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CASH FLOWS ORIGINATING IN CORPORATE BOND FINANCING

THE PRESENT chapter is concerned with certain cash or money flows arising from transactions in corporate funded debt. The estimates to be developed and analyzed do not relate to cash transactions arising from open-market trading in corporate bonds, but only to primary (nontrading) receipts and payments arising from cash offerings and extinguishments and to the money flows associated with the servicing of the debt. In the measurement of such cash flows, we distinguish between those originating in "capital" transactions and those originating in "income" transactions.

Our estimates of capital flows are of three types: (1) gross cash proceeds of corporations at offering; (2) gross cash payments by corporations at extinguishment; (3) net cash flow from these primary capital transactions in corporate bonds. Gross cash proceeds to corporations at offering are equivalent to the aggregate volume of cash paid for new securities by investors (including commissions to underwriters),[1] and gross cash payments by corporations at extinguishment are equivalent to the aggregate cash receipts of investors upon retirement of their holdings. Net

[1] Gross cash proceeds of corporations at offering, as estimated here, are conceptually identical with Securities and Exchange Commission "estimated gross proceeds." SEC "estimated net proceeds" at offering are amounts received by issuers after payment of compensation to distributors and other costs of flotation and therefore constitute a better estimate of corporate receipts. Very little information is available in the records of the Corporate Bond Project on the spread between gross and net proceeds before 1939, but from the little that could be obtained, the spread appears to have averaged between 5 and 6 percent of gross proceeds in the first decade of this century, between 6 and 7 percent in the second, between 5 and 6 percent in the third, and between 3 and 4 percent in the fourth. For the period 1939-51, the SEC estimates that "compensation to distributors" for registered issues decreased from 2.0 to 0.8 percent of gross proceeds. See the Securities and Exchange Commission's Ninth, Twelfth, Fourteenth, and Seventeenth Annual Reports (1943, 1946, 1948, and 1951), Table 2, Part 2. Some of the decline since 1920 may have been due to the rise in average size of issue. (See page 52f.)

cash flow is defined from the point of view of the corporate obligor sector and is the difference between gross receipts and payments; it is positive when corporate cash receipts from offerings exceed payments at extinguishment and is negative when corporate cash payments exceed receipts.

Our estimates of the flow of income arising from corporate bond financing, hereafter termed income flow, relate to coupon payments. These payments are classified in the usual way as income flow rather than as capital flow, since they appear in the earnings statements of investors and obligors as income and offsets to income, respectively. The estimates to be developed are of two types: (1) contractual interest charges, and (2) actual interest payments. The contractual series represents the aggregate cash amount of coupon payments promised by corporate obligors, and the actual series, the aggregate cash amount of coupon payments made (including any payments of overdue interest). The difference between charges and payments is the net amount of interest in default, and the cumulated difference is the amount of interest in arrears.

Summary of Findings

Over the entire period 1900-1943 gross cash proceeds from sale of straight corporate bonds were found to aggregate $60.2 billion, and gross cash payments at extinguishment $40.0 billion, leaving a net cash flow to corporations of $20.2 billion. Over the same period there was a $16.8 billion increment in the par amount of funded debt outstanding. Thus net cash flow to corporations exceeded the net change in outstandings by $3.4 billion. Only part of this represented a loss to the investor group from the scaling down of debts following default, the remainder resulting from voluntary conversions of bonds into stock. As might be expected, most of the conversions occurred during the first three decades of the century, while write-downs were particularly heavy after 1931.

Although the discrepancy between net cash flow and net change in outstandings over the entire period was sizable, over short periods the two series are closely associated, so that one can be estimated from the other. We use this relationship to extrapolate corporate bond outstandings for the years 1945-51 from Securities and Exchange Commission cash-flow data, obtaining

the rough estimates of outstandings and the related net changes that have been utilized in Chapter 2.

During 1900-1943 corporations contracted to pay as interest on their obligations about $41 billion, or 1.4 times the maximum amount of straight bonds outstanding in any of the years. The series on contractual charges and actual payments behaved very much like total outstandings, rising to peaks in the early thirties and falling thereafter. While both series were insensitive to cycles in general business activity, the difference between them (the amount of interest in default) shows pronounced inverse conformity, falling during expansion phases of the cycle and rising during contraction. Nevertheless, the record of American business enterprise in meeting the fixed charges on its funded obligations was remarkably good in the period under study, over 95 percent of the charge being paid in most of the years and in no year less than 84 percent. Our data show that the "burden" of the funded debt—defined as the ratio of interest payments to outstandings—responds sluggishly to changes in current market rates of interest. Within a little more than a decade, however, the continuous decline of interest rates that began in 1932 reduced the burden of the debt by nearly 20 percent, the burden in effect being shifted onto the bondholder in the form of an equal reduction in the rate of return on investment.

Uses of the Cash-flow Data

The cash-flow estimates developed in this chapter may be used in various ways: the income-flow estimates in the analysis of the long-term interest component of national income, and the capital-flow estimates in the study of the disposition of savings by type of investment. Users of the estimates should refer to Chapter 1 for a statement of the general limitations of these series and a definition of the universe of loans covered. Our cash-flow series cover only straight bonds and exclude corporate mortgage and term loans. It will be recalled, also, that we include only bonds issued by nonfinancial domestic corporations and held by the domestic investing public. The latter includes households, financial intermediaries, and nonfinancial corporations not affiliated with the obligor.

Although little is known about the magnitude of the investment holdings of corporate bonds by the nonfinancial corporations in-

cluded in our study, it seems likely that they are quite small and that no great error would be committed by neglecting them for certain types of analysis. For example, the data on income and capital flow may be used to represent the approximate volume of cash flow between the nonfinancial corporate (obligor) sector of the economy on the one hand and all other sectors on the other. But estimates of the flow to and from some residual sector might be seriously impaired by the failure to adjust for nonfinancial corporate holdings, particularly if the net purchases of the residual sector were small. The household sector is a case in point. Conceptually, new investment by households in corporate bonds, i.e. their net purchases, is equivalent to our net cash capital flow to nonfinancial corporations from sale of bonds less net purchases by financial intermediaries and the nonfinancial corporate sector on investment account plus net purchases by households of the bonds of the financial intermediaries. Because the purchases by households generally are small, the neglect of any item in the equation (such as purchases by nonfinancial corporations) might introduce a serious error in the estimates.[2] This is a problem that must be faced by those who wish to use the corporate bond data in analyzing the disposition of personal savings among various types of investments.

Cash Flows Originating in Capital Transactions

The section on cash flows arising from primary capital transactions will first discuss the methods used in deriving the three basic series (gross cash proceeds, gross cash payments, and net cash flow), then compare the cash-flow data with related series expressed in par amounts, and finally use the net flow estimates of the SEC to obtain approximations to the volume of funded debt currently outstanding.

Derivation of Estimates

(1) *Gross cash proceeds at offering.* A direct procedure for estimating gross cash proceeds at offering (including bankers' commissions) would be simply to multiply the par amount of each cash offering by its offering price and sum the products by year and by industry group. Because of incomplete information on method and price of offering for individual issues, however, it

[2] Certain adjustments have already been made for bonds purchased abroad and by the federal government. See page 32.

was necessary to use the aggregate estimates of cash offerings discussed in Chapter 3 and to apply against these an index of average offering price.

Annual estimates for cash offerings of straight bonds by major industry group were obtained, as Chapter 3 explains, by expanding the par amounts of the known cash offerings in Table A-10 on method of offering to cover the portion of offerings for which the method was unknown.[3] Annual index numbers of offering prices for each group were then constructed by weighting each offering price obtainable from the primary source materials by the par amount of the offering, summing the products, and dividing by the sum of the weights, the weights being adjusted, if necessary, for sample size. The price indexes were then applied against estimated cash offerings to obtain the series for gross cash proceeds at offering presented in Table A-22.

(2) *Gross cash payments at extinguishment.* The procedure used in estimating gross cash payments at extinguishment was essentially the same as that used to obtain gross cash proceeds at offering. The basic information on method of extinguishment has been described in Chapter 3 and is presented in Table A-11. For the 78 percent of all extinguishments covered by the table that were final extinguishments, the estimating procedure was identical with that used to obtain cash proceeds at offering: known cash final extinguishments of straight issues (including mixed cash and noncash) were simply expanded to cover the portion of the issues extinguished by unknown method. The resulting series is called "estimated cash final extinguishments."[4] The price index applied against this series was obtained by weighting all known final extinguishment prices by the corresponding par amounts outstanding at final extinguishment after adjustment for sample size.[5]

As Table A-11 indicates, no breakdown of partial extinguish-

[3] Estimated cash offerings equal known cash offerings divided by known offerings multiplied by total offerings.

