Volume Title: Corporate Bond Quality and Investor Experience

Volume Author/Editor: W. Braddock Hickman

Volume Publisher: Princeton University Press

Volume ISBN: 0-870-14146-5

Volume URL: http://www.nber.org/books/hick58-1

Publication Date: 1958

Chapter Title: Agency Ratings

Chapter Author: W. Braddock Hickman

Chapter URL: http://www.nber.org/chapters/c2012

Chapter pages in book: (p. 139 - 210)

≺3≻

AGENCY RATINGS

THE measures of aggregate investor experience examined in the preceding chapter are of interest largely as background materials against which our more detailed records may be compared and examined. Because of the various legal rules governing investment processes and the canons under which prudent men customarily operate, most investors are less concerned with the broad aggregates than with the behavior of bonds rated as high grade under various rating systems. The present chapter focuses attention on the behavior of high grades as defined by the investment rating agencies, using for that purpose a composite rating based on the individual ratings assigned by Fitch, Moody's, Standard Statistics, and Poor's. The next two chapters will examine the behavior of high-grade bonds as determined by the legal lists and the market, and Chapter 6 will present a comparative analysis of the different rating systems.

The first section of this chapter treats briefly of the nature of the composite agency rating used, of the availability of the data, and of several official uses to which agency ratings have been put. The volume of high-grade securities outstanding or flowing onto the market determines the investment outlets available for the financial intermediaries, such as savings banks, insurance companies, personal trust accounts, and employee pension plans; the next section therefore traces the principal trends in the volume of high-grade bonds offered to, or outstanding in the market. Agency ratings are in effect systems of gradation of corporate bond issues according to their "investment quality," but the investment agencies do not divulge the precise factors and weights employed in arriving at their systems of ratings. The third section of the chapter attempts to throw indirect light on this matter by an examination of the principal characteristics of issues having different composite ratings. The investment agencies suggest that the ratings are in effect long-run appraisals of the "intrinsic" quality of corporate bonds (i.e. the ability of issues to withstand default and capital loss over long periods in the future), and the next section examines the extent to which these long-run appraisals have, in fact, been altered to conform with short-run, and

largely temporary, ups and downs in general business. The chapter closes with several sections on the subsequent experience of bonds assigned different composite ratings at offering, on the ability of the composite rating to forecast the risk of default and ultimate capital loss, and on the experience record of different groups of rated bonds held over assumed chronological periods.

Summary of Findings

Since 1909, the year in which corporate bonds were first rated by Moody's Investors Service, the ratings assigned by the various investment agencies have constituted an important device for ranking the quality of corporate bonds. The high tide of the rating movement, in so far as mere coverage is concerned, occurred in the period 1924–35, when ratings were assigned to over 98 percent of the total par amount of all straight corporate bond issues outstanding. With the growth of private placements, which are usually not rated by the agencies, the extent of the coverage then declined. Nevertheless as late as 1944 over 92 percent of the paramount total of all issues outstanding was rated by one or more agencies.

Investment intermediaries, as has been indicated, are particularly interested in the volume of high-grade bonds available as outlets for investment. In official usage, issues in the top four rating grades (roughly equivalent to issues rated Baa or better by Moody's) are considered to be high grade; while others are predominantly speculative. Approximately three-quarters of the total volume of old issues outstanding, as well as of new issues flowing onto the market, is high grade in this sense, the remainder either being rated low grade or not rated by the agencies.

Issues in the top four grades are eligible for purchase by commercial banks and are usually accepted by examiners at book value for purposes of life company and commercial bank asset valuation. Conversely, defaulted issues and issues below the fourth grade must be written down to market, and the capital loss (or difference between book and market) charged against the surplus account. Investors are thus interested in the stability of the ratings, as measured by the volume of issues that are upgraded or downgraded. When judged in this way, the stability of the ratings leaves something to be desired. During most business cycles the agencies upgraded some issues in good times and downgraded considerably more in bad, with the result that the net volume of

high-grade outstandings expanded and contracted with the business cycle. Contrariwise, the volume of low grades contracted during some business expansions and expanded during most business contractions. By implication, the surplus accounts of the financial intermediaries were cyclically unstable: they expanded during good times when issues were upgraded and shrank during bad times when issues were downgraded. If the downgraded issues were not sold, the capital losses were frequently paper ones, since many downgraded issues were promptly upgraded during the next business expansion.

Because of a secular downgrading of issues in the 1930's, the proportion of rated outstandings upgraded in expansion and peak years of the general business cycle averaged close to zero but the proportion downgraded in contraction and trough years averaged 6 percent. Upgrading was important only in the peak year 1923 (6 percent) while downgrading was particularly heavy in 1931 and 1932 (11 percent in each year).

From the published statements of the investment agencies, it appears that the ratings are an attempt to rank issues in order of the probable risk of default and of the possible magnitude of the default loss, issues in the top grade being those on which default seems least likely to occur and issues in the lowest grade those already in default or for which default seems clearly imminent. On the other hand, the agencies specifically warn against the use of the ratings as a guide to the attractiveness of an issue (i.e. the probable realized yield for the investor).

Our analysis indicates that the record of the agencies over the period studied was remarkably good in so far as their ratings pertain to the risk of default. Although mistakes were made, with great regularity issues rated as high grade at offering and at the beginning of assumed chronological investment periods had lower default rates than those rated as low grade. In addition, capital losses, as measured by the difference between par value and market price at default, were consistently smaller for the high grades that went into default than for the low grades. And since market prices declined less at default for the high grades than for the low grades, realized yields from default to extinguishment were lower on the high-grade issues than on the low. These results appear to support the investment agencies' own interpretation of the purpose of their ratings.

Large investors, who are able to diversify widely and thus

balance off default losses against capital gains, are interested in the possible use of agency ratings and other quality measures not only as a guide to default risks but also in helping to analyze prospective or ultimate returns. Whether the ratings can be used in this way would appear to depend upon the type and size of issues acquired and the timing of purchases. On regular offerings of large issues, realized yields from offering to extinguishment were on the average higher on issues rated high grade by the agencies than on those rated low grade; but on similar offerings of small issues, the two groups did about the same. On the other hand, on irregular offerings of both size groups (issues offered in corporate reorganizations, etc.) yields were usually much higher on the low grades. As a result, for total offerings (regulars plus irregulars) the highest returns were obtained on low-grade offerings, and the same was usually true for bonds of outstanding issues purchased in the market, except those acquired at the beginning of periods of heavy default. Rather regularly, loss rates on corporate bonds varied with default rates, and thus were higher the lower the quality of the issue. The implication is that investors seeking price stability or the avoidance of heavy defaults did better during the full period studied by concentrating on the top grades. Conversely, large investors, particularly those able to withstand default and in a position to acquire issues in corporate reorganizations, could have obtained higher returns on the average on the low grades.

Nature and Significance of the Composite Agency Rating

The composite rating used in this study is a median of individual coded agency ratings (Fitch, Moody's, Standard Statistics, and Poor's).[1] The codes assigned to the individual ratings were as follows:

Fitch	*Moody*	*Poor*	*Standard*	*Code*
AAA	Aaa	A**	A1+	I
AA	Aa	A*	A1	II
A	A	A	A	III
BBB	Baa	B**	B1+	IV
BB	Ba	B*	B1	V
B	B	B	B	VI
CCC	Caa	C**	C1+	VII
CC	Ca	C*	C1	VIII
C and lower	C and lower	C and lower	C and lower	IX

[1] An earlier use of the term "composite rating" was by Pynchon and Co. in their *Annual Quotation Booklet,* where it referred to a slightly different type of average than the one used in this report.

The number of agency ratings available for the computation of the composite rating of a particular issue on a particular observation date was determined by the number of agencies rating bonds on that date and by whether or not the agencies assigned a rating to the issue in question. Corporate bonds were not rated by any agency prior to 1909, when Moody's ratings for railroads first appeared. Moody's ratings for public utilities and industrials appeared in 1914, Poor's for all industries in 1922, and those of Standard Statistics and Fitch—also for all industries—in 1924. Four ratings were available for most of the large issues from 1924 through March 1941, when Poor's was merged with Standard Statistics; after that date three ratings were usually available. Ratings are frequently not assigned by the agencies to small issues of little public interest, to private placements, and in situations where insufficient information is available for purposes of rating. Before the postwar growth in private placements, most issues were rated by one or more agencies, so that a composite rating could be assigned to over 90 percent of the par-amount total of all issues outstanding from 1920 through 1944.

When only one rating could be obtained for an issue, the coded value of that rating was used as the composite rating. If two ratings were available, the composite is the arithmetic mean of the coded values of the two, rounded downward in the event of a fractional value to the next lower rating (i.e. grade II is the composite rating assigned an issue rated Aaa by Moody's and Al by Standard). For three ratings, the composite is the middle value of the array of coded ratings; for four values, it is the arithmetic mean of the middle two (rounded downward in the event of a split rating). Ratings were assigned in this study at dates of offering and extinguishment; to outstanding issues, at quadrennial years; and to defaulted issues, at dates five years, two years, and one year before default. For a selected group of actively traded issues ratings were also assigned to outstandings at the beginning of each calendar year. The ratings assigned to offerings were those appearing in the first annual manual or monthly handbook showing the offering, provided the publication date was not more than one year later than the offering. Thus railroad bond offerings in 1908 and public utility and industrial bond offerings in 1913 were assigned a rating at offering even though the first published ratings appeared one year later. The ratings assigned at extinguishment were those given in the manuals or handbooks published not more

than one year before the date of extinguishment. Ratings assigned quadrennially and annually to outstandings were those given in monthly handbooks for April of the year in question whenever they were available; otherwise the ratings were taken from the annual manuals. The manuals usually appear in the summer or fall of each year and reflect conditions around the first quarter of the year.

As the rating agencies are careful to point out, the ratings are intended to reflect intrinsic investment quality and are not designed as guides to future price or yield experience. The agencies do not divulge in detail the particular factors and weights used in assigning the individual ratings, but it appears from the manual descriptions that attention is given to such matters as earnings coverage, lien position, capital structure, and growth and stability of earnings. In our opinion the primary aim of the ratings is to rank issues in the order of their relative freedom from default and from the capital losses arising therefrom, issues with the highest rating being those on which default is judged least likely to occur and issues with the lowest rating those already in default or on which default is imminent.

Issues rated in the first four rating grades by the investment agencies (essentially our grades I–IV) are generally considered to be of "investment quality" by the agencies and by financial analysts, while those of lower grades are considered "predominantly speculative." Agency ratings have frequently been used as the basis for such a classification by various state regulatory authorities, and were brought into such use on a national scale by the Comptroller of the Currency in an Investment Securities Regulation of February 15, 1936.[2] The Comptroller's regulation in effect restricts bond purchases of all national banks and of state member banks of the Federal Reserve System to marketable securities of investment quality. According to the Comptroller, "the purchase of 'investment securities' in which the investment characteristics are distinctly or predominantly speculative, or 'investment securities' of a lower designated standard than those which are distinctly or predominantly speculative, is prohibited."[3] A footnote to the original regulation added that "the terms employed herein may be

[2] For a detailed description of official and other uses of agency ratings, see Gilbert Harold's *Bond Ratings as an Investment Guide* (New York, 1938), Chapter 3.

[3] *Federal Reserve Bulletin,* March 1936, p. 195.

found in recognized rating manuals, and where there is doubt as to the eligibility of a security for purchase, such eligibility must be supported by not less than two rating manuals." The footnote was subsequently attacked as placing too much authority in the hands of the investment agencies,[4] and was deleted under a revision effective July 1, 1938.[5] Unofficial discussions with bank examiners indicate, however, that bonds rated in the first four grades by two or more agencies are still generally conceded to meet the Comptroller's requirements.

An additional official use of agency ratings is in figuring the net sound capital of commercial banks, and in the establishment of valuation standards for life insurance company investments. Thus the Secretary of the Treasury, the Board of Governors of the Federal Reserve System, the Directors of the Federal Deposit Insurance Corporation, and the Comptroller of the Currency specified in a joint resolution of June 27, 1938 that securities in "Group I" are to be carried at book value, such securities being described as "marketable obligations in which the investment characteristics are not distinctly or predominantly speculative." Under the resolution, Group I is restricted to "obligations in the four highest grades and unrated securities of equivalent value."[6] Securities failing to meet the rating test (Group II securities) are valued at the market price and fifty percent of the net depreciation is deducted in computing net sound capital.[7] Similar valuation procedures are imposed upon insurance companies by the National Association of Insurance Commissioners. Bonds in the first four

[4] See, for example, *American Banker,* August 12, 1936.

[5] *Federal Reserve Bulletin,* July 1938, p. 566.

[6] *Federal Reserve Bulletin,* July 1938, p. 565. The Executive Committee of the National Association of Supervisors of State Banks later subscribed to the resolution, but some of the states did not adopt it and continue to adhere to traditional valuation policies.

[7] Securities in Groups III and IV (securities in default and stocks) are valued at market and the full net depreciation is deducted in determining the net sound capital of the bank. The original 1938 resolution provided that securities in Group II were to be valued at the average market price for the eighteen months just preceding examination, but the rule was amended in 1949 to provide for valuation at the current market price, on the grounds that the eighteen-months average was no longer of practical significance because of the small volume of Group II securities in the portfolios of the banks. See "Revision in Bank Examination Procedure," Joint Statement of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, the Board of Governors of the Federal Reserve System, and the Executive Committee of the National Association of Supervisors of State Banks, *Federal Reserve Bulletin,* July 1949, pp. 776-77.

rating grades are fully amortizable as to income, and are accepted at book value for purposes of insurance company asset valuation. Other securities are required to meet certain specific tests, or failing those, are written down to market or to some conventional estimate thereof. (Further details on valuation standards for life company investments are provided in Chapter 5.) Despite recent regulatory changes, bonds given a composite rating of I–IV in the present report would usually be considered as substantially satisfying the Comptroller's requirements for commercial banks and the N.A.I.C. ruling for insurance companies.

Volume and Characteristics of Rated Bonds

Institutional investors in corporate bonds are primarily interested in the volume and stability of securities eligible for investment under different rating systems, and in the subsequent yield and loss experience of such investments. Materials on the yield and loss experience of bonds with different agency grades are presented and analyzed in the next section of this chapter; here we shall examine the broad trends in the volume and characteristics of rated bonds, and in the stability of the volume over selected long periods and during business cycles.

Outstandings

Breakdowns by composite rating grade of the number and total par amount of all straight corporate bond issues outstanding at the beginning of the quadrennial years 1900, 1904, and so on, are presented in Charts 6 and 7, and percentage distributions of the par-amount totals are given in Table 27. The estimates in par amount were obtained from data covering all large issues and the 10 percent sample of small issues, after adjustment of the latter within major industry groups to sum to the par-amount totals for all small issues. Because the large issues dominate the par-amount totals, the breakdowns by amount are believed to be quite accurate. The smaller issues occupy a more important position relative to the total number of issues outstanding, and the breakdowns by number of issues are therefore believed to be less accurate.

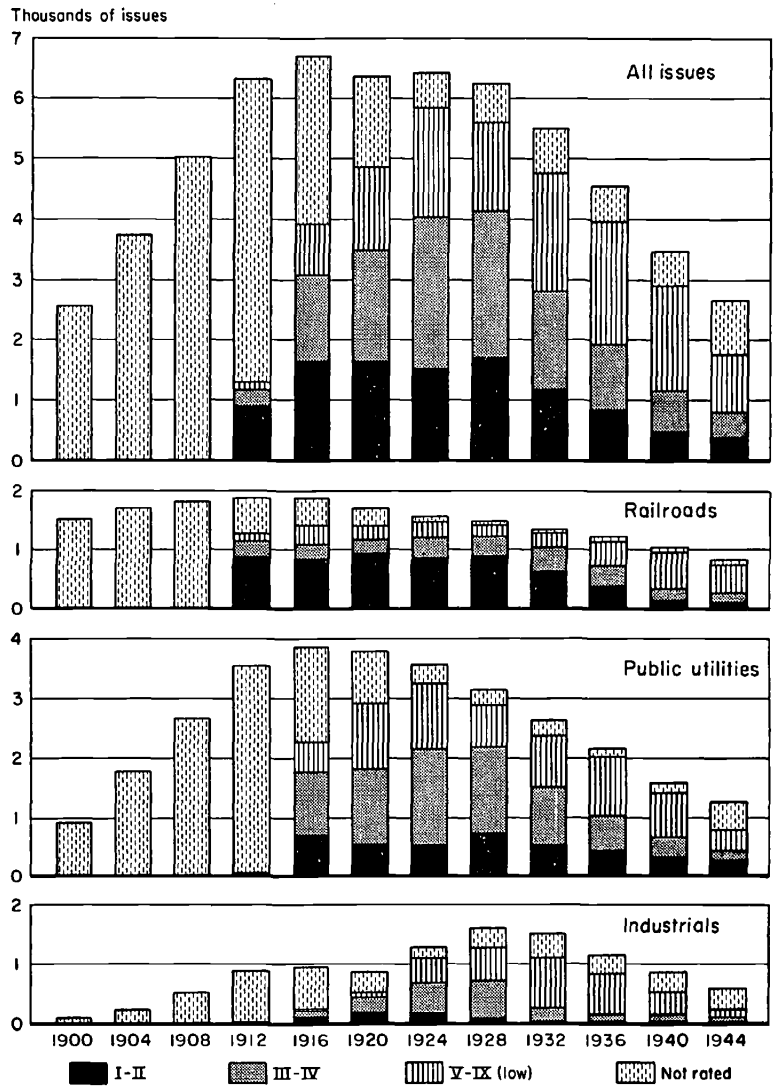
Since bonds were not rated by any agency until 1909 (the year of the first Moody ratings for railroads), the quadrennial breakdowns begin in 1912. At that time 94 percent of the par amount of all rail issues outstanding was rated by Moody's; and, since

almost 60 percent of the volume of outstandings then was comprised of rails, this represented better than 55 per cent of the total for all industries combined. With the introduction of Moody ratings for public utilities and industrials in 1914, and of other ratings in 1922 and 1924, the percent of the par-amount total for all rated issues rose from 88 percent in 1916 to 99 percent in 1924. Thereafter the percent rated showed no significant change until after 1940. With the growth of private placements, many of which are not now rated by the agencies, the proportion of rated outstandings gradually fell until it reached 92 percent by 1944. Since then, the volume of private placements has expanded markedly, and the proportion of issues rated by the agencies has continued to decline.

