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business is to make credit available to the masses, the business is more inclined toward liberality for the sake of volume than it is toward restrictiveness for the sake of quality. If applicants were too carefully selected—if they were required to have bank accounts and stable employment records, and to make large down payments—a large share of the present borrowers would be excluded. There is practically no evidence to indicate that additional care in the selection of applicants would bring greater benefits to the business. For several decades the consumer credit business has been pursuing a liberal policy of serving the masses of consumers, and it has succeeded in avoiding undue losses.

The ultimate problem of credit analysis is not one of determining which classes of risks are good and which classes are poor, but rather of determining which of the poorer classes are so poor that they are unprofitable at the prevailing rates charged for credit. The method of analysis outlined in this study is not an entirely satisfactory approach to the question of profitability. In cases where precision is required, the only satisfactory method is a detailed and laborious analysis of the actual costs involved, but in many other cases the simplicity and inexpensiveness of our method will compensate for its lack of precision.

While it is not our purpose to discuss the social implications of credit policy, it is necessary to point out that the problem exists. The consumer credit business fills a real need by extending credit facilities to a large number of worthy borrowers who could not otherwise enjoy such facilities; but by extending credit to borrowers who are unable to repay the financial obligations thus assumed, the business provides an undesirable social influence. Although the social benefits of consumer credit cannot be enjoyed without some of the attendant ills, risk policy can be directed toward maximizing the benefits and minimizing the ills.

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Scope and Purpose of the Study

Some form of credit investigation is essential to any loan transaction, whether large or small, personal or business. When making an investigation, a lender does not attempt to predict the applicant's repayment record precisely, but he does undertake to distinguish the applicants who are likely to repay from those who are not. In this attempt, he obtains pertinent information on such matters as borrower's character and reputation, borrower's financial condition, intended use of the funds, and type and value of any collateral that may be offered as security. From an analysis of this information, the lender evaluates the proposed transaction; in doing this, he relies on his experience and intuition, and in addition he may weigh the available facts according to some mechanical routine.

In the present study, we are presenting a statistical approach to the analysis of certain pertinent risk elements in consumer instalment financing. The purpose of the study is twofold: first, to analyze the significance of some credit factors generally considered important by credit men, to discern which of these factors have been associated in the past with bad loans, and to determine whether or not this information can be used to predict the course of future transactions; second, to experiment with the use of statistical methods that may be applied to the problem of credit risk selection. Statistical methods, particularly small sample techniques, have not heretofore been used to any great extent in credit analysis, and their value in such analysis is not well known. This is regrettable, for the orderly recording of experience, which

is the essence of the statistical method, should aid considerably in solving risk problems.

The statistical method evolved in this study has been designed to permit analysis of loan experience without undue expenditure of labor, and its application is simple enough, we believe, to be of practical value to credit executives in solving some of their own particular problems. But the method has its shortcomings as well as its advantages. Although it may be effectively used for testing various general hypotheses and for discovering unsuspected relations between credit information and risk experience, it is an inferior method for determining what type of credit policy will produce lowest costs and highest profits. Detailed consideration of the proper approach to the questions of costs and credit policy will be given in a later chapter.

CHARACTERISTICS OF CONSUMER INSTALMENT CREDIT

Provision for periodic repayment is the most general characteristic of consumer instalment credit, but a number of others are fairly typical. Loans are for the most part small; nearly all are substantially less than a thousand dollars in size, and the majority are less than five hundred dollars. The proceeds are usually employed by ultimate consumers to purchase goods, to finance a current deficit, or to meet a personal emergency; but they are also used for business purposes.[1] The security for these loans does not ordinarily consist of stocks and bonds or mortgageable real estate, which would be acceptable collateral for a loan at almost any commercial bank. The usual forms are endorsements by comakers, con-

[1] Loans used for consumption purposes cannot always be distinguished easily from those used for business purposes. When a small business enterprise buys a truck on the instalment plan, a business loan is undeniably involved. On the other hand, while the purchase of a passenger automobile would usually be considered a consumer loan, many passenger cars are used partly for business purposes.

ditional sales contracts, and chattel mortgages on automobiles or household goods; in many cases there is no security at all. Interest rates on consumer loans are on the whole higher than on business loans, but the costs of doing business are also higher. A number of different types of institutions make consumer instalment loans; the main ones are industrial banking companies, commercial banks, personal finance companies, sales finance companies, retail dealers, and credit unions.

