8. Rates of Payment and Transfer. A baker's dozen of classes of payments have been defined by the relation of the payments to the productive process. The argument now moves from classes of payments to rates of payment, and from rates of payment to the circulatory inter-dependence of the rates. Just as there is a dynamic structure of the productive process, so also there is a dynamic structure of the circulation. The classes of payments provide the link between the two: the classes are based upon the dynamic structure of the process; the rates, constructed from the classes, aim at an analysis of the circulation.

Eight rates of payment form the main points of reference in the circulatory process. They will be denoted by the symbols : fE', fE", fR', fR",fO', fO", fI', fI". The initial , f, flow, ' is used in each case to emphasize the fact that we deal not with a static quantity but with a rate, a flow, a "so much every so often". The dashes (') and (") indicate basic and surplus rates respectively. Upper-case "E" stands for expenditure, "R" for receipts, "O" for outlay, "I" for income. All rates refer to some standard interval of time: a day, week, month, quarter, half-year, year, as the subject-matter of the issue may permit or demand. The rates of successive intervals may be distinguished by suffixes: thus, fE'_1, fE'_2, fE'_3,... denote the rate fE' in three successive intervals.

The rates, fE' and fR', are the two aspects of final basic operative payments. fE' is the expenditure of consumers purchasing the emergent standard of living of the given interval; R' is the receipt of this expenditure by the final agents of basic supply.

The rates, fE" and fR", are the two aspects of final surplus operative payments. E" is the expenditure of producers purchasing surplus products: it includes the payments of basic producers to the final agents of the

lowest stage of surplus supply; the payments of producers in the lowest stage of surplus supply to the final agents of next to lowest stage of surplus supply; and so on up the dynamic ladder of the productive process. On the other hand, DR" is the receipt of such expenditure by the final agents of surplus supply, no matter what level of surplus supply they may represent.

Next, both R' and R" stand as double summations to activities in basic and surplus industry respectively. The analysis leaps across the double summations to the initial elements. ' is the aggregate of initial basic payments during the given interval; " is the aggregate of initial surplus payments during the same interval. These rates may be named basic outlay and surplus outlay respectively; they are payments of wages and salaries, rents and royalties, interest and dividends, and allocations to depreciation, sinking funds, undistributed profits; they are the rewards of the ultimate factors of production in the basic stage and in the surplus stage respectively of the productive process.

Now while R' is identical with E', and R" is identical with E", not only is ' not identical with ' nor " with " but it usually happens that it is greater or less. One is not to think of ' as the distribution of ' among the factors of production. ' is simultaneous with ', and aggregate calculated with respect to the same time interval as R'. A present ' is an aggregate of initial payments that at a series of future dates will reach their place in a double summation to become elements in some '; similarly, a present ' is a double summation with respect to initial payments occurring at a series of past dates. The same is true of " and ".

Six of the eight rates of payment have been defined. Before defining basic income, , and surplus income, , it will be necessary to introduce the idea of monetary functions. Thus, the argument takes a further step towards defining a circulation of money. For a circulation of money is not a rotational movement of money. Rather it is a circular series of relationships of dependence of one rate of payment upon another. Money moves only at the instant of a payment or transfer. Most of the time it is quiescent. It may be totally quiescent, as when it is held in reserve for no purpose whatever. But also it may be dynamically quiescent, held in reserve for some definite purpose.

Money held in reserve for a defined purpose will be said to be in a monetary function. Five such functions are distinguished: basic demand, basic supply, surplus demand, surplus supply, and a fifth, remainder, redistributive function. Money held in reserve for basic expenditure and so on its way to entering will be said to be in the basic demand function. Money held in reserve for surplus expenditure and so on its way in entering will be said to be in the surplus demand function. Again, money on its way from to , from final basic operative payments to initial basic operative payments, will be said to be in the basic supply function. Similarly, money on its way from " to " will be said to be in the surplus supply function. Finally, money held in reserve for redistributive payments, or for no specific purpose whatever, will be said to be in the redistributive function.