Both the absolute and relative amounts of issues rated as high grade by the agencies (issues rated I–IV under our system) rose continually from 1912 to the beginning of 1928 ($7.7 billion or 50 percent of the total par amount in 1912; $22.6 billion or 85 percent in 1928). Volumewise, the increase was particularly marked in the period 1912–15, when public utility and industrial issues were rated for the first time, and in 1924–27, when total offerings expanded so greatly. Thereafter both the absolute and relative amounts of high grades shrank steadily, especially during the years 1928–35, so that by 1944 only $13.7 billion or 60 percent of total outstandings were in the first four rating grades. The amount of corporate bonds rated high grade by the agencies has failed to keep pace with the volume of funds seeking high-grade investment outlets. Between 1912 and 1928, for example, the volume of outstandings in the first four grades expanded by 194 percent, while deposits of mutual savings banks more than doubled and net reserves of life insurance companies (reserves plus accrued dividends less premium notes and loans) increased by nearly 400 percent. Between 1928 and 1944 the funds of each of the principal types of savings institutions continued to expand, while the volume of corporate bond outstandings in the first four rating grades shrank by 40 percent. To an appreciable extent such funds found their way into the government bond market, into the mortgage market, and into direct placements (not rated by the agencies).

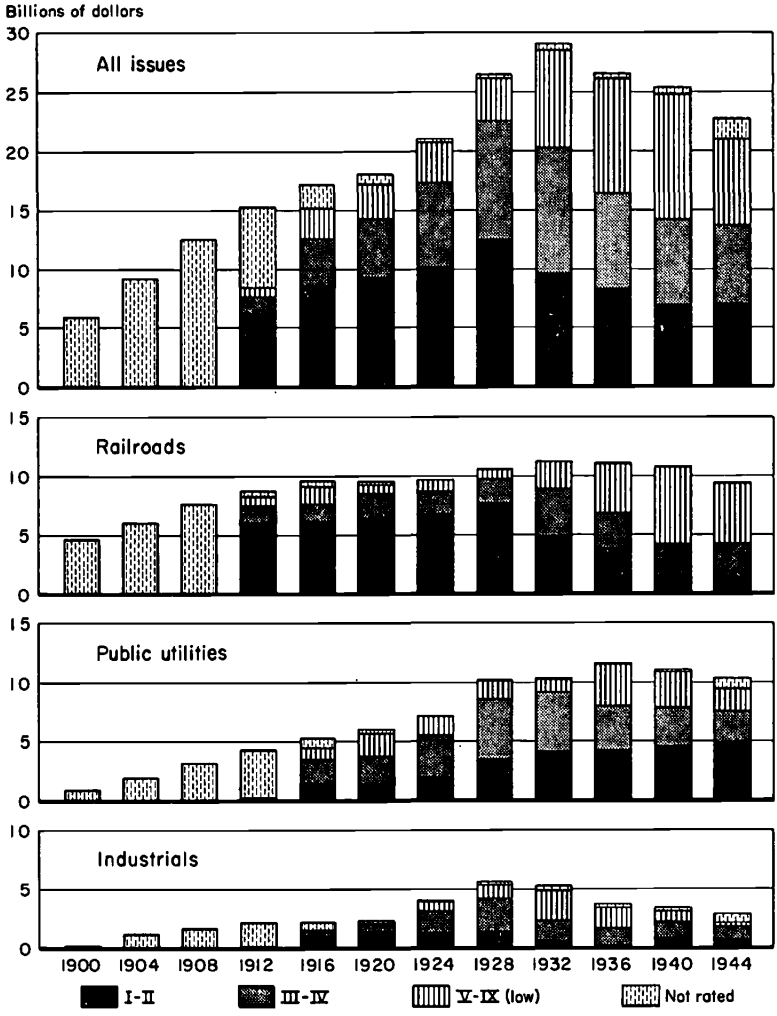
Evidence of the dramatic shift that occurred in competent investment opinion during the Great Depression is provided by the fact that 92 percent of the par amount of all rail issues was rated

CHART 6—Number of Issues Outstanding with High and Low Agency Ratings, 1900-1944



Universe estimates for straight bonds, January figures, from "Statistical Measures," Table 2.

CHART 7—Par Amount of Outstandings with High and Low Agency Ratings, 1900-1944



Universe estimates for straight bonds, January figures, from "Statistical Measures," Table 2.

TABLE 27—Percentage Distributions of Outstandings among High and Low Agency Ratings, Quadrennially 1912–44

BEGINNING OF YEAR	COMPOSITE RATING				*Total Par Amount (millions)*
	I–II	III–IV	*(Low)* V–IX	*No Rating*	
			All Issues		
1912	40.6%	9.7%	4.9%	44.8%	$15,303.3
1916	49.9	23.4	14.7	12.0	17,226.6
1920	51.9	27.6	15.9	4.6	18,085.1
1924	48.3	34.3	16.4	1.0	21,035.3
1928	47.4	38.0	13.3	1.3	26,476.5
1932	33.2	36.9	28.1	1.8	29,014.0
1936	31.5	30.5	36.5	1.5	26,517.8
1940	27.6	28.8	41.5	2.1	25,360.5
1944	31.1	28.9	32.1	7.9	22,797.8
			Railroads		
1912	69.0	16.7	8.5	5.8	8,828.3
1916	63.5	16.0	14.8	5.7	9,662.1
1920	67.9	21.1	7.8	3.2	9,630.5
1924	70.0	19.1	10.6	0.3	9,727.0
1928	72.3	19.9	7.3	0.5	10,647.3
1932	43.6	35.1	21.1	0.2	11,292.0
1936	34.2	26.7	38.7	0.4	11,142.1
1940	14.0	25.1	60.5	0.4	10,826.8
1944	14.4	30.1	54.7	0.8	9,488.2
			Public Utilities		
1912	0.5	0.1	0.1	99.3	4,268.3
1916	27.9	38.4	18.7	15.0	5,277.9
1920	23.5	38.2	32.7	5.6	6,074.4
1924	27.6	49.1	22.6	0.7	7,202.3
1928	33.9	50.1	15.5	0.5	10,214.4
1932	33.0	40.4	25.7	0.9	12,395.4
1936	36.0	31.8	31.6	0.6	11,623.5
1940	41.2	29.1	28.1	1.6	11,078.3
1944	47.9	25.0	17.8	9.3	10,369.8

as high grade by the agencies as late as 1928, while only 39 percent was so rated in 1940. Utility issues were also rated downward after 1928, although not so sharply as the rails (84 percent of the par amount of utility outstandings had I–IV ratings in 1928; 68 percent in 1936), but the utilities were rated upward in the late thirties on the basis of their excellent depression performance. The statistics for industrials reflect several sharp reversals of opinion between 1920 and 1944. At the beginning of 1920 industrials were generally considered to be of sound quality (86 percent of

TABLE 27
(concluded)

BEGINNING OF YEAR	COMPOSITE RATING				*Total Par Amount (millions)*
	I–II	III–IV	(*Low*) V–IX	*No Rating*	
			Industrials		
1912	4.7%	0.0%	0.0%	95.3%	$2,206.7
1916	44.0	19.8	4.6	31.6	2,286.6
1920	59.3	26.9	5.9	7.9	2,380.2
1924	33.4	44.1	19.4	3.1	4,106.0
1928	25.0	50.2	20.5	4.3	5,614.8
1932	11.3	33.1	48.2	7.4	5,326.6
1936	9.3	37.6	45.4	7.7	3,752.2
1940	26.2	39.0	25.5	9.3	3,455.4
1944	26.0	38.4	9.7	25.9	2,939.8
			Large Issues		
1912	47.6	11.3	6.0	35.1	10,928.2
1916	57.2	24.0	14.3	4.5	12,646.0
1920	59.2	26.1	13.3	1.4	13,668.1
1924	54.9	31.4	13.6	0.1	16,176.5
1928	52.8	36.5	10.3	0.4	21,251.3
1932	35.3	38.0	26.4	0.3	24,233.7
1936	33.3	31.2	35.1	0.4	22,777.5
1940	29.6	29.5	40.1	0.8	22,683.1
1944	33.0	30.3	31.6	5.1	20,845.0
			Small Issues		
1912	23.2	5.6	2.4	68.8	4,375.1
1916	30.4	21.5	15.5	32.6	4,580.6
1920	28.9	32.1	24.2	14.8	4,417.0
1924	26.0	43.8	26.0	4.2	4,858.8
1928	25.4	43.9	25.6	5.1	5,225.2
1932	22.7	31.5	36.3	9.5	4,780.3
1936	20.1	26.5	45.0	8.4	3,740.3
1940	10.7	22.2	53.8	13.3	2,677.4
1944	10.9	13.1	37.1	38.9	1,952.8

Based on Tables 2 and 3 of *Statistical Measures*: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted quadrennially to universe totals. Although bonds in the railroad manual were the only group rated in 1912, among them were bonds of affiliated companies, some of which come within our public utility and industrial groups (defined in *Volume of Financing*, page 31 and footnote 7).

the total par amount outstanding was rated in the first four grades as against only 62 percent for utilities); but when many industrial issues were threatened with default during the sharp business contraction of 1920–21, investment opinion was revised down-

ward. An even more abrupt downward revision occurred after 1929, so that by 1932 only 44 percent of the amount of industrial outstandings was rated in the top four grades. Although an exceptionally high proportion of industrial outstandings went into default during the early thirties, industrial earnings recovered rapidly and most default situations were settled with little or no loss to investors. The agency ratings reflect this experience: by 1944, 64 percent of total industrial outstandings and 87 percent of rated industrial outstandings were placed in the top four grades.

Comparison of Charts 6 and 7 reveals that the proportions of the total number of outstanding issues not rated were considerably higher than the corresponding proportions based on par amounts, suggesting that the detailed data needed to rate issues was obtainable more readily for large than for small issues. A similar story is told by Table 27, which shows that the percents of the par-amount totals not rated were consistently higher for small than for large issues. Even more important is the tendency revealed by the data for the agencies to assign lower ratings to the small issues. In each of the years studied the percent of the par amount of outstanding issues rated I–IV was lower for small issues than for large, and the gap appears to have widened through the years. Thus in 1924, 86 percent of the par-amount total of large issues and 70 percent of the total of small issues were rated I–IV, while in 1944 the corresponding figures were 63 percent and 24 percent. Part of the differential in favor of large issues arises from the fact that a larger proportion of such issues are rated; yet substantially the same results are obtained when only rated issues are considered. In 1944, for example, 67 percent of the par amount of all large rated issues had composite grades of I-IV, while the corresponding figure for the rated small issues was 39 percent. The rating differential in favor of the large issues is quite pronounced, particularly when it is recalled that many of the smaller underlying rail issues were assigned high ratings by the agencies. As we shall see in Chapter 8, large issues are not infrequently issued by large obligors, so that the higher ratings assigned to them may in part reflect the agencies' confidence in the stability and financial strength of large corporations. Evidence already presented in Chapter 2 suggests that this confidence has to some extent been justified in so far as the incidence of default is concerned, although realized yields obtained on small issues

have on the whole averaged above those on large. Chapter 8 will examine the extent to which these tendencies are observable in more detailed breakdowns of the data by size of issue as well as by the asset size of the obligor.

Offerings

Percentage distributions of the par-amount totals of straight bond offerings by agency rating grade are presented in Table 28 for quadrennial periods beginning with 1908. Comparison of the table with the preceding one indicates that on the whole new issues flowing onto the market had ratings roughly comparable with those of old issues outstanding. Thus over the period 1916–39, 79 percent of the par amount of offerings was rated I–IV, and the comparable figure for average outstandings over the same period was roughly 75 percent; during 1940–43, 69 percent of offerings was in the first four grades, and in 1944, 60 percent of outstand-

TABLE 28—Percentage Distributions of Offerings among High and Low Agency Ratings, Four-year Periods 1908–43

PERIOD OF OFFERING	COMPOSITE RATING				*Total Par Amount (millions)*
	I–II	III–IV	*(Low)* V–IX	*No Rating*	
			All Issues		
1908–11	17.9%	6.9%	6.0%	69.2%	$4,808.8
1912–15	18.3	27.2	11.0	43.5	4,942.7
1916–19	31.9	34.0	14.0	20.1	4,552.7
1920–23	32.9	46.4	17.7	3.0	7,911.0
1924–27	22.0	59.7	17.1	1.2	11,011.0
1928–31	27.9	49.9	18.8	3.4	9,963.1
1932–35	41.6	31.0	20.6	6.8	4,214.2
1936–39	43.9	41.4	11.4	3.3	9,400.9
1940–43	31.8	37.0	8.6	22.6	6,128.8
			Railroads		
1908–11	39.1	15.2	13.0	32.7	2,210.5
1912–15	33.6	32.8	14.4	19.2	2,189.0
1916–19	41.8	30.4	11.0	16.8	1,473.7
1920–23	74.2	17.7	6.1	2.0	1,591.1
1924–27	46.7	40.8	12.4	0.1	1,940.6
1928–31	48.4	41.2	9.5	0.9	2,074.8
1932–35	43.9	27.2	19.2	9.7	596.2
1936–39	29.0	33.8	36.0	1.2	1,438.6
1940–43	21.5	36.9	37.6	4.0	828.2

TABLE 28
(concluded)

PERIOD OF OFFERING	COMPOSITE RATING I–II	III–IV	(*Low*) V–IX	*No Rating*	*Total Par Amount (millions)*
			Public Utilities		
1908–11	0.0%	0.0%	0.0%	100.0%	$1,732.8
1912–15	5.9	27.7	10.5	55.9	1,929.1
1916–19	25.2	41.5	16.7	16.6	2,020.9
1920–23	18.7	55.0	25.3	1.0	3,134.2
1924–27	18.1	65.5	16.0	0.4	5,529.2
1928–31	26.8	51.9	20.6	0.7	5,406.8
1932–35	54.4	23.8	19.2	2.6	2,445.5
1936–39	56.9	37.4	4.4	1.3	5,178.2
1940–43	42.3	34.9	4.9	17.9	3,450.8
			Industrials		
1908–11	0.0	0.0	0.0	100.0	865.5
1912–15	6.8	10.8	3.3	79.1	824.6
1916–19	31.1	24.2	13.1	31.6	1,058.1
1920–23	26.2	52.3	16.1	5.4	3,185.7
1924–27	14.5	61.1	21.3	3.1	3,541.2
1928–31	13.0	53.3	22.5	11.2	2,481.5
1932–35	13.8	47.8	24.2	14.2	1,172.5
1936–39	27.7	52.8	11.5	8.0	2,784.1
1940–43	17.1	40.8	2.4	39.7	1,849.8

Based on Table 52 of *Statistical Measures*: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted annually to universe totals.

ings had such ratings. The large amounts of industrials and utilities not rated in the early forties were direct placements.

Before the Great Depression, the agencies favored the railroads at offering and rated utilities and industrials low; yet the rails had the poorest yield and default record in the thirties while the other industries did reasonably well. The agencies' preference for the rails in the early period is reflected most sharply in the proportions of total offerings rated in the top two grades. In each of the six four-year periods from 1908 through 1931 the rails had the highest proportion rated I–II; but from 1932 onward the utilities took the lead. Curiously enough, the industrials had the lowest proportion of offerings rated I–IV from 1924 onward, despite their good record in the thirties. The downgrading of rail bonds at offering really did not get under way on a sizable scale

until 1936–39. Whereas 52 percent of their par-amount total was rated I or II at offering in 1916–35, only 26 percent was so rated in 1936–43. Corresponding changes in grades III and IV were from 33 percent to 35 percent, in grades V–IX from 11 percent to 37 percent, and in offerings not rated, from 5 percent to 2 percent.

Although rails were rated five years before utilities and industrials, and were rated somewhat higher at offering, rail debt has been relatively long-term and stable, so that the volume of high-grade rail offerings was quite small. Thus only $9.1 billion of rail bonds in the top four grades were offered in the period 1913–43, as compared with $22.6 billion for utilities. The utilities were consistently the leaders in the volume of high grades flowing onto the market in every four-year period beginning in 1916, except 1920–23, when industrials led utilities by $2.5 to $2.3 billion. For the entire period 1913–43, $11.6 billion of industrial offerings were in the top grades.

Characteristics of Rated Bonds

Since the agencies do not reveal the details of the procedures employed in assigning ratings to corporate bond issues, the statistical characteristics of rated bonds are not without interest. From materials already presented it is clear that the agencies have assigned relatively high ratings to large issues. In keeping with competent investment opinion before 1932, they also favored the rails and rated industrials and utilities relatively low, but to some extent these judgments were later revised on the basis of depression experience. Additional information on the nature of rated issues is presented in Table 29, which shows distributions of the par amounts of straight bond outstandings at the beginning of selected years, by various characteristics.

As the table indicates, before the Great Depression a relatively large proportion (by volume) of issues rated as high grade were listed on the New York Stock Exchange, were issues of obligors having assets of $200 million and over, and matured in over thirty years. Since then most of these differences have either disappeared or have been reversed. By 1944, a slightly larger proportion of low grades were listed on the New York Stock Exchange, were issued by obligors having assets of $200 million and over, and matured in over thirty years. No very regular pattern shows up in the lien position of the high- versus the low-grade issues, although slightly larger proportions of the high grades were senior liens.

TABLE 29—Proportions of Outstandings Characterized by Large Obligor, Exchange Listing, Long Term, etc., for Issues with High and Low Agency Ratings, 1920–44

BEGINNING OF YEAR	*Assets of $200 Million and over*	*Amount Outstanding $5 Million and over*	*Listed on New York Stock Exchange*	*Maturity over 30 Years*	*Senior Liens*[a]	*Debentures*[b]
1920						
All issues	45.5%	73.7%	56.5%	33.0%	75.1%	9.3%
I–IV	53.2	79.4	65.0	35.7	76.4	10.4
V–IX	18.0	60.6	28.5	27.0	70.8	4.6
1928						
All issues	47.0	78.0	57.0	24.1	67.1	14.7
I–IV	51.7	81.9	60.9	26.0	67.7	14.4
V–IX	21.2	58.7	36.3	13.8	63.5	17.1
1936						
All issues	51.4	84.0	59.8	21.5	69.0	16.3
I–IV	55.0	88.1	63.7	26.3	72.6	12.1
V–IX	47.1	79.9	55.5	14.1	63.2	23.2
1944						
All issues	58.9	90.0	65.7	15.1	67.0	20.6
I–IV	60.9	95.7	70.1	14.5	71.1	19.7
V–IX	65.6	88.0	72.8	19.9	62.5	19.2

Based on Tables 23, 24, 28, 30, 34, 36, and 40 of *Statistical Measures*, and special supplementary tabulations: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted to universe totals.

[a] A "senior lien" is an issue secured by mortgage, collateral, or leasehold, provided the lien is not entirely junior to that of other issues.

[b] A debenture is an issue not secured by lien.

To a large extent the changes in marketability, size, and term to maturity reflect changing opinion as to the merits of issues in different industry classifications. Thus in 1920 the listing requirements of the New York Stock Exchange favored railroads; the railroads are large obligors; and they were favored by investors generally and by the rating agencies. Moreover, the rail issues were quite important in the par-amount totals for all issues. It follows that a relatively large proportion of the par-amount rated I–IV consisted of issues listed on the New York Stock Exchange and of bonds of obligors with assets of $200 million and over. Since the rails are also typically long-term issues, a somewhat larger proportion of issues rated I–IV was long term than of issues rated V–IX.

