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Volume Author/Editor: Richard T. Selden

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Chapter Author: Richard T. Selden

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Demand and Supply in the Commercial Paper Market

The preceding chapters have described the evolution of commercial paper during the last forty years and the manner in which this type of debt is used by the principal class of borrowers, finance companies. Unavoidably, in the course of these chapters, a good deal has been said about demand and supply conditions in the commercial paper market. The purpose of this chapter is to examine these demand and supply conditions more systematically and fully. This examination will be useful in the cyclical analysis of Chapter 6.

Finance-Company Demand for Commercial Paper Funds

In some instances, finance-company demand for commercial paper funds is limited by standards that have been established by dealers and institutional lenders. Life insurance companies, when acquiring long-term securities of finance companies, sometimes stipulate that short-term debt may not exceed some percentage of total long-term debt, and that commercial paper may not exceed some percentage of total short-term debt. Similarly, with few if any exceptions, commercial paper borrowers must maintain open bank lines equal to outstandings at all times.¹ National Bureau sample data indicate that this rule has been adhered to by all finance companies that sell paper through dealers. It is not known what

¹ Another rule laid down by banks and paper dealers, that commercial paper not exceed 25 per cent of bank loans, is no longer generally observed.

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effect such limitations have had, but possibly they have slowed down the rate of growth of commercial paper.

Aside from such constraints, the quantity of commercial paper funds demanded by a finance company depends on (1) the expected marginal yield on receivables that could be acquired with additional funds, (2) the marginal cost of the funds, and (3) the expected cost and availability of close substitutes, most notably bank loans. There is little to be said about the first of these. My purpose here is to discuss the various elements of the cost of funds, the elasticity of demand with respect to cost, and the impact of bank credit availability on the demand for funds.

COST OF FUNDS

The cost of commercial paper funds consists of three main components: the yield offered the lender, the cost of dealer services, and the cost of providing protection, in the form of open credit lines, against the contingency of an unanticipated decline in paper borrowings. Each of these cost components differs somewhat for direct borrowers and those that use the dealer market.

For reasons to be discussed later, the yields on direct paper are characteristically lower than yields on dealer paper. However, the borrower is less interested in the yield on paper than in the *marginal* yield—i.e., the effect on his total borrowing costs as a result of a yield change on any portion of his paper debt. Because of the short average maturity of commercial paper, a borrower who raises yields in order to enlarge his borrowings will shortly find that he must pay the higher yields on his entire outstandings (in the maturity classes affected). This consideration is not important for firms that use dealers, since most of them are tiny relative to the entire dealer market, and since changes in offered yields are made by the dealers in any case. For direct borrowers, some of whom account for sizable fractions of the market, the distinction is more significant. However, even for direct borrowers, the yield and the marginal yield do not differ greatly, because the supply of funds available to any borrower is highly elastic (discussed below).

The cost of dealer services, as noted earlier, has been one-quarter of 1 per cent per annum for many years for nearly all firms that use dealers. The counterpart for direct borrowers is the addition to the

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firm's administrative costs on account of additional borrowing; however, one would expect these additional costs to be minor.

For both types of borrowers, the cost of maintaining open credit lines at banks will vary with bank interest rates, the size of balances that must be kept on deposit at line-granting banks, and the variability of paper outstandings over the year. The cost of commercial paper funds is nearly 1 per cent above the quoted paper rate (including commission) when bank rates are 4.5 per cent, for a borrower who anticipates peak outstandings of 25 per cent more than average outstandings and who is subject to balance requirements of 15 per cent of lines.² However, these costs usually are lower for the large direct borrowers for two reasons. First, they are not bound by the dealers' rule of full coverage with open lines. It was seen earlier that the very large sales finance companies maintain considerably higher ratios of paper to open lines than the smaller firms (Table D-1). Second, the usual compensating balance requirement among these firms is 10 per cent of the line plus 10 per cent of the amount borrowed, rather than the 15 per cent of the line required of most other borrowers. The direct borrowers can therefore maintain open lines more cheaply than most firms that use the dealer market.

² Assume that a firm is subject to balance requirements of 15 per cent of lines, that bank rates are 4.5 per cent, that average paper outstanding is \$800,000, and that maximum paper outstanding is \$1,000,000. In order to obtain \$1,000,000 of open lines the firm must have total lines of \$1,176,471, equal to \$1,000,000 plus 15 per cent of its total lines. The addition to borrowing costs is given by the product of the bank rate, the compensating balance requirement, and total bank lines, and amounts to \$7,941.18. This is 0.99 per cent of average paper borrowings.

