The Monetary Theory of the Trade Cycle

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Source: *The Economic Journal*, Jun., 1929, Vol. 39, No. 154 (Jun., 1929), pp. 183–194

Published by: Oxford University Press on behalf of the Royal Economic Society

Stable URL: http://www.jstor.com/stable/2224538

THE MONETARY THEORY OF THE TRADE CYCLE [1]

§ 1. SOMETHING like one-third of Mr. Hawtrey's new volume of essays on *Trade and Credit* is devoted to criticisms of arguments set out by me in *Industrial Fluctuations* and elsewhere. Much of this criticism is naturally detailed in character. Though useful to me personally and requiring attention in future revisions of my work, this portion of it does not deal with matters of sufficient general interest to warrant a reply in the ECONOMIC JOURNAL. There are, however, certain broad issues raised by Mr. Hawtrey's discussion, which are of far-reaching importance both for theory and for practice. The purpose of the article that follows is to define and study these. It is necessary, however, to warn the reader that Mr. Hawtrey is a writer whom I do not always find it easy to understand, and that I may, on this occasion, as I appear to have done before, unintentionally fail to represent his position correctly.

§ 2. It will be convenient to begin by setting out those propositions which are common ground. First, with industry and banking organisation as they now are, expansions of productive activity are, in general, associated with increases in the volume of credit and in prices, and contractions of productive activity with corresponding decreases. Secondly, the credit movements and the price movements, which accompany and are in part due to them, are an important factor in accentuating the range of the associated industrial fluctuations. Thirdly, if credit policy were so controlled as to keep the general price level substantially stable, the magnitude of these industrial fluctuations would, other things being equal, be reduced in an important degree, to the great benefit of society at large and particularly of wage-earners. This last very important practical inference is now accepted by the main body of economists, and Mr. Hawtrey's writings have done much to win recognition for it.

§ 3. We have next to elucidate, so far as may be, what precisely Mr. Hawtrey means by his thesis that " The trade cycle is a purely monetary phenomenon." He does not mean that *industrial fluctuations* are purely monetary phenomena. " It is the periodicity of fluctuations forming the trade cycle which I believe to be wholly due to monetary causes " (p. 175). But

[1] *Trade and Credit*, by R. G. Hawtrey, 1929, Longmans, pp. 189. 10s. 6d.

the term periodicity is not used in a strict sense. For a true periodic phenomenon is one whose recurrences are separated by a precise and constant time interval; and the trade cycle is not periodic in this sense. Mr. Hawtrey uses the term in a wider and looser way. " The central characteristic of the trade cycle is its periodicity. That, of course, is the meaning of the term *cycle* " (p. 82). But *any disturbance*, which embraces an upward and downward movement spread over a finite interval of time, can be depicted as a wave; and, if periodicity is compatible with variations in the height, length and inter-relations of successive waves, any series of such disturbances can claim to be periodic. At all events Mr. Hawtrey has provided no definition that would enable us to distinguish between degrees of variation in these respects that do and degrees that do not allow a series of waves to be periodic and to constitute cycles. This is very unfortunate. For it is impossible to discuss satisfactorily a thesis the terms of which are ambiguous.

§ 4. This difficulty, however, partly disappears when Mr. Hawtrey's doctrine is studied, not as a single whole, but divided into parts. So viewed it is seen to contain two main elements, one of which, at all events, seems at first sight to be clear cut. This first and more fundamental thesis is as follows. In any day or year there is in any community a certain volume of consumers' income expressed in money. So long as the sum-total of purchasing power embodied in money balances and circulating currency remains constant, this consumers' income constitutes also consumers' outlay, expended partly upon consumable commodities and partly upon machinery and plant (*i.e.* investment) (p. 83). If in these conditions no disturbances are initiated on the side of production, the price level must remain constant, and so also—this is the fundamental point—must the wages bill and the volume of employment. No access of business optimism, no new inventions opening up opportunities for profitable investment, no desire of dealers to add to their stocks, no decision of the Government to undertake capital expenditure, can augment employment or diminish unemployment in any degree; because, aggregate consumers' outlay being unchanged, an expansion in one part of it can only be made at the expense of an exactly equal contraction in another part. It follows that, provided the sum-total of monetary purchasing power—roughly, of bank deposits—is kept constant, the trade cycle—which for this purpose appears to mean all fluctuations in industrial activity initiated on the side of demand—would totally disappear.