Stability of Agency Ratings

Present laws governing the valuation of investments of commercial banks and life insurance companies in corporate bonds require that defaulted issues be written down to market. In the absence of other evidence of investment quality, the same rules pertain to issues that drop "below grade" (i.e., roughly speaking, below composite grade IV). Thus the downgrading of an issue may prove almost as embarrassing to investors as an actual default. In either case a capital loss occurs, equal to the difference between book value and market (or some intermediate value assigned by the regulatory authorities), with a resultant shrinkage of surplus. In the event of downgrading, the loss is usually a paper one, but may become actual if the issue subsequently goes into default or if the intermediaries are encouraged to liquidate it. It follows that the stability of the ratings assigned by the agencies, as measured by the proportion of issues that drop below grade, is of extreme importance to the investment intermediaries.

Some evidence on this matter is presented in Table 30, which shows the distributions of the par amount totals in various rating grades at offering by the rating grade at date of final extinguishment. The table is particularly relevant for life insurance companies and others who typically purchase at offering and hold for long periods. The table is based on universe estimates of straight bond offerings, i.e. all large issues and the adjusted 10 percent sample of small issues.

As the table indicates, 56.9 percent of the par amount of all bonds rated I at offering (i.e. Aaa under the Moody system) was still rated I at extinguishment, 21.1 percent was rated II at extinguishment, and so on, so that 90.8 percent was still rated I–IV at extinguishment and only 8.9 percent had dropped below grade. As might be expected, the proportions falling below grade at extinguishment rise as we move down the rating scale. Of the total par amount of issues rated IV at offering, only 61 percent was still rated I–IV at extinguishment (43 percent still in fourth grade; 18 percent upgraded), and 35 percent had dropped below grade. The table shows that there was relatively little crossing over between issues rated I–IV at offering and those rated V–IX. Thus, of the amount of the issues originally rated I–IV, 77 percent was still rated I–IV at extinguishment, and of issues originally rated V–IX, 75 percent was still so rated.

TABLE 30—Offerings 1900–1943 in Given Agency Rating Grades at Offering, Distributed by Agency Rating at Extinguishment

COMPOSITE RATING AT EXTINGUISHMENT	COMPOSITE RATING AT OFFERING						
	I	II	III	IV	I–IV	V–IX	*No Rating*
				All Issues			
I	*56.9%*	9.0%	2.0%	0.5%	12.1%	0.5%	13.6%
II	21.1	*56.2*	12.2	1.9	22.5	0.7	10.3
III	7.2	12.8	*45.2*	15.3	22.6	3.0	8.0
IV	5.6	7.1	17.5	*43.3*	19.8	14.5	7.4
I–IV	90.8	85.1	76.9	61.0	*77.0*	18.7	39.3
V–IX	8.9	13.3	21.2	35.4	21.0	*75.4*	21.5
No rating	0.3	1.6	1.9	3.6	2.0	5.9	*39.2*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Railroads			
I	*30.4*	2.9	0.9	0.0	9.2	0.0	16.0
II	21.0	*25.8*	5.7	2.2	15.6	0.1	8.9
III	12.8	16.0	*29.3*	11.1	17.6	3.5	6.9
IV	13.7	12.1	8.7	*30.1*	14.7	5.3	10.8
I–IV	77.9	56.8	44.6	43.4	*57.1*	8.9	42.6
V–IX	22.1	43.0	53.8	53.7	41.9	*87.1*	27.6
No rating	0.0	0.2	1.6	2.9	1.0	4.0	*29.8*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In the matter of stability of ratings, as in most other respects, the rails had the poorest record; only 78 percent of the amount rated I at offering and 43 percent of that rated IV were still rated I–IV at extinguishment. Moreover, only 57 percent of rails rated in the first four grades at offering was still rated in that group at extinguishment, and there was rather little upgrading of the lower-grade rail issues. The utilities were the most stable group: virtually all (99.8 percent) of the amount rated I at offering and 65 percent of that rated IV were rated I–IV at extinguishment. Industrial ratings were also quite stable, the corresponding percentages being 98.5 and 62.

In general there was a tendency for issues rated in the top grades to be the most stable, i.e. the largest proportion of the amount of offerings remaining in the same rating grade at ex-

TABLE 30
(concluded)

COMPOSITE RATING AT EXTINGUISHMENT	COMPOSITE RATING AT OFFERING						
	I	II	III	IV	I–IV	V–IX	*No Rating*
				Public Utilities			
I	*71.0%*	11.6%	3.3%	0.8%	14.0%	0.9%	9.9%
II	28.4	*75.6*	13.9	2.6	30.2	1.1	15.8
III	0.4	7.2	*47.5*	16.9	22.0	3.6	9.2
IV	0.0	2.2	20.4	*45.0*	18.9	16.2	6.4
I–IV	99.8	96.6	85.1	65.3	*85.1*	21.8	41.3
V–IX	0.0	1.2	13.1	31.4	12.8	*73.5*	23.4
No rating	0.2	2.2	1.8	3.3	2.1	4.7	*35.3*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				Industrials			
I	*82.8*	11.0	0.3	0.3	11.1	0.3	15.4
II	3.5	*46.1*	13.3	0.9	13.4	0.5	5.1
III	11.4	24.9	*51.5*	14.8	28.7	1.7	7.8
IV	0.8	14.0	17.9	*46.1*	26.0	19.5	5.1
I–IV	98.5	96.0	83.0	62.1	*79.2*	22.0	33.4
V–IX	0.5	2.5	14.7	33.5	18.0	*68.7*	12.3
No rating	1.0	1.5	2.3	4.4	2.8	9.3	*54.3*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Based on Table 58 of *Statistical Measures*: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted annually to universe totals. The composite rating at extinguishment refers to the rating assigned an issue within one year before date of final extinguishment, or at the beginning of 1944 if still outstanding at that time.

tinguishment occurred in grade I, and the proportion declines as we move down the rating scale. (This was not true within industry group, however.) On the other hand, the proportions still in the same rating grade or higher were remarkably stable. Thus 56.9 percent of grade I at offering was grade I at extinguishment, 65.2 percent of grade II was I or II at extinguishment, 59.4 percent of grade III was I–III at extinguishment, and 61.0 percent of grade IV was I–IV at extinguishment. With respect to the proportion of offerings rated in the same grade or higher at extinguishment, grade II utilities led the rest, 87.2 percent of the amount being rated I or II at extinguishment. Grade I industrials were also quite

TABLE 31—Outstandings with High and Low Agency Ratings at Beginning of Four-year Periods, Distributed by Agency Rating at End; 1912–43

PERIOD	COMPOSITE RATING AT BEGINNING OF PERIOD: I–IV — Composite Rating at End: I–IV	I–IV — Composite Rating at End: V–IX	I–IV — Composite Rating at End: No Rating	V–IX — Composite Rating at End: I–IV	V–IX — Composite Rating at End: V–IX	V–IX — Composite Rating at End: No Rating	NOT RATED — Composite Rating at End: I–IV	NOT RATED — Composite Rating at End: V–IX	NOT RATED — Composite Rating at End: No Rating
				All Issues					
1912–15	89.1%	10.4%	0.5%	19.5%	76.1%	4.4%	66.3%	13.6%	20.1%
1916–19	92.1	7.1	0.8	32.2	60.3	7.5	42.6	22.6	34.8
1920–23	92.9	7.1	0.0	32.0	67.7	0.3	38.9	36.3	24.8
1924–27	97.7	1.7	0.6	27.3	69.5	3.2	7.4	43.8	48.8
1928–31	84.8	14.9	0.3	5.0	91.0	4.0	1.6	12.9	85.5
1932–35	79.1	20.7	0.2	7.8	91.4	0.8	0.0	34.4	65.6
1936–39	73.3	26.0	0.7	4.3	94.5	1.2	0.0	16.9	83.1
1940–43	96.0	1.4	2.6	6.8	91.6	1.6	0.0	2.1	97.9
				Railroads					
1912–15	88.9	10.6	0.5	19.5	76.1	4.4	30.0	12.5	57.5
1916–19	99.0	0.8	0.2	38.5	52.3	9.2	28.8	13.4	57.8
1920–23	93.0	7.0	0.0	29.8	70.2	0.0	51.3	36.9	11.8
1924–27	99.6	0.1	0.3	33.1	64.5	2.4	0.0	0.0	100.0
1928–31	88.1	11.9	0.0	4.6	95.4	0.0	0.0	0.0	100.0
1932–35	75.5	24.3	0.2	3.7	96.1	0.2	0.0	0.0	100.0
1936–39	62.8	37.1	0.1	0.3	99.7	0.0	0.0	12.2	87.8
1940–43	98.5	1.5	0.0	6.6	92.5	0.9	0.0	13.9	86.1

stable (82.8 percent). The rails generally turned in the poorest performance.

Another approach to the analysis of the stability of agency ratings may be made by comparing the par amounts of outstandings in different rating grades at the beginning of the quadrennial periods with their rating grades at the end of the periods (Table 31). Since we wished to remove the adventitious effects of extinguishments, an issue was included in a given period only if it was outstanding throughout the period.

Between 1912 and 1928, few issues rated I–IV at the beginning of any period fell below grade, while a substantial proportion of those initially rated V–IX were upgraded. Such downgrading as occurred usually reflects actual or imminent defaults within the

TABLE 31
(concluded)

PERIOD	COMPOSITE RATING AT BEGINNING OF PERIOD: I–IV, Composite Rating at End: I–IV	I–IV, Composite Rating at End: V–IX	I–IV, Composite Rating at End: *No Rating*	V–IX, Composite Rating at End: I–IV	V–IX, Composite Rating at End: V–IX	V–IX, Composite Rating at End: *No Rating*	NOT RATED, Composite Rating at End: I–IV	NOT RATED, Composite Rating at End: V–IX	NOT RATED, Composite Rating at End: *No Rating*
				Public Utilities					
1912–15	100.0%	0.0%	0.0%				67.8%	17.8%	14.4%
1916–19	72.9	24.5	2.6	21.8%	72.1%	6.1%	37.6	32.7	29.7
1920–23	95.1	4.9	0.0	33.3	66.7	0.0	30.2	47.3	22.5
1924–27	98.1	1.8	0.1	21.1	76.2	2.7	26.6	0.0	73.4
1928–31	91.4	8.3	0.3	7.2	89.1	3.7	0.0	27.1	72.9
1932–35	83.1	16.9	0.0	2.8	97.2	0.0	0.0	35.1	64.9
1936–39	89.6	8.7	1.7	9.3	88.1	2.6	0.0	0.0	100.0
1940–43	94.7	1.7	3.6	4.3	93.3	2.4	0.0	0.0	100.0
				Industrials					
1912–15	100.0	0.0	0.0				70.4	3.9	25.7
1916–19	99.7	0.3	0.0	73.9	26.1	0.0	53.3	18.8	27.9
1920–23	88.6	11.4	0.0	25.0	69.8	5.2	34.7	17.3	48.0
1924–27	90.7	7.0	2.3	31.9	60.8	7.3	3.9	60.2	35.9
1928–31	58.9	40.2	0.9	1.4	91.6	7.0	2.0	12.3	85.7
1932–35	80.0	19.2	0.8	20.0	77.1	2.9	0.0	36.1	63.9
1936–39	82.7	16.7	0.6	4.0	94.0	2.0	0.0	19.3	80.7
1940–43	93.7	0.0	6.3	20.7	72.4	6.9	0.0	0.0	100.0

From special tabulations of the National Bureau of Economic Research: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted quadrennially to universe totals, with issues extinguished during each period excluded.

major industry groups. Thus the 10 percent of the par amount of issues of all industries rated I–IV in 1912 that was downgraded before 1916 reflects the bulge in rail defaults in that period. Similarly the 7 percent of total outstandings of 1916 that dropped below grade before 1920 was largely the result of street railway defaults. The 7 percent of the total downgraded in 1920–23 occurred largely in the industrial field, foreshadowing the heavy defaults of 1924.[8]

Between 1930 and 1940 defaults were general and widespread;

[8] For data on corporate bond defaults, classified by major industry group, see *Volume of Financing*, particularly Table A-17 and Chart 25.

in consequence, a substantial proportion of the amount of high-grades was rated down in each of the quadrennial periods beginning with 1928, and very few of the lower grades were upgraded. Again, downgrading reflected actual or impending defaults. Rail defaults were heavy from 1931 on and reorganizations and settlements were unusually slow, so that substantial amounts of rail issues were downgraded by the agencies. Industrial defaults were also heavy, but were concentrated in the years 1931–33; in consequence 40 percent of industrial bonds rated I–IV in 1928 and 19 percent of the corresponding group in 1932 were downgraded in the subsequent four-year periods. At the same time, many industrial defaults were quickly settled, so that a substantial proportion of outstandings of the low-grade issues was upgraded between 1932 and 1936. Except for the period 1916–19, when street railway defaults were heavy, utility bonds had the best over-all record with respect to stability of ratings. Railroads, public utilities, and industrials each had an excellent record during the early war years, 1940–43.

One is impressed by the fact that the percentage of downgrading is closely related to the default record of corporate bonds, which is in turn very sensitive to business cycles, and particularly to major depressions.[9] Under present valuation rules, the implication is that capital values and surplus accounts tend to shrink during business contractions at the very time when some assurance of financial stability is most needed by the investment intermediaries and their beneficiaries. The sensitivity of agency ratings to short-run movements in general business activity cannot be adequately investigated on the basis of quadrennial data, but the matter is important, and will be pursued further in the next section by means of specially derived annual series.

Agency Ratings and Business Cycles

To investigate the short-run movements in the volume of bonds rated as high grade (I–IV) and low grade (V–IX) by the agencies, annual series on outstandings were constructed by interpolating between quadrennial dates on the basis of data for a large sample of actively traded issues, plus an additional amount of data obtained from the manuals for areas in which the sample seemed particularly weak.[10] The first differences or net changes in the

[9] *Ibid.*, pp. 195 ff.

[10] The interpolating series were developed from the so-called Annual

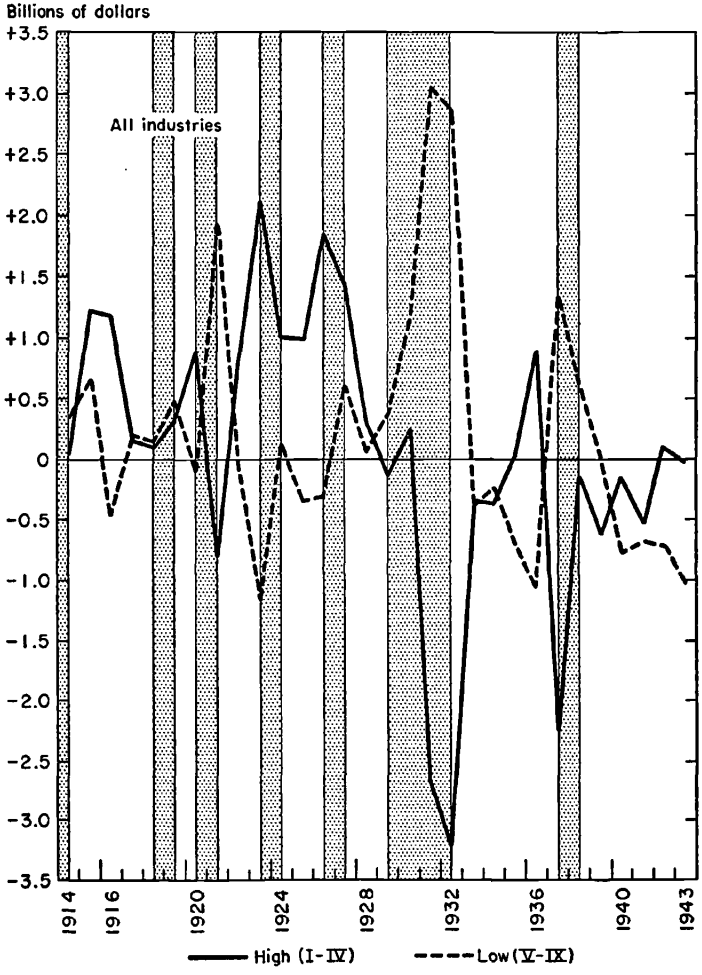
annual amounts outstanding that were rated I–IV and V–IX are plotted in Chart 8 against the National Bureau's reference chronology of business expansions and contractions. The chart indicates that the net changes in the amounts of high grades and of low grades outstanding have varied in roughly complementary fashion over business cycles, the net change for the high grades generally expanding during business expansions while that for low grades contracts, and contracting in periods of business contraction, while the net change for the low grades expands. The implication is that the amount of high-grade securities eligible as investment outlets for the financial intermediaries typically increases in good times (occasionally, contracts at a slower rate) and contracts in bad times (occasionally, expands at a slower rate). Since the series for high and low grades are roughly complementary they also suggest a possible upgrading by the investment agencies during business expansions and a downgrading in contractions. Under present valuation standards this would imply a corresponding expansion and contraction in the surplus accounts of the financial intermediaries.

Additional evidence on this matter may be obtained by examining the behavior of the volume of issues upgraded and downgraded by the investment agencies over business cycles. Ideally for this purpose we should like to know the gross amounts of high grade issues formerly rated low grade by the agencies (gross upgrading), and the gross amounts of low grades formerly rated high grade (gross downgrading); but reliable information of this type is available in our records only for the four-year periods (cf. Table 31), and at least annual data are needed for cyclical analysis. It is, however, possible to combine the series on offerings, extinguishments, and outstandings, each classified by agency rating, to obtain rough annual estimates of net upgrading (gross upgrading less gross downgrading). Since the estimates are approximate, two series—or "variants"—of net upgrading were developed as a check on one another (cf. Chart 9). Although each variant is subject to an undetermined amount of error, it is be-

---

Record of Corporate Bond Experience of the original Corporate Bond Project. These series cover actively traded issues (principally large issues) during the time that they were in good standing. A supplementary search was made of the manuals for annual data on the ratings of defaulted issues, and also for unrated small issues. For the derived series and a description of the method of derivation see *Statistical Measures,* Table 1 and the notes in that volume in the section on characteristics of outstanding issues.

