GENERAL ALLOCATION THEORY

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The central concern of General Allocation Theory is the way in which individual choices determine the aggregate distribution of money to its various Investment and Divestment uses. The allocation of money to its various roles has a baring on the orderly functioning of the economy and on the distribution of wealth among various groups of people. It also has a direct baring on the causes of the historically regular appearance of 'irrational' periods in free market economies, when earning expectations build up so far in excess of realities that an expectation collapse occurs.

The approach used here is reminiscent of the abstract income distribution work of other modern theorists, J.M. Keynes, Kenneth Boulding and Nicholas Kaldor, to mention a few, and reaches similar conclusions. It proceeds from an encompassing accounting identity, rather than economic statistics, examples and accumulated reasoning. By focusing on the complete set of catagorical choices that people make, and by defining Money as exclusively composed of federal reserve certificates, a comprehensive model is developed and rigorous conclusions are reached.

The basic accounting identity used here is that Money (M) is either in someone's posession (Holdings, H) or is being Exchanged(E)(M=H+E). The ownership of a dollar 'in the mail' may be variously defined, but it is not in anyone's Holdings, ($E \neq 0$).

A second accounting identity used is that the flow of Money through Exchange equals both the amount of Allocations from and Receipts to Holdings (A=R). Money introduced into the system is not con-

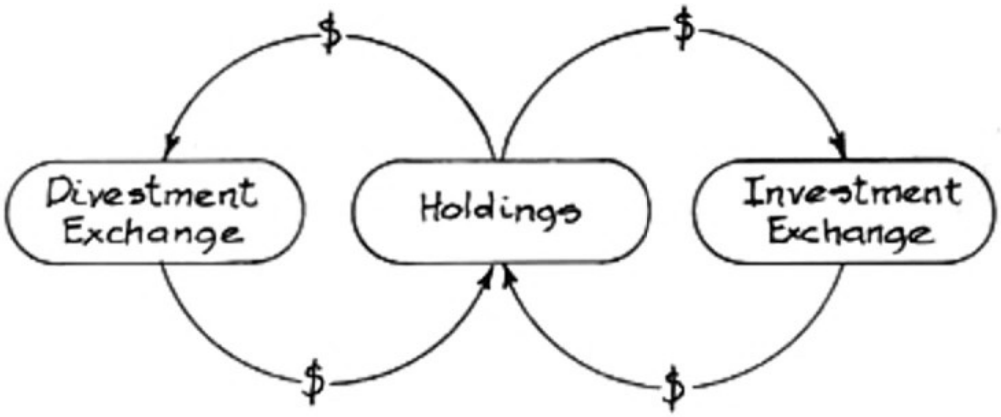

fig. 1

sidered to be Exchanged until it is Allocated from someone's Holdings. Allocations and Receipts are then split into two categories, Investment and Divestment. An encompassing model of currency use is then assembled using a flow diagram, (fig 1.).

For the model to remain valid Investment and Divestment need to be inclusive and catagorically distinct by definition, the same way Holding and Exchange are. Up until such time as statistical measures of these catagories are saught, the simple English language distinction between the terms will be used. That distinction can be variously interpreted, but always seems to incorporate the difference between transfering money with and without expectations of returns. Investment is a money flow conditioned by promices of counterflow. Divestment is unconditional.

It is important to remember that these definitions apply only to the Investment of Money and not the investment of materials, as in building a factory. Material investment is interpreted as the result of two successive Money Allocation decisions. First there is a choice to Invest Money (by the business in itself or by investors) and then a choice to Divest that Money in order to purchase investment materials. Capital investment spending is part of Divestment.

