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### III

## DEFAULTS

#### *Incidence of Defaults*

It was stated earlier that Hickman's methods are used as much as possible. His study of bond defaults was limited to an examination of "straight" corporate bonds, i.e., issues with a fixed coupon and single maturity. The distinction between straight bonds with a sinking fund and serial bonds becomes fine when both types are placed directly, since direct placements constitute 46 per cent of all cash offerings in 1948-65. Table 21, on which the postwar years in Table 16 are based, includes all types of bond issues. But the earlier years shown in Table 16 are from Hickman, and accordingly are based on straight bonds only.<sup>1</sup>

Hickman defined default as "(1) a failure to pay interest or principal in the full contractual amount when due, or (2) an exchange or contract modification (of an issue otherwise in good standing) in which the new security received or the modified issue is worth less than par."<sup>2</sup> The definition had to be modified for the postwar period because of the large number of direct placements and the sparsity of information on them. The text of Moody's manuals for corporations was checked under three headings in the blue sections: bonds in default, receiverships and trusteeships, and securities of reorganized companies entitled to receive cash and/or securities. The first list gave information only on bonds with unpaid interest or principal at the time the manual went to press, but from the other two sources information on contract modifications and noncontractual exchanges was obtained, mostly for publicly offered issues. Other default data were obtained from lists

<sup>1</sup> For the years 1944-51 default rates have been computed for straight bonds (based on Hickman's Table A-2 in *Volume of Corporate Bond Financing*) and found to be similar to the rates for all bonds computed from Table 21.

<sup>2</sup> *Ibid.*, p. 182. The following acts were not considered defaults: failure to pay interest on income bonds, failure to meet sinking fund provisions, modification of sinking fund provisions, modification of working capital requirements.

TABLE 16  
Average Annual Default Rates for Corporate Bonds, 1900-65  
(per cent)

Date	Rate
1900-43	1.7
1900-29	1.3
1930-43	2.6
1944-65	0.1
1900-09	0.9
1910-19	2.0
1920-29	1.0
1930-39	3.2
1940-49	0.4
1950-59	0.04
1940-43	0.9
1944-49	0.1
1960-65	0.03

Source: 1900-43 (straight bonds only), Hickman, *Volume of Corporate Bond Financing*, Table 22, p. 208; 1944-65 (all bonds) Table 21 of this study.

<sup>a</sup>Annual rates are based on amount in good standing at beginning of year.

compiled by security analysts and from bonds of firms undergoing Chapter X proceedings.<sup>3</sup>

The default rates given in Table 16 are the percentages of the par amounts of bonds not in default at the beginning of a given year that went into default during the year. The rate was less than 0.1 per cent in the postwar period (1944-65) compared with 1.7 per cent in the 1900-43 period. The rate was 0.4-0.5 per cent in the decade of the

<sup>3</sup> See Per H. Sjogran, "Enterprise Valuation by the Securities and Exchange Commission under Chapter X of the Bankruptcy Act," unpublished Ph.D. dissertation, Columbia University, 1964.

*Trends in Corporate Bond Quality*

TABLE 17

*New Defaults of Corporate Bonds by  
Year of Occurrence, 1944-65  
(dollars in millions)*

Year of Default	Straight and Serial Bonds <sup>a</sup>		Income Bonds		Total	
	No. (1)	Par Amount (2)	No. (3)	Par Amount (4)	No. (5)	Par Amount (6)
1944	5	34.1	1	0.4	6	34.5
1945	7	19.6	2	6.7	9	26.3
1946	4	1.7	1	0.2	5	1.9
1947	10	18.9	3	7.6	13	26.5
1948	11	33.2	7	17.9	18	51.1
1949	10	25.6	2	5.1	12	30.7
1950	3	0.8	0	0.0	3	0.8
1951	1	1.6	2	2.4	3	4.0
1952	2	1.1	3	57.2	5	58.3
1953	2	2.1	1	0.6	3	2.7
1954	2	1.9	0	0.0	2	1.9
1955	6	30.3	1	1.6	7	31.9
1956	2	3.2	0	0.0	2	3.2
1957	2	10.3	4	45.2	6	55.5
1958	6	28.7	1	1.3	7	30.0
1959	7	13.1	0	0.0	7	13.1
1960	3	7.3	0	0.0	3	7.3
1961	4	103.2	1	3.2	5	106.4
1962	1	0.5	0	0.0	1	0.5
1963	1	2.4	0	0.0	1	2.4
1964	0	0.0	0	0.0	0	0.0
1965	2	7.1	0	0.0	2	7.1
Total	91	346.7	29	149.4	120	496.1

Source: NBER compilation of data in Moody's manuals and other sources as described in text.