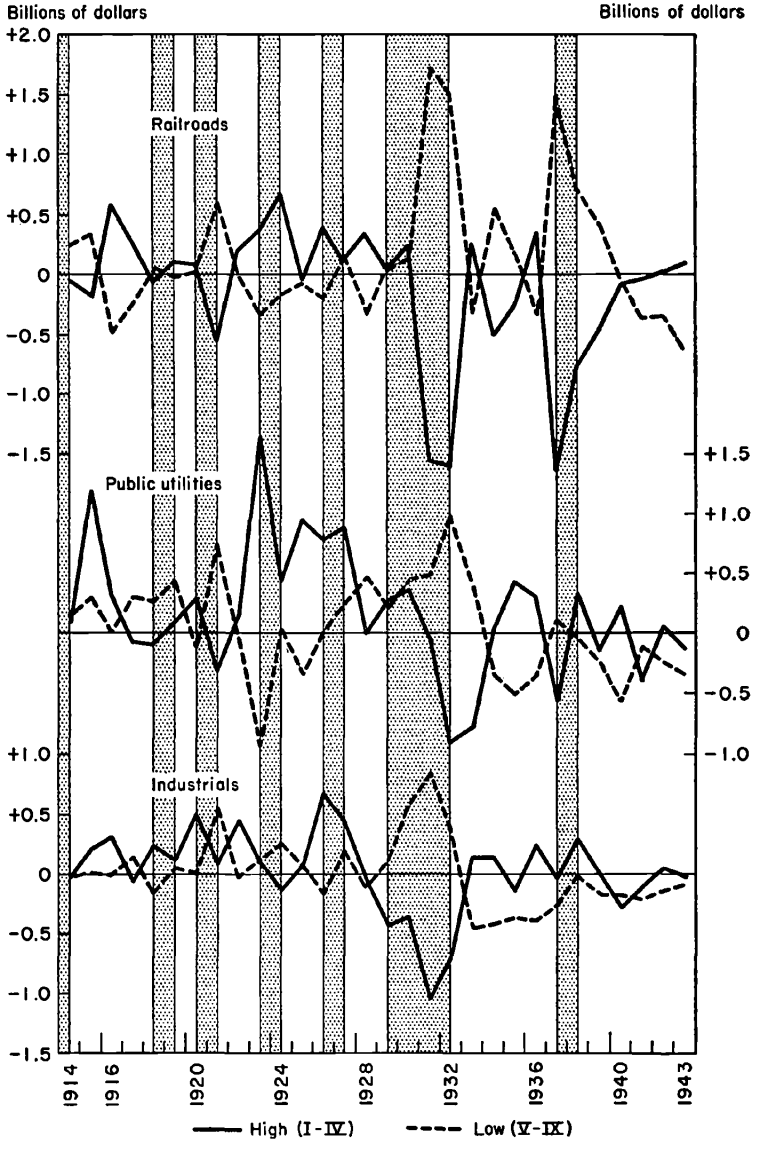
CHART 8—Net Changes in Outstandings with High and Low Agency Ratings, 1914-43



Universe estimates for straight bonds, yearly totals in par amount, from "Statistical Measures," Table 1.

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 8, concluded



lieved that valid conclusions may be drawn from them, to the extent that they are mutually substantiating.

The nature of the two variants of net upgrading is perhaps best appreciated by first making an assumption contrary to fact, and then removing it to trace the sources of error. Let us assume, then, that all issues are rated by the investment agencies over their entire life span. Under such conditions, the net change in high-grade outstandings (I–IV) would equal offerings (I–IV) less extinguishments (I–IV) *plus* net upgrading (gross upgrading of issues previously rated V–IX less gross downgrading of issues previously rated I–IV). Similarly, the net change in low-grade outstandings (V–IX) would equal offerings (V–IX) less extinguishments (V–IX) *minus* net upgrading. After rearrangement of terms, net upgrading can thus be expressed in two ways:

(1) Net upgrading = net change in outstandings I–IV − offering I–IV + extinguishments I–IV, and
(2) Net upgrading = −(net change in outstandings V–IX − offerings V–IX + extinguishments V–IX).

The two definitions are equivalent, as may be seen by subtracting one equation from the other and noting that the net change in total outstandings is equal to the difference between total offerings and total extinguishments.

When an attempt is made to use either of the definitions to measure net upgrading (or net downgrading, when the sign is negative), we are confronted by two difficulties, the first stemming from the fact that not all issues are rated throughout their life, and the second, from the fact that our records do not contain complete information on the rating grades of all issues at extinguishment. Thus when the available data are substituted in equations (1) and (2), two different estimates of net upgrading, Variant I and Variant II, respectively, are obtained.

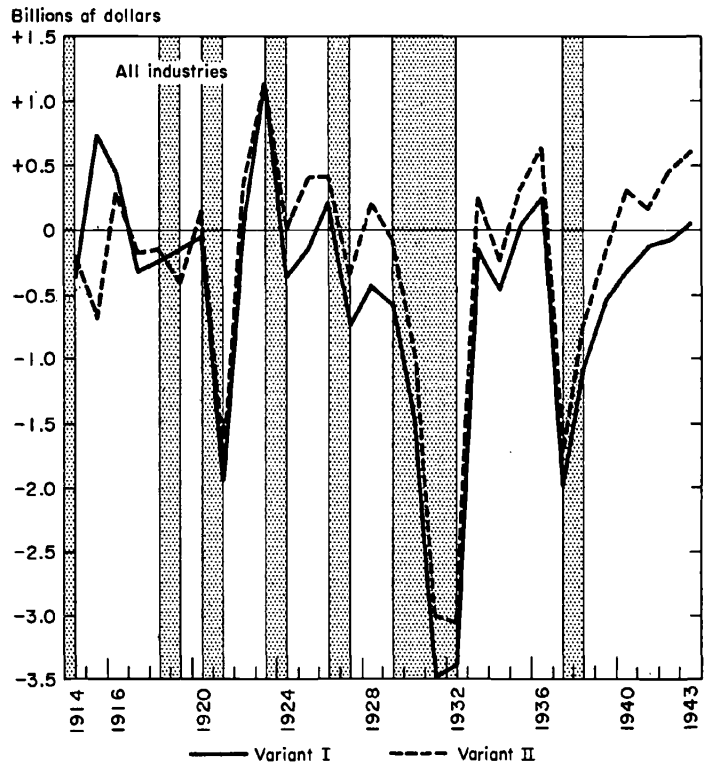
Let us consider first the types of error introduced by the addition or deletion of outstanding issues from the list of rated bonds. Variant I will be swollen whenever issues previously not rated are rated high grade, and Variant II when issues previously rated low grade are dropped from the list of rated bonds. Up to 1916, in particular, many utility and industrial issues previously not rated were rated high grade by the agencies, so that Variant I is suspect for that period (cf. Chart 9). On the other hand, there appears to have been a tendency for the agencies to drop a few issues from

the list of rated bonds as they closely approached default. To the extent that such issues were low grade, the net change (V–IX) would be reduced by the deletions, so that under Variant II net upgrading would be too large (or if negative, net downgrading would be too small). Something like this probably occurred in the thirties, which may partially account for the fact that in that period Variant II showed less downgrading than Variant I.

The second source of error is that our series on ratings at extinguishment cover final but not partial extinguishments (i.e. issues retired in part by sinking-fund call, conversion, etc. prior to final extinguishment); but since partial extinguishments during the period studied comprised only 22 percent of total extinguishments, the absence of data on the partials should not be too serious a defect. Since the estimates were obtained by using ratings for final extinguishments rather than for total extinguishments, net upgrading under Variant I actually measures net upgrading *minus* any partial extinguishments that were rated I–IV at date of extinguishment. Similarly, net upgrading under Variant II measures net upgrading *plus* partial extinguishments rated V–IX at date of extinguishment. Thus Variant I is too low and Variant II too high, a relationship that is confirmed by Chart 9. If forced to choose between them, we should select Variant II as the more accurate measure in respect of this source of error, since most partial extinguishments, by their very nature, are presumably high grade and would not affect Variant II.

Despite the indicated sources of error, Chart 9 clearly shows that the two estimates of net upgrading usually behaved similarly, and this is particularly true of their movements over business cycles. Like the net changes in outstandings, the net upgrading series strongly suggest that the agencies upgraded issues during short-run expansions of general business activity and downgraded them during business contractions. The evidence in this respect may be summarized conveniently by means of conformity indexes showing the relationships of the two variants and their component series to business cycles (Table 32). A positive index means that a series usually rises during expansion and falls during contraction phases of the cycle, and a negative index indicates the reverse pattern of behavior. Expansion indexes refer to behavior during business expansions (i.e. the movement of the series from the initial trough of each cycle to the peak) and contraction indexes to behavior during business contractions. The full-cycle in-

CHART 9—Net Upgrading of Outstanding Issues by the Investment Rating Agencies, 1914-43



Universe estimates for straight bonds, from "Statistical Measures," Tables 1, 52, and 55.

Net upgrading is that part of the annual net change in the par-amount total of bond outstandings rated high (the four best grades) or low (all other grades) that is attributable to revisions of agency ratings of outstanding issues. Positive values indicate an excess of upward over downward revisions; negative values, an excess of downward over upward revisions. Variant I was computed from changes in high grades and Variant II from changes in low grades. If all issues were rated throughout their lives and if information on partial extinguishments were available, the two series would be identical.

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 9, concluded

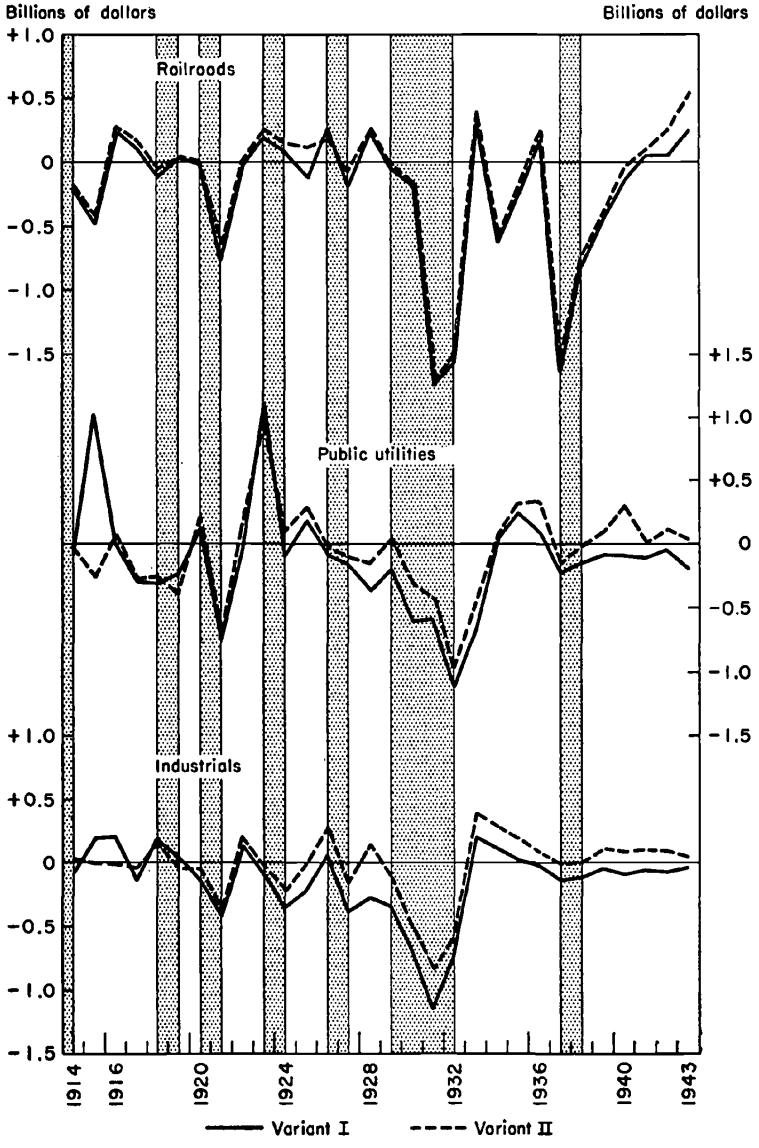


TABLE 32—Conformity Indexes for Bonds with High and Low Agency Ratings: Offerings, Extinguishments, Net Changes, and Net Upgrading, 1908–38

	BONDS RATED I–IV			BONDS RATED V–IX		
	Expansion	*Contraction*	*Full Cycle*	*Expansion*	*Contraction*	*Full Cycle*
			Net Changes			
All industries	+67	+33	+45	−100	−67	−82
Railroads	−71	0	+14	−71	−50	−57
Public utilities	+33	0	+27	−33	−67	−100
Industrials	+67	+67	+45	−100	−100	−100
			Offerings			
All industries	0	−67	−64	0	0	−9
Railroads	0	−25	−47	+25	−25	−20
Public utilities	+33	−14	−33	0	−14	0
Industrials	+33	−14	0	−33	+14	+17
			Final Extinguishments			
All industries	0	0	−9	+67	0	−9
Railroads	+14	0	−29	+43	−14	+8
Public utilities	+67	−33	+45	+33	0	+9
Industrials	+67	0	+45	+50	−33	−45

	NET UPGRADING, VARIANT I			NET UPGRADING, VARIANT II		
	Expansion	*Contraction*	*Full Cycle*	*Expansion*	*Contraction*	*Full Cycle*
All industries	+100	+33	+64	+100	+67	+82
Railroads	+14	+43	+38	+43	+43	+54
Public utilities	0	+33	+82	+33	+67	+82
Industrials	+67	+67	+82	+67	+67	+100

Based on annual par-amount data for straight corporate bonds from *Statistical Measures*, Tables 1, 52, and 55. Indexes cover six reference cycles 1914–38 for all series except railroads; railroad offerings cover eight cycles 1908–38, and other rail series, seven cycles, 1911–38. These indexes do not take account of possible leads or lags at reference-cycle turning points.

dex is based on comparisons of the rates of change of the series over business contractions with the corresponding rates for preceding and succeeding expansions, a positive index indicating that the rates of change are typically lower in contractions than in expansions. For each type of index, +100 indicates perfect positive conformity to business cycles, −100 perfect negative conformity, and values near zero, negligible conformity.[11]

[11] For a full description of the construction of annual conformity indexes

As the expansion and contraction indexes show for bonds of all industries and also for industrials, the net changes in outstandings rated I–IV typically increased during business expansions and decreased during business contractions. Moreover, all of the full-cycle indexes are positive, indicating definite positive conformity for the group. Conversely, indexes for the net changes V–IX are all negative and are generally quite high, showing a definitely inverted and even more sensitive response to business cycles.

The indexes for high-grade bond offerings indicate low negative conformity for the full cycle, while those for extinguishments and for low-grade bond offerings suggest negligible conformity. When the offering and extinguishment series are combined with the corresponding net change series, the resultant indexes for net upgrading, Variant I, generally rise, while those for Variant II reverse signs but otherwise change only slightly. In both cases the indexes indicate systematic positive conformity of net upgrading to general business activity. Moreover, the fact that the corresponding indexes for the two variants are of about the same order of magnitude indicates that, despite error, they behaved similarly over business cycles.[12]

The absence of information on additions and deletions and on

---

and their uses in analyzing various types of economic time series, see Arthur F. Burns and Wesley C. Mitchell's *Measuring Business Cycles* (National Bureau of Economic Research, 1946), Chapter 5. A brief explanation is given in *Volume of Financing,* Chapter 4.

12 The conformity indexes in Table 32 do not take account of possible leads or lags at reference-cycle turning points; and for the annual all-industry series further analyses were made. Definite changes from the standard reference pattern appeared only for final extinguishments and for net upgrading. Final extinguishments typically rose from mid-contraction to mid-expansion (stages VII to III) for bonds rated I–IV and from trough to mid-expansion (stages I to III) for bonds rated V–IX. (The latter is also the typical expansion period for total final extinguishments; cf. *Volume of Financing,* page 69, note 12.) On these bases, the conformity indexes show general improvement: for high grades, +71 for expansions, 0 for contractions, and +50 for the full cycle; for low grades, +100, +33, and +82, respectively. Net upgrading, Variant II, exhibits no evidence of systematic leads or lags with respect to the reference cycle. Variant I, on the other hand, typically rose from trough to mid-expansion (stages I to III), and on that basis the expansion, contraction, and full-cycle indexes all show perfect positive conformity. It is not clear whether the net change for high grades typically rose over the full reference expansion (stages I to V) as assumed in Table 32 or only through mid-expansion (stages I to III); nor whether the net change for low grades typically rose over the reference contraction (stages V to IX) or from mid-expansion to the reference trough (stages III to IX). On the alternative bases, the indexes for high grades all fell, but for low grades all rose to perfect negative conformity.

the ratings of partial extinguishments is troublesome, but is not believed to be so disturbing as to subvert the principal conclusion that net upgrading conforms positively to business cycles. Some evidence is available on the cyclical behavior of total partial extinguishments. Total partial extinguishments show negative conformity to business cycles; but since they are a small fraction of the total (22 percent of total extinguishments) they have a small amplitude of cyclical variation as compared with the series for net upgrading.[13] Moreover, partial extinguishments serve to reduce Variant I and to increase Variant II (with the greater impact falling on Variant I, since most partial extinguishments are high grade); they therefore presumably have an opposite effect on the conformity of the two variants. The fact that the conformity indexes for the two variants are so similar thus provides additional evidence of the negligible effect of the partial extinguishments on the cyclical behavior of net upgrading and downgrading.

In view of the good record of the agencies in predicting default risk, it is natural to suppose that some part of the downgrading observed during business contractions is related to corporate bond defaults. For there is considerable evidence that the agencies, in their efforts to assess the risk of default, downgraded issues that defaulted or were about to default (cf. Table 31); and the evidence is equally conclusive that corporate bond defaults are strongly inverted with respect to business cycles (cf. Chart 25 and Table 20 of *Volume of Financing*). Superficially, therefore, the net upgrading and downgrading may simply reflect the changing default status of outstanding issues. To appraise the importance of this factor, a special study was made to determine the volume of all downgrading on defaulted issues that occurred in the year of default or year before default, and the volume of all upgrading that occurred in the year of settlement of a default situation, or in the year before settlement. These amounts, which proved to be surprisingly small on an annual basis, were then removed from the two variants of net upgrading, and the conformity indexes were recalculated. In general, the series were affected only slightly, so that the conformity indexes covering issues other than those near default remained virtually unchanged.[14] The small volume of downgrad-

[13] For data on total, partial, and final extinguishments, see *Volume of Financing*, Table A-11.

[14] The conformity indexes on a I–V basis obtained by eliminating down-

ing of defaulted issues in trough years of the business cycle may appear at first hand to conflict with our earlier finding that downgrading was large in quadrennial periods of heavy default. The principal explanation seems to be that the investment agencies were able to foresee defaults several years in advance and downgraded issues accordingly. Also, issues that went into default during other than peak and trough years of the general reference cycle are reflected in the quadrennial data, but not in the conformity indexes, which are based on the behavior of the series at turning points. Finally, heavy defaults at the reference troughs may have affected agency psychology adversely, so that issues were downgraded at that time even though they did not go into default.

From the evidence, therefore, it appears that the agencies definitely rated bonds up in expansions and down in contractions, a finding that is, of course, at odds with the notion that they take only long-run factors into account in assigning the ratings of issues other than those approaching default. Since it is known that earnings coverage enters into the ratings, doubtless the cyclical instability of corporate earnings is one factor that contributes to the sensitivity of the ratings to business cycles. Whatever the cause, however, it is clear that the ratings of bond issues continually shifted over business cycles, and in a way that amplified the problems of the commercial banks and of other financial intermediaries.