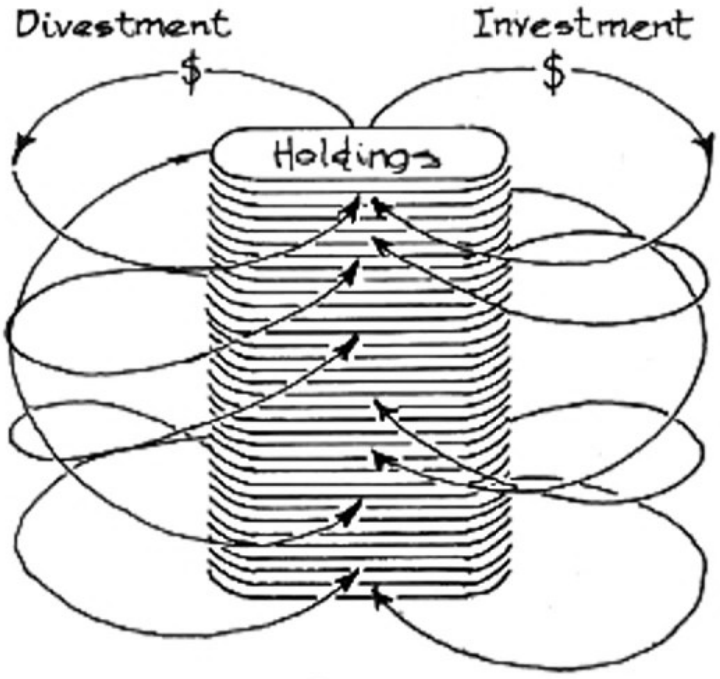

fig. 2

The three major elements of the model, (D,H & I), do not need to be thought of as abstract pools and channels. They can be interpreted as a simplified view (the top view) of a very much more complex three dimensional model, (fig 2.). That more complex model symbolizes the inclusion of every individual Holding and Exchange of money. Every Holder of money is represented as one disk in a stack including all others. Each Exchange is represented as an arc from the Allocations side to the appropriate location on the Receipts side.

These individual participants and the flows they generate can then be grouped according to distinguishing characteristics and those groupings represented in the plan ('top') view of the model. The mutual interaction between sub-groups, according to the Allocation decisions being made, can then be comprehensively examined. If lost Money is excluded from consideration, the examination of interactions is between parts of a fully accountable closed system.

Defining the analytical model in this way overcomes a number of difficulties customarily found in modeling money flows. What people normally consider to be their money holdings is their expectation of the hard currency that they could have if they requested it, the potential sums available according to the estimated exchange value of their posessions and commitments from others. Those expectations are prone to multiplying and vanishing more or less spontaneously. The total sum of currency holding expectations is many times greater than the actual amount of currency in existance. Those expectations can, as will be shown, multiply uncontrollably in a period of slowing real economic growth.

Here the idea that more money exists than has been actually issued is replaced by the idea that Money is able to move wherever it is called for. A savings account, for example, can be considered to actually contain no money except for those brief moments when money is transfered to it for immediate transfer elsewhere. A check deposited is not considered as Money deposited but as a standard instruction to execute a chain of Money transfers. [4] The chain implied begins with taking principle or returns payments from Investments to place them in and Divest them from the payee's Holdings, for placement in and immediate Investment from the recipient's Holdings. That Investment initiates other Exchanges as did the withdrawl from Investment where the Money came from. The bank's reserve Holdings serve as a ballast for the sequence of Exchanges, allowing later steps in the sequence to occur before former ones. This interpretation of the model, as of an implicit accounting procedure with a one-to-one correspondence between accounts and currency, preserves the model's rigor while making the first steps toward defining meaningful statistical measures.

In the simplest kind of economy (fig 3.) the decisions which people make on how to Allocate the Money they receive are extremely simple. Money received (earnings, e) has no strings attached and is only held or Allocated (spent, sp) with no strings attached, (e = sp). That e = sp in any fixed time period depends on whether the resi-

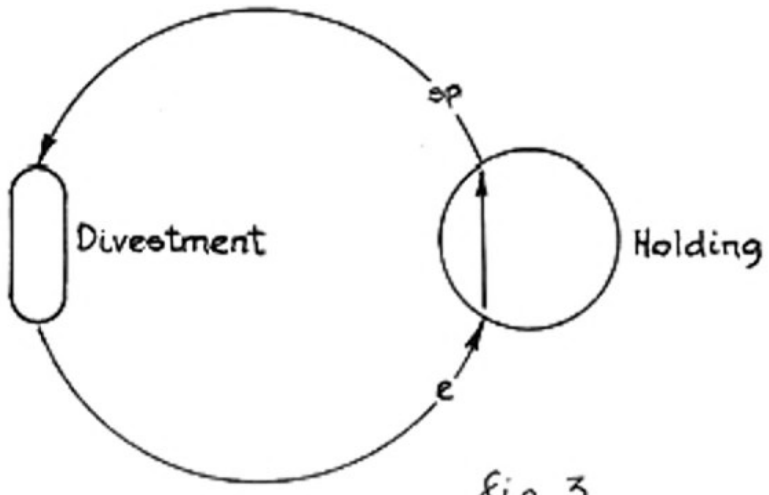

fig. 3

dence times (t_r's) of Money in Holdings and Exchange are constant, (t_{rH}, t_{rE} = c). Throughout this discussion the residence times of Money in Holdings and Exchange will be assumed to be constant.

