

9. Receipts to Outlay. The two circuits, basic and surplus, defined in the foregoing section, have now to be examined part by part. A convenient point of departure is had in the operations of the supply functions. There the principal agents are entrepreneurs each of whom at any time is conducting one, or perhaps several, units of enterprise. By a unit of enterprise is meant some fully determinate and, as far as it goes, complete contribution to the productive process. It is complete in the sense that it is not merely the contribution of labour, or of capital, or of management; but it may be incomplete in the sense that it is not a final product but only some partial good or service in the process towards final products. It is fully determinate: it is specified not by the entrepreneur but by the precise nature of the contribution as, for instance, it would be described in an order or a contract; further it is specified as a basic or a surplus contribution according as it stands, in point of fact, in the lowest or any higher correlation with elements in an emergent standard of living.

Now any unit of enterprise involves two component determinations of its monetary magnitude. For at any given time the unit is being operated on some definite scale, and over a period of time operations are repeated every so often. This is conspicuous in such a matter as construction: a ship-builder will have so many ships under production at once; and to build a ship will take so many days. But even when the productive process approximates to continuity, as on an assembly line, there is no continuity of payments. As contributions are completed and sold, payments are received; as immediate

factors of production are rewarded and as contributions of other entrepreneurs are taken over, payments are made. But between payments made and payments received there is a lag in which the same two dimensions re-appear. Each unit of enterprise requires a quantity of monetary circulating capital that varies with variations in the scale of operations, say, with the number of products under process at once and with variations in their costs. And this quantity of money has a frequency of use that is increased by more rapid, decreased by less rapid, production and sales. The two components of the unit of enterprise will be referred to as turnover magnitude and turnover frequency.

It follows that accelerations of the basic and of the surplus stages of the process are either or both accelerations of turnover magnitudes/<sup>or/</sup> accelerations of turnover frequencies. In the former case more money is brought into, or withdrawn from, circulation. In the latter case the money in circulation moves more or less rapidly.

factors of production are rewarded and as contributions of other entrepreneurs are taken over, payments are made. Between payments made and payments received there is a lag that varies with variations in the time ~~required~~ required to produce and sell a unit contribution. Further the maximum quantity of money involved in this lag varies with the scale of operations, with the number of unit contributions under process at once. Finally, each unit of enterprise has to have at call a quantity of monetary circulating capital equal to the maximum quantity involved in its lag; this capital increases or decreases with changes in the scale of operations; and it has a frequency of use that is increased by more rapid, decreased by less rapid production and sales.

Let us name these two components of the unit of enterprise its turnover magnitude and its turnover frequency. Turnover magnitude is a quantity of monetary circulating capital employed by the unit of enterprise. Turnover frequency is the number of times, say per year, that the employment of capital and the scale of operations are repeated. On the assumption of a constant process the scale of operations multiplied by the turnover frequency would give the total annual product, and the quantity of circulating capital multiplied by turnover frequency would give the total annual volume of business. However, ~~the constant process is precisely what we are not interested in~~ the point of interest is not the constant but the accelerating process in which turnover magnitudes and frequencies are increasing or decreasing.

To obtain some notion of the accelerating process, let us take any unit of enterprise, 1, and consider it as a series of turnovers

with any two successive turnovers numbered  $i$  and  $k$  respectively. Now the magnitude of the turnovers might be measured either by payments received or by payments made, but the most convenient line of approach seems to be a comparison between payments received in the earlier turnover and payments made in the later. The payments received in the earlier are either basic or surplus, final or transitional payments; they may be denoted as  $f_{ij}^1, f_{ij}^2, T_{ij}^1, T_{ij}^2$ ; since the unit of enterprise,  $i$ , is either basic or surplus, two of these four terms are always zero; <sup>in any particular case</sup> and since any given unit regularly sells its contribution either directly to final buyers or directly to other entrepreneurs, usually three of the terms are zero. Again, the payments made in the later turnover are either basic or surplus, initial or transitional payments; they may be denoted by  ~~$o_{ik}^1, o_{ik}^2, t_{ik}^1, t_{ik}^2$~~   $o_{ik}^1, o_{ik}^2, t_{ik}^1, t_{ik}^2$ ; with reference to any particular instance of the unit,  $i$ , only the basic or the surplus terms are relevant, though most units make both transitional and initial payments. Now even though the profits of the previous turnover are part of the initial payments of the later turnover, there is no need of payments received in the previous turnover being equal to payments made in the later turnover. For the scale of operations may be increased or decreased, involving a positive or negative increment of monetary circulating capital; further, the payments received in the previous turnover may contain a windfall profit or loss which is not passed on to income through ~~trans~~ initial payments but transferred to or covered from a reserve fund; and again this is in effect a decrease or increase of monetary circulating capital understood as the money

