

August 6, 1948

MARKET ECONOMY FREE FROM TRADE CYCLES

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; how shall we 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 a sense, 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, the discussion is limited to conditions pertaining to a closed economy, and it does not cover the transition from the present to the proposed system.

A free market economy under the conventional monetary system is characterized by alternating booms and depressions. It is not possible to eliminate these fluctuations by controlling the interest rate, a method of control which has its obvious limitations in the fact that the interest rate cannot be made smaller than zero. While such a market economy is obviously unstable, it is not easy to disentangle all of the factors which enter into the causation of booms and depressions. It is, however, not necessary to do this in order to see that under a slightly different monetary system, which is based on two currencies rather than one, it would be possible to have a stable market economy that is free from the oscillations of the trade cycles.

We arrive at such a two currency system through the thought that money fulfills in the conventional, single currency, system two essentially different functions. On the one hand, it is used for paying wages and purchasing goods from current production; and on the other hand, it can be "saved" and thus used to establish claims on future production. As long as the same currency is used for both functions, the free market economy suffers, not from being too free, but rather from not being free enough. An additional degree of freedom is introduced if two different currencies, spending money, or greendollars, and savings money, or red dollars, are made to serve these two different functions, and if the exchange rate between them (the price of the red dollars) is permitted to remain free; i.e., if it is left to be determined by the market.

ADVANCE REMARKS ABOUT THE TWO CURRENCY SYSTEM

One result of the operation of the two currency system described below is that the wage level and the general price level of consumer's goods may remain constant as expressed in green dollars. (This holds true even over long periods of time if we disregard the increase in the standard of living due to technological progress, which should lead to an increase in the wage level at constant prices of consumer goods.) The price of the red dollar, on the other hand, may undergo variations, and also may show long term trends. It is these variations of the price of the red dollar which make it possible to maintain the "money volume" of green dollars constant over periods during which there is a shrinkage of the "loan volume" of green dollars, and also to have a shrinkage of the loan volume of green dollars automatically accompanied by an increase rather than a decrease in the circulation of green dollars.

It is this relationship between "loan volume" (of green dollars) on the one hand, and "money volume" (of green dollars), as well as money circulation (of green dollars) on the other hand, which is responsible for the absence of that essential instability which characterizes the market economy based on the conventional, single currency, monetary system.

But an economy which is free from this instability could still suffer from

considerable fluctuations; there could be a trade shrinkage with respect to certain types of goods, and an expansion of trade with respect to certain other types of goods. If such shifts take place very rapidly, there may not be enough time for proper adjustment, and there could be unemployment in certain industries, while the production capacity of other industries remains insufficient to meet the demand. Such undesirable phenomena might develop in a two currency economy also, if the distribution of savings (of red dollars) should be deteriorated; i.e., if few people have very large savings, and the bulk of the consumers have no savings at all.

The two currency economy described below would function ~~the~~ the more smoothly the larger the fraction of the savings (of red dollars) is which is owned by the consumers; and the more their distribution resembles the distribution of the normal spending of the individual consumers.

In the subsequent discussion of the two currency system we shall always implicitly assume a distribution of savings which is sufficiently far from deterioration. We shall also briefly discuss, later, the possibility that it might be necessary to prevent a deterioration of the distribution of savings over long periods of time, by some form of taxation, which might be based on the yearly increment of capital assets of the individual rather than on his annual income.

A shrinkage in the loan volume will in the two currency system always lead to an immediate fall in the price of consumer's goods, not in terms of green dollars, but in terms of red dollars, (the price of which will necessarily rise - as we shall see - with the shrinking of the loan volume) and in this sense, the two currency system is free from price rigidity.

SPIELREGELN

In discussing the two currency system we shall assume that the system has been in operation for a considerable period of time, so that the disturbances which may occur during the transition from the one currency system to the two currency system have faded out.

We shall, for the sake of simplicity, assume that there is only one bank, which we shall call the Bank; but we shall distinguish between the Bank and the Central Bank.

We postulate that all wages and salaries are paid in green dollars at equal time intervals, say monthly, on the first of the month.

We further postulate that every person and every business has a checking account with the Bank, in green dollars; and that all wages are paid and all purchases of goods are made by transfer through check, in green dollars. (We are thus disregarding for the time being the possibility that for the sake of convenience a certain limited amount of green dollars may be issued in the form of bank notes to the public. This point will be discussed later.)

Any person or business corporation may have with the Bank an account in red dollars.

Whoever has such a red dollar holding is entitled to a loan from the Bank of green dollars in amounts up to the nominal value of his red dollar holding.

All green dollar loans granted by the Bank are carried on debit accounts, on which interest is charged (in green dollars) at the current interest rate.

Correspondingly, interest is paid by the Bank at the same current interest rate (in green dollars) on the nominal value of all red dollar accounts.

Only a fraction of the loans to which the red dollar depositors are in toto entitled will in fact be taken up by them, and loans will be granted by the Bank against securities other than red dollar deposits.

We postulate that the total number, G , of green dollars in the system is equal to the total number, R , of red dollars in the system; i.e., the total amount, G , of the green dollars in the system is equal to the nominal value, R , of the total amount of the red dollars.

We shall assume for the sake of this presentation that both red and green dollars are printed in the form of certificates, which are kept either in the Bank or in the Central Bank, and which are not released to the public.

The Bank is obligated to keep 100% coverage in red dollar certificates for red dollar accounts; and 100% coverage in green dollar certificates for green dollar checking accounts.

We postulate that originally all red dollars were owned by the public, and accordingly all red dollar certificates were in the Bank covering the red dollar accounts of the public. The Central Bank owned at that time no red dollars, but it owned all the green dollars, had loaned all of them to the Bank, and the Bank had loaned all of them to the public. In this original, or standard, condition, the total of the debit accounts, D, is therefore equal to the total, C, of the checking accounts; and incidentally, also equal to the total amount, G, of green dollars in the system, which is in turn equal to the total nominal value, R, of the red dollars in the system. That is, in the standard condition we have: D equal C equal G equal R.

We shall see that this standard condition is not necessarily maintained all the time, because as some green dollar loans are repaid to the Central Bank the Central Bank will purchase red dollars in the open market for green dollars; and the total, D, of the debit accounts may then fall below the total, C, of the checking accounts. However, as we shall see, under the rules of operation described below, the system will return from time to time to the standard condition.

In the subsequent discussion we shall call the total, D, of the debit accounts also the "loan volume" and the total, C, of the checking accounts, also the "money volume."

If there is a trend towards trade shrinkage, as reflected by a decline in the total, D, of the debit accounts by a certain value, delta D, there will be also a corresponding decline, delta C, in the total, C, of the checking accounts. (Delta C equals delta D.) The Bank is then free to return to the Central Bank green dollar certificates in this amount, delta C.

We postulate the rule that the Central Bank shall immediately purchase on the open market red dollars for this amount, delta C, of green dollars. As a result of

this purchase, the total, C, of the checking accounts will rise by this same amount, delta C.

This activity of the Central Bank will continue as long as this trend continues. During this period of time the Central Bank accumulates a fund of red dollars purchased at rising prices, while the total, C, of the checking accounts remains constant (except for one day's change, which may remain uncompensated.) During this same period the total, D, of the debit accounts falls from its original value, D equal C, to a value $D < C$.

If subsequently there is a reversal of trend; i.e., a tendency towards acceleration of trade, as reflected by increasing demands for loans, the Central Bank will then sell red dollars from its previously accumulated fund at falling prices, and the green dollars which the Central Bank so acquires will be loaned to the Bank, which will then grant additional loans to the public. During this period of time, the red dollar fund of the Central Bank diminishes, the total of the debit accounts rises, and the total of the checking accounts remains constant (except for one day's change, which may remain uncompensated.) This process comes to an end when the red dollar fund of the Central Bank is exhausted, by which time the total, D, of the debit accounts has again risen to a value close to its original value, G.