In general, consumer instalment credit transactions may be classified in two broad groups—sales finance transactions and personal finance transactions. The former are handled largely by sales finance companies or retail merchants, and to a lesser extent by commercial banks and industrial banking companies; cash loan transactions are usually handled by personal finance companies, commercial banks, industrial banking companies, credit unions, and a number of lesser agencies. In sales finance, some retail merchants handle the entire transaction themselves—the investigation of risk, the arrangement of terms, and the collection of payments; others investigate the risk, arrange the terms, and then dispose of the customer's obligations to one of several agencies that discount and collect such paper; and still others leave all the arrangements to their financing agencies. In personal finance, the borrower applies to one of the available lending agencies for a loan of cash, and this agency, if it approves the application, assumes the task of collecting the account. The borrower uses the loan for some specified purpose or purposes; he may use it to purchase goods, in which case it may be a substitute for a sales finance transaction, or he may use it to meet emergencies or to settle pre-existing obligations.

In legal discussions it is extremely important to distinguish sales finance transactions from personal finance transactions, for a debt arising out of a bona fide sale of goods on the deferred payment plan is not legally a loan and is not subject to the maximum interest statutes. For purposes of risk analy-

sis, however, the distinction is of little use. Although we shall occasionally find it convenient to consider sales credit separately from personal credit, we shall usually prefer to consider both together; we shall use the term *loan* to include both cash loans and instalment sales transactions, and the term *lender* to include sales finance companies and retail merchants as well as cash lending agencies.

On the whole, consumer instalment lending institutions tend to establish themselves in urban areas and to grant credit to urban and suburban dwellers with moderate and regular incomes. These facts are reflected in the vocational composition and income distribution of their clientele. Persons of all occupations are included, from unskilled laborers to the higher-paid business and professional classes. The number of farmers included, however, is relatively small in comparison with the general population.[2] Farmers tend to seek other forms of credit since on the whole they have seasonal incomes unsuited to meeting regular monthly payments; as entrepreneurs, they can usually satisfy their personal, as well as their business needs with non-instalment loans from commercial banks and from a number of other institutions specially set up to provide credit to farmers.

The highest and lowest income classes also are underrepresented. Although the income distribution covers a wide range, substantially more than half of all the cases in the samples on which this study is based represent borrowers with incomes between $1200 and $3000; and among purchasers of used cars and borrowers from personal finance companies, more than 75 percent of each group falls within this income range.[3] The proportion of the total borrowing public included in this income group is considerably higher than the analogous proportion of the country's total population; the

[2] No farmer group is given in the occupational distribution presented in Table 13, pp. 70-71, because the number of farmers was too small to justify a separate classification.

[3] See Table 4, pp. 46-47.

latter proportion is only about 47 percent.[4] The well-to-do are underrepresented because they have relatively less need for consumer loans than do other classes; when they do require financing, they can usually obtain lower interest rates on non-instalment bank loans either unsecured or secured by stocks and bonds or real estate; and in any event they rarely have to resort to the higher-rate loans secured by comakers or chattel mortgages. The very poorest classes, the unemployed and the indigent and those with incomes substantially less than $1200, are underrepresented among borrowers by necessity rather than by choice; they are excluded from credit facilities by lenders' credit standards. Instalment loans are intended to be repaid out of income, and the main concern of lenders is that their borrowers shall have a means of livelihood. Therefore, customers usually must be employed or engaged in business, and they must receive a remuneration sufficient for their support. Probably every lender operates on a set of minimum income standards. These standards are seldom precisely formulated, and are capable of being waived in special circumstances; nevertheless, they serve to prevent paupers and near paupers from availing themselves of loan facilities.[5]

[4] This percentage, which was estimated for 1935-36 by the National Resources Committee, refers to the income class of $1000 to $3000. It includes all single persons and non-relief families. See *Consumer Incomes in the United States* (1938) Table 8, p. 25.

