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Volume Title: Trends and Cycles in Corporate Bond Financing

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Volume Publisher: UMI

Volume ISBN: 0-87014-352-2

Volume URL: <http://www.nber.org/books/hick52-1>

Publication Date: 1952

Chapter Title: RELATIONS BETWEEN BOND OFFERINGS AND EXTINGUIS

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Chapter URL: <http://www.nber.org/chapters/c3111>

Chapter pages in book: (p. 13 - 16)

of private debt in most years, a marked shrinkage of private as against public debt characterizes the period covered by Chart 4. In 1917, corporate debt accounted for about 44 percent of total debt (public and private), and private noncorporate debt for about 48 percent, so that the private components together accounted for about 92 percent, and public debt for only 8 percent. Thereafter, except for a minor reversal in the twenties, the share of the public sector in total debt moved gradually upward until it stood at 34 percent just before World War II. In the years of heavy war financing by the federal government the share of the public sector increased much further, reaching its high point, 70 percent of total debt, at the close of the war. Since then a pronounced expansion in the dollar volume of private debt and a moderate contraction in public debt have lowered the share of public debt to 54 percent of the total (at the beginning of 1951).

The position of corporate bonds has also changed drastically. We estimate that they accounted for about 25 percent of total debt in the years immediately preceding World War I and for only 6 percent at the close of World War II. Since then, their share, like the shares of the other components of private debt, has expanded slightly. At the beginning of 1951 they accounted for about 8 percent of total debt.

RELATIONS BETWEEN BOND OFFERINGS AND EXTINGUISHMENTS

The volume of funded debt outstanding at any moment measures on the one hand the total indebtedness of business corporations arising from their past offerings of corporate bonds (less repayments), and on the other hand the volume of past savings held in this form by the investing public. To interpret the behavior of these "stock" figures, we must study the "flows" by which they are generated.

For this purpose the net and gross flows into and out of the "stock" of bond outstandings have been measured at various levels. Our basic gross estimates are monthly and annual series of total offerings (including bonds offered both for new-money purposes and for refunding old bonds), and of total extinguishments (including both bonds actually extinguished in an economic sense

and those refunded into new bonds).⁷ The difference is the net change in outstandings, which, when added to the volume of bonds outstanding at the beginning of a period, generates the series on outstandings described in the preceding section. Separate estimates of the volume of refundings (old bonds refunded into new bonds) enable us to transform the two gross flow series into series on new-money offerings (total offerings less refundings) and on net repayments (total extinguishments less refundings). All of these series are measured in terms of par amounts (the principal amount promised by the obligor at maturity); in addition, three cash series are utilized. We have measured the gross cash proceeds obtained by business corporations from the sales of their bonds, their gross cash payments at extinguishment, and the difference between these, or net cash receipts of corporations from sales of bonds.

During the period 1900-1944, for which we have full information, the total par amount of straight bonds offered to (and purchased by) the investing public aggregated \$72 billion, while total extinguishments of straight bonds aggregated \$55 billion. Thus the net change in outstandings was only \$17 billion. Refundings accounted for \$32 billion of total offerings or extinguishments; it follows that only \$40 billion or 55 percent of total offerings was for new-money purposes, and that only \$23 billion or 41 percent of the total volume of bonds extinguished was actually repaid without refunding.

During the years 1900-1944 the gross amount of cash received by business corporations from the sale of bonds was \$60 billion, or 84 percent of the par amount of total offerings. The remaining 16 percent was accounted for principally by bonds offered in direct exchange for old bonds. On the other side of the ledger, the gross amount of cash paid out by business corporations at extinguishment was \$40 billion, or 73 percent of the par amount of total

⁷ "Total extinguishments" include bonds retired through maturity, call, conversion, exchange, payment of bondholders after liquidation, or a change in the contract not provided for in the original indenture, such as an extension of the maturity of the issue or a change in the coupon rate. Extinguished bonds are said to be "refunded" to the extent that they are replaced by new bonds; all other extinguished bonds are said to be "repaid."

extinguishments. The remaining 27 percent was accounted for largely by direct exchange of old bonds for new bonds. It follows that the net cash realized by business corporations from sale of bonds was about \$20 billion, as compared with a net change in outstandings of \$17 billion; bonds were in effect "sold" at approximately a 20 percent premium over the amounts repaid to investors. We find, however, that in most years the net cash flow corresponds closely to the net change in outstandings. We may therefore focus attention largely on the behavior of the net change in outstandings, for which our estimates are most complete, with reasonable assurance that the corresponding cash flows are moving in the same direction.

Our analysis of the interrelationships among the various bond series yields some pertinent information on a practical matter, that of the selection of an appropriate series to be used as an indicator of the net volume of bond financing. In many credit markets, namely those where old loans run off rather smoothly and the volume of refunding activities is not large, a series on new credit granted (analogous to our total offerings) is a reliable index of net credit change. The volume of refunding activity in the bond market, however, is large, and bond offerings statistics must be interpreted with caution. In 1936, for example, total offerings reached unusually high levels, but the proceeds of nearly all of these offerings were used simply to refund outstanding issues. Since repayments exceeded new-money offerings, outstandings actually declined. In 1918 the reverse situation obtained: total offerings were held to a low level by the Capital Issues Committee, but new-money offerings exceeded repayments, so that the volume of outstandings actually rose.

Clearly the best measure of the impact of bond financing on the economy is either the net change in outstandings or the closely related series on net cash flow. Unfortunately, our data for these series terminate at the end of 1943, and estimates for later years are not yet available.⁸ Our analysis of new-money offerings, which measures the gross volume of bonds offered for new-money pur-

⁸ Estimates of net cash flow are being prepared by the Securities and Exchange Commission but have not yet been released for general use.

poses, shows that this series is rather highly correlated with the net change in outstandings. During the period studied, about five-eighths of the year-to-year variation in the net change in outstandings can be imputed to changes in new-money offerings and only about three-eighths to repayments. To put it differently, new-money offerings moved in the same direction as the net change in 33 of the 43 years for which our data can register the movements. It follows that a series on new-money offerings, such as that currently prepared by the *Commercial and Financial Chronicle*, may be of use as a rough indicator of the direction of change in outstandings until more precise statistics become available.

INTEREST RATES AND BOND FINANCING

The interrelated statistics developed in this study should prove useful in the analysis of the relationships between interest rates and bond financing. A preliminary examination of these matters, which is all that can be undertaken here, will suffice to show that the relationships are complicated, and to indicate some promising leads for further investigation.

Some of the basic data are presented in Chart 5, where high-grade bond yields are compared with the net changes in outstandings and with the closely related series on gross new-money offerings. In interpretation of this chart it is desirable to distinguish the long-run drifts in the series from the shorter ups and downs. At this point we shall concern ourselves mainly with the former; in the next section we take a look at the short-run movements.

To the extent that bond yields (the cost of long-term money) are effective regulators of the demand for bond financing, the higher the yield, the lower will be the net change in outstandings; and conversely, the lower the yield, the higher will be the net change in outstandings. The chart shows that between 1900 and 1920 the trend in bond yields was upward while that of both new-money offerings and the net changes in outstandings was on the whole downward. During 1920-32 bond yields moved sharply downward and then leveled off (rising sharply in 1931-32), while new-money offerings and net changes in outstandings first rose rapidly and then fell. From 1932 to 1945 bond yields declined