(This total, D, of the debit accounts, may not have returned, however, necessarily to exactly the original value, D equal G; it may be a trifle lower or a trifle higher, according to whether the Central Bank made a loss or a gain when it sold its red dollar holding. This is a minor point, but in order not to leave any uncertainty on it, we postulate that the total, D, of the debit accounts is brought back to exactly the standard value, D equal G. This may be accomplished either by a flat bonus or a flat tax on all debit accounts. Either bonus or tax would be very small because of the essentially symmetrical character of the processes which lead to the accumulation and to the disposal of a red dollar fund of the Central Bank. This minor adjustment could be made annually; and moreover, if it is desired, it could always take the form of a

partial refund of interest on debit accounts, provided we are willing to let the interest rate demanded on debit accounts be slightly higher than the interest rate granted on the red dollar deposits.)

OVERFLOW PURCHASES

The amount of red dollars deposited on anyone's red dollar account is not limited by any rule. Similarly, the amount of green dollars kept in anyone's checking account during the month is not limited by any rule. But on the 31st of the month the Bank will remove from anyone's checking account the amount by which this account exceeds his indebtedness to the Bank, (as shown by his debit account); and the Bank will buy on his behalf, for this excess amount, red dollars on the open market, which it will credit to his red dollar account. We shall call these red dollar purchases overflow purchases.

SERVICE CHARGES

Service charges play in this two currency system the role of friction, and have the function of dampening fluctuations. A service charge of perhaps 1%, or a fraction thereof, may be made on all sales of red money. This service charge must be kept so small as not to affect any legitimate business, but high enough to make it unprofitable for anyone to sell at the beginning of each month the red dollars which the Bank may have purchased on his behalf for his excess green dollar holding.

Real estate, stocks, and other capital investment are, according to our scheme, purchasable against payments in red dollars; and again service charges should make it unprofitable to make such purchases via green dollars by check drawn on a checking account. The purpose of these service charges is to prevent speculation in stocks from leading to an increase in the "loan volume," which would not reflect the money requirement of the legitimate trade, would therefore blur the picture and make the stabilization of the system by a simple set of rules rather difficult.

THE INTEREST RATE

The interest rate should be raised by the Central Bank whenever its red dollar

reserve approaches zero, and by raising the interest rate sufficiently high, it should always be possible to keep the demands for loans within the bounds set by the rule of 100% coverage of the checking accounts. Conversely, wherever there is a marked trend for the accumulation of red dollar reserves in the Central Bank, the Central Bank will decrease the interest rate until some fixed minimum value is reached.

LONG TERM INCREASES OF THE RED DOLLAR AND GREEN DOLLAR AMOUNTS IN THE SYSTEM

In an expanding economy, whether the expansion is due to the increase in population, or to the increase in the standard of living, due to technological progress, there is a need for a steady increase in the money circulation if we wish to maintain a high level of employment at constant prices. To meet this requirement a certain number of green dollars and red dollars should be introduced in the course of each year by the Central Bank. These two numbers should be equal so as to retain the original equality of the nominal value of the red dollar amount and of the green dollar amount contained in the system. A corresponding number of red and green dollar certificates should then be printed each year.

The amount of green dollars newly created should be loaned by the Central Bank to the Bank, and should enable the Bank to grant additional loans leading to a corresponding increase in the total, C, of the checking accounts. The red dollars which are newly created should, however, be distributed free among the population, in one manner or another.

PHYSIOLOGY OF THE TWO CURRENCY SYSTEM

Let us consider now what would happen if, for some reason or another, (say in a perhaps mistaken anticipation of a fall in the general price level of consumer's goods, ^{as} expressed in green dollars) dealers should be induced to hold back with purchases; i.e., if they should begin selling from stock without replenishing their stock. If this happens, dealers will begin to repay loans to the Bank, on which they would have to pay interest; and this will reduce the total, C, of the checking accounts.

The excess green dollar certificates no longer needed for 100% coverage of the checking accounts will then be currently transferred by the Bank to the Central Bank, and the Central Bank will then currently purchase red dollars on the open market. This activity of the Central Bank will immediately lead to a rise in the price of red dollars. Moreover, a certain percentage of the dealers who take in more green dollars than they disburse during this particular period, will begin to have more money in their checking accounts than corresponds to their individual indebtedness to the Bank; and this will lead to overflow purchases of red dollars by the Bank on their behalf. These overflow purchases will also contribute to the increase of the red dollar price during this particular period.

A rise in the price of red dollars means that the savings of the consumers have increased in purchasing power. A certain fraction of the red dollars purchased by the Central Bank during that period will be red dollars sold by consumers who wish to buy goods which, in terms of red dollars, are now cheaper than they were before. There may be also consumers who will assume that the price of red dollars will increase still further, and who, wishing to speculate, will prefer to borrow green dollars on their red dollar deposits and then purchase consumer's goods with these borrowed dollars.

Thus during this particular period there will be a shift of green dollars from where money turns over more slowly, to the checking accounts of the consumers, the checking accounts of the dealers, /where money turns over fastest; i.e., during this particular period of loan shrinkage, there will be an increase rather than a decrease in the circulation of green dollars. (We have seen before that in the two currency system there is never a shrinkage of the "money volume," even though there may be a shrinkage of the "loan volume.")

We may further say that in this two currency system, if there is a tendency towards the slowing of trade, prices will in a certain sense "fall," and they will fall immediately; but they will "fall" in terms of red dollars and not necessarily in terms of green dollars. Consequently, during such a period of "falling prices," dealers may continue to buy and sell at essentially unchanged prices in green dollars, and make a profit.

REMARKS ON SAVING

A few remarks on saving in the two currency system might illustrate certain peculiarities of this system.

An individual who consumes nothing can save as much as he can earn, but what society as a whole can save is determined (if we disregard the possibility of manufacturing products for stock and saving by the storing of products) by the rate at which the total production and consumption increases. In the particular case, when there is no further increase in the population, no further technological improvement, and thus no further possible increase in either production or consumption, society as a whole cannot save anything. Let us see how the two currency system would behave in this extreme case.

We may, for instance, have a situation in which at any time people who wish to draw on their red dollar savings just balance the people who wish to increase their red dollar savings. There will then be overflow purchases of red dollars by the Bank for individual accounts; but the price of red dollars will remain unchanged.

On the other hand, if there is a greater tendency to save, the price of red dollars will rise and will keep rising as long as this tendency persists. If a man who wishes to save buys red dollars at a high price that does not mean, however, that he incurs a loss; for if society persists in its saving habits, the price of red dollars will continue to rise.

If there should be a reversal of the trend, however; if for one reason or another a large number of people should suddenly decide that they want to increase their consumption rather than to save, and if they begin to draw on their red dollar savings, the price of red dollars will fall on the market, and this fall will tend to discourage a further increase in the consumption on the part of those who want to consume at the cost of their savings.

Clearly it is not possible in any economy to consume the savings of many years within a short period of time. An attempt to do so would, in the two currency system, depreciate the red dollar holdings of the savers, but it need not lead to a rise in the price of consumer's goods, as expressed in green dollars; and therefore it need

not disturb the relations of wages and prices. No new wage demands need, therefore, arise as a result of such a reversal of the saving habits of society.

