Volume Title: The Quality of Trade Credit

Volume Author/Editor: Martin H. Seiden

Volume Publisher: NBER

Volume ISBN: 0-87014-401-4

Volume URL: http://www.nber.org/books/seid64-1

Publication Date: 1964

Chapter Title: Measuring Trade Credit Quality: Changes in Credit Standards

Chapter Author: Martin H. Seiden

Chapter URL: http://www.nber.org/chapters/c1862

Chapter pages in book: (p. 37 - 49)

4

Measuring Trade Credit Quality: Changes in Credit Standards

Current experience with credit, i.e., its *ex post* quality, is not an adequate measure of current quality. Seemingly sound credit has been known to crumble under the pressure of a general economic decline. The collapse of capital values in 1929 spread rapidly through the financial structure, yet before it happened there was little indication of what was to come. The problem, then, is to measure the risk inherent in current and potential trade credit. Knowledge of this *ex ante* quality of credit would permit the rapid diagnosis of weak (low-quality) components in the financial structure and facilitate the early use of corrective measures.

Each form of credit has its own criteria for the measurement of its *ex ante* quality. In trade credit two major criteria are involved: (1) the credit standards used by lenders and (2) the borrowers' short-run capacity to meet these standards. This chapter describes the method of calculating changes in the credit standards employed in granting trade credit. Later chapters deal with the measurement of the creditworthiness of trade debtors.

Terms of Sale

When a buyer receives goods or services from a seller, a credit relationship, expressed by the "terms of sale," is established until payment is made. Since easier terms of sale attract customers whose ability to meet their current obligations is weaker, easier credit terms bring creditors into regions of lower credit quality and increased risk. Hence changing terms of sale are potentially one measure of changing trade credit quality.

But securing a sound measure is complex. Terms of sale ordinarily consist of three parts: the "net period" (e.g., thirty days) within which payment is due; the "discount period" (ordinarily ten days from receipt of the invoice or the goods) within which payment can be made at a cash discount; and, finally, the discount rate (e.g., 2 per cent from the net billing). The terms of the preceding example are expressed as 2 per cent 10 days net 30 (2/10 net 30).

Terms of sale imply an interest charge to buyers not taking the discount and an interest return to sellers on their receivables which can be expressed as an annual rate of interest; these rates are listed for selected terms in Table 18. Under terms of 2/10 net 30 days, the seller is in effect offering credit to the customer at no interest for the first ten days and at an annual rate of 36 per cent for the next twenty days.[1] The customer who does not take advantage of the cash discount in effect pays this rate for the use of the funds for twenty days. It would be to the customer's advantage to borrow from banks or other available sources whose rates are lower than the cost of trade credit and gain the differential by discounting his bills. But trade credit is often available when bank credit is not, and its use increases the capital available to the trade debtor.

There are significant differences in the implications of changes in the several components of the sales terms. If the cash discount rate is increased, the seller is in effect cutting his prices but raising the cost of (and his rate of return from) trade credit to buyers who do not discount their bills. The effect may be to stimulate sales, diminish the volume of receivables, and possibly to raise the average quality of trade credit since buyers who cannot take advantage of the higher discount are eliminated as they would be at a competitive disadvantage by purchasing at a higher effective cost. Conversely, a reduction in the cash discount will increase the volume of receivables and lower its average quality

[1]This assumes that the discounted (cash) price is the actual price of the goods, and that the discount is the charge for credit. We shall adhere to this assumption throughout. Alternatively, one might consider the amount due at the end of the net period as the actual price of goods, in which case the seller is offering an interest return to the buyer in order to obtain payment before the due date.

