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Measurement of Instalment
Credit for Cyclical Analysis

THERE are three principal types of series that might be used
to indicate the direction and force of the influence of con-
sumer instalment credit on general economic activity: first,
the volume of new credits granted during successive periods
(a current new credits series); second, the amount of out-
standing credit as of regular points in time (a series of
cumulated net credit change); and third, net changes in out-
standings from one period to another (a series of current net
credit change). Each of these measures has certain intrinsic
merits and demerits for purposes of cyclical analysis, as will
be indicated below.

Moreover, there are certain statistical conditions, arising
from the operating practices of the credit agencies, which
impair the accuracy of such measures. These too will be
discussed presently, but two statistical limitations should be
mentioned at once. First, except in the practice of personal
finance companies and a few credit unions, data on new
credits include the finance charge and to this extent overstate
the flow of money going to borrowers; since outstandings
represent the combined result, up to a certain point in time,
of credit granted, repayments and charge-offs, they too are
overstated by the inclusion of finance charges. And second,
cash loan data include not only new loans but also old ones
that have been refinanced; this practice swells the figures on
new credits and repayments, since the refinanced balance
counts both as a loan paid off and as a new loan made, but
neither outstandings nor the net month-to-month change
in outstandings is thereby affected.

TYPICAL INTERRELATIONSHIPS OF THE
VARIOUS MEASURES[1]

In order to understand the typical behavior of the three
curves in relation to one another the following facts must
be kept in mind. Current new credits and current net credit
change refer to transactions that have occurred during one
particular interval of time, while outstandings refer to the
situation at a particular point of time produced by the trans-
actions that have occurred during preceding intervals. Cur-
rent net credit change is current new credits minus current
repayments, or the difference, positive or negative, between
outstandings at the beginning and at the end of the period;
cumulated net credit change, or outstandings, is cumulated
new credits minus cumulated repayments, or the new credits
granted up to that time minus the repayments and charge-
offs made up to that time.

There is no simple connection between new credits and
net credit change or outstandings that would force them
to change by the same amount or even in the same direction.
Information on new credits alone can tell nothing about
credit change, and vice versa. The two magnitudes may be-
have quite differently, the one rising, the other falling, the
one standing still, the other changing, the one fluctuating
rapidly and irregularly, the other exhibiting a more regular
and continuous change.

General mathematical relationships between the stock of
outstanding credit at a particular time and the flow of new
credits granted up to that time, or between the change in
outstandings during a particular period and the new credits
granted during that period, can be stated only if there is
information on the repayment conditions—contractual dura-
tion of debt, defaults, charge-offs and prepayments. If there is

[1] For the analysis of the relationship between new credits and outstandings
I am much indebted to discussions with David Durand of the Financial
Research staff of the National Bureau of Economic Research, and with Paul
A. Samuelson of the Massachusetts Institute of Technology. A mathematical
analysis by Mr. Samuelson of the problems discussed here is presented in
Appendix **B**.

sufficient information on repayment conditions as well as on new credits, it is possible to calculate either the amount of outstanding credit at a particular moment of time or the change that has occurred during a particular interval.

Certain typical relationships of the curves of new credits, current net credit change and outstandings are evident from Charts I and II, containing instalment credit series on two types of retail establishments and two types of cash-lending agencies.[2] On these and the following charts vertical lines are used to indicate general business cycle turning points (monthly dates), as determined by W. C. Mitchell and A. F. Burns of the National Bureau of Economic Research.

The irregularity of the new credits curve is readily under-standable. It is notable that the curve representing repayments is much smoother in the two series on commodity credit, in Chart I. This relative smoothness is typical when-ever the average contract length is fairly long and constant, and contract obligations are generally fulfilled. The reason is that repayments falling due in any month are determined not by current but by cumulated new credits, in other words, by the credits granted over a whole series of preceding months. If the length of contract is uniformly 15 months, for example, the amount of repayment in any month is

[2] In the series relating to automobile dealers and department stores the curve of repayments is not based on direct statistical records of repayments, but has been estimated on the assumption that all contracts were of the same length during any year. Average contract lengths varied somewhat from year to year, but not markedly. The assumption of constant contract length for single years does not impair the value of the repayments curves as an illustration of the formal relationship of repayments to outstandings and new credits; moreover, general information regarding the conduct of instal-ment financing indicates that changes in contract length within any given year are not substantial. The series relating to personal finance companies and industrial banking companies were estimated by a different procedure from that followed in the commodity credit curves. In the cash loan series the starting point of the calculation was year-end outstandings, and monthly new loans and repayments were computed with the help of sample data which showed monthly ratios of new loans to outstandings. For further description of the data see below, pp. 62 ff. The statistical procedures are discussed in detail in National Bureau of Economic Research (Financial Re-search Program), *The Volume of Consumer Instalment Credit, 1929-38*, by Duncan McC. Holthausen, in collaboration with Malcolm L. Merriam and Rolf Nugent (1940) Appendix D.
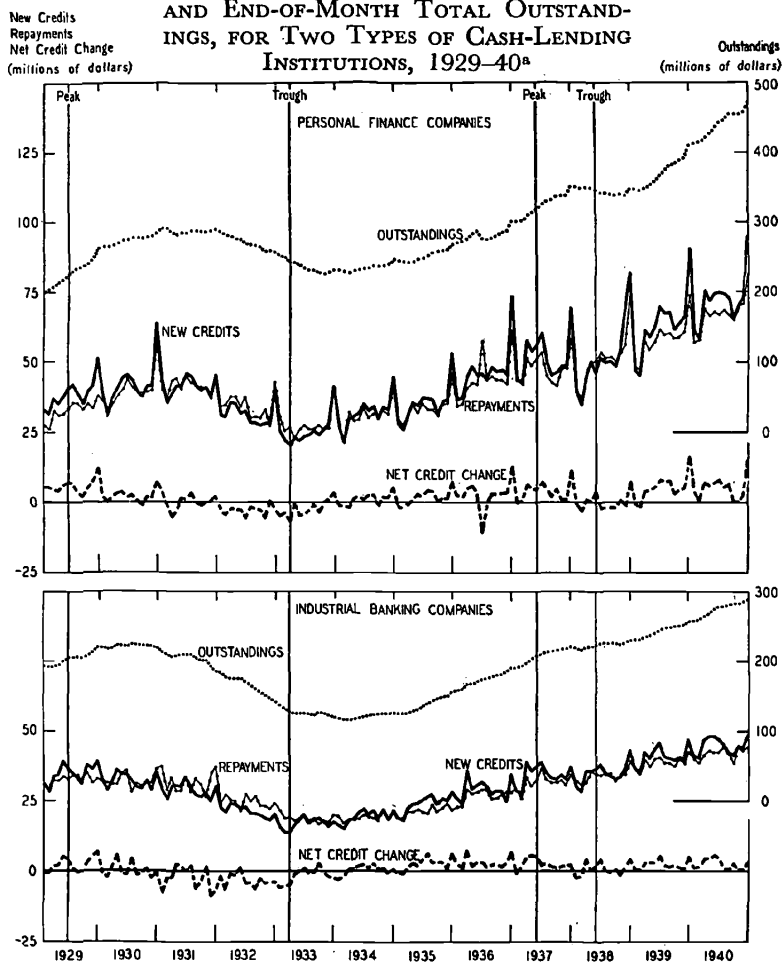
CHART I

