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# 3

## Instalment Credit

### RELATION TO DISPOSABLE PERSONAL INCOME

WE HAVE SEEN that instalment credit is the part of consumer credit most sensitive to business cycles. Now we want to know how important it is in the economy and if its importance has changed over time.

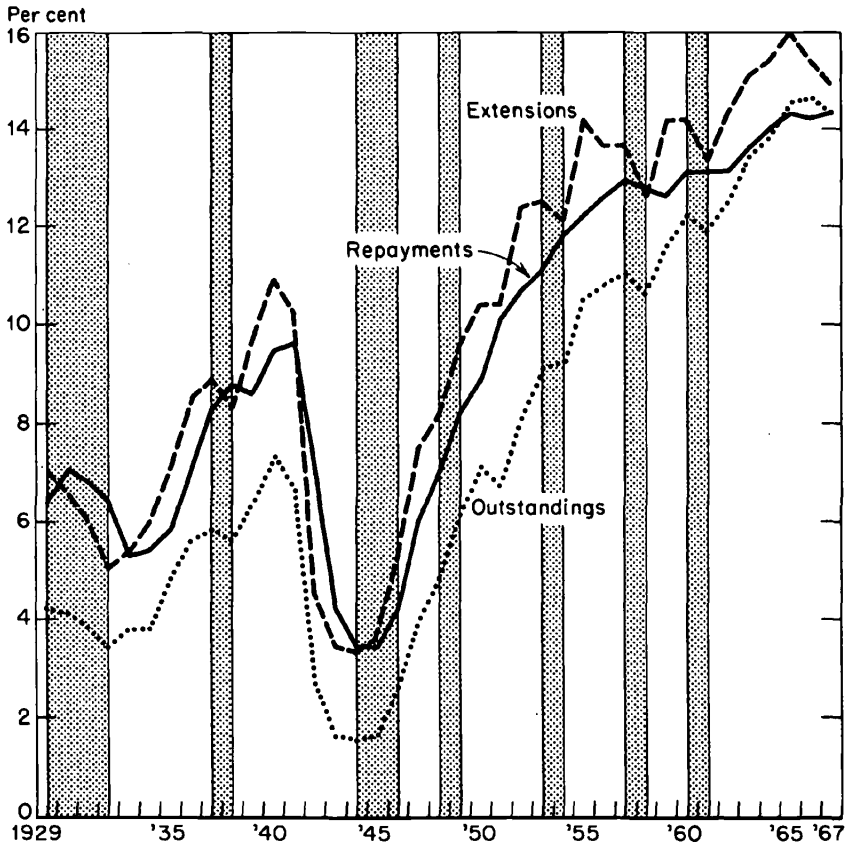
Chart 5 shows instalment credit extensions, repayments, and outstandings as percentages of disposable personal income for 1929-67. From this, we can determine the relative impact of business cycles on income and on credit, as well as the relative rates of growth of credit and income. Thus, if credit were growing at precisely the same rate as disposable income there would be no upward movement in the chart; or if the rates of change of the credit series exactly matched the cyclical rates of change in income the credit series would represent the same percentage of income during expansion and contraction and cycles would not be visible in the chart. In Chart 5, clearly both the secular and the cyclical relationships of instalment credit to disposable income show changes of importance.

The major finding is the striking increase in credit relative to disposable personal income since the end of World War II. Extensions have reached as high as 16 per cent of disposable personal income, although 13-14 per cent is more usual for the most recent period. This compares with percentages not much higher than 10 per cent for the prewar period. Outstandings and repayments have also reached higher levels relative to disposable personal income in the postwar period. Thus, despite the great growth in disposable personal income over the years since 1929, instalment credit, however measured, has grown at an even faster rate.

Once again, the cyclical volatility of credit can be observed in Chart

CHART 5

Instalment Credit Extensions, Repayments, and Outstandings as a Percentage of Disposable Personal Income, 1929-67



NOTE: Shaded areas represent business cycle contractions; white areas, expansions.

SOURCE: *Federal Reserve Bulletins* and OBE, *Business Statistics*.

5. In every recession shown there, with the exception of the first two postwar recessions, all three measures of instalment credit decreased relative to disposable personal income.<sup>1</sup>

We may note, too, the precipitous decline in the relative importance of credit during World War II. Production restrictions sharply affected both automobile buying and credit extensions. The bulk were affected

<sup>1</sup> Repayments did not fall in the first three postwar recessions.

by Regulation W. The consequence for the instalment credit purchase of cars is clearly shown in Chart 5.<sup>2</sup>

Table 3, closely related to Chart 5, indicates (in millions of dollars) the total change during expansions and contractions in both disposable personal income and total instalment credit outstanding during all the cyclical episodes since 1929.<sup>3</sup> These changes have also been shown on a per quarter basis so that it is possible to compare the average quarterly change in the amplitude of the changes in both income and instalment credit outstanding during the cycle phases of varying lengths. The greater severity of the prewar recessions shows up in quantifiable fashion. The total (net) change in both disposable income and in instalment credit outstanding was negative (the only case in the total comparisons at the bottom of the table for which this was true), but the percentage ratio is also the smallest, indicating the relatively insignificant size of instalment credit relative to disposable income as well as their relative volatilities, at that time. For all the other comparisons the percentage ratios are positive because the (net) totals during the postwar expansions and contractions are positive.<sup>4</sup> The percentage ratios are much higher during both expansions and contractions in the postwar period and we thus have an indication of the increase in the magnitude of the impact which swings in credit have exhibited relative to the swings in disposable income. Furthermore, the comparisons suggest that the swings in credit relative to income have been far greater during expansions than they have during contractions. For the entire period, the change in instalment credit outstanding appears to have constituted about one-fifth of the change in disposable income during both expansions and contractions, although the variability, as indicated in the specific ratios, is very great indeed.

<sup>2</sup> Because we shall subsequently be concerned with the automobile component of instalment credit, it is appropriate to point out that the pattern indicated in Chart 5 for total instalment credit corresponds in most important particulars to the pattern for automobile credit alone. Auto credit extensions have reached as much as 6 per cent of total disposable income in the postwar period, though they were usually no more than about 3 per cent in the prewar period. Outstandings and repayments behaved in the same fashion indicated in Chart 5 for total instalment credit.

<sup>3</sup> The only exception is for the termination of the series arbitrarily at the end of 1969, which was not an official turning point in the NBER business cycle chronology.

<sup>4</sup> The few times in which either disposable income or instalment credit declined absolutely during contractions are more than offset by the times when they increased, albeit customarily at decreasing rates, during contraction.