The limits of the above summation define the standard "turnover interval" which is henceforth to replace the standard "calendar or clock-time interval" of the initial definitions. This turnover interval does not begin and end at the same instant with respect to all payments. On the contrary, with respect to the payments made or received by each unit of enterprise,  $i$ , it begins when turnover,  $\underline{1}$ , begins, and it ends when turnover,  $\underline{n}$ , ends. Thus in time it has ragged edges. On the other hand, each successive turnover interval fits perfectly into its predecessor; for the turnovers,  $\underline{n}$ , of the preceding interval are the turnovers,  $\underline{0}$ , of the succeeding interval. Finally, the distinction between basic and surplus stages of the productive process should ~~not~~ prevent the necessity of taking meaninglessly long intervals to give each unit of enterprise at least one turnover during the interval.

There remains the matter of simplifying equations (26) and ~~(26)~~ (27). Consider then the following,

$$K' = \sum_i \sum_1^n (t'_{ij} - T'_{ij}) \quad (28)$$

$$K'' = \sum_i \sum_1^n (t''_{ij} - T''_{ij}) \quad (29)$$

where the expressions on the right-hand side are taken from equations (26) and (27) and represent respectively the difference between basic transitional payments made and basic transitional payments received during the turnover interval, and the difference between surplus transitional payments made and surplus transitional payments received during the turnover interval. Evidently, on the supposition of synchronized turnovers, such that each turnover,  $\underline{1}$ , began at the same instant and each turnover,  $\underline{n}$ , ended at the same instant,  $K'$  and  $K''$  would each be equal to zero. For while the

transitional payments received and the transitional payments received-made differ with respect to any one enterprise, they are exactly the same with respect to an aggregate of all enterprises that make transitional payments to one another. And the definitions have been worked out so that only basic enterprises make or receive basic transitional payments and only surplus enterprises make or receive surplus transitional payments. Hence, on the supposition of synchronized turnovers,  $K'$  and  $K''$  are each zero.

However, apart from that supposition  $K'$  and  $K''$  are arbitrary constants. The ragged edges in time of the turnover interval make it possible for transitional payments to <sup>be</sup> made during the interval but received before or after it; and similarly they make it possible for transitional payments to be received during the interval but made before or after it. For the expression "during the interval" is not univocal when the interval begins and ends at a series of different dates, according to the enterprise that makes or receives the payments. Although there is a probability, <sup>which</sup> ~~that~~, increases with the number of enterprises concerned, to the effect that payments made but not received tend to cancel against payments received but not made during the interval, no amount of probability will insure that in each interval  $K'$  and  $K''$  are zero. It remains that they are arbitrary constants resulting from the lack of synchronization of the turnovers. For, first, they disappear on the supposition of synchronization, and so they cannot be the result of accelerations of the process in the sense that they are necessary factors of any such accelerations. But again they constitute no real problem: there always is some enterprise that receives payments made or

and final payments of expenditure, DR. But there is no similar expectation with regard to DS, dR, dT, which depend upon the acceleration of turnover magnitudes: it may happen that they are each zero; it may happen that they are each negative; and even if they are positive, the increase in DO and DR is a multiple, depending on turnover frequency, of the increase in turnover magnitude. Hence, at a first approximation, the interpretation of equations (24) and (25) lies in equating the large sums, DO and DR, and again in equating the small sums, DS and (dR + dT).