---

grading at default and upgrading at settlement are as follows:

	NET UPGRADING, VARIANT I			NET UPGRADING, VARIANT II		
	Expansion	*Contraction*	*Full Cycle*	*Expansion*	*Contraction*	*Full Cycle*
All industries	+100	+33	+64	+67	+67	+82
Railroads	−14	+43	+38	+43	+43	+54
Public utilities	+33	+33	+82	+33	+67	+82
Industrials	+67	+67	+82	+100	+67	+100

Comparison with Table 32 shows that the elimination of defaults changes several of the expansion indexes slightly but leaves the others unchanged. Elimination of defaults changed the expansion indexes only when the average change per year from trough to peak of the original series was close to zero. When the downgrading of defaults occurred in a trough year the sign of the average change per year then changed from plus to minus and when it occurred in a peak year, from minus to plus. Since total downgrading was more important than upgrading, the contraction indexes were unaffected by the removal of defaults. In general the volume of issues upgraded at settlement was negligible.

Reference back to Chart 9 will show that the downgrading was particularly heavy in the recession years 1920–21 and 1929–32, and throughout most of the depressed thirties. As a matter of fact, the downgrading was so heavy in those years that over the full period studied downgrading exceeded upgrading. Some idea of the importance of downgrading is indicated by the fact that net downgrading constituted about 10 percent of total rated outstandings in 1921, 11 percent in 1931 and 1932, and 7 percent in 1937. Relative to total rated outstandings, net upgrading was extensive only in 1923, when about 6 percent of the total was upgraded. (Variant 1 shows heavy net upgrading in 1915, but the series is suspect for that year; see the discussion accompanying Chart 9.) In other years, the proportions upgraded or downgraded, while less important, still followed the course of the business cycle. Conformity indexes computed for the proportions upgraded and downgraded are substantially like those presented in Table 32.

Despite the short-run cyclical instability of agency ratings, it is noteworthy that the agencies became progressively more conservative during the 1920's, rating up a smaller proportion of issues (or rating down a larger proportion) towards the close of the period than at the beginning. The conservatism of the agencies in the twenties is particularly striking in view of the speculative excesses of the era.

Investor Experience and Agency Ratings

According to our interpretation of agency ratings, they are an attempt to rank issues in order of prospective default risk and of the possible magnitude of default loss. The agencies, however, make no pretense that the ratings per se are useful as signals for purchase or sale, and at least one agency specifically warns that they should not be used in that way. Thus *Moody's Investment Manuals* (1953), page v, state:

"As ratings are designed exclusively for the purpose of grading bonds according to their investment qualities, they should not be used alone as a basis for investment operations. For example, they have no value in forecasting the direction of future movements of market prices. Market price movements in bonds are influenced not only by the quality of individual issues but also by changes in money rates and general economic trends, as well as by the length of maturity, etc. During its life even the best quality bond may have wide price movements, although its high investment status remains unchanged.

"The matter of market price has no bearing whatsoever on the determination of a rating and ratings themselves are not to be construed as a recommendation with respect to 'attractiveness.' The attractiveness of a given bond may depend on its yield, its maturity date or on other factors for which the investor may search, as well as on its investment quality which is the only characteristic to which the rating refers."

To the extent that our interpretation is correct, and the agencies are successful in their forecasts, we should observe a fairly close inverse relationship between rating grade and default incidence and also between rating grade and default loss. On the other hand, since the agencies do not attempt to judge the attractiveness of an issue, it would not be surprising if the ratings were found to be rather loosely related to the returns actually obtained by investors.

The purpose of this section is to determine the validity of these inferences, in so far as the data permit. We shall first examine the default rates on corporate bonds in different rating grades, and then the prices, yields, and loss experience on defaulted issues. The chapter closes with an investigation of the relationships between rating grades and over-all yield averages calculated from offering to extinguishment and from the beginning to the end of selected chronological periods.

Default Rates for Offerings

Percents of the par-amount totals of bond offerings that subsequently went into default are classified by agency-rating grade at offering in Tables 33 and 34; and quadrennial default rates for the par-amount totals of issues outstanding at the beginning of selected chronological periods are similarly classified in Tables 35 and 36. Tables 33 and 36 cover only issues in the experience samples, while Tables 34 and 35 are based on estimates for all straight issues.

The tables provide evidence of the remarkable ability of the agencies to predict default experience on issues of roughly comparable type; that is, on issues within the same major industry group. Table 33, which shows the accuracy of the long-range forecasts based on ratings at offering, is particularly interesting in this respect. It will be remembered from Chapter 2 that the percent of offerings subsequently going into default is influenced by the period of offering and extinguishment, and presumably also by many other factors not closely related to intrinsic investment

TABLE 33—Proportions of Offerings 1900–1943 in Given Agency Rating Grades at Offering That Went into Default before 1944

	I	II	III	IV	I–IV	V–IX	*No Rating*	*No Rating after 1/1/20*
				Default Rates				
Large issues, all industries	5.9%	6.0%	13.4%	19.1%	11.3%	42.4%	28.6%	15.2%
Railroads	14.5	18.6	41.0	36.6	25.7	70.4	25.9	0.0[a]
Public utilities	0.0	0.3	5.0	14.0	4.9	34.4	34.3	25.4
Street railways	0.0[a]	70.3	85.1	58.5	75.1	34.6	64.8	
All others	0.0	0.1	0.6	12.0	2.9	34.3	16.5	25.4
Industrials	0.4	3.2	8.8	18.5	9.8	32.7	30.3	14.1
Small issues, all industries	10.2	15.5	9.9	25.2	19.2	32.6	27.0	44.9
Railroads	0.0	15.2	26.2	3.4	14.4	72.6	19.9	0.0[a]
Public utilities	51.3[a]	15.9	2.5	13.9	9.4	28.1	36.2	28.7
Street railways	100.0[a]		19.2[a]	100.0[a]	70.5	77.6	65.8	
All others	0.0[a]	15.9	1.9	10.1	6.9	26.6	10.4	28.7
Industrials			23.8	40.3	36.7	35.1	24.7	53.0

TABLE 33
(concluded)

	I	II	III	IV	I–IV	V–IX	*No Rating*	*No Rating after 1/1/20*
				Par Amount of Offerings, Defaults and Nondefaults (in millions)				
Large issues, all industries	$ 6,398.0	$10,648.2	$11,700.6	$ 8,506.0	$37,252.8	$ 3,725.1	$11,460.5	$ 198.3
Railroads	2,560.5	3,007.2	2,362.7	1,275.9	9,206.3	876.4	6,896.7	5.1
Public utilities	2,683.6	5,659.6	5,954.6	4,123.8	18,421.6	1,814.8	2,660.8	26.4
Street railways	0.1	22.5	308.9	178.5	510.0	204.4	979.7	0.0
All others	2,683.5	5,637.1	5,645.7	3,945.3	17,911.6	1,610.4	1,681.1	26.4
Industrials	1,153.9	1,981.4	3,383.3	3,106.3	9,624.9	1,033.9	1,903.0	166.8
Small issues, all industries	5.8	23.6	142.1	244.5	416.0	217.7	298.4	16.8
Railroads	4.6	14.4	16.7	12.7	48.4	7.7	124.5	0.5
Public utilities	1.2	9.2	94.5	122.0	226.9	119.1	113.1	4.5
Street railways	0.6	0.0	3.3	5.2	9.1	3.6	52.6	0.0
All others	0.6	9.2	91.2	116.8	217.8	115.5	60.5	4.5
Industrials	0.0	0.0	30.9	109.8	140.7	90.9	60.8	11.8

Based on Tables 185 and 186, of *Statistical Measures*, and special supplementary tabulations, covering regular offerings in the offerings experience sample.

[a] Based on less than five offerings.

quality in the agency rating sense. Nevertheless, aside from the large issues of street railways, most of which were not rated at offering, and the small industrials, for which our sample data are quite fragmentary, the percents of the amount of offerings rated I-IV that subsequently went into default were consistently lower than the corresponding percents for offerings rated V-IX. Moreover, the percents going into default rose rather consistently from grade I through grade IV.

The agencies appear to have been less successful in predicting relative default experience at offering as between major industry groups. For example, large grade I rail defaults were heavier than large grade IV utilities other than street railways. Moreover, defaults on large issues, grades I–IV, were three times as heavy on industrials as on utilities other than street railways, and were almost three times as heavy on rails as on industrials. On the other hand, the ratings seem to have been more homogeneous among the lower-grade issues, approximately one-third of the offerings in all major industry groups except railroads subsequently going into default, and seven-tenths in the latter industry. From the data available, it would also appear that the agencies were somewhat more successful in ranking the large issues in order of default risk than the small issues, possibly because more information could be obtained for them. The erratic behavior of the default rates for small issues may also be explained in part by sampling errors. The data on small issues in Table 33 are quite thin when cross-classified by rating grade within industry group.

On the whole, the percents of unrated issues subsequently going into default were above the corresponding rates for the high grades but below those for low grades. The unrated offerings are best compared, however, after 1920, when most issues of public significance were rated by the agencies. The unrated small issues in that period had higher default rates than either of the rated groups. The unrated large issues, on the other hand, had lower default rates than the corresponding grades V–IX. This is probably the result of the inclusion of private placements in the unrated group of large issues in the later years of the period.

Table 34, which contains annual data on the percents of the par amount of rated bonds in grades I–IV and the default rates for bonds rated I–IV and V–IX at offering, again demonstrates the remarkable ability of the agencies to rank offerings in order of risk of default. For all issues combined, the default rates for issues

TABLE 34—Percent of Par Amount of Offerings Rated by Agencies, Percent Rated High Grade, and Percent of Bonds Rated High and Low Grade at Offering That Went into Default before 1944, Annually, 1908–43

ALL ISSUES

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1908	$1,112.1	23.1%	79.7%	30.9%	14.4%	95.6%
1909	1,264.0	43.8	81.3	37.5	28.6	76.3
1910	1,133.2	24.9	74.3	20.1	20.5	18.9
1911	1,299.5	30.2	85.1	45.2	41.4	66.9
1912	1,396.9	23.7	71.5	50.0	36.8	82.9
1913	1,167.6	65.4	84.2	46.1	46.2	45.7
1914	1,193.4	65.5	73.9	29.4	26.2	38.5
1915	1,184.8	77.1	86.4	26.8	23.4	48.6
1916	1,485.0	77.5	86.1	29.2	29.1	29.4
1917	1,228.6	73.7	77.1	21.8	15.3	43.7
1918	800.4	75.2	85.7	19.3	14.1	50.5
1919	1,038.7	94.1	81.0	10.4	4.6	35.0
1920	1,448.0	97.4	87.6	17.2	11.7	56.0
1921	2,074.6	98.0	84.7	12.1	6.1	44.8
1922	2,270.2	98.4	75.3	15.0	10.9	27.3
1923	2,118.2	94.3	81.7	9.8	8.0	18.0
1924	2,227.0	99.2	83.9	21.3	21.6	19.9
1925	2,202.4	97.6	83.3	16.9	12.7	38.6
1926	2,724.8	98.4	81.8	21.6	16.2	45.5
1927	3,856.8	99.5	82.3	27.1	21.2	54.4
1928	2,997.0	97.0	73.0	38.2	24.9	75.1
1929	1,957.7	94.1	73.8	30.6	18.5	65.9
1930	2,978.3	97.4	86.5	27.1	24.4	44.9
1931	2,030.1	97.3	89.2	18.4	11.4	76.4
1932	873.7	90.9	77.1	15.2	2.0	65.6
1933	444.3	84.3	36.1	38.3	8.9	54.9
1934	581.3	90.6	78.8	12.4	13.0	10.1
1935	2,314.9	96.4	85.0	5.7	0.8	33.7
1936	3,666.1	98.8	93.8	2.5	1.9	11.0
1937	1,561.6	97.5	87.1	0.4	0.3	0.5
1938	1,960.1	94.2	94.7	0.0	0.0	0.0
1939	2,213.1	95.0	73.9	0.0	0.6	0.0
1940	2,416.4	86.4	84.9	0.1	0.0	0.8
1941	2,005.2	72.6	95.5	1.4	0.0	30.7
1942	897.7	69.4	86.3	0.0	0.0	0.0
1943	809.5	71.3	89.6	2.3	0.0	22.0

TABLE 34
(continued)

RAILROADS

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1908	$573.6	44.8%	79.7%	30.9%	14.4%	95.6%
1909	668.8	82.8	81.3	37.5	28.6	76.3
1910	443.7	63.6	74.3	20.1	20.5	18.9
1911	524.4	74.9	85.1	45.2	41.4	66.9
1912	442.6	74.7	71.5	50.0	36.8	82.9
1913	519.6	78.3	85.1	61.4	56.3	90.8
1914	558.3	77.9	78.4	23.7	20.0	37.0
1915	668.5	89.2	89.0	29.2	24.1	70.0
1916	546.1	93.3	85.7	43.0	41.0	55.1
1917	491.4	73.5	84.0	32.1	19.2	100.0[a]
1918	185.8	66.5	99.2	9.7	9.4	50.0[a]
1919	250.4	92.7	87.0	2.2	2.2	2.3
1920	261.4	96.7	87.0	12.0	1.6	81.8[a]
1921	590.4	97.0	99.8	12.3	12.1	100.0[a]
1922	455.5	100.0	91.1	3.6	2.7	13.5
1923	283.8	98.2	91.8	28.9	24.9	74.6[a]
1924	654.4	99.9	97.9	26.9	27.3	5.1[a]
1925	368.6	99.8	79.7	50.1	43.4	76.8
1926	296.5	99.8	82.0	55.2	45.5	99.6
1927	621.1	100.0	83.9	56.7	49.9	92.5[a]
1928	573.7	99.9	76.7	56.8	43.6	100.0
1929	344.0	99.5	92.8	41.1	36.7	98.8[a]
1930	760.5	97.8	97.0	51.1	49.6	100.0[a]
1931	396.6	99.7	95.7	28.5	25.3	100.0[a]
1932	63.5	72.0	18.2	92.8	60.2[a]	100.0[a]
1933	115.7	80.6	58.3	41.7	0.0[a]	100.0[a]
1934	246.6	92.8	92.2	21.3	20.5	30.2[a]
1935	170.4	99.9	88.2	10.5	10.3	11.4[a]
1936	680.5	100.0	92.1	3.0	0.0	37.3
1937	194.3	99.9	98.3	0.0	0.0	0.0[a]
1938	71.6	99.9	87.0	0.0	0.0	0.0[a]
1939	492.2	96.5	5.1	0.0	0.0	0.0
1940	465.0	96.9	62.7	0.6	0.0	1.5
1941	174.1	92.0	75.8	12.5	0.0	51.5[a]
1942	68.3	93.1	25.5	0.0	0.0[a]	0.0[a]
1943	120.8	99.9	52.4	10.9	0.0	23.0

TABLE 34
(continued)

PUBLIC UTILITIES

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1913	$486.4	64.3%	84.9%	29.2%	34.4%	0.0%
1914	439.8	66.1	64.6	43.4	43.8	42.6
1915	338.9	72.4	78.9	28.5	28.9	27.2
1916	606.5	76.4	81.5	24.9	28.9	7.0
1917	371.4	80.5	84.1	25.2	16.9	69.0
1918	488.0	80.2	78.3	21.4	13.3	50.5
1919	555.0	96.0	77.5	8.6	3.7	26.1
1920	478.8	96.9	70.8	14.0	0.2	47.6
1921	674.1	99.3	80.4	10.3	0.3	51.7
1922	929.4	99.5	67.2	11.1	6.3	20.9
1923	1,051.9	99.3	78.7	2.0	0.8	6.4
1924	1,008.1	99.9	81.2	6.1	6.0	6.6
1925	1,093.3	99.4	89.2	1.8	1.4	5.8
1926	1,392.6	99.0	85.7	7.0	4.9	19.1
1927	2,035.2	100.0	81.3	16.2	7.8	52.7
1928	1,513.0	100.0	70.7	36.9	21.8	73.6
1929	996.5	97.9	70.3	24.3	9.4	61.8
1930	1,539.5	98.9	84.3	13.9	8.8	41.4
1931	1,357.8	100.0	89.5	12.2	3.5	85.9
1932	654.6	96.3	81.5	9.9	1.4	55.5
1933	209.0	99.3	33.1	35.4	0.0	52.9
1934	239.4	94.0	68.1	4.5	6.5	0.1
1935	1,342.5	98.2	89.2	0.4	0.0	3.7
1936	2,038.6	99.5	96.6	3.2	3.3	0.0
1937	823.4	99.9	93.3	0.7	0.6	1.6
1938	1,206.0	98.3	94.7	0.0	0.0	0.0
1939	1,110.2	96.7	96.1	0.9	1.0	0.0
1940	1,275.5	92.4	89.0	0.0	0.0	0.0
1941	1,303.4	74.9	99.9	0.0	0.0	0.0[a]
1942	482.2	73.2	89.8	0.0	0.0	0.0[a]
1943	389.7	83.8	99.2	0.0	0.0	0.0[a]

TABLE 34
(continued)

INDUSTRIALS

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1913	$161.6	26.9%	71.3%	24.1%	33.9%	0.0%[a]
1914	195.3	28.6	86.6	0.9	1.0	0.0[a]
1915	177.4	40.8	90.6	1.5	1.2	4.4
1916	332.4	53.7	99.4	0.9	0.5	70.0[a]
1917	365.8	67.1	58.5	2.3	4.0	0.0[a]
1918	126.6	69.0	100.0	23.7	23.7	
1919	233.3	91.0	83.1	23.6	9.7	91.9
1920	707.8	97.9	99.0	21.2	20.4	100.0[a]
1921	810.1	97.7	77.5	13.4	5.9	39.3
1922	885.3	96.5	75.6	25.2	20.6	39.3
1923	782.5	86.3	82.3	13.9	10.8	29.1
1924	564.5	96.9	72.2	42.6	44.5	37.8
1925	740.5	93.9	76.1	23.0	16.4	45.1
1926	1,035.7	97.3	76.3	31.7	24.3	55.3
1927	1,200.5	98.3	83.3	30.3	28.7	38.3
1928	910.3	90.3	74.9	27.7	16.7	61.5
1929	617.2	84.9	67.9	35.3	19.9	67.8
1930	678.3	93.5	79.5	30.8	27.9	42.0
1931	275.7	81.0	76.4	38.1	36.5	43.2
1932	155.6	75.7	76.5	12.6	0.0[a]	53.8[a]
1933	119.6	61.7	16.3	42.1	100.0[a]	30.9
1934	95.3	76.3	69.5	8.9	1.4[a]	26.1
1935	802.0	92.5	76.8	14.2	0.0	61.0
1936	947.0	96.5	88.9	0.5	0.0	4.4
1937	543.9	93.1	72.6	0.0	0.0	0.0
1938	682.5	86.3	95.9	0.0	0.0	0.0[a]
1939	610.7	90.6	89.9	0.0	0.0	0.0
1940	675.9	68.1	96.1	0.0	0.0	0.0[a]
1941	527.7	60.4	92.1	0.0	0.0	0.0[a]
1942	347.2	59.3	99.0	0.0	0.0	0.0[a]
1943	299.0	43.4	100.0	0.0	0.0	