TABLE 18

EQUIVALENT ANNUAL INTEREST RATES[a]

(per cent)

Terms	Annual Rate	Terms	Annual Rate
1/10 net 30	18	2/10 net 20	72
2/10 net 30	36	2/10 net 30	36
3/10 net 30	54	2/10 net 40	24
4/10 net 30	72	2/10 net 60	14.4

[a] Calculated here on the basis of a "banking year" of 360 days.

since reducing its cost to borrowers attracts marginal firms.[2]

By lengthening the net period, the seller reduces his credit standards since it is the "weaker" buyers who are most attracted by the reduced cost of trade credit. A lengthening of the net period thus tends to stimulate sales at the cost of a reduction in the quality of receivables. For this reason, the ratio of receivables to sales, which measures the average length of the collection period, is used as one of the measures of trade credit quality. It would be most desirable from the standpoint of quality analysis to supplement the collection period with information describing changes in the proportion of buyers discounting their bills. This information, once collected by the Credit Research Foundation, was unfortunately discontinued. The U.S. Department of Labor, in surveying producers for its wholesale price index, also inquires about the terms of sale. This source offers the possibility of continuous information about changes in terms of sale, and possibly about changes in the behavior of trade debtors as well.

RISK PREMIUM

The risk premium, which is considered a measure of quality in some other forms of credit, does not generally apply in trade credit. There

[2] "Marginal firms," as used in this study, refer to the firms that are *less* sound, not *least* sound. There is no set point beyond which a firm becomes marginal. A marginal firm is a risk that is one rank greater than that currently obtaining trade credit.

are exceptions, such as the tendencies cited below in the terms granted to jobbers and to chain stores. However, beyond the decision to extend or withhold trade credit to marginal firms, trade credit does not ordinarily respond to risk in the "normal" fashion. Most suppliers will, particularly in a buyers' market, adopt an easier credit policy in dealing with credit of low quality. This may involve an unspoken agreement not to press for payment at the due date but to allow a period of grace. Since the grace period is, in effect, an extension of the net period and the equivalent annual rate of interest is inversely related to the length of the net period, credit of lower quality is charged a lower annual rate of interest. The practice of pursuing a policy that is the opposite of imposing a risk premium is not surprising, since financing is secondary to the major objective of nonfinancial firms—the sale of their goods and services.

It is, of course, possible that in selling to marginal firms, noninterest income, including reduced storage and depreciation expenses, compensates the creditor sufficiently for his losses, thus substituting for a risk premium. The advantages to the creditor may also include higher profit margins if economies of scale are involved.

PATTERNS OF TERMS

Terms of sale vary among different lines of business, but several broad patterns are discernible.[3] Terms tend to reflect the perishability of the goods involved, with manufacturers and processors of baking products, meats, fruits, and vegetables generally requiring cash on delivery.

A second pattern underlying the terms of sale is the tendency for large buyers, such as jobbers and chain stores, to obtain the more liberal terms. This is true of distributors of bakery products, canned fruits and vegetables, leather garments, paints and varnishes, and petroleum.

Third, highly competitive lines grant the longest net period and the highest cash discounts. Often both long net periods and high cash discounts are offered by the same firm. Manufacturers of coats, suits, dresses, underwear, and neckwear offer cash discounts as high as 8 per cent. A net period of sixty days is offered by manufacturers of cotton dresses, men's clothing, curtains, drapes, bedspreads, neckwear, electrical parts, auto parts, furniture, paint, dry goods, bedsprings, and mattresses.

[3] Roy A. Foulke, *Current Trends in Terms of Sale*, New York, Dun & Bradstreet, 1959, Table 5.

TABLE 19

PROPORTION OF FIRMS USING DIFFERENT TERMS OF SALE, 1958

(per cent)

	Manufacturers	Wholesalers
	DISCOUNT RATE	
None	35	26
1 per cent	21	10
2 per cent	31	57
Other	13	7
Total	100	100
	DISCOUNT PERIOD	
10 days	63	39
10th day of the following month	24	52
Other	13	9
Total	100	100
	NET PERIOD	
30 days	62	38
10th day of the following month	22	43
Other	16	19
Total	100	100

SOURCE: Foulke, *Current Trends*, Tables 1, 2, and 3. Based on a survey of 1,600 firms in 145 manufacturing lines and 75 wholesale lines, and supplemented by considerable correspondence with individual concerns.