Now initial payments are income. They may be supposed to be, at least for an instant, in the basic or surplus demand functions. Hence one may write, without affecting the generality of the analysis,

(2)

where DI' are the initial payments entering basic demand and DI" are the initial payments entering surplus demand during the given interval of time. Let us now introduce two cross-over ratios: G' is the fraction of DO' that moves to surplus demand, and G" is the fraction of DO" that moves to basic demand. Hence one may replace equation (2) by two equations, namely,

$$DI' = (1 - G')DO' + G"DO" \quad (3)$$

$$DI" = (1 - G")DO" + G'DO' \quad (4)$$

These equations may be given a simpler form in two ways. One may introduce a rate of cross-over difference, DG, where

$$DG = G"DO" - G'DO' \quad (5)$$

so that equations (3) and (4) may be written

$$DI' = DO' + DG \quad (6)$$

$$DI" = DO" - DG \quad (7)$$

Again, one may introduce the supposition that

$$G" = 1 - G' \quad (8)$$

namely, the movement of money to basic demand disregards its source, so that generally the same proportion of both basic outlay and surplus outlay move to basic demand. Hence one has

$$DI' = (1 - G')(DO' + DO") \quad (9)$$

$$DI" = G'(DO' + DO") \quad (10)$$

and the definition of cross-over difference becomes

$$DG = (1 - G')DO" - G'DO' \quad (11)$$

It is to be remembered that equations (2) to (7) are perfectly general, while equations (8) to (11) involve a restrictive supposition.

Movements between four of the monetary functions have now been named and defined. They form two circuits connected by a cross-over. There is a basic circuit of basic expenditure, DE', becoming basic receipts, DR', which move towards basic outlay, DO', which, with allowance made for the cross-over difference, DG, becomes basic income, DI'. There is a similar surplus circuit of surplus expenditure, DE", becoming surplus receipts, DR", which move towards surplus outlay, DO", which, with allowance made for the cross-over difference, DG, becomes surplus income, DI".

Now the redistributive function is to be studied only in its relations to these two circuits. These relations are basically to be derived from changes of the quantity of money in the circuits. Let DM' be the quantity of money added to the basic circuit during the interval, and DM" be the quantity of money added to the surplus circuit during the interval. Further let us write,

$$DM' = DS' + DD' + DG \qquad (12)$$

$$DM'' = DS'' + DD'' - DG \qquad (13)$$

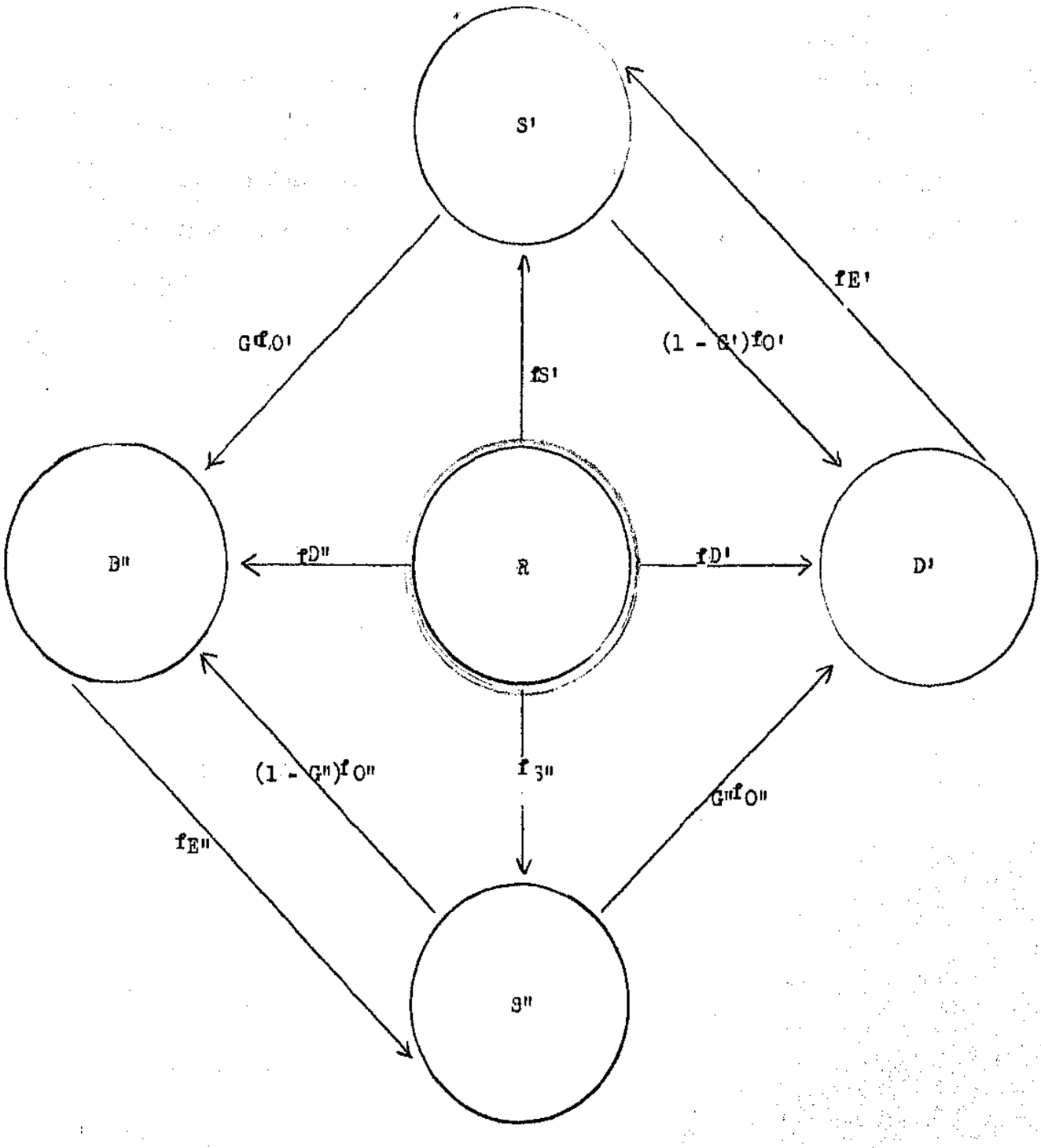
where any of the rates involved may be positive, zero, or negative. DG has been defined already. DS', DS", DD', DD" are quantities of money per interval transferred from the redistributive function to basic supply, surplus supply, basic demand, surplus demand respectively. These quantities per interval are net quantities, that is, the net result of all transferences in either direction. DS' and DS" are the quantities added to, or if negative subtracted from, the quantity of money moving from basic receipts to basic outlay (DR' to DO') and from surplus receipts to surplus outlay (DR" to DO") respectively during the interval. DD' and DD" are the quantities added to, or if negative subtracted from, the quantity of money moving from basic income to basic expenditure (DI' to DE') and from surplus income to surplus