[4] Estimated cash final extinguishments equal known cash and mixed final extinguishments divided by known final extinguishments multiplied by total final extinguishments.

[5] The price used was par for bonds extinguished by payment in full at maturity, the call price for issues extinguished by call, the cash payment expressed as a percent of par when both cash and new securities were given, etc. If, for example, an issue was paid off 40 percent in cash and 60 percent in new bonds, a price of 40.0 was used.

ments between cash and noncash was available, nor were prices recorded for partial extinguishments. Therefore it was necessary to use the materials on final extinguishments to estimate cash partial extinguishments and their prices. The par amounts of estimated cash partial extinguishments were obtained from total partial extinguishments by subtracting out all partial extinguishments of convertible bonds (conversion is a noncash type of extinguishment) and by assuming that the amount of cash partials in the remainder was proportional to the amount of cash finals in the total of all final extinguishments. Since virtually all cash partial extinguishments were effected either by call, purchase, or tenders, the price index applied against partial extinguishments was derived by taking weighted averages of the final extinguishment prices of bonds extinguished by those three methods.[6]

Finally the price indexes were applied against the estimated par amounts of cash final and cash partial extinguishments and the products were summed to obtain the series for gross cash payments at extinguishment presented in Table A-22.

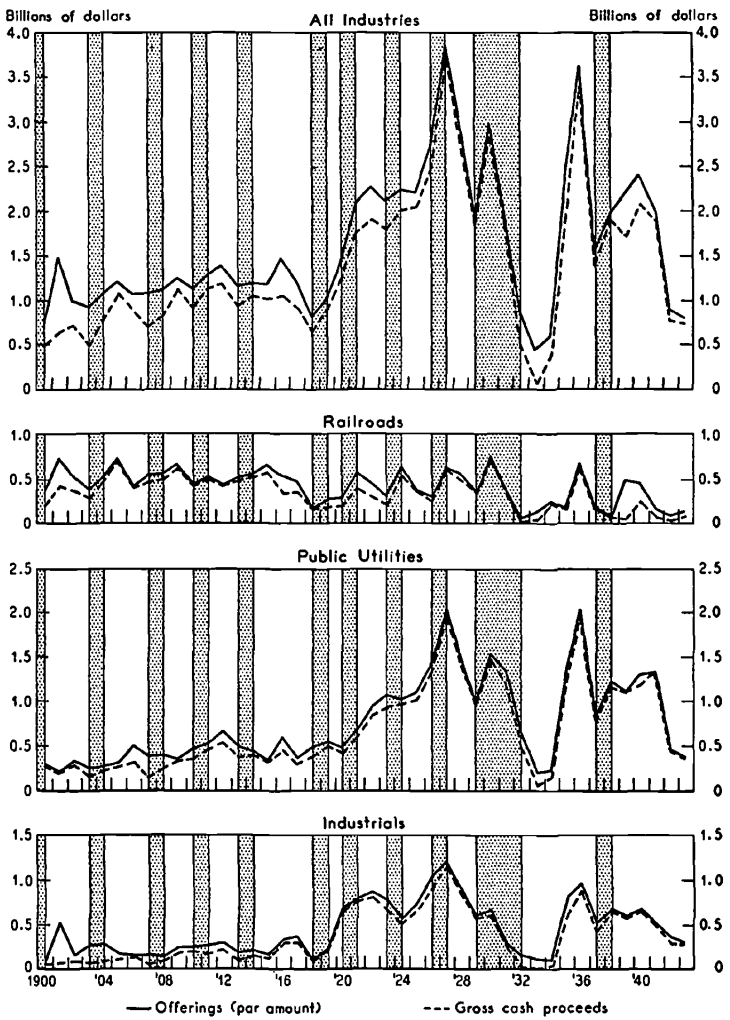
(3) *Net cash flow.* The net cash-flow estimates in Table A-22 were obtained simply by subtracting the estimates for gross cash payments at extinguishment from those for gross cash proceeds at offering.

Comparison of Capital-flow Estimates and Debt Estimates

The various estimates of cash flow originating in capital transactions are compared with the corresponding debt estimates in Charts 27, 28, and 29, which show the annual movements over 1900-1943. Gross cash proceeds at offering are plotted against total offerings, gross cash payments at extinguishment against

[6] The price index for cash partial extinguishments may be slightly too high and the estimates for the par amount of cash partials slightly too low. The price index may be biased upward by the fact that the market price is usually lower than the call price and that the proportion of bonds extinguished by open-market purchase is presumed to be somewhat lower for finals than for partials. The estimates for par amounts of cash partials may be biased downward by the fact that total extinguishments include noncontractual exchanges and contract modifications, types of extinguishment that do not occur in the case of partials. The net effect of these compensating biases is unknown, but it should be relatively unimportant in the aggregate cash estimates, since partial extinguishments are only 22 percent of total extinguishments.

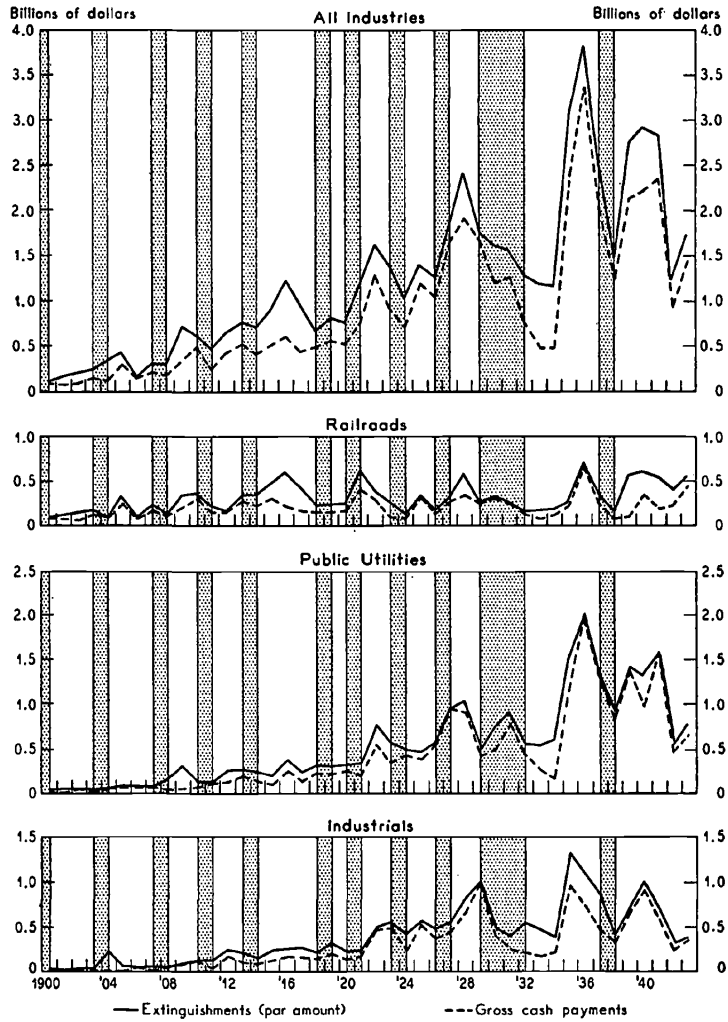
CHART 27—Corporate Bond Offerings and Gross Cash Proceeds at Offering, 1900-1943



From Tables A-2 and A-22; straight bonds, yearly totals.

Shaded areas, representing contractions in general business activity, and white areas, representing expansions, are from Arthur F. Burns and Wesley C. Mitchell's Measuring Business Cycles (National Bureau of Economic Research, 1946), p. 78.