Table 3  
*Relation Between Change in Disposable Personal Income and  
 Net Change in Instalment Credit Outstanding: Cyclical Expansions  
 and Contractions During Calendar Years, 1929-69*

Calendar year (1)	Cycle Phase C-Contraction E-Expansion (2)	Change in Disposable Personal Income		Change in Instalment Credit Outstanding		Percentage Ratio <sup>a</sup> (col. 6 ÷ col. 4 × 100) (7)	Change in Percentage (8)
		Total (3)	Per Quarter (4)	Total (5)	Per Quarter (6)		
1929-32	C	- 34,567	-2,881	- 1,852	- 154	+ 5.35	-
1932-37	E	+ 22,502	+1,125	+ 2,446	+ 122	+ 10.84	+ 5.49
1937-38	C	- 5,713	-1,428	- 432	- 108	+ 7.56	- 3.28
1938-41 <sup>b</sup>	E	+ 27,195	+2,266	+ 2,399	+ 200	+ 8.83	+ 1.27
1944-46 <sup>b</sup>	C	-	-	-	-	-	-
1946-48	E	+ 29,117	+640	+ 4,824	+ 603	+ 16.57	-
1948-49	C	- 553	- 138	+ 2,594	+ 648	-469.57	-486.14
1949-53	E	+ 63,979	+3,999	+ 11,415	+ 713	+ 17.83	+487.40
1953-54	C	+ 4,881	+1,220	+ 563	+ 141	+ 11.56	- 6.27
1954-57	E	+ 51,079	+4,257	+ 10,299	+ 858	+ 20.16	+ 8.60
1957-58	C	+ 10,302	+2,576	- 255	- 64	- 2.48	- 22.64
1958-60	E	+ 31,218	+3,902	+ 9,190	+1,149	+ 29.45	+ 31.93
1960-61	C	+ 14,380	+3,595	+ 695	+ 174	+ 4.84	- 24.61
1961-69 <sup>c</sup>	E	+265,200	+8,288	+ 64,200	+2,006	+ 24.20	+ 19.36
Totals							
Prewar (1929-41)	C	- 40,280		- 2,284		+ 5.67	
	E	+ 49,697		+ 4,845		+ 9.75	

(continued)

Table 3 (concluded)

Calendar Year (1)	Cycle Phase C—Contraction E—Expansion (2)	Change in Disposable Personal Income		Change in Instalment Credit Outstanding		Percentage Ratio <sup>a</sup> (col. 6 ÷ col. 4 × 100) (7)	Change in Percentage (8)
		Total (3)	Per Quarter (4)	Total (5)	Per Quarter (6)		
Postwar (1946–69)	C	+ 29,010		+ 3,597		+ 12.40	
	E	+440,593		+ 99,928		+ 22.68	
Both (1929–41, 1946–69)	C	- 11,270		+ 1,313		- 11.65	
	E	+490,290		+104,773		+ 21.37	

<sup>a</sup>A + sign indicates increases in both credit and income in the same direction; a - sign denotes change in the offsetting direction. Calculations are based on per quarter comparisons and differ from totals only due to rounding errors.

<sup>b</sup>The 1938–44 expansion has been truncated to 1938–41, since after 1941 the consumption and instalment credit sectors were powerfully affected by wartime controls. The 1944–46 contraction has been eliminated for the same reasons.

<sup>c</sup>The end of 1969 has been utilized in the calculations, but was, of course, not an official NBER turning point.

NOTE: Disposable personal income and net change in instalment credit are in millions of dollars.

SOURCE: Disposable personal income—*The National Income and Product Accounts of the U.S., 1929–1965 Statistical Tables*, Department of Commerce, O.B.E., pp. 32–33; Instalment credit—Federal Reserve Bank, *Supplement to Banking and Monetary Statistics*, p. 95, and *Federal Reserve Bulletin*, selected issues.

The most significant finding of the table, however, is the increased importance since World War II of instalment credit relative to disposable personal income during business cycles. The variability in the percentage ratios (column 8) has grown as well, relative to the prewar period, and here the signs still conform usually to the stage of the cycle, indicating that only rarely has either credit change or income change remained immune to the impact of cyclical forces.

### CONFORMITY TO BUSINESS CYCLES

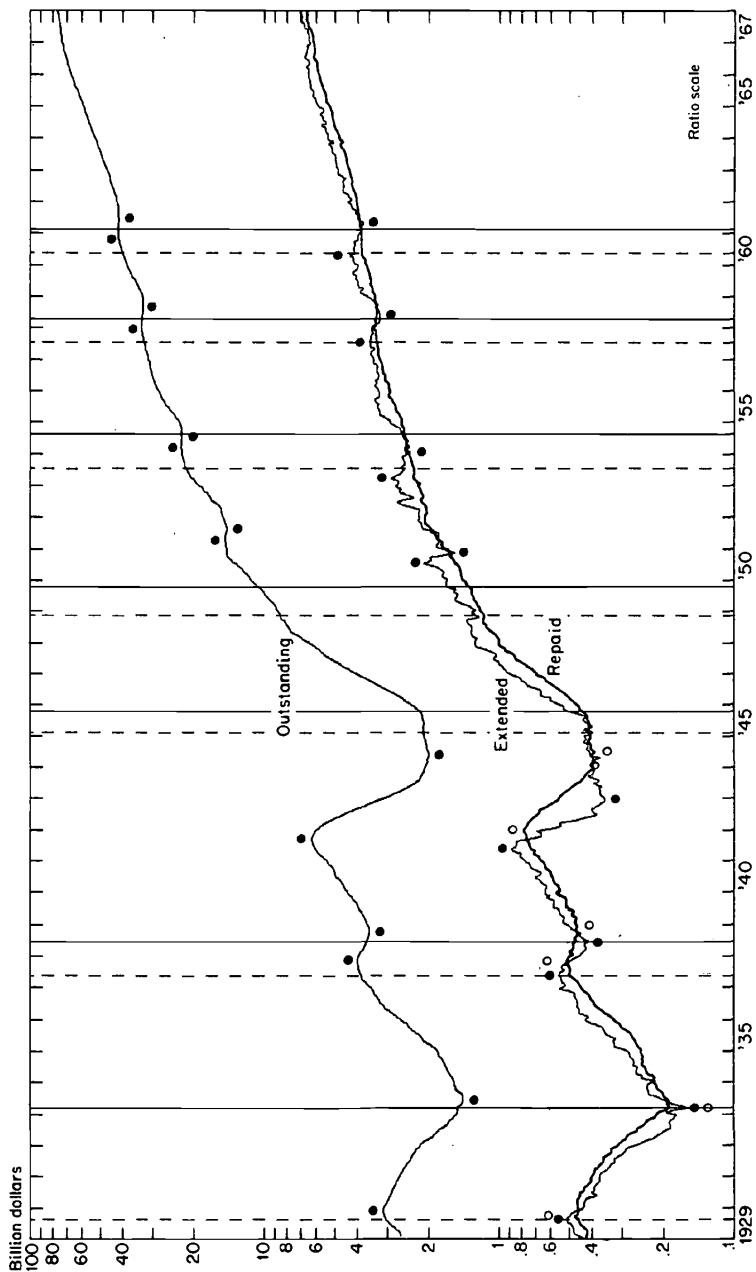
We have thus far examined only the total amount of credit outstanding. Three other basic measures of instalment credit activity are extensions of new credit, repayments of existing credit, and net change in outstandings. The four basic credit measures—outstandings, extensions, repayments, and net change—are related definitionally: Net change is the difference in outstandings between two successive dates like months or quarters, and net change is also equal to the algebraic sum of extensions (+) and repayments (-). The data on these four basic measures over the 1929-67 period constitute the basic record, and are presented in Appendix Tables C1-C4. It is turns in these measures that we will now analyze.<sup>5</sup>