MONTHLY NEW CREDITS, REPAYMENTS AND NET CREDIT CHANGE, AND END-OF-MONTH TOTAL OUTSTAND-INGS, FOR TWO TYPES OF RETAIL ESTAB-LISHMENTS, 1926–40[a]
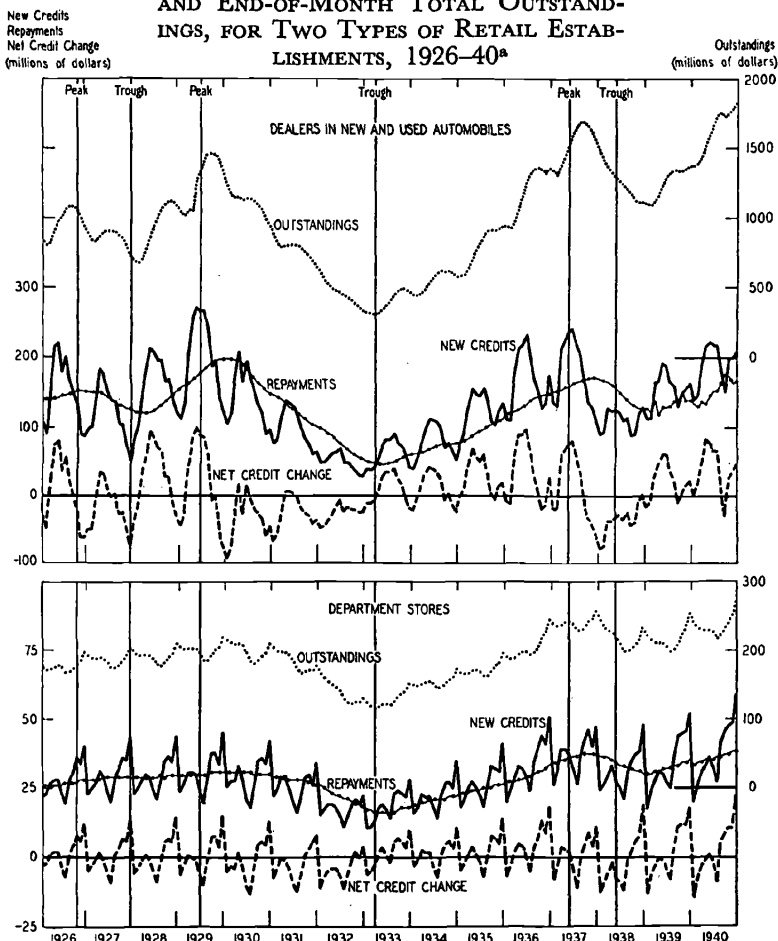
[a] For 1926-38 based on data in National Bureau of Economic Research (Financial Research Program), *The Volume of Consumer Instalment Credit, 1929-38*, by Duncan McC. Holthausen, in collaboration with Malcolm L. Merriam and Rolf Nugent (1940) pp. 49-58. Data on 1939-40 outstandings and net credit change supplied by U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Current Business Analysis Unit; for retail establishments the 1939-40 figures for new credits and repayments are provisional estimates made by the National Bureau. No adjustment has been made for seasonal variations. For methodological comment see footnote 2, p. 55 above, and pp. 62-63. The vertical lines indicate general business cycle turning points (monthly dates), as determined by W. C. Mitchell and A. F. Burns of the National Bureau of Economic Research.

CHART II

MONTHLY NEW CREDITS, REPAYMENTS AND NET CREDIT CHANGE, AND END-OF-MONTH TOTAL OUTSTANDINGS, FOR TWO TYPES OF CASH-LENDING INSTITUTIONS, 1929–40[a]

[a] See footnote to Chart I. Here the source in Holthausen et al. is pp. 84-91. For 1939-40 based on data in U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, *Personal Finance Companies: Installment Loans to Consumers* (December 1940), and *Industrial Banking Companies: Installment Loans to Consumers* (December 1940). No adjustment has been made for seasonal variations. The abrupt rise in personal finance company outstandings in December 1939 was due to the addition of companies operating in California, where a revision of the Personal Property Brokers' Act resulted in an increase of licensed personal finance companies in that year. This irregular jump in outstandings was disregarded in computing net credit change; thus the latter represents the difference between December new credits and December repayments, but not the difference between outstandings at the beginning and at the end of December.

equal to the sum of the new credits in the preceding 15
months divided by 15: the repayments series is a lagged mov-
ing average of the new credits series. Thus even if the cur-
rent new credits curve is highly irregular the current repay-
ments curve will be relatively smooth, and the more so the
longer the average contract length. In the cash loan series of
Chart II the lack of smoothness in the repayments curve
is due to the great frequency of refinancing. As was pointed
out above, refinanced balances count as both a new loan and
a repayment; hence the repayments curve tends to follow
the curve of new credits more closely than would otherwise
be the case.

The outstandings curve is also relatively smooth, though
not so smooth as the curve for repayments (except when
the latter is swollen by refinancing). The reason is that out-
standings indicate the combined result of cumulated new
credits and cumulated repayments. The curve for current
net credit change—standing for the new credits of a single
interval minus that interval's repayments—follows closely
the short-run fluctuations of the new credits curve, since the
latter fluctuates widely while the repayments curve is com-
paratively smooth.

For present purposes the most significant consideration is
the timing of the cyclical turning points in the various curves,
though the formal relationships can be studied also from
seasonal turns, which stand out more clearly and are more
numerous. It can be seen that in the automobile series of
Chart I the turning points of the outstandings curve show a
persistent lag behind those of the new credits curve; this
lag is less evident in the two cash loan series of Chart II,
and scarcely noticeable in the department store series. In
no case, however, is the lag reversed.

The lag of the outstandings curve behind the new credits
curve at cyclical (and seasonal) turning points is not a chance
event but is to be expected. Its length depends upon two
factors: the rate of change in the new credits curve before

and after the turn; and the average contract length. The flatter the new credits curve before its turn as compared with its slope after the turn (well illustrated in the department store series of Chart I), and the shorter the contract length in comparison with the length of the cycle in new credits, the more quickly will the turn in the new credits curve be followed by a turn in the curve of outstandings. Thus if the new credits curve turns up or down after a relatively long horizontal stretch, and if contracts are short enough for this horizontal stretch to be reflected in the curves of repayments and outstandings by the time the turn occurs, then the change in the flow of new credits, however small, will at once affect also the stock of outstanding credit, and in the same direction. Or if there is a precipitous drop in new credits (as in January in department store credits) there is no lag, or only a brief one, between the turning points of new credits and outstandings. On the other hand, if the new credits curve is not so flat before its turn, if the drop after the turn is gradual or if the flat stretch is not long in relation to contract length, the turning point of outstandings will show a certain lag.