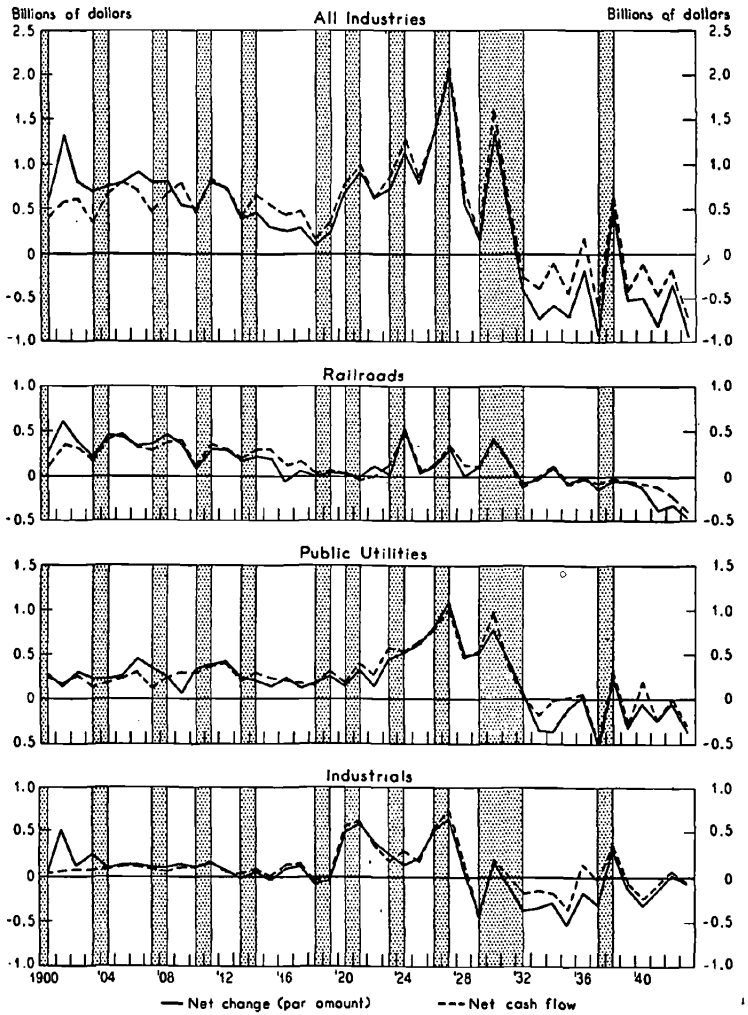
CHART 28—Corporate Bond Extinguishments and Gross Cash Payments at Extinguishment, 1900-1943



From Tables A-2 and A-22; straight bonds, yearly totals.

Shaded areas represent contractions in general business activity and white areas represent expansions (Burns and Mitchell, op.cit., p. 78).

CHART 29—Net Changes in Corporate Bond Outstandings, and Net Cash Flow, 1900-1943



From Tables A-2 and A-22; straight bonds, yearly totals.

Shaded areas represent contractions in general business activity and white areas represent expansions (Burns and Mitchell, op.cit., p. 78).

total extinguishments, and net cash flow against net changes in outstandings.

The principal point to be noted from these charts—a point of major import for the interpretation of the cyclical behavior of the net cash flow—is the similarity of the debt and cash series with respect to direction of movement and timing at turning points. The correlation between the various series compared on the charts is +0.90 or better in all cases except between rail extinguishments and payments, where the disproportionately large volume of contract modifications and exchanges following default reduces the coefficient to +0.77 (see Chapter 3). Because of the generally high correlation the conformity indexes for the various capital-flow series are quite similar to the corresponding indexes for total offerings, total extinguishments, and the net change in outstandings (Table 25). As might be expected from the way the cash-flow series were constructed, there is an equally close correspondence between the indexes for the par amount of cash offerings and those for cash proceeds, and between the indexes for par amount of cash extinguishments and those for cash payments. Cash proceeds, like total offerings, have high negative conformity with business cycles while cash payments, like total extinguishments, have moderate positive conformity. The net cash flow is therefore strongly inverted with respect to movements in general business activity.[7]

[7] Analysis of annual data for the combined industries shows that cash proceeds, like cash offerings and total offerings, typically expand over cycle stages v-III (cf. Chapter 3, footnote 3). Conformity indexes computed on that basis are as follows:

	Expansion	*Contraction*	*Full cycle*
Total offerings	−40	−80	−58
Cash offerings	−40	−80	−37
Cash proceeds	−40	−80	−37

Similarly an analysis of the annual data on cash payments shows that they behave like cash extinguishments and total extinguishments. On an annual basis, all of these series typically expand over cycle stages I-III (cf. Chapter 3, footnote 5), and their conformity indexes on that basis are as follows:

	Expansion	*Contraction*	*Full cycle*
Total extinguishments	+64	+20	+60
Cash extinguishments	+64	0	+60
Cash payments	+64	+20	+70

Finally, the annual estimates of net cash flow and net change in outstandings

TABLE 25—Conformity Indexes for Total Corporate Bond Offerings, Extinguishments, and Net Change, and for Cash Offerings and Proceeds, Cash Extinguishments and Payments, and Net Cash Flow: Ten Reference Cycles 1900-1938

	EXPANSION			CONTRACTION			FULL CYCLE		
	Total offerings	*Cash offerings*	*Cash proceeds*	*Total offerings*	*Cash offerings*	*Cash proceeds*	*Total offerings*	*Cash offerings*	*Cash proceeds*
All industries	+20	−20	0	−80	−80	−80	−68	−68	−68
Railroads	−20	−60	−40	−60	−60	−60	−79	−79	−79
Public utilities	+20	0	−20	−40	−80	−80	−16	−68	−68
Industrials	0	0	0	−40	−60	−40	−5	−47	−16
	Total extinguishments	*Cash extinguishments*	*Cash payments*	*Total extinguishments*	*Cash extinguishments*	*Cash payments*	*Total extinguishments*	*Cash extinguishments*	*Cash payments*
All industries	+20	+60	+80	+20	+40	+40	+5	+37	+37
Railroads	+40	+40	+40	+40	+60	+60	+16	+37	+37
Public utilities	+40	+60	+60	−20	−20	0	+5	+37	+5
Industrials	+60	+60	+60	+20	+30	+10	+26	+37	+37
	Net change		*Net cash flow*	*Net change*		*Net cash flow*	*Net change*		*Net cash flow*
All industries	−20		−60	−80		−80	−68		−68
Railroads	−60		−40	−60		−60	−68		−68
Public utilities	−20		−40	−40		−60	−26		−68
Industrials	+20		0	−40		−80	−5		−47

Based on annual data, Tables A-2, A-10, A-11, and A-22. These indexes do not take account of possible leads or lags at reference-cycle turning points.

The second point to be noted concerns the excess of net cash flow over net change in outstandings. Total offerings usually exceeded gross cash proceeds (Chart 27), and total extinguishments always exceeded gross cash payments (Chart 28), both for the combined industries and for each of the major industry groups. However, the spread between extinguishments and payments was usually greater than the spread between offerings and proceeds. In consequence (Chart 29) the net cash flow usually exceeded the net change in outstandings (i.e. the change in the par amount of the debt). The differences between the two series were especially pronounced during the later years of the period under study, when funded debt was being retired. From 1932 on, both series were negative in all but two years; and since net retirements exceeded net cash payments, the debt was being repaid at a discount.

Over 1900-1943 aggregate gross cash proceeds exceeded aggregate gross cash payments by $20.2 billion while outstanding funded debt increased by only $16.8 billion. This discrepancy of $3.4 billion was due primarily to the retirement of straight bonds by exchange for various equity and debt instruments. A secondary cause was the scaling down of debt following default and the repayment of bonds at a cash discount from par. The excess of net cash flow to corporations over the net increase in their indebtedness occurred principally during and after the Great Depression. Between 1900 and the end of 1931 the increase in par amount of corporate bonds outstanding exactly equaled the net cash flow to corporations from sale of bonds (in effect, the consolidated corporate sector was selling bonds at par). During the period of debt contraction, 1932-43, $6.2 billion par amount of debt was retired on balance through cash payments of only $2.8 billion (in effect, the consolidated corporate sector was retiring

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for the combined industries suggest that these series both typically expand over cycle stages v-ix. Since Table 25 is computed on a v-ix basis (i.e. with no allowance for possible leads or lags at reference-cycle turning points), it was not necessary to recompute the indexes for these series.

The method of constructing reference-cycle patterns from annual data restricts the choice of typical expansion and contraction stages (cf. Chapter 4). The timing of the cash-flow series might be altered somewhat if monthly or quarterly observations were available.

bonds at the rate of 45 cents on the dollar).[8] The situation was less favorable for the railroads than for other industry groups, principally because of the lower settlement rates on defaulted rail bonds (cf. Chapter 5). Although $1.8 billion of rail debt was retired in the period 1932-43 by cash payments of $1.2 billion (repayment at the rate of 67 cents on the dollar), utilities and industrials retired even larger amounts and at lower rates of cash repayment.

Use of Net Flow Estimates to Approximate the Volume of Funded Debt Currently Outstanding

Since annual movements in net cash flow closely parallel those in net changes in outstandings (Chart 29), net flow estimates for corporate bonds prepared by the Securities and Exchange Commission were used to obtain the rough approximations of outstandings for the years 1945-51 shown in Tables A-1 and A-2. Extrapolations of this nature are liable to considerable error, but the risk seemed worth taking in view of the widespread interest in current figures on corporate bond outstandings. A favorable condition was the fact that the procedures used by the SEC to estimate net cash flow are essentially the same as those used to obtain our cash-flow estimates. Moreover, the two sets of estimates compare quite closely for years in which they overlap (cf. Appendix C).

