Some Notes on the Stockholm Theory of Savings and Investment I

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SOME NOTES ON THE STOCKHOLM THEORY OF SAVINGS AND INVESTMENT I.

OWING to a coincidence of circumstances, already at an early stage of the depression Swedish economists came to deal with the problem of variations in employment, output and prices by means of a theoretical apparatus rather different from the price theory in economic textbooks. There are surprising similarities as well as striking differences between that apparatus and the conclusions reached in Sweden on the one hand and Mr. Keynes' " General Theory " on the other hand. Hoping that a discussion of two independent attacks on the same set of problems may throw some light on the latter, I intend in this and the succeeding paper to make some observations on these two theories. In view of the fact that the Stockholm approach and theories are only partly available in other languages than Swedish, I shall begin with some observations on this work—pointing out differences from and similarities with Keynes' position—and come in a second article to some critical notes on his theory. A more complete comparison between the two bodies of doctrines will have to wait until the Stockholm theory has been made available in English.

A. *The Development and Characteristics of the Stockholm Theory.*

Among the circumstances which explain the present trend of theoretical analysis in Swedish economics one should, I think, first mention the writings of Wicksell, which naturally attracted more attention in Sweden than elsewhere. His *Geldzins und Güterpreise* of 1898 and his later books and papers on money contained the embryo of " a theory of output as a whole," although this fact was not clearly perceived until the late 'twenties, when Professor Lindahl presented his elaboration of Wicksell. Wicksell started from the fact that the price of an individual commodity is determined by supply and demand. If its price rises, one says that it is due to a rise in demand relative to supply. Naturally, if the prices paid for all commodities taken together rise—and thus the general price level is raised—a similar explanation should be possible. Wicksell attempted to give such an explanation through his analysis of saving and investment. Thus, he broke both with the Say doctrine that supply creates its own demand and with the

accepted view that the theory of relative prices and the theory of money are two entirely different things, although he never arrived at a real unification of these theories.

Wicksell's analysis was concentrated on the process of price movements, in which credit plays a large rôle. Credit and savings have a time dimension. For this and other reasons he came to study time-using processes. The most famous is his so-called " cumulative " process, which proved to be an important " type model " of economic development, i.e., a " model sequence."

Professor Lindahl—as will be shown below—followed up the Wicksellian analysis. He showed that it was useful in a study of changes in employment and output as well as in prices. Furthermore, he showed that Wicksell's cumulative process depended on special assumptions concerning the entrepreneurs' expectations, thereby utilising the analysis of " anticipations " which had been presented in Professor Myrdal's work, Pricing and the Change Factor, 1927. This work was the second of the circumstances which have vitally affected Swedish research in the field under discussion during the last decade. Myrdal discusses the influence of the uncertain future on price formation. To what extent are economic actions influenced by anticipations of future events, i.e. by expectations ? In the static equilibrium price theory of the textbooks, this question had been neglected. Of the pre-depression treatises only Marshall seems to have had it in mind. If he did not make much progress himself in this field, at least he used a terminology which protects him from much of the criticism which can be directed towards other writers. In fact, Keynes' analysis of expectations in Ch. 5—which in many ways is similar to the general view in Stockholm—can be regarded as the following up of numerous suggestions in Marshall's " Principles."

Myrdal tries to build these expectations into the static price equilibrium, and thus to give a picture of the forces existing at a certain moment of time. He does not attempt to construct a dynamic price theory which considers the rate of change and thus gives an account of a process in time. His theory can be regarded as the last step which a static theory can take in the direction of dynamics. In constructing his equilibrium Myrdal eliminates time from change, but not anticipations of time. In other words, he assumes a timeless adjustment, but with all friction and cost and expectations.[1] While this may appear to be a peculiar con-

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[1] Brinley Thomas, Monetary Policy and Crises, uses a different terminology from mine when he calls Myrdal's theory the dynamic theory and seems to have overlooked the need for a different theory of the sort I call " dynamic."

