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Introduction and Summary

Trade credit is extended by one nonfinancial firm to another for the period between the invoice date (or delivery of goods or services) and the receipt of payment. Since trade credit is a function of sales and has the shortest maturity of any of the major forms of financing, it is perhaps the most sensitive to changes in business conditions and hence to changes in the level of risk exposure. Thus, though trade credit is but a single cell in the matrix of credit, its analysis should shed much light on the behavior and significance of changes in the quality of credit as a whole.

Trade credit is one of the most important forms of financing in the American economy. It is estimated that by the end of 1962 there was approximately $111 billion in trade credit outstanding. This sum exceeded the volume of more familiar financial media such as corporate bonds and state and local securities; it was twice the volume of consumer credit outstanding, and far exceeded the business lending of the entire commercial banking system.

The large and growing volume of trade credit has helped to place nonfinancial firms ahead of financial firms as holders of financial assets. One-third of the $212 billion in financial assets held by nonfinancial firms in 1957 was the trade debt of other nonfinancial firms. Within several business sectors, trade credit represents a major share of total company assets. In the 1947-57 period its average share of total assets was 48 per cent in the construction sector, 33 per cent in the wholesale sector, 16 per cent in manufacturing, and 12 per cent in mining.

Although the volume of trade credit is large and is sensitive to changes in business conditions, the quality of trade credit is not the paramount concern of trade creditors. For nonfinancial firms the question of financial risk is secondary to their primary interest, the sale of goods and services. Trade credit policy is thus caught between the conflicting objectives of aggressive selling and sound credit practice. This conflict,

which in large firms normally takes place between the sales and credit departments, has its impact upon general business conditions and the survival of firms.

Trade Credit Experience

The analysis of the quality of trade credit involved securing *ex post* quality measures (actual experience) and *ex ante* (predictive) quality measures. The *ex post* measures employed in this study are (1) delinquencies, (2) the volume and rate of business bad-debt losses, and (3) business failures.

DELINQUENCIES

In 1959-62 the volume of past-due trade credit held by manufacturers averaged 16.0 per cent of the dollar volume outstanding; the average rate for wholesalers in 1960-62 was 25.8 per cent. The average proportion ninety days or more past due was 2.9 per cent for manufacturers and 7.1 per cent for wholesalers. The high cost of credit collections makes late payment of trade credit a substantial source of loss even if the debt is fully repaid, although this cost is not generally included in bad-debt losses.

BAD-DEBT LOSSES

In 1960 the combined rate of bad-debt losses of corporations in four major business sectors—mining, manufacturing, wholesale, and construction—was about 1.4 per cent of the volume of trade credit outstanding; this loss rate is among the highest of any of the major forms of financing. The dollar volume of these losses reached an annual rate of $1.0 billion in that year, more than the volume of bad-debt losses of all other forms of credit combined.

Loss rates vary widely among creditor firms in different sectors and of different size and profitability. The highest loss rates were experienced by retail firms, unprofitable firms, and small firms. Small manufacturing firms had an average loss rate five times as great as giant manufacturing firms, and unprofitable firms (those reporting net losses in the given year) had an average loss rate two to three times as great

as profitable firms. The highest average loss rate for 1947-57 occurred among small, unprofitable retail firms (4.3 per cent), but a substantial part of the losses of retailers might have been on credit granted to consumers which could not be separated from trade credit losses in the case of retail and service firms.

BUSINESS FAILURES

Credit losses are not only an operating expense; they also pose a serious threat to the creditor's survival. It has been estimated that, on the average, over 9 per cent of all failures in the postwar period resulted from the poor quality of trade credit in the portfolio of the failing firm. In the wholesale sector, receivables difficulties account for an average of 17 per cent of all failures. The average is 15 per cent in construction, 12 per cent in mining and manufacturing, 6 per cent in commercial services, and 5 per cent in retail trade.

The quality of the trade credit extended appears to be a greater factor in the survival of larger firms than of smaller ones. Among failures with total liabilities of more than $100,000, 15 per cent were attributable to receivables difficulties. By comparison, only 5 per cent of the failures involving liabilities of less than $5,000 were caused by the poor quality of trade credit. This does not mean that small firms hold higher quality credit, but rather that they are more susceptible to other causes of failure.

For the economy as a whole, the ratio of failure liabilities to current liabilities of all firms rose 70 per cent between 1947 and 1960, substantial increases taking place in most sectors. The manufacturing sector was the exception, for its trend was negative. In terms of numbers of failures, the trend was upward in all sectors. The rate of failure per 10,000 firms in the economy rose from 14 in 1947 to 61 in 1962.

EX POST QUALITY: THE TREND

The trend of the *ex post* measures indicates that the quality of trade credit has been declining since the late 1940's. The rate of bad-debt losses, the rate of delinquency, and the rate of business failures all rose throughout this period. The last rose both in terms of the number of firms and in terms of the dollar volume of liabilities. The ratio of

bad-debt losses to receivables outstanding had shown some stability until 1955, but then it too began to rise.

