakdown of ownership among the four, at yearend 1962, is as follows: savings and loan associations, \$5,563 million; dealers and brokers, \$4,268 million; corporate pension trust funds, \$2,354 million, the residual \$515 million is attributed to non-profit organizations.³

¹ Table 2-1.

² Ibid.

³ Statistical Abstract, 1964, op. cit., pp. 293, 404, 463. Federal Reserve Bulletin, March 1963, p. 364. About one percent of savings and loan holdings and one-tenth of one percent of pension trust holdings are guaranteed issues, whose interest is excluded from discussion above.

Interest Estimates

Because no direct evidence about how much interest was earned on U.S. Government issues by each of these four categories of holder is available, it is necessary to make an estimate of the amounts. Except for non-profit organizations, this is accomplished by first applying the percentage maturity distribution for each category, derived from the Treasury's Survey of Ownership of the Debt,⁴ to the average total debt held by each category during 1962. Average holdings are the mean of yearend 1961 and 1962 holdings for savings and loan associations (\$5,386 million) and corporate pension trust funds (\$2,264 million). For dealers and brokers, the average that is used is the mean of monthly figures for 1962 (\$3,320 million) because of the volatility of these holdings. Average holdings of non-profit organizations (\$1,180 million) is a residual arrived at by deducting the average holdings of savings and loan associations, pension trust funds and dealers and brokers from the average (mean of yearend 1961 and 1962) holdings of the Treasury category "Other."⁵ The estimated amount of each type of security,

⁴U. S. Treasury Bulletin, February 1952, p. 63, February 1953, p. 70.

⁵Statistical Abstract, 1964, op. cit., pp. 293, 404, 463 and Federal Reserve Bulletin, March 1953, op. cit., p. 364. The average holdings of non-profit organizations is so much larger than the yearend holdings because the figure is a residual and there is a big difference between yearend and average holdings of dealers and brokers (\$4,268 million versus \$3,320 million).

held by each category is then multiplied by the appropriate rate of interest in order to arrive at the total amount of interest earned by each category.⁶ This procedure results in the following estimated amounts of U.S. Interest earned during 1962: savings and loan associations, \$201.4 million; dealers and brokers, \$99.1 million; and corporate pension trust funds, \$79 million. The amount of interest attributable to non-profit organizations is more difficult to ascertain because no evidence about the maturity structure of their holdings is given in the Treasury survey or elsewhere; nor is there any direct evidence about the amount of interest earned. If all non-profit holdings were bills, the interest earned (based on average holdings) during 1962 would have been \$33.5 million; if all non-profit holdings were in the form of bonds, a total of \$46.6 million in interest would have been earned. Because most non-profit organizations are like investment trusts (foundations, universities, etc.), the holdings are more likely to be long-term in character than short. A figure of around \$40 million seems reasonable, but it must be stressed that this is merely a guess. Table 11-1 shows the total amount of interest allocated to savings

⁶The interest rates used are the same as elsewhere in this study for the purpose of estimating interest: bills, 2.84 percent (mean of 3 and 6 month bill rate); bonds, 3.95 percent; notes, 3.57 percent; and certificates, 3.01 percent, all from the Federal Reserve Bulletin, July 1963, p. 974.

TABLE 11-1
 TOTAL INTEREST EARNED BY "OTHER" OWNERS
 OF FEDERAL DEBT DURING 1962

Owner Category	Amount of Interest
Savings and Loan Assn's	\$201.4 million
Dealers and Brokers	99.1
Corporate Pensions	79.0
Non-Profit	<u>40.0</u>
TOTAL	\$419.5 million

and loan associations, dealers and brokers, corporate pension trust funds and non-profit organizations.

Allocation Among the Income Classes

Savings and Loan Associations

The allocation of the \$201.4 million in federal interest earned by savings and loan associations is carried out in Table 11-2, where the index of distribution employed is the ownership of deposits at these institutions. Because savings and loan associations are organized overwhelmingly on a mutual basis, similar to mutual savings banks, all of the interest benefit is credited to depositors. No deduction for income taxes is made due to the fact that taxes are considered separately in Part II of this study (only about two percent of the gross income of savings and loan's was paid out as

TABLE 11-2

ALLOCATION OF THE FEDERAL INTEREST EARNED BY SAVINGS AND
LOAN ASSOCIATION ACCORDING TO DEPOSIT OWNERSHIP
1962

Income Class	Percent of Savings and Loan Deposits Owned	Amount of Interest
1. \$ 0- 2,999	17.5	\$35.2 million
2. 3,000- 4,999	12.5	25.2
3. 5,000- 7,499	16.9	34.0
4. 7,500- 9,999	15.3	30.8
5. 10,000-14,999	17.7	35.7
6. 15,000-24,999	10.8	21.8
7. 25,000-49,999	6.6	13.3
8. 50,000-99,999	1.3	2.6
9. 100,000-and over	<u>1.4</u>	<u>2.8</u>
TOTAL	100.0	201.4 million

Source: Ownership of deposits from Table 2-12. The total amount of interest allocated is from Table 11-1.

taxes in 1962.)⁷

⁷U.S. Savings and Loan League, Savings and Loan Fact Book 1965, pp. 99, 103-104. The reason for the low level of taxes is that savings and loan associations, like mutual savings banks, are permitted to make large tax-free additions to reserves out of net income, because they have no capital cushion to protect depositors.

Interestingly, if stockholders are assumed to bear the burden of the corporation income tax, a distribution of that tax among the income classes based on ownership of stock would bypass that part of the tax falling on participants in mutual organizations, like savings and loan's, mutual savings banks and some insurance companies. Fortunately, however, because they were all lightly taxed in 1962, the error would be small. See above p. 190.

Dealers and Brokers

The federal interest earned by dealers and brokers, \$99.1 million, is allocated among the income classes in Table 11-3, according to the ownership of equity in partnerships and closely held corporations in which no member of the consumer unit played a role in management. It is assumed that the nature of the securities business is such that this index of distribution is a more accurate indicator of the dispersion of control of dealers and brokers than are the alternative indices available to us, ownership of publicly traded stock and equity in proprietorships, partnerships and corporations managed by the consumer unit surveyed. The latter would tend to be the smallest firms in the economy, the former the largest. Attributing the interest benefit to the owners of these firms assumes that they profit from it, rather than their customers. However, even if one were to attribute the benefit to customers, the proper index of distribution would be ownership of publicly traded stock (because investors in securities markets are the customers), which is not very different from the index used under the present assumption (cf. Tables 2-6 and 2-7). No deduction, as usual, is made for income taxes because of the separate treatment they are accorded in Part II.

Corporate Pension Funds

The \$79 million in interest earned by corporate pension trust

TABLE 11-3

DISTRIBUTION OF FEDERAL INTEREST EARNED BY DEALERS AND BROKERS
ACCORDING TO OWNERSHIP OF PARTNERSHIPS AND CLOSELY-
HELD CORPORATIONS (NOT MANAGED)
1962

Income Class	Percentage Ownership of Equity	Amount of Interest
1. \$ 0- 2,999	0.0	\$ 0 mil.
2. 3,000- 4,999	11.0	10.9
3. 5,000- 7,499	3.2	3.2
4. 7,500- 9,999	7.2	7.1
5. 10,000-14,999	3.5	3.5
6. 15,000-24,999	8.6	8.5
7. 25,000-49,999	3.7	3.7
8. 50,000-99,999	24.7	24.5
9. 100,000-and over	<u>38.1</u>	<u>37.7</u>
	100.0	99.1 mil.

Source: Percentage distribution of equity ownership is from Table 2-7, while the total amount of interest allocated is from Table 11-1.

funds is allocated \$21 million to current pension beneficiaries and \$58 million to owners of equity in pension and retirement plans (non-governmental). The basis for this division is the fact that current (1962) recipients of pension plan benefits cannot be attributed with the entire amount of interest because investment income was not required to cover any part of the disbursements made in 1962. Current non-investment income (contributions) of corporate pension plans was \$3,913 million in 1962, while disbursements (benefit

payments and expenses) totaled only to \$1,437 million.⁸ Investment income from all sources was \$1,443 million, which when added to non-investment income yields total receipts of \$5,356 million.⁹ The \$79 million in U.S. interest earned by these pension trusts in 1962 represents 1.5 percent of their total income that year. Assuming a pool of funds treatment of income, 1.5 percent of current disbursements or, \$21 million, is attributable to current pension recipients. 1.5 percent of undistributed income or, \$58 million, is allocable according to the ownership of equity in pension plans. Table 11-4 distributes the \$21 million according to the distribution of social insurance benefits by income class, which is taken as approximating the distribution of private pension plan benefits. Table 11-5 distributes the \$58 million among the income classes based on the ownership of equity in pension and retirement plans. Taxes do not enter into the analysis of corporate pension trust funds because virtually all of them enjoy a tax-exempt status.

Non-Profit Organizations

The estimated \$40 million in interest earned by non-profit organizations during 1962 is distributed in Table 11-6 according to consumption by income class. This method of allocation derives from the assumption that individuals benefit from the non-profit

⁸ Statistical Abstract, 1964, op. cit., p. 293.

⁹ Ibid.

TABLE 11-4

ALLOCATION OF FEDERAL INTEREST EARNED BY CORPORATE PENSION
TRUST FUNDS AND ATTRIBUTABLE TO CURRENT PENSIONERS
ACCORDING TO RECEIPT OF SOCIAL INSURANCE
1962

Income Class	Percent of Social Insurance Benefits Received	Amount of Interest
1. \$ 0- 2,999	46.4	\$ 9.7 million
2. 3,000- 4,999	22.2	4.7
3. 5,000- 7,499	13.5	2.8
4. 7,500- 9,999	8.3	1.7
5. 10,000-14,999	7.9	1.7
6. 15,000-24,999	1.2	0.3
7. 25,000-49,999	0.3	0.1
8. 50,000-99,999	0.1	0.0
9. 100,000-and over	<u>0.1</u>	<u>0.0</u>
TOTAL	100.0	\$21.0 million

Source: Percentage distribution of social insurance benefits is from Table 2-5. Total interest allocated is from Table 11-1.

sector in proportion to the benefit they receive from the market economy. No consideration of taxes is necessary because non-profit organizations are tax-exempt.

TABLE 11-5

ALLOCATION BY INCOME CLASS ACCORDING TO OWNERSHIP OF
PENSION PLAN EQUITY OF FEDERAL INTEREST EARNED BY
CORPORATE PENSION TRUST FUNDS AND ATTRIBUTABLE
TO THE OWNERS OF EQUITY IN SUCH FUNDS
1962

Income Class	Percentage Ownership of Equity in Pension Plans	Amount of Interest
1. \$ 0- 2,999	0.2	\$ 0.1 million
2. 3,000- 4,999	4.3	2.5
3. 5,000- 7,499	18.1	10.5
4. 7,500- 9,999	22.0	12.8
5. 10,000-14,999	26.2	15.2
6. 15,000-24,999	20.5	12.0
7. 25,000-49,999	4.9	2.8
8. 50,000-99,999	2.2	1.2
9. 100,000-and over	<u>1.6</u>	<u>0.9</u>
TOTAL	100.0	\$58.0 million

Source: Percentage distribution of ownership of pension plan equity is from Table 2-22. Total interest allocated is from Table 11-1.

TABLE 11-6

DISTRIBUTION OF FEDERAL INTEREST EARNED BY
NON-PROFIT ORGANIZATIONS ACCORDING
TO CONSUMPTION BY INCOME CLASS
1952

Income Class	Percent of Consumption	Amount of Interest
1. \$ 0- 2,999	10.8	\$4.3 million
2. 3,000- 4,999	14.6	5.8
3. 5,000- 7,499	22.0	8.9
4. 7,500- 9,999	21.1	8.4
5. 10,000-14,999	18.7	7.5
6. 15,000-24,999	6.5	2.6
7. 25,000-49,999	2.3	0.9
8. 50,000-99,999	1.8	0.7
9. 100,000-and over	<u>2.2</u>	<u>0.9</u>
TOTAL	100.0	\$40.0 million

Source: Percentage distribution of consumption is from Table 2-13.
Total interest allocated is from Table 11.1

CHAPTER XII

SUMMARY OF INTEREST ALLOCATION

Table 12-1 summarizes the allocation by income class of the interest payments on the debt made during 1962 that is carried out in detail in Chapters 3 through 11. The amount of interest attributed to each income class from each category of debt ownership, as well as the total interest credited to each class, is presented. The two alternative assumptions about the distribution of implicit interest on business-owned demand deposits (E, that owners of firms benefit; C that consumers benefit) is presented in the Commercial Banks column, as well as in the Total column of 12-1. Note that while the effect of the alternative assumptions in altering the relative distribution of interest flowing through the commercial banks is noticeable in the Commercial Banks column, the impact on the overall distribution of interest in the Total column is minimal. This is due to the fact that the amount of interest subject to the alternative assumption (\$317.9 million) is swamped in its effect on the total by the remaining seven billion dollars in interest that is allocated

among the income classes. Such will be the result whenever an alternative assumption affects only a small proportion of the total being allocated, as we shall see again in the allocation of the tax burden.