More generally, let

c = the required ratio of balances to lines

r = the bank interest rate (divided by 100)

L_o = open credit lines

L_t = total lines required on account of paper borrowings

A = average paper borrowings

M = Maximum paper borrowings (= L_o)

I = added interest cost to obtain open lines

i = I/A

Then

$$I = rcL_t \\ = rcL_o/(1-c)$$

and

$$i = rcL_o/(1-c)A$$

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DEMAND ELASTICITY WITH RESPECT TO COST OF FUNDS

Finance companies regard commercial paper as a good substitute, within limits, for bank credit. Because of this, finance company demand for commercial paper funds is highly elastic with respect to cost, given any level of bank interest rates on business loans. By the same token, given any level of paper yields, a decline (rise) in bank interest rates will result in a relatively sharp fall (rise) in the demand for paper funds. The differential between borrowing costs at banks and in the open market is therefore a key determinant of the quantity of commercial paper funds demanded.

This interpretation can be supported by several lines of evidence. For instance, among the NBER sample firms, as well as the other groups of finance companies included in Appendixes D and E, there is a tendency—with exceptions to be noted later—for borrowers to turn away from the banks during recessions, as the differential between bank rates and paper yields widens. Similarly, the interpretation is consistent with the differences in use of paper between direct borrowers and others at all times. Commercial paper funds are significantly less expensive for direct borrowers on every dimension of cost: yields to lenders, the cost of dealer services, and compensating balance costs.

Furthermore, this emphasis on the importance of differential borrowing costs is consistent with the long-run shift from bank credit to commercial paper by finance companies. This shift has been accompanied by a substantial widening of differentials between bank rates and paper rates in recent years. A complete monthly record of these differentials for 1946-61, measured against yields on sixty- to eighty-nine-day direct paper, is shown in Table 14. The absolute level of the differentials has no special significance, since no allowance has been made for the cost of providing compensating balances to the banks or the administrative costs of maintaining a commercial paper department; but changes in the differentials give a fairly accurate picture of changes in the relative costs of the two types of funds.³ During 1946-52 the differential exceeded one percentage point only once, in December 1950; usually it was between one-half and seven-eighths of 1 per cent. Since the 1953-54 re-

³ Actually, these data underestimate somewhat the extent to which bank credit has become more expensive relative to commercial paper funds. In the early postwar years the largest finance companies sometimes obtained bank loans at less than the quoted prime rate. This is no longer the case.

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TABLE 14

BANK PRIME INTEREST RATE MINUS YIELDS ON SIXTY- TO
EIGHTY-NINE-DAY DIRECTLY PLACED PAPER, MONTHLY, 1946-61

Month	1946	1947	1948	1949	1950	1951	1952	1953
January	.88	.75	.50	.75	.88	1.00	.88	.88
February	.88	.75	.50	.75	.88	1.00	.88	.88
March	.88	.75	.50	.75	.88	1.00	.88	.88
April	.88	.75	.50	.75	.88	.88	1.00	.88
May	.88	.75	.50	.75	.88	.88	1.00	1.00
June	.88	.75	.50	.75	.88	.62	1.00	.88
July	.88	.75	.50	.75	.88	.62	1.00	.88
August	.88	.75	.38	.75	.88	.62	1.00	.88
September	.88	.50	.38	.88	.75	.62	1.00	.88
October	.75	.50	.75	.88	.88	.88	1.00	1.12
November	.75	.50	.75	.88	.88	.88	1.00	1.25
December	.75	.62	.75	.88	1.12	.88	1.00	1.25

Month	1954	1955	1956	1957	1958	1959	1960	1961
January	1.50	1.62	.75	.75	1.25	.25	.75	2.12
February	1.62	1.62	.75	.75	2.25	1.25	.75	1.75
March	1.62	1.62	.75	.75	2.38	1.00	1.62	2.00
April	1.62	1.25	.88	.75	2.25	.75	1.25	2.12
May	1.75	1.25	.88	.75	2.25	1.25	1.25	2.25
June	1.88	1.25	.88	.50	2.25	1.00	2.25	2.12
July	1.88	1.25	1.00	.50	2.50	1.00	2.50	2.25
August	1.88	1.12	1.00	1.00	1.75	.62	1.75	2.00
September	1.88	1.12	1.00	.75	1.75	.50	1.75	2.12
October	1.88	1.12	.75	.75	1.75	1.00	1.75	2.00
November	1.88	1.00	.75	1.00	1.75	1.00	1.62	1.88
December	1.88	.75	.75	1.12	1.25	.38	1.88	1.75

