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## APPENDIX B

### SOURCES OF DATA AND DERIVATION OF BASIC ESTIMATES

THE PROCEDURES used in constructing our basic debt estimates—the series on total offerings, total extinguishments, net changes, and outstandings (Tables A-1 through A-9 and A-13 through A-16)—will be outlined here, after the sources of data have been specified. Information on the methods of obtaining other derived estimates has been given in the text.<sup>1</sup>

The principal sources of data were the detailed records on corporate bond financing compiled by the Corporate Bond Project and by the National Bureau of Economic Research from data in the investment manuals and financial press. These records, which are on file at the National Bureau, include: (1) Record of Offerings; (2) Record of Issue and Extinguishment Characteristics; (3) Default Record; (4) Periodic Record; (5) Annual Record; and (6) Monthly Record. The Corporate Bond Project, which was active from January 1, 1939 to November 30, 1941, completed the transcription of the records for the period January 1, 1900 to January 1, 1939. After the termination of the project, the records were extended by the National Bureau to cover the period January 1, 1939 to January 1, 1944. In order to obtain the estimates presented in this volume certain additional information was collected, to which reference will be made below.<sup>2</sup>

For a detailed description of the content of the project records, the reader is referred to a series of monographs prepared by the project staff under the general title *The Corporate Bond*

<sup>1</sup> Discussions of derivation methods are located in the following sections: pages 93-101 for cash and noncash offerings and extinguishments; pages 109f. for new-money offerings, refundings, and repayments; pages 186-88 for default series; pages 218-20 for capital-flow estimates; and pages 229-33 for income-flow estimates.

<sup>2</sup> Before the dissolution of the Corporate Bond Project its staff compiled three volumes of statistics, which were distributed under the general title *Corporate Bond Statistics, 1900-1938*. The purpose was to indicate the types of materials available in the project records. Several of the tables have been amended and are superseded by tables in the present volume. Other revised estimates will be presented in a subsequent report.

*Project: Organization and Methods.* The series, on file at leading university libraries throughout the country, is divided into the following parts:

- Part I. *Organization and Administration of the Corporate Bond Project*, by Harold G. Fraine and Melvin W. Brethouwer
- Part II. *The Record of Offerings of Corporate Bonds, 1900-38*, by Elizabeth T. Simpson
- Part III. *The Record of Issue and Extinguishment Characteristics of Corporate Bonds, 1900-38*, by George P. Hitchings
- Part IV. *The Record of Corporate Bond Defaults, 1900-38*, by George P. Hitchings
- Part V. *The Periodic, Annual and Monthly Records of Corporate Bond Experience, 1900-40*, by W. Braddock Hickman

For constructing the basic debt estimates, three types of information were required:

- a catalog of the titles of all corporate bond issues held by the investing public during the period 1900-1944;
- schedules showing the dates and amounts of offerings for each issue included in the catalog, and, where necessary, the amounts outstanding on January 1, 1900;
- similar schedules for extinguishments.

The sources and procedures used in obtaining each type of information are described below.

#### CATALOG OF BOND TITLES

The catalog of bond titles was provided by the Record of Offerings, which constitutes a virtual census of all issues appearing in the investment manuals during the period 1900-1944 that come under our definition of a corporate bond (see Chapter 1). The sources from which the catalog was compiled were the investment manuals published annually by Moody's Investors Service and by Poor's Publishing Company (later Standard and Poor's Corporation).

Under the original plan, bond titles were to be recorded from

both Poor's and Moody's manuals; but when that had been done for railroad issues, it was found that the two sources were virtually identical in coverage. Only Poor's manuals, therefore, were consulted systematically for the other industry groups.<sup>3</sup> The particular manuals used in preparing the catalog were the following:<sup>4</sup>

#### *Railroads*

Poor's Railroad Manuals, 1900-1940  
 Standard and Poor's Corporation Records, 1941-44  
 Moody's Railroad Manuals, 1909-11, 1915-38<sup>5</sup>

#### *Public Utilities*

Poor's Railroad Manuals, 1900-1909  
 Poor's Industrial Manuals, 1910-12<sup>6</sup>  
 Poor's Public Utility Manuals, 1913-40  
 Standard and Poor's Corporation Records, 1941-44

#### *Industrials*

Poor's Railroad Manuals, 1900-1909  
 Poor's Industrial Manuals, 1910-40  
 Standard and Poor's Corporation Records, 1941-44

### OFFERINGS SCHEDULES

The Record of Offerings, in addition to serving as a census of bond titles, contains a large quantity of information on dates and amounts of offerings and extinguishments. Other records of the Corporate Bond Project include more detailed information on all large straight issues (hereafter referred to as Sample I) and

<sup>3</sup> The decision to use Poor's manuals rather than Moody's was based primarily on the fact that a complete set of Poor's manuals was available to the project staff when the work of compilation was undertaken.

<sup>4</sup> The exact titles of the annual volumes vary.