Of the \$8,968 million in interest estimated to have been paid in 1962 to the categories of ownership shown in Table 12-1, \$7,306 million is actually allocable among the income classes. The rest is attributed to the U.S. Government and to foreign-owned bank deposits. The reader may wonder how the \$8,968 million interest estimate in Table 12-1 compares with reported Treasury interest payments in 1962. About \$9,500 million is the amount reported by the Treasury as paid in interest on the national debt in 1962.¹ This includes accrued as well as cash payments, and also, interest payments to the U.S. Government Trust funds. The discrepancy between this figure and the estimate arrived at in this study is not as large as it might first appear to be. About \$15.3 billion of debt directly held by foreigners (Table 2-1) is entirely ignored in the present interest allocation because we are here concerned only with the effects on the United States income distribution. And the amount of interest paid by the Treasury on that sum is likely large enough to eliminate the difference between reported interest payments by the Treasury and the estimated amount presented in Table 12-1.

¹ Statistical Abstract, 1964, op. cit., p. 403. Mean of fiscal years 1962 and 1963.

Assuming an interest rate of three percent, which was about the rate paid in 1962 by the Treasury, \$450 million in interest is attributable to foreigners and the discrepancy between actual and estimated interest payments virtually disappears.

TABLE 12-1

SUMMARY OF INTEREST ALLOCATION

CATEGORIES OF OWNERSHIP (Amounts in Millions)							
Income Class	Commercial C ¹	Banks E ²	Individuals	U.S. Govt. Trusts	Federal Reserve Banks	Corpo- rations	
1. \$ 0- 2,999	\$212.3	192.4	\$201.0	\$345.0	\$18.8	\$ 11.3	
2. 3,000- 4,999	207.8	172.9	205.1	174.3	25.5	12.2	
3. 5,000- 7,499	277.9	231.5	195.8	122.1	39.6	25.6	
4. 7,500- 9,999	263.0	222.8	248.5	87.7	35.8	36.1	
5. 10,000-14,999	303.9	277.8	272.0	91.2	32.6	44.0	
6. 15,000-24,999	176.6	180.9	275.3	29.8	11.3	32.3	
7. 25,000-49,999	173.5	207.7	156.2	15.4	4.0	55.3	
8. 50,000-99,999	209.6	251.2	342.6	7.8	3.1	50.3	
9. 100,000-and over	<u>248.3</u>	<u>335.7</u>	<u>113.8</u>	<u>9.8</u>	<u>3.8</u>	<u>152.2</u>	
TOTAL ALLOCATED	\$2,072.9	\$2,072.9	\$2,010.3	\$883.1	\$174.5	\$419.3	
U.S. GOVT. AND FOREIGN	<u>66.1</u>	<u>66.1</u>	<u> </u>	<u>758.4</u>	<u>837.5</u>	<u> </u>	
	\$2,139.0	\$2,139.0	\$2,010.3	\$1,641.5	\$1,012.0	\$419.3	

	State & Local Govt.	Insur- ance Co's.	Mutual Savings Banks	Other	TOTAL Assumption C ¹	Assumption E ¹
—	\$ 91.3	\$ 21.5	\$ 32.1	\$49.3	\$ 982.6	\$ 962.7
	104.1	30.0	24.9	49.1	833.0	798.1
	143.4	54.3	25.1	59.4	942.2	895.8
	132.4	62.4	39.1	60.8	956.8	926.6
	117.1	72.9	35.0	63.6	1,032.3	1,006.2
	49.9	45.1	28.2	45.2	693.7	698.0
	20.4	42.2	10.1	20.8	497.9	532.1
	12.9	32.2	8.0	29.0	695.5	737.1
	<u>15.4</u>	<u>72.9</u>	<u>3.5</u>	<u>42.3</u>	<u>662.0</u>	<u>749.4</u>
	\$686.9	\$433.5	\$206.0	\$419.5	\$7,306.0	\$7,306.0
	<u>\$686.9</u>	<u>\$433.5</u>	<u>\$206.0</u>	<u>\$419.5</u>	<u>\$1,662.0</u>	<u>\$1,662.0</u>
					\$8,968.0	\$8,968.0

TABLE 12-1 (Continued)

¹The E and C in the Commercial Banks and Total column refer to the alternative assumptions under which implicit interest on business owned demand deposits (\$319.7 million) is allocated. E attributes it to the owners of firms, C to the customers of firms.

²Other consists of Savings and Loan Associations, Dealers and Brokers, Non-Profit Organizations and Corporate Pension Trust Funds.

PART II

ALLOCATION OF THE TAX BURDEN

CHAPTER XIII

TAX BURDEN ALLOCATION

In this section we allocate the 1962 federal tax burden among the nine income classes. The way in which the total tax burden is distributed among the income classes is assumed to indicate the way in which that fraction of the taxes used to pay interest is distributed. Only those federal taxes whose revenues could be used to pay interest on the debt in 1962 are considered, viz., the individual and corporate income tax, customs and excise taxes, gift and estate taxes and employment (payroll) taxes, except for those excise taxes earmarked for the Highway Trust Fund (the gasoline and diesel oil taxes, excises on tires, trucks, etc.), and those payroll taxes covering the Old Age, Survivors and Disability Insurance System (social security) and the Railroad Retirement System. Why these taxes should be omitted requires some explanation. From Table 5-2 in the chapter dealing with U.S. Government Trust Funds, we see that the tax receipts of the Highway Trust Fund fell short of expenditures in 1962. No part of the excise taxes reserved for this fund could have been

used by this trust fund to buy additional securities from the Treasury and thereby make the tax revenues available for payment of interest on the debt. As for the social security and railroad trust funds, both of them expended more in paying out benefits than they received from payroll taxes during 1962 (Table 5-2), also foreclosing the possibility that any part of these taxes could have found their way into the general fund of the Treasury and be used to service the debt. Again referring to Table 5-2, only the Civil Service Retirement and Unemployment Trust Funds had payroll tax revenues in excess of disbursements, with the resulting surplus being channeled back to the Treasury in the form of security purchases and thus made available for interest payments on the debt.¹ Because only the amount of such surplus could have been so used, only the surplus is considered to be part of the allocable tax burden, \$710 million from Civil Service Retirement and \$260 million from the Unemployment Insurance Trust Funds.

Table 13-1 shows each tax source considered in the tax allocation procedure and the amount of revenue derived from each. The fact that some part of the interest payments on the national debt is financed out of new borrowing by the Treasury is considered in the final chapter. \$80,438 million is the total tax burden in Table 13-1 that must be distributed among the income classes.

¹Federal employment (payroll) taxes are only used to finance the operations of the four trust funds mentioned above: social security, railroad retirement, civil service (federal) retirement and unemployment insurance.

TABLE 13-1

FEDERAL TAX REVENUES FOR INTEREST PAYMENTS
1962

Tax	Amount
1. Individual Income Tax	\$43,700 million
2. Corporation Income Tax	22,700
3. Customs and Excise Taxes ^a	11,044
4. Gift and Estate Taxes	2,024
5. Payroll Taxes ^b	<div style="text-align: right; margin-right: 20px;">970</div> \$80,438 million

^aExcludes excise taxes earmarked for Highway Trust Fund.

^bConsists of Civil Service Retirement and Unemployment Insurance Trust Funds' surplus of tax receipts over expenditures.

Source: 1. U.S. Department of Commerce, Survey of Current Business, April 1964, p. 9. Compare the figure given in the table with \$46,580 million, which is the mean of individual income tax receipts for fiscal 1962 and 1963 shown in the Statistical Abstract 1964, op. cit., p. 392. This discrepancy is unexplained and unimportant because it only affects the total amount of tax being allocated, not its relative distribution. The figure used in the table above is chosen because it comes from the same source as the distribution of the individual income tax by income class.

2. U.S. Department of Commerce, Survey of Current Business, July 1966, p. 21. A discrepancy like that noted in 1. above appears here, too. The figure from the Statistical Abstract, ibid., is \$21,051 million, which is also the mean of fiscal 1962 and 1963. Either figure could have been used because the index of allocation used in distributing the corporation income tax is derived in the present monograph. Again, only the absolute amount allocated would be affected.

3. Statistical Abstract 1964, op. cit., pp. 392, 395; and Table 5-2 in this study. Figures used are mean of fiscal 1962 and 1963.

4. Ibid., p. 395. Mean of fiscal 1962 and 1963.

5. Table 5-2, Civil Service Retirement Trust Fund Surplus, \$710 million, Unemployment Insurance Trust Fund Surplus, \$260 million.

CHAPTER XIV

THE INDIVIDUAL INCOME TAX

The allocation of the federal individual income tax among the income classes is quite straightforward. After a brief explanation of why the series of distribution used was chosen the tax is allocated among the income classes according to Department of Commerce data. The impact of this tax is assumed to coincide with its ultimate incidence, i.e., no forward or backward shifting of the tax is considered.

For a number of years, the Internal Revenue Service has published extensive statistical information about individual income tax payments in its Statistics of Income series, published annually.¹ Unfortunately, all of this data is classified by Adjusted Gross Income (AGI) classes. AGI is a concept of income that substantially differs from personal or money income, the most common definitions of income used in studies of the size distribution of income.²

¹U.S. Treasury Department, Internal Revenue Service, Statistics of Income, 1962 Individual Income Tax Returns (Washington: U.S. Government Printing Office, 1965).

²Personal income generally differs from money income in that the former includes imputed income.

Excluded from AGI are such vital components of income as transfers, gifts and inheritances, interest on state and local bonds, part of dividend income and all imputed income.³ In addition, AGI results from deducting things like business expenses of earning income, and one-half of net long-term capital gains.⁴ To attempt to convert tax liabilities distributed according to AGI into a distribution based on money or personal income would be quite a task. Merely ascertaining the amount of exemptions and deductions for each AGI class is not enough because the tax payers in each class must then be reclassified according to the new, broader, definition of income. B. Okner has done all of this with the aid of an electronic computer, for the years 1962 and 1965.⁵ But still this data is not useful for our purposes because the basic unit of classification is the tax return (or taxpayer), not the consumer unit which is used throughout this study. Thus, persons whose income is so low as not to have filed a return will be entirely excluded from the data. And family or consumer unit income will

³For a discussion of the meaning of adjusted gross income see Statistics of Income, 1962 Individual Income Tax Returns, op. cit., p. 26; and Joseph Pechman, Federal Tax Policy (Washington: Brookings Institutions, 1966), p. 52.

⁴Ibid.

⁵B. Okner, Income Distribution and The Federal Income Tax (Ann Arbor: Institute of Public Administration, University of Michigan, 1966).

be split up among individual income earners, to the extent that each files a separate return, thereby greatly increasing the number of lower income returns. For example, in 1962 there were 57.9 million consumer units and 62.7 million tax returns filed.⁶ Finally, excluded parts of income such as transfers and state and local bond interest would not be taken into account at all in setting up the income classes. All in all, the problems posed by the Statistics of Income data are too great to justify their use and recourse must be had to other sources in order to distribute the individual income tax burden. Fortunately, the U.S. Department of Commerce has published for a number of years the distribution of federal individual income tax liabilities by personal income class.⁷ The concept of personal income differs from the money income concept used throughout this paper chiefly in that the former includes the imputed income from owner-occupied homes, and food and fuel consumed on farms.⁸ This difference does introduce some incomparability, but not enough to bar use of this data. Table 14-1 presents the allocation of the individual income tax burden by income class taken bodily from the Commerce Department's series.

⁶Projector and Weiss, op. cit., p. 151 and Statistics of Income, op. cit., p. 3.

⁷U.S. Department of Commerce, Survey of Current Business, April 1964, p. 9.

⁸Ibid., April 1963, p. 14.

TABLE 14-1
ALLOCATION OF PERSONAL INCOME TAXES
1952

Income Class	Amount (millions)	Percent
1. \$ 0- 2,999	\$ 771	1.8
2. 3,000- 4,999	2,812	6.4
3. 5,000- 7,499	6,964	15.9
4. 7,500- 9,999	6,776	15.5
5. 10,000-14,999	8,159	18.6
6. 15,000-24,999	7,422	16.9
7. 25,000-49,999	5,325	12.2
8. 50,000-99,999	5,471	12.5
9. 100,000-and over	<u>5,471</u>	<u>12.5</u>
TOTAL	\$43,700	100.0

Source: U.S. Department of Commerce, Survey of Current Business, April 1964, p. 9.

CHAPTER XV

THE CORPORATION INCOME TAX

Unlike the individual income tax, where the point of tax impact is regarded as being identical with the point of incidence, the question of whether or not corporations bear the ultimate burden of the corporate income tax is not so easily resolved. When a tax is subject to subsequent market transactions it becomes possible for the final burden to rest someplace other than the intended place. Such is the case with the corporate income tax, because either prices of the products that corporations sell may be raised or the prices of the inputs that they buy may be reduced in an attempt to throw off the burden of the tax. Generally speaking, the wider the impact of a tax the more likely is shifting because most people (or firms) will be affected by the tax and attempt to compensate for it via market transactions, and there will be few untaxed activities or goods that can serve as substitutes. On the other hand, the more direct a tax the less likely is shifting because of limited market opportunities, i.e., the point of impact is close enough to individual wealth and income so that further

market transactions do not intervene to permit an opportunity to shift. The individual income tax is very direct in this sense, but shifting might be possible, for example, if trade unions demanded higher wages in response to higher taxes and actually achieved this goal. The widespread impact of the individual income tax increases the possibility of shifting, but its directness is almost universally regarded as the controlling factor that prevents shifting. Because the corporation income tax is both widespread in its impact and subject to substantial further market transactions, the possibility of its being shifted forward to consumers in the manner of a sales tax or, backward to labor like a payroll levy is very real and controversial.