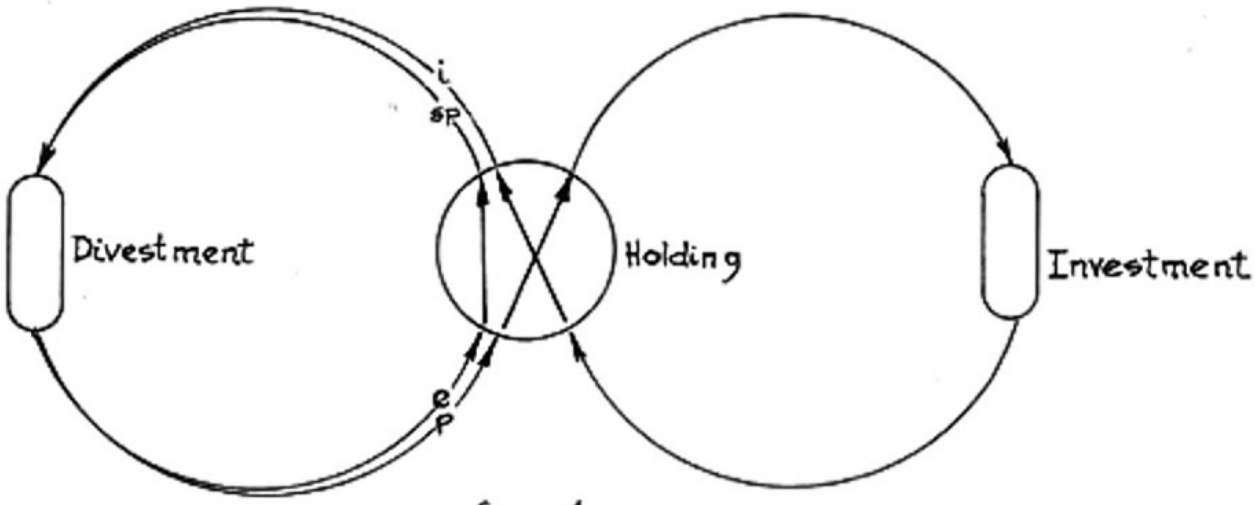

fig. 4

In a simple economy with a fixed sum of Money being used for Investment purposes, (fig 4.), individual decision making is only slightly more complex. The receipt of principle payments on past Investment (p) are directly Allocated to Investment. From there they are again used for investment spending (i), (p = i). If the payment of principle were coming directly from investment spending, then Investment would be functionally short circuited. The net result would be an economy that functions as the one of figure 3. Thus, when drawn as figure 4, the