The picture we have presented is based on the operations of sales finance companies, personal finance companies, commercial banks, and industrial banking companies. If we had had data for other lending agencies, particularly retail merchants, we might have shown that even lower-income classes make extensive use of instalment credit. Retail dealers extend credit to very low-income classes, particularly in communities where clothing, cheap radios, and other low-priced goods are sold on the instalment plan. Furthermore, mail-order houses extend considerable amounts of instalment credit to farmers.

The limits of the interval $1200 to $3000 are not particularly significant since we do not know the precise points at which the overrepresented middle group ends and the underrepresented extreme groups begin. However, the chosen limits are convenient for broad illustrative purposes.

[5] The records of most lenders show a few cases of borrowers with little or no income, but these cases can usually be explained in terms of family or

RISK SELECTION

Because consumer credit is designed to be available to the general masses, and because small sums are involved, the detailed and exhaustive investigation of credit standing characteristic of most commercial loan transactions is not typical of consumer instalment credit transactions; a more routine and less individual procedure is necessary. The lender has to content himself with a rather limited amount of credit information. In essence, the process of risk selection is more one of rejecting a small number of undesirables from a large body of generally satisfactory applicants than one of selecting a limited number of high-grade risks. Despite this fact, the consumer credit business has grown rapidly, and consumer lenders usually succeed in avoiding undue losses.

Risk selection is effected not only by the interviewing of applicants but also by other methods. For instance, after deciding what class of customers it wishes to deal with, a lending firm can direct its advertising to that class; and by making known its general requirements for loans, it can dissuade a great number of unsatisfactory risks from applying for credit.

Standards of acceptability doubtless vary considerably from lender to lender, but certain broad principles appear fairly universal. The minimum income restriction, mentioned above, seems to be one of the fundamentals of risk selection. Another fundamental is the lender's insistence upon obtaining borrowers who are reasonably honest and fairly responsible in meeting their obligations. To assure this result, a good share of the credit investigation consists in checking

other personal relationships. Examples are a wife who borrows on the co-signature of her husband, a son who succeeds in buying a car on credit because of his father's credit standing, or an unemployed person who meets his expenses while seeking employment with the proceeds of a loan secured by co-signatures of friends. These cases do not occur frequently, and when they do occur the reported income is misleading.

applications for false statements, consulting credit bureaus and previous creditors for signs of irresponsibility, and searching court records. Apparently some lenders reject a credit applicant if he has ever failed to meet financial obligations or if he falsifies his application; others, however, may be much more lenient.

In addition to minimum incomes and satisfactory past payment records, applicants are expected to possess other qualifications, and to supply on their applications information concerning these qualifications. This information, which concerns age, marital status, number of dependents, stability of residence and occupation, assets and liabilities, etc., is indicative of what credit officials generally consider important. The items collected for our analysis of risk elements are reasonably representative except for one item; no information is available on the important matter of past payment record.

Although a study of application forms demonstrates the items of information required, it does not even suggest the relative importance that credit officials attach to these items. Consequently, two sets of questionnaires were sent to credit officials, to determine how operating lenders evaluate credit factors. One set went to commercial bankers operating personal loan departments, and the other to retailers in several lines of business; 126 replies were received from the former and 688 replies from the latter.