We begin by considering the degree to which all these measures of instalment credit exhibit basic conformity to the cyclical record of aggregate economic activity in the United States. Specifically, does instalment credit as measured by extensions, repayments, outstandings, and net credit change in outstandings exhibit cycles that conform generally to American business cycles between 1929 and 1967? Conformity must be established and evaluated before the pattern of turns, which we consider subsequently, can be properly evaluated. If there are many skipped cycles or many extra cycles, for example, the results of an analysis of timing would have little significance. Charts 6 and 7 show the movement in these four measures of instalment credit during this period.

The general cyclical conformity of net credit change, extensions, and outstandings for both total instalment credit and total automobile

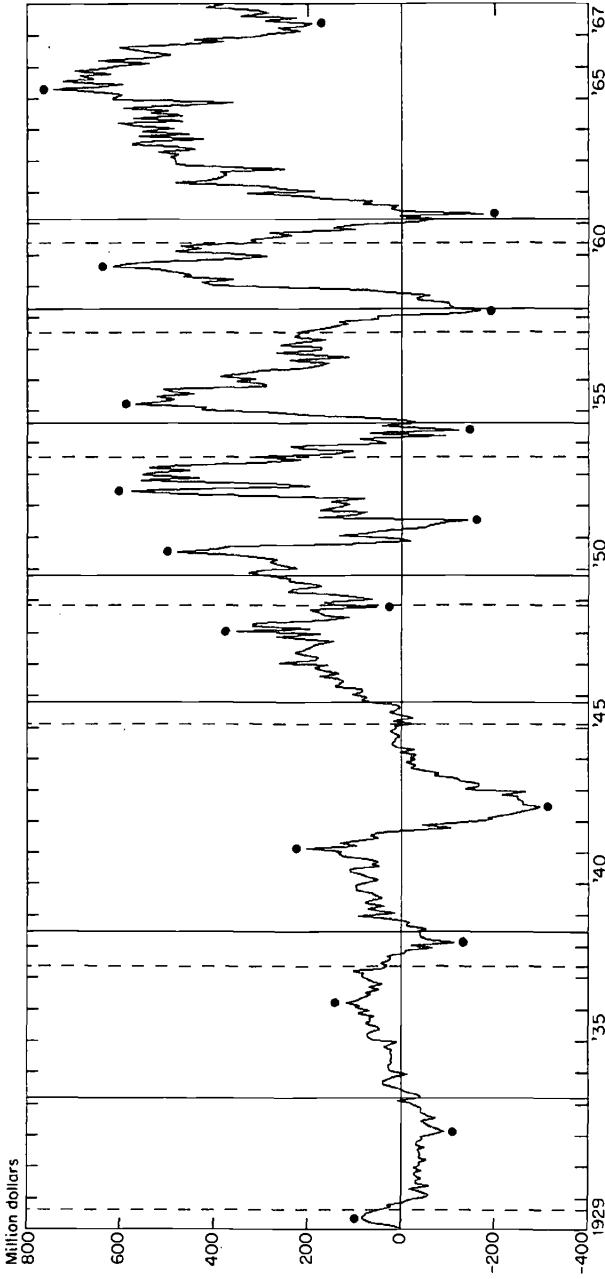
<sup>5</sup> In unadjusted data, outstandings at the beginning of month  $t$  plus extensions during  $t$  minus repayments during  $t$  must equal outstandings at the end of  $t$ ; thus net change in outstandings between the beginning and end of  $t$  will necessarily equal extensions minus repayments during  $t$ . However, in seasonally adjusted data, since outstandings, extensions, and repayments are separately adjusted, it will not generally be true that seasonally adjusted extensions minus seasonally adjusted repayments will equal seasonally adjusted change in outstandings.

**CHART 6**  
**Instalment Credit Extended, Repaid, and Outstanding, 1929-67**



**NOTE:** Vertical broken lines represent business cycle peaks; vertical solid lines, troughs. Dots (outstanding and extended) or circles (repaid) identify peaks and troughs of specific cycles.  
**SOURCE:** Board of Governors, Federal Reserve System.

CHART 7  
Total Instalment Credit Outstanding, Net Change, 1929-67



Note: Vertical broken lines represent business cycle peaks; vertical solid lines, troughs. Dots identify peaks and troughs of specific cycles.

SOURCE: Board of Governors, Federal Reserve System.

credit throughout the period under review is shown clearly in Chart 8. The conformity of these measures is somewhat greater during the prewar period. Although the repayments series for both auto and total instalment credit also conform during the prewar period, they fail to conform in the postwar period. Indeed, the repayments series have shown no cycles at all in the period since 1945. All the credit series show a wartime cycle in the early 1940's (previously considered in connection with credit outstanding), which does not coincide with the reference chronology. This cycle is associated principally with the wartime production restriction but was also affected by the imposition of Regulation W.<sup>6</sup>

All the credit series skip the postwar readjustment cycle (1945) except auto credit extensions. Actually we shall see that this is a mild recession in extensions, and that outstandings and repayments reflect this episode, too, although not sufficiently strongly to produce turning points.

The pattern of conformity during the 1948-49 recession is interesting. The postwar demand for consumer durables was so strong and the use of credit as a means of paying for these durables was growing so rapidly that only the most volatile of the credit series, net credit change, reflects this recession. The implications of this will be considered in the subsequent consideration of the timing pattern.