Such a reversal of the saving habits of society is, of course, not likely to occur under ordered conditions. It is more likely that society will persist in its saving habits; and it is quite possible that this would mean continually rising red dollar prices. If this should be the case, and if it should prove necessary to prevent the deterioration, over long periods of time, of the distribution of red dollar holdings, it might perhaps be advisable to introduce a tax based on the annual capital gain, represented by the increased green dollar value of individual red dollar holdings. Alternatively, a tax based on the annual increment of all capital assets owned by an individual might also be considered for the prevention of the deterioration of the distribution of savings. Either of these taxes could be a graduated tax like the income tax to which we are at present accustomed.

BANK NOTES

If green dollars are also issued in the form of bank notes, as for sake of convenience they ought to be, there exists theoretically the possibility of hoarding bank notes. In a two currency economy there would not be much incentive for such hoarding. But in order to stop any such tendency it might be required by law that bank notes in excess of, say, \$100 per person, be deposited on a bank account before the 31st of each month. If one wishes one could even go a step further and remove all legal protection from any "illegal" hoards of banknotes. Finally, if there should be insistence on having a foolproof system, one might limit the validity of individual banknotes to one calendar month (or maybe one calendar year). Then, of course, we could be quite sure that all bank notes would be paid in on a bank account before the time limit set. It is unlikely, though, that such a drastic measure should be required in the absence of any manifest incentives for hoarding of bank notes.

GENERAL REMARKS TO THE TWO CURRENCY SYSTEM

A market economy in a capitalistic setting will best function if there is an

incentive to investment by expectation of profit and if it is profitable to invest then we may expect that those who wish to borrow money for production purposes will be prepared to pay interest at a certain appreciable rate. In the system proposed in this paper there is an equitable allocation of loans by means of allowing the interest rate to be determined by the market, with the maximum total volume of loans being fixed by the nominal value of the total amount of red dollars in the system. If too many want to borrow too much, those willing to pay the higher interest rate will have preference, as it should be.

A man who acquires green dollars, either by earning them or by selling some of his assets, acquires the right to consume from current production. A man who wants to "save" can either buy goods and store them, or he may invest in some business, for instance by buying stocks, or he might acquire - by buying red dollars - the right to lend money to others, via the Bank, at the current interest rate. The equitable allocation of the right to lend money to others is accomplished by permitting the price of red dollars to be determined by the market.

The only function of the Government in this system consists in determining the rate at which additional amounts of red dollars are issued. Clearly, how much should be invested in toto in accordance with the desirable and possible expansion of the economy is a decision which the community must make in the light of the increase of population and the advances of technology which make a rise in the standard of living possible. There is no reason why the Government should enter the economic picture in any other way, or why the budget of the Government should not be balanced at any time. Only inasmuch as the Government may embark on commercial or industrial enterprises, would the Government, like any other entrepreneur, be justified in borrowing money at the prevailing rates.

It should be, however, the concern of the Government to maintain a distribution of savings under which the two currency system can satisfactorily operate. As we have mentioned before, one might think of various reasonable systems of taxation which, if necessary, could be invoked for the purpose of preventing deterioration over long periods of time of the distribution of red dollar holdings.

Second Version
First Draft, Second Typing
Not For Release

August 6, 1948

*explain negative
interest role of
two currency system*

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*discuss loan
depression!*

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; how shall we 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 a sense, 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, the discussion is limited to conditions pertaining to a closed economy, and it does not cover the transition from the present to the proposed system.

A free market economy ^{operation} under the conventional monetary system is characterized by alternating booms and depressions. ^{It is not possible to eliminate these fluctuations by controlling the interest rate, a method of control which has its obvious limitations in the fact that the interest rate cannot be made smaller than zero.} ~~It is not possible to eliminate these fluctuations by controlling the interest rate, a method of control which has its obvious limitations in the fact that the interest rate cannot be made smaller than zero.~~ ^{It is not easy to} ~~discern the factors which enter into the causation of booms and depressions.~~ ^{the most important of} ~~it is, however, not necessary to do this in order to see that under a slightly~~

quite unnecessary

INSERT 1 PAGE 6

In discussing the general framework of the constant flow system, later the special provisions and finally in detail its rules of procedure, we shall, for the sake of a more definite presentation, frequently more or less arbitrarily postulate one out of several possible modes of ~~organi-~~ *operations*

~~zation~~ We shall also postulate ~~specific procedures~~ *provisions* which might be cumbersome in practice ~~as well as unnecessary~~ *and in reality not really necessary*. Such probably unnecessary ~~provisions~~ *we want to describe a system* procedures are ~~unnecessarily~~ introduced here because ~~it is easier to analyse~~

~~the~~ system which is fool-proof. The behavior of ~~an~~ *XX* an economic

system can be analysed only by making a certain assumption concerning the *behavior* consumers. By discussing a system which is as nearly as possible foolproof

it is possible to reduce these assumptions to a minimum, and to operate only with assumptions which may find universal acceptance on the part

of all economists. If we ~~we~~ *would* abandon some of ~~the rules of procedure~~ *our provisions*

the system ~~might~~ *would* be less cumbersome without necessarily becoming less stable.

~~At~~ *But* the discussion of its stability we then ~~require~~ *require* a larger number of

assumptions relating to consumer behavior and the validity of some of these assumptions might ~~be~~ *then* a subject of controversy among economists

that cannot be settled by analysing material available at present.

shuffled

SSS

In contrast to these two institutions there are business organizations that operate for profit in the money market, which we shall call banks, though their functions are not exactly identical with the functions of present day banks. These banks may not accept money deposits on ~~XXX~~ checking accounts.

A bank may obtain ~~money~~ ^{money like} by selling shares and may ~~make~~ ^{lend} loans ~~to business~~ ^{to business}. ~~that money~~ ^{or else} a bank might act as a broker between those who wish to loan money and those who wish to lend money. But a bank acting in this way as broker ~~may not accept short-term loans on the basis of long-term loans which it has granted.~~ ^{may not accept short-term loans on the basis of long-term loans which it has granted on shorter terms.} While the putting of such limitation on banks in the conventional monetary system might induce hoarding on the part of those who do not wish to loan money on the long-term loans ~~XXXXX~~ ^{we shall} see that in the ~~XXXXXX~~ ^{constant flow} system these ~~same~~ ^{same} limitations ~~may~~ ^{not} have any detrimental effects on the money market. ^{put on the banks will}

Some of these "banks" may raise ~~XXXXXX~~ ^{funds} by issuing promissory notes or some fresh notes and may use exclusively its own capital to ~~lend~~ ^{lend} loans to business ~~enterprise~~ ^{enterprises}.

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The payments for all purchases of goods are made in cash, i.e., ^{or} I.O.U.s
are post-dated checks used for the purchase of goods, ~~are if not~~ ^{either} prohibited
~~or otherwise made simply by the~~
~~at least left without any legal protection. On other hand money can be~~
~~loaned~~ ^{loans} between private individuals for any given ~~XXX~~ term and
business can be freely and

conducting them without any
legal protection

In the other hand private
individuals and business
organizations can freely ^{take up} ~~these~~ loans
with hard money ^{and}

for any ~~type~~ ^{specie} ~~purpose~~ ^{purpose}
if done, banks can be closed and
~~money~~ ^{may be} mortgages ~~with~~ and other
^{may be} freely ~~done~~ bought and sold on
the market.

