FREE MARKET ECONOMY IN A "CONSTANT FLOW" MONETARY SYSTEM

by

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FOREWORD

If a physicist writes about a subject relating to economics he owes the reader an explanation, if not an apology. The advances of physics have led the world to a point where the establishment of a World Government, one way or another, can no longer be very far off. Yet the world is far from being ready for this inevitable development. To take just one example, let us assume that a free market economy will be maintained under a World Government -- admittedly a rather bold assumption. How shall we then avoid the periodic recurrences of booms and depressions; shall we try to stave off depressions on a catch-as-catch-can basis, through ad hoc legislation by some World Parliament? Surely, we will have to do better than that.

In one sense, at least, the problem may be simpler under a World Government, for then we have to deal with a closed economy and need not be concerned with changing tariffs and other uncontrollable trade restrictions. Looking towards such a more remote application rather than the possible immediate applications of the principles discussed in this paper, our discussion is limited to conditions pertaining to a closed economy, and it does not cover the transition from the present to the proposed system.

The free market economy which is based on the conventional monetary system is inherently instable; in general, it is subject to alternate booms and depressions. During the boom the flow of goods is fast and the money circulation high; during the depression the flow of goods is slow and the money circulation low.

By imposing comparatively mild measures of central control upon an economy of this type, the behavior of the system can be modified to some extent. The interest rate might be controlled, for instance, by a "Central Bank" which also might sell and buy bonds on the open market. If this is done, the money volume might certainly be kept constant but that does not necessarily mean that the flow of goods or even the money circulation also can be kept constant.

It is a peculiarity of the conventional monetary system that money plays a dual function. Money – a small fraction of which is held by the public in the form of bank notes but most of which is kept on checking accounts – is used on the one hand for paying wages as well as purchasing goods from current production and it may represent on the other hand "reserves" which establish a claim on future production.

(Other conceivable monetary systems may be free from this dual role of "money". One might easily imagine for instance a system in which the two functions of money are separated and in which – as the result of some magic – one currency is made use of for the paying wages as well as the purchasing of goods from current production and another currency is being made use of for keeping "reserves". An exchange ratio between these two currencies would then be established by the free market, which would vary and the variable exchange ratio would introduce an additional degree of freedom which is lacking in the conventional monetary system. A feature somewhat related to this will be discussed further below in connection with the "constant flow system" to which the greater part of this paper is devoted.)

During a period of falling prices such as will occur at the onset of a depression in the conventional monetary system, the circulation of the money which is kept by business as a reserve on checking accounts will slow down. As far as an individual business organization is concerned which holds funds in reserve on a checking account, the most profitable employment during such a period of some of the funds so held may very well be to do nothing with them and just to keep them hoarded.

During such a period the money circulation may slow down even if the "Central Bank" keeps the money volume constant or increases the money volume by ~~selling~~ *buying* bonds on the market and by reducing the interest rate all the way down to zero. The money pumped into the economy by the Central Bank through the ~~sale~~ *purchase* of bonds may circulate very slowly and the loans taken up under the stimulus of the low interest rate may not lead to enough spending to prevent a fall in the money circulation. The operations of the "Central Bank" on the bond market and the manipulations of the interest rate are measures insufficient for stabilizing the free economy in the conventional monetary system.

The free market economy in the conventional monetary system may also be subject to long-sustained disturbances not necessarily cyclical in character. Quite independently of any particular type of monetary system upon which a free market economy may be based it will be true that the desire of the individuals to save and build up reserves in one form or another is determined by economic and psychological factors which are largely independent of those economic and psychologic factors which determine how much opportunity there is for new capital investment and how much willingness to make use of such opportunities as do exist. But while the possibility of disparity between the desire to save and the will to invest is independent of the particular monetary system the manifestations of such disparity are not independent of it.

In the conventional monetary system such a disparity, if it consists in a preponderance of the desire to save may lead - if it is long sustained - to a long-sustained non-cyclical disturbance. ~~It may manifest itself in the ~~growing accumula-~~ ~~tion of reserves in the form of continually increasing checking accounts which~~ ~~are then actually hoarded. If people persist over a long period of time in spending~~ ~~in the aggregate less than corresponds to their aggregate income there will be an~~ ~~steady increase in the amount of money hoarded, accompanied by either decreasing~~ *up*

The attempt to which manifests itself ~~in~~

in decreasing

prices as well as wages or else increasing unemployment or ~~th~~ both. This particular mani-
festation of the disparity between the desire to save and the will to invest is inti-
mately connected with the dual function which money plays in the conventional monetary
system.

A disturbance of this sort might to some extent be remedied by taxation
that will change the income distribution in the direction of greater uniformity and
thereby, under certain conditions at least, reduce the disparity between the tendency
to save and the will to invest. A sufficiently steeply progressive income tax, for
instance, particularly if it were used to finance a flat per capita bonus, could thus
have the result that a larger fraction of the national income is spent for the pur-
chase of consumer goods ~~and that the total spending becomes equal to the total income~~.
By reducing the desire to save in the aggregate such taxation would thus remove the
undesirable manifestations of the disparity between the tendency to save and the will
to invest by removing the disparity itself. The method is, even though effective, in a
sense a barbarous one. It is particularly barbarous from the purely economic point of
view if the progressive income tax is not coupled with a flat per capita bonus but
is to a large extent used for some unproductive government expenditure such as expendi-
ture for military defense.

As to the cyclical disturbances to which in the conventional monetary sys-
tem the free market economy is subject, there is little doubt that in principle these
disturbances could also be eliminated by governmental control measures if one just
goes sufficiently far towards a fully planned economy, even though one may still re-
tain a large number of market mechanisms.

It is not our intention to discuss the merits of such a planned economy
versus a free market economy. In order to have a profitable discussion of that issue
it would be first necessary to determine how good the planners might be expected to be
under present day conditions or at least in the foreseeable future, either within the

present national frameworth or within the framework of some world government. To deal with such an issue is not the purpose of this paper.

The purpose of this paper is rather to show that a comparatively minor modification of the conventional monetary system of the free market economy and notably a modification which does not make the economy any less free, would be capable of rendering the system stable. The same modification would not only eliminate trade cycles but would also render any disparity between the desire to save and the will to invest harmless in its manifestations, without necessarily removing the disparity itself. We shall refer to this modified monetary system as the "constant flow" system, since we claim that the money circulation in such a system will remain constant and so will the flow of goods. It will be seen that the constant flow system does not impose any limitation on consumer sovereignty except the limitations imposed upon it by the laws of nature and especially the law of nature which says that you cannot have your cake and eat it too.

It might be, of course, asked whether full consumer sovereignty is at all desirable. It might well be, for instance, so someone might argue, that, if there is a rapidly growing population full consumer sovereignty might, under certain conditions, lead to too little aggregate saving and — from the point of view of the long range interests of the community - to too little investment. The long range interests of the community might of course be safeguarded in such cases by the government, which might, for instance, impose taxes and make the proceeds available to the money market for purpose of investment. But it seems to me that even if government action has thus to be invoked in certain cases, at least we ought to have such outside measures imposed unto an economic system which is inherently stable, and thus maintain a clear separation between government action aimed at the safeguarding of the long range interests of the community and the day-to-day operations of those economic factors proper in which consumer sovereignty finds its natural expression.

Insert: Fool proof unnecessary gadgets

The General Framework of the Constant Flow System

It is perhaps useful to indicate at the outset, without going at first into too much detail, the essential features which distinguish the constant flow system from the conventional monetary system. Before we do this however, we shall have to describe the general framework within which the constant flow system operates.

For the sake of presentation we shall distinguish between an organization which we shall call the "Bank" and another which we shall call the "Central Bank". Neither of them are business organizations operating for profit; they are public service organizations with a fully automatic mode of operation. They engage in certain types of operations which yield a revenue and certain other types of operations which involve expenditures. These two different types of operations are so balanced that the net incomes of the "Bank" and the "Central Bank" are at all times exactly zero.

In contrast to these two banking institutions are the ordinary banks which are business organizations that operate for profit in the money market. They accept time deposits both for shorter and longer duration and grant credits for shorter or longer duration against securities or otherwise. They float or issue bonds and may in general engage in most of the usual activities pursued by banks in the conventional monetary system but they may not accept money deposits on checking accounts.

We postulate that every person or business or organization has two accounts with the "Bank":

1). A checking account on which no interest is paid.

We postulate that all wages are paid and all purchases of goods are made by transfer through check, and thus we disregard for the time being the possibility that for the sake of convenience a certain limited amount of money may be issued in the form of bank notes and may circulate among the public. The discussion of this latter point will be taken up later.

2). A "special debit" account on which interest is charged at the official interest rate p.

This __official__ interest rate p is, as we shall explain later, always kept above the interest rate of the free money market for short term loans and in particular it never falls below a certain minimal value p_o (which for the moment we may assume, pour fixer les idees, to be about 3% per annum).

The revenue of the "Bank" derived from interest charged on special debit accounts is currently spent in its entirety in paying interest on "debit letters" — a security of a particular type which we shall further discuss later. These "debit letters" are almost all in the hands of the public and only a small, but variable, fraction is held by the Central Bank.

We shall designate the amount carried on an individual checking account with c, and the amount carried on the corresponding individual special debit account with d. Similarly we shall designate that the sum total of the amounts carried on all checking accounts with C, and call it the "Money Volume", and we shall designate the sum total of the amounts carried on all special debit accounts with D, and call it the "Special Debit Volume".

We shall assume for the sake of this presentation that there are in the system dollar certificates printed in some amount C_o, and we postulate that the Bank is obligated to keep 100% coverage in such certificates for all checking accounts. Accordingly C_o sets an upper limit to the money volume.

Let us assume that at some given time the "Money Volume" is equal to C_o, i.e. __at that time__ all dollar certificates are in the "Bank" covering the checking accounts and none of them are held at that time by the "Central Bank". We then postulate, that thereafter whenever there is a shrinkage in the "special debit volume" and dollar certificates not needed for 100% coverage of checking accounts are returned by the "Bank" to the "Central Bank", then the Central Bank will immediately purchase "special debit letters" on the open market for the full amount of the dollar certificates which it receives from the Bank, and thereby keep the Money Volume constant.

Similarly if there is an expansion in the "special/~~special~~ debit volume", the Central Bank will keep the Money Volume constant by selling "~~additional~~ debit letters".