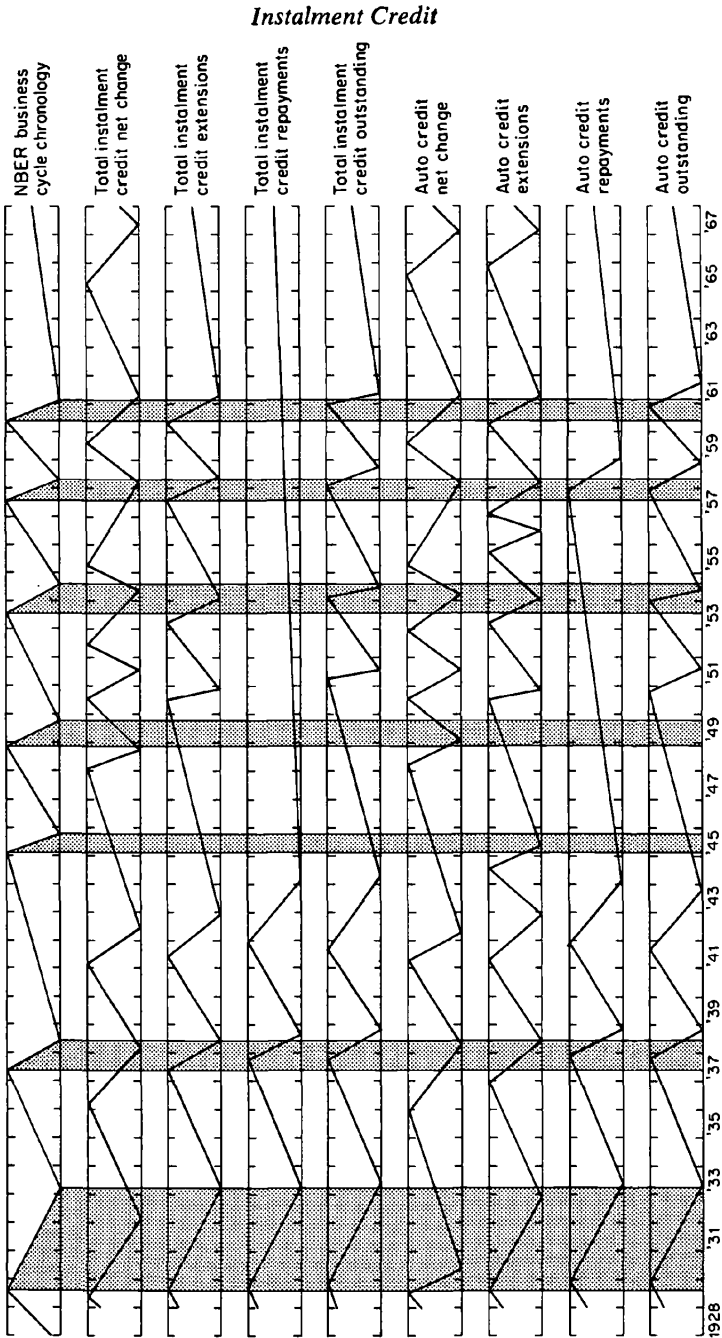
We find that all the credit series (again with the exception of the two repayments series) show an extra cycle in 1950-51, which can be related to the Korean War and the reimposition of Regulation W. All the credit series except the repayments series exhibit conformity to the 1953-54 cyclical pattern, though the timing here will be of considerable interest to us.

The series dealing with automobile net change in outstandings and with extensions show an extra cycle in 1955-56, which was associated with the liberalization in instalment credit terms for autos in 1955.<sup>7</sup>

<sup>6</sup> For a full discussion of Regulation W, see Robert Paul Shay, *Regulation W: Experiment in Credit Control*, Orono, Maine, 1953.

<sup>7</sup> Considerable attention, both within the automobile industry and among economists, has been paid to the experience of 1955-56. The rapid liberalization of terms in 1955 may well have encouraged many who might otherwise not have purchased an automobile until 1956 to purchase in the earlier year. This produced a greater increase in sales in 1955, but because terms could not (or at any rate did not) continue easing at the same rate in 1956 as in 1954-55, sales in 1956 decreased. By luring some of the 1956 customers into the market in 1955, the easing of terms in 1955 may well have contributed to this extra cycle.

**CHART 8**  
**Chronology of Specific Cycles in Four Measures of Instalment Credit and Four Measures of Auto Credit at Business Cycle Peaks and Troughs, 1929-67**



**NOTE:** Shaded areas represent business cycle contractions; white areas, expansions.  
**SOURCE:** See Charts 6, 7, 10, and 13.

After 1956 all the credit series conform reasonably well to the third and fourth postwar recessions, although it must be emphasized that by "conformity" we here mean little more than a cyclical movement in the credit series that can be associated with a corresponding movement in the business cycles.

It is possible to argue that the conformity of these series to the business cycle depends more on whether the cycles involved are severe or mild and that there have not been significant changes in their relationships to business cycles since World War II. Unfortunately it is impossible to test this properly. The two prewar recessions were the most severe of any included. Data are not available to examine the degree of conformity exhibited by credit movements during cycles in the 1920's; moreover, instalment credit was in its infancy during this earlier period. Despite some variation in the intensity or severity of the postwar cycles, all have been relatively mild. One of the more severe recessions occurred in 1948-49 and the conformity of instalment credit series during this period was, for the reasons already discussed, poor. Other than that (and the immediate postwar cycle) one could not rank the degree of conformity in each recession period with any degree of precision. Nonetheless, it is clear that the series dealing with instalment credit reveal a rather high degree of conformity to the cycles in aggregate economic activity throughout the period under review. We may therefore conclude that it is appropriate to examine the pattern of turns in these series more closely.

### **TIMING DURING BUSINESS CYCLES**

A detailed listing of the turning points in each of the four measures of instalment credit and the timing relationships of each turn to the business cycle turn are given in Tables 1, 4, and 5. In Table 6, for peaks and for troughs, we have indicated the average timing relationship for the prewar period, the postwar period, and for the entire period, including in each average all the comparable turns.<sup>8</sup>

In Table 6, it is clear that for each cycle except 1929-33 and 1948-49 the average lead in net change in outstandings is much longer at peaks than at troughs. The disparity has been greater, but only slightly so, since the war. There has been variability in the lead, more

<sup>8</sup> That is, specific turns have been related wherever possible to reference turns. In effect, only the skipped cycles and extra cycles were not considered.

