

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: The Quality of Consumer Instalment Credit

Volume Author/Editor: Moore, Geoffrey H. and Philip A Klein

Volume Publisher: UMI

Volume ISBN: 0-870-14484-7

Volume URL: <http://www.nber.org/books/moor67-1>

Publication Date: 1967

Chapter Title: Appendix H: Estimation of Delinquency and Repossession Risk from Maturity and Down Payment Information on New-Auto Contracts

Chapter Author: Geoffrey H. Moore, Philip A Klein

Chapter URL: <http://www.nber.org/chapters/c1471>

Chapter pages in book: (p. 233 - 254)

Appendix H: Estimation of Delinquency and Repossession Risk from Maturity and Down Payment Information on New-Auto Contracts

1. GENERAL METHOD

The objective is to derive an estimate of the subsequent rate of delinquency or repossession from a given distribution of new-automobile credit contracts, according to maturity or down payment. That is, what over-all rate of repayment difficulty could be expected when the proportion of contracts in each maturity or down-payment class is known? Furthermore, we wish to make a series of such estimates, over time, corresponding to the changing terms of contracts that actually originated and to compare such a series with delinquency and repossession rates actually observed.

For sales finance companies, we have estimated repossession risk, since the available time series with which to compare the estimates pertained to repossession and loss rates. For commercial banks, estimates of delinquency risk were made in order to compare them with the available actual delinquency rate series. The procedure was, first, to derive from the 1954-55 Federal Reserve survey of new-car purchases the delinquency and repossession rates associated with given maturity or down-payment classes of contracts. Then weighted averages of these rates were calculated, using as weights the distributions available annually or monthly of contracts according to maturity or down payment. The resulting averages show how collection experience might be expected to vary from that prevailing on contracts originating in 1954-55 in view of the variations in credit terms, other things being equal.

The following data were used for the sales finance company estimates of repossession risk:

1. Repossession rates on new-auto contracts by maturity or down-payment class, 1954-55 (Tables H-1 and H-2). These data are from the lender report sample and cover all lenders, not just sales finance companies, since separate tabulations of repossessions by type of lender were not available. Repossessions include those occurring at any time during the period between contract origination (1954 and 1955) and date of survey (June-July 1956), and the number of contracts repossessed is taken as a ratio to all contracts in the maturity or down-payment class. The lender report was used instead of the personal interview sample because it appears to give more complete coverage of credit difficulty and also to represent more accurately its relationship to length of contract. Even in the lender report sample the repossession rates for the longer contracts are probably too low, due to incomplete coverage of the entire history of the longer loans, many of which originated late in the period covered by the survey (see Chapter 3, "Interarea Analysis"). Estimates of repossession rates for 1954-55 contracts classified by ratio of contract balance to dealer cost instead of by down payment percentage also were obtained. The method is described in Section 2, below.

2. Median percentages of new-auto contracts both above and below a certain maturity, annually, 1953-61, as reported for nineteen sales finance companies by the First National Bank of Chicago. The maturity classes used in these reports changed during the period. The dividing line was at 18 months, 1953-57; 24 months, 1955-60; and 30 months, 1957-61. The divisions at 18 and 24 months were extended back to 1948 and to 1950, respectively, by using the aggregate data for two and for five large sales finance companies reported by Moore, Atkinson, and Klein.

3. Median percentages of new-auto contracts with down payment less than 33 per cent, annually, 1953-57, and with "advance in excess of dealer cost," annually, 1957-61, as reported for nineteen sales finance companies by the First National Bank of Chicago. The down-payment distribution was extended back to 1950 by using the aggregate data for five large sales finance companies reported by Moore, Atkinson, and Klein.

One series of repossession risk estimates was obtained from the maturity distributions (Table H-3) and another from the down-payment and dealer cost-ratio distributions (Table H-4). These estimates were averaged to obtain a series influenced by both aspects of credit terms (see Table 47). Finally, the risk estimates were converted to index numbers on the base of their average during 1954-55.

For commercial banks, estimates of delinquency risk were derived from the following data:

1. Delinquency rates on new-auto contracts cross-classified by maturity and dealer-cost ratio, 1954-55. The method of deriving these rates is described in Section 2, below. They pertain to all lenders, not only to commercial banks, since tabulations of delinquencies by type of lender are not available. Purchased paper and direct loans are not distinguished, for the same reason. The same limitations with respect to the rates on long-maturity contracts apply here as in the case of repossession rates, mentioned above.