The reasons are readily understandable. During any month outstandings are increased by new credits and diminished by repayments. If new credits have reached a high point and begin to fall, fewer new credits will be added to outstandings in the month following the peak than in the previous month. How are repayments changed, assuming again that the credit is repaid in 15 equal instalments? In any month repayments are diminished by one-fifteenth of the volume of new credits extended 16 months earlier (because the last instalments on these credits fell due in the preceding month), and are increased by one-fifteenth of the volume of new credits extended in the preceding month (because the first instalment on these credits falls due). And if the length of contract (15 months in this example) is relatively short as compared with the cycle in the new credits curve, the in-

crement in repayments will exceed the decrement (because in the preceding month the flow of new credits was on a higher level than it had been 15 months earlier). Hence the curve of repayments will continue to rise after the curve of new credits has started to fall. It follows that, ordinarily, outstandings will rise for a while, although not so long as repayments.

The significance of contract length as a determinant of the lag between the turning points of the new credits and outstandings curves is illustrated in Chart III, where the automobile outstandings curve has been computed in accordance with five different assumptions concerning contract length. It is clear that the lag is greater as contract length increases, though the difference is not very great. More conspicuous is the way in which longer contracts result in greater smoothness in the curve of outstandings.

In Charts I and II the curve of net credit change follows closely the new credits curve, the seasonal turning points of the two curves coinciding perfectly. The cyclical turning points in the curve of net credit change cannot be located with precision by mere inspection because of the sharp seasonal fluctuations. But at least in the automobile series there is some evidence that the net credit change curve tends to reach its cyclical culmination before the curve of new credits. This relationship is very clear in Chart IV, where the series have been adjusted for seasonal fluctuations, and it is the "normal" relationship that we should expect when new credits form a regular, wave-like curve. It is only because of the violent and discontinuous nature of the short-run fluctuations that we find the close short-run correspondence between new credits and net credit change in Charts I and II. In the ideally regular case the turning points of the four curves follow one another in the following order: net credit change (rate of change or first difference of outstandings), new credits, outstandings, repayments.[3]

[3] See Appendix B, especially Chart B-II.

CHART III

MONTHLY NEW CREDITS EXTENDED BY AUTOMOBILE DEALERS,
1932–40, AND END-OF-MONTH TOTAL OUTSTANDINGS COMPUTED
ON THE BASIS OF VARYING CONTRACT LENGTHS[a]
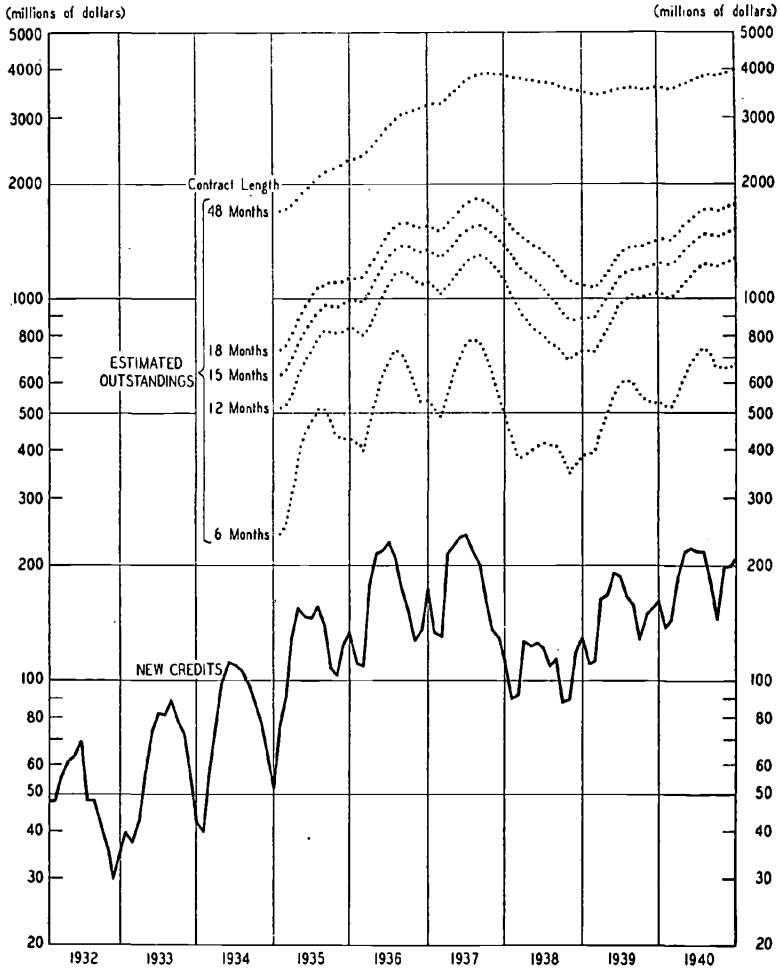
[a] See footnote to Chart I. Here the source in Holthausen et al. (for new credits) is pp. 51-53. The 1939-40 figures for new credits are provisional esti-mates made by the National Bureau.

CYCLICAL BEHAVIOR OF THE VARIOUS MEASURES

For a detailed analysis of how new credits, outstandings and current net credit change have actually behaved in relation to business cycles, it would be desirable to have statistical data on instalment credit extending back nearly three decades, for it was in the years after 1910 that this type of consumer credit became an important economic factor. Unfortunately, however, data depicting its fluctuations are available only for a much shorter period. The series used in the following discussion pertain to the period 1929-40; figures that extend back to 1926 are too fragmentary for inclusion. Series are presented here on the two main types of consumer instalment credit—commodity credit and cash loans. The former is represented by data on five types of retail establishments combined, and the latter by data on four types of cash-lending agencies combined. The two sets of data are subject to certain characteristics and limitations which should be borne in mind in the subsequent analysis.[4]

First, in all constituent series except that for automobile credit (included in the commodity credit series) repayments include charge-offs. In computing the repayments and outstandings of automobile credit no allowance has been made for prepayments, renewals, delinquencies or repossessions.

Second, finance charges are included in all constituent series except that for personal finance companies and, to a certain extent, that for credit unions (both in the cash loan series). Except in regard to automobiles there was but little information on contract terms for commodity credit, and therefore it was necessary to assume that finance charges were equaled by down payments, and to regard new credits (including finance charges) as equal to instalment sales. Thus some of the individual commodity credit series are probably biased upward, others downward, but the bias is not likely to be greater than 4 percent, and it is largely canceled out when all the series are combined.

[4] For detailed description of the data and statistical procedures see Holthausen et al., *op. cit.*, Appendix D.

Third, the five series constituting the commodity credit group pertain to types of retail establishments rather than to types of goods sold, but in most cases the former is descriptive of the latter.

Fourth, in the commodity credit series (in Chart IV, not in Chart VI, where commodity credit is compared with and combined with cash loans) the constituent curves have been adjusted for seasonal variations.[5] Seasonal variations are pronounced and very regular, although in the automobile series they are of a different pattern from the one they take in the other four commodity series, where year-end holiday peaks stand out very clearly. In the cash loan group seasonal variations are discoverable only in the new loans made by personal finance and industrial banking companies. There is no pronounced seasonal regularity in the series on outstandings or net credit change, which are the only curves presented in the cash loan charts, and therefore no seasonal adjustments have been made in these series.