struction, it is no doubt more realistic than the earlier static equilibrium. In any case, it enabled Myrdal to concentrate on the influence of expectations. This analysis was continued by him in Ch. V. of " Der Gleichgewichtsbegriff als Hilfmittel in der Geldtheoretischen Analyse," in *Beiträge zur Geldtheorie*, published by Prof. Hayek in 1933. He there works out in some detail the vitally important distinction between " looking forward " and " looking backward," and shows its significance more clearly than he had done before in Swedish writings and discussions. This analysis of income and capital values with the aid of " *ex-post* " and " *ex-ante* " concepts is independent of the timeless equilibrium construction which is expounded in the paper and which is similar to that used in the book of 1927. In fact, it seems most useful in a *period analysis* of the type which Lindahl and myself are using, while Myrdal views it with some scepticism.

The third decisive factor in the development of the Stockholm theory was Lindahl's book on *The Means of Monetary Policy* (published in 1930 but circulated in proof a year earlier), which I have already mentioned. He used Myrdal's expectation analysis to follow the Wicksellian line of approach by means of periods of time, perhaps somewhat under the influence of Mr. D. H. Robertson in this latter respect. Some essential parts of Lindahl's theory can be briefly indicated.

Already Wicksell had stressed that consumption purchases are governed by that part of individual incomes which people want to consume, whereas investment purchases are not directly governed by the part of income people want to save. The decisions to save and the decisions to invest are taken largely by different individuals, and there is no mechanism which guarantees that the volume of savings and of investment will always be equal. This is the very essence of the Wicksellian approach. Wicksell goes on to investigate what rôle the rate of interest can play in making them equal, and what happens when they are not made equal. Lindahl does not concentrate his attention to the same extent on the investment activity. He starts from the formula :

$$E(1 - s) = PQ;$$

E is income, s savings ratio, P the price level of consumption goods, and Q the quantity of consumption goods. Regarded as a picture of a brief period, during which equilibrium exists, this equation is implicit in the equilibrium theory of prices. It can be used, however, for an analysis of a process in time, which is divided into different periods. Lindahl studies the conditions under which the com-

ponents of the equation change, the volume of consumption goods as well as their prices. In so doing he naturally has to pay a great deal of attention, although not in my opinion sufficient, to the volume of real investment. He does not confine his discussion of policy to monetary policy in a narrow sense, but analyses also the effects of changes in the financial policy of the State, *e.g.* the financing of deficits by borrowing. Thus, he departs a long way from the quantity theory of money approach, by which it was natural in any discussion of price problems, etc., to ask how the quantity of money could be affected. In fact, he follows Wicksell in assuming a perfect credit economy, where the quantity of money has no significance. It would carry me too far to describe his argument concerning Wicksell's cumulative process. Among other things he introduces the hypothesis of unused resources and discusses alternative " models," based on different assumptions as to the disposition to save, etc., demonstrating that they behave rather differently under the impact of the same original change. He also investigates the importance of long- and short-term interest rates, and finds Wicksell's concept of a " normal " rate of interest to be of little or no use.

These Wicksell–Myrdal–Lindahl writings were the theoretical background for the work done by four economists, who were asked by the Unemployment Committee late in 1931 to write monographs on different aspects of economic policy in relation to unemployment. What the Committee asked for amounted to an extensive treatment of the " economics of unused resources." What will be the effect of this or that policy in conditions in which considerable quantities of the industrial agents are unemployed ? The fact that the Committee put the question in this way is the fourth and last of the circumstances which influenced the direction of Swedish research in the field under discussion. I should, however, mention also the fact that Professor Bagge, a leading member of the Committee, had himself in 1930 published an excellent survey of the causes of unemployment, based on an assumption which one might call relatively constant demand in terms of money or " stable monetary conditions." Hence, it was possible for the writers of the four monographs to concentrate on the processes of general expansion and contraction of economic activity, connected with variations in total demand in terms of money. These questions were, of course, the ones which attracted the greatest general interest at this time of severe depression.