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 *a certain amount* and ~~have~~ charged to his special debit account (and credited to his checking account) against any of his assets that may serve as collateral, ~~for instance,~~ *such as* stocks, bonds, *"debit letters"* etc. ~~We shall be particularly interested in considering~~ *In* the particular case when a business ~~may use~~ debit letters as collateral *we have a particularly simple case that we shall now discuss in detail. —*

Detailed Provisions of the Constant Flow System

The provisions which we shall postulate in the following may not all be necessary for the functioning of the system. They are introduced here in an attempt to arrive at a system which is foolproof. It may not be necessary at all for the satisfactory functioning of the system; in practice such foolproofness is hardly necessary. But for the purposes of discussion foolproofness has a great advantage; that discussion can be carried out on the basis of only a very few assumptions concerning the behavior of consumers, functions which may find universal acceptance on the part of all economists. If we made the system less foolproof its operation might not be any less satisfactory, and as a matter of fact, it might be less cumbersome. But the discussion of its stability might then require a large number of assumptions relating to consumer behavior and the validity of some of these assumptions might ^{then} be subject to controversy among economists and the statistical material available at present might not be sufficient favorably to resolve the controversy.

We postulate the following provisions:

- 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. The interest charged on the account difference (c-d) is calculated from the amounts shown on the last day of each month on the checking account and on the special debit account.
- d. In addition to a checking account and a special debit account each

person or business has also a "red dollar" account ~~XX~~ with the Bank. One red dollar represents the _____ of all debit letter of the nominal value of one dollar. Debit letters may be presented in the form of red dollar certificates in the total amount of R and the Bank is obligated to ~~KK~~ maintain 100 per cent coverage of red dollar accounts.

e. Anyone who has red dollars in his red dollar account is free to overdraw his checking account and the Bank will automatically within twenty-four hours sell red dollars on his behalf and credit his checking account so as to eliminate the overdraft.

f. In periods of time when the special debit volume is shrinking the Bank may purchase at the end of each month on behalf of each person whose checking account shows an excess ~~X~~ (c-d) over his special debit account ~~X~~ For a certain fraction of his excess debit letters on the open market with which it will credit the corresponding red dollar account of the client.

W. G. LEWIS, OWNER

JOHN H. RANKIN, MANAGER

STEAD RANCH AND HOTEL

PRIVATELY OWNED
WITHIN ROCKY MOUNTAIN NATIONAL PARK
ESTES PARK, COLORADO

GOLFING AT COUNTRY CLUB
9 HOLES

Aug 8th / 48

Dear Arjun,

Here is another M.S. -

Could you please - as before -
bring 25 alto - 2 made and
send me 10 of them c/o Van Niel,
Hugobins Marine Studio
Pacific Grove, Cal. -

I wrote you before that
between the 10 and 13 I can be
~~at~~ reached at Stanford Univ.,
Palo Alto ^{Cal.} c/o Louis Wirth
611 Alvarado Row. -

What is new?

James Leitch

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different monetary system, which is based on two currencies rather than one, it would be possible to have a stable market economy that ~~will be~~ free from the oscillations of the trade cycles.

We arrive at such a two currency system through the thought that money fulfills in the conventional, single currency, system two essentially different functions. On the one hand, it is used for paying wages and purchasing goods from current production; and on the other hand, it can be "saved" and thus used to establish claims on future production. As long as the same currency is used for both functions, the free market economy suffers, not from being too free, but rather from not being free enough. An additional degree of freedom is introduced if two different currencies, spending money, or green dollars, and savings money, or red dollars, are made to serve these two different functions, and if the exchange rate between them (the price of the red dollars) is permitted to remain free; i.e., if it is left to be determined by the market.

ADVANCE REMARKS ABOUT THE TWO CURRENCY SYSTEM

One result of the operation of the two currency system described below is that the ~~salaries~~ ^{wage level} and the general price level of consumer's goods may remain constant as expressed in green dollars, ~~even over very long periods of time.~~ ^{even over long periods of time} (This holds true ~~only~~ if we disregard the increase in the standard of living due to technological progress, which should lead to an increase in the wage level at constant prices of consumer goods.) The price of the red dollar, on the other hand, may undergo variations, and also may show long term trends. It is these variations of the price of the red dollar which make it possible to maintain the "money volume" of green dollars constant over periods during which there is a shrinkage of the "loan volume" of green dollars, and also to have a shrinkage of the loan volume of green dollars automatically accompanied by an increase rather than a decrease in the circulation of green dollars.

It is this relationship between "loan volume" (of green dollars) on the one hand, and "money volume" (of green dollars) ^{as well as} ~~and~~ money circulation (of green dollars) on the other hand, which is responsible for the absence of that essential instability which characterises the market economy based on the conventional, single currency, monetary system.

But an economy which is free from this instability could still suffer from considerable fluctuations; there could be a trade shrinkage with respect to certain types of goods, and an expansion of trade with respect to certain other types of goods. If such shifts take place very rapidly, there may not be enough time for proper adjustment, and there could be unemployment in certain industries, while the production capacity of other industries remains insufficient to meet the demand. Such undesirable phenomena might develop in a two currency economy also, if the distribution of savings (of red dollars) should be deteriorated; i.e., if few people have very large savings, and the bulk of the consumers have no savings at all.

The two currency economy described below would function all the more smoothly the larger ^{the} fraction of the savings (of red dollars) is ^{which is} owned by the consumers; and the more their distribution resembles the distribution of the normal spending of the individual consumers.

In the subsequent discussion of the two currency system we shall always implicitly assume a distribution of savings which is sufficiently far from deterioration. We shall also briefly discuss, later, the possibility that it might be necessary to prevent a deterioration of the distribution of savings over long periods of time, by some form of taxation, which might be based on the yearly increment of capital assets of the individual rather than ^{on} his annual income.

A shrinkage in the loan volume will in the two currency system always lead to an immediate fall in the price of consumer's goods, not in terms of green dollars, but in terms of red dollars, (the price of which will necessarily rise - as

we shall see -

with the shrinking of the loan volume.) and in this sense, the two currency system is free from price rigidity.

In discussing the two currency system we shall assume that the system has been in operation for a considerable period of time, so that the disturbances which may occur during the transition from the one currency system to the two currency system have faded out.

We shall, for the sake of simplicity, assume that there is only one bank, which we shall call the Bank; but we shall distinguish between the Bank and the Central Bank.

SPIELREGELN

We postulate that all wages and salaries are paid ^{at} equal time intervals, say monthly, on the first of the month, in green dollars.

We further postulate that every person and every business has a checking account with the Bank, in green dollars; and that all wages are paid and all purchases of goods are made by transfer through check, in green dollars. (We are thus disregarding for the time being the possibility that for the sake of convenience a certain limited amount of green dollars may be issued in the form of bank notes to the public. This point will be discussed later.)

Any person or business ^{corporation} may have with the Bank an account in red dollars.

Whoever has such a red dollar holding is entitled to a loan from the Bank of green dollars in amounts up to the nominal value of his red dollar holding.

All green dollar loans granted by the Bank are carried on debit accounts, on which interest is charged (in green dollars) at the current interest rate.

Correspondingly, interest is paid by the Bank ^{at} the same current interest rate (in green dollars) on the nominal value of all red dollar accounts.

Only a fraction of the ~~total~~ ^{will} loans to which the red dollar depositors are ^{in fact} entitled ~~may~~ in fact be taken up by them, and loans will be granted by the Bank against securities other than ~~the~~ red dollar deposits.

We postulate that the total number ^{G,} of green dollars, ~~it~~ in the system is equal to the total number, R, of red dollars in the system; i.e., the total amount, G, of the green dollars in the system is equal to the nominal value, R, of the total amount of the red dollars.

We shall assume for the sake of this presentation that both red and green dollars are printed in the form of certificates, which are kept either in the Bank or in the Central Bank, and which are not released to the public.