Table 19 summarizes the pattern of terms of sale as they were reported in a 1958 Dun & Bradstreet survey of 1,600 firms in forty-five manufacturing lines and seventy-five wholesale lines. As of 1958, 35 per cent of all manufacturers and 26 per cent of all wholesalers surveyed offered no cash discount. Without a cash discount buyers are encouraged to use trade credit as a source of working capital, for it is costless.

CHANGES IN TERMS

Terms of sale are slow to change. The relative stability of terms of sale was indicated in two surveys conducted in the 1950's.[4] Both found that only about 16 per cent of all firms had officially changed their terms of sale in the postwar period through 1958. Furthermore, there was no pronounced liberalizing or tightening of terms in the changes that were made.[5]

Of eighty-one concerns that reported having reduced or eliminated cash discounts, twenty-four gave unearned discounts as the cause of their action,[6] twenty were responding to reduced profit margins, twelve were conforming to an industrywide change, eight were responding to a cutback in the discount offered by their suppliers, and six adopted this change in lieu of a price increase. Eleven firms gave no reason for having reduced or eliminated the cash discount.

Although twenty-four firms reduced or eliminated their cash discounts because customers were paying more slowly and taking unearned discounts, twenty-six reported that they increased their discounts for the same reason. Apparently different creditors react differently to a given form of debtor behavior. In the CRF survey, roughly 10 per cent of the firms reported that they reduced or eliminated the cash discount, compared with about 5 per cent in the Dun & Bradstreet survey. The CRF, however, did not go into the reasons for these changes.[7] In addition to the small proportion of firms that changed their terms of sale, only 2 per cent of the firms surveyed by Dun & Bradstreet reported that they grant frequent exceptions to their standard terms; over half reported that they *never* grant exceptions (Table 20).

It appears that the principal means of varying credit standards is through changes in the creditor's selection of customers and their treatment if they become delinquent. This conclusion is verified in the CRF study which shows that 52 per cent of the firms surveyed continued

[4] The Credit Research Foundation reviewed the policies of 1,203 firms for 1946-55, and Dun & Bradstreet reviewed 1,600 firms for the period 1953 through the first three months of 1958.

[5] Foulke, *Current Trends*, Table 5.

[6] An unearned discount occurs when the debtor deducts the cash discount, although making payment after the discount period.

[7] H. Reinhardt, *Terms of Sale and Collection Practices in 32 Industries*, New York, Credit Research Foundation, 1955.

TABLE 20

BUSINESSES GRANTING SPECIAL TERMS, 1953-58

(per cent of firms surveyed)

	Manufacturers	Wholesalers	Total
No special terms granted	59.3	53.6	57.6
Special terms occasionally granted	38.5	45.3	40.5
Special terms frequently granted	2.2	1.1	1.9
Total	100.0	100.0	100.0

SOURCE: Foulke, *Current Trends*, Table 8, p. 41.

to sell on regular terms despite a customer's tendency to pay after the net period; 33 per cent of the firms reported routinely offering a number of days' "grace" after the net period expires; 26 per cent said that they accepted postdated checks; only 12 per cent charged interest on past-due accounts.

These findings support the conclusion that in practice credit standards are normally altered through a change in credit policy rather than through a change in terms.

The decision to whom to sell is adopted knowing that the terms will most probably not be strictly adhered to by marginal firms. Less than vigorous enforcement of the net period has particular advantages. It facilitates discriminatory price discounts and conceals price changes from competitors. As a result of its flexibility, selectivity, and low cost relative to formal price changes, credit policy is an important factor determining both the quantity and the quality of the trade credit outstanding.