Although the estimating procedures were about the same in both cases, and although the two cash-flow series are alike in excluding both mortgage and term loans of corporations, in several particulars the coverage differs. Our flow estimates relate solely to straight bonds, whereas the SEC estimates cover bond issues of minor types as well, i.e. income bonds, equipment obligations, and serial bonds. Therefore we first estimated the volume of outstandings for issues of all types and then applied reduction factors to obtain estimates for straight bonds. The reduction

[8] That is, only 45 cents in cash was received for each dollar of debt extinguished. Investors frequently received, in addition, valuable considerations other than cash for their old bonds (e.g. stock or debt instruments other than straight bonds). The relationships between the debt and cash-flow series will be dealt with in greater detail in a technical note at the end of the chapter.

factors were determined by extrapolating ratios of the volume of straight-bond outstandings to the volume of outstandings of all types from the trend over the years 1939-43. As is explained in Appendix C, adjustments were also made to eliminate bonds of the financial and real estate groups that are included in the SEC estimates but excluded from our series.

The method of calculating current estimates of the volume of corporate bond outstandings is shown in Table 26. Column 1, which gives the net cash flow to the corporate sector from sale of bonds of all types, was obtained by eliminating financial and real estate issues from the SEC estimates.[9] The estimates of outstandings are presented in the form of a range. The figures in column 2, the upper bounds for bond issues of all types, were obtained by cumulating column 1 after addition of the volume of funded debt outstanding on January 1, 1944 as given in Table A-1. The lower bounds of the range for issues of all types (column 3) were obtained by adjusting the estimates of column 1 downward, before cumulating, by the mean difference between our annual estimates of net cash flow and of net changes in outstandings over the period 1939-43. Corresponding estimates for straight bonds are presented in columns 4-6.

Since net cash flow typically exceeds the net change in outstandings (Chart 29), the values in columns 2 and 5 may be too high. On the other hand, the values in columns 3 and 6 may be too low, particularly in the postwar period when noncash extinguishments resulting from corporate reorganizations appear to have been low. For most years the true figures on outstandings should fall between the adjusted and unadjusted estimates given in the table. The midpoints of the ranges for bonds of all types and for straight bonds are presented in Tables A-1 and A-2 respectively.

Cash Flows Originating in Income Transactions

In analyzing the volume of fixed charges on corporate funded

[9] The SEC estimates for all issues combined (including finance and real estate) are presented under the heading "bonds" in the sources and uses statements of the Department of Commerce for the years 1946-51 in *Survey of Current Business*, February 1952, page 28. The differences between the sources and uses estimates and the corresponding entries in column 1 represent our adjustments for bonds of the financial and real estate groups.

debt, it is necessary to distinguish between the amount of cash interest promised by corporate obligors (contractual interest charges) and the amount of cash interest actually paid (actual interest payments). Actual interest payments, as here conceived, include cash interest paid on current account plus any cash payments of back interest due. The difference between contractual charges and actual payments is the net amount of interest in default. The subsections that follow will develop estimates of interest charges and payments on a monthly and annual basis, trace the movements in these series and in the derived estimates of interest in default over the period 1900-1943, and, by relating the two basic interest series to outstandings, determine the burden of fixed charges on corporate funded debt. The monthly estimates are presented in the statistical appendix but are not analyzed here. A principal use of the monthly data will be in the analysis of long-term interest payments as one of the components of national income.[10]

Derivation of Estimates

(1) *Contractual interest charges.* Contractual charges were determined by multiplying the estimated par amount of each issue outstanding on a coupon payment date by the appropriate coupon rate and summing the products by month, by year, and by industry group. The determination of the coupon rate was relatively simple, since full information on the annual coupon rate and frequency of coupon payment was available for all large issues (of straight bonds) and for the 10 percent sample of small issues. In the majority of cases interest was payable semiannually, and for such issues the appropriate rate was one-half the annual coupon rate. Rates for bonds carrying monthly, quarterly, or annual payments were adjusted accordingly.[11] Because bond contracts are usually drawn so that the maturity date coincides with a regular coupon payment date, it was generally possible to infer the remaining interest payment dates by counting back at regular intervals to the offering date. Adjustments were made in a few exceptional cases.

[10] See, for example, a forthcoming study of personal income and business cycles by Daniel Creamer.

[11] We estimate that out of 21,189 straight issues, over 98.5 percent paid interest semiannually and 1 percent paid interest quarterly.

TABLE 26—Estimates of Corporate Bond Outstandings for Issues of All Types, and for Straight Issues Only, from Estimated Net Cash Capital Flow, 1944-51

	BONDS OF ALL TYPES			STRAIGHT BONDS		
		ESTIMATED OUTSTANDINGS, BEGINNING OF YEAR			ESTIMATED OUTSTANDINGS, BEGINNING OF YEAR	
	Net cash capital flow[a] (1)	*Upper bound*[b] (2)	*Lower bound*[c] (3)	*Net cash capital flow*[d] (4)	*Upper bound*[b] (5)	*Lower bound*[c] (6)
			All industries			
1944	$ −630	$25,390	$25,390	$ −550	$22,800	$22,800
1945	−1,080	24,760	24,560	−940	22,250	22,050
1946	+990	23,680	23,280	+800	21,310	20,910
1947	+2,890	24,670	24,070	+2,530	22,110	21,510
1948	+4,340	27,560	26,760	+3,760	24,640	23,840
1949	+2,860	31,900	30,900	+2,500	28,400	27,400
1950	+1,720	34,760	33,560	+1,520	30,900	29,700
1951		36,480	35,080		32,420	31,020
			Railroads			
1944	−80	10,760	10,760	−70	9,490	9,490
1945	−440	10,680	10,580	−390	9,420	9,320
1946	−350	10,240	10,040	−300	9,030	8,830
1947	−60	9,890	9,590	−50	8,730	8,430
1948	+290	9,830	9,430	+250	8,680	8,280
1949	+180	10,120	9,620	+150	8,930	8,430
1950	+200	10,300	9,700	+170	9,080	8,480
1951		10,500	9,800		9,250	8,550
			Public utilities			
1944	−260	10,960	10,960	−240	10,370	10,370
1945	−260	10,700	10,600	−250	10,130	10,030
1946	+300	10,440	10,240	+280	9,880	9,680
1947	+1,730	10,740	10,440	+1,630	10,160	9,860
1948	+2,300	12,470	12,070	+2,170	11,790	11,390
1949	+1,820	14,770	14,270	+1,700	13,960	13,460
1950	+1,180	16,590	15,990	+1,100	15,660	15,060
1951		17,770	17,070		16,760	16,060
			Industrials			
1944	−290	3,660	3,660	−240	2,940	2,940
1945	−380	3,370	3,370	−300	2,700	2,700
1946	+1,040	2,990	2,990	+820	2,400	2,400
1947	+1,220	4,030	4,030	+950	3,220	3,220
1948	+1,750	5,250	5,250	+1,340	4,170	4,170
1949	+860	7,000	7,000	+650	5,510	5,510
1950	+340	7,860	7,860	+250	6,160	6,160
1951		8,200	8,200		6,410	6,410

[a] Preliminary SEC estimates of "net change in corporate debt issues outstanding" (cash transactions only) after adjustment to eliminate bonds of the real estate and financial groups. A positive net change indicates a cash flow to the corporate sector and a negative net change a cash flow from the corporate sector.

[b] Cumulated net cash capital flow from columns 1 and 4 applied, respectively, to outstandings on January 1, 1944 of bonds of all types (Table A-1) and of straight bonds (Table A-2).

[c] Column 2 or 5 adjusted for discrepancy between net cash capital flow and net change in outstandings. Adjustment factors were obtained from data for the years 1939-43 in Tables A-2 and A-22.

[d] Computed from column 1 by applying extrapolated ratios of outstandings of straight bonds to outstandings of all bonds, the extrapolations being based on data for 1939-43 in Tables A-1 and A-2.

Some convention had to be followed in determining the principal amount on which interest was earned. As an estimate of that amount, we used the amount outstanding at the beginning of the calendar year nearest to the regular interest payment date, adjusted where necessary for sample size.[12] For a large sample of bonds, annual amounts outstanding were provided on our data sheets; for the other issues, annual estimates were determined inferentially from information available on outstandings at the beginning of quadrennial years (1900, 1904, etc.).[13]

In estimating contractual charges for bonds in default, the question arises whether the obligor has contracted to pay interest after an issue has passed its maturity date. The courts have usually ruled in such cases that interest continues to accrue until principal is extinguished. Accordingly we have included in the

[12] An exception was made in the case of bonds finally extinguished in the last half of a calendar year. In computing the last payment on such issues, we used the amount outstanding on final extinguishment date.