The Bank is obligated to keep 100% coverage in red dollar certificates for red dollar accounts; and 100% coverage in green dollar certificates for green dollar checking accounts.

We postulate that originally all red dollars were owned by the public, and accordingly all red dollar certificates were in the Bank covering the red dollar accounts of the public. The Central Bank owned at that time no red dollars, but it owned all the green dollars, had loaned all of them to the Bank, and the Bank had loaned all of them to the public. In this original, or standard, condition, the total of the debit accounts, D, is therefore equal to the total, C, of the checking accounts; and incidentally, also equal to the total amount, G, of green dollars in the system, which is in turn equal to the total nominal value, R, of the red dollars in the system. That is, in the standard condition we have: D equal C equal G equal R.

We shall see that this standard condition is not necessarily maintained all the time, because as some green dollar loans are repaid to the Central Bank the Central Bank will purchase red dollars in the open market for green dollars; and the total, D, of the debit accounts may then fall below the total, C, of the checking accounts. However, as we shall see, under the rules of operation described below, the system will return from time to time to the standard condition.

In the subsequent discussion we shall call the total, D, of the debit accounts also the "loan volume", and the total, C, of the checking accounts, also the "money

volume".

If there is a trend towards trade shrinkage, as reflected by a decline in the total, D, of the debit accounts ~~(the loan volume)~~ by a certain value, delta D, there ^{will} ~~be~~ be also a corresponding decline, delta C, in the total, C, of the checking accounts. (delta ^C ~~is~~ equal delta ^D ~~is~~). The Bank is then free to return to the Central Bank green dollar certificates in this amount, delta C.

We postulate the rule that the Central Bank shall immediately purchase on the open market red dollars for this amount, of green dollars, delta C. As a result of this purchase, the total, ~~of the checking accounts~~ C, of the checking accounts will ~~now~~ rise by this same amount, delta C.

This activity of the Central Bank will continue as long as ~~the~~ trend continues. During this period of time the Central Bank accumulates a fund of red dollars purchased at rising prices, while the total, C, of the checking accounts remains constant (except for ^{one} ~~the~~ day's change, which may remain uncompensated.) During ~~the~~ same period the total, D, of the debit accounts falls from its original value, D equal C, to a value $D < C$.

If subsequently there is a reversal of trend; i.e., a tendency towards acceleration of trade, as reflected by increasing demands for loans, the Central Bank will then sell red dollars from its ^{previously} ~~accumulated fund~~ ~~at falling prices~~ and the green dollars which the Central Bank so acquires will be loaned to the Bank, which will then grant additional loans to the public. During this period of time, the red dollar fund of the Central Bank diminishes, the total of the debit accounts rises, and the total of the checking accounts remains constant (except for ^{one} ~~the~~ day's change, which may remain uncompensated.) This process comes to an end when the red dollar fund of the Central Bank ^{is} ~~has been~~ exhausted, ^{by} ~~at~~ which time the total, D, of the debit accounts has again risen to a value close to its original value, G.

(This total, D, of the debit accounts, may not have returned, however,

necessarily to exactly the original value, ~~#~~ ^D equal G; it may be a trifle lower or a trifle higher, according to whether the Central Bank made a loss or a gain when it sold its red dollar holding. This is a minor point, but in order not to leave any uncertainty on it, we postulate that the total, ~~#~~ ^D, of the debit accounts is brought back to exactly the standard value, ~~#~~ ^D equal G, ^{*This may be accomplished*} either by a flat bonus or a flat tax on all debit accounts. Either bonus or tax would be very small because of the essentially symmetrical character of the processes which lead to the accumulation and to the disposal of a red dollar fund of the Central Bank. This minor adjustment could be made annually; and moreover, if it is desired, it could always take the form of a partial refund of interest on debit accounts, provided we are willing to let the interest rate demanded on debit accounts be ~~slightly~~ ^{*granted*} higher than the interest rate ~~paid~~ ^{*granted*} on the red dollar deposits.)

OVERFLOW PURCHASES

The amount of red dollars deposited on anyone's red dollar account is not limited by any rule. Similarly, the amount of green dollars kept in anyone's checking account during the month is not limited by any rule. But on the 31st of the month the Bank will remove from anyone's checking account the amount by which this account exceeds his indebtedness to the Bank, (as shown by his debit account); and the Bank will buy on his behalf, for this excess amount, red dollars on the open market, which it will credit to his red dollar account. We shall call these red dollar purchases overflow purchases.

SERVICE CHARGES

Service charges play in this two currency system the role of friction, and have the function to dampen fluctuations. A service charge of 1% perhaps, or a fraction thereof, may be made on all sales of red money. This service charge must be kept so small as not to affect any legitimate business, but high enough to make it unprofitable for anyone to sell at the beginning of each month the red dollars

which the Bank ~~may~~ ^{may have} purchased on his behalf for his excess green dollar holding.

Real estate, stocks, and other capital investment are according to our scheme purchasable ~~in~~ ^{against payments in} red dollars; and again service charges should make it unprofitable to make such purchases via green dollars by check drawn on a checking account. The purpose of these service charges is to prevent ~~the~~ ^{that} speculation in stocks, should lead to an increase in the "loan volume" which would not reflect the money requirement of the legitimate trade, would therefore blur the picture and make the stabilisation of the system by a simple set of rules rather difficult.

THE INTEREST RATE

The interest rate ~~will~~ ^{should} be raised by the Central Bank whenever its red dollar reserve approaches zero, and by raising the interest rate sufficiently high, it should always be possible to keep the demands for loans within the bounds set by the rule of 100% coverage of the checking accounts. Conversely, wherever there is a marked trend for the accumulation of red dollar reserves in the Central Bank, the Central Bank will decrease the interest rate until some fixed minimum value is reached.

LONG TERM INCREASES OF THE RED DOLLAR AND GREEN DOLLAR AMOUNTS IN THE SYSTEM

In an expanding economy, whether the expansion is due to the increase in population, or to the increase in the standard of living, due to technological progress, there is a need for a steady increase in the money circulation if we wish to maintain a high level of employment at constant prices. To meet this requirement a certain number of green dollars and red dollars should ~~therefore~~ be introduced in the course of ~~every~~ ^{each} year by the Central Bank. These two numbers should be equal so as to retain the original equality ~~between~~ ^{of} the nominal value of the red dollar amount and ~~the~~ ^{of} amount ~~of~~ ^{contained} green dollars in the system. A corresponding number of red and green dollar certificates ~~should~~ ^{should} be then printed ~~each~~ ^{each} year.

The amount of green dollars newly created ~~must~~ ^{should} be loaned by the Central Bank to the Bank, and ~~will~~ ^{should} enable the Bank to grant additional loans leading to a corresponding increase in the total, C, of the checking accounts. The red dollars which are newly created ~~must~~ ^{should}, however, be distributed free among the population, in one manner or another.

PHYSIOLOGY OF THE TWO CURRENCY SYSTEM

Let us consider now what would happen if, for some reason or another, (say perhaps in a mistaken anticipation of a fall in the general price level of consumer's goods, as expressed in green dollars) dealers should be induced to hold back with purchases; i.e., if ~~they~~ they should begin selling from stock without replenishing their stock. If this happens, dealers will begin to repay loans to the Bank, on which they ^{would} have to pay interest; and this will reduce the total, C, of the checking accounts. The excess green dollar certificates no longer needed for 100% coverage of the checking accounts will then be currently transferred by the Bank to the Central Bank, and the Central Bank will then currently purchase red dollars on the open market. This activity of the Central Bank will immediately lead to a rise in the price of red dollars. ~~The price of the red dollar is expected to rise with the increase in the price of the green dollar.~~ Moreover, a certain percentage of the dealers who take in more green dollars than they disburse during this particular period, will begin to have more money in their individual checking accounts than corresponds to their individual indebtedness to the ~~Bank~~ ^{Bank}; and this will lead to overflow purchases of red dollars by the Bank on their behalf. These overflow purchases will also contribute to the increase of the red dollar price during this particular period.