More generally the difference (DO' - DR') and the difference (DO'' - DR'') is a lag. There is no need that DO and DR be exactly equal in each interval. But it is necessary that they keep pace. When DR is smaller than DO, entrepreneurs are not getting back their outlays; they reduce perforce their scale of operations; and that reduces DO till it is as small as DR. Again, when DR is greater than DO, ~~then aggregate earnings are greater than aggregate outlays~~ then aggregate expenditure is greater than aggregate earnings (where earnings include undistributed profits, allocations to sinking funds, even imaginary depreciation charges); the possibility of this is a negative DS representing a contracting scale of operations when entrepreneurs have a maximum stimulus to increase their scale of operations; the supposition is a little fantastic. Hence while there may be a lag between DO and DR, there can be no more than a lag. The two have to keep pace.

In conclusion, the circuit equations (24) and (25) equate DS' to the lag of basic final payments behind basic initial payments, plus the aggregate increment per interval in basic final turnover magnitudes, plus the aggregate increment per interval in basic

makes payments received; the difference between transitional payments made and transitional payments received at the end of one turnover interval is always cancelled exactly by an opposite difference at the beginning of the next interval. Further, no matter what the length of the interval and no matter what accelerations or decelerations occur during the interval, the values of  $K'$  and  $K''$  depend solely upon the series of dates at which the turnover series of the interval begins and end, and these values can always be modified so that a cancellation results by a suitable modification of the series of dates. Accordingly, one is led to conclude that  $K'$  and  $K''$  are mere constants of integration, and that the significance of equations (28) and (29) is that they provide the means of calculating these constants.

d) Alternative Form of the Summations. Equations (18) and (19) were reduced to the form of equations (23) and (24) by introducing increments in final payments and transitional payments received, as defined by equations (20) to (23). This transformation was effected <sup>in order that</sup> ~~to have~~ all the terms of the equations turnover equations <sup>might</sup> refer to the same turnover. However the same result might have been obtained by introducing increments in initial and transitional payments made and also increments in the equating sums of money. Such a transformation would involve six defining equations as follows,

$$di'_{ij} = i'_{ij} - i'_{ij} \quad (30)$$

$$di''_{ij} = i''_{ij} - i''_{ij} \quad (31)$$

$$dt'_{ij} = t'_{ij} - t'_{ij} \quad (32)$$

9. Circuit Acceleration. On the assumption of cross-over equilibrium ( $DG = 0$ ) the basic and the surplus circuits operate independently. The basic circuit is a function of  $DR'$ ,  $DS'$ ,  $DO'$ ,  $DI'$ ,  $DD'$ ,  $DE'$  and the surplus circuit is a function of  $DR''$ ,  $DS''$ ,  $DO''$ ,  $DI''$ ,  $DD''$ ,  $DE''$ . Further, of the six variables of each circuit, the pairs,  $DE'$  and  $DR'$ ,  $DE''$  and  $DR''$ , are no more than equivalent aspects of basic and surplus final payments; while with cross-over equilibrium,  $DI'$  equals  $DO'$  and  $DI''$  equals  $DO''$ ; thus each circuit is reduced to four independent variables. It remains that four independent variables leave a great deal of indeterminacy, and it is the purpose of the present section to shew that, in the main,  $DD'$  and  $DD''$  are zero, that  $DE'$  keeps pace with  $DO'$  and  $DE''$  keeps pace with  $DO''$ , and that variations in  $DO'$  depend upon  $DS'$  while variations in  $DO''$  depend upon  $DS''$ .

One may begin by noting an historical fact: the exchange economy has an appetite for ever more money. It has developed bills of exchange and discounting houses, the political policy of mercantilism, the gold standard with a fiduciary issue of notes, banking and bank credit and, finally, the elimination of automatic limits on quantity of money by the elimination of the gold standard. In each case the effect of the device was to make available in greater quantities the means of payment

factors of production are rewarded and as the contributions of other entrepreneurs are taken over, payments are made. Now between payments made and payments received there is a gap: at any time it is as deep as the difference between payments made and payments received, and it is as broad as the time taken to produce and sell a unit contribution

factors of production are rewarded and as the contributions of other entrepreneurial units are taken over, payments are made. Between payments made and payments received there is a gap, as deep as the magnitude of the payments and as broad as the length of time taken to produce and sell a unit contribution

Certain points are to be noted. The equality of outlay and expenditure does not exclude profits: profits are the part of initial payments which entrepreneurs pay themselves; that part may be as large as you please even though outlay and expenditure remain equal. What is excluded by the equality of outlay and expenditure is that there is no element of outlay that is not spent, either in itself or in its equivalent, without the disappearance of that element on the next round of outlay.