The bankers, in their questionnaire, were requested to state what credit factors they considered important and to list them in order of importance. No hints were given concerning the answers expected except that reference to income was not to be included. Although the replies showed amazing variation, many of the differences seemed to be merely in terminology. The answers were classified into 15 convenient categories, such as character and reputation, stability of employment, borrower's liabilities, etc. These categories were then given ratings on a point system; a score of 5 was given

each category every time it was listed first in importance by a banker; a score of 4 was given every time it was listed second; 3 was given for third place; 2 for fourth place; and 1 for fifth place. These 15 categories were then consolidated into 5 broad groups; for example, the similar items of past payment record, character and reputation, and credit rating were combined to form the broad group, moral characteristics. A score for each broad group was then determined by computing a simple sum of the scores of the component items. All the scores, both single and combined, were then converted to index numbers, with the total score of the vocational characteristics as the base figure (i.e., 100). The results are presented in Table 1.

As the table stands, moral characteristics are most highly emphasized, financial characteristics are next, and vocational characteristics are a very close third. But this presentation of results may be extremely misleading, for the table could be rearranged to show a very different order of importance. The table was arranged in its present form because of certain resemblances among the grouped categories. Character and reputation, past payment record, and credit rating, all seemed to us to be virtually identical, and hence they were grouped together; but they may not have seemed identical to the bankers who filled in the questionnaires. Thus, although the present form of the table shows that moral characteristics are most important, with financial characteristics next, and vocational characteristics third, other interpretations are possible; for example, stability of occupation may be considered most important, with past payment record second, and character and reputation third.

The questionnaire for retail merchants was arranged differently. Six specific credit factors were listed on the questionnaire, and the merchants were requested to indicate the relative order of importance of these factors. The merchants were also requested to list any other factors that they con-

TABLE 1

INDEX OF RELATIVE IMPORTANCE ATTACHED TO VARIOUS CREDIT FACTORS OTHER THAN INCOME BY 126 COMMERCIAL BANKS[a]

Credit Factor	*Index*[b]	
Vocational characteristics		
Work performed	25	
Industry and employer	4	
Stability	71	
		100
Financial characteristics		
Assets	21	
Liabilities	46	
Income balance	36	
		103
Moral characteristics		
Past payment record	63	
Character and reputation	59	
Credit rating	40	
		162
Personal characteristics		
Age	5	
Marital status	4	
Number of dependents	18	
Stability of residence	3	
		30
Loan characteristics		
Security	13	
Duration	14	
		27

[a] Based on a questionnaire survey made by the National Bureau of Economic Research. A more detailed table, showing number of times each factor was given first or second or third place, is given in National Bureau of Economic Research (Financial Research Program), *Commercial Banks and Consumer Instalment Credit,* by John M. Chapman and Associates (1940) p. 138.

[b] For explanation see text, pp. 15-16.

sidered important, but few of them availed themselves of the opportunity. The replies were rated by the same point system used for the bank questionnaire; and the scores were converted to relatives, with occupation and permanence of employment equaling 100. The results are shown in Table 2.

In this table, item (1), occupation and permanence of employment, and item (2), past payment record, appear clearly as the two most important factors, with all others distinctly secondary. But items (3) and (4) could be combined to form a group similar to financial characteristics in Table 1, and then the combined score of 90 would bring this group

TABLE 2
INDEX OF RELATIVE IMPORTANCE ATTACHED TO VARIOUS CREDIT FACTORS BY 688 RETAIL ESTABLISHMENTS[a]

Credit Factor	*Index*[b]
(1) Occupation and permanence of employment	100
(2) Past payment record	98
(3) Terms conveniently adjusted to customer's income	48
(4) Additional instalment obligations to other stores	42
(5) Terms that will secure largest down payment and fastest liquidation possible	33
(6) Length of loan contract	16

[a] Based on a questionnaire survey conducted by the National Retail Credit Association in cooperation with the National Bureau of Economic Research (Financial Research Program), July and August, 1939. Answers were received from 688 retail establishments situated in 157 cities in the United States and Canada. The answers were graded by giving 5 points to the credit factors ranked first in importance by the retail merchants, 4 to those ranked second, 3 to those ranked third, 2 to those ranked fourth, and 1 to those ranked fifth; the final scores were then converted to relatives with item (1) equal to 100. A more detailed table, showing replies by various types of stores, is to be found in National Bureau of Economic Research (Financial Research Program), *Sales Finance Companies and Their Credit Practices,* by Wilbur C. Plummer and Ralph A. Young (1940) p. 137.
[b] For explanation, see text above.

into a position of importance with the first two items; similarly, the combining of groups (3), (5), and (6) would result in a total score of 97.