As a result of these open market operations of the Central Bank, the Money Volume will remain constant (except for minor daily fluctuations). The total D of the special debit accounts will however not be fixed but will vary with business conditions. It will oscillate around some average value D_0 which we shall call the normal or standard value because it obtains when business conditions are normal.

The total, R_0, of the nominal value of the "debit letters" contained in the system is chosen to be equal to the normal value D_0 of the "special debit volume". Because the bank will <u>in toto</u> pay in interest on special debit letters just as much as it receives in interest on special debit accounts, the particular choice of $R_0 = D_0$ will have the consequence that interest on the nominal value of a "debit letter" is paid at a rate π which is at any time very close to the rate p at which interest is charged on special debit accounts. For we have

$$ p\, D = \pi R_0 = \pi D_0 \qquad \text{and therefore} \qquad \frac{p-\pi}{p} = \frac{D_0 - D}{D} $$

On the average the interest rate π paid on the nominal value of debit letters will be exactly the same as the interest rate p charged on special debit accounts.

We postulate that against a "debit letter" as collateral the holder is entitled to obtain funds (in an amount equal to the nominal value of the debit letter) charged to his special debit account and credited to his checking account. It should be noted here for later reference that because of the identity of the interest paid on debit letters and charged on special debit accounts the holder of a debit letter who borrows an amount equal to its nominal value from the Bank on his special debit account and keeps the funds so obtained on his checking account will have available "cash" on which in the aggregate he neither pays nor receives any interest.

Special Debit letters can be freely bought and sold on the market. Their price may fluctuate and there is no theoretical limit to the height which it may reach. On the other hand the price cannot fall very much below par because of the provision that the holder is entitled to obtain funds equal to its nominal value against the debit letter as collateral.

While we have postulated in the foregoing that the Central Bank keeps the Money Volume constant by open market sales or purchases of "debit letters," it should be pointed out that this is not an essential feature of the constant flow system. We could just as well more generally postulate that the Central Bank will keep the Money Volume constant by open market sales or purchase of an assortment of bonds and stocks as well as "debit letters." We singled out "debit letters here solely in order to make it easier to be quite specific in our prescriptions, and thereby to facilitate the presentation, and not because the restriction of the open market operations of the Central Bank to "debit letters has any particular significance from the point of view of the general behavior of the constant flow system.

The interest rate for short-term and long-term loans is determined by the free money market. The official interest rate p ~~however~~ (i.e. the interest rate charged on special debit accounts) however is determined in the following manner: In the normal or standard condition (special debit volume $D = D_o$) around which the system oscillates, there is held by the Central Bank a certain amount of debit letters having _in toto_ a nominal value $R*$ which we postulate is a small fraction of the total R_o of the nominal value of the debit letters contained in the system.

a) Whenever the special debit volume D is _below_ its standard value, the debit letter holdings R_{CB} of the Central Bank will automatically be above its standard value $R*$. The official interest rate p during such a period of time is then postulated to be either equal to p_o or else equal to the free market interest rate

for short-term loans multiplied by some suitable factor f which is larger than one, - whichever of the two formulae gives the _higher_ value. The official interest rate p is thus always kept sufficiently high above the interest rate of the free market for short-term loans to make certain that no money shall be taken up for purposes of investment on special debit accounts.

b) Whenever the special debit volume D is above its standard value D_0, and accordingly R_{CB}, the debit letter holding of the Central Bank, is lower than its standard value R*, then the official interest rate p is postulated to be either equal to the free market interest rate for short-term loans multiplied by the above mentioned factor f or else it is given by the formula   ,

$$p = p_0 \frac{R^*}{R_{CB}}$$

whichever of the two prescriptions gives the _higher_ value.

The degree to which the special debit volume can expand is thus essentially determined by the choice of R*, the standard value of the "debit letter" holding of the Central Bank.

In order to make the subsequent discussions easier, i.e. for the purposes of this presentation, we shall postulate the following:

All wages and salaries are paid at equal time intervals which we shall call the Basic Period of the system. If the Basic Period is chosen to be a week, all wages and salaries are paid at the beginning of the week. If the Basic Period is chosen to be a month, all wages and salaries are paid at the beginning of the month. We shall not make any specific choice as to the length of the Basic Period except to state that it must comprise a number of days and therefore may not be made shorter than a week. We shall simply call the Basic Period a "month" so that when we shall speak of operations which take place on the first day of the "month" or the last day of the "month" when we actually mean the first day of the Basic Period or the last day of the Basic Period.

All payments of [illegible] in [illegible]

Loans are permissible; [illegible] are permissible

Special

The Provisions of the Constant Flow System

We are now in the position to state the two main provisions of the constant flow system, which are as follows:

1) *While* there is no interest either paid or charged on checking accounts there is interest charged on the "excess" of the checking account over and above the debit shown by the corresponding special debit account, i.e., there is interest charged on the amount c—d, if c is larger than d. On the "excess" of the checking account interest is charged at the rate $p\Delta$ where p is the official interest rate charged on special debit accounts and Δ has some value above one. For instance if Δ has a value of 4, we would have in the normal condition (when we have $p = p_0$ and, as previously assumed, $p_0 = 3\%$) interest charged at the rate of 12% per annum or *about* 1% per month on the "excess" (c — d) of the checking account. The numerical figures are here chosen arbitrarily for the sake of illustration only.

2) Whenever a check is deposited in any one checking account, whether as the result of a sale of goods or as the result of the granting of a loan by the Bank which is credited to the checking account and charged to the corresponding *special* debit account, the check will not be credited in full but rather with a deduction of a flat "service charge". This "service charge" is *pro*portionate to the value of the check and amounts to $\tau p\Delta$ *dollar/dollar*, where τ is the basic period of the system. Assuming that τ is one month and that $p = p_0$ and Δ have the values mentioned above under 1), this service charge would amount to $\frac{1}{12}\frac{3}{100}4 = \frac{1}{100}$

3) The net revenue of the Bank and Central Bank arising in toto from the open market operations, the interest charged on the "excess" of the checking accounts, and the service charges levied on checks credited to checking accounts is currently returned to the economy in full in two ways:

   (a) A sales bonus/(i.e. a negative sales tax)/ *at a flat rate* on all retail sales

   (b) A sales bonus on all other sales of goods at a flat rate but not

exceeding in any individual case the actual cost of transportation arising from the delivery of the goods sold.

insert the sales bonus in either case takes the form of a refund total or partial of the service charge paid on the check that is given in exchange of the goods.

The service charge listed under No. 2 is a necessary concomitant of the provision of charging interest -- according to the provision listed under No. 1 -- on the "excess" of the checking account. This service charge discourages the reoccurrence of transfers of money from the checking account of one person, (who at a given moment happens to have a high amount of cash and a low special debit) to the checking account of some other person, (who at that moment happens to have a low amount of cash and a high special debit). In the absence of this service charge hoarded money would go into hiding by being repeatedly shifted from one person's checking account to another's, and the provision of charging interest on the "excess" of individual checking accounts would then be rendered inoperative. (Explain)

The provision listed under No. 3 serves to compensate the adverse economic effect that this service charge otherwise would have. This provision relieves those who are buying or selling goods, which are actually changing hands, from the burden of the service charge while the service charge continues to function as a damper on possible recurrent monetary transactions which are unaccompanied by physical transfer of goods.

The cost of keeping money

The philosophy —
of no hoarding and of spending

α earned income + β capital gain

How Does a Business Operate?

If someone wants to start a business he must have a certain amount of capital at his disposal. In order to be specific, let us assume, for instance, that he has assets in the form of debit letters, bonds, stocks, real estate, etc. In order to start his business he will then sell part of his assets in order to procure the cash with which to purchase goods and to pay the wages of labor employed say in establishing a factory. Or if he is a dealer in consumer's goods he will sell some of his assets and buy for the proceeds the goods in which he wishes to establish a stock.

In addition to this initial investment he needs a certain amount of cash on hand to serve as his working capital. This cash he may obtain, for instance, in whole or in part by borrowing from the bank against "debit letters" as collateral a certain amount charged to his special debit account and credited to his checking account. [He could of course use any other assets as collateral also.]

When operating in this particular manner a business man is in reality using his own capital as working capital. This can be seen from the fact that the interest charged on the special debit account is equal to the interest payment which he receives on that part of his debit letter holding which serves as collateral, i.e. the aggregate consisting of the debit letter which is used as collateral, the debit obtained on the special debit account and the cash credited to his checking account, will neither receive nor pay any interest.

It might be said here that the possession of debit letters in a sense represents the privilege of obtaining working capital free of interest or else the privilege of lending working capital to others on a special debit account (indirectly, via the Bank) at the current official interest rate. Let us investigate now what amount an individual business will wish to keep on its special debit account. This amount is determined by the desire of the business to minimize the expense connected with this current business operation which is composed of the following items:

a) the interest charged on the special debit account at the rate p

b) the interest charged on the "excess" of this checking account over his special

debit account at the rate of $p\Delta$

c) the service charges charged each time he obtains a fresh debit on his special

debit account or in form of short-term loans when the corresponding amount is

credited to his checking account. This service charge amounts to $cp\Delta$

If a business organization kept both a large amount of cash on its check-

ing account and also a large amount of debt on its special debit account, its interest

payments under a) would become very high.

If it kept a too high amount in cash on its checking account and a too low

amount of debt on its special debit account, its interest payments under b) would be-

come very high.

And finally if the business organization tried to keep a too low amount of

cash on its checking account and adopted the policy of taking up fresh loans from the

Bank or on the free money market, each time when in the normal course of its business it

needed more cash, then the service/charges under c) would add up to a very

high amount.

Thus for any given business depending on the fluctuations associated with

it, there will be an optimal amount of cash and an optimal amount of "special debit"

which will minimize/the total burden/resulting from the charges specified under a),

per dollar turned over

b) and c). If the basic period τ is fixed, the optimal value for "the special debit"

per dollar turned over will depend on the value Δ and it will be

interest rate p. Clearly the optimal value for the special debit will increase with

increasing value of Δ. If Δ were made to be zero the optimal value for the special

debit will become zero, since in that case a business organization which frequently

needs a larger amount of cash for a short period of time could each time take up a

short term loan on the open market at some interest rate which is below the official

rate p or alternatively could keep in the absence of any debt registered on its special

debit account - a large amount of cash on its checking account (without ~~payingxanyx~~ being burdened either with ~~the~~ any "service charges" or with any/interest payments on the "excess" of its checking account) .