If firms are equating marginal revenue to marginal cost in order to maximize profits, and the tax does not fall on that element of profit that is a necessary return to capital, then the profit maximizing price and output will be the same before and after the imposition of the tax. This is because neither marginal cost or marginal revenue has been affected. Even if the tax falls on the necessary reward of capital, no forward or backward shifting is possible in the short-run because normal profit is a fixed cost and thus plays no role in price or output decisions in the short-run. The assumption that short-run forward shifting of the corporation income tax occurs derives basically from theories of the firm that

do not postulate profit maximization.¹ Wide segments of the economy, especially the corporate sector, are believed to be characterized by complex, interdependent oligopoly pricing in which significant market power is possessed. This power is not fully exercised, out of fear of government antitrust policies or to forestall entrance by competitors. The introduction or increase in the corporation income tax causes these firms, it is argued, to utilize their market power in an attempt to recover part of their tax liability by raising product prices. Firms may seek to maintain only a target level of profits or rate of return or (what amounts to almost the same thing) they seek to cover average total costs for some normal level of output plus some standard profit mark-up. Taxes are sometimes thought to be included in such cost calculations, it then being assumed that entrepreneurs know the level of income tax liability that they will incur at a given level of output. This latter assumption attributes a kind of knowledge and foresight to businessmen that the adherents of full-cost pricing usually deny in other connections, e.g., they usually assert the impossibility of knowing what marginal cost and

¹An excellent brief discussion of the alternative theories underlying the assumptions about the shifting of the corporate income tax appears in R. Goode, "Rates of Return, Income Shares, and Corporate Tax," in M. Krzyzaniak, ed., Effects of Corporation Income Tax (Detroit: Wayne State University Press, 1966), pp. 209-11, and also in M. Krzyzaniak and R. A. Musgrave, The Shifting of The Corporation Income Tax (Baltimore: The Johns Hopkins University Press, 1963), Chapter I.

marginal revenue are in the real world and hence the need for "rules of thumb" in setting prices. What exactly determines the mark-up used or why such policies must result in prices less than the profit-maximizing solution (so as to leave a margin for upward adjustment and forward shifting) is not usually explained, though, by those advocating such a view. All assumptions about short-run forward shifting also must assume the appropriate macro-level fiscal and monetary adjustments that permit this cost-push type of inflation. Up to this point, the discussion has been entirely in terms of a period of time short enough to permit the assumption of an unchanged capital stock. Naturally, if the corporation income tax is not shifted in the short-run, the return to corporate capital will be reduced and long-run effects on the rate of investment and stock of capital may ensue. Because they found full (or greater) shifting of the tax, Musgrave and Krzyzaniak concluded that it had no effect on investment.²

If the rate of return is reduced in the short-run but entrepreneurs come to believe that the normal (minimum acceptable, risk adjusted) rate of profit is permanently lowered as a result of the tax, and no untaxed areas of investment exist, there may be little effect on the rate of investment.

²Krzyzaniak and Musgrave, op. cit., p. 66.

Slitor points out that the existence of a non-corporate sector may not be the attractive tax haven that first impressions might convey, because of the presence of the personal income tax and the need to carry on many businesses in the corporate form of organization.³ This differential burden thesis, coupled with the necessity of the corporate form of business, is consistent with the secular rise in the relative importance of the corporate form of enterprise, and with the increased use of the cheaper debt capital relative to equity capital.⁴ Firms seem to prefer to adjust to the tax rather than eschew the corporate sector altogether. Adjust may mean shift, but it can also mean changes in the debt/equity ratio, a reduction in capital formation, or a more intensive use of capital. Naturally, changes in the input mix and flow of investment are long-run adjustments, presumably resulting from the tax not being shifted (or only partly shifted) in the short-run. A reduction in the rate of investment in response to the tax not being shifted in the short-run would lower the capital/output ratio and raise the pre-tax rate of return on capital.⁵ If this occurred

³R. Slitor, "Corporate Tax Incidence: Economic Adjustments to Differentials Under a Two-Tier Tax Structure," in M. Krzyzaniak, ed., op. cit., pp. 191-197.

⁴Goode, op. cit., p. 229.

⁵The tax differential notion points up the fact, sometimes overlooked in discussions on the subject, that equalization of the rate of return between the corporate and non-corporate sectors does not require a doubling of the pre-tax rate of return (with a fifty percent corporate tax rate).

throughout the economy, the nature of the aggregate production function would determine the effect on relative shares. A rise in capital's before-tax share of income would mean that some part of the tax burden was shifted to non-capital factors of production (mostly labor) in the long-run. The fair constancy of the property income share in the U.S. could be taken as evidence that the corporation income tax is borne by capitalists as a whole, if it were possible to demonstrate that other forces, such as the nature of technical progress, would not have otherwise reduced the share of capital in the long-run.

It should be clear from the preceding discussion that a priori reasoning alone cannot indicate how the burden of the federal corporation income tax should be distributed as between the owners of corporate capital and consumers or workers. Resort must be had to empirical information.

Empirical Studies of Corporate Tax Incidence

In their study of the incidence of the corporation income tax Musgrave and Krzyzaniak (M-K for short) found at least 100 percent, and possibly as high as 134 percent, forward shifting.⁶ The lower figure represents the degree of shifting indicated when the effects of price inflation on rates of return is allowed for in their model.

⁶ M. Krzyzaniak and R. A. Musgrave, op. cit., pp. 45, 54-55.

M-K's standard model covers the period 1935-1942 and 1948-1959, for all corporate manufacturing, with the capital base defined as net worth plus debt, and with profits calculated to include interest on debt.⁷ Their results have been subject to a barrage of criticism in recent years and few economists appear willing to accept them.⁸ Criticism has centered around the failure of the M-K model to properly take into account changes in the overall level of economic activity that could have caused the pre-tax rate of return on corporate capital to rise concomitantly with the rise in corporate tax rates, and hence which could account for the increase in the pre-tax rate of return on capital that is attributed to forward shifting by M-K. Another difficulty with their findings is their inability to reconcile more than full forward shifting in the short-run with a constant profits share of income in manufacturing.⁹ The plausibility of 100 percent or greater forward shifting is also undermined by the very low rates of return that are implied, ceteris paribus, in

⁷The inflation adjusted estimate uses a capital base that includes only equity capital.

⁸See Goode's and Slitor's articles mentioned above, in M. Krzyzaniak, ed., Effects of Corporation Income Tax, op. cit. Included are M-K's reply and rejoinders by Goode and Slitor. Other criticisms of M-K can be found in J.G. Cragg, A. C. Harberger and P. Mieszkowski, "Empirical Evidence on the Incidence of the Corporation Income Tax," Journal of Political Economy, LXXV, (December, 1967), pp. 811-82.

⁹M. Krzyzaniak and R. A. Musgrave, op. cit., p. 65.

the absence of a tax that was shifted forward.¹⁰ The conclusion of M-K that all (or more) of the corporation income tax is shifted forward almost instantaneously by upward price adjustments conflicts with the idea that it is the differential burden of the tax that is crucial. An attempt to equalize the rate of return on corporate as compared to non-corporate income would require that only the differential be shifted. One hundred percent (or 134 percent) shifting seems to imply that the response of entrepreneurs to the tax (or an increase in it) is to attempt to recoup the entire burden of corporate income taxation, and indeed to improve their profit position relative to what it was prior to the tax. Such a course of events would establish the corporate sector as a virtual tax-free sanctuary for investment that would set in motion powerful forces making for large scale capital movements into the corporate sector or, substantial increases in rent, interest and other forms of non-corporate profits income.¹¹ This does not seem to be an accurate description of the effects of the corporation income tax.

The fact that the most prominent exponents of forward shifting have not demonstrated their case to the satisfaction of their fellow economists does not mean that their view of the world is necessarily

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Slitor, op. cit., pp. 166-167. For example, a 50 percent tax shifted forward 133 percent means that an observed rate of return of 20 percent would have been only $6\frac{2}{3}$ percent without the tax.

¹¹

Slitor, op. cit., pp. 191-192.

incorrect. Perhaps they just have been unable to separate econometrically the reactions to the tax from the welter of other forces affecting corporate profits.

Robert J. Gordon, in a recent econometric analysis of the short-run shifting of the tax in corporate manufacturing concluded that, "corporations suffered the full burden of the tax during the period of study, 1925-1962."¹² Like M-K, he uses time series regressions to determine the degree of shifting but his independent variables are derived from a full-blown model of firm behavior that postulates mark-up pricing. One of the independent variables is a tax variable, the coefficient of which indicates the degree of shifting. The dependent variable is profits, expressed alternatively as a rate of return concept and as an income share concept. M-K do not develop a formal model from which their estimating equations are drawn. Instead they toy with various plausible independent variables and select those that yield the best fit. Criticism of M-K has revolved around their choice of independent variables. Moreover, the non-linear estimating procedure used by Gordon is claimed to be superior to the instrumental variable technique employed by M-K.¹³ Using their own equation (for the same time period) Gordon shows

¹²Robert J. Gordon, "The Incidence of the Corporation Income Tax in U.S. Manufacturing, 1925-1962," American Economic Review, LVII (September, 1967), p. 733.

¹³Ibid., pp. 738-39, 741-44.

that the degree of shifting is reduced from 134 percent to 92 percent by merely substituting the nonlinear for the instrumental variable method.¹⁴ Examination of the coefficient of the independent tax variable in Gordon's model shows it to be .110 when profit is expressed as a rate of return, and .057 when profit is an income share.¹⁵ Thus, firms did not raise their mark-up margins in response to increased corporate income taxes. With constant mark-up margins and the more intensive use of assets (fall in the capital/output ratio) that was observed, the ratio of profits/sales was unchanged but the rate of return on assets rose.¹⁶ This explains the well-known rise in the observed rate of return that is sometimes attributed to tax shifting. The fall in the capital/output ratio may be the long-run adjustment to an unshifted corporation income tax that burdens capital fully in the short-run. Note, too, that these findings of essentially zero shifting are unaffected by whether the rate of return or the profit share of income is used. Recall that M-K were unable to reconcile their finding of full short-run forward shifting in terms of a rate of return on capital with the known constancy of the profit share. It is also interesting to recognize that Gordon's model hypothesizes mark-up pricing, the foundation of the belief that the tax is shifted forward.

¹⁴Ibid., p. 744.

¹⁵Ibid., p. 743.

¹⁶Ibid., p. 753.

Firms may implicitly be maximizing profits even when they set prices by adding a mark-up to average costs by merely adjusting the mark-up margin when it is deemed profitable. Gordon found that mark-up margins varied widely among industries, but that rates of return were in a narrow range of 11 to 14 percent.¹⁷ Varying margins of mark-up is consistent with profit maximization because of varying capital intensity among industries, and equality in the rate of return reflects interindustry capital movements in response to profit differentials. If the prevailing margin is regarded as the most profitable by entrepreneurs, the introduction of, or increase in, the corporation income tax will not change the optimal price/output combination because such a position will still yield the greatest before and after-tax profit. Attempts to shift the tax forward by raising the profit mark-up will be self-defeating.

The preceding discussion cannot be regarded as a systematic analysis of the problem of corporate tax incidence, a topic worthy of an entire study by itself. These remarks are only meant to point to the fact that a review of the recent literature in the field discloses good reason to reject the hypothesis that the corporation income tax is significantly shifted forward and that the hypothesis of zero shifting does not seem to be in conflict with empirical evidence and a priori reasoning about how the economy functions. Therefore, the corporate tax liability will be allocated among the income classes according to the ownership of corporate equity.

¹⁷ Ibid.

Allocation of the Tax

During 1962, U.S. corporations incurred federal income tax liabilities amounting to \$22,700 million.¹⁸ In accordance with the preceding discussion of the incidence of the tax, this amount is to be allocated among the income classes according to the ownership of corporate equity capital. But before this is done, certain aspects of the situation must be clarified. Part of the corporate income tax is undoubtedly borne out of funds that would have been paid as dividends to stockholders, and imputing this part of the tax to them is quite proper; but part of the tax is also borne out of funds that would have been retained in the business, and the rationale for attributing this part of the tax to stockholders is less clear. To the extent that retained earnings do bear the tax, growth in the value of the equity will be less than otherwise--as long as the funds handed over to the government could have profitably been employed. A burden still falls on the owners, but it is less direct and immediate than when dividends are affected. This is not to say that stock capital gains are governed primarily by the size of retained earnings, but merely that realized and expected profits will likely be less and hence the value of equity will grow less rapidly (or decline) than in the absence of the tax. Thus, it seems

¹⁸U.S. Department of Commerce, Survey of Current Business, July, 1966, p. 21.

evident that the burden of the corporation income tax must be regarded as ultimately coming to rest on the owners of corporate equity capital. In any given year, however, it is impossible to determine for the aggregate corporate sector how much of the tax comes out of funds that would have been retained and how much out of dividends. But, fortunately, for our purposes this information is not necessary.