SOURCE: Bank prime interest rate minus yields on directly placed finance-company paper, Appendix C. Paper yields are those offered on sixty- to eighty-nine-day notes by one large direct seller. Data for recession periods are printed in boldface.

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cession, however, differentials of nearly two percentage points or more have occurred in each business contraction and have persisted well into the succeeding business expansion. In 76 of the 108 months during 1953-61 the differential was 1 per cent or more—a decided contrast to the situation in the early postwar period.

If it is granted that changing cost differentials are a major reason for the observed shifts on the part of finance companies between bank credit and commercial paper funds, a more fundamental question remains: why did commercial paper become less costly, relative to bank credit, as the postwar period developed, and why has this situation persisted? The answer must be deferred until the nature of the supply of paper funds has been considered.

INFLUENCE OF BANK CREDIT AVAILABILITY ON DEMAND FOR PAPER FUNDS

Finally, another alleged determinant of the demand for paper funds must be considered. It is often stated that the very large sales finance companies have turned more and more to commercial paper because of an inability of banks, operating under the 10 per cent rule,⁴ to accommodate their needs. It is true that each of the largest finance companies has established maximum lines of credit with several hundred banks. However, the NBER finance-company data indicate that open bank lines of these companies have been expanding steadily, at about the same rate as commercial paper during the 1950's (Table D-1). If the finance companies did not wish to use paper, they could have obtained bank loans under these lines. In addition, these data indicate that smaller companies also have been substituting commercial paper for bank loans, yet the "bottleneck" argument has no relevance to these companies.

⁴Under Section 5200 of the National Banking Act, a national bank may not hold unsecured obligations of single borrowers in amounts greater than 10 per cent of the bank's capital and surplus, with certain exceptions. Most state banks are subject to similar restrictions under state legislation; see Jacobs, "Sources and Costs of Funds," p. 344, for a summary of such state rules.

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Supply of Commercial Paper Funds

DEALER PAPER, DIRECT PAPER, AND TREASURY BILLS

The fundamental fact underlying the supply conditions of commercial paper funds is that dealer paper, direct paper, and Treasury bills are close substitutes for one another from the lender's point of view. Obviously, they are not perfect substitutes, however, for this would imply identical yields at all times, even in the face of widely differing demand conditions in the three markets. The lower two lines in Chart 12 show that during 1953-61 dealer paper yields were continuously above direct yields, and direct yields were almost always above bill yields.⁵ Nor was the size of these differentials constant: the spread between dealer and direct yields has varied between one-eighth of 1 per cent and 1 per cent, and the spread between direct yields and bill yields has varied even more, from -0.50 to 0.85 per cent. Note that the dealer-direct differential has tended to increase since 1953, while the spread between direct yields and bill yields has not.

Bills, direct paper, and dealer paper differ in liquidity, degree of credit risk, and flexibility of maturities. Both types of commercial paper are less liquid than bills, since there is no secondary market in paper. In the case of direct paper this disadvantage is mitigated in some measure by informal assurances on the part of borrowers that they will repurchase the note if the lender needs his cash before maturity. Occasionally, dealers, as well as direct borrowers, repurchase paper they have sold, but the lender cannot rely on this.