Fifth, in the derivation of the five monthly commodity credit series the estimated annual total instalment sales figures were distributed among the different months according to samples of monthly instalment sales. In one case (jewelry stores) the pattern of total sales had to be used for the distribution of credit sales.[6] This procedure makes it unsafe to draw conclusions from possible deviations between the intra-year patterns of credit sales and cash sales.

In view of certain of these statistical characteristics, and also because the data cover less than two cycles, it would be unwise to draw rigid generalizations concerning lags or leads of only a few months between turning points of the credit curves and of general business cycles.

The five types of retail establishments represented in the data on commodity credit are dealers in new and used automobiles, furniture stores, department stores, household ap-

[5] This was not done in Charts I and II.
[6] This implies an assumption that the seasonal patterns of credit sales and total sales are identical.

pliance stores and jewelry stores.[7] In Chart IV are presented, for these five types of establishments combined, monthly series of outstandings, new credits and current net credit change for the period 1929-40; the curve of current repayments is also included, since it is the second determinant of outstandings and net credit change.

All curves presented in Chart IV display definite cyclical patterns, both in the longer and more severe cycle bounded by the peaks in 1929 and 1937 and in the shorter and less severe cycle marked by the peak in 1937 and the trough in 1938. Supplementary data show that also in the period between the peaks in 1926 and 1929 the general business cycle was reflected in the credit curves of automobile dealers, although not in those of department and furniture stores.[8] It is notable that the turn in the net credit change curve considerably preceded the turning point of the reference cycle at the trough in 1933 and the peak in 1937, but coincided with it at the trough in 1938.

As said above, in cyclical turning points outstandings typically lag behind new credits and current net credit change, a behavior clearly evident in Chart IV. There is no consistency, however, in the exact timing: in 1933 the turn in outstandings almost coincides with the turning point of the reference cycle while the turns in the other two curves precede it; in 1937 and 1938 outstandings lag while the other two lead or coincide. Clearly no far-reaching economic conclusion can be based on such diversity of behavior, especially since so few observations are possible.

Quantitatively the cash loan business has been much less important than commodity credit, but in recent years its

[7] Data on other types of retail establishments are not available in monthly series. In the period 1929-38 all other types of retail stores, combined, accounted for only 7 to 11 percent of both the total instalment credit granted by retail establishments and their total average instalment outstandings. See Holthausen et al., *op. cit.*, pp. 45-46.

[8] *Ibid.*, p. 20. Data for household appliance and jewelry stores are not available for the years before 1929. On automobile dealers and department stores the supplementary data, not adjusted for seasonal variations, were presented in Chart I.

CHART IV

MONTHLY NEW CREDITS, REPAYMENTS AND NET CREDIT CHANGE,
AND END-OF-MONTH TOTAL OUTSTAND-
INGS, FOR FIVE TYPES OF RETAIL ESTAB-
LISHMENTS COMBINED, 1929–40[a]

New Credits
Repayments
Net Credit Change
(millions of dollars)

Outstandings
(millions of dollars)
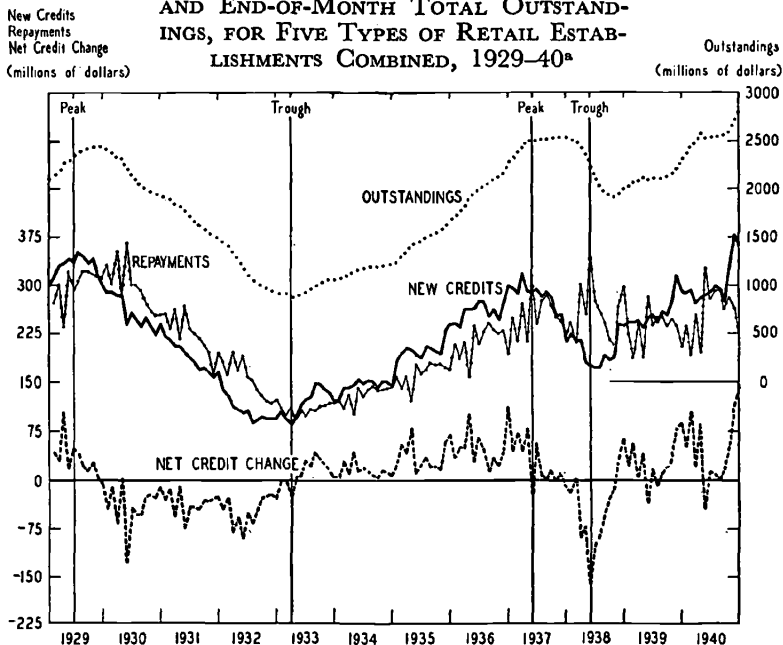
[a] See footnote to Chart I. Here the source in Holthausen et al. is pp. 42-45.
The 1939-40 figures for new credits and repayments are provisional estimates
made by the National Bureau. The figures are adjusted for seasonal variations.
The five types of establishments are dealers in new and used passenger auto-
mobiles, furniture stores, department stores, household appliance stores and
jewelry stores.

rate of growth has been substantially greater. Cash loan
credit is represented by four types of lending agencies: per-
sonal finance companies, industrial banking companies, per-
sonal loan departments of commercial banks, and credit
unions. Chart V presents, for these four types of institutions
combined, monthly series of outstandings and current net
credit change for the period 1929-40; for the years 1934-40
data are included on the instalment loans insured by the
Federal Housing Administration. Curves on new credits and
repayments are not included, since data on these items ex-
tending back to 1929 are available only for personal finance

and industrial banking companies; moreover, as was pointed
out above, cash loan new credits and repayments are inflated
by the inclusion of refinanced balances. Supplementary data
on the four constituent types of institutions show considera-

CHART V

MONTHLY NET CREDIT CHANGE AND END-OF-MONTH TOTAL OUT-
STANDINGS FOR FOUR TYPES OF CASH-LEND-
ING INSTITUTIONS COMBINED, 1929–40[a]

Net Credit Change
(millions of dollars)

Outstandings
(millions of dollars)
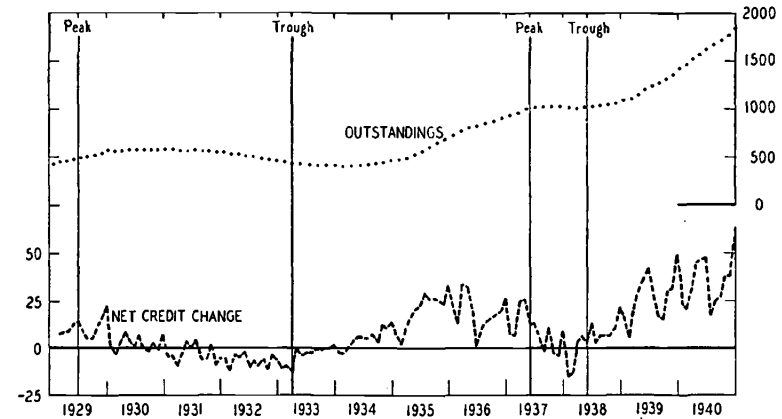
[a] See footnote to Chart I. Here the source in Holthausen et al. is p. 76. No
adjustment has been made for seasonal variations. The four types of institu-
tions are personal finance companies, industrial banking companies, com-
mercial banks' personal loan departments, and credit unions; for 1934-40
instalment loans insured by the Federal Housing Administration are included.

ble variation in the movements of their outstandings curves
over this period.