Table 15-1 allocates the \$22.7 billion in federal corporate income taxes paid in 1962 among the income classes according to the ownership of publicly traded stock. The proportion of equity in corporations owned by each income class is taken to be indicative of the portion of the tax burden falling on each class. This means roughly that the average rate of profit on corporate equity capital is assumed to be the same among the various income classes.

TABLE 15-1

ALLOCATION OF THE CORPORATE INCOME TAX AMONG THE INCOME
CLASSES BASED ON THE OWNERSHIP OF PUBLICLY TRADED STOCK
1962

Income Class	Percent of Stock Ownership	Amount of Tax (millions)
1. \$ 0- 2,999	2.7	\$ 612.9
2. 3,000- 4,999	2.9	658.3
3. 5,000- 7,499	6.1	1,384.7
4. 7,500- 9,999	8.6	1,952.2
5. 10,000-14,999	10.5	2,383.5
6. 15,000-24,999	7.7	1,747.9
7. 25,000-49,999	13.2	2,996.4
8. 50,000-99,999	12.0	2,724.0
9. 100,000-and over	36.2	8,240.1
TOTAL	100.0	\$22,700.0

Source: The percentage distribution of ownership of publicly traded stock is from Table 2-6. Total amount of tax from U.S. Department of Commerce, Survey of Current Business, July 1966, p. 21.

APPENDIX CHAPTER 15

Even though the assumption of forward shifting of the corporation income tax is rejected in the present study, it is felt that some consideration of the impact of this assumption should be considered because some readers may not accept the view that the tax is not shifted forward. If it is assumed that the corporate tax is shifted forward 100 percent, the extreme opposite of the assumption made in Chapter 15, then the appropriate index for allocating the tax burden is the distribution of consumption by income class. Table 15-2 allocates the \$22,700 million in corporate income taxes collected in 1962 among the income classes according to the distribution of consumption.

TABLE 15-2

ALLOCATION OF THE CORPORATE INCOME TAX ACCORDING
TO CONSUMPTION BY INCOME CLASS
1962

Income Class	Percent of Consumption	Amount of Tax
1. \$ 0- 2,999	10.8	\$2,451.6 million
2. 3,000- 4,999	14.6	3,314.2
3. 5,000- 7,499	22.0	4,994.0
4. 7,500- 9,999	21.1	4,789.7
5. 10,000-14,999	18.7	4,244.9
6. 15,000-24,999	6.5	1,475.5
7. 25,000-49,999	2.3	522.1
8. 50,000-99,999	1.8	403.6
9. 100,000-and over	2.2	499.4
—	100.0	\$22,700.0 million

Source: Percentage distribution of consumption from Table 2-13.

CHAPTER XVI

EXCISE AND CUSTOMS TAXES

The next category of federal taxation that we turn our attention to is the excises and customs taxes. This is a mixed bag of levies falling on a wide variety of consumption and investment goods, imposed on either an ad valorem or a specific basis. As noted in Chapter XIII, the federal excise taxes earmarked for the Highway Trust Fund are excluded from consideration here because they were all expended on road construction during 1962 and could not have been used to pay interest on the debt.¹ The remaining excise and customs yielded a total of \$11,044 million (Table 13-1), which is the amount that must be allocated among the income classes. Customs are treated here like excise taxes on imported goods and assumed to be distributed among the income classes in the same way as the excises.²

¹The amount of taxes earmarked for the Highway Trust Fund was \$3,127 million in 1962 (Table 5-2).

²Customs taxes (duties) amounted to \$1,173 million in 1962, mean of fiscal 1962 and 1963 figures. Statistical Abstract 1964, op. cit., p. 392.

Almost all writers on the subject express the belief that the burden of excise taxes falls upon individuals in proportion to the amount of the taxed good or service consumed. As Professor Due says, "for the most part, any tax on sales or output tends to shift directly to the consumers of the product and is borne primarily in relation to consumer expenditures on the taxed good."³ Because of the widespread acceptance of this view among economists, there does not seem to be any need to undertake an extensive discussion of excise tax shifting. What follows therefore is an attempt to allocate the relevant part of the federal excise tax burden among the income classes according to the proportion of total consumption attributed to each class.

Table 16-1 distributes the \$11,044 million in federal excises and customs that were part of the tax-transfer process in 1962 based on the index of consumption by income class that was constructed in Table 2-13. Total consumption is used instead of the consumption of specifically taxed items for several reasons. First of all, many of the excise taxes cannot be regarded as falling on a specific commodity or group of commodities, e.g., the excise tax on business telephone calls, or the tax on fuel used in motor trucks. About \$2 billion of the total excise and customs taxes collected in

³ John F. Due, Government Finance, Revised ed. (Homewood, Ill.: Richard D. Irwin, 1959), p. 296.

1962 fall into this category. Secondly, the Bureau of Labor Statistics' survey of consumer expenditures, which is our basic source of consumption information, is not detailed enough, in the opinion of the present writer, to permit useful estimates to be made of the consumption of specific goods and services by the upper-most income classes. Recall the construction of Table 2-13, the consumption index used in Table 16-1, where data limitations made it necessary to use regression analysis to estimate the mean level of total consumption for the sixth, eighth and ninth income classes. While such estimating procedures do not seem so objectionable when dealing with total consumption by income class, it hardly seems appropriate to estimate the consumption of specific commodities by the upper income groups based on the extrapolation of behavior by the lower income classes. Such a procedure would introduce a spurious note of accuracy and detail into this study. Finally, a quick check of the consumption of specific items showed the percentage distribution (for those classes for which data is available) to be quite similar to that for total consumption. And the classes for which data is available account for about ninety percent of total consumption. Thus, little would be gained by constructing a variety a specific consumption indices.

One other point should be noted. The use of current consumption and current income to allocate the excise tax burden may

tend to exaggerate the regressivity of the tax. Regressive in the sense used here refers to the fact that the tax tends to constitute a larger fraction of income of lower income than of the upper income families. This derives from the fact that changes in consumption spending tend to lag behind changes in current income. When a family suffers what it believes to be a temporary decline in income, it will tend to consume its previously attained level of consumption which is geared to its higher level of "permanent" income, even though it occupies a lower current income class.⁴ Thus raising the ratio of consumption to income in the lower income strata, and hence the excise tax burden, when income is measured in current terms. If families were classified by permanent income levels, the ratio of consumption to income would be lower. Similarly, when a family experiences a temporary increase in income it is pushed into a higher current income class, yet consumes according to its lower permanent income. This lowers the ratio of current consumption to current income in the classes into which such families move. Overall, the ratio of current consumption to current income tends to be reduced in the upper and raised in the lower income classes. In Appendix Table 16-2, the excise and customs tax burden derived in Table 16-1, is expressed

⁴See M. Friedman, A Theory of the Consumption Function (Princeton: National Bureau of Economic Research, Princeton University Press, 1957), Chapter III.

as a percent of the mean income of each income class. Note the steady decline in the percentage tax burden as income rises. The fact that this distribution does not include the excise taxes earmarked for the Highway Trust Fund reduces the absolute amount of tax allocated, and the tax as a proportion of income, but not the relationship among the proportions because the same index of consumption would be used to carry out the allocation.

TABLE 16-1

DISTRIBUTION OF FEDERAL EXCISE AND CUSTOMS TAXES
BASED ON CONSUMPTION BY INCOME CLASS
1962

Income Class	Percent of Total Current Consumption	Amount of Tax
1. \$ 0- 2,999	10.8	\$1,192.8 million
2. 3,000- 4,999	14.6	1,612.4
3. 5,000- 7,499	22.0	2,429.6
4. 7,500- 9,999	21.1	2,330.3
5. 10,000-14,999	18.7	2,065.2
6. 15,000-24,999	6.5	717.9
7. 25,000-49,999	2.3	254.0
8. 50,000-99,999	1.8	198.8
9. 100,000-and over	<u>2.2</u>	<u>243.0</u>
TOTAL	100.0	\$11,044.0 million

Note that this allocation does not include \$3,127 million in federal excise taxes earmarked for the Highway Trust Fund.

Source: Table 2-13 for the percentage distribution of consumption, and Table 13-1 for the total amount of taxes.

APPENDIX TABLE 16-2

EXCISE TAX BURDEN AS A PERCENT OF INCOME
1962

Income Class	Mean Excise Taxes Paid	Consumer Unit Mean Income	Tax as % of Income
1. \$ 0- 2,999	\$73.18	\$1,576	4.64
2. 3,000- 4,999	141.43	3,970	3.56
3. 5,000- 7,499	199.15	6,219	3.20
4. 7,500- 9,999	258.92	8,630	3.00
5. 10,000-14,999	333.10	11,960	2.79
6. 15,000-24,999	358.95	17,758	2.02
7. 25,000-49,999	503.00	34,534	1.47
8. 50,000-99,999	994.00	61,207	1.62
9. 100,000-and over	\$2,430.00	\$158,166	1.54

Note that the excise tax burden considered here does not include the excise taxes earmarked for the Highway Trust Fund.

Source: The mean excise tax burden is arrived at by dividing the total excise tax burden (from Table 16-1) of each income class by the number of consumer units in each class (from Table 2-3). Consumer unit mean income is from D. Projector and G. Weiss, Survey of Financial Characteristics of Consumers, *op. cit.*, p. 149.

CHAPTER XVII

ESTATE AND GIFT TAXES

The federal estate and gift taxes are relatively minor revenue sources for the U.S. Treasury. During 1962 the estate tax yielded \$1,841 million and the gift tax only \$183 million, out of total federal tax collections of more than \$102 billion.¹

Ascertaining the incidence of the estate and gift taxes is the first problem that must be resolved in this chapter. Then, the burden of these taxes must be allocated among the income classes.

In the case of the estate tax, it seems likely that the point of tax impact and tax incidence coincide, i.e., the inheritors bear the burden of the tax. This would appear to be a sensible assumption if for no other reason than it is difficult to attribute a tax burden to a deceased person.² For the legator to have borne the tax it

¹Statistical Abstract, 1964, op. cit., p. 395, mean of fiscal 1962 and 1963. Total taxes includes all excises and payroll taxes.

²The estate tax might be regarded as falling on the deceased in the form of a final levy on unrealized capital gains, which are not taxed as income if held until death. But it is very difficult to determine the quantitative importance of this possibility. See John F. Due, Government Finance, 3rd ed., (Homewood, Ill.: Richard D. Irwin, 1963), p. 341.

would be necessary to demonstrate that he reduced his lifetime level of consumption in order to enable him to leave a given net after-tax estate. Proving such behavior would be very difficult. As far as the gift tax is concerned, the donor is still alive and bears the impact, but not necessarily the incidence, of the tax. Unless the donor reduces his level of consumption in order to give away a certain sum, net of taxes, the recipient can be regarded as bearing the ultimate burden. If it is assumed that the recipients of gifts and bequests tend to occupy the same or adjacent income classes as the donor or legator, it does not matter much for our purposes upon whom the final burden of these taxes actually rests. The concern here is with the tax burden by income class, not with its distribution among individuals, per se. Gifts and bequests are generally made to close relatives and friends, most of whom are in economic circumstances similar to the persons making the gift or bequest. Gifts and bequests made to charitable organizations are not taxable and do not affect this situation, except as they may be made residual beneficiaries. In such a case, because other beneficiaries are given specified amounts the tax is effectively borne out of the residual claimant's share. How such a situation should be treated in terms of its impact on the allocation of the tax burden by income class is left to the reader to decide. Finally, no account is taken of any burden of the tax arising from its possible

effects on the volume of saving and investment in the economy.

Only purely distributional questions interest us here.

Next, it is necessary to apportion the estate and gift tax burden among the income classes. With respect to the estate tax, we can link the amount of tax paid to the income classes by correlating the size of estates and the amount of tax paid with the average amount of total wealth owned by consumer units in each income class. This is shown in Table 17-1.

TABLE 17-1
WEALTH, INCOME AND ESTATE TAXES
1962

Income Class	Mean Total Wealth	Gross Estate	Estate Taxes
1. \$ 0- 2,999	\$ 7,609	-	
2. 3,000- 4,999	10,025	-	
3. 5,000- 7,499	13,207	-	
4. 7,500- 9,999	19,131	-	
5. 10,000-14,999	28,021	-	
6. 15,000-24,000	62,966	\$ 60,000- 200,000	\$179 mil
7. 25,000-49,999	291,317	200,000- 500,000	433
8. 50,000-99,999	653,223	500,000-1,000,000	334
9. 100,000-and over	\$1,698,021	\$1,000,000-and over	895
		TOTAL	\$1,841 mil.

Source: Income classes and mean wealth from D. Projector and G. Weiss, Survey of Financial Characteristics of Consumers, op. cit. p. 110. Gross Estate sizes and the amount of estate taxes paid by each is from J. Pechman, Federal Tax Policy, op. cit., p. 292.