* * *

Just as the amount d kept by an individual business in any given trade situation on its special debit account, is the larger the higher the value of Δ so will the total debit volume D for any given trade situation be the greater the greater the value of Δ . We shall assume for the time being the value of Δ is fixed and then if it is chosen high enough we can always make $D_0 \geqq C_0$

If there is a change in the general business situation, for instance, if there is for any reason a slackening of trade business, organizations will, by and large, find that they can get along with less cash and will therefore, in order to save interest paid on the special debit account ~~reduaenthanspenialxndanix~~ (at the rate which never falls below ~~xexx~~ p_0) reduce the special debit. Thus the special debit volume will respond to a slackening of trade by immediate shrinkage. The Central Bank which according to the rules is not permitted to keep in its portfolio any of the dollar certificates which of necessity flow to it in the same measure as the special debit volume shrinks will then currently buy debit letters on the open market and thereby maintain the money volume constant during the period during which there is a shrinkage of debit volume.

During such a period the market price of debit letters will be rising and along with it other securities such as bonds and stocks will also rise to some extent even though the open market purchases of the Central Bank may be limited to debit letters only. This rise in the market price of the debit letters and other securities as a result of the open market operations of the Central Bank may be much steeper than would be the rise of the price of securities in the conventional monetary system in otherwise similar circumstances.

the cost of
keeping cash

Take first / ~~[crossed out]~~ then

page 18

Then the Bibliography

~~[crossed out]~~ remarks on saving

(i) on private acct. α economy & β expected ~~[?]~~

shift of cash from business account
to private accounts

includes pages 16 and 18

The philosophy
1.) the cost of keeping cash
2.) How no hoarding and it spending = of sinned income
of B capital
private accounts, join

General Characteristics of the Constant Flow System

The special provisions of the constant flow system achieve a
double purpose. On the one hand, a business that requires a large amount of
cash for its operation can/keep a large amount of cash without being penalized.
for it. Such a business will be burdened only with interest payments on a
commensurate "special debit" at the official interest rate p which may be rather
low. On the other hand, the special provisions of the constant flow system
will effectively prevent a business from accumulating profits in the form of
useless cash. For such useless cash derived from accumulated profits is bur-
dened with interest payments at the rate of $p\Delta$ which ~~may be~~ is much higher
than the official interest rate p. The most essential behavior characteris-
tics of the constant flow system follows from the fact that the holding of
the accumulated profits in the form of cash is costly whereas the holding
of cash which is balanced by commensurate special debit is not costly.

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We may say in general that during periods during which the Central Bank purchases debit letters in the course of its open market operations, the market price of the debit letters will be rising; in general it will rise above par, and possibly very much above par.

Conversely when there is a period in which special debit volume rises and the Central Bank is selling "debit letters" on the open market, the market price of "debit letters" will fall and along with it there will be a fall of other capital assets, particularly stock and bonds even though the open market operations of the Central Bank may be limited to the sale of special debit letters. The market price of special debit letters might fall during such a period quite rapidly to par and even slightly below par. As the debit letter reserve, R_{CB} of the Central Bank falls below R* its standard value and if the expansion of the special debit volume continues there will be a rapid rise in the official interest rate p charged on debit accounts according to the formula

$$p = p_0 \frac{R^*}{R_{CB}}$$

Stability of the Constant Flow System

For the purpose of this presentation, we will now postulate certain rules which may be of no practical importance and may in fact be unnecessary, but which we wish to ~~postulate~~ *assume* in order to facilitate the analysis of stability. These postulates are as follows: *and the discussion*

that will effect the postulation

A. All wages and salaries are paid on the second day of the month.

B. No checks may be drawn on the last day of the month, and checks received on a checking account during the month will, (a) if they represent payments received for the sale of capital assets, be credited within a day, (b) if they do not represent payments received for sales of capital assets, be credited on the last day of the month.

C.~~X.~~ The interest charged on the account difference (c-d) is calculated from the amount shown on the last day of each month on the checking account and on the special debit account.

D. *red dollars for manche... debit letter*

In order to facilitate the discussion of the behavior of the constant flow system, we imagine that all accounts are separated into two classes -- business accounts and private or consumer accounts. We assume that no expenditures for purposes of consumption are charged to business accounts. A private person who owns a business or a share in it may have his share of the profits in whole or in part transferred to his private account (distributed profit) *and* may then spend the profits so distributed *in* whole or in part for the purchase of consumers goods.

According to the provisions listed above, that part of the cash which circulates in the capital assets market circulates very fast. On the private accounts of those who receive salaries or wages -- and these will constitute the bulk of the private accounts -- each dollar will circulate at the rate of close to one dollar per month, and the same may be true of all private or consumers' accounts. All the money ~~circulating on~~ *flowing through* private accounts is used, we may assume, for the purchase of goods.

E. *overdrawing of checking accounts*
F. */ Bank will buy red dollars in (amount?)*

Therefore that for a given price level the ~~circulation~~ flow of money ~~by~~ through private

accounts can be equated with the flow of consumers' goods. On business accounts

money used for the purchase of goods might very well circulate slower, and it

can not on any ~~on no~~ business account circulate any faster because of the provision B)b,).

Incidentally it should be noted that as the result of provision C

consumers ~~should~~ who in general have little cash left at the end of the month are

not burdened with any appreciable interest payments on the "excess" of their private

checking account.

Constancy ~~Consistency~~ of the Money Circulation

Let us assume now that due to some transitory economic disturbance there

is a slackening of business. The special debit volume will then be falling and

accordingly the Central Bank will currently buy ~~special~~ "debit letters" on the open

market. What will those who sell these ~~special~~ "debit letters" do with the money

they receive from the sale? During such a period of trade shrinkage they have

no need for an increased amount of cash and the useless hoarding of cash is expen-

sive on account of the interest charged on the "excess" of checking accounts. Thus

those who ~~sold~~ sell "debit letters" to the Central Bank will use the money in one of the

following ways:

a) to diminish their special debit account in order to save interest,

b) to buy goods, for instance, durable consumers' goods, ~~or~~

c) to invest; i.e. to spend ~~their money~~ on the purchase of goods or
   on the payment of wages, ~~and~~

d) to purchase capital assets.

If they spend the money according to a) there will immediately be a further

reduction in the special debit volume, and accordingly the amount of money so used

will within a day be pumped back into the economy by the open market purchases of

the Central Bank. In the case of c) that fraction of the money which is spent on

wages will almost entirely be spent within the month. In the case of d) the

money will reappear within a day in another person's ~~hands~~ *checking account.*

We thus see that because the useless hoarding of money is suppressed

we may be sure that a large fraction of the money pumped by the Central Bank

into the economy when the debit volume shrinks is spent for the purchase of

goods. ~~during the~~ ~~xxxxxx~~ ~~month.~~

During a period during which the special debit volume shrinks, while the

money vlaume xx is kept constant by the open market purchases of the central

bank, money will be ~~forced~~ *shifted* from business checking accounts to private or

consumer checking accounts. And consequently during such a period there might

be an increase, but there will be no decrease, of the money circulation. It is

this characteristic of the constant-flow system which renders the system stable.

Thus we see that not only is the money volume maintained constant, but there is

also no decrease of the money circulation accompanying a shrinkage of the special

debit volume, and correspondingly there is no increase in the money circulation

accompanying an expansion of the special debit volume.

Inventory Cycles

Let us consider an economy which is not expanding. Let the population be
stationary and let there be no technilogical advances that could lead to
new investment. At a given instant part of the population spends less than
its income for the purchase of goods, and saves, for instance by buying "debit
letters" or other capital assets, and the rest of the population at the same
instant spends more than it owns, it dissaves by selling debit letters or
other capital assets. The market price of debit letters, so we wish to assume,
is not changing at this particular time, and the price of all other capital
assets is not changing either.

Let there now be a disturbance consisting in a change of attitude on the
part of the dealers who, perhaps in a mistaken anticipation of falling prices
begin to sell goods from stock without replenishing their stock.

If this happens dealers will begin to accumulate cash on which they re-
ceive no interest and for which they have no used in their business. They will
therefore begin to use this unnecessary cash to reduce their special debits
on which they are charged interest during such a period at the official rate p_0.
The excess dollar certificates no longer needed by the bank for 100 per cent
coverage will then currently flow from the Bank to the Central Bank and via
the open market purchases of "debit letters" by the Central Bank they will flow
back to the Bank. The market price of the debit letters will be rising and the
debit letter reserve R_{CB} of the Central Bank will be rising. At the same time,
the interest rate charged on special debit accounts will remain unchanged at
p_0.

Dealers who do not decrease their debit but rather allow cash to accumulate
on their checking account will gradually have an "excess" over their special
debit, and will either have to purchase "debit letters" or other capital assets
before the end of the month, or pay high interest rate p_Δ on the "excess".

The General Framework of the Constant Flow System

It is perhaps useful to indicate at the outset, without going at first into too much detail, the essential features which distinguish the constant flow system from the conventional monetary system. Before we do this however, we shall have to describe the general framework within which the constant flow system operates.

For the sake of presentation we shall distinguish between an organization which we shall call the "Bank" and another which we shall call the "Central Bank". Neither of them are business organizations operating for profit; they are public service organizations with a fully automatic mode of operation. They engage in certain types of operations which yield a revenue and certain other types of operations which involve expenditures. These two different types of operations are so balanced that the net incomes of the "Bank" and the "Central Bank" are at all times exactly zero.

In contrast to these two banking institutions are the ordinary banks which are business organizations that operate for profit in the money market. They accept time deposits both for shorter and longer duration and grant credits for shorter or longer duration against securities or otherwise. They float or issue bonds and may in general engage in most of the usual activities pursued by banks in the conventional monetary system but they may not accept money deposits on checking accounts.

We postulate that every person or business or organization has two accounts with the "Bank":

1). A checking account on which no interest is paid.

We postulate that all wages are paid and all purchases of goods are made by transfer through check, and thus we disregard for the time being the possibility that for the sake of convenience a certain limited amount of money may be issued in the form of bank notes and may circulate among the public. The discussion of this latter point will be taken up later.

2). A "special debit" account on which interest is charged at the official interest rate p.

This **official** interest rate p is, as we shall explain later, always kept above the interest rate of the free money market for short term loans and in particular it never falls below a certain minimal value p_o (which for the moment we may assume, pour fixer les idees, to be about 3% per annum).