2. Distributions of new-auto contracts cross-classified by maturity and by ratio of contract balance to dealer cost, as reported by a sample of commercial banks to the Federal Reserve, monthly, 1957-62. Data were used separately for purchased and direct paper. These cross-classifications are based on reports from about half the members of banks which report maturity distributions separately, and the maturity data extend one year farther back (i.e., to 1956), but the cross-classification provides more information. When the Federal Reserve survey was initiated, in August 1956, contract down-payment distributions were obtained, but after a few months these were superseded by the dealer-cost ratios. We did not use the early down-payment data. Neither did we use the distributions of used-car paper by maturity and ratio of contract balance to wholesale value, also reported monthly by the Federal Reserve. This would have been desirable since the actual delinquency rates (American Bankers Association series) with which the risk estimates are to be compared do not distinguish new- and used-auto loans, and may well be affected by shifts in their proportions. However, the data required to translate used-car terms into delinquency-risk estimates are not available from the Federal Reserve 1954-55 survey, which was confined to new cars.

3. Distributions of new-auto contracts by maturity and by dealer-cost ratio (not cross-classified), for purchased paper and direct loans by banks, as reported in the Federal Reserve new-car purchases survey for the years 1954 and 1955 (Table H-5, cols. 7 and 8).

The application of the monthly distributions to obtain weighted averages of the 1954-55 delinquency rates produced two monthly series of delinquency-risk estimates for commercial banks, one for purchased paper and the other for direct loans, 1957-64 (Table H-6). The two differ only because of differences in the maturities and dealer-cost ratios of the two categories. Roughly comparable annual estimates for 1954 and 1955 were obtained by applying the distributions in (3) above (see Table H-5). The annual estimates, 1954-55, 1957-62, were converted to index numbers by dividing by the 1954-55 average (see Table 48).

Table H-5, incidentally, permits a direct comparison of 1954 and 1955 estimates of delinquency and repossession rates by type of lender, based on the distributions of contracts according to maturity and dealer-cost ratios prevailing in those years. The maturity distributions for sales finance companies in both years were quite similar to those for banks' purchased paper, both shifting toward longer maturities in 1955. Hence the corresponding repossession and delinquency risk estimates are very nearly the same. The dealer-cost ratio distributions for sales finance companies are somewhat more liberal than those for banks' purchased paper; hence the corresponding risk estimates are higher.¹ The lowest risk estimates shown are for banks' direct loans, while those for other institutions occupy an intermediate position.

The several delinquency and repossession-risk series show to what extent, as maturities lengthen, down payments get smaller, or dealer-cost ratios increase (or as all these things happen together), collection or repayment experience tends to worsen, and vice versa. Various factors operate to make the actual rates turn out differently from the estimated risk. One of the most prominent is the business cycle. Actual delinquency or repossession rates usually worsen during a recession

¹ Note that the sales finance company repossession rates for 1954 and 1955 in Table H-5 differ slightly from those in Tables H-3 and H-4. The differences arise partly because the maturity and down payment or dealer-cost ratio distributions differ among the sources used, partly because the final series in Tables H-3 and H-4 are adjusted to maintain comparability with other years.

and improve during a recovery, but these changes in economic conditions will not affect the estimated risk unless the lending terms change in a corresponding way. Indeed, if lending terms tighten during recession, the estimated risk will improve while the actual ratio is worsening. Over longer periods than a business cycle, many other things that have a bearing on loan experience may change and cause deviations from the estimated risk. In short, the estimates take into account only one of the factors determining loan experience, namely lending terms, although this is, as we have seen, an important one.

Furthermore, the risk estimates apply to contracts made during a given period and to what happens to them during their ensuing life. The actual rates available for banks or sales finance companies represent delinquencies, repossessions, or losses incurred during the month or year reported, without regard to when the contract originated. Hence the actual rates incurred on loans outstanding in a given period might be expected to lag behind the estimated risks on loans originated in that period. However, the lag is probably less than a year, on the average, since repayment difficulties tend to appear early in the life of an instalment contract.

Apart from the lag, the level of the estimated rates may differ markedly from the level of reported rates because of differences in the concept of the rate that is measured (see Chapter 7, notes 1 and 3). Other sources of divergence are evident from the inadequacies and lack of comparability of the data (see especially Section 2, below). The most that can be expected, therefore, is that the estimated risk will reveal some broad tendencies corresponding to those that show up somewhat later in actual credit experience.

2. ESTIMATES FOR CONTRACTS CLASSIFIED BY RATIO OF CONTRACT BALANCE TO DEALER COST

This part of the estimation problem proved most troublesome because both the Federal Reserve and the First National Bank of Chicago have substituted the dealer-cost ratio for the down payment ratio in their current reports on the characteristics of new-auto contracts, but no comprehensive data are as yet available showing repossessions or delinquencies on contracts classified by dealer-cost ratios (see Chapter 3,

note 3). What we have done is to reconstruct, out of the 1954-55 new-car purchases survey, estimates of what the repossession and delinquency rates would have been had the data been classified by dealer-cost ratios.