No part of the tax is attributed to consumer units in the first six income classes because of the small size of their wealth. This method of allocation is appealing as long as one is willing to accept the view that total wealth is a good proxy for inherited wealth. Unfortunately, however, this seems to be true only for consumer units in the \$100,000 and over income class. Projector and Weiss's survey of consumer wealth revealed that in 1962 fully fifty-seven percent of the consumer units in the \$100,000 and over income class reported that a "substantial" portion of their total wealth was inherited.³ In the next lowest income class, \$50,000-99,999, only 14 percent of consumer units indicated that inherited assets comprised a "substantial" portion of their (much smaller) total wealth.⁴ For all the other income classes, this percentage ranged from three to eight percent.⁵ Thus, it seems that only consumer units in the topmost income class received wealth transfers that might conceivably have been taxed by the federal estate tax. This view is in accordance with the general effect of the tax, where exemptions, deductions and loopholes reduce the amount of tax due to insignificance except for the very largest estates. In 1962, for example, estates of one million dollars or more accounted

³ Projector and Weiss, op. cit., p. 148.

⁴ Ibid.

⁵ Ibid.

for only three percent of taxable estate returns but accounted for 48 percent of the estate taxes paid.⁶ In light of the preceding comments, it seems sensible to credit the entire \$1,841 million in estate taxes paid in 1962 to the \$100,000 and over income class.

With regard to the \$183 million in federal gift tax paid in 1962, it seems best to attribute the entire sum to the topmost income class, too. This is based on the fact that present exemptions and deductions result in gift tax liability only in those cases where truly substantial sums are transferred. For example, about 78 percent of the gift tax paid in 1962 was on taxable gifts in excess of \$100,000.⁷ Only consumer units at the pinnacle of the wealth and income pyramid could afford to make such transfers.

⁶Pechman, Federal Tax Policy, op. cit., p. 292.

⁷Ibid., p. 293.

CHAPTER XVIII

PAYROLL TAXES

Because of the growth of benefits and the extension of coverage, federal payroll taxes designed to cover the cost of Social Security, Railroad Retirement, Civil Service (federal) Retirement and Unemployment Insurance loom larger than ever before in the federal revenue picture. About twenty percent of federal tax revenues were derived from payroll taxes in 1952. Taxes levied to finance these social insurance programs are earmarked taxes, the revenue from the taxes on payrolls does not constitute part of the Treasury's general fund but instead is attributed to the various special trust funds established for these programs.

Before considering these taxes in any detail, we must first decide whether or not they ought to be considered in this study at all. Our attempt to measure the federal tax burden by income class is designed to make it possible to compare the distribution of interest benefits arising from the need to pay interest on a large debt with the burden of taxation levied to pay that interest. To that purpose we have examined the personal and corporate income

tax, the federal excises, and estate and gift taxes. The inclusion of these taxes in this study is beyond question because they are the source (along with borrowing) of the general Treasury revenues out of which interest on the national debt is paid. But payroll taxes are earmarked for the provision of social welfare benefits, not interest payments on the debt. The only way that payroll tax receipts could find their way into the general fund is if trust fund tax receipts exceed current disbursements and the surplus is used to acquire Treasury securities. Indeed, this usually does occur and is the basis of the more than forty billion dollars in Treasury issues held by the Social Security, Railroad Retirement, Civil Service Retirement and Unemployment Insurance Trust Funds in 1962.¹ However, in 1962 disbursements of the Social Security and Railroad Trust Funds exceeded current tax contributions, the deficit being closed by interest payments on Treasury issues and liquidation of some Treasury holdings (see Table 5-2). The Civil Service Retirement and Unemployment Insurance Trust Funds, however, were both in surplus (exclusive of interest income) in 1962 and thus contributed to general fund revenues via acquisition of Treasury securities (Table 5-2). Indeed, the rates and base of these federal payroll taxes is designed so that the trust funds generally

¹Table 5-1.

operate at a surplus in order to provide a financial reserve. The deficits of 1962 are unusual, and rates and base were adjusted upward in succeeding years to provide such surpluses. Nevertheless, as noted in Chapter XIII, the fact that all of the tax receipts of the social security and railroad trust funds were used to pay beneficiaries in 1962 means that no part of these taxes could possibly have gotten into the general fund of the Treasury to be used to pay interest on the national debt. Therefore, the payroll taxes levied to finance social security and railroad retirement must be excluded from further consideration in the tax-transfer process. As also noted in Chapter XIII, the Civil Service Retirement and Unemployment Insurance Trust Funds both collected more in payroll taxes than they disbursed in benefit payments. It is the amount of the resulting surpluses, \$710 million for the Civil Service Trust Fund and \$260 million for the Unemployment Trust Fund, that represents the only part of federal payroll taxes that must be allocated among the income classes.² The nature of these taxes is such that one-half of the retirement levy is paid by the employee and one-half by the employer; and all of the unemployment insurance payroll tax is paid by the employer. But the point of tax impact does not necessarily indicate the point of incidence, and it is to this question that we turn our attention next.

²Table 5-2.

Incidence of the Payroll Taxes

The possibility of shifting the payroll tax seems most likely with respect to the employer's share, where market transactions make it possible to shift part or all of the tax backward to labor in the form of lower wages or forward to consumers in the form of higher prices. In addition, trade unions may demand and receive compensating wage increases to cover the cost of employee contributions to social insurance programs, thus passing the employee's share to employers and thence, perhaps, to consumers. But the widespread impact of the payroll tax makes it practically impossible for labor to migrate to untaxed areas to avoid payment of the tax. "Thus, like the personal income tax, the employee payroll tax is not shifted and is probably borne by those who pay it."³ In his tax allocation analysis, Professor Musgrave also accepts this view.⁴ The employer's share of the tax is more difficult to analyze. It will raise the marginal cost of hiring labor and, other things equal, lead to a substitution in consumption against labor intensive goods, and in the long-run a substitution in production. Goods and services produced with relatively more labor will rise in price and there will be a reduction in employment and output in these industries.

³J. Pechman, Federal Tax Policy, op. cit., p. 169.

⁴R. A. Musgrave et al., "Distribution of Tax Payments by Income Groups: A Case Study for 1948," National Tax Journal, IV (March, 1951), p. 23.

As equipment wears out and it becomes possible to rearrange the techniques of production, relatively less labor will be employed wherever possible. The elasticity of substitution over the entire range of industry will govern this effect because the tax impact falls on the use of labor in almost every employment. Those industries least able to replace labor with capital in the long run will suffer a relative decline. The labor that is displaced by these substitution effects will serve to press down the level of wages until the wage, gross of the tax, equals the pre-tax wage. In this neo-classical world, labor will bear the entire burden of the tax, the employer's share as well as the employee's. This assumes an inelastic general supply of labor, not an unrealistic assumption, and a reasonable degree of competition. But the modern economic landscape is characterized by downward inflexibility of the wage rate. Any rise in wage costs that requires a fall in wages to ensure full employment is not likely to come about and unemployment will likely persist without a fall in wages. Firms will merely back up their labor demand curves until marginal revenue productivity equals the higher cost of labor. If, however, public policy is committed to the maintenance of full employment (a likely case), macro-economic adjustments in the level of aggregate demand can prevent unemployment and facilitate forward shifting of the tax. A rise in the general level of demand will raise the demand

curve for goods and services and thus labor's marginal revenue productivity, blunting or offsetting entirely the employment effects of higher labor costs. Employer's will be able to pass along to consumers most or all of the higher cost of labor in the form of higher prices. In this case the tax will be borne in accordance with the consumption of goods and services, much like a sales tax. Note that here we are speaking of the forward shifting of the employer's share of the tax, it still being assumed that the employee share is unshifted. Finally, the failure of employer's to shift all of the tax forward or backward may mean that some part of it rests on profits. But given the two directions in which shifting is possible, and likely, and not incompatible, it seems unlikely that profits bear any burden of the tax. Accordingly, we must decide whether to allocate the entire tax on payrolls according to the distribution of social insurance contributions by income class (backward shifting) or, to allocate the employee share according to Social Insurance contributions and the employer's share according to consumption by income class (forward shifting). Fortunately, however, the two alternatives indexes of distribution do not differ drastically, in terms of the percentages attributable to each income class.

Turning specifically to the allocation among the income classes of the \$970 million in federal payroll taxes that were part

of the tax-transfer mechanism in 1962, \$355 million was paid by employees (one-half of the Civil Service Retirement Trust Fund surplus); employer's paid a total of \$615 million, the other half of the retirement surplus, plus the unemployment insurance payroll tax surplus of \$260 million). The employee share is assumed to be borne by labor in proportion to the contributions made to social insurance programs, the index developed in Table 2-21. If the employer's share is assumed to be shifted backward to labor, it is allocable according to the same basis as the employee share. This is shown in Table 18-1 as assumption L, where the entire amount of payroll taxes being considered is allocated according to the distribution of social insurance contributions. If, on the other hand, the employer's share is supposed to be shifted forward in the form of higher prices to consumers, it must be apportioned in accordance with the distribution of consumption expenditures by income class. This is shown as assumption K in Table 18-1, where the employee share is still assumed to be borne by labor in accordance with social insurance contributions. Note the only slight difference in the percentage allocation of the tax burden by income class under these two assumptions in Table 18-1. This is due to the fact that most wages are consumed and thus the tax hits labor either in its role as a factor of production or as a consumer.

TABLE 18-1
 ALLOCATION OF FEDERAL PAYROLL TAXES
 (1962)
 (Amounts in Millions)

Income Class	Assumption L		Assumption K	
	Tax Borne Amount	Entirely by Labor Percent	Employer Share Amount	Shifted Forward Percent
1. \$ 0- 2,999	\$ 44.6	4.6	\$ 82.7	8.5
2. 3,000- 4,999	137.7	14.2	140.2	14.5
3. 5,000- 7,499	247.4	25.5	225.8	23.3
4. 7,500- 9,999	241.5	24.9	218.2	22.5
5. 10,000-14,999	210.5	21.7	192.0	19.8
6. 15,000-24,999	63.1	6.5	63.1	6.5
7. 25,000-49,999	15.5	1.6	19.8	2.0
8. 50,000-99,999	6.8	0.7	13.6	1.4
9. 100,000-and over	<u>2.9</u>	<u>0.3</u>	<u>14.6</u>	<u>1.5</u>
TOTAL	\$970.0	100.0	\$970.0	100.0

Note:

The federal payroll taxes allocated in Table 18-1 consist only of the surplus of tax receipts over disbursements of the Civil Service Retirement and Unemployment Insurance Trust Funds.

Source: Under assumption L, the entire amount of tax is allocated among the income classes according to the distribution of contributions to social insurance, from Table 2-21. Assumption K allocates \$355 million according to social insurance contributions, and \$615 million according to consumption by income class, from Table 2-13. The total amount of taxes allocated is from Table 13-1.

CHAPTER XIX

SUMMARY OF TAX BURDEN ALLOCATION

Table 19-1 summarizes the allocation of the tax burden by income class that is carried out in detail in Chapters 13 through 18. The amount of each federal tax attributed to each income class and the total amount of all taxes attributed to each class is shown. Note that the amount of excise taxes allocated excludes taxes earmarked for the Highway Trust Fund. The payroll tax is distributed according to our two alternative assumptions, L, that labor bears the entire burden of the tax, and K, that the employer's share is shifted forward to consumers. In the total column, however, the amount of taxes attributed to each income class includes only the payroll tax allocated on the assumption that it is borne by labor, i.e., assumption L. This is done because the effect of the alternative assumption on the total tax burden allotted to each income class is trivial, the change in the small amount of payroll tax being distributed is swamped by the huge amount of other taxes. Indeed, the percentage distribution of the total tax burden by income class (not shown in Table 19-1)

is exactly the same under either payroll tax assumption. For this reason, the percentage distribution of the tax burden used in concluding Chapter 20 utilizes only assumption L. If all the federal payroll taxes collected in 1962, about \$20 billion, were allocated instead of just the excess of taxes over expenditures for the trust funds financed by payroll taxes, the effect of the alternative assumptions about the incidence of the payroll tax would be more apparent.¹

¹Statistical Abstract, 1964, op. cit., p. 388.

TABLE 19-1

SUMMARY OF TAX BURDEN ALLOCATION
1962
(Amounts in Millions)

Income Class	Individual Income Tax	Corporate Income Tax	Excise ¹ Taxes	Gift and Estate Taxes	Payroll ²		TOTAL ³
					L Taxes	K	
1. \$ 0- 2,999	\$ 771.0	\$ 612.9	\$ 1,192.8		\$ 44.6	\$ 82.7	\$ 2,621.3
2. 3,000- 4,999	2,812.0	658.3	1,612.4		137.7	140.2	5,220.4
3. 5,000- 7,499	6,964.0	1,384.7	2,429.6		247.4	225.8	11,025.7
4. 7,500- 9,999	6,776.0	1,952.2	2,330.3		241.5	218.2	11,300.0
5. 10,000-14,999	8,159.0	2,383.5	2,065.2		210.5	192.0	12,818.2
6. 15,000-14,999	7,422.0	1,747.9	717.9		63.1	63.1	9,950.9
7. 25,000-49,000	5,325.0	2,996.4	254.0		15.5	19.8	8,590.0
8. 50,000-99,999	5,471.0	2,724.0	198.8		6.8	13.6)	18,910.6
9. 100,000-and over	8,240.0	8,240.0	243.0	\$2,024.0	2.9	14.6)	
TOTAL	\$43,700.0	\$22,700.0	\$11,044.0	\$2,024.0	\$970.0	\$970.0	\$80,438.0

TABLE 19-1 (Continued)

¹ Excludes \$3,127 million in excise taxes earmarked for Highway Trust Fund.