The revenue of the "Bank" derived from interest charged on special debit account is currently spent in its entirety in paying interest on "debit letters" - a security of a particular type which we shall further discuss later. These "debit letters" are almost all in the hands of the public and only a small, but variable, fraction is held by the Central Bank.

We shall designate the amount carried on an individual checking account with c, and the amount carried on the corresponding individual special debit account with d. Similarly we shall designate that the sum total of the amounts carried on all checking accounts with C, and call it the "Money Volume", and we shall designate the sum total of the amounts carried on all special debit accounts with D, and call it the "Special Debit Volume".

We shall assume for the sake of this presentation that there are in the system dollar certificates printed in some amount C_o, and we postulate that the Bank is obligated to keep 100% coverage in such certificates for all checking accounts. Accordingly C_o sets an upper limit to the money volume.

Let us assume that at some given time the "Money Volume" is equal to C_o, i.e. **at that time** all dollar certificates are in the "Bank" covering the checking accounts and none of them are held at that time by the "Central Bank". We then postulate, that thereafter whenever there is a shrinkage in the "special debit volume" and dollar certificates not needed for 100% coverage of checking accounts are returned by the "Bank" to the "Central Bank", then the Central Bank will immediately purchase "special debit letters" on the open market for the full amount of the dollar certificates which it receives from the Bank, and thereby keep the Money Volume constant.

Similarly if there is an expansion in the "special debit volume", the Central Bank will keep the Money Volume constant by selling "special debit letters".

As a result of these open market operations of the Central Bank, the Money Volume will remain constant (except for minor daily fluctuations). The total D of the special debit accounts will however not be fixed but will vary with business conditions. It will oscillate around some average value D_o which we shall call the normal or standard value because it obtains when business conditions are normal.

The total, R_o, of the nominal value of the "debit letters" contained in the system is chosen to be equal to the normal value D_o of the "special debit volume". Because the bank will in toto pay in interest on special debit letters just as much as it receives in interest on special debit accounts, the particular choice of $R_o = D_o$ will have the consequence that interest on the nominal value of a debit letter is paid at a rate/which is at any time very close to the rate p at which interest is charged on special debit accounts. For we have

$$pD = \pi R_o = \pi D_o$$

and therefore $\dfrac{p - \pi}{p} = \dfrac{D_o - D}{D}$

On the average the interest rate π paid on the nominal value of debit letters will be exactly the same as the interest rate p charged on special debit accounts.

We postulate that against a "debit letter" as collateral the holder is entitled to obtain funds (in an amount equal to the nominal value of the debit letter) charged to his special debit account and credited to his checking account. It should be noted here for later reference that because of the identity of the interest paid on debit letters and charged on special debit accounts the holder of a debit letter who borrows an amount equal to its nominal value from the Bank on his special debit account and keeps the funds so obtained on his checking account will have available "cash" on which in the aggregate he neither pays nor receives any interest.

Special debit letters can be freely bought and sold on the market. Their price may fluctuate and there is no theoretical limit to the height which it may reach. On the other hand the price cannot fall very much below par because of the provision that the holder is entitled to obtain funds equal to its nominal value against the debit letter as collateral.

While we have postulated in the foregoing that the Central Bank keeps the Money Volume constant by open market sales or purchases of special debit letters, it should be pointed out that this is not an essential feature of the constant flow system. We could just as well more generally postulate that the Central Bank will keep the Money Volume constant by open market sales or purchase of an assortment of bonds and stocks as well as special debit letters. We singled out special debit letters here solely in order to make it easier to be quite specific in our prescriptions, and thereby to facilitate the presentation, and not because the restriction of the open market operations of the Central Bank to special debit letters has any particular significance from the point of view of the general behavior of the constant flow system.

The interest rate for short-term and long-term loans is determined by the free money market. The official interest rate p howaxax (i.e. the interest rate charged on special debit accounts) however is determined in the following manner: In the normal or standard condition (special debit volume $D = D_0$) around which the system oscillates, there is held by the Central Bank a certain amount of debit letters having in toto a nominal value R* which we postulate is a small fraction of the total R_0 of the nominal value of the debit letters contained in the system.

a) Whenever the special debit volume D is below its standard value, the debit letter holdings R_{CB} of the Central Bank will automatically be above its standard value R*. The official interest rate p during such a period of time is then postulated to be either equal to p_0 or else equal to the free market interest rate

for short-term loans multiplied by some suitable factor f which is larger than one,
- whichever of the two formulae gives the higher value. The official interest rate p
is thus always kept sufficiently high above the interest rate of the free market for
short-term loans to make certain that no money shall be taken up for purposes of in-
vestment on special debit accounts.

b) Whenever the special debit volume D is above its standard value D_o,
and accordingly R_{CB}, the debit letter holding of the Central Bank, is lower than its
standard value R*, then the official interest rate p is postulated to be either equal
to the free market interest rate for short-term loans multiplied by the above mentioned
factor f or else it is given by the formula   ,

$$p = p_o \frac{R^*}{R_{CB}}$$

whichever of the two prescriptions gives the higher value.

The degree to which the special debit volume can expand is thus essen-
tially determined by the choice of R*, the standard value of the debit letter holding
of the Central Bank.

In order to make the subsequent discussions easier, i.e. for the purposes
of this presentation, we shall postulate the following:

All wages and salaries are paid at equal time intervals which we shall call
the Basic Period of the system. If the Basic Period is chosen to be a week, all wages
and salaries are paid at the beginning of the week. If the Basic Period is chosen to
be a month, all wages and salaries are paid at the beginning of the month. We shall
not make any specific choice as to the length of the Basic Period except to state that
it must comprise a number of days and therefore may not be made shorter than a week.
We shall simply call the Basic Period a "month" so that when we shall speak of opera-
tions which take place on the first day of the "month" or the last day of the "month"
when we actually mean the first day of the Basic Period or the last day of the Basic
Period.

The Provisions of the Constant Flow System

We are now in the position to state the two main provisions of the constant flow system, which are as follows:

1) Where there is no interest either paid or charged on checking accounts there is interest charged on the "excess" of the checking account over and above the debit shown by the corresponding special debit account, i.e., there is interest charged on the amount c-d, if c is larger than d. On the "excess" of the checking account interest is charged at the rate $p\Delta$ where p is the official interest rate charged on special debit accounts and Δ has some value above one. For instance if Δ has a value of 4, we would have in the normal condition (when we have $p = p_0$ and, ~~pxxxxxx~~ as previously assumed, $p_0 = 3\%$) interest charged at the rate of 12% per annum or about/1% per month on the "excess" (c - d) of the checking account. The numerical figures are here chosen arbitrarily for the sake of illustration only.

2) Whenever a check is deposited in any one checking account, whether as the result of a sale of goods or as the result of the granting of a loan by the bank which is credited to the checking account and charged to the corresponding debit account, the check will not be credited in full but rather with a deduction of a flat "service charge". This "service charge" is pro/porportionate to the value of the check and amounts to $p\Delta\tau$ per dollar, where   is the basic period of the system. Assuming that τ is one month and that $p = p_0$ and Δ have the values mentioned above under 1), this service charge would amount to   per dollar. X

3) The net revenue of the Bank and Central Bank arising <u>in toto</u> from the open market operations, the interest charged on the excess of the checking accounts, and the service charges levied on checks credited to checking accounts is currently returned to the economy in full in two ways:

(a) A sales bonus/(i.e. a negative sales tax)/at a flat rate on all retail sales

(b) A sales bonus on all other sales of goods at a flat rate but not

exeeding in any individual case the actual/transportation cost of xxxxx arising from the delivery of the goods sold.

FREE MARKET ECONOMY IN A "CONSTANT FLOW" MONETARY SYSTEM

by

LEO SZILARD

FOREWORD

If a physicist writes about a subject relating to economics he owes the reader an explanation, if not an apology. The advances of physics have led the world to a point where the establishment of a World Government, one way or another, can no longer be very far off. Yet the world is far from being ready for this inevitable development. To take just one example, let us assume that a free market economy will be maintained under a World Government -- admittedly a rather bold assumption. How shall we then avoid the periodic recurrences of booms and depressions; shall we try to stave off depressions on a catch-as-catch-can basis, through ad hoc legislation by some World Parliament? Surely, we will have to do better than that.

In one sense, at least, the problem may be simpler under a World Government, for then we have to deal with a closed economy and need not be concerned with changing tariffs and other uncontrollable trade restrictions. Looking towards such a more remote application rather than the possible immediate applications of the principles discussed in this paper, our discussion is limited to conditions pertaining to a closed economy, and it does not cover the transition from the present to the proposed system.

The free market economy which is based on the conventional monetary system is inherently instable; in general, it is subject to alternate booms and depressions. During the boom the flow of goods is fast and the money circulation high; during the depression the flow of goods is slow and the money circulation low.

By imposing comparatively mild measures of central control upon an economy of this type, the behavior of the system can be modified to some extent. The interest rate might be controlled, for instance, by a "Central Bank" which also might sell and buy bonds on the open market. If this is done, the money volume might certainly be kept constant but that does not necessarily mean that the flow of goods or even the money circulation also can be kept constant.

It is a peculiarity of the conventional monetary system that money plays a dual function. Money - a small fraction of which/~~circulates in~~ is held by the public in the form of bank notes but most of which is kept on checking accounts - is used on the one hand for paying wages as well as purchasing goods from current production and it may represent on the other hand ~~re~~ "reserves" which establish a claim on future production.

(Other conceivable monetary systems may be free from this dual role of "money". One might easily imagine for instance a system in the two functions of money are separated and in which - as the result of some magic - one currency is made use of for ~~payments~~ the paying wages as well as/the purchasing of goods from current production and another currency is being made use of for keeping "reserves". An exchange ratio between these two currencies would then be established by the free market, which would vary and the variable exchange ratio would introduce an additional degree of freedom which is lacking in the conventional monetary system. A feature somewhat related to this will be discussed further below in connection with the "constant flow system" to which the greater part of this paper is devoted.)

During a period of falling prices such as will occur at the onset of a depression in the conventional monetary system, the circulation of the money which is kept by business as a reserve on checking accounts will slow down. As far as an individual business organization is concerned which holds funds in reserve on a checking account, the most profitable employment during such a period of some of the funds so held may very well be to do nothing with them and just to keep them hoarded.