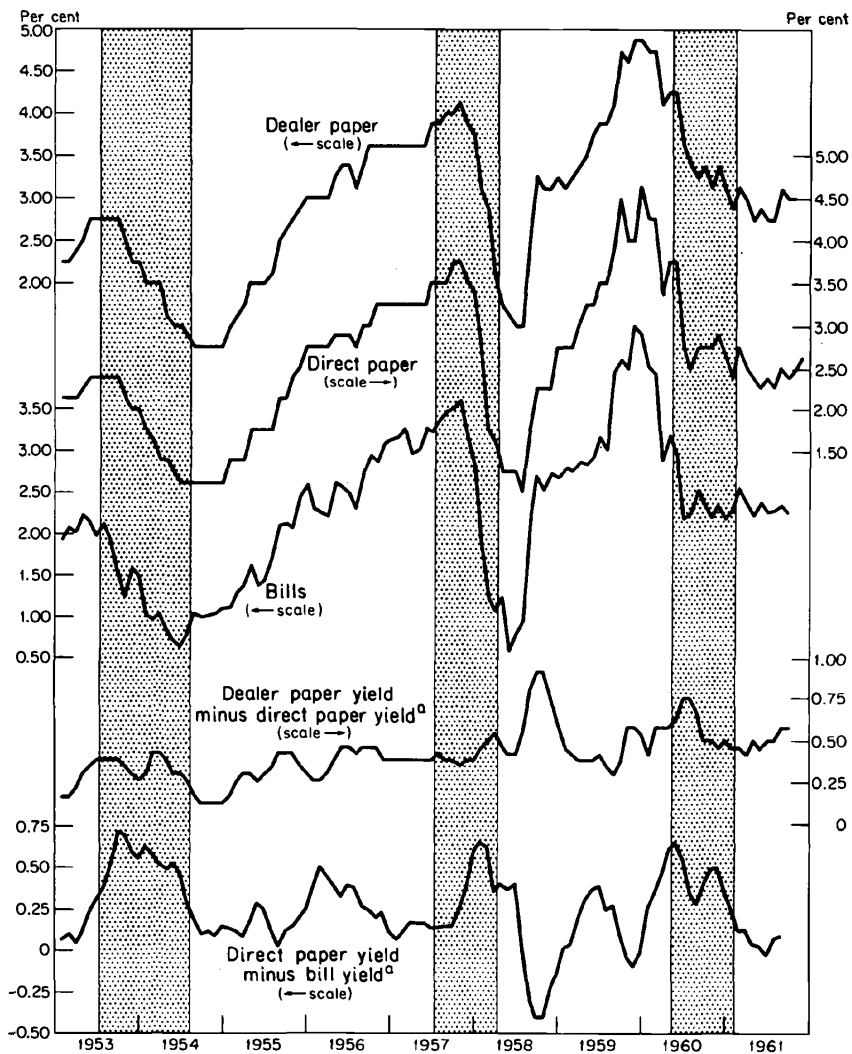
Commercial paper is also at a disadvantage, relative to bills, in terms of credit risk; probably even more important in this regard is the disadvantage of dealer paper relative to direct paper. However, in view of the excellent record of commercial paper even in severe recessions, only modest risk premiums appear to be warranted. On the other hand, commercial paper of both types does have the advantage of maturities

⁵During some earlier periods direct yields have exceeded dealer yields; see Jacobs, *Journal of Finance*, September 1960, p. 358. Note that the yield differentials shown in Chart 12 have been smoothed by use of three-month moving averages; also, that the differentials relate to only one of the several maturity classes for each type of paper, and that the dealer paper yields refer to four- to six-month paper while the direct paper yields refer to yield differentials and tend to be somewhat less than those shown in the chart.

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CHART 12

Yields on Dealer Paper, Direct Paper, and Treasury Bills at End of Month, and Yield Differentials, 1953-61



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NOTES TO CHART 12

Note: Shaded areas represent business cycle contractions.

Source: Yields on dealer paper are those prevailing at end of month on prime four- to six-month dealer paper, as reported by two large dealers to the Federal Reserve Bank of New York and published by the bank in its monthly releases, *Commercial Paper*.

Yields on direct paper are those prevailing at end of month on General Motors Acceptance Corporation notes maturing in sixty to eighty-nine days.

Yields on Treasury bills represent market yields on three-month bills, average for week containing last day of month, from *Federal Reserve Bulletin*.

Yields differentials are three-month moving averages of dealer paper yield minus direct paper yield and of direct paper yield minus Treasury bill yield.

^aThree-month moving average.

that are tailored to lenders' specifications—all the way from a few days to a year or more. The same precision can be achieved in government securities by use of repurchase agreements with dealers, but only at a cost; furthermore, repurchase agreements are usually limited to very short maturities.