[13] Readers familiar with the data sheets may be interested in the particular records used in constructing the estimates of contractual interest charges. (For a brief description of these records, see Appendix B.) Coupon rates and payment dates were taken from the Record of Offerings. For bonds in the Annual Record, amounts outstanding were available annually for the years in which they were in good standing, and were obtained from the Record of Corporate Bond Defaults, the Periodic Record, and from manual sources for years in which they were in default. For bonds not covered by the Annual Record, differences between amounts outstanding at the beginning of quadrennial years (given in the Periodic Record) were prorated uniformly. Information on amounts outstanding during the first and last years in the life of the issues was filled in, if necessary, from the Record of Issue and Extinguishment Characteristics.

contractual charges series the full amount of interest due, calculated from date of first offering to date of final extinguishment.

The principle of full recording likewise underlies our treatment of a few issues that do not bear interest payable entirely at a fixed constant rate. If interest was entirely contingent, the issue was classified as an income bond and hence excluded, since our interest series cover only straight bonds (see Chapter 1 for the definition of a straight bond); however, if interest was partly fixed and partly contingent, the full amount of the interest was included in calculating contractual interest charges.[14]

The appropriate coupon rates were multiplied by the corresponding par amounts on an individual issue basis, and the products were classified by month, to obtain the final aggregates of contractual interest charges. These are presented monthly in Table A-23 and annually in the first column of Table A-25.

(2) *Actual interest payments.* Actual interest payments were derived from contractual charges by first subtracting out all interest not paid when due on defaulted bonds or on bonds with contingent interest provisions, and then adding back any irregular cash payments actually made on account of such securities. In some cases defaulted bonds continued to pay interest until settled; in others, back interest was paid up in a lump sum on settlement date. In the latter cases, only cash paid on interest account was included, the remainder of the cash payment being considered as a capital payment and included in the estimates of gross cash payments at extinguishment.

Since all interest adjustments used to obtain actual interest payments were first expressed as a percentage of par, the procedure followed in estimating actual interest payments was the same as that outlined above for contractual charges: the payment rates were simply multiplied by the par amounts, and the products were added to or subtracted from contractual interest charges to give the totals of cash interest actually paid. The monthly estimates of actual interest payments are presented in Table A-24 and the annual estimates in the second column of Table A-25.

(3) *Interest in default and interest in arrears.* Because the volume of contingent interest included is small, the difference between payments and charges may be considered for most

[14] We estimate that only 0.2 percent of the total number of straight issues had partially contingent interest provisions.

practical purposes as the amount of interest currently in default. Annual estimates of interest in default are presented in the third column of Table A-25; interest in arrears, obtained by cumulating interest in default, is presented in the fourth column.

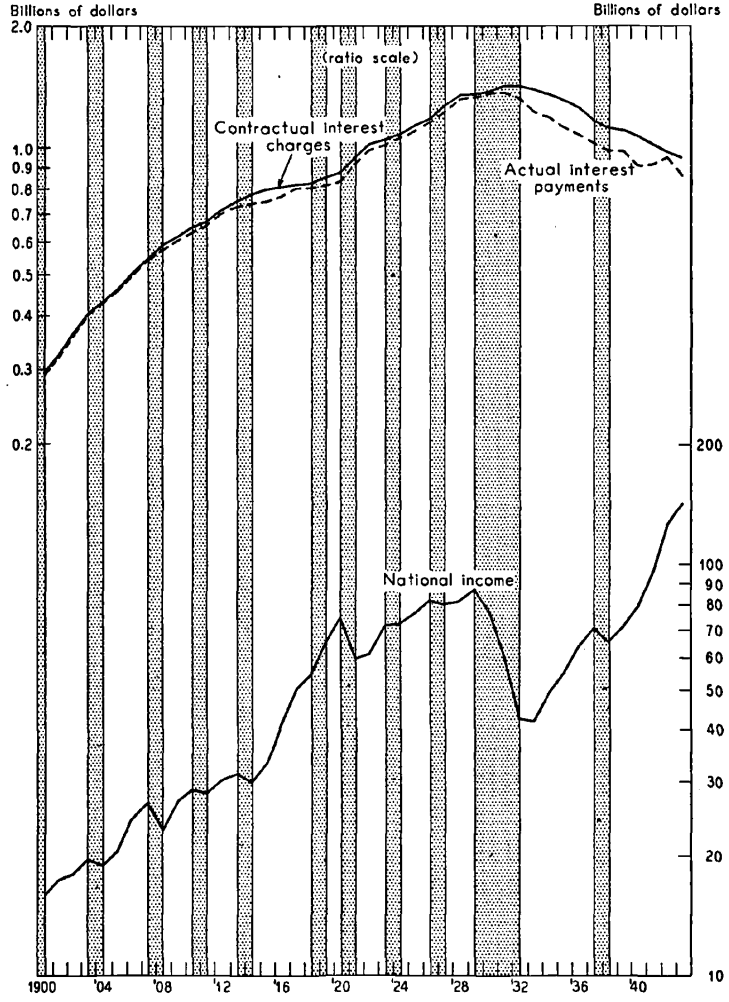
Since no attempt was made to determine the amount of overdue interest accrued as of January 1, 1900, the series on interest in arrears is too low for the early years. We know, however, that the par amount of bonds outstanding in default at that time was quite small both absolutely and in relation to the total volume of bond outstandings (cf. Chapter 5), and may infer that the discrepancy from neglect of accrued interest overdue is unimportant. On the other hand, the estimates include small amounts of back interest funded by exchange for other obligations, or canceled by court order or other method. No difficulty is created thereby if the series is interpreted strictly as the accumulated amount of cash interest unpaid; however, a slight upward bias is implied if the series is used to approximate the amount of interest currently in arrears.

The Volume of Contractual Interest Charges and of Actual Interest Payments

As the totals at the bottom of Table A-25 indicate, contractual charges for the period 1900-1943 aggregated $40.8 billion, or about 1.4 times the maximum amount of funded debt outstanding at any time during the period. When expressed on an annual basis, the data are no less impressive: the annual volume of fixed charges averaged slightly under $1.0 billion on average outstandings of $19.4 billion, or 4.8 percent.

Despite important changes, to be discussed later, in the rate of contractual interest charges (i.e. the average coupon rate), movements in the dollar volume of contractual charges since 1900 have roughly paralleled movements in outstandings (compare Chart 30 with Chart 2, page 44). For all industries combined, both series rose together to a peak in 1931 and then fell together through 1943. Contractual charges were only $0.3 billion in 1900, reached $1.4 billion in 1931, and stood at $0.9 billion in 1943. But because of the sharp fall in interest rates during the thirties, the decline in the volume of contractual charges between 1932 and 1943 was relatively greater than the decline in outstandings,

CHART 30—Contractual Interest Charges on Corporate Bonds, Actual Interest Payments, and National Income, 1900-1943



On the vertical scale, equal distances represent equal ratios of change.

Bond data are yearly totals for straight bonds, all industries, from Table A-25. National income data (net national product) are unpublished estimates by Simon Kuznets presented in Work Memorandum #6 of the Study of Capital Formation and Financing, National Bureau of Economic Research.

Shaded areas represent contractions in general business activity and white areas represent expansions (Burns and Mitchell, op.cit., p. 78).

charges contracting by 34 percent and outstandings by only 18 percent.

Actual interest payments made over the full period 1900-1943, during which contractual charges totaled $40.8 billion, aggregated $38.4 billion.[15] Hence only $2.3 billion, or less than 6 percent of aggregate contractual charges, was in arrears by January 1, 1944. Of the total arrearage 53 percent was owed by railroads, 25 percent by utilities, and 22 percent by industrial corporations. In relation to industry-group totals of contractual charges for the years 1900-1943, the utilities had the smallest percentage of interest in arrears (3.7 percent, as compared with 6.9 percent for rails and 7.2 percent for industrials). Considering the high credit rating now placed on industrial bonds, it may surprise some readers to learn that industrials also show a slightly poorer performance than the rails when the arrearage is cumulated to cover only the years of heavy interest defaults after 1931. The arrearage on rail bonds was reduced considerably by payment of back interest after 1940.

Because of the pronounced upward trend in outstandings over the first three decades of the study and the pronounced downward trend thereafter, the series for contractual charges and actual payments show no evidence of conformity with business cycles.[16] The series rose independently of the pace of general business activity during the first nine cycles (the cycles beginning in 1900 and ending in 1932) and fell over the last cycle (1932-38). As a result the expansion indexes for both payments and charges were +80 for all industries combined and for each industry

[15] Of the $38.4 billion of actual interest payments, $38.0 billion represented interest paid when due and only $0.4 billion constituted payments of back interest. One-half of all the back interest was paid in the four years 1940-43. Three-quarters of the total for all years was paid by the railroads.