Collection Period

Changes in the turnover of trade credit—the ratio of trade credit to sales (TC/S)—are a response both to changes in the terms of sale and the behavior of trade debtors in taking discounts and paying within the net period. Since trade creditors can, in the long run, alter their terms or their choice of customers, the turnover of trade credit is a good measure of the trend in credit standards. In the short run, however, events may overtake the credit already extended and generate short-run oscillations in the turnover of trade credit.

The ratio of trade credit outstanding to *daily* sales is the ratio base most widely used to measure the collection period. This is variously referred to as the "number of days sales outstanding" or the "collection period." To calculate this measure, annual sales are converted into their daily average by dividing them by 365 or 360 days, quarterly sales by ninety days, and monthly sales by thirty days. This method assumes, for practical purposes, that sales are equally distributed throughout the period represented by the sales data. This assumption overlooks the seasonality of sales, an oversight that may introduce different results for balance sheets of different dates. The cross section of collection periods shown in Table 21 uses 365 days to convert the annual sales data of the U.S. Treasury's *Source Book* into average daily sales.

VARIATION IN COLLECTION PERIODS

Care must be exercised in interpreting the collection period. A long collection period can indicate both strength and weakness. The tendency for unprofitable firms to have slightly longer collection periods than profitable firms may be a factor in their unprofitability (Table 21). Financing is costly; and the longer the collection period, the greater the likelihood of loss.

On the other hand, there is a tendency for large and giant profitable firms to have a slightly longer collection period than small- and medium-sized firms. This is a competitive advantage reflecting their policy of accommodating slower-paying customers, as well as their policy of employing implicit price discounting.

The ranking of sectors in Table 21 by the length of their average collection periods for 1947-57 places the construction sector at the top

TABLE 21

COLLECTION PERIOD,[a] BY SECTOR, SIZE, AND PROFITABILITY OF CORPORATION, AVERAGE FOR 1947-57

(number of days)

	All Sizes	Small	Medium	Large	Giant
			MINING		
All corporations	60	57	59	63	56
Profitable	58	53	55	61	60
Unprofitable	70	66	76	76	59
			MANUFACTURING		
All corporations	38	34	36	40	39
Profitable	38	34	35	39	39
Unprofitable	39	35	41	47	40
			WHOLESALE		
All corporations	38	31	35	38	46
Profitable	38	30	34	37	47
Unprofitable	38	33	40	43	43
			RETAIL[b]		
All corporations	30	21	31	39	30
Profitable	30	22	31	38	29
Unprofitable	32	20	32	54	74
			SERVICES[b]		
All corporations	46	32	44	49	57
Profitable	45	32	43	47	56
Unprofitable	46	31	49	54	66
			CONSTRUCTION		
All corporations	82	42	62	99	110
Profitable	80	40	59	94	111
Unprofitable	99	45	81	144	284

SOURCE: Treasury *Source Book.*

[a] Ratio of trade credit outstanding to daily sales.

[b] Includes consumer receivables.

of the list and retailing at the bottom. The longest collection period is found among unprofitable construction firms (284 days). By contrast, the average collection period of twenty days for small unprofitable retail firms was the shortest, probably reflecting their inability to carry their customers.[8]

A series of rank correlations failed to show a link between the length of the collection period and either the liquidity or the net credit position of firms. It may be concluded, as a result, that the relatively high liquidity of large firms is not a determining factor in their longer average collection period. A possible explanation for their putting trade credit to what appears to be better competitive advantage than small firms may be better credit management, particularly in evaluating their total risk exposure, or in the dominance of large firms in industries whose sales must be financed.

Analysis also shows that, in addition to being unrelated to liquidity, the length of the collection period is also unrelated to the supplier's credit position. Thus it is possible for a firm to have a relatively long collection period entirely financed by its own suppliers, as do some unprofitable mining firms which are net trade debtors.

It may be concluded that the collection period is less a function of any financial characteristic of firms than it is of their primary objective, the sale of their goods. This requires that sellers meet their competitors' terms and policies.