The two questionnaires together substantiate fairly well our views of the two fundamental requirements of risk selection. Lenders attach considerable importance to past payment record, which was one of our fundamentals. Although the questionnaires did not request information concerning minimum income, our other fundamental, its importance may be gauged in other ways. For all practical purposes the minimum income requirement means that borrowers must be employed and self-supporting; and since the questionnaires indicate emphatically that borrowers are expected to be employed in stable positions, the matter of minimum income adequate for self-support can almost be taken for granted. In addition to employment stability and repayment record, other factors such as borrower liabilities and the relation of income to obligation are important, but no attempt is made in this study to determine the relative importance placed upon these factors by credit executives.

NATURE OF PROBLEM

The specific problem undertaken in this study is the analysis, by use of statistical methods, of some credit factors generally considered important in consumer instalment financing. The data on which the study is based were transcribed from actual loan applications, and were contributed by 37 lending concerns operating in various phases of consumer instalment credit. About 7200 loans were represented, of which about 2700 cases were supplied by commercial banks operating personal loan departments, 1400 by personal finance companies, 1300 by industrial banking companies, 1400 by automobile finance companies, and 400 by appliance finance companies. The data obtained covered a number of bor-

rower characteristics: age, sex, marital status, number of dependents, income, occupation, number of years at occupation, number of years at present address, borrower's assets and liabilities. Information was also secured concerning the chief characteristics of the loan contract: the amount of the loan, number of months for repayment, intended use of funds in the case of cash loans, and the amount of down payment in instalment sales transactions. These data are readily available on most applications and are adaptable to statistical analysis. Information was not obtained on the important question of past payment record and similar considerations, since such data were difficult to obtain in a form suitable for analysis. No information could be secured on matters like physical and mental health, which are certainly germane to the risk problem, but which obviously do not lend themselves to analysis in a statistical study of credit risks.

The present report is concerned solely with the selection of risks and does not deal with the matter of collecting accounts. This qualification of the practical significance of the study is important, for leniency in selection may be partly offset by more rigorous collection policy, and vice versa. The cure for excessive delinquency and charge-off losses, among borrowers as a whole or in some particular class of borrowers, is not always a better selection of risks; in some cases it may be found in better collection methods.

Perhaps the most serious limitation of the present study is that it is based upon data derived from applications that were carefully investigated and finally accepted. The findings therefore pertain to high-grade, selected risks and not to risks in general. Since we have only meager data on the reasons for rejecting applicants and no data whatsoever that show how rejected applicants would have behaved if they had been granted loans, the opportunities for determining the effectiveness of existing methods of risk selection are few.

This limitation is no drawback, however, to lenders primarily interested in reducing losses by further raising of credit restrictions. Even among the selected, high-grade risks, different degrees of excellence exist. On the basis of the findings presented here, or on the basis of a similar study of his own past loan experience, a lender may determine the characteristics of the most desirable of his present customers; he may then supplement his existing credit standards with others to obtain an even more highly selected group of customers.

On the other hand, if a lender is interested in increasing the volume of loans as far as possible, the value of this study—or of any study based on past loan experience—is distinctly limited. The lender's problem is to determine which of the borrowers hitherto excluded can be safely included in the acceptable class. One possible procedure is to make experimental loans, which amounts to a temporary lowering of standards, with a possible increase in losses, and a subsequent adjustment of standards on the basis of the newly gained experience. Another possible procedure is to follow the experience of some other lender who has already relaxed credit standards. Of course, the methods of analysis used in the present study are appropriate for evaluating experience with experimental loans or for evaluating the experience of another lender.