expenditure (DI" to DE") respectively during the interval. Hence equation (12) states that the total quantity of money added to the basic circuit during the interval, DM', is equal to the quantity added from the redistributive function to basic supply, DS', plus the quantity added from the redistributive function to basic demand, DD', plus the quantity added from the other circuit by the cross-over difference, DG. Similarly, equation (13) states that the total quantity of money added to the surplus circuit during the interval, DM", is equal to the quantity added from the redistributive function to surplus supply, DS", plus that added from the redistributive function to surplus demand, DD", minus the quantity contributed to the other circuit by the cross-over difference, DG. Any of these seven quantities per interval may be negative; and when they are negative, "added" is to be replaced by "subtracted" in the above statement.

It is to be observed that there is no simple correlation between rates of payment per interval, DE', DR', DO', DI', G', DE", DR", DO", DI", G" and, on the other hand, changes in the quantity of money per interval, DM', DS', DD', DM", DS", DD". Rates of payment are products of quantity and velocity of money. Hence without suppositions regarding the velocity of money, changes in quantity yield no conclusions about rates of payment. Inversely, with velocities undetermined, changes in rates of payment yield no conclusions about changes in quantities.

This section may be resumed by explaining the diagramme of transfers on the following page. There are five monetary functions: a redistributive function, R, basic supply, S', basic demand, D', surplus supply, S", and surplus demand, D". In a given interval, the action of the redistributive function changes the quantity of money available in the other four functions by DS', DD', DS", DD", respectively; these changes may be posi-

Diagramme of Transfers between Monetary Functions.



tive, zero, or negative. In the same interval, basic supply makes basic initial payments of $(1 - G')DO'$ to basic demand and of $G'DO'$ to surplus demand; similarly surplus supply makes surplus initial payments of $(1 - G'')DO''$ to surplus demand and of $G''DO''$ to basic demand. In the same interval basic demand makes final basic payments, DE', to basic supply; and surplus demand makes final surplus payments, DE'', to surplus supply. The other rates of the analysis are defined in terms of the foregoing, as follows:

$$
\begin{aligned}
DR' &= DE' \\
DR'' &= DE'' \\
DI' &= (1 - G')DO' + G''DO'' = DO' + DG \\
DI'' &= (1 - G'')DO'' + G'DO' = DO'' - DG \\
DG &= G''DO'' - G'DO' \\
DM' &= DS' + DD' + DG \\
DM'' &= DS'' + DD'' - DG
\end{aligned}
\tag{14}
$$