Combining equations (65) and (93), (66) and (94), one obtains the correlation of turnover differences in the form,

$$D^2R' + D^2S' = D^2O' + T' \quad (95)$$

$$D^2R'' + D^2S'' = D^2O'' + T'' \quad (96)$$

where  $T'$  and  $T''$  are adjustment factors tending to zero as a statistical average. Now it has been shown that over a series of intervals in which  $DM'$  or  $DM''$  is positive, zero, or negative, respectively  $D^2R'$  or  $D^2R''$  will be positive, <sup>an average</sup> zero, or negative. But with  $D^2S'$  at zero, or again with  $D^2S''$  at zero, and apart from incidental adjustments  $T'$  and  $T''$ ,  $D^2R'$  and  $D^2O'$  are equal, and again  $D^2R''$  and  $D^2O''$  are equal.



The fifth theorem is that turnover frequencies are resultant and not initiating factors of acceleration. The meaning is that, granted the existence of an acceleration, then changes in turnover frequency may be expected. In an expansion one may expect increasing efficiency of production and sales; in a contraction one may expect decreasing efficiency of production and sales. Inversely, one cannot expect a change in efficiency to be the initiating principle of an expansion or a contraction. The reason for the tendency, and no more than a tendency is asserted, is that change in turnover frequency

that the emergence of exchange-values is a component part of the productive process, and that there are payments within the process in the sense that they constitute that part of the process. Such payments are termed operative. They are as much operations as any other operation within the process. They are as much component parts of the process as any other component part, indeed more so, for they are the ultimate and decisive part of every completed forward movement of the process.

The correlation, then, between operative payments and the productive process is immediate and intrinsic. Operative payments are the immanent manifestation, the constituent component, of the process itself inasmuch as it is a process of <sup>emerging</sup> exchange-values. It follows that such payments stand in a net-work that is congruent with the proprietary net-work which ownership throws over the process; that they recur with the recurrence of the routines of the process; that, in the main, they vary with variations in the volume of those routines. It follows further that, since every element within the process has its price and, as an emergent exchange-value, commands a payment, therefore the sections of the process give grounds for a division of operative payments, that as there is basic section, so there are basic operative payments, and as there is a surplus section, so also there are surplus operative payments. It follows finally that, since the surplus section has to do with the acceleration of the economy, and the basic section has to do with the main velocity of the economy, namely, the velocity that is proportionate to the standard of living in a point-to-point correspondence, therefore surplus operative payments stand in a circulation related to the acceleration and basic operative payments stand in a circulation related to the

denied that such payments may mean much more than that. ~~Detail~~  
Redistributive ~~payments~~ exchanges may have repercussions on current production: incidental re-sales of durable goods prevent sales of new goods. Again, redistributive exchanges may mark the re-entry of goods into the process: junk is a source of raw materials; an organized second-hand trade, apart from its purchases, is a part of the productive process. Further, redistributive exchanges may be highly significant indices of industrial and commercial situations: the movements of stock and security (as distinct from investment) markets are cases in point. But it is one thing to have repercussions on current production, and quite another to be the current production which the repercussions affect. It is one thing for goods to re-enter the productive process, and quite another for them to be already part of the process. It is one thing to be a highly significant index on the condition of something else, and quite another to be the something else. However closely related to current production, redistributive payments are not constituent and component parts of it. Redistributive payments are non-operative payments. They constitute exchange-values outside the productive process.

It has been said that while surplus payments have to do with the acceleration and basic payments with the main velocity of the process, redistributive payments are an incidental, a constant of integration. As far as regards redistributive payments, this statement is only the first approximation of the analysis. It affirms what is true of redistributive payments in the mass, namely, that they merely redistribute titles to ownership. But it will appear later that ~~redix~~ some redistributive payments, in a free, as opposed to a dictatorially controlled, exchange economy,

velocity of the economy.