One of the links is provided by the fact that the 1954-55 survey did contain distributions of the number of contracts by down payment ratio (both personal interview and lender report sample) and by dealer-cost ratio (personal interview sample only). If we assume that when the contracts are arrayed separately by each of these ratios their order is substantially the same, the distributions can be matched and the dealer cost ratio that is equivalent to a given down payment ratio obtained. These will be approximately equivalent ratios for 1954-55, but not necessarily for other years when the down payment ratio may have been either more or less inflated relative to the dealer-cost ratio (see Section 3 below). We use the equivalents, however, only for the purpose of obtaining 1954-55 repossession and delinquency rates for corresponding down payment-dealer-cost ratio classes.

The three available percentage distributions are as follows:

Contract Down Payment Ratio	Personal Interview Data ^a		Lender Report Data ^a		Dealer- Cost Ratio	Personal Interview Data ^b	
	Noncum.	Cum.	Noncum.	Cum.		Noncum.	Cum.
0-9.9%	2.0	2.0	0.9	0.9	1.00 & over	23.1	23.1
10-14.9	1.6	3.6	1.2	2.1	.80-.99	36.5	59.6
15-19.9	2.6	6.2	2.3	4.4	.60-.79	21.9	81.5
20-24.9	5.4	11.6	5.3	9.7	.59 & under	18.5	100.0
25-29.9	10.5	22.1	13.5	23.2	Total	100.0	
30-34.9	19.6	41.7	22.4	45.6	Median	.85	
35-39.9	13.8	55.5	14.1	59.7			
40-44.9	9.9	65.4	9.7	69.4			
45-49.9	8.3	73.7	8.2	77.6			
50-59.9	12.5	86.2	11.1	88.7			
60-69.9	7.6	93.8	6.8	95.5			
70-79.9	4.4	98.2	3.4	98.9			
80-89.9	1.3	99.5	0.9	99.8			
90 & over	0.5	100.0	0.2	100.0			
Total	100.0		100.0				
Median	38 per cent		37 per cent				

^a Unpublished data from National Analysts 1954-55 New-Automobile Purchase Survey for the Federal Reserve Board.

^b *Consumer Instalment Credit*, Part IV, Table 40, p. 65; averages of the 1954 and 1955 distributions, weighted by the reported coverage ratios (23 and 34 respectively).

From these distributions the down payment classes that most closely match the dealer-cost classes in terms of the percentage of contracts included are:

<i>Contract Down Payment Percentage</i>	<i>Personal Interview Data</i>		<i>Lender Report Data</i>		<i>Dealer- Cost Ratio</i>	<i>Personal Interview Data</i>	
	<i>Noncum.</i>	<i>Cum.</i>	<i>Noncum.</i>	<i>Cum.</i>		<i>Noncum.</i>	<i>Cum.</i>
0-29.9	22.1	22.1	23.2	23.2	1.00 & over	23.1	23.1
30-39.9	33.4	55.5	36.5	59.7	.80-.99	36.5	59.6
40-49.9	18.2	73.7	17.9	77.6	.60-.79	21.9	81.5
50 & over	26.3	100.0	22.4	100.0	.59 & under	18.5	100.0

Thus it appears that in 1954-55 a dealer-cost ratio of 1.00 was roughly equivalent to a contract down payment of 30 per cent, .80 corresponded to 40 per cent, and .60 to about 55 per cent. The median dealer-cost ratio, .85, corresponded to a median down payment ratio of 37 or 38 per cent.

The dealer-cost ratio classes shown above, which are those used in the 1954-55 survey, are not quite the same as those used currently either by the Federal Reserve or the First National Bank of Chicago. To match the currently available classes, we adjust the preceding figures as follows: ²

<i>Dealer-Cost Ratio</i>	<i>Contract Down Payment Percentage</i>	<i>Personal Interview Data</i>		<i>Lender Report Data</i>	
		<i>Noncum.</i>	<i>Cum.</i>	<i>Noncum.</i>	<i>Cum.</i>
1.01 & over	0-29.9	22.1	22.1	23.2	23.2
.91-1.00	30-34.9	19.6	41.7	22.4	45.6
.81-.90	35-39.9	13.8	55.5	14.1	59.7
.80 & under	40 & over	44.5	100.0	40.3	100.0
Sub-total					
1.00 & under	30 & over	77.9		76.8	
Total		100.0		100.0	

In terms of these sets of "equivalent" class intervals we obtain repossession and delinquency rates for 1954-55 from the lender report sample (Table H-7).³ The rates provide a basis for estimating average

² One of the assumptions here, namely that the percentage of contracts with a dealer-cost ratio of exactly 1.00 is negligible, may be wide of the mark, but we do not know how to improve upon it.