TABLE 34
(continued)

LARGE ISSUES

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1908	$808.8	31.3%	79.4%	29.9%	12.8%	95.6%
1909	859.3	55.9	78.4	42.8	33.6	76.3
1910	729.5	38.7	74.3	20.1	20.5	18.9
1911	888.9	43.3	84.8	46.2	42.5	66.9
1912	1,030.2	27.4	75.9	44.9	35.0	76.3
1913	831.5	78.6	84.3	49.2	48.4	53.5
1914	832.5	82.7	80.3	26.7	25.7	30.6
1915	913.5	84.8	90.2	29.5	24.3	76.5
1916	1,162.4	88.0	92.2	32.0	29.9	57.3
1917	931.8	82.6	76.8	18.4	13.0	36.0
1918	549.9	81.4	95.7	18.1	17.0	43.0
1919	725.7	94.3	90.0	6.7	3.8	32.8
1920	1,085.7	98.8	95.3	13.1	11.0	56.8
1921	1,552.1	99.7	91.1	12.2	7.3	62.6
1922	1,647.2	98.4	82.8	12.2	7.0	37.1
1923	1,543.5	99.7	84.9	8.3	6.4	19.1
1924	1,653.7	99.8	89.5	19.2	18.8	22.5
1925	1,634.0	99.3	86.8	18.8	13.6	54.7
1926	2,056.7	99.3	84.3	17.3	14.1	34.6
1927	3,135.3	100.0	89.7	19.2	16.4	43.8
1928	2,337.4	99.4	82.2	34.2	25.6	74.0
1929	1,619.6	97.1	76.2	31.8	20.7	67.4
1930	2,668.7	99.7	87.8	25.4	23.3	40.5
1931	1,786.1	99.9	91.1	17.3	12.1	70.8
1932	702.1	95.5	82.5	15.6	2.2	78.7
1933	260.9	99.4	49.8	42.6	9.3	75.6
1934	457.7	92.3	87.8	15.3	14.4	21.9
1935	2,064.7	97.8	92.6	2.2	0.8	19.3
1936	3,382.6	99.6	97.3	2.5	2.0	22.3
1937	1,329.5	99.2	93.7	0.3	0.4	0.0
1938	1,815.3	95.1	97.7	0.0	0.0	0.0
1939	2,040.7	98.1	74.9	0.5	0.7	0.0
1940	2,166.0	89.6	89.5	0.0	0.0	0.0
1941	1,746.1	81.7	97.4	1.4	0.0	54.8[a]
1942	762.4	81.4	86.6	0.0	0.0	0.0
1943	696.2	78.8	90.8	2.4	0.0	26.1[a]

TABLE 34
(concluded)

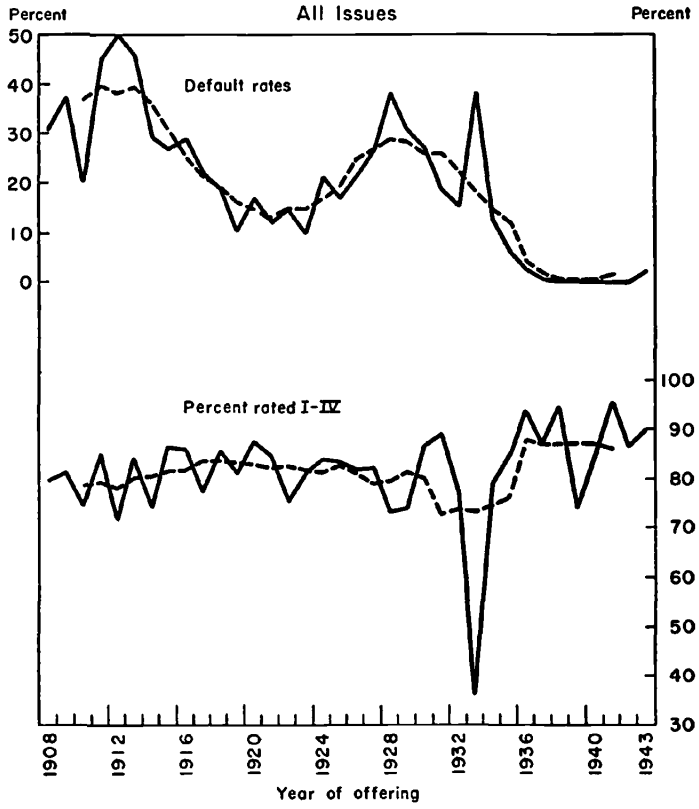
SMALL ISSUES

YEAR OF OFFERING	*Par Amount of Total Offerings*	*Percent of Par Amount Rated by the Agencies*	*Percent of Rated Bonds in Grades* I–IV	*Default Rates*		
				Total Rated	I–IV	V–IX
1908	$303.3	1.2%	100.0%	100.0%	100.0%[a]	
1909	404.7	18.2	100.0	2.7	2.7	
1910	403.7	0.0				
1911	410.6	2.0	100.0	0.0	0.0[a]	
1912	366.7	13.3	45.8	79.1	54.5[a]	100.0%[a]
1913	336.1	32.5	83.8	27.5	32.8	0.0
1914	360.9	25.7	25.8	49.3	35.8[a]	54.0
1915	271.3	51.2	65.4	12.1	16.3	4.2
1916	322.6	39.6	37.5	6.6	15.2	1.4
1917	296.8	45.9	78.8	40.9	27.5	91.0[a]
1918	250.5	61.8	56.8	22.7	0.0	52.7
1919	313.0	93.6	60.0	19.0	7.6	36.3
1920	362.3	93.0	62.8	30.1	14.8	55.7
1921	522.5	93.1	64.5	11.6	0.0	30.6
1922	623.0	98.5	55.4	22.5	26.7	17.3
1923	574.7	80.1	71.0	14.8	14.4	15.9
1924	573.3	97.4	67.5	27.6	32.4	17.5
1925	568.4	92.6	72.5	11.2	9.3	16.0
1926	668.1	95.7	73.8	35.2	24.1	66.6
1927	721.5	97.2	49.5	62.5	60.9	64.0
1928	659.6	88.6	36.8	55.1	18.6	76.3
1929	338.1	79.9	60.2	23.3	2.8	59.9
1930	309.6	78.0	72.6	46.7	39.1	66.7
1931	244.0	78.5	71.5	28.1	2.3	92.7[a]
1932	171.6	71.9	47.9	12.5	0.0	29.8
1933	183.4	62.8	5.0	28.6	0.0[a]	30.2
1934	123.6	84.3	42.2	0.7	1.6[a]	0.0
1935	250.2	84.6	12.8	39.5	0.0	45.3
1936	283.5	89.0	46.9	1.8	0.0	3.4
1937	232.1	88.2	44.3	0.4	0.0	0.8
1938	144.8	83.1	51.9	0.0	0.0[a]	0.0
1939	172.4	58.4	54.4	0.0	0.0	0.0
1940	250.4	59.1	25.1	1.8	0.0[a]	2.3
1941	259.1	11.0	0.0	0.0		0.0[a]
1942	135.3	1.6	0.0	0.0		0.0[a]
1943	113.3	25.2	67.5	0.0	0.0[a]	0.0[a]

Based on Tables 52 and 53 of *Statistical Measures*, and special supplementary tabulations: par-amount data for all large (straight) corporate issues, and for 10 percent of small issues adjusted annually to universe totals.

[a] Based on less than five offerings.

CHART 10—Proportion of Agency-rated Offerings That Later Defaulted, and Proportion That was Grade IV or Better, Annually, 1908-43

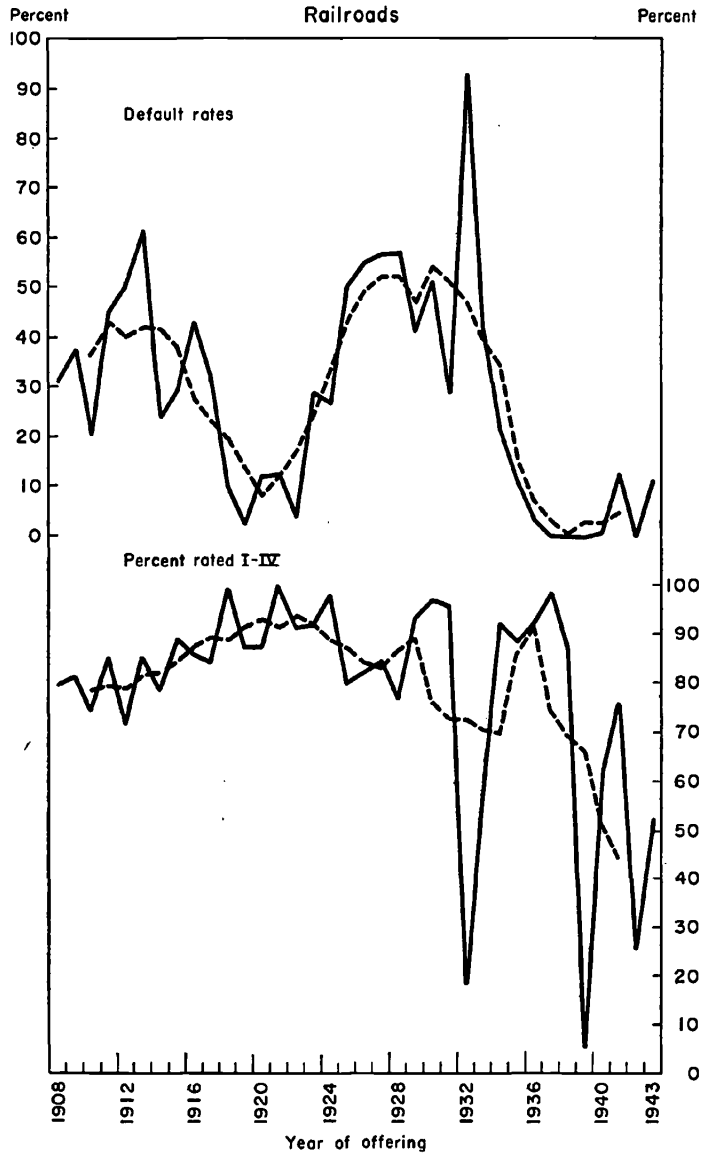


Based on par-amount data for straight bonds, from Table 34. Broken lines are centered five-year moving averages.

rated low grade at offering were lower than for those rated high grade in only 5 of the 36 years covered. The agencies' record in this respect appears to have been better for the large issues than for the small issues, a result perhaps due to the limited coverage of the small issues sample. The record was also better for rails than for utilities and industrials.

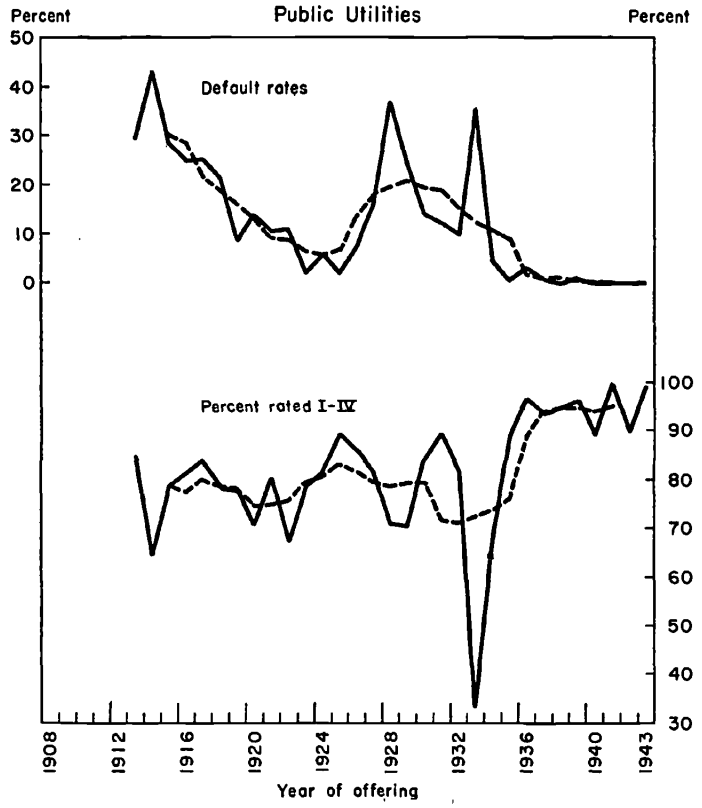
Another important point revealed by Table 34 is that the agencies were able to detect the deterioration in bond quality in the twenties—the poorer quality of bonds offered—that was re-

CHART 10, continued



vealed later by the actual default experience. As measured by default rates, the quality of both high grades and low grades deteriorated in the late twenties. Moreover, the agency ratings, which may be interpreted as a measure of the average estimated

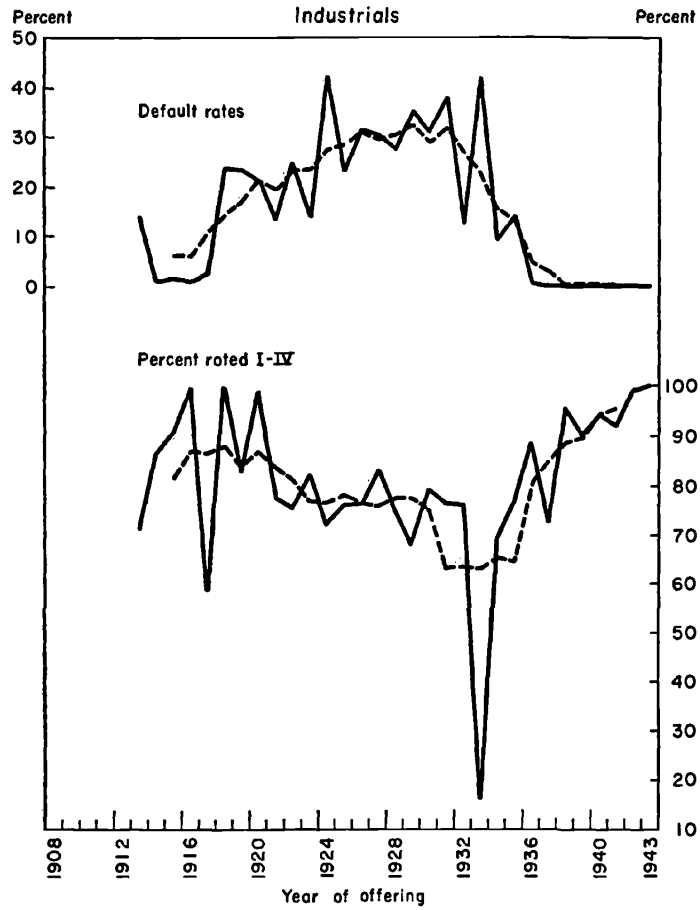
CHART 10, continued



or expected quality, registered that deterioration, since the percent of rated offerings in the first four grades declined in 1928 and 1929. Chart 10, which compares the annual default rates on rated offerings with the percents rated high grade, reveals a slight inverse relationship for other years as well, with the agency ratings possibly lagging behind the default rates. The inverse relationship between these series, however, should not be pressed too far, for it is clearly very slight.[15]

[15] A slight inverse relationship may be detected in the long-term trends of the series but not in their year-to-year changes. For example, comparisons of annual directions of change for default rates of rated offerings and percents rated grade IV or better show that for all industries the series moved in the opposite direction in 18 comparisons and in the same direction in 17 comparisons. The inverse relationship of annual directions of change was least pronounced for rails and most pronounced for industrials.

CHART 10, concluded



Default Rates on Outstandings

The quadrennial default rates in Table 35, which are based on all issues that were not in default at the beginning of the quadrennial periods, show the precision of the agency forecasts of default risk over short periods. For each of the forty-seven comparisons possible from this table the default rates on high grades were below those on low grades. Moreover, the quadrennial default rates for each major industry group averaged about ten times higher for low grades than for high grades. For rails the averages are 31.8 percent for low grades and 3.6 percent for high grades;

for utilities, exclusive of 1912–15, when few were rated, 20.6 percent and 2.1 percent; and for industrials for the same periods, 23.5 percent and 2.3 percent. The default rates on unrated issues stood about midway between the rates for the high and low grades, averaging 10.7 percent for rails, 16.3 percent for utilities, and 13.3 percent for industrials. Defaults were particularly heavy for high-grade rails in 1912–15 and 1932–35, for high-grade utilities in 1916–19, and for high-grade industrials in 1932–35.

TABLE 35—Quadrennial Default Rates for Outstandings with High and Low Agency Ratings at Beginning of Periods, 1912–43

PERIOD	I–IV	V–IX	*No Rating*	I–IV	V–IX	*No Rating*	I–IV	V–IX	*No Rating*
	All Issues			*Large Issues*			*Small Issues*		
1912–15	7.0%	49.3%	8.5%	5.9%	54.3%	8.7%	12.6%	19.0%	8.2%
1916–19	3.4	21.6	9.2	3.0	19.6	1.5	5.3	25.6	11.5
1920–23	1.0	18.2	14.9	0.9	17.8	22.0	1.2	18.7	13.4
1924–27	1.1	23.5	13.8	1.1	26.9		0.8	17.3	13.8
1928–31	1.4	22.6	7.2	0.8	21.5	6.3	4.6	24.1	7.5
1932–35	6.2	48.9	49.2	6.1	46.6	54.3	7.1	58.5	48.2
1936–39	3.3	21.7	8.0	3.3	24.2	0.0	3.3	10.3	12.2
1940–43	0.4	8.9	6.8	0.2	7.0	0.0	3.0	17.8	11.8
	Railroads			*Public Utilities*			*Industrials*		
1912–15	7.1	48.8	13.5	0.0[a]	100.0[a]	6.7	0.0[a]		11.2
1916–19	1.7	12.3	24.2	8.6	30.1	3.7	0.3	17.2	4.4
1920–23	1.0	20.1	11.1	0.9	16.6	25.2	1.0	28.1	3.6
1924–27	0.6	29.5	13.1	0.7	16.6	13.1	3.1	29.4	14.1
1928–31	0.8	23.6	0.0	1.3	18.1	2.9	2.9	27.6	8.4
1932–35	10.5	68.8	0.0	1.8	41.9	45.6	7.2	38.2	51.9
1936–39	6.3	43.4	0.0	1.1	10.9	14.5	1.4	12.2	8.7
1940–43	0.6	7.7	23.3	0.4	9.7	8.8	0.0	11.9	2.2

Based on Tables 164, 165, 167 and 168 of *Statistical Measures*: par-amount data for all large (straight) corporate issues in good standing at beginning of four-year periods, and for 10 percent of small issues adjusted quadrennially to universe totals.

[a] Based on less than five issues.