A rise in the price of red dollars means that the savings of the consumers have increased in purchasing power. A certain fraction of the red dollars purchased by the Central Bank during that period ~~are~~ ^{will be} red dollars sold by consumers who wish to buy goods which, in terms of red dollars, are now cheaper than they were before.

There ~~will~~ ^{may} be also consumers who ~~may wish to speculate, and assuming that the~~ ^{will assume} ~~price of red dollars will increase still further,~~ ^{and who, wishing to speculate,} will prefer to borrow green dollars on their red dollar deposits and then purchase consumer's goods with these borrowed dollars.

~~It should be noted that during this particular period there will be a~~ ^{Thus} ~~shift of green dollars from the checking accounts of the dealers, where money~~ shift of green dollars from the checking accounts of the dealers, where money ~~turns over more slowly, to the checking accounts of the consumers, where money~~ turns over more slowly, to the checking accounts of the consumers, where money ~~turns over fastest; i.e., during this particular period of loan shrinkage, there~~ turns over fastest; i.e., during this particular period of loan shrinkage, there ~~will be an increase rather than a decrease in the circulation of green dollars.~~ will be an increase rather than a decrease in the circulation of green dollars.

~~(We have seen before that in the two currency system there is never a~~ ^{shrinkage of the "money volume," even though there may be a shrinkage of the "loan} ~~shrinkage of the "money volume," even though there may be a shrinkage of the "loan~~ shrinkage of the "money volume," even though there may be a shrinkage of the "loan ~~volume.")~~ volume.")

We may ^{further} say that in this two currency system, if there is a tendency towards ~~the slowing of trade, prices will in a certain sense immediately "fall" but they will~~ ^{and they will fall immediately;} ~~"fall" in terms of red dollars and not necessarily in terms of green dollars.~~ "fall" in terms of red dollars and not necessarily in terms of green dollars. ~~Consequently, during such a period of "falling prices", dealers may continue to~~ Consequently, during such a period of "falling prices", dealers may continue to ~~buy and sell at essentially unchanged prices in green dollars, and make a profit.~~ buy and sell at essentially unchanged prices in green dollars, and make a profit.

REMARKS ON SAVING

A few remarks on saving in the two currency system might illustrate certain peculiarities of this system.

An individual who consumes nothing can save as much as he can earn, but what society as a whole can save is determined (if we disregard the possibility of manufacturing products for stock and saving by the storing of products) by the rate at which ^{the} ~~is~~ total production and consumption increases. In the particular case, when there is no further increase in the population, no further technological improvement, and thus no further ^{possible} increase in either production or consumption, society as a whole cannot save anything. Let us see how the two currency system

would behave in this extreme ~~limiting~~ case.

We may, for instance, have a situation in which at any time people who wish to draw on their ~~savings~~ red dollar savings just balance the people who wish to increase their red dollar savings. There will then be overflow purchases of red dollars by the Bank for individual accounts; but the price of red dollars will remain unchanged.

On the other hand, if there is a greater tendency to save, the price of red dollars will rise and will keep rising as long as this tendency persists. If a man who wishes to save buys red dollars at a high price that does not mean, however, that he incurs a loss; for if society persists in its saving habits, the price of red dollars will continue to rise.

If there should be a reversal of the trend, however; if for one reason or another a large number of people should suddenly decide that they want to increase their consumption rather than to save, and if they begin to draw on their red dollar savings, the price of red dollars will fall on the market, and this fall will tend to discourage ^{a further} increase in the consumption on the part of those who want to consume at the cost of their savings.

Clearly it is not possible in any economy to consume the savings of many ^{within a short period of time.} years ~~in one single year~~. An attempt to do so would, in the two currency system, depreciate the red dollar holdings of the savers, but it need not lead to a rise in the price of consumer's goods, as expressed in green dollars; and therefore it need not disturb the relations of wages and prices. No new wage demands need, therefore, arise as a result of such a reversal of the saving habits of society.

Such a reversal of the saving habits of society is, of course, not likely to occur under ordered conditions. It is more likely that society will persist in its saving habits; and it is quite possible that this would mean continuous ^{ally} rising red dollar prices. If this should be the case, ~~if~~ and if it should prove necessary to prevent the deterioration, over long periods of time, of the distribution of red

~~introduce a tax~~ *introduce a tax*

dollar holdings, it might perhaps be advisable to ~~have taxes~~ based on the annual capital gain, represented by the increased green dollar value of individual red dollar holdings, ~~rather than based on the annual income, as is at present cus-~~
~~toms.~~ Alternatively, a tax based on the annual increment of all capital assets owned by an individual might also be considered for the prevention of the deterioration of the distribution of savings.

Either of these taxes could be a graduated tax like the income tax to which we are at present accustomed. ~~but we should be careful~~

BANK NOTES

If green dollars are also issued in the form of bank notes, as for sake of convenience they ought to be, there ~~is~~ ^{exists} theoretically the possibility of hoarding bank notes. In a two currency economy there would not be much incentive for such hoarding. But in order to stop any such tendency it might be required by law that bank notes in excess of, say, \$100 per person, be deposited on a bank account before the 31st of each month. If one wishes one could even go a step further and remove all legal protection from any "illegal" hoards of banknotes. Finally, if there should be insistence on having a foolproof system, one might limit the validity of individual banknotes to one calendar month (or maybe one calendar year). Then, of course, we could be quite sure that all bank notes would be paid in on a bank account before the time limit set. It is ~~very~~ unlikely, though, that such a drastic measure ~~could~~ be required in the absence of any manifest incentives for hoarding of bank notes.

GENERAL REMARKS TO THE TWO CURRENCY SYSTEM

A market economy in a capitalistic setting will best function if there is an incentive to investment by expectation of profit and if it is profitable to invest then we may expect that those who wish to borrow money for production purposes will be prepared to pay interest at a certain appreciable rate. In the system proposed in this paper there is an equitable allocation of loans by means of allowing the interest rate to be determined by the market, with the maximum

total volume of loans being fixed by the nominal value of the total amount of red dollars in the system. If too many want to borrow too much, those willing to pay the higher interest rate will have preference, as it should be.

A man who acquires green dollars, either by earning them or by selling some of his assets, acquires the right to consume from current production. A ^{who} man/wants to "save" can either buy goods and store them, ^{or he may invest in some business for instance by buying stocks,} or he might acquire-by ^{via the Bank} buying red dollars-the right to lend money to others, at the current interest rate. The equitable allocation of the right to lend money to others is accomplished by permitting the price of red dollars to be determined by the market.

The only function of the Government in this system consists in determining the rate at which additional amounts of red dollars are issued. Clearly, how much should be invested in toto in accordance with ^{(the} desirable and possible expansion of the economy is a decision which the community must make in the light of the increase of population and the advances of technology which make a rise in the standard of living possible. There is no reason why the Government should enter the economic picture in any other way, or why the budget of the Government should not be balanced at any time. Only inasmuch as the Government may embark on commercial or industrial enterprises, would the Government, like any other entrepreneur, be justified in borrowing money at the prevailing rates.

It should be, however, the concern of the Government to maintain a distribution of savings under which the two currency system can satisfactorily operate. As we have mentioned before, one might think of various reasonable systems of taxation which, if necessary, could be invoked for the purpose of preventing deterioration ^{over long periods of time} of the distribution of red dollar holdings.