³ The derived relationship between dealer-cost ratios and the derived repossession rates for 1954 compare quite closely with that reported for 1958 and

delinquency and repossession risks from the 1954-55 distributions of contracts by dealer-cost ratio (Table H-5), or from the current distributions compiled by the First National Bank of Chicago for sales finance companies (Table H-4), or from the current Federal Reserve data pertaining to commercial banks (Table H-6).

Use of these rates with the current Federal Reserve data requires a further step, however, because in this case we use dealer-cost ratios cross-classified with contract maturity. Repossession and delinquency rates based on such a cross-classification do not exist, but we estimate delinquency rates in Table H-8 on the assumption that maturity and dealer-cost ratios influence the rates independently, not jointly.⁴ A test of this assumption, for the only similar type of cross-tabulation that does exist, between maturity and "effective" down payment ratio (i.e., with down payment and new-car selling price adjusted for the over allowance on trade-in, if any—see below), is made in Table H-9. It shows that the method yields estimates that only roughly approximate those of a true cross-tabulation. Nevertheless, we have used the figures in Table H-8 to calculate average repossession and delinquency risks from the monthly distributions of commercial bank paper cross-classified by maturity and dealer-cost ratio, with the results shown in Table H-6.

3. A NOTE ON DEALERS' GROSS MARGINS

The dealer-cost ratio and down payment percentage permit one to calculate the dealer gross margin as a percentage of selling price. This affords a rough check on the reasonableness of the relationship between dealer cost and down payment derived in Section 2. If c is the ratio

1959 for a large sales finance company by McCracken, Mao, and Fricke (p. 138). Taking repossession rates in Table H-7 as a ratio to the rate for all contracts, the comparison is as follows:

<i>Dealer-Cost Ratio</i>	<i>Repossession Rates</i>		
	<i>1954-55</i>	<i>1958</i>	<i>1959</i>
1.11 and over } 1.06-1.10 } 1.01-1.05 }	2.4	3.7	3.4
.91-1.00	1.2	1.4	1.5
.90 or less	0.3	0.4	0.4
All Contracts	1.0	1.0	1.0

⁴ Repossession rates could be estimated similarly, but this was not done because comparable actual repossession-rate series with which to compare the risk estimates are lacking.

of loan balance to dealer cost, and d the ratio of down payment to selling price, then the dealer gross margin, m , is $1 - \frac{1-d}{c}$. Applying this formula to the median figures for 1954-55 (.85 for dealer cost and 37 or 38 per cent for down payment), the dealer margin is 26 or 27 per cent. Apparently the margins tend to be higher when the dealer-cost ratio is high and the down payment low, perhaps in compensation for the greater risk or because of differences in bargaining power. The figures cited in Section 2 work out as follows:

<i>Dealer-Cost Ratio</i>	<i>Contract Down Payment (per cent)</i>	<i>Dealer Margin (per cent)</i>
1.00	30	30
.80	40	25
.60	55	25

These calculated margins (and the down payments) are inflated to some degree by the practice of overallowing for trade-ins—i.e., instead of reducing the new-car price, the dealers increase the valuation of the used car typically traded in (which is included in the down payment). The Federal Reserve study calculated the “effective” down payment, eliminating the overallowance by substituting the estimated wholesale price of the used car for the trade-in allowance. Although no direct comparisons were made in the Federal Reserve report, the following medians for 1955 can be derived from Tables 44 and 45 in Part IV of the report:

	<i>Dealer-Cost Ratio</i>	<i>“Effective” Down Payment (per cent)</i>	<i>“Effective” Dealer Margin (per cent)</i>
All contracts	.88	27	17
Sales finance company, “other”	.94	24	19
Sales finance company, 4 major cos.	.92	25	18
“Other” lenders	.92	26	20
Banks’ purchased paper	.88	27	17
Banks’ direct loans	.77	34	14

The “effective” down payments and dealer margins are substantially lower than the contract down payments and corresponding margins, but in both cases the margin diminishes as the down payment increases and the dealer-cost ratio declines.

TABLE H-1
 Repossession and Delinquency Rates for New-Automobile Contracts Classified by Original Maturity, 1954-55