The titles of the four investigations, all published late in 1933 and early in 1934, were the following : Hammarskjöld, *On the*

Spread of Conjunctures; Johansson, *Wage Development and Unemployment*; Myrdal, *The Economic Effects of Public Financial Policy*; and my own book, *Monetary Policy, Public Works, Subsidies, and Tariff Policy as Remedies for Unemployment*. In spite of considerable differences in the methods and the terminology used, there is a certain unity between the theories developed and the conclusions reached in all the reports, including also the Final Report of the Committee on *Remedies for Unemployment*, published in 1935 and written by Dr. Hammarskjöld on the basis of discussion in the Committee. This report covers on the whole the same field of theoretical problems as those in Keynes' " General Theory." While there is only a scanty discussion of the determination of the rates of interest, there is an extensive analysis of " frictional " unemployment and possible remedies, matters which are almost entirely ignored by Keynes.

The high degree of unanimity between the writers mentioned, and the fact that they were all influenced by the Wicksell–Myrdal–Lindahl writings and by Cassel with regard to the anti-classical approach to price and distribution theory, make it justifiable to talk about a Stockholm school of thought. (The only non-resident in Stockholm is Lindahl, who worked in Stockholm for many years.) It must not be supposed, however, that the different members of this school agree on everything. As in my attempt below to illuminate certain aspects of the Stockholm [1] theory I shall follow the version used by myself, I have to add that my terminology has been viewed with great scepticism by some of the younger Stockholm economists, chiefly because of my way of defining income so as to make savings and investment always equal *ex definitione*. Personally, however, I am to-day more than ever convinced that this set of definitions permits a simpler, more realistic and more easily understandable description of economic processes than the rather different definitions used by other members of the Stockholm school.

Let me begin by enumerating the characteristics of what I propose to call the " Stockholm Theory of Processes of Contraction and Expansion," meaning thereby the analysis of changes in employment, output and prices. Firstly, in the discussion of special partial processes attention is concentrated on the reaction of the economic system as a whole, *i.e.* possible influences on the

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[1] There is considerable similarity between my terminology and analysis and that presented by Myrdal in Ch. V. of " Gleichgewichtsbegriff " (1933) I learned a great deal from the Swedish, less complete, version of this paper. To some extent we arrived at similar conclusions independently of one another.

total volume of output and monetary demand.[1] Monetary theory is therefore made a part of the general price theory. The analysis has not as yet been pushed far enough to make it include a theory of business cycles. A book by Dr. Lundberg on cycle problems (*Studies in the Theory of Economic Expansion*) will, however, appear before this paper is published. Secondly, care is taken to state clearly when concepts like income and savings refer to plans or expectations for the future and when they are concerned with a period that is already finished. Thirdly, with the exception of Myrdal (whose position is not quite clear) all use a period method of analysis. In this respect the procedure is similar to D. H. Robertson's. Fourthly, as in Hawtrey's and Keynes' theories, attention is concentrated on the action of the individual entrepreneurs or consumers, and not much is said about what this involves with regard to the movements of the currency units. The exception is Dr. Hammarskjöld, who in his book of 1933 uses a velocity of money approach. Fifthly, it has been found that the reasoning to be precise enough must be casuistic. Wide use is, therefore, made of " type models " like Wicksell's cumulative process. For the construction of such models, simplifying assumptions are necessary. Hence each of them throws light on only one aspect of the processes of expansion or contraction.

B. *Some Aspects of Process Analysis.*[2]

1. To analyse and explain what happens or what will happen in certain circumstances it is necessary to register the relevant events. One needs a system of book-keeping which is relative to time. Not only is the time sequence of events as a rule important, the same is often true of the time-lags. It is therefore practical to use periods of time as a basis for the book-keeping. At the end of each period one can survey the registrations which refer to that period. This answers the question what has happened during a passed period. It is an account *ex-post*.

This, however, explains nothing, for it does not describe the causal or functional relations. As economic events depend on man's actions, one has to investigate what determines these actions. They always refer to a more or less distant future. Hence, one must study those expectations about the future which govern the actions, keeping in mind that expectations are based

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[1] Compare my remarks on Keynes' position in this respect: Section C. 1 below.