So much for basic and surplus operative payments. They exist on two conditions: first, there must be a productive process with a basic and/<sup>a</sup>surplus section; second, both sections of the process must involve an emergence of exchange-values. These conditions are not fulfilled in every economy. Primitive fruit-gatherers have a productive process, gathering fruit, but this process has only a basic section. Primitive hunters and fishers, inasmuch as they make spears and nets, have a productive process with both sections. However, in neither case need there be any emergence of value-in-exchange but only of value-in-use. It is only with further technical, political, and cultural developments that value-in-exchange appears and, ~~as is to be expected, it appears at first only~~ <sup>both</sup> in the basic section and ~~later~~ in the surplus section. It remains, none the less, that the existence of both surplus and basic operative payments can be doubted only in rather elementary forms of economic development.

Besides operative there are also redistributive payments. Their existence results from the fact that property is a wider category than the goods and services of the current process. As already noted, there are natural resources presupposed by the current production of any time; these may be owned and sold and paid for. Again, there are the durable products of past production: houses and motor-cars, factories and machinery, do not dissolve into dust as soon as they are produced and paid for; they continue to exist and to be owned; and they may be sold again. The payments involved in such sales and re-sales are termed redistributive, for, at least, they change ownership, they make ~~the-owner~~ Brown the owner instead of Smith. It is not

constitute an even higher determinant of the total movement of the economy than surplus payments (see p. ).

The remaining questions regard the sub-division of basic and surplus payments into initial, transitional, and final. An account has to be given of ultimate prices and of simultaneous and successive price-building. It will be recalled that the productive process includes an emergence of exchange-values. Price-building is the summation of the exchange-values that emerge per unit product or service. § Usually this summation is a double summation, so that there is a distinction between the simultaneous price-building of the first summation and the successive price-building of the second summation. The simultaneous price-building of the first summation adds together the exchange-values per unit product or service resulting from the immediate cooperation of several factors within a single entrepreneurial unit. In its generalized form this summation is of the exchange-value per unit of the contributions of labour, management, and capital equipment. The successive price-building of the second summation adds together the first summations that refer to the same product or service at its present stage of the productive process. The simplest example of such second summations is had when the same material is owned successively by a number of entrepreneurial units; then second summations occur when the third unit pays the first two, the fourth pays the first three, the fifth pays the first four, and so forth. Lastly, ultimate prices are second summations in their final stage; and such a stage is final in the sense that any subsequent sale of the same object would be not operative but redistributive.

bases will again find themselves without balls eventually. But without further information one cannot say how rapidly the ultimate event of being without balls will arrive. Further, the players at the bases may make up, by a greater efficiency in pitching and catching what balls they have, for any loss of balls they may suffer, up to the ultimate moment when they have no balls at all.

But despite this almost baffling indeterminacy, it remains that there is a definite dynamic structure. There are hypotheses on which the game can go awry; and this possibility constitutes a fundamental determinacy for the structure. On that basis either by adding further information about the nature of the game or by adding further suppositions, a still greater determinacy may be built.

third to second is  $(1 - G'')DO''$ , from third to home is  $G''DO''$ .

As far as these movements are concerned, at the end of each interval the groups at home and first have DG more balls than at the beginning of the <sup>same</sup> interval, while the groups at second and third have DG less balls at the end of each interval than at the beginning of the same interval, where

$$DG = G''DO'' - G'DO'$$

and so DG may be positive, zero, or negative. However, the group at the pitcher's box is far from idle. In the course of the interval it has made  $DD'$  more throws to home than the group at home has made to it,  $DS'$  more throws to first than first has made to it,  $DD''$  more throws to second than second has made to it, and  $DS''$  more throws to third than third has made to it. The result of these movements is that at the respective bases there have been added to the home-first circuit  $(DD' + DS')$  balls during the interval and also there have been added to the second-third circuit  $(DD'' + DS'')$  balls during the interval, where however any of these quantities may be positive, zero, or negative.