The turns in the cash loan outstandings curve display a
considerable lag behind the 1929 peak and the 1933 trough
of the general business cycle as represented by the reference
dates; after the 1929 reference peak about a year and a half
elapsed before cash loan outstandings began to decline con-
sistently, and the lag behind the 1933 trough was about a
year. After the 1937 reference peak cash loan outstandings
merely leveled off for a short period, and then they mani-
fested a sharply rising trend. The cyclical turning points of
net credit change cannot be located precisely on this rather
irregularly fluctuating curve, but it seems that its turn ap-

proximately coincided with the reference trough of 1933 and preceded the peak of 1937 and the trough of 1938.

For this same period, 1929-40, Chart VI and Table 2 make it possible to compare the movements of outstandings in

CHART VI

END-OF-MONTH TOTAL OUTSTANDINGS IN CONSUMER INSTALMENT CREDIT, 1929–40[a]
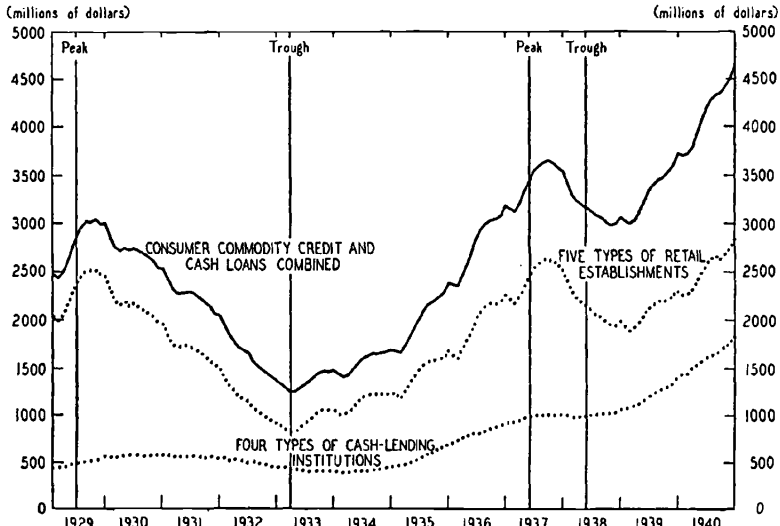
[a] See footnote to Chart I. Here the source in Holthausen et al. is pp. 42-45, 76, 100. No adjustment has been made for seasonal variations. The five types of retail establishments are dealers in new and used passenger automobiles, furniture stores, department stores, household appliance stores and jewelry stores. The four types of cash-lending institutions are personal finance companies, industrial banking companies, commercial banks' personal loan departments, and credit unions; for 1934-40 instalment loans insured by the Federal Housing Administration are included.

consumer commodity credit, in cash loans and in the two types combined, and to examine them in relation to the turning points of the reference cycle. Several points stand out particularly.

First, while commodity credit outstandings rose only slightly between their peaks in November 1929 and November 1937, cash loan outstandings practically doubled from

TABLE 2

TIMING AND AMPLITUDE OF MOVEMENTS IN END-OF-MONTH OUTSTANDINGS IN CONSUMER INSTALMENT CREDIT, 1929–40

	Date of Peak	% Decline from Peak	Date of Trough	% Rise from Trough	Date of Peak	% Decline from Peak	Date of Trough
Reference cycle dates[a]	June '29	..	Mar. '33	..	May '37	..	May '38
5 commodity credit and 4 cash loan series combined[b]	Oct. '29	59	Mar. '33	195	Sept. '37	18	Oct. '38
5 commodity credit series[c]	Nov. '29	64	Mar. '33	194	Nov. '37	25	Oct. '38
Automobile dealers[c]	Nov. '29	76	Mar. '33	391	Dec. '37	33	Oct. '38
Furniture stores[c]	Feb. '30	49	July '33	44	Sept. '37	12	July '38
Department stores[c]	Feb. '30	46	Mar. '33	113	July–Sept. '37	16	Nov. '38
Jewelry stores[c]	June '29	50	Apr.–July '33	97	Dec. '37	13	May '39
Appliance stores[c]	Dec. '29	58	Apr.–May '33	144	Oct. '37	19	Aug. & Nov. '38
4 cash loan series[d]	Dec. '30	31	Feb. '34	371[e]	•	..	..
Credit unions[d]	Dec. '29	23	Apr. '33	694[e]	•	..	..
Personal finance companies[d]	Jan. '31	22	Oct. '33	123[e]	•	..	..
Industrial banking companies[d]	July '30	48	Feb. '34	152[e]	•	..	..
Commercial banks' pers. loan depts.[d]	Dec. '30	36	Dec. '33	2,070[e]	•	..	..
Index of national income paid out[f]	Aug. '29	48	Apr. '33	69	Aug. '37	12	May '38

[a] General business cycle turning points (monthly dates), as determined by W. C. Mitchell and A. F. Burns of the National Bureau of Economic Research.

[b] For 1929-38 based on data in National Bureau of Economic Research (Financial Research Program), *The Volume of Consumer Instalment Credit, 1929-38*, by Duncan McC. Holthausen, in collaboration with Malcolm L. Merriam and Rolf Nugent (1940) p. 100. For 1939-40 based on data supplied by U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Current Business Analysis Unit.

[c] See footnote b, above; here the source in Holthausen et al. is pp. 42-45, 49-71. The figures are adjusted for seasonal variations.

[d] See footnote b, above; here the source in Holthausen et al. is pp. 76, 82, 88-91, 84-87, 78-81. For 1934-40 instalment loans insured by the Federal Housing Administration are included in the combined series. Data extend through March 1941.

[e] No peak had been reached in these series before March 1941, when data ceased to be available. Percentage figures for rise from trough are computed as of March 1941.

[f] Based on U. S. Department of Commerce, *Survey of Current Business*, as follows: for 1929 from issue of October 1938, p. 19; for 1930-35 from issue of October 1939, pp. 15-16; for 1936-39 from 1940 Supplement, p. 6; for January and February 1940 from Annual Review Number, February 1941, p. 65; for March 1940 through March 1941 from issue of May 1941, p. 19. The index is adjusted for seasonal variations.

their peak in 1930 to November 1937. After that date the latter curve continued to rise, almost without interruption—mainly because of the rapid increase in the instalment loans extended by commercial banks and credit unions—and had nearly doubled again by March 31, 1941, while commodity credit outstandings declined notably in 1938, and by the end of 1940 had only slightly surpassed their 1937 peak.