§ 5. The foregoing thesis is what Mr. Hawtrey seems, so to speak, to hanker after, and certainly it is what he ought to maintain if his statement about " a purely monetary phenomenon " is to be justified. But in fact he does not maintain it; for in more than one passage he recognises, in effect, that the consumers' outlay may be modified, nor merely by an alteration in the volume of bank credit, but also by an alteration in the velocity of monetary circulation brought about independently of the volume of bank credit (pp. 113 and 169). But, while recognising this, he appears to regard it as an incident of quite subordinate importance, in such wise that, for a broad practical statement, what was set out in the preceding section may be taken as an adequate picture of the facts. Let us write M for the stock of money (bank balances and circulating currency) in the country; V for the number of times in the year that a representative unit of money becomes consumers' income and outlay; R for the real income, including the income of capital goods, expressed in some representative commodity or service, that accrues to the community in a year; and P for the price in money of a unit of the aforementioned representative commodity or service. We then have the equation $VM = PR$. The statement of the preceding section is that V is in its nature constant. Mr. Hawtrey in fact allows that it may vary, but implies that it will only do so in exceptional circumstances (p. 110), about which we need not trouble ourselves seriously.

§ 6. If this view were right, it would follow, as Mr. Hawtrey contends, that, broadly speaking, Government expenditure on public works in times of depression can only increase the volume of employment if the expenditure is financed through the creation of bank credits; that the same result could be achieved by creating credits without the *addendum* of public works; and that, therefore, these " are merely a piece of ritual, convenient to people who want to be able to say that they are doing something, but otherwise irrelevant " (p. 112). There is, however, a comment to be added here. It is true that conditions may easily be such that a given programme of public works will cause employment to expand to exactly the same extent that some defined lowering of the discount rate, leading to an equal net increase in the volume of credit, would do. In these conditions the two " remedies " may properly be regarded as alternatives. But it does not follow that public works are mere ritual. They bring about the required expansion of credit without lowering the discount rate; the other plan involves lowering that rate.

For a community with an independent "managed" paper standard, it may well be that the discount method would usually be preferable. But, with a gold standard, the risk of a large foreign drain may render an extended use of this method impracticable. No such obstacle lies in the way of the rival method.

§ 7. The preceding paragraph was in the nature of a digression. Let us return to the main issue of § 5. The truth of the matter, as I see it, is that consumers' income and consumers' outlay can be varied in large and important ways by influences acting on V; and that, therefore, there is nothing to prevent P or R or both together from rising or falling substantially even though M remains rigidly fixed. Let us begin with a simple case. Suppose that, instead of spending £100 in buying food and clothes for my personal consumption, I use the £100 to engage painters and plasterers, hitherto unemployed, to repair my house, these painters and plasterers using the money to buy the food and clothes that I forgo. In that event certain money units, that would otherwise have become income and outlay during a year n times, now become income and outlay $(n + 1)$ times. That is to say, V is increased, and, therefore, of course, VM also. In other language, aggregate consumers' money income and money outlay are increased—and the Income Tax Commissioners' Accounts will show this—by the £100 that I paid to these men. My money income and outlay are the same as they would have been otherwise, theirs is £100 larger. Alongside of this addition to aggregate money income and outlay there is an addition to real income represented by the services of these men or the commodities that they produce. According to the relation between the addition to money income and the associated addition to real income, P may increase or decrease or remain unchanged. But in any event aggregate money income (which is equal to outlay) is increased, in spite of the fact that M has remained unaltered, and aggregate real income, along with the productive activity—employment—that gives rise to it, is also increased. Exactly similar reasoning applies if the Government takes from me £100, which I should have devoted to purchases for my personal consumption of food and clothes, and employs it to hire otherwise unemployed workmen in building roads or bridges.