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August 6, 1948

MARKET ECONOMY FREE FROM TRADE CYCLES

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; how shall we 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. *and respect the intention of* In ~~a~~ sense, 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! *but in other respects the ~~pro~~ solution may be more difficult* Looking towards such a more remote application rather than the possible immediate applications of the principles discussed in this paper, the discussion is limited to conditions pertaining to a closed economy, and *(moreover)* it does not cover the transition from the present to the proposed system.

A free market economy under the conventional monetary system is characterized by alternating booms and depressions. It is not possible to eliminate these fluctuations by controlling the interest rate, a method of control which has its obvious limitations in the fact that the interest rate cannot be made smaller than zero. While such a market economy is obviously unstable, it is not easy to disentangle all of the factors which enter into the causation of booms and depressions. It is, however, not necessary to do this in order to see that under a slightly

X different monetary system, which is based on two currencies rather than one, it would be possible to have a stable market economy that ~~will~~^{is} be free from the oscillations of the trade cycles.

3 We arrive at such a two currency system through the thought that money fulfills in the conventional, single currency, system two essentially different functions. On the one hand, it is used for paying wages and purchasing goods from current production; and on the other hand, it can be "saved" and thus used to establish claims on future production. As long as the same currency is used for both functions, the free market economy suffers, not from being too free, but rather from not being free enough. An additional degree of freedom is introduced if two different currencies, spending money, or green dollars, and savings money, or red dollars, are made to serve these two different functions, and if the exchange rate between them (the price of the red dollars) is permitted to remain free; i.e., if it is left to be determined by the market.

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But an economy which is free from this instability could still suffer from considerable fluctuations; there could be a trade shrinkage with respect to certain types of goods, and an expansion of trade with respect to certain other types of goods. If such shifts take place very rapidly, there may not be enough time for proper adjustment, and there could be unemployment in certain industries, while the production capacity of other industries remains insufficient to meet the demand. Such undesirable phenomena might develop in a two currency economy also, if the distribution of savings (of red dollars) should be deteriorated; i.e., if few people have very large savings, and the bulk of the consumers have no savings at all.

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If subsequently there is a reversal of trend; i.e., a tendency towards acceleration of trade, as reflected by increasing demands for loans, the Central Bank will then sell red dollars from its ^{previously} accumulated funds, ~~and these sales will take place~~ at falling prices, and the green dollars which the Central Bank so acquires will be loaned to the Bank, which will then grant additional loans to the public. During this period of time, the red dollar fund of the Central Bank diminishes, the total, ^{of} the debit accounts rises, and the total of the checking accounts remains constant (except for ^{one} ~~the last~~ day's change, which may remain uncompensated.) This process comes to an end when the red dollar fund of the Central Bank ^{is} ~~has been~~ exhausted, ^{by} which time the total, D, of the debit accounts has again risen to a value close to its original value, G.

X
30

(This total, D, of the debit accounts, may not have returned, however,

*what if
a new
medium
sets in
before
red dep.
is exhausted*

† necessarily to exactly the original value ~~of~~ D equal G; it may be a trifle lower or a trifle higher, according to whether the Central Bank made a loss or a gain when it sold its red dollar holding. This is a minor point, but in order not to leave any uncertainty on it, we postulate that the total, ~~of~~ D, of the debit accounts is brought back to exactly the standard value ~~of~~ D equal G ~~either by~~ *and that this can be accomplished* a flat bonus or a flat tax on all debit accounts. Either bonus or tax would be very small because of the essentially symmetrical character of the processes which lead to the accumulation and to the disposal of a red dollar fund of the Central Bank. This minor adjustment could be made annually; and moreover, if it is desired, it could always take the form of a partial refund of interest on debit accounts, provided we are willing to let the interest rate demanded on debit accounts be slightly higher than the interest rate ^{granted} ~~paid~~ on ~~the~~ red dollar deposits.)

31

32

interest

interest rate not raised until all red dollars gone

OVERFLOW PURCHASES

The amount of red dollars deposited on anyone's red dollar account is not limited by any rule. Similarly, the amount of green dollars kept in anyone's checking account during the month is not limited by any rule. But on the 31st of the month the Bank will remove from anyone's checking account the amount by which this account exceeds his indebtedness to the Bank, (as shown by his debit account); and the Bank will buy on his behalf, for this excess amount, red dollars on the open market, which it will credit to his red dollar account. We shall call these red dollar purchases overflow purchases.

33

expand

SERVICE CHARGES

Service charges play in this two currency system the role of friction, and have the function to dampen fluctuations. A service charge of 1% perhaps, or a fraction thereof, may be made on all sales of red money. This service charge must be kept so small as not to affect any legitimate business, but high enough to make it unprofitable for anyone to sell at the beginning of each month the red dollars

34

X which the Bank ^{may have} ~~has~~ purchased on his behalf for his excess green dollar holding.

X
35.
X Real estate, stocks, and other capital investment are according to our
against payment in
scheme purchasable in/red dollars; and again service charges should make it
unprofitable to make such purchases via green dollars by check drawn on a checking
account. The purpose of these service charges is to prevent ^{that} ~~the~~ speculation in
stocks, should lead to an increase in the "loan volume" which would not reflect
the money requirement of the legitimate trade, would therefore blur the picture
and make the stabilisation of the system by a simple set of rules ~~rather~~ ^{rather} difficult.

THE INTEREST RATE

X
+ The interest rate ^{should} ~~will~~ be raised by the Central Bank whenever its red
dollar reserve approaches zero, and by raising the interest rate sufficiently
high, it should always be possible to keep the demands for loans within the
bounds set by the rule of 100% coverage of the checking accounts. Conversely,
wherever there is a marked trend for the accumulation of red dollar reserves in
the Central Bank, the Central Bank will decrease the interest rate until ~~some~~
fixed minimum value is reached.

LONG TERM INCREASES OF THE RED DOLLAR AND GREEN DOLLAR AMOUNTS IN THE SYSTEM

X
X In an expanding economy, whether the expansion is due to the increase in
population, or to the increase in the standard of living, due to technological
progress, there is a need for a steady increase in the money circulation if we
wish to maintain a high level of employment at constant prices. To meet this
requirement a certain number of green dollars and red dollars should ~~therefore~~
be introduced in the course of ^{each} ~~every~~ year by the Central Bank. These two numbers
should be equal so as to retain the original equality ^{of} ~~between~~ the nominal value
of the red dollar amount and the ^{of} ~~amount of~~ green dollars ^{contained} in the system. A
corresponding number of red and green dollar certificates ^{would} ~~may~~ be then printed
^{each} every year.

The amount of green dollars newly created ^{should} ~~must~~ be loaned by the Central Bank to the Bank, and ^{would} ~~will~~ enable the Bank to grant additional loans leading to a corresponding increase in the total, C, of the checking accounts. The red dollars which are newly created ^{should} ~~must~~, however, be distributed free among the population, in one manner or another.

PHYSIOLOGY OF THE TWO CURRENCY SYSTEM

Let us consider now what would happen if, for some reason or another, ^{(say} perhaps ^{in a} mistaken anticipation of a fall in the general price level of consumer's goods (as expressed in green dollars) dealers should be induced to hold back with purchases; i.e., if ~~there~~ they should begin selling from stock without replenishing their stock. If this happens, dealers will begin to repay loans to the Bank, on which they ^{would} have to pay interest; and this will reduce the total, C, of the checking accounts. The excess green dollar certificates no longer needed for 100% coverage of the checking accounts will then be currently transferred by the Bank to the Central Bank, and the Central Bank will then currently purchase red dollars on the open market. This activity of the Central Bank will immediately lead to a rise in the price of red dollars. ~~The price of the red dollar will rise~~ Moreover, a certain percentage of the dealers who take in more green dollars than they disburse during this particular period, will begin to have more money in their individual checking accounts than corresponds to their individual indebtedness to the ^{Bank} ~~Bank~~; and this will lead to overflow purchases of red dollars by the Bank on their behalf. These overflow purchases will also contribute to the increase of the red dollar price during this particular period.