Table 4  
Timing Analysis, Total Instalment Credit Outstanding,  
Extensions, and Repayments at Business Cycle Peaks and Troughs, 1929-67

										Peaks					Troughs				
Bus. Cycle Peak	Net Change in Total Instal. Credit (1)	Lead or Lag (+) (-) (2)	Total Instal. Credit Extensions (3)	Lead or Lag (+) (-) (4)	Total Instal. Credit Repayments (5)	Lead or Lag (+) (-) (6)	Bus. Cycle Trough	Net Change in Total Instal. Credit (7)	Lead or Lag (+) (-) (8)	Total Instal. Credit Extensions (9)	Lead or Lag (+) (-) (10)	Total Instal. Credit Repayments (11)	Lead or Lag (+) (-) (12)						
														8/29	5/29	- 3	8/29	0	9/29
5/37	3/36	-14	5/37	0	10/37	+5	6/38	2/38	- 4	6/38	0	8/38	+2						
2/45	NT	-	5/41	-	12/41	-	10/45	6/42	-	12/42	-	2/44	-						
11/48	1/48	-10	NT	-	NT	-	10/49	NT	-	NT	-	NT	-						
7/53	6/52	-13	7/50	-	7/50	-	10/48	7/51	-12	11/50	-	NT	-						
7/57	3/55	-28	3/53	-4	NT	-	8/54	5/54	- 3	1/54	-7	NT	-						
5/60	8/59	- 9	7/57	0	NT	-	4/58	3/58	- 1	5/58	+1	NT	-						
	4/65	-	4/60	-1	NT	-	2/61	4/61	+ 2	4/61	+2	NT	-						
							5/67	5/67	-										

NT = No turn.  
NOTE: Leads and lags are in months.  
SOURCE: Federal Reserve Bulletin.

Table 5  
*Summary of Timing of Instalment Credit: Net Credit Change,  
 Extensions, and Repayments at Business Cycles, 1929-67*

Line	Net Credit Change	Extensions	Repayments
1. Number of business cycle turns covered	14	14	14
2. Number of leads	11	3	0
3. Number of rough coincidences <sup>a</sup>	4(0)	8(5)	3(1)
4. Number of lags	1	2	3
5. Number of timing comparisons	12	10	4
6. Number of business cycle turns skipped	2	4	10
7. Number of extra specific cycle turns	6	4	2
8. Median lead (-) or lag (+) at peak	-11½	0	+3
9. Median lead (-) or lag (+) at trough	-3½	0	+1
10. Mean lead (-) or lag (+) at peak	-12.8	-1.0	+3.0
11. Mean lead (-) or lag (+) at trough	-5.2	-0.8	+1.0
12. Average deviation at peak <sup>b</sup>	5.5	1.2	2.0
13. Average deviation at trough <sup>b</sup>	4.9	2.5	1.0

<sup>a</sup>Rough coincidences include exact coincidences (shown in parentheses) and leads or lags of three months or less. The total number of timing comparisons (line 5) is equal to the total number of leads, exact coincidences, and lags.

<sup>b</sup>Average deviations have been computed from the mean leads and lags reported in lines 10 and 11.

NOTE: Computed at the end of the month.

SOURCE: Federal Reserve Board.

at peaks than at troughs, but the pattern is quite clear. Net change in credit outstanding is extremely volatile, reflecting, in effect, the difference between extensions and repayments.

Extensions in instalment credit present no significant divergence from the business cycle turns in Table 4. At both peaks and troughs there has been a slight average lead in the postwar period, but this is due entirely to the 1953-54 experience. This consistency shows up in comparatively small average deviations for the period as a whole.

Repayments need little further comment. They lagged during three of four turns prior to the war and have not exhibited downturns since then (Table 4). Credit has grown so rapidly that all postwar recessions have either not been reflected at all in the repayments series or have taken the form of a decreased rate of increase. In this connection it is important to remember that because of the increased importance of

Table 6  
*Average Timing and Deviation for Four Measures of Total Instalment  
 Credit at Business Cycle Peaks and Troughs, 1929-67  
 (in months)*

	Peaks			Troughs		
	Prewar	Postwar	Entire Period	Prewar	Postwar	Entire Period
Net credit change						
Average	-8.5(2)	-15.04(4)	-12.8(6)	-8.5(2)	-3.5(4)	-5.2(6)
Average deviation	5.5	6.5	5.5	5.5	4.2	4.9
Extensions <sup>a</sup>						
Average	0 (2)	- 1.7(3)	- 1.0(5)	0 (2)	-1.3(3)	-0.8(5)
Average deviation	0	1.6	1.2	0	3.8	2.5
Outstandings <sup>b</sup>						
Average	+3.5(2)	+ 7.2(3)	+ 5.7(5)	+3.5(2)	+2.2(3)	+2.7(5)
Average deviation	1.0	0.4	1.8	1.0	2.4	1.8
Repayments <sup>c</sup>						
Average	+3.0(2)	NT	+ 3.0(2)	+1.0(2)	NT	+1.0(2)
Average deviation	2.0		3.0	1.0		1.0

<sup>a</sup>Extensions skip one postwar peak and one trough.

<sup>b</sup>Outstandings skip one postwar peak and one trough.

<sup>c</sup>All prewar turns.

NT = No turns.

NOTE: Numbers in parentheses show the number of reference cycle comparisons included in each average. All instalment credit series skip the 1945 business cycle contraction. Prewar averages for all series cover the same reference cycle turns and are comparable. Postwar averages do not refer to the same turns and are not comparable. For details, see Tables 1 and 4.

SOURCE: Tables 1 and 4.

automatic stabilizers the postwar period is characterized by an increased ability of personal income (and more importantly, disposable personal income) to hold up during recessions.<sup>9</sup> We have

<sup>9</sup> The immediate reason for the cyclical insensitivity of repayments since World War II is that scheduled repayments are spread out over time so that they behave, in effect, like a moving average of extensions. They must, therefore, have a smaller amplitude than extensions: if the cycles in the latter are small or short enough, they will disappear altogether in repayments. We have considered this possibility in some detail below in connection with the discussion of automobile credit.

already noted that credit has grown more rapidly than income, but the relative stability of income has undoubtedly led to the disappearance of cycles in repayments.