§ 8. To obviate misunderstanding it is here necessary to make clear a matter about which I think there is no difference between Mr. Hawtrey and myself. This has to do with the precise significance to be attached to the terms money income

and outlay and its correlative the velocity of monetary circula-
tion. Money income is not the sum-total of money *which flows
through people's hands* during a year, but the sum-total which
becomes available to them for spending in the purchase of services,
consumption goods or capital goods. Thus, if a piece of lace,
the cost of the raw material in which may be neglected, is sold
by an artist to a wholesale dealer for £50, is sold by him to a retail
dealer for £60, and by him again to a consumer for £75, the
money income accruing to the artist is £50; but that accruing
to the wholesale dealer is not £60 but £10, and that accruing to
the retailer is not £75 but £15; the income of all three aggregating
to the £75 which the final purchaser pays. The velocity of
monetary circulation per year is measured by the consumer's
income thus defined divided by the stock of money. Hence,
if the services now rendered by three middle-men come to be
rendered instead by six for the same total charge, so that money
changes hands twice as often as before against goods—which, of
course, also change hands twice as often as before against money—
my V is not altered and aggregate money income and outlay
are not altered.

§ 9. This proposition, which nobody, I think, would dispute,
carries with it as a logical consequence the further and more
important proposition that consumers' income and outlay are
not, so to speak, self-subsistent, but are derivative concepts,
secondary to and built upon the concept of real income. Thus,
consider the expression VM, in which they are represented
algebraically. If I, in the course of a year, whether directly
or through the Government, hand over £100 in exchange for
the services of painters and plasterers, instead of holding it as
cash, nobody doubts that V is increased and that the sum-
total of money income (or money outlay) rises by £100. But,
if I give £100 to a friend, or if a father makes an allowance of
£100 to his son, provided that the recipient employs it in the
same way as the donor would have done, V is not increased,
and the sum-total of money income (or money outlay) remains
what it was before. If the Government takes £100 and hands it
over to a war pensioner or in interest on War Loan, the case is
economically analogous to the second of the above two cases : in
spite of the fact that in the reckonings of the Income Tax Com-
missioners it is treated as analogous to the first. Mr. Hawtrey,
by implication, adopts this generally accepted interpretation of
V. Clearly then consumers' income (and outlay) excludes all
categories of free gifts. Consequently it may change in size

even though the quantity and all the processes of flow undergone by money remain unaltered. If, for example, a man, who has been out of work and receiving £2 a week in charity, comes instead to earn £2 a week in wages, aggregate consumers' income or outlay is increased by £2 a week. The *definition* of consumers' income and outlay is such that, other things being equal, the passage of workpeople from unemployment to employment carries with it an increase in the community's money income (and outlay) exactly proportional, on the assumption that prices remain unchanged, to the increase in its real income.

§ 10. I have said that Mr. Hawtrey, while regarding variations in the velocity of circulation as of minor importance, recognises quite definitely that they may occur. The first half of his thesis, when set out so as to take account of this, is to the effect that, unless *either* M *or* V increase, PR cannot increase (p. 169). Since VM = PR this is of course true. We must be careful, however, not to infer from it that, if the banking system so controls the volume of credit as to keep the price level stable despite variations in V, industrial fluctuations will be eliminated. Constancy in P implies constancy in $\frac{VM}{R}$; but it does not imply constancy in R. I have argued elsewhere that, if P were stabilised, fluctuations in R would in fact, other things being equal, be substantially reduced; but I cannot accept what is, I think, Mr. Hawtrey's view (p. 80) that the trade cycle would be, for all practical purposes, eliminated.

§ 11. In view of current events it may be not inappropriate to discuss in a more positive and direct manner the question how far in a régime of stable general prices, *i.e.* apart from inflation, it is possible by means of Government expenditure to diminish the volume of unemployment. Imagine a large isolated island in which the land, buildings, machinery and so on are owned by non-wage-earners, while the manual work is done by labourers hired directly by them for wages paid in kind. All the labourers are supposed to be exactly alike, and there is no difficulty about their moving from one job to another. They insist absolutely on a wage of one bushel of wheat per week, and their numbers, in conjunction with the environing conditions, are such that it pays non-wage-earners to employ ninety per cent. at that wage, leaving ten per cent., say one million men, unemployed and receiving, through the Government, out of funds raised from non-wage-earners say $\frac{10}{h}$ million bushels of wheat per week for