<sup>5</sup> Moody's manuals for 1900-1908 were published by a predecessor corporation; they were used as a source of information on offerings and extinguishments but not in preparing the catalog of bond titles. Moody's manuals for 1912-14 were not available to the project staff when the railroad catalog was transcribed.

<sup>6</sup> Street railways for 1910 and 1911 were obtained from Poor's Railroad manuals.

a 10 percent sample of small straight issues (Sample II).<sup>7</sup> In particular, the Record of Issue and Extinguishment Characteristics contains the most detailed information available on offerings and on final extinguishments; therefore it was used for all issues included in Samples I and II. Offerings data on the remaining small straight issues (Sample III) and on all minor types of issues were taken largely from the Record of Offerings.

The primary sources of data for the Record of Offerings were the following:

1. Poor's and Moody's Manuals, and Standard and Poor's Corporation Records, 1900-1944.

2. *Commercial and Financial Chronicle*, News and Investment Sections, January 1, 1900 to January 1, 1934. A card catalog of all offerings data appearing in the *Chronicles* of those years was prepared on the original project and was used, as necessary, in completing the Record of Offerings.

3. Securities and Exchange Commission file of cash offerings, 1934-43. This catalog, which was loaned to the National Bureau by the SEC, contains information on all cash offerings of over \$100,000 mentioned in the financial press. It was checked by the Commission against the *Commercial and Financial Chronicle*.

4. Interstate Commerce Commission Special Report, Circular No. 29. The report contains offerings data on outstanding issues of railroads reporting to the Interstate Commerce Commission as of June 27, 1920.

5. Correspondence with obligors. In 1938 the Securities and Exchange Commission undertook to correspond with each obligor having an issue amounting to \$10 million or over in cases where the Corporate Bond Project required additional information on such issues. Of the 476 concerns contacted, 44 percent responded.

Additional sources consulted to obtain data for the Record of Issue and Extinguishment Characteristics (Samples I and II) were: Fitch Bond Books and Records; *Railway Age*; Standard Corporation Records; a list prepared by the Baltimore and Ohio Railroad Company of all rail offerings authorized by the Interstate Commerce Commission during the period 1920-38; and miscellaneous documents and newspaper clippings in the libraries

<sup>7</sup> The Annual and Monthly Records provide time-series data on actively traded subsamples selected from Samples I and II.

of the Chase National Bank, Moody's Investors Service, the National City Bank, New York University, and Standard and Poor's Corporation.

The procedure followed in transcribing offerings data for the Record of Offerings (used for Sample III and minor types of issues) was to consult the last Poor's manual in which the issue appeared, on the ground that later manuals were usually more exact and complete than earlier ones. The information was then checked against Moody's manual of last appearance and finally against the manual of first appearance. In preparing the Record of Issue and Extinguishment Characteristics, transcribers also consulted manuals for every fourth or fifth interim year. The other sources noted above were consulted only when the par amounts of offerings transcribed from the manuals failed to sum to the total amount issued.

Full and explicit information on dates of offering (month and year) was obtained from the above sources for 95 percent of the aggregate par amount of all offerings. Most of the remaining 5 percent consisted of cases in which explicit data were lacking on date of original offering. The investment manuals usually reflect balance sheet conditions near the close of the calendar year preceding the date of publication. For that reason the year preceding the manual of first appearance was regularly assigned as the year of first offering; but if the year of first appearance preceded the contract date of the issue, the contract year was assigned, since bonds are seldom offered before the contract date.

In other cases, original offerings data had been obtained but subsequent balance sheet increments were not fully explained by explicit data on later offerings. Such unexplained increments were assigned as offerings to the years in which they occurred.

The procedures for assigning the year of offering appear to have given accurate results, the only questionable items being a few issues (together, less than 1 percent of the par-amount total) whose contract dates precede the manual of first appearance by more than one year. Particularly suspicious are the years of offering assigned to a few of the small public utility issues that were not reported in the manuals until their obligors had been absorbed into larger systems. Since these issues are small, however, their effect on the accuracy of the total offerings

series and its major industry components should be negligible.<sup>8</sup>

After a year had been assigned to each offering, the data were classified by major industry and size groups and summed to obtain the series for the annual par amounts of offerings presented in Tables A-1 through A-6 and the series for the annual number of straight bond offerings presented in Table A-9. The annual numbers of new straight issues in Tables A-7 and A-8 were obtained by counting only the first offering of each issue.

Monthly series for par amounts of straight bond offerings (Table A-15) were obtained by constructing series for which months were known and raising them to sum to the annual totals. The annual raising factors ranged from a low of 1.0 to a high of 2.0, with the majority falling below 1.2. Since the months were known for 95 percent of the total par amount of all offerings, the monthly estimates should be reasonably accurate, particularly for the period 1910-43, when the raising factors were lowest. The annual estimates, however, are more accurate than the monthly and have therefore been used throughout the study, except in certain of the cyclical analyses discussed in Chapter 4.