A rise in the price of red dollars means that the savings of the consumers have increased in purchasing power. A certain fraction of the red dollars purchased by the Central Bank during that period ^{will be} ~~are~~ red dollars sold by consumers who wish to buy goods which, in terms of red dollars, are now cheaper than they were before.

X There ^{may} ~~will~~ be also consumers ^{with} ~~who may wish to speculate, and assuming~~ ^{who will assume} that the price of red dollars will increase still further; ^{they will} ~~will~~ prefer to borrow green dollars on their red dollar deposits and then purchase consumer's goods with these borrowed dollars.

X ^{Thus} ~~It should be noted that~~ ^{according to the above} during this particular period there will be a shift of green dollars from the checking accounts of the dealers, where money turns over more slowly, to the checking accounts of the consumers, where money turns over fastest; i.e., during this particular period of loan shrinkage, there will be an increase rather than a decrease in the "circulation" of green dollars.

~~(It does not mean, therefore, that there is no shrinkage of the money volume during such~~

X ^{and periods} ~~and periods~~ (We have seen ^{before} ~~before~~ that in the two currency system there is ~~no~~ ^{never} shrinkage of the "money volume," even though there may be a shrinkage of "the loan volume".)

X We may ^{rather} say that in this two currency system, if there is a tendency towards the slowing of trade, prices will in a certain sense ~~immediately~~ ^(and they will fall immediately) "fall", but they "fall" in terms of red dollars and not necessarily in terms of green dollars.

Consequently, during such a period of "falling prices", dealers may continue to buy and sell at essentially unchanged prices in green dollars, and make a profit.

REMARKS ON SAVING

in the absence of technological progress

A few remarks on saving in the two currency system might illustrate certain peculiarities of this system.

X An individual who consumes nothing can save as much as he can earn, but what society as a whole can save is determined (if we disregard the possibility of manufacturing products for stock and saving by the storing of products) by the rate at which ^{the} ~~its~~ total production and consumption increases. In the particular case, when there is no further increase in the population, no further technological improvement, and thus no further ^{possible} increase in either production or consumption, society as a whole cannot save anything. Let us see how the two currency system

X would behave in this extreme ~~case~~ case.

We may, for instance, have a situation in which at any time people who wish to draw on their ~~savings~~ red dollar savings just balance the people who wish to increase their red dollar savings. There will then be overflow purchases of red
X dollars by the Bank for individual accounts, but the price of red dollars will remain unchanged.

On the other hand, if there is a greater tendency to save, the price of red dollars will rise and will keep rising as long as this tendency persists. If a man who wishes to save buys red dollars at a high price that does not mean, however, that he incurs a loss; for if society persists in its saving habits, the
X price of red dollars will continue to rise.

If there should be a reversal of the trend, however; if for one reason or another a large number of people should suddenly decide that they want to increase their consumption rather than to save, and if they begin to draw on their red dollar savings, the price of red dollars will fall on the market, and this fall
X will tend to discourage ^{an increase} an increase in the consumption on the part of those who want to consume at the cost of their savings.

Clearly it is not possible in any economy to consume the savings of many
X within a short period of time years in one single year. An attempt to do so would, in the two currency system, depreciate the red dollar holdings of the savers, but it ^{would} ~~need~~ not lead to a rise in the price of consumer's goods, as expressed in green dollars; and therefore it ^{would} ~~need~~ not disturb the relations of wages and prices. No new wage demands ^{would} ~~need~~, therefore, arise as a result of such a reversal of the saving habits of society.

2
X Such a reversal of the saving habits of society is, of course, not likely
X to occur under ordered conditions. It is more likely that society will persist in its saving habits; and it is quite possible that this would mean ^{usually} continuously rising red dollar prices. If this should be the case, ~~if~~ and if it should prove necessary to prevent the deterioration, over long periods of time, of the distribution of red

dollar holdings, it might perhaps be advisable to ^{introduce a tax, perhaps a ~~greater~~ ~~checkbox~~} ~~have taxes~~ based on the annual capital gain ^{represented} by the increased green dollar value of individual red dollar holdings, ~~rather than based on the annual income, as is at present ~~con-~~~~
~~tomary~~ Alternatively, a tax based on the annual increment of all capital assets owned by an individual might also be considered for the prevention of the deterioration of the distribution of savings. ^{Further of these taxes would be}

BANK NOTES

^{a graduated tax, similar to the graduated income tax which}
^{exists}
~~income tax which is listed at present in~~
~~to which we are ~~not~~ accustomed.~~

If green dollars are also issued in the form of bank notes, as for sake of convenience they ought to be, there ^{exists} theoretically the possibility of hoarding bank notes. In a two currency economy there would not be much incentive for such hoarding. But in order to stop any such tendency it might be required by law that bank notes in excess of, say, \$100 per person, be deposited on a bank account before the 31st of each month. If one wishes one could even go a step further and remove all legal protection from any "illegal" hoards of banknotes. Finally, if there should be insistence on having a foolproof system, one might limit the validity of individual banknotes to one calendar month (or maybe one calendar year). Then, of course, we could be quite sure that all bank notes would be paid in on a bank account before the time limit set. It is ~~very~~ unlikely, though, that such a drastic measure ^{would} be required in the absence of any manifest incentives for hoarding of bank notes.

GENERAL REMARKS TO THE TWO CURRENCY SYSTEM

A market economy in a capitalistic setting will best function if there is an incentive to investment by expectation of profit, and if it is profitable to invest, then we may expect that those who wish to borrow money for production purposes will be prepared to pay interest at a certain appreciable rate. In the system proposed in this paper there is an equitable allocation of loans by means of allowing the interest rate to be determined by the market, with the maximum

total volume of loans being fixed by the nominal value of the total amount of red dollars in the system. If too many want to borrow too much, those willing to pay the higher interest rate will have preference, as it should be.

A man who acquires green dollars, either by earning them or by selling some of his assets, acquires the right to consume from current production. A man ^{who} wants to "save" can either buy goods and store ^{or he may invest in some business for insurance by} them, or he might acquire, by ^(with the Bank) buying red dollars, the right to lend money to others ^{buying them} at the current interest rate. The equitable allocation of the right to lend money to others is accomplished by permitting the price of red dollars to be determined by the market.

The only function of the Government in this system consists in determining the rate at which additional amounts of red dollars are issued. Clearly, how much ^{the} should be invested in toto in accordance with desirable and possible expansion of the economy is a decision which the community must make in the light of the increase of population and the advances of technology which make a rise in the standard of living possible. There is no reason why the Government should enter the economic picture in any other way, or why the budget of the Government should not be balanced at any time. Only inasmuch as the Government may embark on commercial or industrial enterprises, would the Government, like any other entrepreneur, be justified in borrowing money at the prevailing rates.

It should be, however, the concern of the Government to maintain a distribution of savings under which the two currency system can satisfactorily operate. As we have mentioned before, one might think of various reasonable systems of taxation which, if necessary, could be invoked for the purpose of preventing deterioration ^{over long periods of time} of the distribution of red dollar holdings. ^{over long periods of time}