Second, between the reference peak of 1929 and the reference trough of 1933 the commodity credit series, as is evident from Table 2, declined more than the index of national income paid out, and the cash loan series declined less. Between the reference trough of 1933 and the reference peak of 1937 the commodity credit series rose far more than the national income index, and its subsequent decline in 1938 was again greater, though not nearly so much so; for these dates no comparison is possible with the cash loan series, because its peak was not reached before March 31, 1941, when data ceased to be available.

Third, the turning points in commodity credit and in cash loan outstandings appear to differ somewhat in their timing. For the reference turning points of 1937 and 1938 comparison between the two series is difficult because of the steep trend in the cash loan series; but the latter's lag behind the reference peak of June 1929 and trough of March 1933 was much greater than that of the commodity credit series.

Finally, Chart VI shows clearly that commodity credit is quantitatively preponderant over cash loans, especially around its cyclical peaks. Until the great rise in cash loan outstandings during the latter years of the period the cyclical pattern of the composite series was nearly identical with that of the commodity credit series.

ECONOMIC SIGNIFICANCE OF THE VARIOUS MAGNITUDES

The question arises now as to the respective significance of the three series—new credits, outstandings and current net

credit change—for purposes of cyclical analysis. More specifically, which of the three is best suited to indicate when credit is a stimulating and when it is a depressing factor? The discussion in Chapter 2 is the basis for an answer to this question. It was decided there, after an analysis of probabilities, that under conditions of high liquidity, such as have existed in this country for quite a while, the extension of consumer instalment credit does not diminish significantly the supply of credit available for other purposes, that most consumers would not buy anyway, from hoarded cash or salable assets, if credit were not available, and that most consumers make their repayments by cutting down expenditure rather than by drawing on savings.[9]

On the basis of these assumptions it was concluded in Chapter 2 that, on the whole, new credits increase and repayments (including finance charges) diminish consumer purchasing power and expenditure. This implies that the difference between new credits and repayments—in other words, either outstandings or net credit change—indicates whether instalment credit adds to or subtracts from consumer expenditure. It goes without saying that if we seek a *measure* of the stimulating or depressing force of credit on total consumer expenditure during any interval (any particular month or year) we must use the change in outstanding credit during that interval, in other words, current net credit change (and not the level of outstandings at the beginning, at the end or on the average during the interval).

The comparative significance of outstandings and net credit change as criteria will be discussed presently, but first it should be mentioned that for some purposes the new credits curve may indicate when credit is a stimulating and when it is a depressing factor, and also may measure the force of the stimulating or depressing effect during any particular period. This curve is relevant if what we are seeking is the effect of credit on a particular industry. We would say then

[9] To the extent that consumers would dishoard or sell assets if they could not obtain credit, all the magnitudes under consideration overstate the effect of credit on consumer purchasing.

that instalment credit exerts a stimulating influence on that industry when new credits rise, a depressing influence when they decline.

So long as we are concerned with a qualitative analysis, that is to say, with determining whether credit tends to stimulate or to depress a particular industry or economic activity in general (without attempting to give an absolute measure of its influence), it makes little difference whether we make use of outstandings or new credits, for the difference in their timing at the upper and lower turning points of the cycle is not very great. Both series are roughly parallel with business cycles. Let us suppose, for example, that there is a sudden and sharp curtailment of new automobile credits. Automobile sales drop precipitously and the direct effect on the automobile industry, along with the further repercussions on the economy as a whole, will be quite independent of what happens to automobile outstandings (or total instalment credit outstandings). But it is unlikely that outstandings will remain the same if the flow of new credits drops suddenly. If repayments continue on schedule, outstandings will begin to fall as soon or almost as soon as new credits are curtailed, though this decline in outstandings is not the essential element in the situation.[10]

But even if there is no difference in timing between the

[10] It may happen, however, that outstandings remain unchanged for a more or less protracted period when new credits fall. Suppose that by a strange coincidence repayments fall just as much as new credits—as a cause we could imagine a partial credit moratorium or a sharp increase in delinquencies. In that case outstandings will remain unchanged. But this will not alter the effect of the drop of new credits on the automobile industry, or its further repercussions.

It is even possible that outstandings move in the opposite direction to new credits. It may happen, for example, that as long as the flow of new credit increases, repayments exceed new credits, so that outstandings fall, and that as soon as new credits cease, repayments also cease, so that outstandings cease to fall. Or, if new credits fall not to zero but to, say, 20 percent of their former level, and repayments cease altogether or fall more rapidly than new credits, outstandings may begin to grow when new credits are curtailed. At the turning point there is, in fact, as we have seen, a short period during which new credits and outstandings move in the opposite direction. In such cases it is clear that new credits, and not outstandings, indicate the influence of credit on a particular industry.

new credits and the outstandings curves the *magnitude* of
the depressing effect of credit on the automobile industry
must be measured by the fall in new credits. The reason is
that repayments of automobile credits (which together with
new credits determine both the other curves) can be assumed
not to encroach upon automobile sales;[11] therefore repay-
ments can be disregarded in measuring the effect of credit
upon that industry, and only the data on new credits are
relevant.

Naturally the effect of instalment credit on particular in-
dustries can be analyzed only if new credits are, in fact,
largely concentrated around the purchase of some particular
commodities, and if we have data concerning this concentra-
tion. This is not always the case. Consumer commodity
credit is so centered around the purchase of a few durable
goods, but cash loans place general purchasing power in the
hands of consumers, which is then diffused by expenditure
on all sorts of commodities and by the refinancing of old
debt. And except in regard to automobiles the available
data are not complete enough to indicate the exact extent
to which cash credit is used for the purchase of particular
commodities. Moreover, if a drop in new credits is associated
with a fall in the sales of a particular commodity, we can
speak of an effect of credit only if we assume that a tighten-
ing of the supply of credit was responsible for the fall in
sales. If the *demand* for that commodity, and hence for credit,
has failed (say because a temporary saturation point has been
reached in the market) we can hardly speak of an effect of
credit.

Since new credits show nothing of the drain on consumer
purchasing power exerted by the repayments of credit they
do not reflect the *total* influence that credit exerts on con-

[11] The effect of repayments is diffused over a considerable area, for it is
unlikely that the necessity of repaying instalment debts induces consumers
to cut down their expenditures on precisely those commodities that they
buy on credit. If this were the case the effect of credit on particular in-
dustries would have to be measured by changes in outstandings rather than
by new credits.

sumer demand for all types of goods, irrespective of possible concentrations at some points.[12] Therefore if we wish to know whether credit stimulates or depresses total consumer expenditure we must turn to the curve of outstandings or to that of net credit change.[13]

In regard to the effect of credit on total consumer expenditure it will be remembered that we are not concerned with the question whether the amount of outstanding credit or the change in outstandings should be regarded as a *measure* for the stimulating or depressing force of credit during a given interval of time. Only the change in outstandings represents an addition to, or subtraction from, consumer expenditure and hence a measure for the influence of credit: when net credit change is at its maximum positive point the stimulating force of credit is greatest, and when it is at its maximum negative point the depressing force of credit is greatest. The only point at issue here is whether we ought to regard credit as a stimulating (depressing) force (of whatever intensity)

[12] It may be interesting to observe that under certain assumptions (which in Chapter 2 were discussed as possibilities but rejected as unrealistic) new credits must be regarded as a criterion even for credit's influence on total consumer expenditure, and that under other assumptions repayments must be so regarded. Thus if new credits were not a substitute for the dishoarding of cash (or other forms of dissaving), and if the consumers made their repayments at the expense of current savings, it is clear that repayments would exert no influence on expenditure and that new credits alone would be relevant. And if new credits were merely a substitute for other forms of dissaving, and if consumers made their repayments at the expense of consumption, it is clear that new credits would exert no influence on consumer expenditure and that repayments alone would be relevant.