Measuring Trade Credit Quality

A major objective of this study was to secure reliable predictive data which would anticipate credit difficulties. Credit quality in the predictive sense measures the probability of repayment. The higher that probability, the higher the quality of the credit. Three different types of predictive or *ex ante* measurements are used for this purpose: (1) movements of selected financial ratios, (2) trends in Dun & Bradstreet's credit ratings, and (3) changes in the distribution of trade debt among business borrowers representing differing degrees of risk.

FINANCIAL RATIO ANALYSIS

Earlier studies indicate that there are four financial ratios that are especially helpful in predicting the subsequent failure of business firms; they are the "quick ratio" (cash and government securities to current liabilities), the "current ratio" (current assets to current liabilities), the ratio of net working capital to total assets, and the ratio of net worth to debt.

Without exception, these four ratios moved downward for each of the six major business sectors during the postwar period. The liquidity (quick) ratio of the six sectors combined fell over 40 per cent between 1948 and 1960, the current ratio declined by more than one-fifth, and the working capital and worth-to-debt ratios each fell by one-quarter. More recent data from the Federal Trade Commission and the Securities and Exchange Commission show a continuation in the decline of these financial ratios into the 1960's.

In general, the ratios were maintained better in manufacturing than in the other business sectors, and the service and construction sectors showed the greatest weakening. Analysis of the behavior of these ratios among business size classes within sectors shows that the decline was greatest for the smaller-sized firms.

CREDIT RATINGS

A decline in the quality of trade credit during the 1950's is also suggested by the upward movement in the proportion of firms whose credit in the

Dun & Bradstreet ratings is only "limited" or "fair." Examination of the effectiveness of credit ratings in predicting credit difficulties yields evidence to support these ratings as effective measures of credit quality.

DISTRIBUTION OF TRADE CREDIT

Analysis of the changing distribution of trade payables among economic sectors and among different types of firms produces mixed evidence regarding quality changes. The share of all trade debt owed by small and young firms (which were found to be of more than average riskiness) did not increase during 1947-57, but the proportion of trade debt owed by the especially risky class of unprofitable small firms did rise substantially.

CREDIT STANDARDS

Other measures of the quality of trade credit investigated were the ratio of trade receivables to sales (the "collection period" of trade creditors) and the ratio of trade payables to sales (the "payables turnover" ratio of debtors). Both of these ratios are rough measures of changes in credit standards. A rise in the collection period or a decline in "payables turnover" is tantamount to a lengthening of the credit terms of sale, and longer terms entail greater risk exposure. Both of these ratios rose appreciably over 1947-60, indicating some decline in trade credit quality.

EX ANTE QUALITY: TREND AND CYCLE

The evidence indicates that the unusually strong credit position of American business resulting from the liquidation of debt during World War II and the wartime and postwar inflation of values had largely disappeared by the late 1950's, and that the decline in the quality of trade credit appears to be continuing into the 1960's.

Rigorous cyclical analysis of credit quality and credit difficulties was not possible with the data available; however, it is apparent that trade credit quality weakens during periods of general economic expansion and is restored during periods of recession. The cyclical behavior of trade credit quality suggests that it may be an important factor influencing general business conditions. The improvement of credit quality requires the restoration of business liquidity, and liquidity is increased principally at the expense of production.

EX ANTE QUALITY AS A PREDICTOR OF CREDIT DIFFICULTIES

Several experiments were conducted in the course of this study to determine the extent to which the *ex ante* measures anticipate credit difficulties. Most of the correlation between groups of financial ratios and series of credit delinquencies, losses, and failures passed tests of statistical significance and indicated that the *ex ante* measures do generally anticipate changes in credit difficulties among different business sectors during the ensuing year or so.

Important problems must be resolved, however, before these *ex ante* measures are of practical use. These include refinement and increased coverage of the basic data to permit a more precise determination of the extent to which credit difficulties result from a given change in credit quality.

Improvement of Data on Trade Credit Quality

At present, sources of current data that indicate the quality of trade credit are few, and not all of these are sufficiently broad in coverage to provide insight into the quality of trade credit in the economy as a whole. Most of these data, indeed, bear only indirectly on trade credit.

The sources of current information that cover broad sectors are the FTC-SEC *Quarterly Financial Report for Manufacturing Corporations,* which provides balance-sheet and income data and selected ratios for manufacturing corporations by industry group, and a size-of-firm breakdown for manufacturing corporations as a whole; the SEC quarterly series on current assets and current liabilities of all corporations; the Credit Research Foundation's quarterly accounts receivable survey showing the proportion of trade credit past due and the collection period for wholesale and manufacturing firms; and the Dun & Bradstreet weekly and monthly series on the number of business failures and their liabilities for all business sectors. On a less aggregative basis, Dun & Bradstreet and Robert Morris Associates each publish financial ratios for certain narrowly defined industrial groups.

There is clearly a need for comprehensive current data bearing directly upon trade credit. Appendix D lists all the sources now available, with specific recommendations for their improvement. This appendix also calls attention to the possibilities inherent in the application of electronic data processing to credit quality control.