<sup>a</sup>Included are five defaults with total par amount of \$16.1 million, with interest partially fixed and partially contingent on earnings. Also included are six serial bonds with par amount of \$27.3 million (\$.5 million in 1948, \$.2 million in 1950, \$25 million in 1958, \$.5 million in 1959, \$.5 million in 1962, and \$.6 million in 1965).

forties mainly because of the somewhat higher rates in the war years, and less than 0.1 per cent in the fifties and early sixties.

*Characteristics of Postwar Bond Defaults*

As Table 17 shows, 120 corporate bonds with par value of \$496.1 million went into default from 1944 through 1965. Of this amount, 29 issues (\$149.4 million) were income bonds and 91 issues (\$346.7 million) were fixed-coupon bonds (straight and serial).

The majority of the bonds defaulting in the postwar period (Table 18) were offered after 1929, although some of them were refundings of earlier issues. Forty-five issues offered after 1943, amounting to almost \$200 million, defaulted. Half were industrial bonds; in fact, all but three manufacturing issues which went into default in the postwar period were also offered in the period. In terms of par amount, transportation defaults were the most important, but the New York, New Haven and Hartford Railroad accounted for over 70 per cent of the transportation total.

TABLE 18

*New Defaults of Corporate Bonds in 1944-65, by Decade of Offering*  
(dollars in millions)

Year of Offerings	Straight and Serial Bonds <sup>a</sup>		Income Bonds		Total	
	No.	Amount	No.	Amount	No.	Amount
Before 1900	2	5.1			2	5.1
1900-09	12	25.5			12	25.5
1910-19	8	47.0	3	39.9	11	86.9
1920-29	12	43.4	3	16.6	15	60.0
1930-39	14	34.6	17	78.2	31	112.8
1940-49	16	96.8	4	9.4	20	106.2
1950-59	23	80.7	2	5.3	25	86.0
1960-65	4	13.6			4	13.6
Total	91	346.7	29	149.4	120	496.1

Source: Same as Table 17.

<sup>a</sup>Included are six serial bonds with par amount of \$27.3 million (\$.7 million [two issues] offered in 1940-49 and \$25 million in 1950-59, \$.5 million in 1959, and \$1.1 million [two issues] in 1960-65).

Table 19 shows that half of the postwar default experience in terms of par amount was in the railroad (and street railway) industry. Examination of the names of defaulting railroads suggests that problems of commuter transportation, unsound management, and duplicating facilities played a role; also, certain roads run by American companies abroad were affected by governmental edicts.

TABLE 19

*New Defaults of Corporate Bonds by Industry of Obligor, 1944-65*  
(dollars in millions)

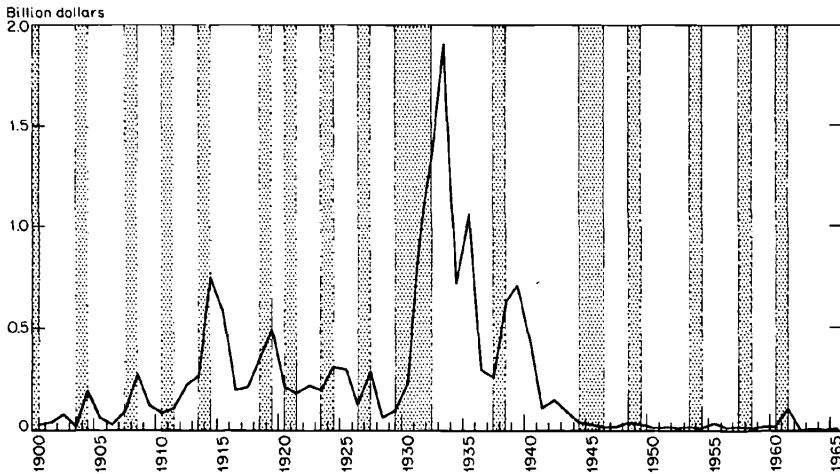
Industry	Number	Par Amount
Transportation		
Railroad	31	\$151.1
Street railways and buses	13	104.7
Airlines	1	12.0
Terminals	5	4.4
Bridges	2	0.4
Trucking	2	7.1
Total	54	279.7
Public Utilities		
Electricity <sup>a</sup>	10	108.1
Gas	5	3.2
Telephone	3	0.9
Warehousing	2	4.3
Water	3	3.3
Total	23	119.8
Industrials		
Manufacturing	21	63.1
Mining	12	20.6
Trade	3	2.2
Service, agriculture, construction	7	10.7
Total	43	96.6
Grand Total	120	496.1

Source: Same as Table 17.