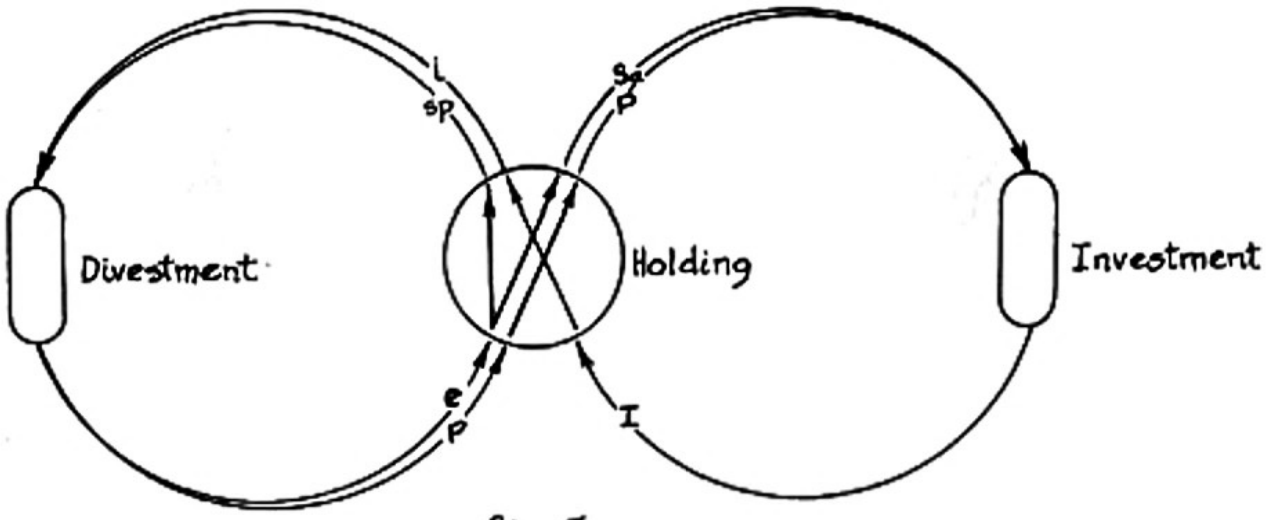

fig. 5

initial assumption is that (p) largely comes from (sp) and that (i) largely contributes to (e).

In an economy where Money from earnings is permanently set aside for Investment, (fig 5.), an imbalance may arise. If Divestment is constant a growing imbalance between (e) and (p) is prevented only when the amount of principle repaid is smaller than the amount of investment spending by the amount of savings from earnings (sa_e), ($i - p = sa_e$). That is a condition of Investment failure equaling the amount of savings from earnings.

A growing imbalance in the model could also be avoided if Divestment were to grow as fast as savings from earning is added to Investment, $\log(sa_e + c) = \log(D)$. That would imply that either an amount of Money or its speed of circulation were adding to Divestment at an equal rate.

A more realistic model of a modern economy is presented in figure 6. The central Allocation choices are enlarged and labeled in figure 7. The flow of earnings (e), principle (p) and returns (r) are each drawn partly Allocated to Divestment and partly to Investment. Investment received is shown as either of debt (I_d) or equity (I_e) variety to distinguish the two basic categories of commitments made for its receipt. Investment received is then Allocated in three ways, to reInvestment (I_I) and to real and consumption investment