² Consists only of the surplus of tax receipts over expenditures of the Civil Service Retirement and Unemployment Insurance Trust Funds.

³ The total shown includes the payroll tax allocated under assumption L (all borne by labor).

Note:

With respect to payroll taxes, L allocates the tax on the assumption it is borne entirely by labor (social insurance contributions is the index used); K assumes that the employer's share is shifted forward to consumers and is allocated according to consumption by income class, with the employee share still assumed to be borne by labor.

Source: Tables 14-1, 15-1, 16-1 and 18-1. Estate and gift taxes allocated to topmost income class, according to the discussion in Chapter 17.

CHAPTER XX

SUMMARY AND CONCLUSIONS

Now that we have completed the allocation among the income classes of the interest benefits of the debt and the tax burden, we are in a position to summarize and draw up our conclusions. Table 20-1 compares the distribution of the interest and taxes in 1962. The absolute and relative amounts of each attributed to each income class is shown. Because the total amount of taxes is much greater than the amount of interest involved, the absolute amounts are not directly comparable. If we wanted to compare the absolute amounts we would first have to allow for the fact that about 7.5 percent of federal expenditures in 1962 were financed by borrowing, and therefore about 7.5 percent of interest payments were not due to taxation but to further debt creation.¹ The reduced amount of interest allocable (\$6,758 million) could then be expressed as a percent of total federal taxes ($\$6,758 \div \$80,438 = 8.4$ percent); this percent would then represent the fraction of the total

¹ Statistical Abstract, 1964, op. cit., p. 392.

TABLE 20-1
 INTEREST BENEFIT AND TAX BURDEN
 1962
 (Amounts in Millions)

Income Class	Interest Benefit				Tax Burden ¹	
	Assumption C		Assumption E		Amount	Percent
	Amount	Percent	Amount	Percent		
1. \$ 0- 2,999	\$ 982.6	13.4	\$ 952.7	13.1	\$ 2,621.3	3.3
2. 3,000- 4,999	833.0	11.4	798.1	10.9	5,220.4	6.5
3. 5,000- 7,499	942.2	12.9	895.8	12.3	11,025.7	13.7
4. 7,500- 9,999	956.8	13.2	926.6	12.7	11,300.0	14.0
5. 10,000-14,999	1,032.3	14.2	1,006.2	13.7	12,818.2	15.9
6. 15,000-14,999	693.7	9.5	698.0	9.6	9,950.9	12.4
7. 25,000-49,999	497.9	6.8	532.1	7.3	8,590.9	10.7
8. 50,000-99,999	695.5	9.5	737.1	10.1)	18,910.6	23.5
9. 100,000-and over	662.0	9.1	749.4	10.3)		
TOTAL	\$7,306.0	100.0	\$7,306.0	100.0	\$80,438.0	100.0
U.S. Government & Foreign Interest	1,662.0		1,662.0			
GRAND TOTAL	\$8,968.0		\$8,968.0			

TABLE 20-1 (Continued)

Assumption C attributes implicit interest on business-owned demand deposits to consumers.

Assumption E attributes implicit interest on business-owned demand deposits to owners of firms.

¹The tax burden includes the payroll tax allocated on the assumption that it is borne entirely by labor.

Source: Tables 12-1 and 19-1.

amount of taxes attributed to each income class in Table 20-1 that is due to the need to service the national debt. However, it is more interesting and general to focus attention on the relative distribution of the interest and taxes. Of course, the percentage distribution of the interest benefit or tax burden would be the same regardless of whether the total amount of each or the reduced amount was considered, because the amount of each attributed to each income class would be reduced by a constant proportion.

The two alternative assumptions employed about the distribution of the interest benefit are presented in Table 20-1. Assumption C attributes the implicit interest on business-owned demand deposits (\$319.7 million) to the customers of firms and distributes it according to consumption by income class. Assumption E attributes the same amount to the owners of firms, distributing it according to the ownership of stock by income class. Note that the effect of these two alternative assumptions on the overall distribution of interest is slight because the amount involved is small relative to total interest. But, nevertheless, the effect is in the expected direction, i.e., assumption E results in more interest being attributed to the upper income classes.

The tax burden distribution shown in Table 20-1 distributes the payroll tax according to the assumption that labor bears the

entire tax (assumption L in Table 19-1). This is due to the fact that the percentage distribution is the same under either of the two incidence assumptions considered in Chapter 18, that the tax is borne entirely by labor or, that the employer's share is shifted forward to consumers.

Conclusions

Upon inspection of Table 20-1, the inevitable conclusion that one arrives at is that the two lowest income classes (under \$5,000) are attributed with substantially more of the interest benefit of the debt than of the tax burden to raise the interest. For the remaining seven income classes, the percentage of the tax burden attributed to each class slightly exceeds the interest benefit percentage, providing thereby the source of the net redistribution of income in favor of the two lowest classes. This result holds with either of the two assumptions about the distribution of interest used in Table 20-1. For example, under assumption C, the first two classes are credited with 24.8 percent of the total interest, while under assumption E, 24.0 percent of the interest is credited to these two classes; the corresponding tax burden is 9.8 percent.

Thus, the need to pay interest on the national debt would seem to provide a mechanism for transferring income from the upper to the lower income classes. This result is at variance with what some

economists believe. As noted in chapter 1, both Samuelson and Lerner seem to hold that one of the "burdens" of a large national debt may be its tendency to cause taxes to be paid by the poor in order to pay interest to the rich, while Musgrave and the Commission on Money and Credit held that no redistribution takes place. The major prior empirical study of the redistributive effects of the debt, i.e., Miller, concluded that in 1945 there was some slight redistribution in favor of the upper income classes; 56 percent of the tax burden and 59 percent of the interest was attributed by that study to the over \$5,000 income class (the "upper" income class in that study).² This when it was assumed, as in the present work, that the corporation income tax is borne by capital. It would seem that the main reason why Miller did not show any redistribution in favor of the under \$5,000 income class was his failure to consider the interest paid on the holdings of Treasury issues by the U.S. Government Trust Funds and Agencies and state and local governments. As Table 12-1 shows, both of these categories, especially the former, are important sources of the total amount of interest attributed to the lowest income classes. Moreover, since 1945 the relative and absolute importance of the debt holdings of these two categories in the total debt structure has

² Miller, op. cit., p. 133.

grown considerably, adding to their potential redistributive impact. Another earlier, simpler, study of the redistributive effects of the debt indicated a net redistribution in favor of the under \$5,000 class (with the corporation income tax also borne by capital): 45 percent of the tax burden and 61 percent of the interest benefit being attributed to that income class.³ But this result was mainly due to the assumption that the ownership of the debt was distributed among the income classes in the same way as were demand deposits, time deposits and government securities.⁴

Before considering our findings further, let us present them diagrammatically. In what follows, the interest benefit is allocated according to assumption E in Table 20-1. Figure 20-1 shows Lorenz curves of the distribution of interest, taxes and income. Along the horizontal axis the cumulative percentage of consumer units is shown, ranked from the lowest to the highest income class. Along the vertical axis the cumulative percentage of interest, taxes and income is shown, also ranked from the lowest to the highest income

³Cohen, op. cit., p. 270. It should be noted that the "lower" income class in our study (under \$5,000) is relatively lower than the same money class was in 1945 because of the rise in real and money incomes.

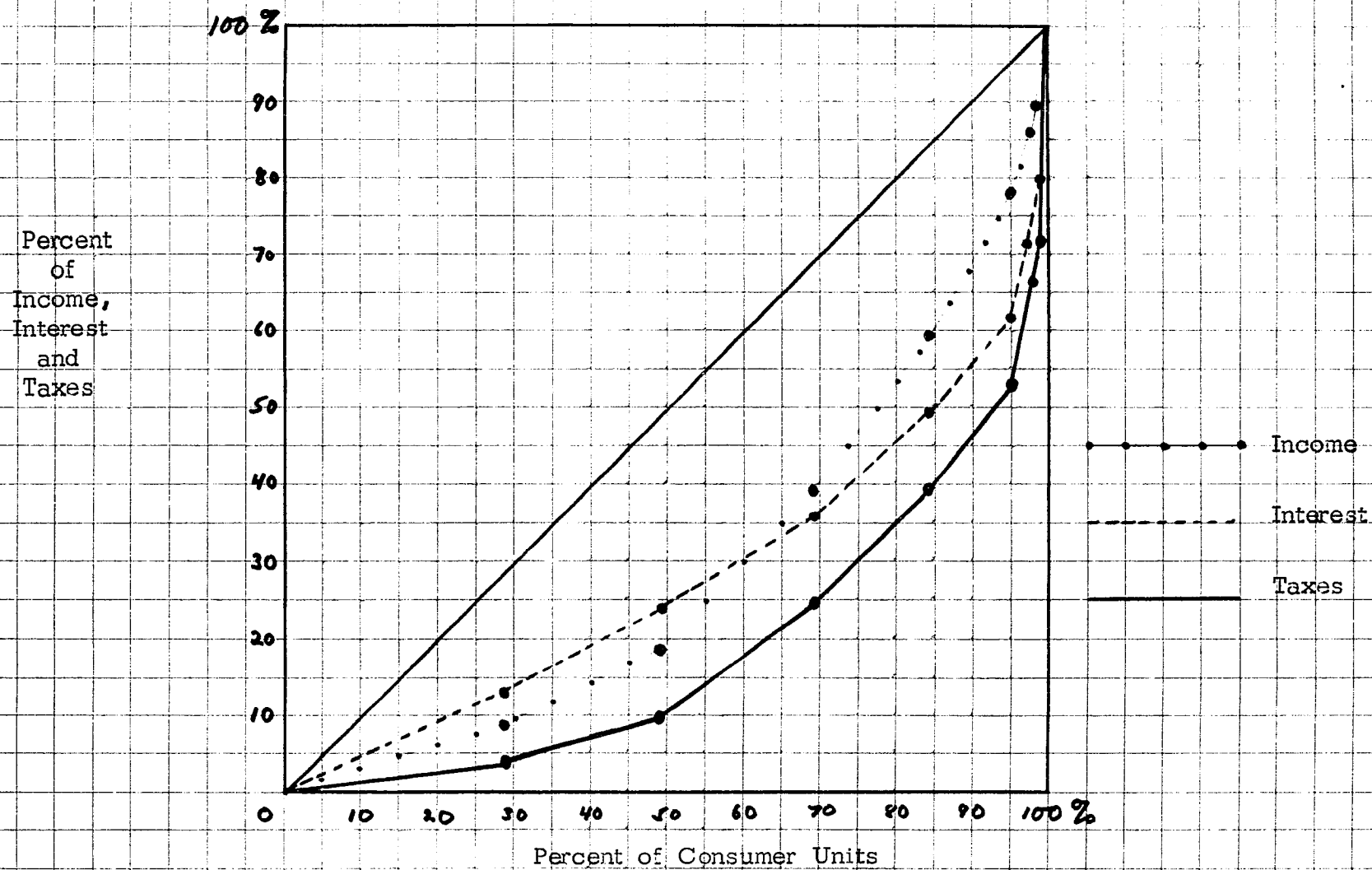
⁴Ibid., pp. 267-270.

class.⁵ The diagonal is the line of perfectly equal distribution, i.e., the amount of interest, taxes or income attributed to each consumer unit is the same for every income class. The further to the right of the diagonal that the actual curve of distribution lies, the less equal is the allocation among consumer units. It is clear from Figure 20-1 that the tax burden is the least equally distributed of the three quantities, reflecting the progressive nature of the tax system. For example, the lowest eighty percent of consumer units are attributed with only about thirty-five percent of the total tax burden, but with forty-five percent of the interest and fifty-five percent of income. Redistribution in favor of the lower classes is shown by the fact that the curve of interest distribution lies to the left of the tax curve, indicating that the cumulative proportion of interest attributed to the income classes as we move from the lower to the upper classes is greater than the corresponding proportion of taxes. This means that consumer units above any particular income level are attributed with a greater proportion of taxes than of interest. Of course, the distribution of before-tax income is more

⁵The income distribution employed in Figure 20-1 is arrived at by weighting the mean amount of income in each class by the number of consumer units in each class (from Tables 2-3 and 2-14). The resulting aggregate amount of income, \$380 billion, agrees favorably with known aggregate income from other sources, \$387 billion. U.S. Department of Commerce, Survey of Current Business, July, 1967, p. 16.

⁶A tax curve coincident with the income curve would indicate a flat proportion tax, while one to the left of the income line would be regressive.