During such a period the money circulation may slow down even if the "Central Bank" keeps the money volume constant or increases the money volume by ~~selling~~ bonds on the market and by reducing the interest rate all the way down to zero. The money pumped into the economy by the Central Bank through the ~~sale~~ of bonds may circulate very slowly and the loans taken up under the stimulus of the low interest rate may not lead to enough spending to prevent a fall in the money circulation. The operations of the "Central Bank" on the bond market and the manipulations of the interest rate are measures insufficient for stabilizing the free economy in the conventional monetary system.

The free market economy in the conventional monetary system may also be subject to long-sustained disturbances not necessarily cyclical in character. Quite independently of any particular type of monetary system upon which a free market economy may be based it will be true that the desire of the individuals to save and build up reserves in one form or another is determined by economic and psychological factors which are largely independent of those economic and psychologic factors which determine how much opportunity there is for new capital investment and how much willingness to make use of such opportunities as do exist. But while the possibility of disparity between the desire to save and the will to invest is independent of the particular monetary system the manifestations of such disparity are not independent of it.

In the conventional monetary system such a disparity, if it consists in a preponderance of the desire to save may lead - if it is long sustained - to a long-sustained non-cyclical disturbance. It may manifest itself in the growing accumulation of reserves in the form of continually increasing checking accounts on which money is uselessly hoarded. If people persist over a long period of time in spending in the aggregate less than corresponds to their aggregate income, there will be a steady increase in the amount of money hoarded, accompanied by either decreasing

prices and wages or else increasing unemployment or by both. This particular mani-
festation of the disparity between the desire to save and the will to invest is inti-
mately connected with the dual function which money plays in the conventional monetary
system.

A disturbance of this sort might to some extent be remedied by taxation
that will change the income distribution in the direction of greater uniformity and
thereby, under certain conditions at least, reduce the disparity between the tendency
to save and the will to invest. A sufficiently steeply progressive income tax, for
instance, particularly if it were used to finance a flat per capita bonus, could thus
have the result that a larger fraction of the national income is spent for the pur-
chase of consumer goods and that the total spending becomes equal to the total income.
By reducing the desire to save in the aggregate such taxation would thus remove the
undesirable manifestations of the disparity between the tendency to save and the will
to invest by removing the disparity itself. The method is, even though effective, in a
sense a barbarous one. It is particularly barbarous from the purely economic point of
view if the progressive income tax is not coupled with a flat per capita bonus but
is to a large extent used for some unproductive government expenditure such as expendi-
ture for military defense.

As to the cyclical disturbances to which in the conventional monetary sys-
tem the free market economy is subject, there is little doubt that in principle these
disturbances could also be eliminated by governmental control measures if one just
goes sufficiently far towards a fully planned economy, even though one may still re-
tain a large number of market mechanisms.

It is not our intention to discuss the merits of such a planned economy
versus a free market economy. In order to have a profitable discussion of that issue
it would be first necessary to determine how good the planners might be expected to be
under present day conditions or at least in the foreseeable future, either within the

present national frameworth or within the framework of some world government. To deal with such an issue is not the purpose of this paper.

The purpose of this paper is rather to show that a comparatively minor modification of the conventional monetary system of the free market economy and notably a modification which does not make the economy any less free, would be capable of rendering the system stable. The same modification would not only eliminate trade cycles but would also render any disparity between the desire to save and the will to invest harmless in its manifestations, without necessarily removing the disparity itself. We shall refer to this modified monetary system as the "constant flow" system, since we claim that the money circulation in such a system will remain constant and so will the flow of goods. It will be seen that the constant flow system does not impose any limitation on consumer sovereignty except the limitations imposed upon it by the laws of nature and especially the law of nature which says that you cannot have your cake and eat it too.

It might be, of course, asked whether full consumer sovereignty is at all desirable. It might well be, for instance, so someone might argue, that, if there is a rapidly growing population full consumer sovereignty might, under certain conditions, lead to too little aggregate saving and -- from the point of view of the long range interests of the community - to too little investment. The long range interests of the community might of course be safeguarded in such cases by the government, which might, for instance, impose taxes and make the proceeds available to the money market for purpose of investment. But it seems to me that even if government action has thus to be invoked in certain cases, at least we ought to have such outside measures imposed unto an economic system which is inherently stable, and thus maintain a clear separation between government action aimed at the safeguarding of the long range interests of the community and the day-to-day operations of those economic factors proper in which consumer sovereignty finds its natural expression.

How Does a Business Operate?

If someone wants to start a business he must have a certain amount of capital at his disposal. In order to be specific, let us assume, for instance, that he has assets in the form of debit letters, bonds, stocks, real estate, etc. In order to start his business he will then sell part of his assets in order to procure the cash with which to purchase goods and to pay the wages of labor employed say in establishing a factory. Or if he is a dealer in consumer's goods he will sell some of his assets and buy for the proceeds the goods in which he wishes to establish a stock.

In addition to this initial investment he needs a certain amount of cash on hand to serve as his working capital. This cash he may obtain, for instance, in whole or in part by borrowing from the Bank against debit letters as collateral, a certain amount charged to his special debit account and credited to his checking account.

When operating in this particular manner a business man is in reality using his own capital as working capital. This can be seen from the fact that the interest charged on the special debit account is equal to the interest paid on that part of his debit letter holding which serves as collateral, i.e. the aggregate consisting of the debit letter which is used as collateral, the debit obtained on the special debit account and the cash credited to his checking account will neither receive nor pay any interest.

It might be said here that the possession of debit letters in a sense represents the privilege of obtaining working capital free of interest or else the privilege of lending working capital to others on a special debit account (indirectly, via the Bank) at the current official interest rate. Let us investigate now what amount an individual business will wish to keep on its special debit account. This amount is determined by the desire of the business to minimize the expense connected with this current business operation which is composed of the following items:

a) the interest charged on the special debit account at the rate p

b) the interest charged on the excess of this checking account over his special

   debit account at the rate of $p\Delta$

c) the service charges charged each time he obtains a fresh debit on his special

   debit account or in form of short-term loans when the corresponding amount is

   credited to his checking account. This service charge amounts to $\tau p\Delta$ per dollar

   If a business organization kept both a large amount of cash on its check-

ing account and also a large amount of debt on its special debit account, its interest

payments under a) would become very high.

   If it kept a too high amount in cash on its checking account and a too low

amount of debt on its special debit account, its interest payments under b) would be-

come very high.

   And finally if the business organization tried to keep a too low amount of

                                                              up
cash on its checking account and adopted the policy of taking a fresh loans from the

Bank or on the money market, each time when in the normal course of its business it
                              service
needed more cash, then the/charges under c) would ~~become very high~~ add up to a very

high amount.

   Thus for any given business depending on the fluctuations associated with

it, there will be an optimal amount of cash and an optimal amount of "special debit"
                                    per dollar turned over
which will minimize/the total burden/resulting from the charges specified under a),

 b) and c). If the basic period τ is fixed the optimal value for "the special debit"
                                                     and will be
per dollar turned over will depend on the value Δ ~~between~~ independent of the official

interest rate p. ‖Clearly the optimal value for the special debit will increase with

increasing value of Δ. If Δ were made to be zero the optimal value for the special

debit will become zero, since in that case a business organization which frequently

needs a larger amount of cash for a short period of time could each time take up a

short term loan on the open market at same interest rate which is below the official

rate p or alternatively could keep in the absence of any debt registered on its special

debit account - a large amount of cash on its checking account without ~~paying~~any~~x~~

being burdened either with ~~the~~ any "service charges" or with/any interest payments on the "excess"

of its checking account.

* * *

Just as the amount d kept by an individual business in any given trade

situation on its special debit account is the larger the higher the value of $\triangle$ so

will the total debit volume D for any given trade situation be the greater the greater

the value of $\triangle$. We shall assume for the time being the value of $\triangle$ is fixed and

then if it is chosen high enough we can always make $D_o \geqq C_o$

If there is a change in the general business situation, for instance, if there is

for any reason a slackening of trade business, organizations will, by and large, find

that they can get along with less cash and will therefore, in order to save interest

charged
~~paid~~ on the special debit account ~~reduce~~~~than~~~~special~~~~debit~~ (at ~~the~~ a rate which never

falls below ~~zero~~ p_o) reduce the special debit. Thus the special debit volume will

respond to a slackening of trade by immediate shrinkage. ¶ The Central Bank which

according to the rules is not permitted to keep in its portfolio any of the dollar

certificates which of necessity flow to it in the same measure as the special debit

volume shrinks will then currently buy debit letters on the open market and thereby

maintain the money volume constant during the period during which there is a shrinkage

of debit volume.

During such a period the market price of debit letters will be rising and

along with it other securities such as bonds and stocks will also rise to some extent

even though the open market purchases of the Central Bank may be limited to debit

letters only. This rise in the market price of the debit letters and other securities

as a result of the open market operations of the Central Bank may be much steeper than

would be the rise of the price of securities in the conventional monetary system in

otherwise similar circumstances.

We may say in gneral that during periods during which the Central Bank purchases debit letters in the course of its open market operations, the market price of the debit letters will be rising; in general it will rise above par, and ~~frequently~~ possibly very much above par.

Conversely when there is a period in which special debit volume rises and the Central Bank is selling debit letters on the open market, the market price of debit letters will fall and along with it there will be a fall of other capital assets, particularly stock and bonds even though the open market operations of the Central Bank may be limited to the sale of special debit letters. The market price of special debit letters might fall during such a period quite rapidly to par and even slightly below par and as the debit letter reserve, R_{CB}, of the Central Bank falls below R* its standard value and if the expansion of the special debit volume continues there will be a rapid rise in the official interest rate p charged on debit accounts according to the formula

$$p = p_0 \frac{R_{CB}}{R^*} \qquad \gtrless \frac{R^*}{R_{CB}}$$

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In one sense, at least, the problem may be simpler under a World Government, for we have then to deal with a closed economy and need not be concerned with changing tariffs and other uncontrollable trade restrictions. Looking towards such a more remote application rather than the possible immediate applications of the principles discussed in this paper, our discussion is limited to conditions pertaining to a closed economy, and it does not cover the transition from the present to the proposed system.

The free market economy which is based on the conventional monetary system is but inherently in stable; in general, it is subject to alternate booms and depressions. During the boom the flow of goods is fast and the money circulation high; during the depression the flow of goods is slow and the money circulation low.