[16] The reason for the absence of conformity is that the charges and payments series reflect average experience over a long interval in the past. Thus, of the $948.5 million of contractual charges on bonds outstanding in 1943 only one-quarter related to bonds outstanding less than five years; one-half related to bonds outstanding less than fourteen years, and three-quarters to bonds outstanding less than twenty-six years. It follows that interest payments are slow to reflect current interest rate and price changes as well as other factors shaping current financial decisions. This lag explains not only the lack of cyclical conformity of the series but also the stability and probable future trend of the long-term interest component in the national income accounts.

group, indicating in each case a rise in nine expansion stages and a fall in the tenth. Similarly, most of the contraction indexes were —80, also indicating nine rises and one fall. The full-cycle indexes are quite low, the highest being +47 for actual interest payments of the combined industries.

On the other hand, interest in default—the series obtained by subtracting payments from charges—is clearly inverted with respect to business cycles (Table 27).[17] All of the full-cycle indexes are negative; with one exception, the rails, all of them indicate definite inverted conformity. In addition, all of the expansion and contraction indexes are either negative or zero. It is worth noting that in the rail field, interest in default is influenced less by movements in general business activity than it is in the other two industry groups. In Chapter 5, it may be recalled, the same was found to be true of the par amount of new defaults.

Percentage of Contractual Interest Paid

Percentages of contractual interest paid in each year—calculated by dividing actual payments by contractual charges—show the proportion of debt service met by corporate obligors. Over business cycles these percentages behave very much as would the negative of the series just considered on interest in default: that is, like a series obtained by subtracting contractual charges from actual payments.[18] While interest in default is inverted with respect to business cycles, the percentage of contractual interest paid conforms positively. The conformity indexes for these series are presented for comparative purposes in Table 27.[19]

[17] A detailed analysis of the all-industries series shows that it typically expands over cycle stages v-IX.

[18] Conformity indexes may be looked upon as homogeneous functions of degree zero in time-rates of change, in the sense that any two series with proportional time-rates have identical conformity indexes. It is easily demonstrated that the time-rates of the two series under consideration are roughly proportional unless the amount of contractual charges undergoes violent change. Let A represent actual interest payments and C, contractual charges. Also let $y = C - A$ represent interest in default and $x = A/C$, the proportion of contractual interest paid. Then $-y = C(x - 1)$. If C is approximately constant, i.e. if $dC/dt \sim 0$, then $-dy/dt \sim C(dx/dt)$.

[19] An analysis of the all-industries total for the percentage of contractual interest paid shows that it typically expands over cycle stages I-V, i.e. over the cycle stages during which interest in default typically contracts (see footnote 17).

TABLE 27—Conformity Indexes for Interest in Default and Percent of Contractual Interest Paid on Corporate Bonds: Ten Reference Cycles 1900-1938

	EXPANSION		CONTRACTION		FULL CYCLE	
	Interest in default	*Percent of contractual interest paid*	*Interest in default*	*Percent of contractual interest paid*	*Interest in default*	*Percent of contractual interest paid*
All industries	−20	+20	−60	+40	−68	+68
Railroads	−20	+20	0	0	−21	+16
Public utilities	−10	+60	−50	+20	−58	+47
Industrials	0	+20	−60	+40	−47	+37

Based on annual data, Table A-25. These indexes do not take account of possible leads or lags at reference-cycle turning points.

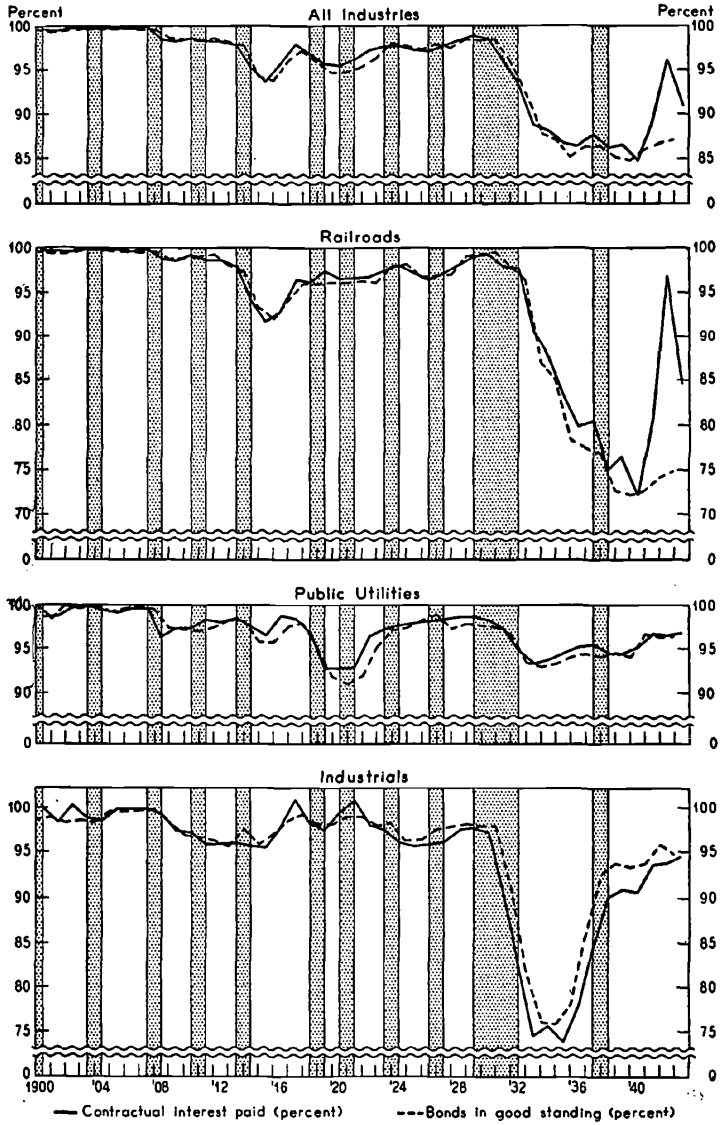
In Chart 31 the series for percentage of contractual interest paid during the year is plotted against the percentage of bonds in good standing at the beginning of the year (the complement of the percentage of outstandings in default, which is shown in Chart 23). With allowance for minor differences in the timing of the observations, the two series are seen to be very similar. That is, of course, what we should expect: if, for example, 90 percent of contractual interest were paid in a given year, then we should infer that approximately 10 percent of bond outstandings was in default and 90 percent in good standing. Chart 31 shows, however, that the two ratios are not identical. Since the average coupon rate on bonds in default was usually above the average on bonds in good standing, the percentage of contractual interest paid was frequently below the percentage of outstandings in good standing. On the other hand, in some years it was above the percentage in good standing as certain bonds in default of principal continued to meet interest payments, or as back interest was paid up in volume when default situations were settled. This last factor was particularly important in the railroad field in 1941-43. Large amounts of back interest on defaulted rail bonds were repaid in those years, and the percentage of contractual interest paid rose sharply in relation to the percentage of non-defaulted outstandings.

Despite the lapses that occurred in actual payments during the Great Depression, domestic corporations have had a remarkably good record in the servicing of their funded debt. In no year from 1900 through 1943 was less than 84 percent of contractual interest paid, and in 32 out of 44 years payments exceeded 95 percent. As Chart 31 shows, there was little difference in the records of the three major industry groups before 1931; after that time the utilities clearly emerged as the superior group.

The percentages of contractual interest paid do not reflect reductions in interest charges through corporate reorganizations, etc.; nevertheless, the over-all performance of corporate bonds in respect to interest payments appears remarkable, particularly when compared with that of foreign dollar bonds publicly offered in this country. Only 55 percent of the debt service on these obligations was being met as late as the beginning of 1952.[20]

[20] Institute of International Finance of New York University, *Statistical Analysis of Publicly Offered Foreign Dollar Bonds*, Bulletin No. 177, June

CHART 31—Percent of Contractual Interest Paid and Percent of Corporate Bonds in Good Standing, 1900-1943



Based on Tables A-2, A-21, and A-25; for straight bonds. Percents of interest paid relate to yearly totals, and of bonds in good standing to January figures.

Shaded areas represent contractions in general business activity and white areas represent expansions (Burns and Mitchell, op.cit., p. 78).

The Burden of the Corporate Debt

The impact of money rates on the cost of debt financing is reflected in the ratio of interest payments to outstandings (see Chart 32).[21] Ratios of this type are frequently used in analyzing the "burden" of the federal debt but have hitherto not been available for corporate bonds. For the federal debt the contractual rate is the same as the actual; but a distinction must be drawn between the two in the present context because of the possibility of interest defaults on corporate bonds.