Data on quadrennial default rates for the individual rating grades I–IV are presented in Table 36 for four-year periods and for selected longer chronological periods. Again the table reflects the ability of the agencies to rank outstanding issues in order of default risk, the default rates rising with remarkable consistency

TABLE 36—Quadrennial Default Rates for Outstandings in First Four Agency Rating Grades at Beginning of Periods, 1912–43

PERIOD	I	II	III	IV	I	II	III	IV
	Large Issues, All Industries				*Large, Railroads*			
1912–15	3.8%	2.7%	15.8%	13.1%	3.9%	2.7%	15.8%	13.2%
1916–19	0.0	1.7	1.9	9.7	0.0	0.9	1.0	9.7
1920–23	0.0	0.0	4.0	0.0	0.0	0.0	5.6	0.0
1924–27	1.7	0.0	0.0	1.8	0.0	0.0	0.0	5.3
1928–31	0.0	0.2	0.3	3.6	0.0	0.0	0.5	10.3
1932–35	0.5	0.1	8.4	10.5	0.8	0.3	20.3	15.2
1936–39	0.0	2.2	4.6	5.1	0.0	5.0	10.9	10.3
1940–43	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1920–27	0.9	0.0	3.7	6.3	0.0	0.0	6.0	8.4
1920–31	0.0	0.1	2.6	4.7	0.0	0.0	4.8	6.6
1920–39	2.3	2.0	8.0	8.8	2.9	2.8	12.3	13.1
1924–39	2.0	2.8	4.3	4.7	2.5	4.5	10.6	13.0
1928–39	2.7	4.1	6.1	8.6	3.7	8.7	23.0	21.5
1932–39	0.2	1.4	6.8	10.6	0.4	3.0	14.8	22.5
	Large, Public Utilities				*Large, Industrials*			
1912–15		0.0		0.0	0.0	0.0		
1916–19	0.0	4.7	3.6	12.2	0.0	0.0	0.0	2.6
1920–23	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0
1924–27	0.0	0.0	0.0	0.0	11.1	0.0	0.0	1.0
1928–31	0.0	0.4	0.0	0.8	0.0	0.0	1.0	3.4
1932–35	0.0	0.0	0.0	3.9	0.0	0.0	1.6	12.8
1936–39	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.2
1940–43	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0
1920–27	0.0	0.0	0.0	0.0	5.5	0.0	3.7	11.6
1920–31	0.0	0.0	0.0	0.5	0.0	0.8	0.0	3.1
1920–39	0.0	0.8	3.8	0.0	0.0	0.6	8.8	5.0
1924–39	0.0	0.4	2.1	1.8	0.0	3.4	0.6	4.2
1928–39	0.0	0.3	1.0	3.4	0.0	0.0	4.4	7.0
1932–39	0.0	0.0	1.3	2.5	0.0	0.0	1.0	5.5

From special tabulations of the National Bureau of Economic Research: par-amount data for large issues in the periodic experience sample. Default rates for other than four-year periods are reduced to quadrennial basis; e.g., one-half the default rate for 1920–27 was entered for that period.

throughout the table as the rating grade declines.[16] The data for the longer periods are particularly interesting as showing the ability of the agencies to forecast default risks over fairly long periods. For all large issues combined, the default rates within

[16] The tendency for default rates on outstanding issues to be inversely related to agency rating was also noted by Gilbert Harold, *op. cit.*, Chapter 9, on the basis of his study of 363 rated issues for the period 1929–35.

each of the long periods were almost perfectly ranked with rating grade at the beginning of the period.

Default Losses

Tables 37 and 38, which measure the returns on defaulted issues, show that the agencies were not only able to rank issues in order of subsequent risk of default but in the order of the magnitude of default losses as well. Like our other data on the experience record of defaulted issues, the materials here presented are in the form of unweighted averages, and, of course, cover only issues for which sufficient information could be obtained to compute the relevant statistics.

The average market prices at default classified by rating grade five years before default indicate that the agencies were able in advance to rank the subsequently defaulting issues according to market valuation. Thus the average price at default for large issues was lower for each successively lower grade, being 60 for grade I but only 34 for grade IV and lower. Roughly the same decline occurred for the smaller issues as well, except that the average price at default for the very lowest grades (VI–IX) was above that of issues graded IV–V. Sampling errors, however, could well account for this quirk in the data.

Even more important was the fact that the agencies as many as five years before default were able to rank issues in order of payouts after default. Thus among large issues the value at default of subsequent receipts discounted at 3 percent was 80 for grade I, but only 53 for grade VI, while for small issues in grades I–III and grades VI–IX it was 76 and 69, respectively. Since the value of subsequent receipts fell almost continuously with agency-rating grade for both large and small issues, there is little doubt about the statistical significance of these results.

As might be expected in view of the proximity of default, the agencies were even more discriminating in the case of ratings assigned only one year before default. Large issues rated as grade I one year before default sold at 86 on date of default, while issues graded VII–IX sold at only 26. Moreover, the value of subsequent receipts on large issues discounted at 3 percent shows a continuous decline from 111 for grade I, through 46 for grades VII–IX. The record of the agencies in ranking subsequently defaulting issues according to value of receipts after default appears to have been equally good for the small issues.

TABLE 37—Market Prices at Default, Discounted Values of Receipts after Default, and Realized Yields after Default for Bonds Classified by Agency Rating Five Years and One Year before Default, 1900–1943

LARGE ISSUES

COMPOSITE RATING	BY RATING FIVE YEARS BEFORE DEFAULT					BY RATING ONE YEAR BEFORE DEFAULT				
	Number of Issues Used for Prices and Receipts	*Average Price at Default*	RECEIPTS DISCOUNTED AT *3 Percent*	RECEIPTS DISCOUNTED AT *6 Percent*	*Realized Yield, Default to Extinguishment*	*Number of Issues Used for Prices and Receipts*	*Average Price at Default*	RECEIPTS DISCOUNTED AT *3 Percent*	RECEIPTS DISCOUNTED AT *6 Percent*	*Realized Yield, Default to Extinguishment*
I	24	60	80	64	9.0%	9	86	111	94	7.9%
II	47	52	76	62	14.3	14	76	103	87	9.9
III	73	42	63	52	16.3	35	55	76	64	17.3
IV	92	34	66	55	27.5	81	54	75	62	11.0
V	65	34	60	50	20.3	147	39	63	53	21.9
VI	55	35	53	47	29.6	139	33	54	46	24.5
VII–IX	18	34	55	46	40.6	95	26	46	39	24.1
I–IV	236	43	69	56	19.5	139	58	80	67	12.3
V–IX	138	35	56	48	26.7	381	34	56	47	23.4
No rating	207	48	62	53	16.0	61	62	74	61	16.1

TABLE 37
(concluded)

SMALL ISSUES

COMPOSITE RATING	BY RATING FIVE YEARS BEFORE DEFAULT: *Number of Issues Used for Prices and Receipts*	*Average Price at Default*	RECEIPTS DISCOUNTED AT: *3 Percent*	*6 Percent*	*Realized Yield, Default to Extinguishment*	BY RATING ONE YEAR BEFORE DEFAULT: *Number of Issues Used for Prices and Receipts*	*Average Price at Default*	RECEIPTS DISCOUNTED AT: *3 Percent*	*6 Percent*	*Realized Yield, Default to Extinguishment*
I–III	19	59	76	65	7.4%	8	73	100	85	7.5%
IV	23	37	62	54	33.8	12	63	76	67	21.1
V	23	30	51	44	38.7	37	38	58	49	22.8
VI–IX	24	40	69	63	34.3	61	30	55	48	33.6
I–IV	42	47	69	59	21.8	20	67	86	74	15.7
V–IX	47	35	60	54	36.5	98	33	56	48	29.5
No rating	48	38	60	50	21.5	19	46	75	62	24.0

From Tables 218 and 220 of *Statistical Measures*, covering issues in the default experience sample. Receipts include liquidating values of securities still outstanding on January 1, 1944 at prices prevailing in the first quarter of that year. Prices, discounted values, and yields are unweighted averages.

It is clear therefore that issues having the highest agency-rating grades had the most stable prices at default, the smallest capital losses if sold at that time, and the largest payouts per dollar invested. On the other hand, the very price stability of the high-grade issues worked against them from the standpoint of investors who purchased at default and held to extinguishment. Although yields obtained from default to extinguishment were rather high on the high grades, they were not nearly so attractive as those on the lower grades. Thus for large issues rated grade I one year before default the average yield from default to extinguishment was 7.9 percent, as compared with 24.5 percent for grade VI; and similar experience was obtained on the smaller issues. Generally speaking, therefore, the ratings proved to be good indicators of default incidence and default loss, but were inversely related to the attractiveness of issues when purchased at default. These findings seem to be in keeping with the investment agencies' own conception of the function of their ratings: that is, that the ratings measure the intrinsic quality of bond issues rather than their attractiveness at prices prevailing in the market.

Additional evidence of the long-range forecasting ability of the agencies is presented in Table 38, which shows promised yields, realized yields, and loss rates on defaulted issues calculated from offering to default and to extinguishment, classified by rating grade at date of offering. As is immediately apparent from a comparison of the yields promised at offering with the rating grades, the market and the agencies were in fair agreement as to the risks of subsequent default. The table shows further that the realized yields from offering to default were lower for each successively lower grade from I through V, and were positive only for large issues in grades I and VII–IX and for unrated issues. The explanation is the ability of the agencies to predict defaults in the near term, with the result that the high grades were outstanding on the average for a much longer period before default than the low grades.[17] Since the promised yields moved inversely to grade, and the realized yields moved directly, the loss rates, or annual rates of capital loss, rose continuously from grade I through grade IX. The loss

[17] For the composite rating groups shown in Table 38, the respective average number of years that issues were outstanding before default were, for large issues, 21, 12, 8, 8, 6, 6, 3, and 20; and, for small issues, 12, 8, 6, 4, and 18. The last figure in each case refers to issues not rated by the agencies at offering.

rates from offering to extinguishment also showed the same pattern of behavior, rising as quality declined.

The extremely high yields promised on large issues of the very lowest grade reflects the fact that many of them were offered dur-

TABLE 38—Yields and Loss Rates up to Default and over Life Span of Issues Defaulting 1900–1943 Classified by Agency Rating at Offering

COMPOSITE RATING	*Number of Issues*	*Promised Yield at Offering*	FIRST OFFERING TO DEFAULT		FIRST OFFERING TO EXTINGUISHMENT	
			Realized Yield	*Loss Rate*	*Realized Yield*	*Loss Rate*
			Large Issues			
I	12	4.7%	1.8%	2.9%	3.1%	1.6%
II	29	4.7	−2.1	6.8	1.7	3.0
III	60	5.5	−5.6	11.1	1.3	4.2
IV	118	6.3	−6.2	12.5	1.7	4.6
V	87	7.1	−10.4	17.5	−0.2	7.3
VI	23	11.6	−7.0	18.6	1.5	10.1
VII–IX	13	22.8	3.0	19.8	15.2	7.6
I–IV	219	5.8	−5.0	10.8	1.6	4.2
V–IX	123	9.5	−8.4	17.9	1.7	7.8
No rating	207	5.0	1.1	3.9	3.3	1.7
			Small Issues			
I–III	6	5.7	−1.1	6.8	0.8	4.9
IV	32	6.4	−4.9	11.3	1.0	5.4
V	25	6.6	−9.9	16.5	−0.5	7.1
VI–IX	14	19.5	−4.9	24.4	6.6	12.9
I–IV	38	6.3	−4.3	10.6	1.0	5.3
V–IX	39	11.2	−8.1	19.3	2.0	9.2
No rating	42	6.0	0.0	6.0	4.2	1.8

From Table 217 of *Statistical Measures*, covering issues in the default experience sample. Yields and loss rates are unweighted averages. For issues still outstanding on January 1, 1944 liquidation is assumed at prices prevailing in the first quarter of that year.

ing periods of corporate reorganization. Most institutional investors were prevented from purchasing them at that time, and other prospective purchasers were wary, so that the market values of the securities were unduly depressed at offering. The result was that although the loss rates were very high, the yields realized from

offering to default were higher than on any of the better issues, and were also exceptionally high from offering to extinguishment.

Aside from the exceptional behavior of the very low-grade issues, one is struck by the rough homogeneity of the realized yields on defaulted issues calculated from offering to extinguishment. Although loss rates rose as quality declined, so did the promised yields, so that investors who held to extinguishment actually obtained approximately the same realized rates of return on defaulted issues of various grades. The implication is that the market was able during the period studied to compensate roughly through the higher yields promised at offering for the larger losses on lower-grade investments. But by the same line of reasoning, it is evident that neither the rating grade nor the promised yields provided useful forecasts of the realized yields on defaulted issues held from offering to extinguishment.

Average Life-span Yields and Loss Rates (nondefaulted and defaulted issues combined)

The observed relationships among the intrinsic quality of bond issues, as reflected in agency ratings, and the incidence and size of default losses are particularly relevant to the small investor who is unable to diversify and thus balance off default losses against capital gains on issues called, converted, etc. For the small individual or small institutional investor in corporate bonds, the purchase of the top grades provides an insurance against ruinous default losses. The large investor, however, is theoretically less interested in the magnitude of default losses on individual issues, since—barring institutional rules and restrictions that may prove temporarily embarrassing in periods of heavy defaults—such losses may usually be balanced against comparably large capital gains. The large investor is primarily interested in the possible use of agency ratings, and of other measures of bond quality, as indicators of the relative attractiveness of different issues, and, in particular, of the probable size of their realized yields. Although the agencies do not claim that the ratings alone are effective measures of the attractiveness of bond issues in this sense (and from the preceding table, the evidence is against their effectiveness as such for bonds that went into default), the agencies, along with other investment analysts and the market generally, are as a matter of fact engaged primarily in the process of evaluating the investment quality of different issues. It is thus important to know how the

various quality measures are related to the rates of return actually received by investors.

Some evidence on this matter is presented in Table 39 which shows the weighted average yields and loss rates for all bond offerings in the experience samples, classified by rating grade at offering. Although the table combines the experience of bonds offered at various times during the period 1900–1943, within which basic yields on high grades varied widely, it is clear from the close relationship between promised yields and agency ratings that both the market and the agencies were influenced by similar factors in the process of appraising the quality of corporate bonds.[18]

The realized yields for all large and for all small offerings showed an irregular tendency to be higher the lower the rating grade at offering. Thus over the period 1900–1943—a period spanning a great war, a great depression, and the start of a second great war—large investors holding well diversified aggregates from offering to extinguishment did best by concentrating on the lower-grade issues. More detailed data presented in *Statistical Measures,* Tables 184 and 185, show the same pattern for rails, utilities, and industrials in the two size groups.

The data for total offerings include irregular offerings issued on an exchange basis during corporate reorganizations, as well as those offered in the regular way. The treatment of the irregular offerings in the yield analysis is troublesome. On the one hand, they are frequently held by even the most conservative investors until the obligor has recovered fully from the default situation, so that the total experience (on regulars and irregulars) is relevant for such investors. On the other hand, reorganization securities are sold by some investors and cannot legally be purchased by others, so that the experience on the regular offerings is more relevant for such investors. Another way of looking at the matter is that investors necessarily take up all of the offerings included in our records, so that the experience on the total best reflects aggregate investment experience; but many conservative investors

[18] The charge that the agencies follow the market in assigning their ratings is frequently leveled against them, and is particularly difficult to answer from data on outstandings, since the two (i.e. ratings and promised yields) are both sensitive to changes in the credit standing of the obligors. In so far as offerings are concerned, however, the charge is invalid, since ratings are assigned to most public offerings before the date of offering (i.e. before the assignment of the promised yield by the market).

TABLE 39—Life-span Yields and Loss Rates for Bonds Classified by Agency Rating at Offering: Regular versus Total Offerings, 1900–1943

	I	II	III	IV	V	VI	VII	VIII	IX	I–IV	V–IX	*No Rating*
						Promised Yield						
Total Offerings												
Large issues	4.5%	4.6%	4.9%	5.4%	6.8%	11.4%	22.2%	28.3%	6.0%[a]	4.8%	9.5%	4.8%
Small issues	5.0	4.9	5.7	6.3	6.5	9.1	9.8	21.1[a]	8.0[a]	6.0	8.0	5.3
Regular Offerings												
Large issues	4.4	4.5	4.9	5.4	6.2	7.4	10.0	6.7	6.0[a]	4.8	6.5	4.7
Small issues	4.6	4.9	5.7	6.3	6.6	6.9	7.3[a]		8.0[a]	6.0	6.7	5.0
Regular Offerings since 1920												
Large issues	4.4	4.4	4.9	5.3	6.4	7.8	12.5	8.4[a]		4.8	6.6	4.2
Small issues	6.3[a]	4.5	5.7	6.3	6.6	7.0	7.3[a]		8.0[a]	6.0	6.7	5.7
						Realized Yield						
Total Offerings												
Large issues	5.1	5.0	5.0	5.7	5.6	9.2	23.4	36.0	1.6[a]	5.2	8.6	4.6
Small issues	4.7	5.1	6.0	5.6	5.7	10.3	16.2	18.8[a]	−6.0[a]	5.7	7.8	5.3
Regular Offerings												
Large issues	5.1	5.0	5.0	5.7	4.1	5.1	6.4	−6.0	1.6[a]	5.2	4.2	4.6
Small issues	4.6	5.1	6.0	5.6	5.6	7.1	3.7[a]		−6.0[a]	5.7	5.8	4.5
Regular Offerings since 1920												
Large issues	5.2	5.2	5.0	5.8	4.2	5.5	7.0	1.2[a]		5.3	4.4	3.4
Small issues	6.3[a]	4.8	6.1	5.5	5.3	7.5	3.7[a]		−6.0[a]	5.7	5.7	1.3

TABLE 39
(concluded)

	I	II	III	IV	V	VI	VII	VIII	IX	I–IV	V–IX	*No Rating*
						Loss Rate						
Total Offerings												
Large issues	−0.6%	−0.4%	−0.1%	−0.3%	1.2%	2.2%	−1.2%	−7.7%	4.4%[a]	−0.4%	0.9%	0.2%
Small issues	0.3	−0.2	−0.3	0.7	0.8	−1.2	−6.4	2.3[a]	14.0[a]	0.3	0.2	0.0
Regular Offerings												
Large issues	−0.7	−0.5	−0.1	−0.3	2.1	2.3	3.6	12.7	4.4[a]	−0.4	2.3	0.1
Small issues	0.0	−0.2	−0.3	0.7	1.0	−0.2	3.6[a]		14.0[a]	0.3	0.9	0.5
Regular Offerings since 1920												
Large issues	−0.8	−0.8	−0.1	−0.5	2.2	2.3	5.5	7.2[a]		−0.5	2.2	0.8
Small issues	0.0[a]	−0.3	−0.4	0.8	1.3	−0.5	3.6[a]		14.0[a]	0.3	1.0	4.4

Based on Tables 184 and 185 of *Statistical Measures*, and special tabulations, covering issues in the offerings experience sample. Yields and loss rates are weighted averages with par amounts of included offerings as weights. For issues still outstanding on January 1, 1944 liquidation is assumed at prices prevailing in the first quarter of that year.