<sup>a</sup>Includes companies distributing electricity and other services.

CHART 6

*Par Amount of New Defaults of Straight Bonds  
by Year of Occurrence, 1900-65*



Source: 1900-43: Hickman, *Volume of Corporate Bond Financing*, Table A-17, p. 340; 1944-65: Table 17 of this study, excluding serials mentioned in note a of that table.

Note: Shaded areas represent business contractions; unshaded areas, expansions.

*Relation of Defaults to Business Cycles*

Chart 6 extends Hickman's data (through 1943) to 1965. Hickman states that his chart shows new defaults "reaching peaks at or near trough years in general business activity and troughs at or near peak years."<sup>4</sup> In the postwar years no such clear pattern emerges. The small number of defaults involved issues with great size variations and were scattered throughout all years except 1964.

More interesting than the business cycle phase at which defaults occurred is the phase at which the offerings were made. Did bonds offered at or near the peak of business cycles default more often than those offered at other stages of the cycle?

The greatest number and volume of defaults occurred in bonds offered one year prior to peaks, presumably a time of greatest optimism. Table 20 shows also that the trough years were second in importance as periods when bonds were issued which subsequently went to default.

<sup>4</sup> Hickman, *Volume of Corporate Bond Financing*, p. 195.

TABLE 20

*Straight and Serial Bonds Offered and Defaulted by  
Stage of Reference Cycle of Offering Date, 1944-65*  
(dollars in millions)

Stage of Reference Cycle	Number	Par Amount
Two years prior to peak (trough year)	5	5.4
Two years prior to peak (nontrough year)	3	11.5
One year prior to peak (nontrough year)	15	110.2
Peak year	6	16.9
One year following peak (nontrough year)	2	1.6
One year following peak (trough year)	7	30.4
Two years following trough (nonpeak year)	2	7.1
Total	40	183.1

Source: Same as Table 17.

*Bonds in Default and in Good Standing*

Table 21 presents estimates of the amount of outstanding corporate bonds in default and in good standing over the period 1944-65. It finds that bonds in default represented over 10 per cent of the total amount outstanding in 1944-45, but had dwindled to 0.1 per cent by the end of the period analyzed. The right-hand column of the table shows that there was only a trickle of new defaults in the postwar period; over a third of these defaults came under the second definition, i.e., exchange or contract modification. In such cases default and settlement are coincident and the bond is never outstanding in default. Most of the other postwar defaults were settled quickly.

TABLE 21

*Estimated Par Amount of Outstanding Corporate Bonds by Default Status and Par Amount of New Defaults, Annually, 1944-65*  
(dollars in millions)

Year	Outstanding Issues <sup>a</sup>			New Defaults <sup>c</sup>
	Total <sup>b</sup>	In Default	In Good Standing	
1944	25,390	3,050	22,340	34.5
1945	24,660	2,530	22,130	26.3
1946	23,480	1,970	21,510	1.9
1947	24,370	1,390	22,980	26.5
1948	27,160	780	26,380	51.1
1949	31,400	790	30,610	30.7
1950	34,060	750	33,310	0.8
1951	35,590	680	34,910	4.0
1952	39,010	650	38,360	58.3
1953	43,710	610	43,100	2.7
1954	47,220	600	46,620	1.9
1955	50,760	560	50,200	31.9
1956	53,780	540	53,240	3.2
1957	57,380	160	57,220	55.5
1958	63,440	180	63,260	30.0
1959	69,090	170	68,920	13.1
1960	72,170	160	72,010	7.3
1961	75,590	120	75,470	106.4
1962	79,850	160	79,690	0.5
1963	83,880	110	83,770	2.4
1964	87,660	110	87,550	0.0
1965	91,650	100	91,550	7.1

<sup>a</sup>Includes serials, incomes, equipment obligations, as well as straight bonds. No equipment obligations went to default during the period.

<sup>b</sup>Obtained by methods shown in Hickman, *Volume of Corporate Bond Financing*, Table 26, p. 230 f. (for bonds of all types). Differences in 1950-51 from figures shown *ibid.*, Table A-1, p. 251, result from revisions in SEC figures. No adjustment was made for discrepancy between net cash flow and net change in outstandings after 1950 since the two series were assumed to be rather close in the later period.

<sup>c</sup>From Table 17.