FIGURE 20-1
 LORENZ CURVES OF INCOME, INTEREST AND TAXES
 1962

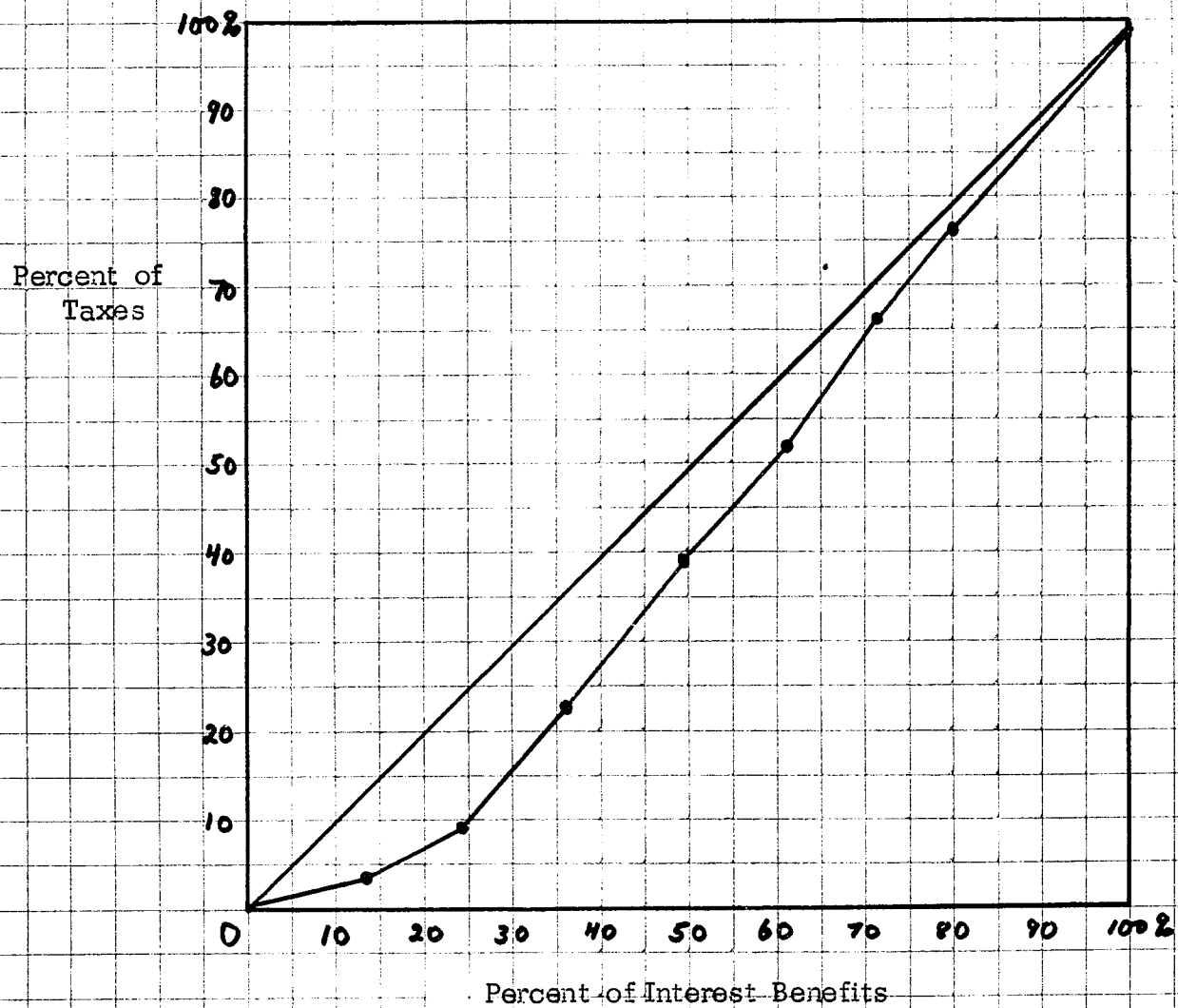


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equal than is the distribution of the tax burden because of the progressivity of the latter. Figure 20-1 also shows that the interest is more equally distributed than income at the lower income levels, but the reverse is true at the upper levels.

An alternative diagrammatic presentation of our findings is presented in Figure 20-2. Along the vertical axis, the cumulative percent of taxes is shown, along the horizontal axis the cumulative percent of interest--both ranked from the lowest to the highest income class. The diagonal line shows how the distribution curve would appear if the amount of taxes attributed to each income class equalled the amount of interest attributed to each class. The fact that the actual curve diverges from the diagonal indicates that redistribution of income does in fact take place. In Figure 20-2, the distribution curve lies entirely to the right of the diagonal, with a prominent bulge at the lower end.⁷ This bulge indicates that at the lower end of the income scale the cumulation of interest is greater than the corresponding cumulation of taxes, i.e., redistribution in favor of the lowest income classes. Beyond the lowest (first two) income classes, the curve is pulled toward the diagonal by the effect on the cumulative totals of the excess of tax burden over interest benefit in the higher classes. Comparing the slope of the diagonal line ($\Delta T/\Delta I = 1$) with that of the distribution curve,

⁷The curve could lie on either side of the diagonal and cross over, depending on the degree of redistribution involved.

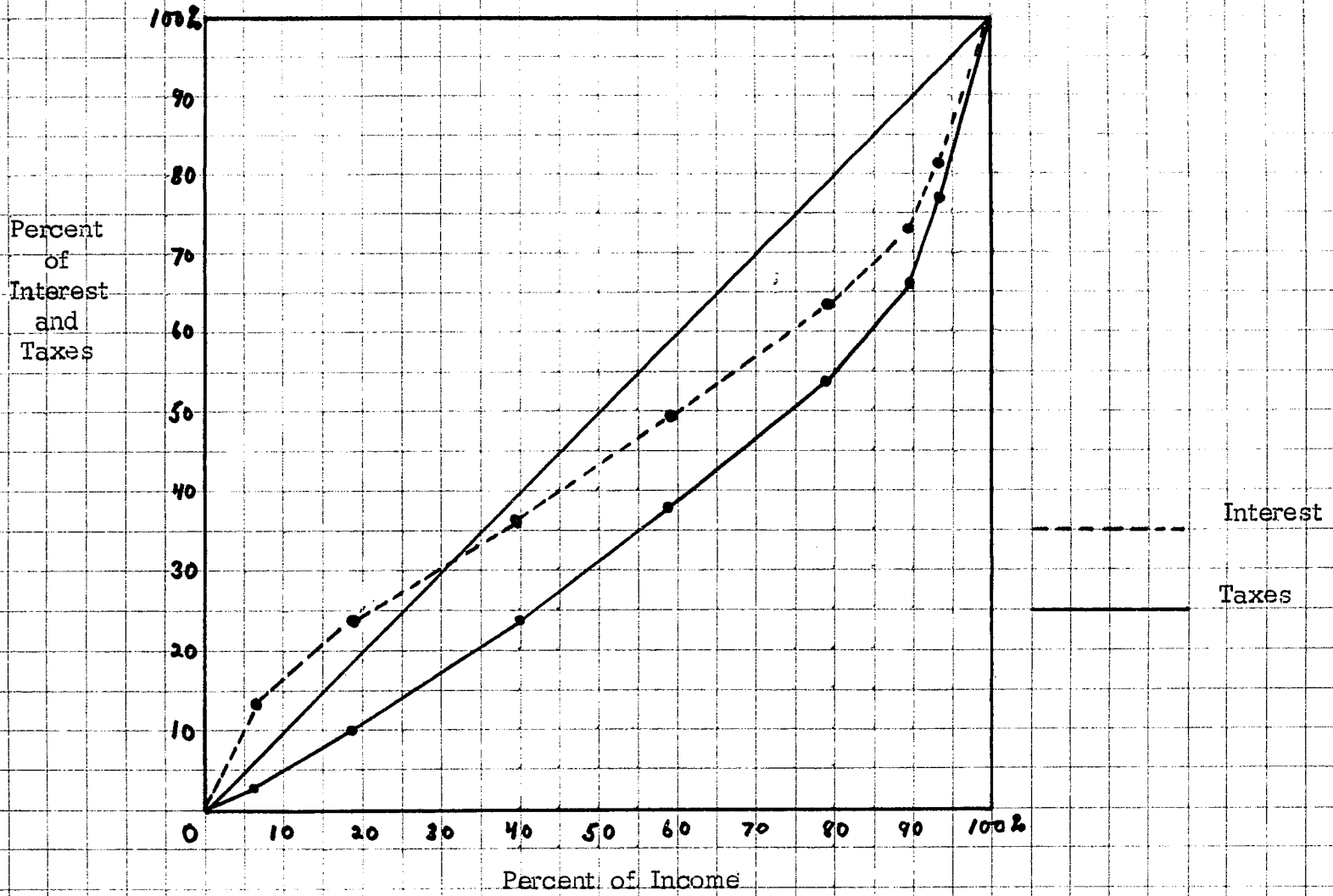
FIGURE 20-2
CUMULATIVE PERCENTAGE DISTRIBUTION OF INTEREST AND TAXES



it is clear that for the first income class (up to the first point in Figure 20-2) the incremental cumulation of interest is much greater than that of taxes, i.e., the slope of the distribution curve is less than 1. If the slope were the same as that of the diagonal, the increment in tax burden and interest benefit would be equal. For the second income class, the curve gets steeper (slope increases) which indicates that the increment in the tax burden and interest benefit are more nearly equal, but with the increment in interest still exceeding that of taxes. That is, the slope is still less than 1, but greater than the slope of the first line segment. The third income class (line segment) has a still steeper slope, in this case even steeper than the slope of the diagonal, indicating that the increment in tax burden now exceeds the increment in interest benefit. This class is attributed with a greater proportion of the tax burden than of the interest benefit. The same is true of the remaining income classes, as shown by the slope of the remaining line segments and as confirmed in Table 20-1.

Still another graphical representation of our results is shown in Figure 20-3. In this figure before-tax income (the same as in Figure 20-1) is cumulated along the horizontal axis, while taxes and interest are cumulated along the vertical. Income, taxes and interest are all cumulated from the lowest to the highest income class. If interest or taxes were distributed in exactly the same

FIGURE 20-3
 DISTRIBUTION OF INCOME, INTEREST AND TAXES
 1962



percentage fashion as income, their distribution curves would coincide with the diagonal line in Figure 20-3, e.g., those receiving the lowest ten percent of income would also be attributed with ten percent of the interest or tax burden.⁸ The fact that the distribution curve for taxes lies to the right of the diagonal indicates the progressive nature of the tax system. Up to about the 80th income percentile, the slope of the tax curve is flatter (less) than the slope of the diagonal, indicating that the incremental percentage of the tax burden is less than the incremental percentage of income. Beyond that point, however, the tax curve is steeper than the diagonal, indicating the progression in the tax system at the upper end of the income scale. As far as the distribution of interest is concerned, it is less progressively distributed against income, as compared to the distribution of taxes. Indeed, it is regressively distributed, whence the redistribution of income in favor of the lowest classes. This redistribution is shown by the interest curve lying to the left of the tax curve. The gap between the two curves shows that the cumulative percentage of taxes is less than the cumulative percentage of interest as one moves up the income scale, indicating the excess of interest benefit over tax payments, with the gap narrowing and finally disappearing as one nears the

⁸This would imply a flat rate proportional tax system.

top of the income ladder. This narrowing is caused by the fact that the increment in the tax burden becomes greater than the increment in interest as we move up the income scale, which is shown by a flattening of the interest curve and a steepening of the tax curve. At the lowest income levels the interest curve lies to the left of the diagonal, due to the fact that not only are these classes imputed a greater proportion of interest than of taxes, but also of a greater proportion than of income.

Conclusions

The findings of this study may be summarized in the form of a set of propositions:

- 1) Lerner and Samuelson both believe that one of the effects of the need to levy taxes in order to pay interest on the national debt is a redistribution of income from lower to upper income classes, while Musgrave and the Commission on Money and Credit believe that essentially no redistribution takes place.
- 2) Two earlier attempts to measure the redistributive effects of taxing to pay interest on the debt arrived at conflicting conclusions, one found redistribution in favor of the upper classes, the other in favor of the lower classes. Both studies were marred by inadequacies of data and technique.
- 3) Using a variety of indices of allocation, many not previously

available, it is possible to impute much more precisely than before the interest benefit of the debt among the income classes. The first two income classes (under \$5,000, the "lower" classes) are attributed a relatively large proportion of the interest, mainly because of their ownership of time deposits, and because of the interest flowing through the federal trust funds and state-local governments that is imputed to them. These last two ownership categories were not considered in the two earlier studies mentioned above.

The regressive nature of state-local tax systems results in more interest being allocated to the lower classes than would a progressive tax system, because much of the interest is assumed to have the effect of lightening the state-local tax burden. Also, the lower classes do own a good deal of the debt directly in the form of savings bonds.