Total credit outstanding, like its net change, presents a clear pattern of divergence from the business cycle—this time in the form of a lag. Credit outstanding is, of course, a stock, whereas net change in credit outstanding, which we saw in Table 4 typically leads the reference dates, is a flow. It is not uncommon for stocks to turn after flows (e.g., inventories). Table 1, already considered, shows that instalment credit outstanding has lagged at all five of the peaks since 1929 for which timing comparisons can be made. There has been small variability around the average lag of about five months. The lag has been smaller (something over two months) but equally variable at troughs. At both peaks and troughs there has been no clear-cut indication of a change in the pattern from the prewar to the postwar period.

Our basic data concerning the timing of net credit change, extension, and repayment of instalment credit are summarized in Table 5. The implications of this pattern of turns in instalment credit can best be considered if we look as well at the relationships of these averages to each other. This is done in Table 6 and suggests that these turns are not only related to the reference chronology in a fairly systematic way, but also to each other.

The general pattern in the turning points summarized in Table 6 is quite clear both at the peaks and to a lesser extent at the troughs. Net credit change turns first—leading by ten to twelve months at the peak and by about five months at the trough. Extensions tend to turn in a manner roughly coincident with the business cycle turns and show smaller variability at turning points than net credit change.<sup>10</sup> Repayments and outstandings typically lag. Repayments, however, have turned so seldom that the evidence for a lag is slight. There is no question, of course, that repayments must, by their very nature, lag behind extensions. This pattern of turns—net credit change first, followed by extensions, and finally by repayments and outstandings—is almost completely consistent throughout the period under review.

Before attempting to explain the pattern of turns shown in Table 6 it is appropriate to ask how consistently this *average* pattern is found in the *individual* cycles. Except for repayments, the pattern of turns is present at all five peaks that can be associated with the business

<sup>10</sup> Compare the average deviations in Table 6.

cycle peaks between 1929 and 1967. The relatively high average lead for net credit change, as well as the high variability, it should be noted, is heavily influenced by the long lead in 1957, which in turn was the result of the extremely rapid growth in credit in 1955 resulting from the easing of credit terms and the other circumstances discussed earlier. At troughs the order of turns is a bit less consistent. There are several that are coincident and several ties. Of the five comparable troughs, the sequence of turns is clearly broken twice (1953 and 1960), and is clearly visible three times (1929, 1937, and 1957).<sup>11</sup>

The economic implications of this pattern can best be considered in conjunction with Chart 9, which is an effort to explain why the lead in the turning points in the net credit change series is so much longer at business cycle peaks than at troughs. Because net credit change measures the change in outstandings, which in turn is the excess of extensions over repayments, the explanation ultimately involves all four of the measures of credit.<sup>12</sup>

a. *Cycle effect.* Part A of Chart 9 portrays the effect of the inter-relationship of extensions and repayments on the timing of turns in net credit change. Specifically, it shows that, when a lagging series (repayments) is subtracted from a coincident series (extensions), the difference (net credit change) leads both series at peaks and troughs.<sup>13</sup>

b. *Trend effect.* One reason for the pattern of turns in net credit change, however, is that throughout the postwar period repayments

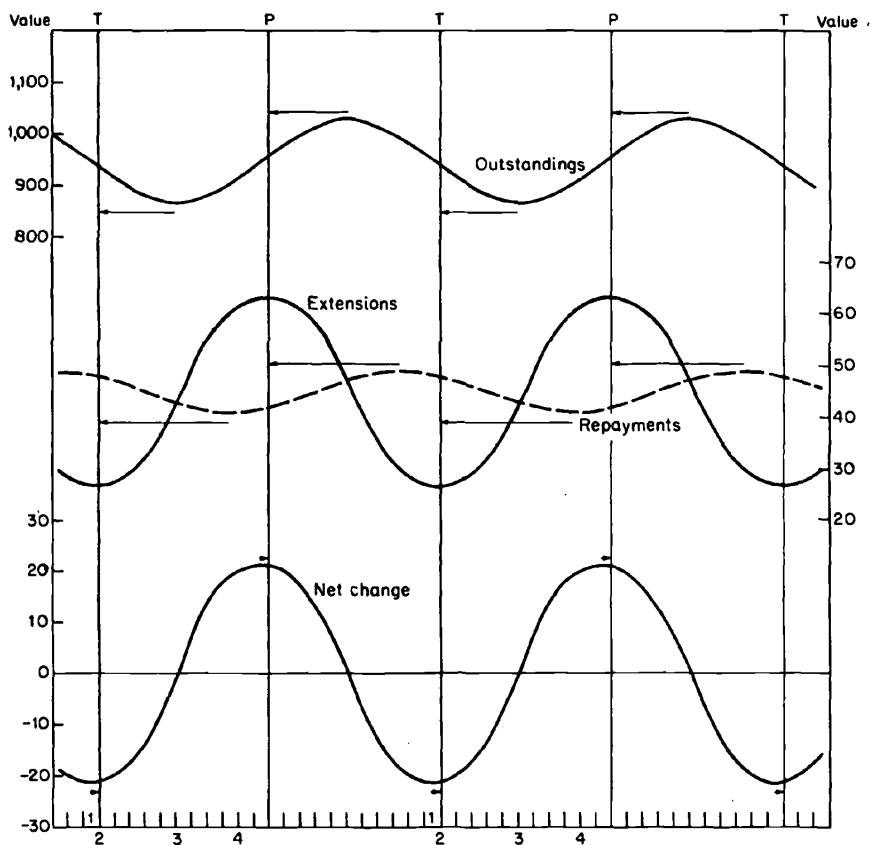
<sup>11</sup> The timing relationships indicated reflect, of course, the underlying process by which credit outstanding changes over time. The fundamental pattern was well described by Gottfried Haberler for the pre-World War II period (see Gottfried Haberler, *Consumer Instalment Credit and Economic Fluctuations*, NBER, New York, 1942).

More recently the timing relationships have been examined in Paul W. McCracken, James C. T. Mao, and Cedric Fricke, *Consumer Instalment Credit and Public Policy*, Michigan Business Studies, Vol. XVII, No. 1, 1965. This study examines only quarterly data, and while it finds a general pattern of conformity to the business cycle, the timing relationships, as would be expected, are less sharply defined than in the monthly data.

<sup>12</sup> If  $C_{t-1}$  and  $C_t$  represent credit outstanding at the end of periods  $t-1$  and  $t$ , respectively,  $E_t$  is extensions during time  $t$ , and  $R_t$  repayments during the same period, then  $C_{t-1} + E_t - R_t = C_t$ , and  $\Delta C_t = E_t - R_t$ .

<sup>13</sup> We may add that, though the repayments evidence is very limited, as noted, for all four of the important reference turns preceding World War II, extensions turned before repayments (though in one case the lead was only one month). The turns utilized as the reference chronology in Chart 9 refer to extensions, not the business cycle turns.