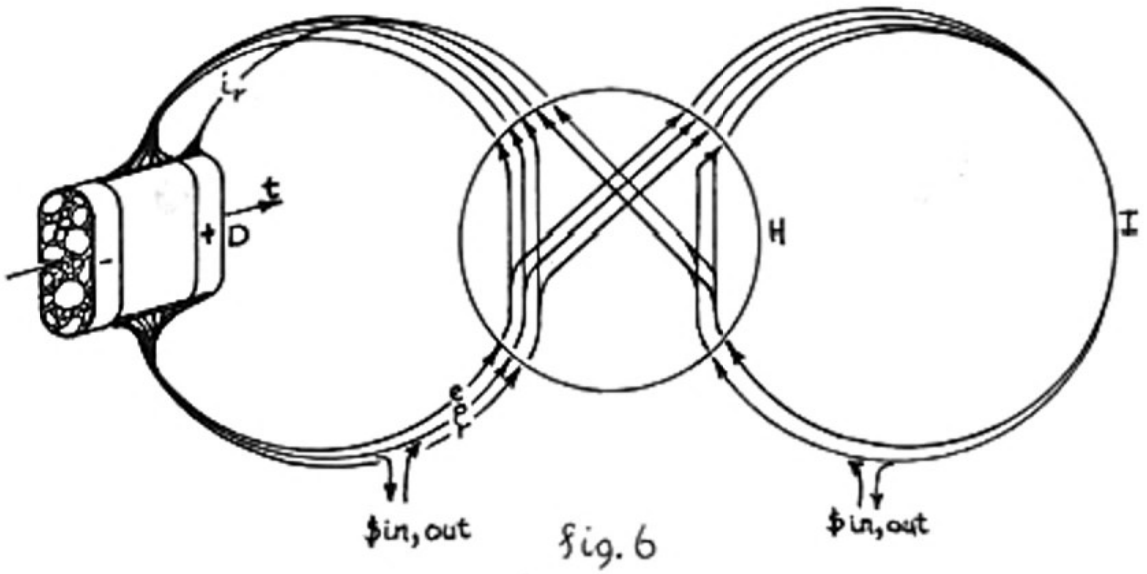

fig. 6

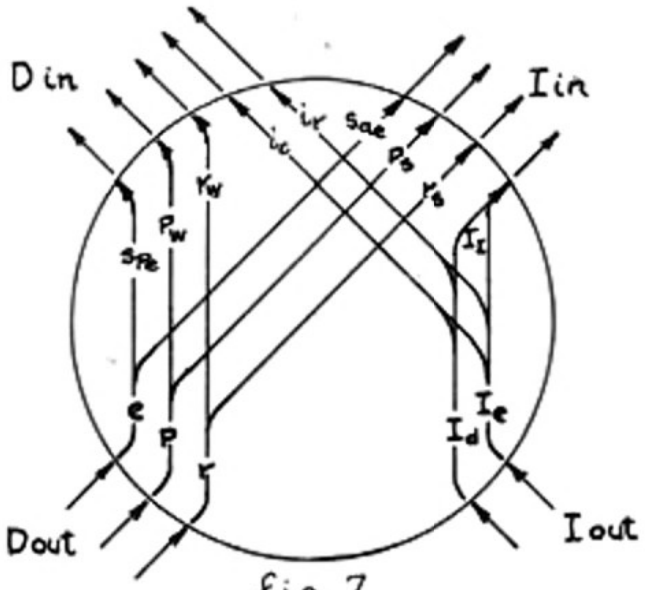

fig. 7

spending (i_r, i_c). These categories are implicitely inclusive and catagorically distinct, characterized by the normal meaning of the word initialed to label them.

The normal meaning of the term 'earnings' used here is as it applies to individuals, i.e. gross income apart from investment repayments and returns. Thus, when applied to businesses, earning refers to what is normally called gross operating income rather than net operating income. The Allocation of spending from earning (sp_e) might, then, be logically subdivided into the various categories of costs, investment repayments and convenience consumption spending.

The distinction between real and consumption investment spending, (i_r, i_c), is further suggested in the symbolic sketch of the physically different parts of the economy each goes to. There real investment spending is shown as going into the creation of entirely new Divestment channels for the economy. The consumption investment spending is shown using old channels. The diagram is suggestive rather than definitive on this point, stating only the assumption that a definable difference exists between building new and using old economic channels. It should be noted that (i_c) implicitely includes both consumer credit use and speculative purchases and might be sub-divided accordingly.

The image of the economy portrayed by distinguishing between the types of investment spending is one of a continual process of building new circuits to be maintained with spending and then abandoned. The maintenance of the economy is by spending. The evolution of the economy is by investment. As investment expands the options for spending to choose from, the detailed Allocation of spending selects which options will be maintained.

The actual physical progression of economic activity is more like an ecological growth by branching where some branches develop and, or mutate faster than others. That varying growth of the whole ecological organism and the shares of its parts could be imagined as expansions and contractions of tubular cell bundles withing the drawn volume of figure 6. Each tubular cell's girth, association with others, length of history and lead in advance would vary extensively. The one dimensional view of addition in the lead, maintenance in the middle and subtraction in back is the only part of the image really needed, however.

Figure 6. also indicates the potential injection and withdrawl of money from the system by the central bank. Money is injected in the Divestment loop by issuing currency as payment of principle and returns, as for retireing government securities. Money is injected in the Investment loop by lending currency to banks (discounting). Withdrawls of Money from the system can theor-

etically be done by reversing those actions, by absorbing government debt payments (taxing government revenues) and by borrowing from bank currency reserves.

The term 'steady state' could be used to describe either an economy in which there is no addition and subtraction of channels for spending, or one in which the addition and subtraction of channels are positive and equal. Here the term 'static state' will be used for the former and 'steady state' for the latter. Static state economies, ones without birth or death of their parts, are purely theoretical constructs and do not exist.

In a steady state economy all the various money flows are nominally constant, with net injection and withdrawl of Money from the system constantly zero. There is no general inflation, change in money velosities or secular trends in income distribution. The system is hardly stagnant, only creatively evolving at a constant rate. The value experienced by participants would most likely be rising due to qualitative refinement of the economy rather than quantitative expansion, as additions and deletions are chosen according to consumer preferences.