SUPPLY OF PAPER FUNDS

Because bills, direct paper, and dealer paper are such close substitutes, the yield elasticity of supply of funds in any one of these markets will be high, given stable yields in the other two. This is particularly true of the direct market vis-à-vis the others. For any set of bill and dealer paper yields, the supply of funds to the direct market will be highly elastic with respect to the direct paper yield.⁶ By the same token—and this is the more relevant formulation—for any established level of paper yields, changes in bill yields will result in opposite shifts in the supply schedules of funds to the paper markets; that is, a fall (rise) in bill yields will induce an increased (decreased) supply of funds to the direct paper and dealer paper markets. In practice, this situation arises continually. Since the direct market consists of a few borrowers and many lenders, yields are posted by borrowers and maintained for

⁶However, supply is elastic only over a limited range of borrowings. Some suppliers continue to furnish funds even when direct yields sink below bill yields (see Chart 12, bottom line), and some stick with bills even when direct yields are well above bill yields.

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a series of transactions despite changes in amounts supplied.⁷ The same is true of the dealer market, even though the number of borrowers is large, since suppliers face only a handful of dealers. Bill yields, on the other hand, change constantly, and therefore the differential between paper yields and bill yields also changes constantly (Chart 12).

One would expect the combination of relatively stable paper yields, volatile bill yields, and an elastic supply of funds to result in wide fluctuations in the volume of paper borrowings, and this tends to be the case. At times direct borrowers find themselves borrowing funds for which they have no need.⁸ Within limits, this situation can be handled by placing unwanted funds in bills, certificates of deposit, or even a competitor's paper. In this way, a borrower may be able to avoid the onus of initiating yield cuts. When the opposite problem arises (i.e., borrowings are less than expected), direct borrowers and dealers may intensify their "sales" efforts in an attempt to increase volume; however, this probably has only a minor effect, since sales efforts are mainly slanted toward the development of new accounts, and the latter are not an important part of total borrowings. As indicated earlier, all paper borrowers keep sizable open credit lines at banks precisely for the purpose of protecting themselves against unexpected declines in borrowings.⁹ Finally, if none of these expedients produces a reasonable balance between demand and supply, direct borrowers and dealers will change offered yields, usually by formal announcement but, in the case of direct borrowers, sometimes informally. This may be done in a single maturity class, or simply by changing the boundaries of maturity classes by a month or two if the desired adjustment is small.

⁷Yield changes on direct paper (and on dealer paper as well) have become much more frequent with the passage of time. This is apparent if one compares Jacobs' Chart 6 (*Journal of Finance*, September 1960), covering the 1930's and early 1940's, with his Chart 8, covering 1946-56, and my Chart 12, covering 1953-61.

⁸In general, this is not a problem in the dealer market. There is no customer relationship between borrower and lender in this market, and the borrower therefore feels no sense of obligation to accept offered funds. The dealer will simply offer lenders the paper of other clients who currently need funds.

⁹Direct borrowers, as well as some large finance companies that borrow through dealers, also have close ties with a few large banks ("demand" banks) at which day-to-day adjustments in borrowings are made to offset fluctuations in commercial paper debt.

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All of the foregoing relates to short-run supply conditions, which may be described in summary as elastic and subject to frequent change. Longer-period changes in supply have also been taking place, as the widening of the differential between bank rates and paper yields noted in Table 14 implies. One might be inclined to regard this as merely a cyclical manifestation: the supply of paper funds increases in recessions, and recessions have occurred more frequently since 1953 than in the early postwar period. However, this is only part of the story. These rate differentials were much wider during the recessions of 1953-54, 1957-58, and 1960-61 than during the 1948-49 recession. Furthermore, the differential widened significantly between the first half of 1948 and the first half of 1953, both periods of active business conditions. It seems clear, therefore, that there has been a secular increase in the supply of paper funds in the postwar period, and at a rate that has outrun finance-company willingness to absorb these funds in place of bank debt. An important factor in this increased supply of funds has been the fine credit record of commercial paper, which has not gone unnoticed. A more basic explanation, however, has been the awakening of corporate financial officers and others to the cost of holding idle cash—a cost that became particularly evident with the trend toward higher interest rates in the 1950's. As a result, commercial paper has become a favorite liquid asset for many nonfinancial businesses, educational institutions, financial intermediaries, and state and local governments; and the trend seems likely to continue for a long time to come. If it does, the wide rate differentials are likely to persist, and finance companies will probably continue to substitute commercial paper funds for bank credit.