[2] Section B, §§ 1–8, is almost exactly the contents of a lecture given at University College, Dublin in May 1934. It also formed part of the Marshall lectures at the University of Cambridge in November 1936. It is a summary— with insignificant changes—of certain parts of my book of 1934.

on the experience of the past, although only partly the *immediate* past. This analysis of the forward-looking type ean be called *ex-ante*, using Myrdal's convenient expressions. It goes without saying that actions depend not only on ideas about the future, but also on actual conditions at the moment of action; *e.g.* the supply of capital instruments and commodity stocks, the character of existing contracts, etc. The *ex-post* description supplies knowledge about these things directly, and at the same time it throws light on those past events, which influence expectations to a greater or smaller extent. Obviously a combination of *ex-post* and *ex-ante* analysis amounts simply to this : after a description of actual events during a certain, finished period, and of the differences between these events and the expectations which existed at the beginning of the period, follows an account of those expectations for the future which more or less govern actions during the next period. The registration of events during this second period reveals again that expectations do not all come true, a fact which influences expectations and actions during the third period, etc.

2. Let me indicate briefly the concepts required for the *ex-post registration* in the general process analysis. For each individual or firm one has the following equation :

$$R - O - D = E = S + C ;$$

R is *revenue*, *i.e.* the value of sales ; O is *current costs, i.e.* payments to factors of production and to other firms for goods used up during this period ; D is *depreciation items, i.e.* the computed costs for the period in question which are due to the use of things which are reckoned as products of earlier periods, minus corresponding appreciation items, which I leave out for the sake of simplicity ; E is *net income*, of which one part C has been *used for consumption* while the rest is *savings S*. $R - O$ may be called *gross income G*, which is equal to $D + E$. I shall, however, not make use of this concept below.

These definitions are based on the picture of the transactions looked at from the " income side." If we now regard it from the " expenditure side " we get

$$X = I + C ;$$

X is *total expenditure*, I is *investment expenditure,* and C is *con-sumption expenditure*. I includes both O (which is, of course, a kind of investment, but for a space of time shorter than one period) and the investment of a more durable kind. I consists of *reinvestment I^r* and *new investment I^n*.

Returning to the income side, we see that the revenue which is not net income is the return of money which has earlier been invested, either during the same period—this sum is equal to O—or during earlier periods—which sum is equal to D. $O + D$ can be called "old savings made available" or "*free capital*." These sums indicate a flow which is "available" for new investment expenditure. "Free capital" plus the new savings can be called "*waiting*," W, which is thus equal to: $O + D + S$.

If we sum up all these things for all firms and individuals—that is, for society as a whole—we get the following identities. The distinction between reinvestment and new investment is made in such a way that the sum of investment, which is equal to free capital, is called reinvestment, while the rest is new investment.

Revenue R = Total expenditure X.
Free capital $O + D$ = Reinvestment I^r.
Savings S = New investment I^n.
Waiting W = Investment I.
Net income E = New investment I^n + Consumption C.

The net income is, of course, equal to the sum total of all individual positive net incomes after deduction of all negative net incomes. Similarly, savings for society as a whole are equal to the sum of all positive savings minus all negative ones. An individual has a negative saving when he uses for consumption more than his income. This occurs always when his income is negative. But in other cases also—if his consumption exceeds his net income—he has to use a part of his fortune or take credit. Thus the savings for society are the sum of all positive savings minus negative incomes, consumption of one's own fortune and consumption credit.

This set of definitions, which refers to industrial, not financial transactions, is somewhat similar to Keynes' new terminology, which is based on the same type of identities. My investment I includes, however, more than Keynes' investment. I shall put off the discussion of the depreciation term D until a later part of this paper, where I comment on Keynes, who has made the important distinction between automatic depreciation—which can be called "time depreciation"—and depreciation caused by use of the different assets—"use depreciation." It should be mentioned already here that the computation of the depreciation terms depends upon expectations, and that therefore book-keeping, including the closing of the accounts—the registration, grouping together, and interpretation of events—is not a pure *ex-post* manœuvre, but a combination of *ex-post* and *ex-ante*.