By imposing comparatively mild measures of central control upon an economy of this type, the behavior of the system can be modified to some extent. The interest rate might be controlled, for instance, by a "Central Bank" and if this is done, the money volume might be kept constant but that does not necessarily mean that the flow of goods or even the money circulation also can be kept constant.

It is a peculiarity of the conventional monetary system that money plays a dual function. Money, a small fraction of which is in bank notes but most of which is kept on checking accounts, is used on the one hand for paying wages and purchasing goods from current production, on the other hand it may represent "reserves" which establish a claim on future production.

(One might easily imagine a system in which these two functions of money are separated and in which one currency is made use of for the paying of wages and purchasing of goods from current production and another currency is being made use of for keeping "reserves". The exchange ratio for these two currencies would then be established by the free market, it would vary and the variable exchange ratio would introduce an additional degree of freedom which is lacking in the conventional monetary system. A feature somewhat related to this will be discussed further below in connection with "constant flow system" with which the bulk of this paper is concerned.)

During a period of falling prices such as will occur at the onset of a depression the circulation of the money which is kept by business as a "reserve" on checking accounts will slow down. As far as an individual business organization is concerned which holds funds as reserve on a checking account, the most profitable employment of such funds during

such a period may very well be to do nothing with them and just keep them

hoarded. During such a period the money circulation may slow down even

if the "Central Bank" keeps the money volume constant or increases the

money volume by selling bonds on the market and by reducing the interest

rate all the way down to zero. The money pumped into the economy by the

Central bank through the sale of bonds may circulate very slowly and the loans taken up

under the stimulus of the low interest rate may not lead to enough spend-

ing to prevent a fall in the money circulation during such a period. The

operations of the "Central Bank" on the bond market and the manipulations

of the interest rate are insufficient measures for stabilizing the free

economy in the conventional monetary system.

The free market economy in the conventional monetary system may

also be subject to long-sustained disturbances not necessarily cyclical

in character.

Quite independently of any particular type of monetary system upon which a

free market economy may be based it will be true that the desire of the

individuals to save and build up reserves in one form or another is deter-

mined by economic and psychological factors which are largely independent

of those economic and psychologic factors which determine how much oppor-

tunity there is for new capital investment and the willingness to make how much

use of such opportunities as do exist. But while the disparity between possibility of

the desire to save and the will to invest is independent of the particular

monetary system the manifestations of such disparity are not independent

of it.

In the conventional monetary system such a disparity, if it con-

sists in a preponderance of the desire to save may lead to a long-sus- - if it is long maintained-

tained disturbance. It may manifest itself in the growing accumulation non cyclical

of reserves in the form of steadily continually increasing checking accounts on which

money is uselessly hoarded. People may persist over a long period of time, in spending in the aggregate less than corresponds to ~~the national~~ their aggregate income, and if they do there will be by either a steady increase in the amount of money hoarded, accompanied with decreasing prices and wages or else increasing unemployment by both. This particular manifestation of the disparity between the desire to save and the will to invest is intimately connected with the dual faunction which money plays in the conventional monetary system.

A disturbance of this sort might to some extent be remedied by ~~taxation~~ taxation that will change the income distribution in the direction of greater uniformity and thereby, under certain conditions at least, reduce the disparity between the tendency to save and the will to invest. A sufficiently steeply progressive income tax, for instance, particularly if it were ~~coupled with~~ used to finance a flat per capita bonus, would thus have the result that a larger fraction of the national income ~~will be~~ is spent for the purchase of consumer goods and that the total spending becomes equal to the total income.

By reducing the desire to save in the aggregate such taxation would thus remove the undesirable manifestations of the disparity between the tendency to save and the will to invest by removing the disparity itself. The method is, even though effective, in a sense a barbarous one. It is particularly barbarous from the purely economic point of view if the progressive income tax is not coupled with a flat per capita bonus but is to a large extent used for some unproductive purpose expenditure such as the expenditure for military defense.

As to the cyclical disturbances to which the free market economy is subject, in the conventional monetary system, there is little doubt that in principle these disturbances could also be eliminated if one just goes sufficiently by governmental control measures

far towards a fully planned economy, even though one may still retain a
large number of market mechanisms. It is not our intention to discuss
the problems [merits] of such a planned economy versus a free market economy.
In order to have a profitable discussion of that issue it would be
first necessary to determine how good the planners might be expected to
be under present day conditions or at least in the forseeable future, [either]
within the present national framework or within the framework of some
world government.

To deal with such an issue is not the purpose of this paper.

The purpose of this paper is rather to show that a comparatifely
minor modification of the conventional monetary system of the free market
economy and notably a modification which does not make the economy any
less free, would be capable of rendering the system stable. [and therefore also] Many free
from trade cycles. The same modification also renders any disparity be-
tween the desire to save and the will to invest harmless in its manifes$\frac{1}{2}$
tations, without necessarily removing the disparity itself. We shall re-
fer to this modified monetary sytem as the "constant flow" system, since
we claim that the flow of goods in such a system will remain constant and
so will the money circulation. It will be seen that the constant flow
system does not impose any limitation on consumer sovereignty except the
limitations imposed upon it by the laws of nature and especially the law
of nature which says that you cannot have your cake and eat it too.

It might be, of course, asked whether full consumer sovereignty
is at all desirable. It might well be, for instance, so one might argue,
that, if there is a rapidly growing population full consumer sovereignty
might under certain conditions lead to too little aggregate saving and -
from the point of view of the long range interests of the community -
to too little investment. I would reply that the long range interests of

the community might in such cases be safeguarded by the government, which
might, for instance, impose taxes and make the proceeds available to the
money market for purpose of investment. It seems to me that even if
government action had thus to be invoked in certain cases, we would at
least have such outside measures imposed unto an economic system which
is inherently stable and we would thus maintain a clear separation be-
tween government action aimed at the safeguarding the long range interests
of the community and the day-to-day operations of those economic factors
proper in which consumer sovereignty finds its natural expression.

It is perhaps useful to indicate at the outset, without going at first into too much detail, the essential features which distinguish the constant flow system from the conventional monetary system. Before we do this however, we shall have to describe the general framework within which the constant flow system operates.

For the sake of presentation we shall distinguish between an organization which we shall call the "Bank" and another which we shall call the "Center Bank". Neither of them are business organizations operating for profit, but they are rather public service organizations with a fully automatic mode of operation. They engage in certain types of operations which yield a revenue and certain other types of operations which involve expenditures. These two different types of operations are so balanced so that the net incomes of the "Bank" and the "Center Bank" are at all times exactly zero. In contrast to these two banking institutions are the ordinary banks which are business organizations that operate for profit in the money market. They accept time deposits both for shorter and longer duration and grant credits for shorter or longer duration against securities or otherwise. They float or issue bonds and may in general engage in most of the usual activities pursued by banks in the conventional monetary system but they may not accept money deposits on checking accounts.

We postulate that every person or business or organization has two accounts with the "Bank":

1). A checking account on which no interest is paid.

We postulate that all wages are paid and all purchases of goods are made by transfer through check, and thus we disregard for the time being the possibility that for the sake of convenience a certain limited amount of money may be issued in the form of bank notes and may circulate among the public. The discussion of this latter point will be taken up later.

2). A "special debit" account on which interest is charged at the official interest rate p.

This official interest rate is, as we shall later explain ~~in detail~~, always kept above the interest rate of the free money market and in particular it never falls below a certain minimal value p_0 (which for the moment we may assume, pour fixer les idées, to be about 3% per annum).

The revenue of the "Bank" derived from interest charged on special debit account is currently spent in its entirety in paying interest on "debit letters" -- a security of a particular type which we shall further discuss later. These debit letters are almost all in the hands of the public and only a small, but ~~as we shall see,~~ variable, -- fraction is held by the Central Bank.

We shall designate the amount carried on an individual checking account with small c, and the amount carried on the corresponding individual special debit account with small d. Similarly we shall designate that the sum total of the amounts carried on all checking accounts with capital C, and call it the "Money Volume", and we shall designate the sum total of the amounts carried on all special debit accounts with capital D, and call it the "Special Debit Volume".

We shall assume for the sake of this presentation that there are ~~printed~~ dollar certificates in some amount C_0, and we postulate that the Bank is obligated to keep 100% coverage in such certificates for all checking accounts. Accordingly C_0 sets an upper limit to the money volume.

~~We further postulate that~~ at some given time the "Money Volume" is equal to C_0, i.e. that at that time all dollar certificates are in the "Bank" covering the checking accounts and that none of them are held at that time by the "Central Bank". We further postulate, that thereafter, whenever there is a shrinkage in the "Money Volume" and dollar certificates not need for 100% par coverage of checking accounts are returned by the "Bank" to the "Central Bank", then the Central Bank will immediately purchase "special debit letters" on the open market for the full amount of the dollar certificates which it receives from the Bank, and thereby keep the Money Volume

constant. Similarly if there is an expansion in the "special debit volume," the Central

Bank will keep the Money Volume constant by selling "special debit letters."

As a result of these open market operations of the Central Bank, the Money

Volume will remain constant (except for minor daily fluctuations). The total D of

the special debit accounts will however not be fixed but will vary with business

conditions. It will oscillate around some average value D_0 which we shall call the

normal or standard value because it obtains when business conditions are normal.

The total R_0 of the nominal value of the debit letters contained in the sys-

tem is chosen to be equal to the normal value D_0 of the "special debit volume." Because

the bank will in toto pay in interest on the special debit letters just as much as it re-

ceives in interest on special debit accounts, the particular choice of $R_0 = D_0$ will

have the consequence that the interest paid at a rate ~~received~~ on the nominal value of a debit

letter is at any time very close to ~~the interest~~ p at which interest is rate charged on special debit

accounts. The difference between the two rates corresponds to the per centual ~~deviation~~

~~of the special debit volume D from its normal value D_0~~ ( ), a deviation which

~~of necessity must remain small.~~ On the average the interest rate paid on the nominal

value of debit letters will be exactly the same as the interest rate charged on special

debit accounts.