Original Maturity	Number of Contracts		Delinquent	Repossession Rate (per cent)	Delinquency Rate (per cent)	Percentage Distribution of All Contracts
	Total	Reposessed				
Less than 18 mos.	856	2	9	0.2	1.1	9.6
18	588	5	10	0.9	1.7	6.6
19-23	99	0	2	0	2.0	1.1
24	2,943	40	100	1.4	3.4	33.2
25-29	78	2	5	2.6	6.4	0.9
30	2,982	80	140	2.7	4.7	33.6
31-35	98	7	15	7.1	15.3	1.1
36	1,209	29	67	2.4	5.5	13.6
More than 36 mos.	23	1	1	4.3	4.3	0.3
Total	8,876	166	349	1.9	3.9	100.0
Subtotals						
18 mos. and under	1,444	7	19	0.5	1.3	16.3
19 mos. and over	7,432	159	330	2.1	4.4	83.7
24 mos. and under	4,486	47	121	1.0	2.7	50.5
25 mos. and over	4,390	119	228	2.7	5.2	49.5
30 mos. and over	7,546	129	266	1.7	3.5	85.0
31 mos. and over	1,330	37	83	2.8	6.2	15.0
24 mos. and under	4,486	47	121	1.0	2.7	50.5
25-30 mos.	3,060	82	145	2.7	4.7	34.5
31-36 mos.	1,307	36	82	2.8	6.3	14.7
Over 36 mos.	23	1	1	4.3	4.3	0.3
Under 30 mos.	4,564	49	126	1.1	2.8	51.4
30-35 mos.	3,080	87	155	2.8	5.0	34.7
36 mos. and over	1,232	30	68	2.4	5.5	13.9

Source: Unpublished lender report data from National Analysts New-Automobile Purchase Survey for the Federal Reserve Board.

TABLE H-2
*Repossession and Delinquency Rates for New-Automobile Contracts Classified
 by Contract Down Payment Ratio, 1954-55*

Ratio, Contract Down Payment to Contract Car Price	Number of Contracts		Repossession Rate (per cent)	Delinquency Rate (per cent)	Percentage Distribution of All Contracts
	Total	Delinquent			
Less than 10%	70	4	5.7	5.7	0.9
10-14.9	93	3	0	3.2	1.2
15-19.9	183	11	3.8	6.0	2.3
20-24.9	429	39	4.7	9.3	5.4
25-29.9	1,084	51	4.7	7.2	13.5
30-34.9	1,797	40	2.2	4.5	22.4
35-39.9	1,127	21	1.9	3.9	14.1
40-44.9	779	4	0.5	1.8	9.7
45-49.9	659	0	0	2.4	8.2
50-59.9	890	0	0	2.2	11.1
60-69.9	541	2	0.4	1.5	6.8
70-79.9	272	0	0	0	3.4
80-89.9	76	0	0	1.3	0.9
90-99.9	14	0	0	7.1	0.2
Total	8,014	149	1.9	4.0	100.0
Subtotals					
Under 30	1,859	82	4.4	7.3	23.2
30 & over	6,155	67	1.1	3.0	76.8
Under 35	3,656	122	3.3	5.9	45.6
35 & over	4,358	27	0.6	2.4	54.4

Source: Unpublished lender report data from National Analysts New-Automobile Purchase Survey for the Federal Reserve Board.

TABLE H-3
 Maturity Distribution of New-Automobile Contracts and Estimated Repossession
 Risk, Sales Finance Companies, 1948-65

	A		B		C		D		E	
	18 Mos. & Under	19 Mos. & Over	18 Mos. & Under	19 Mos. & Over	24 Mos. & Under	25 Mos. & Over	24 Mos. & Under	25 Mos. & Over	30 Mos. & Under	31 Mos. & Over
	<i>Percentage Distribution</i>									
1948	78	22								
1949	53	47								
1950	48	52			95	5				
1951	97	3			100	0				
1952	51	49			90	10				
1953	28	72	16.7	83.3	81	19				
1954	22	78	13.8	86.2	61	39				
1955			9.1	90.9	36	64	32.1	67.9		
1956			6.7	93.3	30 ^a	70 ^a	21.9	78.1		
1957			6.2	93.8			20.3	79.7	56.1	43.9
1958							17.2	82.8	36.1	63.9
1959							13.4	86.6	23.2	76.8
1960							13.7 ^a	86.3 ^a	19.2	80.8
1961									22.0	78.0
1962									18.6	81.4
1963									15.3	84.7
1964									14.6	85.4
1965									13.7	86.3
Reposs. rate (%), 1954-55	0.5	2.1	0.5	2.1	1.0	2.7	1.0	2.7	1.7	2.8

(continued)

TABLE H-3 (concluded)

	Weighted Average Repossession Risk (per cent), Based on Columns					Final Estimated Repossession Risk (per cent) ^b
	A	B	C	D	E	
1948	0.9					1.0
1949	1.3					1.4
1950	1.3		1.1			1.4
1951	0.5		1.0			0.6
1952	1.3		1.2			1.4
1953	1.7	1.8	1.3			1.8
1954	1.7	1.9	1.7			1.9
1955		2.0	2.1	2.2		2.0
1956		2.0	2.2 ^a	2.3		2.1
1957		2.0		2.4	2.2	2.2
1958				2.4	2.4	2.4
1959				2.5	2.5	2.5
1960				2.5 ^a	2.6	2.6
1961						2.6
1962						2.6
1963						2.6
1964						2.6
1965						2.6

Source: Columns A, C—Moore, Atkinson, and Klein, "Changes in the Quality of Consumer Installment Credit", Table 22; Columns B, D, E—First National Bank of Chicago, "Installment Sales Finance Company Ratios," successive issues.