#### EXTINGUISHMENTS SCHEDULES

As in the case of offerings, data on final extinguishments were taken largely from the Record of Issue and Extinguishment Characteristics for issues in Samples I and II and from the Record of Offerings for issues in Sample III and for minor types of issues. The primary sources of data were essentially the same as those detailed above for offerings, but were supplemented by other sources, among which the following were found most useful: the *National Corporation Bond Summary* (1914-44), published by the National Quotation Bureau, and sections on obsolete and inactive issues in *Standard Bond Offerings and Market Data*. Explicit information on months and years of final extinguishments could be determined from these sources for issues comprising approximately 90 percent of the par-amount total. For the remaining 10 percent the years of final extinguishment were

<sup>8</sup> The amounts in question were originally coded in the Record of Issue and Extinguishment Characteristics as having no information on year of offering; but it was necessary for the purposes of our analysis to assign years, so that the totals for offerings would be consistent with the amounts shown as outstanding in the manuals.

taken to be those of the manuals of last appearance, a procedure based on the fact that the manuals record the status of the obligor around the close of the preceding calendar year.

The Corporate Bond Records were not designed with the primary objective of developing integrated debt statistics, such as those presented in this report, and no explicit information was collected on the 22 percent of total extinguishments that were "partials." However, the data in the various Corporate Bond Records could be reconciled to provide accurate information on the years of most of the partial extinguishments. For all issues in Samples I and II the Periodic Record contains data on amounts outstanding at the beginning of each of the quadrennial years 1900, 1904, etc. The Annual Record provides similar information annually for a large sample of actively traded issues. Partial extinguishments for each issue were determined by adding the amounts offered during a year or quadrennial period to the amount outstanding at the beginning and then subtracting the amount outstanding at the end. For issues included in the Annual Record the years of partial extinguishments were thereby determined precisely. For issues noted in the Periodic Record only, an additional search of the manuals was made in order to assign the years of extinguishment. For each issue not included in the Periodic and Annual Records, namely straight issues in Sample III and the minor types of issues, the difference between the sum of offerings and the amount outstanding at final extinguishment was prorated over the years. The errors resulting from this treatment are unimportant: no proration was required for most small straight issues (Sample III), since they were usually extinguished in one lump sum; and most of the minor types of issues matured serially in equal annual instalments.

To obtain additional data on the months of partial extinguishments, the National Bureau consulted the following sources:

1. *Commercial and Financial Chronicle*, sections covering general corporation and investment news, and the railway, industrial, and utility compendiums, 1900-1943. The news sections of the *Chronicle* frequently provided the exact dates and amounts of partial extinguishments. Failing that information, we often used data on outstandings provided in the compendiums to limit the period of extinguishment to some short interval within the year.



2. Moody's Investors Service, monthly supplements, 1925-43. The monthly supplements contain information on dates and amounts of certain classes of partial extinguishments: in particular, on sinking-fund calls and on requests for tenders.

3. Poor's Manuals, blue sheets, 1926-40. The blue sections give names of issues and dates of extinguishment for certain classes of redemption, but no information on amounts.

4. Securities and Exchange Commission file on extinguishments, 1943. A microfilm copy of the SEC file on cash extinguishments for one year, 1943, was available to the National Bureau. The file contains dates and amounts of cash extinguishments reported in the financial press.

The search of the *Chronicle* for explicit information on months and amounts of partial extinguishments was limited to issues for which the annual total of partial extinguishments was \$1 million or more. Any information available in the other sources listed above was used, whatever the size of the partial extinguishment. The various sources consulted provided data on month for about 75 percent of the par amount of all extinguishments (partials and finals).

The procedures followed to obtain the annual and monthly estimates for extinguishments were similar to those employed for offerings. Annual par-amount series (Tables A-1 through A-6) were constructed by summing partial and final extinguishments by type of issue and major industry and size groups. The series on number of issues extinguished (Tables A-7 and A-8) were obtained by counting only the final extinguishments. The monthly estimates for par amounts of straight bond extinguishments (Table A-16) were constructed by using the relevant annual estimates as control totals. The range of the annual raising factors, from 1.0 to 2.0, was the same as that for offerings, but the median for extinguishments was slightly higher, 1.4 as against 1.2 for offerings. The monthly estimates for extinguishments are therefore almost as accurate as the monthly estimates for offerings. They, too, though less accurate than the annual estimates, should be reasonably reliable for the period 1910-43.

As has been explained in Chapter 1, the various series on par amounts of net changes in outstandings (Tables A-1 through A-6, and A-14) were obtained by subtracting extinguishments from offerings. The data on par amounts of outstandings at the begin-

ning of each year (Tables A-1 through A-6) and month (Table A-13) were constructed by adding the net changes to the amounts outstanding at the beginning of the preceding year or month. The annual series on number of issues outstanding (Tables A-7 and A-8) were obtained by subtracting the number of final extinguishments from the number of first offerings of new issues in each year and adding the difference to the number of issues outstanding at the beginning of the year.