We postulate that against a "debit letter" as collateral the holder is en-

titled to obtain funds (in an amount equal to the nominal value of the debit letter) charged to

his special debit account and credited to his checking account. It should be noted

here for later reference that because of the identity of the interest paid ~~received~~ on

debit letters and ~~paid~~ charged on special debit accounts the holder of a debit letter who

borrows an amount equal to its nominal value from the bank on his special debit account

and keeps the funds so obtained on his checking account will have available 'cash' on

which in the aggregate he neither pays nor receives any interest.

$$\text{For } \rho D = \pi R_0 = \pi D_0; \left(\frac{\rho}{\pi} = \frac{D_0}{D} \right) ; \left(\frac{\rho - \pi}{\rho} = \frac{D_0 - D}{D} \right)$$

and therefore

Special debit letters can be freely bought and sold on the market. Their price may fluctuate and there is no theoretical limit to the height which it may reach. On the other hand the price cannot fall very much below par because of the provision that the holder is entitled to obtain funds equal to its nominal value against the debit letter as collateral.

While we have postulated in the foregoing that the Central Bank keeps the Money Volume constant by open market sales or purchases of special debit letters, it should be pointed out that this is not an essential feature of the constant flow system. Wwe could just just as well more generally postulate that the Central Bank will keep the Money Volume constant by open market sales or purchase of an assortment of bonds and stocks as well as special debit letters. We singled out special debit letters here solely in order to make it easier to be quite specific in our prescriptions, and thereby to facilitate the presentation, and not because restriction of the open market operations of the Central Bank to special debit letters has any particular advantage from the point of view of the general behavior of the constant flow system.

We postulate that at some time when the system happens to be in a normal or standard condition, i.e. when the special debit volume D has its standard value D_o, the debit letter holding R   of the Central Bank is given by R (nominal value) where R is very similar compared to the total nominal value R contained in the system.

The official interest rate p charged on special debit accounts is given by the following prescription: If we have

                , then the official interest rate p is given by either

(a)   or

(b)

whichever of these two formulas gives the higher value.

And similarly, if we have

, then the official interest rate p is given by   either

(c)   or

(d)

whichever of these two formulas gives the higher value.

The interest rate for short-term and long-term loans is determined by the free money market. The official interest rate however which governs the interest charged on special debit accounts is determined in the following manner. In the normal or standard condition (special debit volume $D = D_o$) around which the system oscillates, there is held by the Central Bank a certain amount of debit letters having in toto a nominal value R which we postulate is a small fraction of the total R_o of the nominal value of the debit letters contained in the system. Whenever the special debit volume is below its standard value, the debit letter holdings R_{CB} of the Central Bank will automatically be above its standard value R. The official interest rate during such a period of time is then postulated to be either equal to p or equal to the short term interest rate of the free market multiplied by a, whichever of the two formulae gives the higher value. Whenever the special debit volume D is above its standard value D_o, and accordingly R_{CB}, the debit letter holding of the Central Bank, is lower than its standard value R, then the official interest rate p is postulated to be either one-half per cent above the interest rate of the free market for short-term loans or else given by the formula $$p = p_o \frac{R^*}{R_{CB}}$$, whichever of the two prescriptions gives the higher value.

The degree to which the special debit volume can expand is thus essentially determined by the choice of R, the standard value of the debit letter holding of the Central Bank.

for purpose of keeping the official interest rate always kept above the interest rate of the free market per short term loans in order to suitable factor which is larger than one.

In order to make the subsequent discussions easier, i.e. ~~essentially~~ for the purposes of /presentation, we shall postulate the following:

All wages and salaries are paid at equal time intervals which we shall call the Basic Period of the system. If the Basic Period is chosen to be a week, all wages and salaries are paid at the beginning of the week. If the Basic Period is chosen to be a month, all wages and salaries are paid at the beginning of the month. We shall not make any specific choice as to the length of the Basic Period except that it must comprise a number of days and therefore ~~could hardly~~ be made shorter than a week. We shall simply call the Basic Period a "month" so that/we shall speak of operations which take place on the first day of the month or the last day of the month when we ~~shall~~ actually mean the first day of the Basic Period or the last day of the Basic Period.

It is perhaps useful to indicate at the outset - without going at this
time into too much detail - the essential features which distinguish the
"constant flow" system from the conventional monetary system.

For the sake of presentation we shall distinguish a "Bank" and
a Central Bank, neither of which are business organizations operated
for profit, but rather they are public service organizations with fully
proscribed and automatic mode of operation which currently spend the full
amount of the revenue which are derived from certain of their operations.
In contrast to these institutions are the banks which are business
organizations that operate for profit in the money market. They accept
time deposits both for shorter and longer duration and grant credits
for shorter or longer duration against securities or other wise. They
float or issue bonds and in general engage in the usual activities of the
banks in the conventional system XXXXXXXXXXALXthey are not acceptXXXX
moneyX deposits on checking accounts.

We postulate that every person or business organization has two
accounts with the "Bank"

1) A checking account on which no interest is paid

2) A special debit account on which interest is charged at
   the rate p, which is always kept above the interest rate of
   the free money market and never falls below a certain minimal
   value p₀ (which we may assume pour fixer les idees
   to be about three per cent per annum)

The revenue of the Bank from the interest charged on special debit
accounts is spent in its entirety on paying interest on debit letters, XXXX
a XXX security of a particular type, most of which is held by the public
while a small but variable fraction is held by the Central Bank.

We postulate that all wages are paid and all purchases of goods are made
by transfer through check, disregarding for the time being the possibi-
lity that for the sake of convenience a certain limited amount of dollars
may be issued in the form of bank notes and may circulate among the pub-
lic. The discussion of this latter point will be taken up later.

must have all payments by check

We shall designate the amount carried on an individual checking account with c and the amount carried on ~~X~~ the corresponding individual/special/debit account with d. Similarly we shall designate the sum total of all checking accounts with C and call it the "money volume" and the sum total of all special debit accounts with D and call it the "special debit volume", or for short, somewhat misleadingly, the "debit volume."

We shall assume for the sake of this presentation that/there are printed/dollar ~~X~~ ~~XXXXXXXXXXXXXXXXXXXX~~ *income* certificates ~~in the~~ we postulate amount of C_0 and/that the Bank is obligated to keep one hundred per cent coverage in such certificates for all checking accounts. We further postulate that all dollar certificates are, at some given time, in the Bank covering the checking accounts, *i.e.* ~~and~~ that none is at that time ~~XXXXXXXXXX~~ held by the Central Bank, and that thereafter whenever there is a shrinkage in the money volume and ~~XXXXXX~~dollar certificates ~~XXX~~ not needed for hundred per cent coverage by the Bank are returned to the Central Bank, the Central Bank will immediately purchase special debit letters on the open market for the full amount of dollar certificates ~~and XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ ~~XXXXXXXXXXXXXXXXXXXXXXXXXXX~~ ~~and~~ thus by buying (or selling) special debit letters keep *the C is* the money volume at all times constant. *(in case of expansion of the money-flds volume)*

The total D of the special debit accounts will not be fixed but will vary as we shall see with business conditions. It will oscillate around some average value D which we shall call the normal or standard value because it obtains when business conditions are normal.

The total of the/debit letters in the system is so chosen that *nominal value of the* *h. O* *normal* it be equal to the ~~XXXXXXX~~ value D_0 of the special debit volume. As the result of this choice the interest received on the nominal value of debit letters will be - within the limits of the percentual fluctuation of the special debit volume always be *(approximately)* the same as the interest charged on

special debit accounts. And on the average the interest paid on debit letters
will be exactly the same as the interst charged on special debit accounts.

We postulate that the holder is always entitled to obtain funds
charged on his special debit account against a debit letter as security
collateral

We postulate that against a debit letter as collateral the holder
is entitled to obtain funds up to the nominal value of the debit letter
charged XX to his special debit account, and credited to his checking
account. It should be noted here for later reference that because of
the identity of the interest received on debit letters and charged on
special debit accounts the holder of debit letters who borrows the full
nominal value from the Bank on his special debit account and keeps the
funds so obtained on his checking account will have available cash on
which/neither pays interest nor receives interest. (Interest rate)

The special debit letters can be freely bought or sold in the
market. Their price may fluctuate and there is no limit to the height
it may reach. On the other hand the price cannot ever fall very
much below par because of the provision that enables the holder to
obtain funds up to the nominal value against the debit letter as collateral.

We wish now define what we mean
when we subsequently speak of the
base period of the system. For this
purpose let us imagine !
stop here from
page 4 (onward)

We are now in the position to state the two main provisions

of the constant flow system, which are as follows: 1)

1) Where there is no interest either paid or charged on

checking accounts there is interest charged on the "excess" of

the checking account over and above the debit shown by the

corresponding speculative account, i.e., there is interest

charged on the amount $c-d$, if c is larger than d. On

the "excess" of the checking account interest is charged at

the rate $p\triangle$ where p is the interest charged on

special debit accounts and $\triangle$ has a value above 1. For

instance if $\triangle$ has a value of 4, we would have, in the

normal condition when we have $p = p_o$, and according to our

previous assumption a value of 3 per cent per annum interest

charged on the "excess" of the checking account $(c - d)$ at the

rate of 12 per cent per annum or about 1 per cent per month.

These figures are here chosen arbitrarily for the sake of

demonstration only.

2)   Whenever a check is deposited in any one checking

account whether as a result of sale of goods or as a result

of obtaining a loan charged to the corresponding special debit

account the value of the check is credited with a deduction of

a "service charge". This
i.e., there is a service charge that is proportionate to the value

value of the check and that amounts per dollar to $\tau p\triangle$

where τ is a basic period of the system, the meaning of the

term basic which will be explained in a moment, assuming that

it is one month's and that $\triangle$ and p the values men-

tioned above this service charge per dollar would amount to

$$\frac{1}{12} \times 3 \times 4$$

In order to define τ the basic period of the system we may

$.003 \times 4$

per dollar

imagine that all wages and salaries are paid at equal time
intervals, say in the first days of the basic period. If
this basic period is set to be one week the wage payments
willbe made early in the week, or of the basicxperiod
is set to be one month the wage payments will be made
early in the month. We need not for the present determine
just what time interval XXXXXXXXXXXXXXXXXXXXXXXXXXXXk is
chosen to represent the basic period of the system except
that we shall implicitly assume that it will comprise a
number of days, certainly not less than seven, and we shall
simply call the basic period "a month" so that we shall speak
of the first day of the month and the last day of the month
when we actually mean the first day of the basic period and
the last day of the basic period.

Effect of no hoarding on steepness of
price rise of C.B. open market operations.

Insert from
page 10

How Does a Business Operate?