Like the percentage of contractual interest paid, the spread between the contractual and actual rates (that is, the difference between the series shown on Chart 32) reflects the ability of corporate obligors to meet the fixed charges on their funded debt. The remarkably good record of American business enterprise in this respect is shown again by the closeness of the actual to the contractual rates. The largest spread for bonds of all industries combined, which occurred in several years in the period 1935-40, was only 0.7 percent. In contrast, the spread on foreign dollar bonds in 1951 was 1.9 percent, the difference between a contractual rate of 4.1 percent in that year and an actual rate of 2.2 percent.

The rate of contractual charges on any date is equivalent to a weighted average coupon rate on corporate bond outstandings on that date. Since bonds are usually offered at or near par, the coupon rate on a particular issue is approximately equal to the

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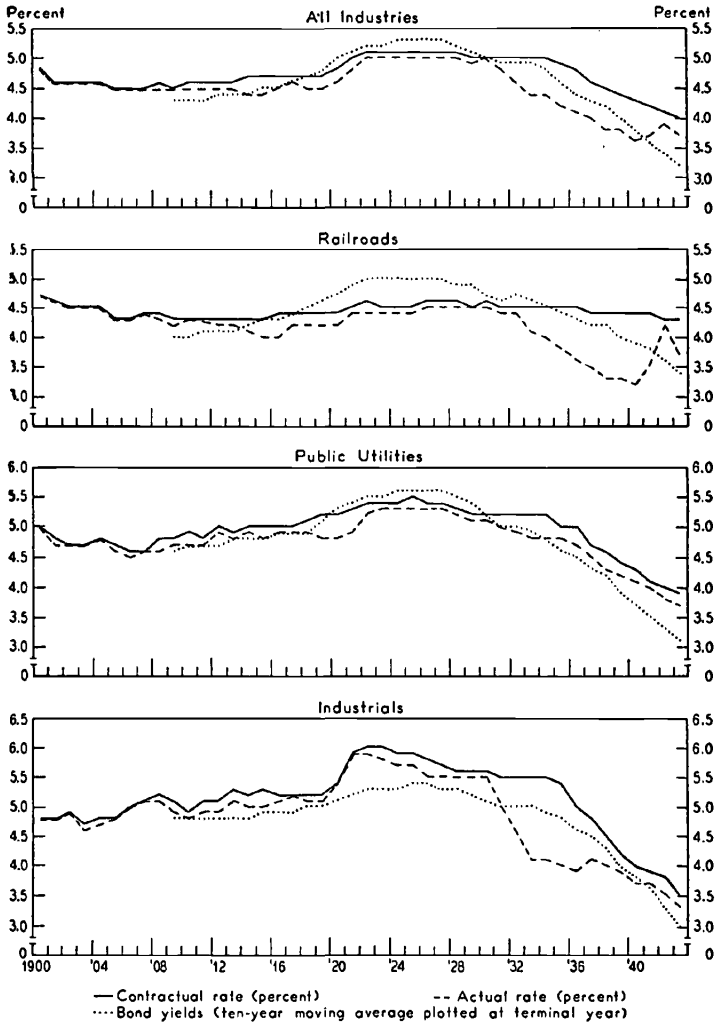
16, 1952, Appendix D. The above figure is based on obligations of Latin America, Europe, the Far East, Canada, and the International Bank for Reconstruction and Development. When the latter two groups are removed, the amount of interest paid drops to only 32 percent.

[21] The series plotted in Chart 32 were derived by dividing contractual charges and actual payments from Table A-25 by the average of January and July outstandings from Table A-13. The use of the average of January and July figures in the denominator of these ratios is appropriate for bonds carrying semiannual coupons: bonds outstanding on January 1 and still outstanding on July 1 have two coupon payments to meet during the year and receive a weight of two in the average; increments or decrements to outstandings between January 1 and July 1 have one coupon payment to meet and receive a weight of one; increments to outstandings after July 1 have no coupon payment to meet during the year and carry a weight of zero.

The rate of contractual interest charges was used to obtain the excess of yields over coupon rates presented in Chart 14.

CHART 32—Rates of Contractual Interest Charges and of Actual Interest Payments on Corporate Bonds, and High-grade Bond Yields, 1900-1943



Rates of contractual charges and of actual interest payments refer to straight bonds and are annual figures derived from Tables A-13 and A-25 (see footnote 21). Yields are averages of Standard and Poor's Corporation high-grade railroad, public utility, and industrial yield series, with centered twelve-month averages of outstandings from Table A-13 as weights.

relevant rate of interest prevailing in the market at the time the issue was first offered, the relevant rate being the rate on bonds having the same term to maturity, marketability, risk features, etc. It follows that the average coupon rate may be interpreted as a type of moving average of the market rates of interest at which securities were floated in the past, with each interest rate weighted by the par amount total of outstanding bonds offered at that rate. The level of the average coupon rate will thus depend upon past interest rates. On the other hand, the rapidity of its response to changes in current market rates of interest will depend upon a number of factors, including the average contract term to maturity on outstanding obligations, the prevalence of callable bonds, the changing requirements of corporations for capital funds, etc.

To illustrate the effect of past and current market rates of interest on contractual charges, ten-year unweighted moving averages of high-grade corporate bond yields have been added to Chart 32. These are plotted at the tenth or terminal year. As the chart indicates, contractual rates were least responsive in the rail group to changes in market rates of interest. Not only were railroad bonds unusually long-term in the period covered by our records but a large proportion of them were allowed to run to maturity (as has been shown in Chapters 2 and 3). During the period of high and rising interest rates through 1927, approximately 40 percent of total railroad financing went to refund old issues, most of which had been offered in the nineteenth century when interest rates were equal to or above those prevailing in the twenties. Moreover, rail bonds were considered to be high-grade in the first three decades of the twentieth century, so that the railroads were able to borrow at or near the rates ruling on the best securities. It follows that the rate of contractual charges rose only slightly up to 1927. On the other hand, during the period of rapidly falling interest rates after 1932, rail credit generally was at a low ebb, and many of the better bonds were not callable. The rails were therefore unable to refund at the bargain rates then prevailing on high-grade securities.

The contractual rates on utility and industrial bonds were more responsive to market rates of interest than the rates on rails, and for the converse set of reasons. The majority of utility and industrial issues had shorter terms to maturity than the rail issues, and

a larger proportion had sinking funds. Moreover, most of them were callable.

Public utility and industrial debt expanded rapidly up to the mid-twenties and contractual rates rose with the ten-year moving average of interest rates. (The rise was particularly sharp in the case of industrials in 1920 and 1921, owing to the large volume of new-money offerings at the extremely high money rates of those years.) Afterward, many of the high-coupon utility and industrial bonds were refunded at lower interest rates or were refinanced through the stock market, and contractual rates gradually fell until they stabilized in the early thirties around 5.5 percent for the industrials and 5.2 percent for the utilities.

During the closing years of the period under study, industrial obligors enjoyed a good credit standing and their debt was relatively short-term or callable. Therefore they were able to profit most by the decline in interest rates between 1932 and 1943, the contractual rate falling from 5.5 to 3.5 percent, a decline of 36 percent. Over the same period the contractual rate for utilities also fell substantially—from 5.2 to 3.9 percent, or by 25 percent. The railroads, while in greater need of relief from their heavy debt burdens than obligors in the other industry groups, profited least from the decline in interest rates, the contractual rate falling from 4.5 to 4.3 percent, a decline of only 4 percent. The series on actual rates of interest payment in Chart 32 show, however, that what the industrials and utilities were able to accomplish largely by contractual methods by virtue of their high credit standing (i.e. by refunding called bonds at lower rates of interest), the railroads accomplished by default. By 1943 the actual rate of interest payment stood at only 3.7 percent for the railroads, the utilities, and combined industries, and at 3.3 percent for the industrial group.

In Chapter 3 we found that the current market rate of interest has an appreciable effect on the volume of refundings. Consequently—and as Chart 32 indicates—a protracted decline in interest rates such as occurred in the thirties must ultimately reduce the debt burden falling on corporate obligors. In the short run a decline in interest rates may or may not induce entrepreneurs to engage in new capital ventures; in the long run such a decline will reduce interest costs and improve profit margins. It should not be forgotten, however, that the corporation's gain in this

matter is the investor's loss. As the result of the decline in interest rates and the heavy interest defaults of the thirties, the rate of actual interest payment to investors fell from 4.6 percent in 1932 to 3.7 percent in 1943, a decline of nearly 20 percent in the investors' annual rate of return.