While the laws of thermodynamics give good reason to say that a steady state economy could not exist perpetually, the question here is whether the patterns of Money Allocation are consistent with maintaining a steady state even as a temporary condition. In mathematical terms, a steady state condition for the economy of figures 6 and 7 implies:

$I_{in} = I_{out}$: one condition of steady state

$sa_e + p_s + r_s + I_I = i_r + i_c + I_I$ - by substitution

$p = i_r + i_c$: if all investment returns its principle, i.e. no failures

$p = p_w + p_s$: by definition

$sa_e + r_s = p_w$ - by substitution & canceling

: additions to Investment equal withdrawls from past Investment
: if all sa_e is eventually withdrawn ($p_w = sa_e$), then $r_s = 0$

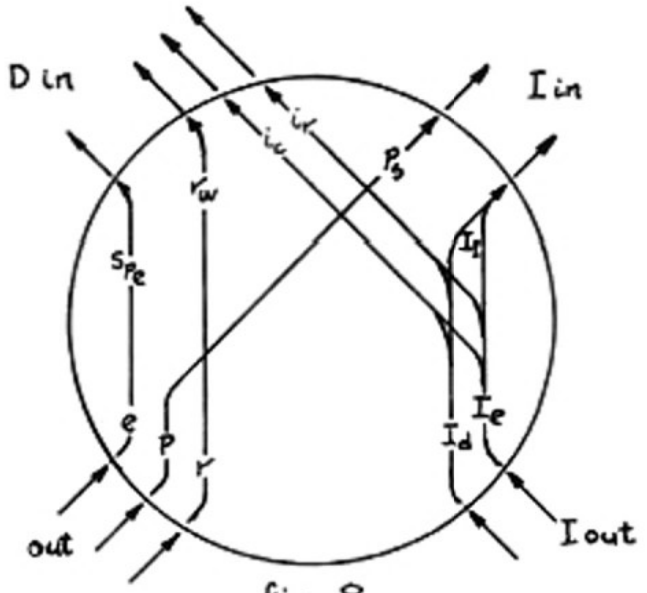

fig 8.

Figure 8.represents one net set of allocation decisions which is implied by the condition of steady state, that sa_e, r_s and p_w must combine to cancel each other out. This suggests a situation in which people withdraw from their savings as much as they add to their savings over a lifetime withdrawing their returns as they accrue. That is not the only possible scenario, but a convenient and reasonable one. None of the possible scenarios of a steady state balance between sa_e, r_s and p_s? are possible in a conventional economy since there is continuous adding of returns on principle which is never withdrawn. This imbalanced state' is portrayed in figure 9.

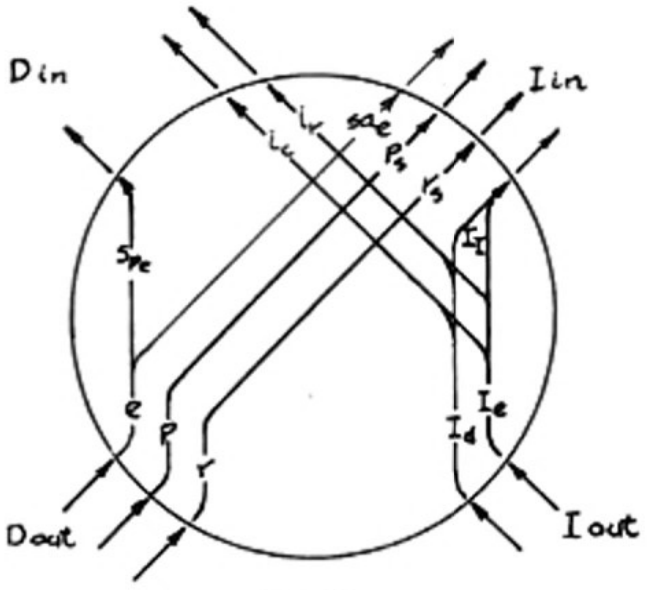

fig 9.