If someone wants to start a business he must have a certain amount

of capital at his disposal. In order to be specific, let us assume, for

~~has~~ ~~asset~~

instance, that he ~~XXX owns~~ ~~a certain amount of capital~~ in the form of

bonds, stocks, real estate etc.

debit letters, In order to start his business he will then sell part of

his assets in order to procure the cash with which to purchase goods

and to pay the wages of labor employed say in establishing a factory.

assets

Or if he is a dealer in consumer's goods he will sell some of his ~~debit~~

~~letter holdings~~ and buy for the proceeds the goods in which he wishes to

a

establish ~~XXX~~ stock.

In addition to this initial investment he needs a certain amount

of cash on hand to serve ~~XXX~~ as his working capital. This cash he may

(or disburse)

obtain in whole or in part by borrowing from the bank against ~~XXX XXX~~

debit letters as collateral a certain amount charged to his special

debit account and credited to his checking account.

When operating in this particular manner a business man is in reality

Be thought rather than it should

using his own capital as working capital. This can be seen from the fact

that the interest charged on the special debit account is equal to the

interest payment which he receives on that part of his debit letter holding

which serves as collateral, i.e., ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ st

~~XXXXXXXXXXXXXXXXXXXXXXXX~~ the aggregate consisting of the debit

letter which is used as collateral, the debit obtained on ~~XXX~~ the special

debit account and the cash credited to his checking account will neither

receive nor pay any interest.

in a sense

He It might be ~~sa~~ said here that the posession of debit letters ~~thus~~

nothing else but the

represents ~~a~~ privilege of obtaining working capital ~~free~~ of interest or

privilege

else the ~~right~~ of lending working capital to others (indirectly, ~~XXX~~ via

official

the Bank) at the current ~~variable~~/interest rate (on special debit accounts)

Let us investigate now what amount an individual business will ~~desire~~ to
keep on its special debit account. This amount is determined by the
desire of the business to minimize the expense connected with this cur-
rent business operations which XXXXXX is composed of the following items:

a) the interest charged on the special debit account at the rate p

b) the interest charged on the excess of this checking account over his
    special debit account at the rate of ____

c) the service charges charged each time he obtains a fresh debit on
    his special debit account or in form of short term loans when the
    corresponding amount is credited to his checking account. This
    service charge amounts to ____

~~Clearly if~~ the business organization tried to keep a too low
amount on its checking account and adopted the policy to ~~take~~ up a fresh
loan each time when XXXXXXXXXX of the fluctuations in the normal course
of his business at the prevailing trade level ~~the business~~ needed more
cash, the charges under c) above would become very high.

Clearly ~~if he~~ kept a too-high amount in cash and a too-low amount ~~in~~ on
~~of~~ his special debit account, his interest payments under b) above would
become very high.

~~And clearly if he~~ kept both a large amount in cash and also a
large amount on his special ~~debit~~ account his interest payments would
become very high, a) above.

XXX For any given business depending on the fluctuations associated
with it, ~~depending on the level of operations, depending on the current mean
turn-over~~ there will be an optimal amount of cash and an optimal amount
~~on the~~ special debit ~~account~~ which will minimize the total load resulting
from the charges a, b, and c. If the basic XXXXXX is fixed, ~~for each value
of the mean turn-over and for each particular business according to its~~

The optimal value for the special debit per dollar turned over will depend on the value _Δ_ but will be independent of p. Clearly the optimal value for the special debit will increase with increasing value of _q_. If _Δ_ were made to be zero the optimal value for the special debit would become zero, ~~since in that case the business organization could borrow funds at any time on the open market at an interest rate below the official rate and could keep such funds on its checking account~~ since in that case a business organization which as a result of fluctuations frequently needs additional cash for short periods of time could take a short term loan on the open market at an interest rate which is below the official rate or alternatively could keep ~~with impunity always such~~ a large amount of cash ~~that taking of short term loans will only be very rarely if ever necessary.~~

Just as the amount d kept by an individual business in any given trade situation on its special debit account is the larger the higher the value of _Δ_ so the total debit volume D for any given trade situation will be the greater the greater the value of _Δ_. We shall assume for the time being the value of _Δ_ is fixed and then if it is chosen high enough we can always make

$$D = qC_0$$

If there is a change in the general business situation, for instance if there is for any reason a slackening of trade, business organizations will, by and large, find that they can get along with less cash and will therefore, in order to save interest paid on the special debit account reduce the special debit. The special debit volume will respond to slackening of trade by immediate shrinkage, ~~and~~ the Central Bank which is according to the rules not permitted to keep in its portfolio any of the green dollar certificates which flow to it ~~as a result of the shrinkage of the~~

~~XXXXXXXXXXXbiXXvXXXXX~~ will then buy debit letters on the open market and thereby maintain the m ney volume constant ~~while the debit volume~~ during the period ~~under discussion during~~ which there is a shrinkage of the debit volume. At the same time as a result of this ~~XX~~ open market operation ~~outside the bank~~ of the C.B. there will be a rise in the market price of the debit letters as long as the ~~XX XX~~ shrinkage of the debit volume continues. If during such a period of slowing of trade any business wished to ~~XXXXX~~ increase its hoard of cash which it does not need in business/it would without payiing an excessive interest rate on either have to maintain an equally large special debit account on which there the excessof his checking XX would be charged interest at the rate of p0   or else it would have account to purchase at a price substantially above par debit letters that would then enable him to keep an amount of special debit and to hoard the same amount of cash equal to the nominal value of the debit letter and then in the aggregate he would not be burdened with any interest payment as a result of his hoarding of cash.

In the opposite case when the debit volume does nnt shrink but expand and corespondingly the Central Bank is selling debit letters the market price of the debit letters may fall to par and a business organization could thus by buying debit letters and using them as in the aggregate collateral hoard cash without being burdened/by interest payments but during such a period of business ex pansion there is as we shall see, prevailing a high interest rate on the free market and accordingly also a high official interest rate and a s a result of this the business or-ganization is being offered a high inducement for reducing its special debit by means of its unnecessary cash holding and thereby enjoy the high interest payments received on its red dollar holding.

Insert:

Replacing page 5 -- Distribution of the net revenue of the Bank and
the Central Bank arising from the open market operations, the interests charged
on the credit -- special debit differences and service charges levied on checks
credited to checking to accounts. The/net revenue of the Bank and Central Bank
arising intoto from ~~itsxabxxexmentisxmedxmeti~~ the open market operations, the
interests charged on the credit -- special debit differences and service charges
levied on checks credited to checking accounts/ is/currently returned to the economy
in full in two ways, one, a sales bonus (i.e. a nagative sales tax on all the
retail sales) two, a sales bonus on all ~~goods soldx~~ other sales of goods at a
flat rate but ~~limited~~ not exceeding the actual transportation costs of the
goods sold.

Insert: on page 9 -- During such a period when the Central Bank buys debit
letters on the open market, the market price of debit letters will be rising
and ~~to some extent~~ along with it other securities such as bonds and stocks will also rise
(to some extent
even if the open market operation of the Central Bank is limited to the purchase
of the debit letters. only This rise in the market price of the debit letters and
other securities as a result of the open market operations of the Central Bank
may be much steeper than would be the rise of the ~~market~~ price of securities
in the conventional monetary system ~~and~~ in otherwise similar circumstances. The
reason for the greater steepness lies in the fact that in the constant flow
system very little if anything of the money which ~~isxpeured~~ flows back into the economy
~~byxthexCentralxBank~~ during the period in which the Central Bank engages in
open market purchases of securities and ~~auxxppresixx~~ therefore all the money
which flows back into the economy ~~and whiehxisxnotxspentxforxthexpurchasexof
goadx~~   is either spent for the purchase of goods or for the purchase of
capital assets including securities, i.e. practically all the money flowing

back into the economy which is not spent for the purchse of goods ~~arxreal~~
~~estate~~ is spent for the purchase of securities or real estate. ~~and more~~
~~involvedxin~~
~~overxthe fractionxofxthe moneyxsexspentx~~ money ~~an thexsecurityxmarketx~~

We may say in general that during periods ~~bre~~ during which Central
Bank purchases debit letters in the course of its open market operations,
                    market
the/price of the debit letters will ~~ar~~ be rising ~~and~~ in general it will rise
~~be~~ above par, ~~frequently~~ and ~~possibly~~ *frequently* very much above par.

Conversely when there is a period in which special debit volume
rises and the Central Bank is selling debit letters on the open market
the market price of debit letters will fall and along with it there will
be a fall of other capital assets particularly stocks and bonds even though
the open market operations of the Central Bank may be limited to the sale of
special debit letters. The market price of special debit letters might
fall during such a period quite rapidly to par and even slightly below par
and as the debit letter reserve, R_{cb} , of the Central Bank falls below R^{*}
its standard value and the expansion of the special debit volume continues
there will be a rapid rise in the official interest rate charged on debit
accounts according to the formula $p = p_0 \dfrac{R^{*}}{R_{cb}}$

In the light of the above we might now say that in the constant
flow system the hording of unnecessary cash is eliminated at all times but
that the motivation for refraining from hording unnecessary cash ~~ix differentx~~
differs somehwat according to the current trade situation. Thus, during a
period ~~when~~ for instance in which the debit volume is expanding, the Central
Bank is selling debit letters on the open market and the debit reserve of the
Central Bank is below its standard value R ~~thexofficialxinterestxratexisx~~
~~hig~~ the market price of the debit letter is low and there may be at par a
business organization that borrows money on a special debit account against
its debit letter holding and keeps the money thus borrowed idle on its checking

account ~~has a strong incentive to use the money to diminish its debit~~ does not actually suffer from the high interest rate because it receives as much interest on its debit letter holding as it pays on its debit account but has neverthe less a strong incentive to use its unnecessary cash for diminishing its debit and thereby save in interest payment.

On the other hand during a period during which the special debit volume is shrinking, and the Central Bank engages in open market purchases of special debit letters, the debit letter holding R_{CB} of the Central Bank is above its standard value R^*, and the official interest rate is $\rho = \rho_o$ ~~P equal P~~ and the market price of debit letters high above par, then a business organization which accumulates profits, purchases debit letters for these profits, and using them as collateral obtains funds equal to their nominal value on its special debit account and leaves the cash obtained unused on its checking account, will have in a sense lesser incentive to decrease his debit as in the previous case since the official interest rate is in this case lower but on the other hand because of the high market price of the debit letters it will also have an amount of cash at his disposal which is lesser than ~~its~~ the profits so invested because of the high market price of the debit letters that he purchased.