[13] It is possible, however, that a drop in new credits, if it hits a few industries hard, may have important indirect repercussions on aggregate effective demand and on the economic system as a whole, even if, because of an offsetting change in repayments, outstandings change not at all or only a little. A substantial decrease in demand produced by, or connected with, the drop in new credits, if concentrated on a single point or a small area, may exert a downward pull more powerful than the upward lift produced by a quantitatively equal but widely diffused increase in demand arising from the decrease in repayments. In actual practice, however, it is extremely difficult, if not impossible, to trace the effects of credit in such detail as to enable us to make comparisons of the more indirect influences emanating from a drop in new credits and those spreading from a change in repayments.

when and so long as outstandings rise (decline) or when and so long as the curve of net credit change rises (declines).[14]

The typical sequence in the turning points of the two curves—already discussed and exemplified in preceding charts —is indicated in Chart VII, in which outstandings are as-

CHART VII

HYPOTHETICAL END-OF-MONTH TOTAL OUTSTANDINGS IN CONSUMER INSTALMENT CREDIT, AND CORRESPONDING MONTHLY NET CREDIT CHANGE[a]

(millions of dollars)   (millions of dollars)
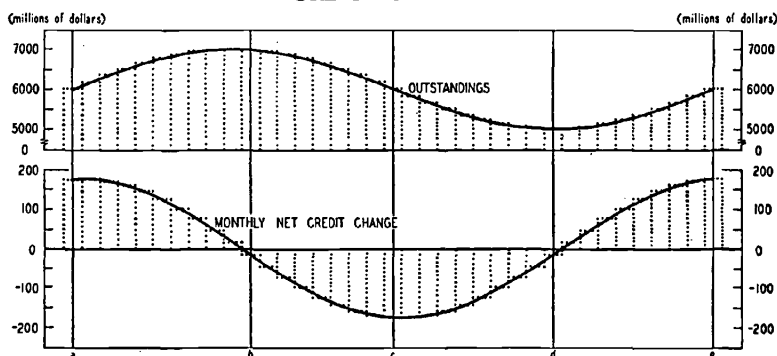
[a] Plotted on the assumption that outstandings take the form of 6,000 + sin t.

sumed to fluctuate in a regular, wave-like fashion—a sine curve—as pictured in the upper line. From this curve is plotted the curve of current net credit change, that is, the difference between the successive levels of outstandings.[15] It too fluctuates in a wave-like fashion, but its turning points do not occur at the same time as those of outstandings.

If outstandings are used as a criterion it will be said that instalment credit has a stimulating effect from a to b (and from d to e), when outstandings increase (that is, when net credit change is positive), and a depressing effect from b to d,

[14] For the analysis of this question I owe a great deal to correspondence and discussions with Moses Abramovitz of the National Bureau of Economic Research.

[15] The net credit change curve can be described either as the curve of the first derivative of outstandings (if the latter is conceived as a smooth, continuous curve) or as that of the first differences of outstandings (if we regard outstandings as a discontinuous series).

when outstandings decline (when net credit change is nega-
tive). But if net credit change is regarded as the correct
indicator, it will be said that credit stimulates from c to e,
when net credit change rises[16] and that it has a depressing
effect from a to c, when net credit change falls.[17]

The economic reasoning that would lead to the adoption of
current net credit change as a criterion is as follows. It has
been agreed that we shall call instalment credit a stimulating
factor if it causes a rise, and a depressing (deflationary) factor
if it causes a fall in consumer expenditure, that is, in the
dollar volume of sales of consumer goods.[18] Now suppose that
apart from the influence of instalment credit, the dollar
volume of sales is constant over time (or else take the sales
volume which would obtain if there were no instalment
credit as zero line) and add to, or subtract from, total expendi-
ture in each month the net credit change. Graphically
speaking, we may plot around the zero line (consumer ex-
penditure) the curve of net credit change, as in the lower
part of the diagram. The resulting series, pictured by the
undulating lower line, then allegedly represents the fluctuat-
ing consumer expenditure (or national income) resulting
from the operation of instalment credit. It follows that credit
is a stimulating force from c to e when consumer expendi-
ture rises, and a depressing one from a to c when consumer
expenditure falls.

There are, however, serious objections to this reasoning.
Suppose that credit fluctuates in accordance with Chart VII;

[16] In other words, when the rate of change of outstandings rises, that is,
when the *second* derivative (second difference) of outstandings is positive.
[17] In other words, when the rate of change of outstandings declines, that is,
when the *second* derivative (second difference) of outstandings is negative.
[18] Instead of "consumer expenditure" some writers might prefer to say
"national income in terms of money" or "total monetary expenditure."
Although for the present argument it makes no difference which magnitude
is emphasized, in general consumer expenditure is better for our purposes
than national income, because we cannot be sure that monetary (and still less
that real) national income will rise by the same amount as consumer ex-
penditure. If, for example, the commodities that consumers buy with the
aid of instalment credit come at first largely from dealers' stocks, national
income will not at once rise correspondingly, but the effect of credit may
still be regarded as stimulating.

as a result consumer expenditure will not fluctuate as de-
picted by the curve of net credit change, except in the im-
probable case that the new money put into circulation by
instalment credit in each month does not go on circulating
but leaks out of circulation immediately after it has been
spent the first time.[19] If this is not the case the fluctuations
in consumer expenditure resulting from the assumed series
of net credit change will no longer be represented by the
lower wave line in Chart VII but by some other line. For
example, if we make the opposite extreme assumption—that
the new money injected by instalment credit goes on circu-
lating with the same rapidity as the existing stock of money
—if we assume, let us say, that the money is spent on con-
sumption again and again, once every month, the increase
or decrease of consumer expenditure produced by instal-
ment credit during any month will be maintained in-
definitely; that is to say, total expenditure will stay at the
level which it has reached under the influence of instalment
credit until a new addition (or subtraction) is made. If we
make that assumption, it is obvious that successive net
credit changes must be cumulated in order to indicate the
total change in expenditure in each month due to the opera-
tion of credit. In that case the outstandings curve will de-
pict the course in total expenditure when credit is in opera-
tion: it will rise from a to b (and from d to e) and fall from
b to d.