BEHAVIOR OF THE COLLECTION PERIOD

The collection period for trade credit of the six major sectors combined rose from thirty-four days sales outstanding in 1947 to forty-four days in 1960 (Table 22). A detailed breakdown by sector and size of firms is shown in Table 23. It is seen that the collection period rose in nearly every sector and size group. These data also reveal the absence of pronounced cycles in the collection period. This does not mean that credit standards are not cyclical. It is more likely an indication that the collection period is inadequate as a measure of short-run changes in credit standards. It is doubtful that any reliable current measure of

[8] Consumer receivables could not be removed from the retail and service sectors on a size-class basis.

short-run change in credit standards can be developed from current data. The collection period, however, is an important measure of *long-run* movements in credit policy, and in the 1947-60 period the lengthening collection period indicates that the credit policy of non-financial firms has contributed to a long-run decline in the quality of trade credit.

TABLE 22

COLLECTION PERIOD, ALL MAJOR BUSINESS SECTORS, 1947-60

	Number of Days
1947	34
1948	33
1949	34
1950	39
1951	37
1952	40
1953	37
1954	41
1955	42
1956	43
1957	42
1958	46
1959[a]	44
1960[a]	44

SOURCE: *Statistics of Income.* Includes mining, manufacturing, wholesale, retail, service, and construction sectors. The inclusion of the retail and service sectors, which contain consumer receivables, reduces the level of the average by one or two days.

[a] A change in the definition of notes and accounts receivable as reported in *Statistics of Income* resulted in a reduction in the collection period in 1959 and 1960. See note a to Table 24.

TABLE 23

TRADE CREDIT: COLLECTION PERIOD,[a] BY SECTOR AND SIZE OF CORPORATION, 1947-59

(number of days)

	Small	Medium	Large	Giant	All Sizes
			MINING		
1947	50	51	59	46	51
1948	46	50	61	40	49
1949	52	55	61	38	51
1950	54	55	62	64	60
1951	53	55	63	56	57
1952	—	—	—	—	58
1953	55	60	62	58	59
1954	62	73	71	71	70
1955	64	64	65	73	68
1956	66	64	63	66	65
1957	59	64	63	61	62
1958	65	88	82	74	77
1959[b]	72	77	76	74	74
			MANUFACTURING		
1947	30	32	35	37	34
1948	30	31	34	34	33
1949	32	34	35	32	33
1950	36	38	41	37	38
1951	32	34	38	37	36
1952	—	—	—	—	39
1953	33	34	38	37	36
1954	36	37	42	41	40
1955	37	39	43	41	41
1956	37	39	44	46	43
1957	36	38	43	43	41
1958	39	42	48	48	46
1959[b]	39	41	48	46	44

(continued)

TABLE 23 (concluded)

	Small	Medium	Large	Giant	All Sizes
			WHOLESALE		
1947	26	28	32	39	32
1948	25	28	32	41	32
1949	28	32	35	41	34
1950	31	35	39	47	39
1951	28	32	35	47	36
1952	—	—	—	—	38
1953	31	34	36	46	37
1954	32	37	41	49	41
1955	33	38	42	53	42
1956	34	38	41	49	41
1957	34	37	39	45	39
1958	36	41	45	52	44
1959[b]	36	41	43	53	44
			CONSTRUCTION		
1947	41	58	101	131	79
1948	38	55	99	118	77
1949	38	55	104	130	79
1950	39	64	114	138	89
1951	38	57	101	134	84
1952	—	—	—	—	84
1953	43	66	97	104	81
1954	43	63	96	107	80
1955	46	69	99	122	85
1956	43	65	92	126	83
1957	42	60	100	112	82
1958	44	66	86	131	81
1959[b]	38	58	70	100	65

SOURCE: Treasury *Source Book*. Profitable and unprofitable firms combined. Retail and service sectors were omitted as consumer receivables could not be removed on a size-class basis.

[a] Ratio of trade credit outstanding to daily sales.

[b] See note a to Table 22.