TECHNICAL NOTE ON RELATIONSHIPS BETWEEN DEBT- AND CAPITAL-FLOW SERIES

For technicians who wish to utilize the various corporate bond series, an analysis of the difference between the debt-flow and capital-flow estimates will be of interest: that is, a comparison of the par-amount series on total offerings, extinguishments, and net changes in outstandings with the corresponding estimates of gross cash proceeds at offering, gross cash payments at extinguishment, and net cash flow. The major part of the difference between the debt and cash estimates is attributable to the fact that total offerings and extinguishments include various noncash transactions that are excluded from the estimates for gross cash flow (cf. Chapter 3). In addition, some part of the difference is caused by the sale or repayment of bonds at premiums or discounts from par.

These differences are brought out in Table 28, which compares total offerings of straight bonds with gross cash proceeds, and Table 29, which compares total extinguishments of straight bonds with gross cash payments. As column 4 indicates, gross cash proceeds at offering for all industries over the full period 1900-1943 aggregated 84 percent of the par amount of bonds offered, while gross cash payments aggregated only 73 percent of extinguishments. By eliminating the noncash transactions from the debt estimates we obtain the par amounts of cash offerings and cash extinguishments shown in column 2. These, as column 5 indicates, are quite close to but not identical with gross cash proceeds and payments. For the combined industries, gross cash proceeds at offering (Table 28) were about 98 percent of the par amount of cash offerings; that is, bonds were offered over 1900-1943 at an average discount of 2 percent from par. Although bonds are now frequently offered at a premium, before the mid-thirties the more usual practice was to offer them at a discount.[1]

Gross cash payments were 95 percent of the par amount of cash extinguishments (Table 29), so that bonds were in effect retired at a 5 percent discount from par. The reason for the discount was the reduced cash payment on defaulted bonds at extinguishment, which more than offset the substantial premiums paid on called bonds in the late thirties and early forties.[2] Although bonds were repaid at a

[1] The change from the older practice of offering bonds at a discount occurred during the period when open-market interest rates were falling rapidly. The presumption is that the downward adjustment of coupon rates in bond indentures failed to keep pace with the fall in interest rates, so that bonds went to a premium by offering date. It will be interesting to observe, if interest rates rise in the future, whether the market reverts to the older practice.

[2] It should not be inferred from these data that investors necessarily suffered losses on their corporate bond investments, since the discount

TABLE 28—Comparison of Total Corporate Bond Offerings, Cash Offerings, and Gross Cash Proceeds, 1900-1943

(DOLLAR FIGURES IN BILLIONS)

	PAR AMOUNT			RATIO OF PROCEEDS TO	
	Total offerings (1)	*Cash offerings*[a] (2)	*Gross cash proceeds* (3)	*Total offerings* (4)	*Cash offerings* (5)
All industries	$71.5	$61.5	$60.2	84.2%	97.9%
Railroads	18.6	14.8	14.4	77.4	97.3
Public utilities	33.4	30.3	29.7	88.9	98.0
Industrials	19.5	16.4	16.1	82.6	98.2

Based on Tables A-10 and A-22 (for straight bonds).

[a] Known cash offerings plus a prorated amount of offerings for which the method was unknown. Cf. page 96.

TABLE 29—Comparison of Total Corporate Bond Extinguishments, Cash Extinguishments, and Gross Cash Payments, 1900-1943

(DOLLAR FIGURES IN BILLIONS)

	PAR AMOUNT			RATIO OF PAYMENTS TO	
	Total extinguishments (1)	*Cash extinguishments*[a] (2)	*Gross cash payments* (3)	*Total extinguishments* (4)	*Cash extinguishments* (5)
All industries	$54.7	$41.9	$40.0	73.1%	95.4%
Railroads	13.8	9.4	8.8	63.8	93.6
Public utilities	24.0	19.6	19.0	79.2	96.9
Industrials	16.9	12.9	12.2	72.2	94.6

Based on Tables A-11 and A-22 (for straight bonds).

[a] For method of deriving cash extinguishments see pages 219f.

discount in each of the industry groups, in the case of the utilities the discount was only 3 percent. Even so small a discount may seem surprising, however, in view of the large proportion of public utility bonds called at a premium (Table 10, page 000). The principal cause of the discount was the large amount of defaulted street railway debt paid off at less than par, a factor that more than offset the bonds of other utilities called in at a premium.

mentioned in the text applies only to cash extinguishments. The value of total receipts at extinguishment (bonds, stock, rights, etc., as well as cash) must be included in computing investment return. Realized yield statistics to be presented in a later monograph will give effect to the values of total receipts.

Table 30 compares net change in par amount of straight bond outstandings with net cash offerings and net cash flow, the full-period data being obtained by subtracting the figures for extinguishments in Table 29 from the corresponding figures for offerings in Table 28. The difference of $0.6 billion between net cash offerings

TABLE 30—Comparison of Net Change in Corporate Bond Outstandings, Net Cash Offerings, and Net Cash Flow, 1900-1943

(DOLLAR FIGURES IN BILLIONS)

	PAR AMOUNT			RATIO OF NET FLOW TO	
	Net change (1)	*Net cash offerings*[a] (2)	*Net cash flow* (3)	*Net change* (4)	*Net cash offerings* (5)
			1900-1943		
All industries	$16.8	$19.6	$20.2	120.2%	103.1%
Railroads	4.8	5.4	5.6	116.7	103.7
Public utilities	9.4	10.7	10.7	113.8	100.0
Industrials	2.6	3.5	3.9	150.0	111.4
			1900-1931		
All industries	23.0	22.9	23.0	100.0	100.4
Railroads	6.6	6.6	6.8	103.0	103.0
Public utilities	11.4	11.6	11.5	100.9	99.1
Industrials	5.0	4.7	4.8	96.0	102.1
			1932-1943		
All industries	—6.2	—3.3	—2.8	45.2	84.8
Railroads	—1.8	—1.2	—1.2	66.7	100.0
Public utilities	—2.0	—0.9	—0.8	40.0	88.9
Industrials	—2.4	—1.2	—0.9	37.5	75.0

Based on Tables A-10, A-11, and A-22 (for straight bonds).

[a] For the method of deriving cash offerings and extinguishments see pages 96 and 219f.

of $19.6 billion and net cash flow of $20.2 billion is accounted for by the spread just mentioned between the average offering price of 98 and the average extinguishment price of 95.

The discrepancy of $2.8 billion between the net change in outstandings ($16.8 billion) and net cash offerings results from various noncash offerings and extinguishments other than offsetting exchanges of straight bonds for straight bonds. The relationships between the quantities involved are shown in the following equations:

(1) Total offerings = Cash offerings + Offsetting exchanges for straight bonds + Other noncash offerings

(2) Total extinguishments = Cash extinguishments + Offsetting exchanges for straight bonds + Other noncash extinguishments

By subtracting Eq. (2) from Eq. (1) and canceling out the offsetting exchanges, we obtain

(3) Net change in outstandings = Net cash offerings + Other noncash offerings — Other noncash extinguishments

It follows from Eq. (3) that the difference of $2.8 billion between the net change in outstandings and net cash offerings is equivalent to the difference between "other noncash offerings" and "other noncash extinguishments." From Table A-10 we estimate that other noncash offerings aggregated $3.5 billion and therefore other noncash extinguishments equaled $6.3 billion. Other noncash offerings were primarily bonds voluntarily accepted in exchange for stock or property. Other noncash extinguishments break down into bonds voluntarily converted into stock (estimated at $3.5 billion) and a residual amount of $2.8 billion of bonds involuntarily exchanged at date of default settlement for securities of uncertain value such as stock of the reorganized company, income bonds, etc.[3]

Estimates similarly arrived at for the major industry groups show that involuntary exchanges were approximately $0.5 billion for rails, $1.0 billion for utilities, and $1.5 billion for industrials. Since these figures were obtained as residuals, they are more than usually liable to error. The rail figure in particular appears to be quite low in view of the large volume of rail defaults but presumably could be accounted for by the fact that the amount of rail defaults not yet settled by the end of 1943 was substantial (cf. Table 19, page 183).

The chief conclusion to be drawn from the breakdown by period in Table 30 has already been discussed: that in 1900-1931 corporate bonds were effectively floated at par, and that in 1932-43 they were retired at an appreciable discount (that is, net cash payments were only 45 cents on the dollar). In the later period the discount was greatest for industrials and least for rails (net cash payments were 38 cents and 67 cents on the dollar, respectively), principally because industrial defaults were settled quickly, whereas much of the defaulted rail debt had still not been settled by the end of 1943.

[3] Also included are certain "write-downs" in a few cases in which the bondholder received as the sole consideration less than 100 percent par amount of new straight bonds. Not included are cases in which the sole consideration was a cash payment of less than 100. The latter, which were treated as entirely cash extinguishments, appear in the discrepancy of $0.6 billion between net cash flow and net cash offerings.