In this case I_{in} is growing at the compound rate of r/p and the ratio e/(r+p) is shrinking, assuming an absense of Investment failure, and Divestment growth at any rate less than r/p. Adopting the physical steady state assumptions and presuming an absense of Investment failure the mathematical description of Net Condition 2 is as follows:

$sp_e + i_c + i_r + sa_e + p_s + r_s = C$: D_{out} assumed constant

$r_s = r,\ p_s = p$: by definition

$p = p_o \cdot e^{r/p \cdot t}$

$r = r_o \cdot e^{r/p \cdot t}$

$i_c + i_r = (i_{c_o} + i_{r_o}) \cdot e^{r/p \cdot t}$

: the growth formulations implied by the compounding of returns and the assumption that all investment principle is repaid

$sp_e + sa_e = C - K \cdot e^{r/p \cdot t}$: where $K = i_{c_o} + i_{r_o} + p_o + r_o$

by substitution & arrangement

: I, p and r tend to infinity, assuming r is not zero

: sp_e tends to minus infinity once sa_e has gone to zero

Those conclusions conflict with some of the basic assumptions of a physical steady state. One implicit assumption that is likely to fail first is that everyone with declining earnings is able to persuade investors to extend them the credit needed to maintain their consumption spending and debt repayment. It is also unlikely that real investment spending would continue uneffected as the amount of net earnings declines in proportion with the decline in gross earnings.

Even accepting the above improbabilities there is a point where the model comes into necessary conflict with the assumptions of a physical steady state. That is when earning becomes zero and the payment of returns in excess of Investment necessarily becomes zero. Then, unless Investment funds are withdrawn and used for spending, there is no more point in investing and all Money flows aoruptly halt.

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$p = p_o \cdot e^{r/p \cdot t}$: the growth formulations implied by the compounding of returns and the assumption that all investment principle is repaid

$r = r_o \cdot e^{r/p \cdot t}$

$i_c + i_r = (i_{c_o} + i_{r_o}) \cdot e^{r/p \cdot t}$

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The central bank could counter balance some of these destabalizing effects of Investment growth in an otherwise steady state economy. It could replace principle and return payments with new issues of currency, so that earnings would not be deminished. It would then also need to borrow that same growing amount of currency from Investment so that real and consumption investment spending would remain constant. In that case returns and principle would still tend to infinity, supported by the central bank's unlimited capacity to borrow money, essentially from itself.

In the real world that technique would fail since the expectation, rather than actual, holding of currency is used as money. Those who are holding the rights to the spiraling principle and returns flows can use their spiraling expectations in place of Money in the otherwise steady state economy. The result would be an invasion of the steady state economy by a spiral of earning expectations not derived from it.

No matter how the central bank pushes or pulls on the currency and Investment supplies essentially the same thing must always follow if any part of the economy operates in Net Condition 2. The appearance of a physical steady state results in a destructive Allocation of Money from spending to Investment. Both physical law and historical experience verify that physical steady states do appear.

An understanding of how this actually effects the real world of economies seems to best follow from asking how the expansions of the Investment funds are used, once their effect of stimulating expansions of spending from earning has begun to slow. That refers to the period of approaching steady state, our world's situation of the past 15 to 20 years.

The simple answer is that it goes wherever else it can find better compounding returns. Those 'last resort' investment uses seem to fall into three general categories. While not creating more earnings for everyone, as real investment it can, for a while, be used by some for taking a compound growth of earnings

away from others. Secondly, the surplus growth of Investment can feed the speculative trading of commodities, stocks, bonds and other futures. The bidding up of scarce resources and the simple growing abundance of funds circulating in specualtive trading gives the appearance of rising values, and attracts more. Thirdly, the over-abundance of Investment can be applied to financing the consumption and repayment of past due debts for those having had strength but now experiencing weakness.

The growing struggle over market shares, the growing attractiveness of speculation and the growth of hardship borrowing, along with the growing scarcity of Money from any other source, serve to create a high level inflexible demand for Investment and rising required rates of return for its use. That helps to further accelerate the disproportionate shift of Money into Investment. As the return requirements rise above the returns potential of economy-expanding investments the slowing of economic growth is accelerated. The economy achieves a dynamically unballanced stall before a slide during which the unreal growth of currency Holding expectations.

Figure 10 gives a schematic view of a whole growth to climax, regression and recovery cycle. It focuses on the role of excessive investment in making larger and larger portions of the economy uncompetative. The breakdown begins with the displacement of unabandoned older sectors, (step 9). The next more severe stage is the displacement of unabandoned sectors which have not yet repaid their initial investment, (step 11). It concludes with the displacement of unabandoned sectors which have not yet repaid their initial investment and are critical to the support of the remaining strongest sectors, and the breakdown of the investment-displacement process, (step 13). Recovery then proceeds with a 'boot strap' self reassembly of talents, resources and equipment left over, and the restarting of the organized investment growth process.