4) In allocating the tax burden among the same income classes used to impute the interest benefit, the traditional approach is departed from only with respect to the corporation income tax. It is assumed to be borne entirely by capital. The presumed incidence of the corporate levy and the fact that much of the income received by the lower classes is in the form of income transfers (e.g., social security, welfare, etc.) that escape most federal taxes, contributes to the indicated progressivity of the tax system.

5) When the relative distribution of the interest benefit and tax

burden is compared, the result is falsification of the Lerner-Samuelson and Musgrave-Commission on Money and Credit hypotheses. The federal tax system in 1962 was more progressively distributed against income than was the distribution of interest, causing a redistribution of income in favor of the under \$5,000 income classes.

APPENDIX CHAPTER XX

Because some economists believe that the corporation income tax is shifted forward to consumers, and because of the great weight of the tax in the total tax structure, it seems proper to examine the effect on the overall quantitative findings of full forward shifting. Table 20-2 shows the distribution of the total tax burden when the \$22,700 million in corporate income taxes paid in 1962 is allocated according to consumption by income class, instead of ownership of publicly traded stock (as is done in Table 20-1). All the other components of the tax burden are exactly the same as in Table 20-1. For comparison with this new tax burden distribution, the interest benefit distribution from Table 20-1 is reproduced in Table 20-2.

As one might expect, the tax burden is less progressively distributed when the corporate tax is assumed borne by consumers than when it is taken to fall upon capitalists. The most important thing to note, however, is that the basic conclusion of Chapter 20 still stands, viz., that significant redistribution of income in favor of the two lowest income classes takes place, but in somewhat

modified form. These two classes still receive about one-fourth of the interest benefits of the national debt, but their share of the tax burden is increased from about ten to about fifteen percent of the total as a result of full forward shifting of the corporation income tax. The impact of the assumption is in the expected direction, but not strong enough to overturn the basic conclusion. Another facet of the forward shifting assumption revealed in Table 20-2 is that there is now also a redistribution of income in favor of the two highest income classes, as well as the two lowest. The two top classes continue to receive about one-fifth of the interest benefit, but forward shifting reduces their share of the tax burden from about one-fourth to eleven percent. Forward shifting enables the upper classes to push a portion of the tax burden onto the classes beneath them on the income scale. Upon reflection, this result is not at all unusual. Since a forward shifted corporation income tax is like a sales tax on consumption, and the middle and lower classes account for the lion's share of total consumption, they will naturally bear most of the burden of any tax falling on consumption spending. Thus, with forward shifting the two lowest and the two highest income classes gain at the expense of the middle income classes (\$5,000-\$50,000).

APPENDIX TABLE 20-2

INTEREST BENEFIT AND TAX BURDEN WHEN THE CORPORATION
INCOME TAX IS SHIFTED FORWARD
1962
(Amounts in Millions)

Income Class	Interest Benefit				Tax Burden	
	Assumption C		Assumption E		Amount	Percent
	Amount	Percent	Amount	Percent		
1. \$ 0- 2,999	\$ 982.6	13.4	\$ 962.7	13.1	\$ 4,460.0	5.5
2. 3,000- 4,999	833.0	11.4	788.1	10.0	7,876.3	9.8
3. 5,000- 7,499	942.2	12.9	895.8	12.3	14,635.0	18.2
4. 7,500- 9,999	966.8	13.2	926.6	12.7	14,137.5	17.6
5. 10,000-14,999	1,032.3	14.2	1,006.2	13.7	14,679.5	18.3
6. 15,000-24,999	693.7	9.5	698.0	9.6	9,678.5	12.0
7. 25,000-49,999	497.9	6.8	532.1	7.3	6,116.6	7.6
8. 50,000-99,999	695.5	9.5	737.1	10.1)	8,854.6	11.0
9. 100,000-and over	662.0	9.1	749.4	10.3)		
TOTAL	\$7,306.0	100.0	\$7,306.0	100.0	\$80,438.0	100.0

APPENDIX TABLE 20-2 (Continued)

Assumption C attributes implicit interest on business-owned demand deposits to consumers.

Assumption E attributes implicit interest on business-owned demand deposits to owners of firms.

Source: The tax burden distribution is the same as in Table 20-1 except that the \$22,700 million in corporation income taxes is allocated according to consumption by income class (from Table 2-13), instead of ownership of publicly traded stock. The distribution of interest is the same as in Table 20-1. U.S. Government and foreign interest shown at the bottom of Table 20-1 is omitted here.

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which time he also taught part-time at The City College. He has accepted an Assistant Professorship in Economics at Rensselaer Polytechnic Institute, Troy, New York, commencing in September 1969.

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by

Judith Wildenberg

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1969

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INTRODUCTION

The availability of the four strands from meiotic tetrads has enabled a detailed characterization of meiotic intragenic recombination (reviewed by Whitehouse and Hastings, 1965; Fogel and Hurst, 1967). This process possesses the following primary characteristics. (1) Recombination between alleles in trans array is largely non-reciprocal. Thus the double mutant strand expected from a classical exchange between the mutant sites rarely occurs concomitantly with a prototrophic strand. Instead, prototrophic revertants mainly show $3^+ : 1^-$ segregations for one of the alleles (gene conversion). (2) Conversion does not necessarily occur with equal frequency at the two allelic sites. Rather, conversion displays a directional polarity. (3) Conversional events are correlated with enhanced recombination of flanking markers. The revertant strand is generally involved in these exchanges at a frequency greater than that expected by chance alone.

Similarities are apparent in the comparable mitotic data from Saccharomyces cerevisiae. Thus a double mutant segregant accompanies prototroph formation in only a small fraction of the revertants from heteroallelic diploids (Roman, 1956a). Also, coincident associations of conversion with recombination of flanking markers have been described (Fogel and Hurst, 1963).

However, mitotic intragenic events are generally studied with selective procedures, typically in revertant diploid clones (reviewed by Pritchard, 1963). While this is necessitated by the rarity of spontaneous mitotic recombination, the amount of information obtained is limited not only by the operational failure to detect events which do not terminate in prototrophy, but by the recovery of only one of the participating strands in one-half of the prototrophic diploids. The pattern of mitotic events cannot therefore be fully specified. Moreover the question remains whether fundamentally similar recombinational mechanisms are operative during meiosis and mitosis. While the latter question can be resolved with techniques facilitating the complete recovery of all cellular products associated with prototroph formation, such systems have generally been inadequately marked (Roman, 1963). Consequently, the relationship between intra- and intergenic recombination remains unclarified.

Mortimer (1959) has shown that X-rays stimulate prototroph formation in heteroallelic diploids. The number of prototrophs rises linearly over a defined dose range (Manney and Mortimer, 1964; Hurst, Fogel and Weinstock, 1967). In addition Esposito (1967) has observed that the number of X-ray induced prototrophs fluctuates in a characteristic manner during the

cell cycle; the frequency is maximum just prior to the initiation of DNA synthesis, declines during replication and is minimal at the completion of replication. In this study X-ray induced histidine-1 prototrophic cells, rather than clones, were selected from synchronous prereplicative yeast cultures and the first four division products subsequently separated. Such pedigrees were isolated from both a linear and non-linear portion of the X-ray prototroph induction curve and from different stages during the cell cycle. The results support the view that similar recombinational mechanisms occur in meiotic and X-ray treated mitotic cells. Evidence is presented that mitotic prototroph formation can occur during the two-strand stage and that selection for mitotic histidine prototrophs results in a high frequency of irregular segregations at a closely linked cistron. Further, no significant differences were observed between X-ray derived mitotic prototrophs isolated at different stages during the cell cycle.

MATERIALS AND METHODS

Strains

The diploid clones utilized in these experiments were synthesized by Dr. D. Hurst and Dr. S. Fogel from the following parental ascospores:

Z2367- Z842-5B x A806-7B

α + + his1-315 + arg6 thr2 leu1 + + ade1
 a ura3 thr3-1 + his1-1 ade6 gal2 ade1

Z3735- A3681-2D x A3671-1A

ura3 thr3-1 + his1-315 + arg6 try2 + ade6 gal2
 + + thr3-2 + his1-1 + + leu1 + +

uvsl adel
 + adel

For details of the origin of the two histidine-1 alleles and Z2367 see Fogel and Hurst (1967). They located the his1-315 mutant at the proximal end of the cistron with respect to the centromere by the flanking marker arrangement in prototrophic asci containing the double histidine-1 mutant.

Diploid Z3735 was synthesized for the present study. The thr3-2 allele was isolated in this laboratory following treatment with the mutagen ethylmethanesulfonate. The recovery of a tetrad from Z3735 with a reciprocal exchange between the mutant sites tentatively places the thr3-2 mutant distal to the thr3-1 mutant with respect to the centromere (Hurst and Fogel, unpublished data).

The ura3 (uracil), thr3 (threonine and methionine), his1 (histidine), arg6 (arginine), and try2 (tryptophan) markers are located on linkage group V in this order, as determined by Mortimer and Hawthorne (1966). The map distances are: ura3-5.0-centromere-34.0-thr3-2.4-his1-10.0-arg6-20.8-try2 (Hawthorne and Mortimer, 1960; Fogel and Hurst, 1967). Aside from the loci leu1 (leucine) and ade6 (adenine) which are both located in linkage group VII, the remaining markers segregate independently of each other (Mortimer and Hawthorne, 1966). The uvs mutant (ultraviolet light-sensitive) was isolated by Dr. D. Hurst and is not centromere linked.

Media

For details of the solid media used in these experiments see Roman (1956b), Fogel and Hurst (1963), and Hurst and Fogel (1964). Liquid starvation medium is described by Williamson and Scopes (1960) and contains, per liter: 0.34 g calcium chloride.2H₂O, 0.75 g potassium chloride, 0.5 g magnesium chloride.

Mutagenesis

The thr3-2 allele was isolated according to the following procedure (Lindgren, Hwang, Oshima and Lindgren, 1965). An 18 hr haploid culture was washed in distilled water and resuspended in 10 ml of 0.05M phosphate buffer, pH 9.0 at a

concentration of about 2×10^8 cells per ml. Ethylmethane-sulfonate (0.3 ml) was added, and the culture was incubated at room temperature with shaking for 60 min. The suspension was washed twice in 10 ml of a 6% solution of sodium thio-sulfate and post-incubated for 60 min in yeast extract-peptone-dextrose (YEPD). The culture was then diluted in sterile distilled water so that platings of 0.1 ml would yield approximately 60 clones per plate on complete medium. After 72 hr the resultant clones were replica-plated to complete medium lacking threonine. About 3000 clones were examined. Auxotrophic mutant clones, identified by their failure to grow on the selective medium, were crossed with strains carrying known thr3 alleles. Allelism was indicated by the absence of complementation in the resultant diploids.

Isolation of a Synchronous Fraction of Cells

A method for obtaining synchronously dividing cultures of Saccharomyces cerevisiae has been described by Williamson and Scopes (1962). Their procedure involves the removal of small cells from a stationary phase population consisting primarily of large unbudded cells by repeated centrifugation in a 15% mannitol solution. The remaining large cell fraction is then subjected to several cycles of feeding and starvation. In the present work it was more expedient to use the small cells.

These can be rapidly removed from the population as a homogeneous fraction, completely uniform in size. Such cells possess the advantage of dividing synchronously upon inoculation into fresh medium without prior cycles of feeding and starvation. The synchronous cultures used in the experiments reported here were obtained according to the following procedure. One clone from a synthetic complete streak plate was inoculated into 10 ml of double strength YEPD contained in a 50 ml Erlenmeyer flask at a concentration of about 100 cells per ml. The culture was incubated for 48 hr at 30° with shaking. After three washings, the cells were resuspended in 5 ml of sterile distilled water at a concentration of about $6-8 \times 10^8$ cells per ml. Such stationary populations consist of both budded and unbudded cells, the latter being broadly divisible into four classes on the basis of cell size. The suspension was then slowly centrifuged for approximately 2 min leaving only the smallest cells in the supernatant. A swinging-bucket centrifuge (International Model CL) was used. Since the exact speed and time of centrifugation vary with the concentration of cells and the proportion of small cells in the population, these parameters must be determined for each culture individually. The supernatant was decanted and inspected microscopically. Any sample containing discernible heterogeneity in size, as

well as any sample containing more than 0.5% budded cells, was discarded. This step is critical since cells visibly larger than the isolated fraction will contribute to the asynchrony of the culture. The original pellet was resuspended in 5 ml distilled water and the centrifugation repeated until the requisite cell number was isolated. About 5×10^7 cells were isolated at each centrifugation. However the efficiency of the procedure can be improved by centrifuging several such suspensions simultaneously and combining the respective yields.

The synchronous division of the isolated fraction was established as follows. The cells were inoculated into single strength YEPD at a concentration of 4×10^7 cells per ml and incubated at room temperature. At 15 min intervals, samples were removed and diluted with sterile distilled water containing 2 drops per ml of a 37.5% solution of formalin (Esposito, 1967). These were then scored for the percentage of budding cells as well as for cell number. Since separation of the bud from the mother cell does not usually occur until one or both cells begin to bud again (Burns, 1954; Williamson and Scopes, 1960; Williamson, 1964), the latter measurement is indicative of the duration of synchrony. The increase in the number of budding cells with time was observed with an oil immersion objective. Only cells with visible buds were