^aFirst six months.

^bBased on column E for 1957-65; D (reduced by 0.2 points) for 1955-56; B for 1953-55; A (raised by 0.1 points) for 1948-52. Column C was not used.

TABLE H-4
 Distribution of New-Automobile Contracts by Down Payment and Dealer-Cost Ratio, and Estimated
 Repossession Risk, Sales Finance Companies, 1950-65

	Contract Down Payment Ratio			Ratio Of Contract Balance To Dealer Cost		Weighted Average Repossession Risk (per cent) Based on Columns			Final Estimated Repossession Risk (per cent) ^b
	A	B	C	1.01 & Over	1.00 & Under	A	B	C	
1950	8								1.0
1951	3								0.8
1952	10								1.0
1953	14								1.2
1954	21	29.9	70.1				2.1		1.5
1955	33	40.3	59.7				2.4		1.9
1956	35 ^a	52.0	48.0				2.8		2.1
1957		57.2	42.8			2.3 ^a	3.0		2.2
1958		60.4	39.6	32.1	67.9		3.1	2.2	2.0
1959				28.6	71.4			2.0	2.2
1960				33.0	67.0			2.2	2.2
1961				32.1	67.9			2.2	2.2
1962				33.0	67.0			2.2	2.2
1963				35.0	65.0			2.3	2.3
1964				38.4	61.6			2.4	2.4
1965				38.8	61.2			2.4	2.4
Reposs. rate (%), 1954-55	4.4	1.1	4.4	4.4	1.1	4.4	1.1	4.4	2.4

Percentage Distribution

(Continued)

Notes to Table H-4

Source: Column A—Moore, Atkinson, Klein, "*Changes in Quality*", Table 29. Columns B, C—First National Bank of Chicago, "Instalment Sales Finance Company Ratios," successive issues.

The repossession rates, 1954-55, are from Table H-2, column 5. For the contract down payment distributions the class "30.0 and over" in Table H-2 was considered most nearly comparable to the class "33 per cent and over" here, because it includes a large volume of contracts at the 33 per cent level. For the method of deriving repossession rates for contracts classified by ratio of contract balance to dealer cost, see Section 2 of this appendix.

^aFirst six months.

^bBased on column C for 1957-65; Column B (reduced by 0.9 points) for 1953-56; Column A (reduced by 0.4 points) for 1950-52.

Table H-5

Estimates of Repossession and Delinquency Risk, by Type of Lender, 1954 and 1955

1. Estimates for 1954

	1954-55		Sales Finance						
	Reposs.	Delin.	Cos.			Banks			
	Rate	Rate	Four	Oth-	All	Purch.	Di-	Oth-	All
	(per cent)	(per cent)	Major	er	(5)	Paper	rect	er	Lend-
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
<i>Percentage Distribution Of Contracts</i>									
Contract Maturity (mos.)									
Under 30	1.1	2.8	53	46	51	52	79	61	59
30-35	} 2.7 ^a	5.0	37	42	38	36	14	27	31
36 and over		5.5	11	11	11	12	6	11	10
Total			101	99	100	100	99	99	100
<i>Percentage Of Sample Reporting</i>									
			14	4	18	8	7	3	37
<i>Percentage Distribution Of Contracts</i>									
Dealer Cost Ratio									
Under .60	0.1	1.7	19	b	19 ^c	20	26	b	22
.60-.79	0.3	2.1	18	b	18 ^c	26	28	b	23
.80-.99	2.1	4.2	42	b	42 ^c	38	35	b	38
1.00 and over	4.4	7.3	21	b	21 ^c	15	11	b	17
Total			100	b	100	99	100	b	100
<i>Percentage Of Sample Reporting</i>									
			7	2	9	4	4	2	23
Weighted Average Repossession Risk (per cent), based on									
Contract Maturity			1.9	2.0	1.9	1.9	1.4	1.7	1.8
Dealer Cost Ratio			1.9	b	1.9 ^c	1.6	1.3	b	1.6
Maturity and Cost Ratio ^d			1.9	2.0	1.9 ^c	1.8	1.4	1.7	1.7
Weighted Average Delinquency Risk (per cent), based on									
Contract Maturity			3.9	4.0	3.9	3.9	3.3	3.7	3.8
Dealer Cost Ratio			4.0	b	4.0 ^c	3.6	3.3	b	3.7
Maturity and Cost Ratio ^d			4.0	4.0	4.0	3.8	3.3	3.7	3.8