The Investment Cycle and Economic Growth & Decay

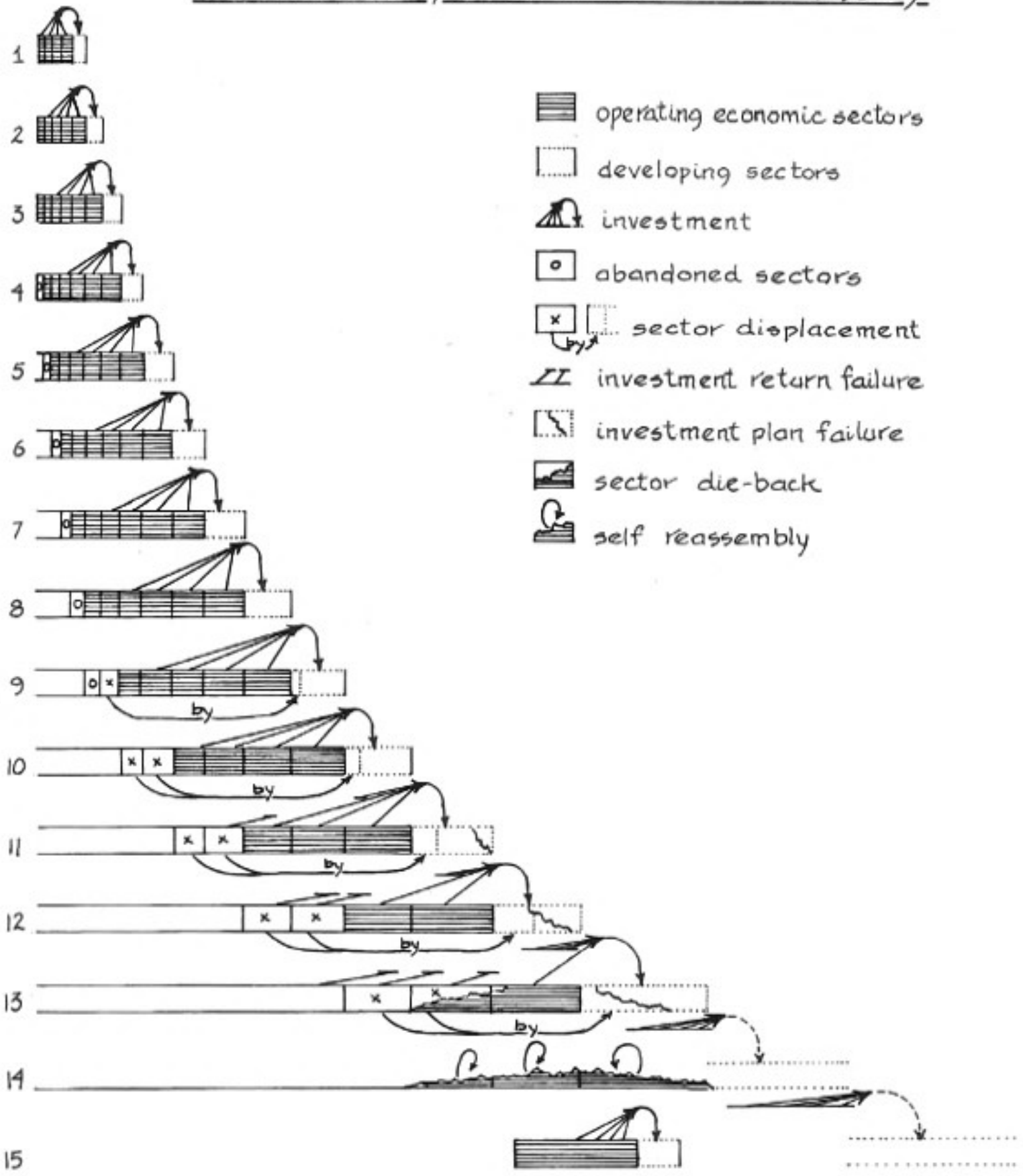

fig 10.