maintenance, *i.e.* $\frac{1}{h}$ bushels of wheat each. The Government, setting out to " conquer unemployment," collects from non-wage-earners, instead of $\frac{10}{h}$ million bushels of wheat for maintaining the unemployed, a *net* weekly sum of R bushels of wheat for a campaign to find work for them. I ignore the fact that in practice part of this sum will go to superintendents and other non-wage-earners. Let the net number of men for whom employment is found be x. This net number is then equal to the difference between (1) the gross number that the *use* of R bushels per week by the Government in its campaign calls into employment and (2) the number that the *collection* of an additional sum of $\left(R - \frac{x}{h} \right)$ bushels per week—for a reduction in the number of the unemployed by one man saves the Government $\frac{1}{h}$ bushels of wheat per week—causes to lose their employment. To determine the net number of men brought into employment, we have then the equation $x = \phi(\mathrm{R}) - \psi\left(\mathrm{R} - \frac{x}{h} \right)$.

Now at first sight it might seem that the *gross* number of men for whom employment will be created, on the assumption that a rigid wage rate of one bushel per week is maintained, must in all circumstances be exactly R. This, however, is not so. If the Government spends its weekly R bushels in setting men directly to work on roads, bridges, or any form of capital development, then, indeed, the number is R. But, if it sets them to work in making consumable goods (in my simplified statement, growing wheat), it then gets back and has available for further wage payments what these men produce; and, again, it gets back and has available what the recipients of these further wage payments produce; and so on. How many men it calls into work altogether depends then on the shape of the curve depicting the marginal wheat output of varying numbers of men. If this curve is a straight line with a slope of 45 degrees, the total number called in to work will be R$(1 + \frac{1}{2} + \frac{1}{4} \ . \ . \ .)$, *i.e.* 2R men. If the curve is a straight line flatter than this, the number is greater than 2R; if it is steeper, less than 2R. In times of depression there is reason to believe that the curve representing the marginal productivity of labour in consumption industries (*i.e.* the real demand curve for labour in those industries) is not steeply inclined. If this be so, the number of men called to employment by the *use* in the

manner described of the campaign fund of R bushels of wheat per week will be several times R. There is yet a third way in which it is open to the Government to use its levy. This is to give a bounty to private industrialists proportionate to the wages bill paid by them. In this case the additional number of men called into employment will be the same as in the case just discussed.[1]

In investigating the debit side of the account, namely, the number of men that are driven out of employment by the *collection* of $\left(R - \frac{x}{h}\right)$ bushels of wheat per week, we have to distinguish immediate and direct effects from indirect subsequent effects. The number of men immediately and directly driven out of employment depends on how much of the $\left(R - \frac{x}{h}\right)$ bushels of wheat is taken from what would have been invested in setting labour to work in making capital (*i.e.* non-consumption) goods. Let the proportion of the levy that is so taken be $\frac{1}{c}$. Then

$$\psi\left(R - \frac{x}{h}\right) = \frac{1}{c}\left(R - \frac{x}{h}\right).$$

Indirectly, in consequence of the withdrawal every week of this quantity of wheat from what would have been non-wage-earners' investments, the annual supply of new capital equipment co-operating with labour to their order is likely to be contracted somewhat. Except, therefore, in so far as the new wage-earners called into employment are engaged in making this sort of capital equipment, a net reduction in the annual supply of it will come about. Since, however, the normal annual supply is a small part of the total stock, the percentage reduction in this stock (as against what it would otherwise have been) cannot be other than very small until the levies have been in operation for a considerable number of years. It follows that the number of men thrown out

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[1] It should be noted that, whereas under an arrangement in which the Government employs labour directly the net levy (R) made on non-wage-earners is equal to the gross levy on them, when the bounty method is employed, it, in general, falls short of the gross levy (which is equal to the aggregate sum paid in bounties) by a large amount. The gross levy is equal to the net addition to the wages bill where the demand curve for labour has the form of a rectangular hyperbola. These relations are easily displayed on a diagram. The reason why the net levy on non-wage-earners, which is required to set a given number of men to work, is larger when the Government devotes this levy to making roads or other public works than in my other cases is, of course, that in this case the levy has to cover, not only the excess of the wages bill of the new work-people over the value of their work, but also this value itself—which the Government retains in its own hands.

of employment, in this indirect way, through the collection of the levy R, is bound for the first year or two to be very small; though, if the levy policy is continued and other things remain the same, it will be liable to grow in a cumulative manner. Attention may, therefore, be concentrated on the number thrown out by the direct process described above.