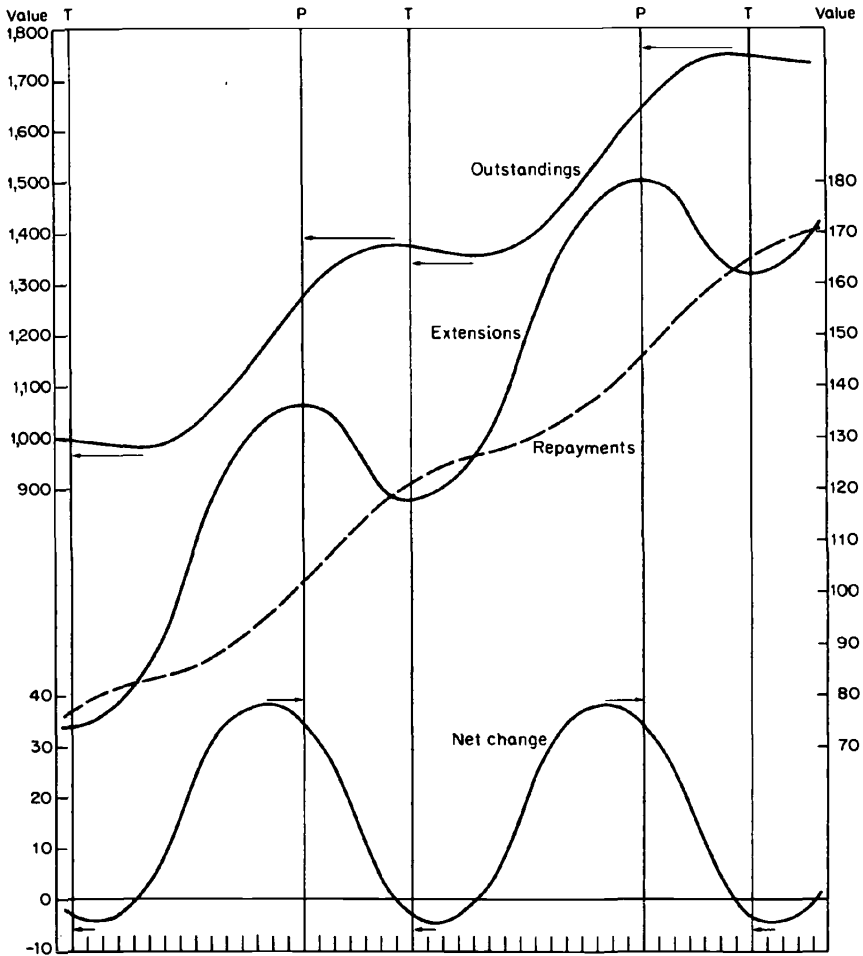
## CHART 9

The Pattern of Turns in Net Credit Change, a Schematic Explanation  
Part. A. Cycle Effect

have reflected cyclical changes only through increasing at decreasing rates during recessions, whereas extensions have continued to fluctuate cyclically. The result of this rising trend in repayments is to make net credit change reflect the movement of extensions but with a less rapidly rising trend (Part B of Chart 9). The rising trend of repayments is subtracted from extensions to obtain the net credit change, and the effect is to make the peaks in net credit change occur earlier than in extensions, and the troughs later.

Thus, there are two influences (a cyclical effect and a trend effect) making peaks in net credit change lead extensions and business cycle peaks, whereas at troughs one influence (the cycle effect) tends to

Part B. Trend Effect



NOTE: *T* and *P* lines represent troughs and peaks in extensions.

produce a lead and the other (the trend effect) a lag. Hence, the leads tend to be longer at peaks. At troughs the evidence suggests that the cycle effect has been of greater quantitative importance than the trend effect because the net credit change has generally led extensions at troughs. The trend effect has been of greater importance in the postwar period than in the prewar period; hence, the difference between the turns at cycle troughs in net credit change and extensions has been smaller in the postwar period than before.

More generally, Part A of Chart 9 can help explain the customary pattern of turns indicated in Table 6. For the entire period the order of turning points at troughs is (1) net credit change, (2) extensions, (3) outstandings, and (4) repayments. In Chart 9, the point where extensions are smallest relative to repayments indicates the trough in net credit change (it is marked by a 1): the troughs in extensions and repayments can be read directly from the chart (they are numbered 2 and 4, respectively); and the trough in outstandings occurs where extensions and repayments cross (indicated by a 3). The order of turns (1, 2, 3, and 4) in the schematic drawing corresponds to the actual order found at troughs.<sup>14</sup> Clearly, the critical factors are the length of the lag in repayments behind extensions, and the rate of change in each. We might note that the timing relationships generally as between a series with no trend and one with trend will be affected significantly by whether the turning points are based on absolute changes, the procedure we have followed here and which the National Bureau has customarily followed, or on differences in rates of change.<sup>15</sup>

It should also be noted that we have found generally that the behavior of repayments has been determined primarily by its strongly rising trend since World War II. This is due partly, of course, to the absence of severe cyclical contractions in the postwar period. It should be remembered, however, that during unusually severe cyclical downturns both delinquencies and repossessions can have a potentially powerful effect on the recorded behavior of repayments, depending on how one measures repayments.<sup>16</sup>

In short, the timing relationships summarized in Table 6 are the logical result of a pattern of behavior involved in the process of

<sup>14</sup> The difference between repayments and outstandings is small historically reflecting the rising trend in repayments shown in Part B of Chart 9. The difference between the two in Part A is due entirely to the way they are plotted—middle of the month for repayments during the month, end of the month for outstandings.

<sup>15</sup> The latter is the method utilized by Ilse Mintz in selecting turning points in German business cycles since 1950. She employed this procedure because of the strong upward trend, and plans to extend the analysis to U.S. data. For a discussion of her method and her explanation for using it, see the *Forty-Eighth Annual Report of the National Bureau of Economic Research*, June 1968, pp. 77-79.

<sup>16</sup> In periods of severe contraction, repayments might be comparable to the entire change in debt outstanding in the event of repossession and subsequent resale, and may not change at all in the case of delinquencies. Thus repayments might still reflect considerable cyclical sensitivity in major downturns. See Philip A. Klein, *Financial Adjustments to Unemployment*, New York, NBER, 1965, especially pp. 13-15.

utilizing credit. The four series considered represent different facets of that pattern. Though net credit change may reflect the net effect on outstandings of the changes occurring both in the rate at which credit is extended and the rate at which it is repaid, it is well to remember that while extensions may appropriately be viewed as involving a bargain between the issuer and the borrower of credit, and so partially controllable by both, repayments are largely in the hands of the purchasers of credit. Indeed, repayments can be controlled by the issuer only indirectly—that is, on the basis of prior experience, which can tell him when and under what circumstances they are apt to falter; the actual individual decision to repay or not to repay is always out of his hands.<sup>17</sup> Otherwise, the issuer can affect repayments only by revising the obligation so as to extend the maturity.