(Continued)

Table H-5 (concluded)

2. Estimates for 1955

	1954-55		Sales Finance							
	Reposs.	Delin.	Cos.			Banks				
	Rate	Rate	Four		All	Purch. Paper	Di. rect Loans	Oth- er Inst.	All Lend- ers	
	(per cent)	(per cent)	Ma- jor	Oth- er						(3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
<i>Percentage Distribution Of Contracts</i>										
Contract Maturity (mos.)										
Under 30	1.1	2.8	28	33	29	33	63	46	38	
30-35	} 2.7	5.0	46	42	45	42	26	33	40	
36 and over		5.5	26	25	26	25	9	20	22	
Total			100	100	100	100	98	99	100	
<i>Percentage Of Sample Reporting</i>										
			21	6	27	13	11	5	57	
<i>Percentage Distribution Of Contracts</i>										
Dealer Cost Ratio										
Under .60	0.1	1.7	12	13	12	16	23	12	16	
.60-.79	0.3	2.1	19	15	18	18	32	18	21	
.80-.99	2.1	4.2	36	34	36	40	32	36	35	
1.00 and over	4.4	7.3	33	38	34	25	12	34	27	
Total			100	100	100	99	99	100	99	
<i>Percentage Of Sample Reporting</i>										
			12	3	15	7	7	3	34	
Weighted Average Repossession Risk (per cent), based on										
Contract Maturity			2.3	2.2	2.2	2.2	1.7	2.0	2.1	
Dealer Cost Ratio			2.3	2.4	2.3	2.0	1.3	2.3	2.0	
Maturity and Cost Ratio ^d			2.3	2.3	2.2	2.1	1.5	2.2	2.0	
Weighted Average Delinquency Risk (per cent), based on										
Contract Maturity			4.5	4.4	4.5	4.4	3.6	4.1	4.3	
Dealer Cost Ratio			4.5	4.7	4.6	4.2	3.3	4.6	4.2	
Maturity and Cost Ratio ^d			4.5	4.6	4.6	4.3	3.4	4.4	4.2	

Quality of Consumer Instalment Credit

Notes to Table H-5

Source: Columns 1 & 2--Tables H-1 and H-7. Columns 3-9--*Consumer Instalment Credit*, Part IV, Tables 43 and 45 (maturity data are from the lender report sample, dealer cost ratio data are from the personal interview sample).

^aThe rates for the two maturity classes separately are 2.8 and 2.4 respectively. They are consolidated here because the decline in rate for the longest maturity is probably spurious, see Chapter 3.

^bData not shown in source because of too few cases.

^cFour major companies only.

^dSimple average of two preceding lines.

Table H-6
Estimated Delinquency Risk, New-Automobile Contracts, Commercial Banks, 1957-66
 (percentage of loans delinquent at some time during their life)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Aver.
	<i>Purchased Paper</i>												
1957						5.09	5.20	n.a.	n.a.	4.91	5.04	5.02	5.05 ^a
1958	n.a.	5.23	5.07	5.23	5.33	5.37	5.37	5.50	5.42	5.48	5.59	5.52	5.37 ^a
1959	5.51	5.63	5.69	5.56	5.63	5.70	5.69	5.85	5.74	5.60	5.77	5.83	5.68
1960	5.79	5.74	5.82	5.69	5.69	5.82	5.83	5.88	5.83	5.78	5.72	5.78	5.78
1961	5.74	5.87	5.64	5.80	5.79	5.79	5.92	5.99	5.97	5.84	5.75	5.62	5.81
1962	5.81	5.91	5.87	5.84	5.99	5.98	6.05	6.00	5.97	5.95	5.90	6.00	5.94
1963	6.16	6.17	6.10	5.99	6.10	6.14	6.24	6.27	6.30	6.16	6.07	6.22	6.16
1964	6.38	6.30	6.28	6.22	6.26	6.38	6.50	6.47	6.36	6.33	6.40	6.28	6.35
1965	6.21	6.36	6.33	6.28	6.26	6.46	6.42	6.45	6.52	6.45	6.37	6.38	6.37
1966	6.46	6.51	6.40	6.44	6.48	6.56							
	<i>Direct Loans</i>												
1957						3.13	3.22	n.a.	n.a.	3.01	3.11	3.00	3.13 ^a
1958	n.a.	3.07	3.18	3.05	3.33	3.41	3.59	3.65	3.50	3.47	3.30	3.70	3.39 ^a
1959	3.51	3.58	3.53	3.39	3.59	3.48	3.71	3.97	3.74	3.73	3.77	3.75	3.65
1960	3.64	3.90	3.81	3.78	3.82	4.03	3.96	3.94	4.15	4.12	4.16	3.97	3.94
1961	4.08	4.19	3.88	4.19	4.26	4.31	4.35	4.25	4.52	4.23	4.25	4.39	4.24
1962	4.39	4.48	4.46	4.47	4.51	4.69	4.68	4.74	4.71	4.49	4.43	4.50	4.55
1963	4.53	4.48	4.47	4.68	4.71	4.60	4.60	4.85	4.69	4.52	4.49	4.69	4.61
1964	4.73	4.86	4.55	4.62	4.72	4.82	4.92	5.00	4.90	4.93	4.80	4.68	4.79
1965	4.74	4.62	5.14	5.19	4.89	4.97	4.96	5.02	5.05	4.91	4.92	4.89	4.94
1966	5.00	4.64	4.60	4.72	4.63	4.59							