We have then the equation $x = \phi(R) - \frac{1}{c}\left(R - \frac{x}{h}\right)$. If $\phi(R) = mR$, this reduces to $x = R\ \dfrac{m - \dfrac{1}{c}}{1 - \dfrac{1}{c}\cdot\dfrac{1}{h}}$. Suppose, for illustration, that $\frac{1}{c} = \frac{3}{4}$ and $\frac{1}{h} = \frac{1}{2}$. Then, in the case where $m = 1$, $x = \frac{2}{5}R$: where $m = 2$, $x = 2R$: and similar calculations can be made when any given values are assigned to c, h and m. It will be noticed that, for some values, x is greater than mR. The results attained are subject to the conditions (1) that the policy under review is practised for a short period only, and (2) that the rate of real wages is not raised above the original one bushel of wheat per week.

§ 12. Before passing on to the second half of Mr. Hawtrey's thesis, I venture to interpolate yet another consideration, which, while it lies outside his discussion, is nevertheless relevant to the first half of it. If F(t) be a function of time (t), the condition to make $\frac{F'(t)}{F(t)}$ constant is that $\frac{F'(t)}{F(t)} = \frac{F''(t)}{F'(t)}$. That is to say, if the daily proportional increase in a stock of things is to be constant, the daily proportional increase in the new production of those things must also be constant. If the percentage rate of increase of the stock is growing, the percentage rate of increase in new production must be greater than the percentage rate of increase in the stock; and in the converse case less.[1] Let us suppose that, roughly speaking, the flow of consumable goods produced with the help of machinery varies directly with the stock of machinery. It follows that, other things being equal, so long as wealth and productive power are increasing in a constant geometrical proportion, the ratio of the numbers of people employed in instrumental industries and in industries making non-durable consumption goods will remain the same; but that

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[1] My equation for simplicity assumes that the stocked things last for ever. It is easy to show that the same result holds good if either they last for a definite number of days or if a definite proportion of those in existence disappears every day.

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in periods when the proportional rate of progress is being
accelerated there will be a relative boom, and in periods when it
is being retarded a relative slump in the instrumental industries.
Since, therefore, work-people are not very mobile between
instrumental industries and industries that make non-durable
consumption goods, there is a *prima facie* case for the Govern-
ment's allocating its own constructional work, which is not con-
cerned with non-durable consumption goods, so far as is feasible,
to periods in which the proportional rate of progress is retarded.
There is, of course, nothing novel about this practical conclusion.
But the analysis behind it is, I think, interesting; for the inter-
relation between stocks and flows is fundamental in several
large problems, including, among others, the central problem of
money and prices.

§ 13. I now turn to the second half of Mr. Hawtrey's main
thesis. Had the first half been successfully established, he would
have proved that variations in the volume of credit, other than
such as serve to cancel variations in the velocity of monetary
circulation, are a *necessary condition* of the trade cycle. But he
would not by any means have proved, even if we waive the point
about velocity, that the trade cycle is a purely monetary pheno-
menon. For the movement of credit may be merely a mechanism
or channel through which genuine causes, *e.g.* swings of business
opinion between optimism and pessimism and so forth, exercise
their influence. Thus the movements of golf-clubs are a necessary
condition for playing golf : if there were no golf-clubs there would
be no game. But this does not prove that a round of golf is
purely a club-maker's phenomenon, so that no urgency on the part
of golf-players' wives could in any degree modify the period of
their rounds. To establish this Mr. Hawtrey needs a further
proposition, namely, that a golf-club, once created, possesses in
itself an internal rhythm, through which it impels its possessor
from tee to tee with a defined frequency. In less frivolous
language, he needs to show that any small accidental change may
start an expansion in the volume of credit; and that this, once
started, "grows, and will continue to grow, till the banks take active
steps to stop it. Under the conditions we have assumed they
do not take these steps until the reserve position is affected, and
by the time that occurs, the movement will have gathered con-
siderable momentum. The process of checking and reversing
this momentum will be a fairly protracted one " (p. 97). In other
words, the rhythm through which the volume of credit moves,
and on which the associated movement of industrial activity

directly depends, is a rhythm inherent in the structure of the
banking and credit organisation.   It is thus independent of the
play of non-monetary circumstances, whether variations in the
temper of business men, Government policy, or anything else
whatever.   If this could be established it would follow, not
merely that these things cannot operate on the trade cycle other-
wise than through variations in the volume of credit, but that
they cannot operate on it at all.