Evidently, there is a high degree of indeterminacy to events within such a dynamic structure. All one can say is the game may go all awry. A large <sup>and positive</sup> cross-over difference uncompensated by action from the pitcher's box ~~mayxxx~~ will result sooner or later in depriving the groups at second and third bases of all their balls, or if the cross-over difference is large and negative, it will result in depriving the groups at home and first of all their balls. Similarly if the group at the pitcher's box makes up its mind to ~~accumulate~~ accumulate balls, tossing back fewer than they receive, the groups at the

A schedule of relative values is a series of statements, each to the effect that a certain quantity, say  $q_1^i$ , is just worth while

For the determining decisions are the decisions of entrepreneurs to produce such and such goods or services in such and such quantities. These decisions are based upon the present prices, that are costs, and the estimated future prices, that will obtain in sales. But both sets of prices are results of exchanges, so that the exchanges supply the premises for the decisions and, further, the actual, as opposed to the estimated, future prices are a control of entrepreneurial decisions. If the market is misjudged, there follow losses; only <sup>in so far as</sup> ~~if~~ it is judged rightly, are there profits. However, the actual future prices are an independent control of entrepreneurial decisions, only when the entrepreneur himself cannot control the future prices

constitute an even higher determinant of the total movement of the economy than surplus payments.

The remaining questions regard the sub-divisions of both basic and surplus payments into initial, transitional, and final. A brief account has to be given of simultaneous and successive price-building and of ultimate prices. Let us begin with the example of a commodity handled successively by a mining company, a processing company, wholesalers, and retailers. Let us postulate separate accounts of receipts and payments of each successive entrepreneurial unit with respect to that commodity, and let losses be counted as negative profits. Consider then the series of payments of consumers to retailers, retailers to wholesalers, wholesalers to the processing company, and the processing company to the mining company. Each of these successive payments will be smaller than its predecessor and the difference will be the costs and profits of the intervening firm. It follows that the gross receipts of retailers are the summation of the costs and profits of all four groups of firms; the gross receipts of wholesalers are the summation of the costs and profits of the remaining three groups; and so forth, until we come to the mining company, where ex hypothesi gross receipts are identical with costs and profits. But, further, in each case the costs and profits are themselves summations. Let us take costs in the very narrow sense of payments made to other firms, such as railways, power companies, and so forth

7. The Exchange Economy. In any economy, that has developed beyond the level of primitive fruit-gathering, it is possible to verify the existence of a productive process with basic and surplus stages. But, further, since at any time there are determinate quantities of goods and services in process, it also is possible to verify the existence of human decisions responsible for that selection of quantities. Now decisions of this type have an extremely interesting general form

constitute an even higher determinant of the total movement of the economy than surplus payments.

The remaining questions regard the sub-divisions of basic and of surplus payments into initial, transitional, and final. A brief account has to be given of ultimate prices, of simultaneous and successive price-building. It will be most convenient to begin from an example. Let us suppose that the productive process of pins involves the activity of mining companies, railways, manufacturers, railways, wholesalers, railways, retailers; further suppose that there are separate accounts of receipts and payments of each of these entrepreneurial units with respect to ~~each~~ their several contributions to the supply of pins.

constitute an even higher determinant of the total movement of the economy than surplus payments. Thus it is by redistributive payments that new combinations of production factors are effected and new firms emerge; further, banking and other financial operations mobilize money for industry and commerce; but, ~~such transactions~~ apart from interest payments and their equivalents which are the reward of services and so operative, ~~not~~ such transactions are redistributive, not component parts of the process but events which, however significant, take place outside it.

constitute an even higher determinant of the total movement of the economy than surplus payments. Thus it is by redistributive payments that new combinations of production factors are effected. Again, the principal part of financial operations is redistributive. The interest, or its equivalent, is an operative payment rewarding financial services. But movements of the principal, when financial operations, are redistributive payments. They change the ownership of a commodity, <sup>money,</sup> that either is created, and so to be assimilated to natural resources, or else is a ~~second-hand~~ second-hand article, and so on another count an object of redistributive exchange.

$$\sum p_i q_i = \sum (p_{ia} q_{ia} + p_{ib} q_{ib} + p_{ic} q_{ic} \dots)$$

where

$$\sum p_{ia} q_{ia} = \sum (p_{iaw} q_{iaw} + p_{iav} q_{iav} + p_{iaw} q_{iaw} \dots)$$

$$\sum p_i q_i = \sum_x \sum_y p_{ixy} q_{ixy}$$