Quality of Consumer Instalment Credit

Notes to Table H-6

Source: Estimated by computing weighted averages of 1954-55 delinquency rates cross-classified by maturity and dealer-cost ratio (Table H-8), using as weights the Federal Reserve monthly percentage distribution of new-auto contracts reported by commercial banks. The second of the two distributions reported for a given month is used, without regard to the variation in the sample of banks covered from month to month. No seasonal adjustment required.

^aPart of year.

Table H-7

*Repossession and Delinquency Rates for Dealer-Cost-Ratio
Classes, 1954-55*

Contract Down Payment Ratio (per cent)	Equivalent Dealer Cost Ratios ^a (1)	Number of Contracts			Repos- session Rate (per cent) [(3) ÷ (2)] (5)	Delin- quency Rate (per cent) [(4) ÷ (2)] (6)
		Total (2)	Repos- sessed (3)	Delin- quent (4)		
0-29.9	1.00 & over	1,859	82	135	4.4	7.3
30-39.9	.80-.99	2,924	61	124	2.1	4.2
40-49.9	.60-.79	1,438	4	30	0.3	2.1
50 & over	.59 & under	1,793	2	30	0.1	1.7
0-29.9	1.01 & over	1,859	82	135	4.4	7.3
30-34.9	.91-1.00	1,797	40	80	2.2	4.5
35-39.9	.81-.90	1,127	21	44	1.9	3.9
40 & over	.80 & under	3,231	6	60	0.2	1.9
0-29.9	1.01 & over	1,859	82	135	4.4	7.3
30 & over	1.00 & under	6,155	67	184	1.1	3.0
Total		8,014	149	319	1.9	4.0

Source: Compiled from Table H-2.

^aThe top set of class intervals is used in the Federal Reserve 1954-55 new-car purchases study, the second set in the First National Bank of Chicago's survey of sales finance company ratios, and the third in the Federal Reserve survey of bank loans.

Table H-8

*Estimated Delinquency Rates for New-Automobile Contracts
Classified by Maturity and Dealer-Cost Ratio, 1954-55*

Dealer-Cost Ratio	Maturity				Total ^a
	24 Mos. & Under	25 - 30 Mos.	31 - 36 Mos.	Over 36 Mos.	
<i>Delinquency Rate (per cent)</i>					
1.01 and over	4.9	8.6	11.5	7.8	7.3
.91 - 1.00	3.0	5.3	7.1	4.8	4.5
.81 - .90	2.6	4.6	6.1	4.2	3.9
.80 and under	1.3	2.2	3.0	2.0	1.9
Total ^b	2.7	4.7	6.3	4.3	4.0

^aFrom Table H-7, column 6.

^bFrom Table H-1, column 5.

The estimates in each maturity-dealer-cost-ratio cell are obtained by assuming the same pattern within each column and row as that shown by the marginal column and row, e.g., the entry in the upper left corner is $\frac{2.7}{4.0} \times 7.3 = 4.9$.

This method assumes that the association of delinquency rates with dealer cost ratio is independent of maturity and that the association with maturity is independent of dealer-cost ratio.

TABLE H-9

*Test of Method of Estimating Delinquency Rates Within Maturity-
Down Payment Classes on Assumption of Independence*

Effective Down Payment Ratio (%)	Maturity			Total
	Under 30 Mos.	30 - 35 Mos.	36 Mos. & Over	
10-29	1.2(1.2)	1.2(1.4)	1.1(1.0)	1.2
30-39	0.8(1.1)	1.7(1.3)	0(0.9)	1.1
40 & over	0.8(0.7)	0(0.8)	0(0.6)	0.7
Total	1.0	1.2	0.8	1.0

Source: Special tabulations of personal interview data from National Analysts. New-Automobile Purchase Survey, 1954-55, for Federal Reserve Board.

^aParenthetic entries are computed by the method used in Table F 8, i.e., on the assumption of independence.