[a] Based on less than five offerings.

would purchase only the regular offerings and sell the irregulars.[19]

To show the results of holding only regular offerings, the irregular offerings have been excluded from the second set of figures shown in the table; and, as a further refinement, the regular offerings since 1920 are presented separately, since most regular offerings were rated by the investment agencies after that date. These data indicate a definite step-down in the realized yields on the large issues between grades IV and V, and on the small issues between grades III and IV, the yields in each case first rising up to grades III or IV, then falling, and then rising again toward the tail of the table. The peculiar behavior of the yields of the regular offerings results largely from the combination of issues offered and extinguished in the different periods during which they were rated by the agencies. For example, for both large and small regular issues, the realized yields of offerings in 1920–31 that were extinguished in 1932–43 were higher the better the rating grade, while the yields of those both offered and extinguished in the period 1932–43 were inversely related. In general, although not uniformly throughout all minor periods, the low grades did better than the high grades unless the issues were subjected to the heavy default risks of the Great Depression. When the periods are combined as in Table 39, the large regular offerings show that the high grades did better, while the small regular offerings show practically the same yields for high and low grades. But this is largely a matter of timing and weighting. The yields realized on low grades were generally higher than on high grades; but the

[19] A further technical difficulty arises from the fact that our yield statistics on total offerings involve a small amount of double counting, since the experience records on some reorganization issues (i.e. irregular offerings of straight issues exchanged in settlement for regular offerings of straight issues) are included for five years in the experience records of the regulars for which they were offered in exchange. An undetermined amount of the irregulars (straight irregular offerings received in exchange for other than straight issues) were not so included, and no double counting would be involved for them. Moreover, the five-year experience record on such irregulars as were included in the life-span yields of regulars is usually not sufficient to reflect their record fully. For these reasons, it seems sensible to view the experience record of the total of regulars and irregulars as more typical of that of holders of straight bonds than the record for straight regulars alone. This, however, is essentially a matter of judgment, since there are no statistical guides. The reader may choose for himself, for in almost all cases the yield statistics in this volume and in *Statistical Measures* are presented separately for total and for regular offerings.

reverse was true when the experience records of the issues spanned the Great Depression.

Since 98 percent of the total par amount of all bonds rated at offering (regulars plus irregulars) fell in the first six grades during the period studied, the effective range of the table is from grade I through grade VI. During that period also, only 15 percent of the total fell in grades V–VI, and in the most recent years the majority of these were irregular. It would appear therefore that the Comptroller's ruling of February 1936, which precludes commercial bank purchase of speculative issues (those generally conceded to be below grade IV), is not particularly restrictive. Moreover, as has been noted, the realized yields on most regular offerings below grade IV were not so attractive on the whole as those on the higher grades.

The loss rates in Table 39 also bear out this point. Capital gains occurred for each class of large offerings through grade IV, and for small offerings through grade III. For the regular offerings capital losses were rather general throughout the remaining categories. On the other hand, substantial capital gains occurred on a few of the very low-grade irregular offerings, particularly those that appeared during the corporate reorganizations of the late thirties and early forties.

In summary, it would appear that defaults and losses were on the whole larger for low-grade issues than for high grades, so that a program of purchasing only medium to high-grade issues would have worked out better for most small investors. Theoretically, the reverse was possible for large investors, since they were in a position to average out the higher risks on the lower-grade issues; but in practice many large investors are prevented from acquiring a broadly diversified list of low grades by company policy or regulatory authority. The outcome of purchasing low grades was also largely dependent upon the timing of the investment with respect to major investment cycles. On the average and in the aggregate, low grades did better than high grades, but this was not true of low grades that were subjected to the heavy default risks of the Great Depression, especially those offered in the late twenties.

Average Yields and Loss Rates over Chronological Periods

Weighted average yields and loss rates over selected chronological periods, classified by rating grade at the beginning of the period,

are presented in Table 40. The table covers only issues in the periodic experience sample (issues in good standing for which realized yields could be computed). The periodic realized yields are relevant for investors interested in the average trading profits obtained on issues of various grades, while the loss rates reflect average price stability and are of interest to those in search of liquidity. Since most issues included in the yield computations were outstanding throughout the periods covered, a zero loss rate in a given instance implies that the issues were selling at investor's book value at the end of the period.[20] Similarly, a positive loss rate indicates that the issues were selling below book, while a negative rate implies that they were selling above.

Over most of the longer of the assumed periods of investment the realized yields on low grades were above those on high grades, both for the large issues and for the small. The exceptions—1924–39 and 1928–39—indicate the weakness of a low-grade portfolio purchased near the beginning of a period of heavy defaults or shortly before a general collapse in bond market values. Over the four-year periods also, the yields on low grades averaged above those on high grades (for the large issues the averages are 4.4 and 5.6 percent for high and low grades, respectively; for the small issues, 4.6 and 7.1 percent). Thus investors who could afford to bear the risks and wait out periods of unusual market disturbance would on the whole have obtained larger returns on the lower-grade issues.

Our periodic experience tables include irregular issues (or rather, outstanding issues that appeared initially as irregular offerings) as well as regular issues. To check whether the market distinguishes between the two classes of issues after the irregulars have seasoned, a special section has been added to Table 40 showing the yields and loss rates for large issues (all industries) after removal, from each group of bonds outstanding over the given periods, of those that were offered irregularly in the preceding four years. This section of the table may be interpreted as covering regular issues and seasoned irregulars. Comparison with the yields for all large issues shows only minor changes for most periods. In particular, the averages of the realized yields over the four-year periods remains unchanged at 4.4 percent for high grades and 5.6 percent for low grades, and the yields for the longer of

[20] That is, amortized book value under conventional accounting practices (cf. Chapter 1).

TABLE 40—Yields and Loss Rates over Four-year and Longer Periods of Investment on Bonds with High and Low Agency Ratings at Beginning of Periods, 1912–43

LARGE ISSUES, ALL INDUSTRIES

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.4%	2.5%	1.9%	5.6%	−5.6%	11.2%	5.2%	4.4%	0.8%
1916–19	4.8	0.3	4.5	7.1	−0.1	7.2	5.1	−0.9	6.0
1920–23	6.5	8.4	−1.9	10.5	12.5	−2.0	7.0[a]	7.6[a]	−0.6[a]
1924–27	5.7	8.1	−2.4	8.8	12.0	−3.2			
1928–31	4.8	−0.3	5.1	6.7	−6.9	13.6	5.7[a]	−3.8[a]	9.5[a]
1932–35	6.7	10.5	−3.8	16.5	15.6	0.9	14.5[a]	18.7[a]	−4.2[a]
1936–39	4.1	1.4	2.7	7.1	1.1	6.0	11.7[a]	24.3[a]	−12.6[a]
1940–43	3.7	4.1	−0.4	9.7	16.0	−6.3	5.4[a]	3.7[a]	1.7[a]
1920–27	6.4	8.3	−1.9	9.6	12.2	−2.6	7.0[a]	7.9[a]	−0.9[a]
1920–31	6.3	5.9	0.4	9.5	7.9	1.6	5.5[a]	4.9[a]	0.6[a]
1920–39	6.1	5.7	0.4	9.3	7.7	1.6	5.5[a]	5.8[a]	−0.3[a]
1924–39	5.5	5.1	0.4	8.2	5.0	3.2			
1928–39	4.8	3.3	1.5	6.2	1.2	5.0	5.9[a]	−4.9[a]	10.8[a]
1932–39	6.5	6.8	−0.3	14.5	9.0	5.5	29.9[a]	8.7[a]	21.2[a]

TABLE 40
(continued)

LARGE ISSUES, RAILROADS

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.4%	2.5%	1.9%	5.6%	−5.6%	11.2%	4.5%	2.5%	2.0%
1916–19	4.7	0.1	4.6	6.9	1.3	5.6	5.4[a]	−2.0[a]	7.4[a]
1920–23	6.4	8.5	−2.1	10.0	11.1	−1.1	5.5[a]	6.7[a]	−1.2[a]
1924–27	5.4	8.2	−2.8	8.9	14.1	−5.2			
1928–31	4.5	−2.4	6.9	5.8	−11.3	17.1			
1932–35	6.9	10.9	−4.0	14.7	7.0	7.7			
1936–39	4.0	−1.4	5.4	6.9	−6.8	13.7			
1940–43	4.5	6.6	−2.1	10.7	18.8	−8.1			
1920–27	6.4	8.5	−2.1	10.0	12.6	−2.6	5.5[a]	7.1[a]	−1.6[a]
1920–31	6.3	5.5	0.8	9.8	7.0	2.8	5.5[a]	4.9[a]	0.6[a]
1920–39	6.1	5.2	0.9	9.8	5.8	4.0	5.5[a]	5.8[a]	−0.3[a]
1924–39	5.3	3.9	1.4	8.2	1.6	6.6			
1928–39	4.5	1.4	3.1	5.6	−4.3	9.9			
1932–39	6.6	4.8	1.8	14.4	−0.2	14.6			

TABLE 40
(continued)

LARGE ISSUES, PUBLIC UTILITIES

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.8%[a]	−0.4%[a]	5.2%[a]				5.3%	4.1%	1.2%
1916–19	5.2	−0.4	5.6	7.3%	−2.3%	9.6%	6.3	1.7	4.6
1920–23	7.1	9.2	−2.1	10.8	13.5	−2.7			
1924–27	5.9	8.2	−2.3	8.6	11.8	−3.2			
1928–31	4.9	1.7	3.2	6.9	−4.5	11.4			
1932–35	6.2	10.1	−3.9	15.5	17.9	−2.4			
1936–39	4.2	3.5	0.7	7.1	5.7	1.4			
1940–43	3.3	3.0	0.3	8.3	12.0	−3.7	5.0[a]	1.1[a]	3.9[a]
1920–27	6.7	8.6	−1.9	9.4	12.1	−2.7			
1920–31	6.7	7.2	−0.5	9.3	8.4	0.9			
1920–39	6.6	7.3	−0.7	9.0	8.8	0.2			
1924–39	5.9	6.7	−0.8	8.1	8.0	0.1			
1928–39	5.0	4.9	0.1	6.6	4.1	2.5			
1932–39	6.2	8.2	−2.0	13.9	13.7	0.2			

TABLE 40
(continued)

LARGE ISSUES, INDUSTRIALS

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.1%[a]	3.4%[a]	0.7%[a]				5.2%	5.1%	0.1%
1916–19	5.0	2.8	2.2	8.5%[a]	10.1%[a]	−1.6%[a]	4.6	−1.2	5.8
1920–23	6.0	6.9	−0.9	8.7[a]	−1.1[a]	9.8[a]	8.0[a]	8.3[a]	−0.3[a]
1924–27	6.0	7.3	−1.3	9.2	7.2	2.0			
1928–31	5.3	0.9	4.4	7.1	−6.3	13.4	5.7[a]	−3.8[a]	9.5[a]
1932–35	7.7	10.2	−2.5	20.4	24.1	−3.7	14.5[a]	18.7[a]	−4.2[a]
1936–39	4.1	3.2	0.9	7.8	3.2	4.6	11.7[a]	24.3[a]	−12.6[a]
1940–43	3.2	2.6	0.6	8.0	13.2	−5.2	5.8[a]	7.0[a]	−1.2[a]
1920–27	5.9	7.0	−1.1	8.7[a]	−7.3[a]	16.0[a]	8.0[a]	8.5[a]	−0.5[a]
1920–31	5.9	5.9	0.0						
1920–39	5.6	6.3	−0.7						
1924–39	5.7	6.6	−0.9	8.5	7.5	1.0			
1928–39	5.2	5.1	0.1	6.5	4.0	2.5	5.9[a]	−4.9[a]	10.8[a]
1932–39	7.3	9.7	−2.4	15.4	17.1	−1.7	29.9[a]	8.7[a]	21.2[a]

TABLE 40
(continued)

SMALL ISSUES, ALL INDUSTRIES

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.5%	2.4%	2.1%	5.3%[a]	2.3%[a]	3.0%[a]	5.5%	3.6%	1.9%
1916–19	5.0	1.2	3.8	7.0	2.3	4.7	7.7	5.9	1.8
1920–23	6.5	8.2	−1.7	9.9	12.3	−2.4	6.9	7.2	−0.3
1924–27	6.1	8.1	−2.0	8.6	8.1	0.5			
1928–31	5.2	−0.3	5.5	8.3	−5.7	14.0	7.1	6.7	0.4
1932–35	7.1	10.8	−3.7	21.8	19.6	2.2	26.7	17.3	9.4
1936–39	4.3	2.5	1.8	9.2	5.3	3.9	7.6[a]	6.5[a]	1.1[a]
1940–43	3.9	3.9	0.0	8.4	12.4	−4.0			
1920–27	6.5	8.2	−1.7	9.5	9.8	−0.3	7.1[a]	8.5[a]	−1.4[a]
1920–31	6.5	6.3	0.2	9.3	8.5	0.8	7.2[a]	5.4[a]	1.8[a]
1920–39	6.4	6.5	−0.1	7.9	6.7	1.2	6.9[a]	4.0[a]	2.9[a]
1924–39	6.0	6.4	−0.4	8.3	3.1	5.2			
1928–39	5.1	3.9	1.2	7.1	3.6	3.5	6.8[a]	11.0[a]	−4.2[a]
1932–39	7.0	8.7	−1.7	20.0	13.9	6.1	27.2	8.8	18.4

TABLE 40
(concluded)

LARGE ISSUES, ALL INDUSTRIES, REGULARS AND SEASONED IRREGULARS

PERIOD	I–IV			V–IX			NO RATING		
	Promised Yield	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*	*Promised Yield*	*Realized Yield*	*Loss Rate*
1912–15	4.4%	2.6%	1.8%	5.6%	−5.5%	11.1%	5.2%	4.3%	0.9%
1916–19	4.8	0.3	4.5	7.1	−0.1	7.2	5.1	−0.9	6.0
1920–23	6.5	8.4	−1.9	10.5	12.5	−2.0	7.0[a]	7.6[a]	−0.6[a]
1924–27	5.6	8.0	−2.4	8.8	12.2	−3.4			
1928–31	4.8	−0.2	5.0	6.7	−6.9	13.6	5.7[a]	−3.8[a]	9.5[a]
1932–35	6.7	10.5	−3.8	16.5	16.0	0.5	14.5[a]	18.7[a]	−4.2[a]
1936–39	4.1	1.4	2.7	7.0	1.0	6.0	11.7[a]	24.3[a]	−12.6[a]
1940–43	3.7	4.1	−0.4	9.4	15.3	−5.9	5.4[a]	3.7[a]	1.7[a]
1920–27	6.4	8.3	−1.9	9.6	12.2	−2.6	7.0[a]	7.9[a]	−0.9[a]
1920–31	6.3	5.9	0.4	9.5	7.9	1.6	5.5[a]	4.9[a]	0.6[a]
1920–39	6.1	5.8	0.3	9.3	7.7	1.6	5.5[a]	5.8[a]	−0.3[a]
1924–39	5.5	5.2	0.3	8.2	5.2	3.0			
1928–39	4.8	3.4	1.4	6.3	1.3	5.0	5.9[a]	−4.9[a]	10.8[a]
1932–39	6.5	6.8	−0.3	14.5	9.3	5.2	29.9[a]	8.7[a]	21.2[a]

From Table 166 of *Statistical Measures*, and special supplementary tabulations, covering issues in the periodic experience sample. Yields and loss rates are weighted averages with par amounts of outstandings at the beginning of the relevant period as weights.

[a] Based on less than five issues.

the assumed periods of investment were virtually unaffected. Again we conclude that investors who purchased outstanding issues would, on the average, have obtained higher returns on the low grades than on the high grades. In subsequent tables of this report, we shall continue to distinguish between regular and irregular offerings, but will disregard the distinction in the periodic experience tables.[21]

Although the low-grade issues afforded higher returns over most periods, their prices and yields were much less stable than those of the high grades. Over the four quadrennial periods 1912–15, 1916–19, 1928–31, 1936–39, classified earlier as periods of market deterioration (cf. Table 23 and the related text discussion), both high grades and low grades fell below investors' book values, but price declines were greatest for the low-grade issues (for large issues the average loss rate over the four periods was 3.5 percent for bonds that had grades I–IV at the beginning of the period, and 9.5 percent for grades V–IX). Contrariwise, 1920–23, 1924–27, and 1940–43 were periods of market appreciation, over which both high and low grades rose above book values; but the rise was greatest for the low grades (for large issues the average loss rate over the three periods was —1.6 percent for grades I–IV, and —3.8 percent for grades V–IX). The period 1932–35 was exceptional. The market generally improved over that period and capital gains accrued on the high grades; but the realized yield on low grades, although averaging out at the high level of 15.6 percent per annum, was still below the 16.5 percent promised at the beginning of the period. To a large extent the failure of realized yields on low grades to move above promised yields during 1932–35 may be attributed to the rail group, where defaults were unusually heavy. In the industrial and utility fields earnings recovered rapidly during the same period, so that low-grade issues did much better than high grades.

Realized yields and loss rates for the long periods were somewhat more stable than for the four-year periods, as might be expected from the fact that prices paid and received on the initial and terminal dates have less effect on the realized rate of return, the longer the period of investment. Otherwise, the yields and loss rates behaved very much as during the four-year periods.

[21] It will be observed (cf. footnote 19) that double counting is not involved in the periodic experience tables, since irregular offerings of issues received in exchange for regulars are included only once in each period.

Over the periods 1920–31 and 1928–39, which were previously classified as periods of market deterioration (cf. Table 23), capital losses accrued on both high and low grades, but most heavily on the low-grade issues. Conversely, the period 1920–27 was one of market appreciation, with widespread capital gains, especially on the low-grade issues. The periods 1920–39, 1924–39, and 1932–39 were exceptional. The market over these periods was classified in Chapter 2 as improving, since most high grade issues had fully recovered from the depression lows and the utilities and industrials were selling above the prices prevailing at the beginning of the periods. This was not true of the low grades, however, which were still suffering from the depression experience. In consequence, over these periods of general market appreciation, the high grades did better than the low grades as measured by the loss rates.

Comparison of the statistics for small and large issues indicates that the two behaved roughly the same over most periods. For high grades, the realized yields and loss rates averaged out about the same for the two size groups over the four-year periods of investment. The realized yields were somewhat higher on the small issues over most of the longer periods, but since the size differentials in promised yields were not so great as in realized yields, loss rates on high grades were generally lower on small issues than on large. The yields and loss rates on low grades in the two size groups agree less well, particularly those covering the four-year periods. Since the data become progressively thinner as we move down the rating scale, the irregularities may be explainable to some extent by sampling errors.

In summary, the principal conclusion to be drawn from Table 40 is that the agency ratings serve as rough indexes to price and yield stability. On the average, realized yields on low grades were somewhat above those on high grades, but investors seeking price stability should have avoided the low-grade issues.