§ 14. Now, in order to warrant such a statement as that the
trade cycle is a purely monetary phenomenon, Mr. Hawtrey
clearly ought to maintain some such proposition as that just
set out.   In some passages he seems to do this; to hold that,
once a credit movement has been started by some small fortuitous
event (p. 98), the *whole* of what happens subsequently is deter-
mined by the internal stresses of the banking system, independ-
ently of what the rest of the community may do.   Other passages,
however, give a different impression.   " Traders' expectations,
whether erroneous or correct, form one element in the problem
of the regulation of credit.   But under pre-war conditions the
regulation of credit was guided by the state of the gold reserves.
If traders' expectations were of a kind to support and assist the
action of the banks in encouraging or discouraging borrowers,
they facilitated their task.   But, if traders' expectations tended
in the contrary direction, the bankers could not surrender their
policy.   They were bound to take whatever measures were
necessary to make it prevail. . . . If merchants refused to be
influenced in any way by expectations as to the future state of
markets, the psychological factor would drop out, but the credit
cycle would persist.   Borrowers would respond to the rate of
interest, and the volume of sales would respond to the volume
of borrowing.   Therefore business psychology, though in practice
a very important factor in the trade cycle, is not essential to it "
(pp. 100–1).   This passage may be interpreted to mean that the
state of business psychology makes no real difference to the
process of the trade cycle; bankers' efforts to assert their policy
being so adjusted to the movements of business psychology that,
whatever these are, the net effect of bankers' efforts and business
psychology combined remains the same.   In the last essay of his
book, however, Mr. Hawtrey rejects this interpretation and falls
into line with more ordinary views.   " If the monetary theory
of the trade cycle traces the period to the rate of progress of
credit movements in their effects upon the gold reserves, that
does not mean that this rate of progress is not itself effected

by non-monetary causes" (p. 176).   This at last is perfectly explicit.

§ 15. Now nobody has ever doubted that under a gold standard an expansion in the volume of credit sets up a drain on the gold reserves; that the banking system cannot with safety allow this drain to go too far; and that the steps which it normally takes to protect its reserves tend also after a time to make the volume of credit contract.   The structure of the banking system thus plays a very important part in determining alike the range and the duration of the swings which the volume of credit undergoes.   But it does not—this is the " orthodox " view—play an exclusive part.   When an upward movement begins, the rate at which the volume of credit expands is greater or less according as business men and (or) the Government are more or less keen to borrow money to extend their enterprises.   The keener they are, the more quickly the moment arrives at which the banking system must take action to protect its reserves. The range and the duration of the movement depend in part upon the requirements of the banks' customers.   In short, the banking system is not a penny-in-the-slot musical instrument; drop in a penny and a predetermined tune of credit is played.   It is rather an elastic and resilient structure, whose processes are the joint product of its own nature and of the forces which from time to time are impressed upon it.   Mr. Hawtrey in the end seems to accept this view.   But, in doing so, he deprives his thesis, that the trade cycle is purely a monetary phenomenon, of all significant content.   He explicitly recognises that non-monetary factors modify the cycle.   He realises that the penny-in-the-slot theory is indefensible; but does not apparently realise that, with its disappearance, the challenging paradox which he has undertaken to defend is left unsupported in the air.

§ 16. In the foregoing paragraphs I have endeavoured to express the reasons for my dissent from Mr. Hawtrey's main theses in a precise and clear-cut way.   What I have written is an argument: it is in no sense a review of his book.   If it were, there would be much to say in praise of the latest work of a most ingenious and subtle writer.   But Mr. Hawtrey is too well known to students of money and banking for that to be necessary; and he himself would greatly prefer discussion to compliment. Controversy for its own sake is as barren as it is boring.   But controversy whose objective is what *should be* thought, not what *may be* said, is sometimes a midwife of truth.

                                                    A. C. PIGOU