What can be said of the possible impact of this pattern on economic stability? We have noted that, though net credit change leads impressively, it is a series about which none of the parties determining it make conscious decisions directly. Net credit change in fact reflects the difference between extensions and repayments. If one assumes that extensions increase consumer purchasing power and repayments diminish it, dollar for dollar, one might argue that the net stimulating effect of credit is measured by the difference between the two—i.e., by net credit change. Alternatively, one can argue that the net stimulating or depressing effect of credit on purchasing power cannot be properly measured by the difference between the two, but rather must involve the rate of change in each. That is, one can argue that the net impact of credit activity is stimulating only so long as extensions not only exceed repayments, but exceed them by more than previously so that net credit change will continue to increase (i.e., not reach a peak). An increase in the net credit change will cause purchasing power to rise, and a decrease will cause it to fall.

The latter view is similar to the argument about whether inventories may be said to stimulate the economy on balance only when they build at an increasing rate. The former is comparable to the view that any increase in inventories is stimulating. In this connection, Ruth P. Mack has recently observed, “. . . the levels of stocks on hand and on order, and particularly the rates at which they change, impinge on other aspects of the economy. . . and the manner in which they fluctuate.” Again she has added, “Let me underscore again the im-

<sup>17</sup> See Geoffrey H. Moore and Philip A. Klein, *The Quality of Consumer Instalment Credit*, New York, NBER, 1967, for a more complete consideration of this problem.

portance of *rates of change*. . . . It means that the influences originate in what Arthur F. Burns has called the 'unseen cycle' of diffusion, in contrast to the 'seen cycle' in aggregates proper."<sup>18</sup> The peak in net credit change signifies, therefore, the end of the period of time in which the net effect of credit activity on the economy is stimulating; beyond this point in Chart 9, Part A, one sees the period of time during which credit outstanding, though still increasing, is increasing only at a decreasing rate.

In sum, at cyclical peaks since 1929, and especially since World War II, the net effect of instalment credit activity has been to reduce purchasing power for perhaps a year prior to business cycle peaks because there was a decrease in the rate of increase in extensions relative to the rate of increase in repayments, and that this change in the net impact of instalment credit preceded as well (also by about a year) an actual peak in extensions.

The causes for the change in the rate of increase in extensions relative to repayments are no doubt to be found in many factors. It is perhaps enough to suggest here that they occurred sufficiently in advance of business cycle peaks to justify placing them among the (many) factors precipitating the peak rather than among those simply reacting to the forces that develop as a result of cyclical peaks.<sup>19</sup>

<sup>18</sup> Ruth P. Mack, *Information, Expectations, and Inventory Fluctuations*, New York, National Bureau of Economic Research, 1967, p. 241 and 267. Italics added.

The correct measure of the stimulating effect of instalment credit has been the subject of considerable discussion and disagreement in the literature. In his 1942 study for the National Bureau, Gottfried Haberler argued that it was net change in credit outstanding itself that best measured the stimulating effect (see *Consumer Instalment Credit and Economic Fluctuations*, New York, 1942, pp. 140-141). More recently F. R. Oliver has taken the same position (see F. R. Oliver, *The Control of Hire Purchase*, London, 1961, p. 126). On the other hand, both Smith and Humphrey have argued as we do that it is the change in net change that is the best measure of the stimulating effect (see Don D. Humphrey, "Instalment Credit and Business Cycles" in *Consumer Instalment Credit: Conference on Regulation*, New York, National Bureau of Economic Research, 1957, Part II, Vol. 1, p. 20; and Paul F. Smith, "Multiplier Effects of Hire Purchase," *Economica*, Vol. XXXI, May 1964, p. 190).

<sup>19</sup> It is useful in connection with this argument to examine Charts 6 and 7. The reader's attention is called particularly to the decreased *relative* volatility in the cyclical movement of extensions, repayments, and outstandings in the postwar period. Net credit change (Chart 7) is measured not in relative but in absolute terms, and shows that the postwar period is much more volatile than the prewar

On the other hand, the lead in net credit change at business cycle troughs, particularly since the war, has not been very long though the differences in timing at troughs and at peaks are, as previously considered, largely a result of a rising trend. While the behavior of net credit change is less clear at troughs, there are nonetheless cases when it led by quite long periods. An increase in the net credit change series might well be influenced by whatever general forces are producing recovery in the economy. This is not to deny that the reversal in the net impact of instalment credit changes on the economy will not and does not strengthen and support the recovery, nor that it could play an important part on occasion. Rather it is to argue only that this reversal precedes (and hence perhaps helps precipitate) the recovery rather than accompanies it less consistently at troughs than at peaks. The line between initiating or precipitating factors in cyclical analysis and factors that accompany cyclical changes is a tenuous one at best. If economic activity and cyclical activity in particular tend indeed to be cumulative there must be factors that initiate such movement and it would appear appropriate to look for them among the leading rather than coincident series. The behavior in net credit change appears to fit these qualifications more clearly at peaks than at troughs, though it doubtless plays a relatively minor part.<sup>20</sup>

period (the former are charted on logarithmic paper, the latter on arithmetic). The changes in volatility must be interpreted against the great changes in absolute magnitude that characterize these series since 1929. Moreover, the great increase in volatility indicated in the postwar period for net credit change should be considered in light of our finding (Table 3) that although both credit and disposable income have grown greatly, the cyclical volatility of instalment credit is not visibly greater, relative to disposable income in the postwar period, than it was in the prewar period.

For a consideration of the prewar pattern alone, see Haberler, *op. cit.*

<sup>20</sup> In this connection, McCracken, Mao, and Fricke comment: "Great caution must be used in imputing to demonstrated leads a causal significance. . . . The broad conformity of credit cycles with those of general economic activity warrants the presumption that movements in consumer instalment credit do result in somewhat wider cyclical swings in business activity" (*op. cit.*, p. 56).

Conformity alone would not appear to justify such a presumption. Such a conclusion cannot be strongly supported by considering instalment credit in relation to business cycles in general. It requires an effort to relate credit to activity in the durable goods industry where it is used, which is the subject of the next chapter.