Clearly both these assumptions about what will happen to
the money after it has been spent the first time are arbitrary.
There are many other possibilities. Leakages may be large
or small, and may change in successive phases of a credit
expansion; they are likely to be different in different phases
of the business cycle. Furthermore, there are other repercus-
sions apart from those produced by successive consumer
spendings, for example, the so-called "tertiary effects" of

[19] The concept of leakage has been made familiar by the multiplier analysis
of the secondary effects of public works; see, for example, J. M. Clark,
Economics of Planning Public Works (1935) Chapter 5.

increased expenditures, that is, the amount of new investment outlays by dealers and producers, which may and probably will be induced by the initial addition to consumer expenditure.[20]

An analogy with a public spending policy may help to clarify the issue. Assume that the government finances its expenditure in excess of current tax receipts (deficit) by borrowing, and that these borrowings do not involve any decrease in loans to other borrowers.[21] The total cumulated deficit (outstanding debt) corresponds to credit outstanding, and the monthly deficit or surplus corresponds to net credit change.

Advocates of net credit change as indicator of the stimulating or depressing force will have to say that the government pursues an inflationary or, as we said, a "stimulating" policy so long as the monthly deficit grows, and that as soon as the monthly deficit falls below the level of the preceding month, the effects of government finance become deflationary (depressive). It would then be impossible to tell for any particular month in isolation whether government policy is stimulating or retarding. Only if the movement of the deficit over a certain period (at least two months if we take the month as a unit period) is observed can any such statement be made.[22] The advocate of outstandings, on the other hand, will say that so long as there is a deficit there is inflation;

[20] These tertiary effects could be construed as negative leakages.

[21] The deficit is financed by "credit creation" rather than by "borrowing from voluntary savings," as it is frequently formulated.

[22] There is another implication which must be called unusual to say the least. Suppose we start from a position of a balanced budget, current expenditure being equal to current tax receipts. Then during a lengthy period the government spends on an enormous scale but at a constant rate, say, one billion dollars per month in addition to its current receipts. If we accept the reasoning just outlined in the text, we would have to say that except in the first month, when the spending policy was adopted, there is no stimulating effect, although the government spends at the rate of one billion dollars a month in excess of its tax receipts. Similarly, if it then starts on a policy of retrenchment and cuts down expenditure so as to create a monthly surplus of one billion dollars (withdrawing money at a rate of one billion dollars per month from circulation), we would not say that the government pursues a deflationary policy except in the first month of retrenchment.

when a surplus appears, when the outstanding debt is re-
duced, and the government spends less than it currently
receives through taxation, there is deflation.

There can be hardly a doubt that the second usage of the
words "inflation" and "deflation," or "stimulating" and "de-
pressing," corresponds better to the everyday meaning of the
two terms and to scientific tradition. In favor of the first
position it must be said, however, that if all secondary and
tertiary repercussions of a series of monthly deficits are
taken into consideration, that is, all the expenditures of the
successive recipients of the funds borrowed by the govern-
ment, it may happen that consumer expenditure (or the
national income) will begin to decrease when the monthly
deficit drops suddenly or stops increasing. But we could
express this also by saying that the slowing down of an in-
crease in the public debt, in other words a decrease in the
"rate of inflation," may produce depressing effects. A case
in point is the sudden decrease in the federal deficit during
1937, which some writers[23] made responsible for the slump
in that year.

We are now in a position to summarize the results of this
discussion and to indicate the significance and implications
of both series—outstandings and net credit change. We want
to know whether and when credit stimulates and depresses
economic activity, and are looking for a measure of the in-
tensity of its stimulating or depressing influence. There is
agreement that we regard credit as a stimulating factor when
its contribution to consumer expenditure is positive (when
it adds to total expenditure), and as a depressing factor when
that contribution is negative (when it subtracts from total
expenditure). But by contribution to, or effect on, total ex-
penditure we may mean either the *direct* contribution of
credit transactions occurring in a particular period, or the

[23] See, for example, Alvin H. Hansen, *Full Recovery or Stagnation?* (1938)
pp. 267 ff.; W. Salant in *Quarterly Journal of Economics* (1938). The net
"income-creating expenditure" of the federal government fell from 4,374
million dollars in 1936 to 1,114 million in 1937 (see Table 6, below).

total, direct plus indirect, contribution of current and past credit transactions.[24]

We shall use our terms in the first sense, and shall say that credit is stimulating (depressing) when its *direct* contribution to consumer expenditure is positive (negative), in other words, when the actual level of consumer expenditure is greater than that level which would have obtained if no credit transactions (no new credits and repayments) had occurred during the period in question, this hypothetical level being *inclusive* of the possible indirect effects of instalment credit transactions in the past.[25] It is evident that net credit change measures the direct contribution of credit to consumer expenditure (with due regard for those qualifications concerning the question whether instalment credit is a substitute for other forms of saving and dissaving, which were discussed at earlier points), and that credit is a stimulating factor so long as outstandings grow (in other words, so long as net credit change is positive) and a depressing factor so long as outstandings decline (or net credit change is negative).

If we adopted the second alternative mentioned above, we should have to say that credit is a stimulating (depressing) factor when its *total* contribution to consumer expenditure (the direct effects of current credit transactions plus the indirect effects of past credit transactions) is positive (negative).[26] This procedure is unworkable, however, because there is no simple measure or indicator of the total contribution.[27]

[24] In the discussion of the analogous problems relating to public spending the words "primary" and "secondary" effects have been used. See, for example, J. M. Clark, *op. cit.*, Chapter 9, pp. 80 ff.

[25] It should be noted that the statement that credit is a stimulating factor in a certain period does not imply that consumer expenditure during that period was on a higher level than in the preceding period. It may have been lower for reasons unrelated to instalment credit, or because of a drop in the cumulated indirect effects of instalment credit changes that occurred in the past.

[26] It will be observed that this interpretation of "contribution" underlies the argument for taking net credit change as an indicator of the stimulating and depressing effect of credit, which was outlined above.

[27] Only under very unrealistic, simplified assumptions could either net credit change or outstandings serve as a measure or indicator.

It is true that it would be very important to know what are the cumulated direct and indirect effects of credit expansion or contraction. We might risk a guess about their magnitude, but in the present stage of our knowledge and statistical information about such dynamic processes we cannot evaluate them qualitatively.[28]

We shall therefore continue to use stimulating and depressing in the sense of the direct contribution of credit to consumer expenditure. But indirect repercussions will be taken into account as far as possible in Chapter 5.

[28] The great range of possibilities is well indicated in Paul A. Samuelson's paper entitled "Interactions Between the Multiplier Analysis and the Principle of Acceleration" in *Review of Economic Statistics*, vol. 21 (May 1939). There it is shown that under the influence of a constant stream of government expenditure, national money income may assume almost any type of movement according to the specific assumptions which are made about the magnitude of multiplier and acceleration coefficient. It may approach asymptotically a certain finite level, or it may tend to rise without limit approaching a compound interest rate of growth, or it may display regular, damped or explosive oscillations. The situation is, of course, still more complicated, and the possible results still more numerous, if there is a changing stream of primary expenditures, as in our case.