3. I come now to *the ex-ante phenomena*—that is, the psychological causation. Purchases of goods and services are either intended for investment or for consumption purposes. Consider first investment purchases. The entrepreneur has certain *expectations* concerning future events beyond his control and a certain knowledge about his productive apparatus, contracts, etc. On this basis he makes certain *plans* concerning his own investments during the coming periods, and these plans are actually carried out as far as *his own* actions during this period are concerned. For the period is chosen so that he does not change his plans until the beginning of the next period. Much ought to be said about the implications of this assumption, and about the necessity for periods of different lengths, but I must pass over it here. Plans are regarded as a special sort of expectations. The difference is that plans concern his own actions, while other expectations do not. Plans are often in terms of alternatives, to be realised under different sets of expected conditions.

The investment plans are of course based on expected revenue from the investment in question and on the expected costs entailed, including the expected rates of interest. In brief, the plans are based on *the profit expectations*. But it would be wrong to assume that entrepreneurs plan to carry out all the investments which they think will yield a return, exceeding the rate of interest which they expect to pay. (Keynes' statement that the investment demand for capital depends on the relations of the marginal efficiency of capital to the interest rates, amounts practically to this.) Of all the possible investments which seem profitable, only some are planned for the next period and actually begun. This may be due to the fact that the present cash and credit resources of the firm are not large enough to permit more, or that the expected cash and credit resources put a check on the investments. Sometimes, however, strong business firms which could easily borrow huge sums for profitable-looking investment prefer not to do so. They are averse to an increase of their indebtedness. It is an open question whether this can be regarded as evidence that they reckon on unfavourable developments, which would make the investment unprofitable, as probable enough to make it not worth while, or whether the explanation must run in other terms. (I am looking forward to a paper by Dr. Kalecki on this subject.) In any case it is clear that the cash and credit resources, which the firm has at its disposal at the beginning of a period and acquires during the period, provide an upper limit for its *ability to buy*, and that the expectations concerning them set a limit to its

investment plans; while the profit expectations and the expectations with regard to future cash and credit resources influence the *desire to buy*. As long as the latter does not touch the former limit, it determines the investment plans. (The above refers to investment in producers' goods. A similar, but somewhat different, reasoning explains the investment in durable consumers' goods.)

Like investment purchases, *the demand for non-durable consumption goods and services* is influenced by expectations and by knowledge concerning the actual situation of the consumer. On the basis of these circumstances consumption plans are made for the future, and as far as purchases during the first coming period are concerned, these plans are realised. Of course, the plans are not definite, for the consumer has not one precise expectation, *e.g.* about what prices will be during the next period or how much cash he will receive. But he usually plans to spend a certain sum for consumption purposes, and has alternative purchase plans concerning the distribution of this sum between different lines of consumption. The important thing for an analysis of changes in employment, output and prices is the sum total he plans to spend and does actually give out. On what does this sum total of planned consumption depend? First of all on the consumer's income expectations. Not his expected income during the first coming period only, but on what he expects to earn over a long period in the future. If a man gets a temporary, well-paid job which gives him a much higher salary than he is used to and more than he can expect to earn later on, his standard of consumption will obviously be much affected by consideration of this latter fact.

As a parenthesis let me observe that Keynes' analysis on this point seems a little superficial. On p. 28 he indicates that consumption depends on the relationship between the community's income and the propensity to consume. And on p. 57 he writes about the *causal* significance of net income : " Net income is what we suppose the ordinary man to reckon his available income to be when he is deciding how much to spend on current consumption "; Keynes adds that the consumer also considers, *e.g.*, windfall gains. There are two objections to this standpoint. The income which has causal significance is *not* Keynes' *ex-post* concept, the realised income during the last period, but the *expected* income. Secondly, the expectations for many coming periods influence considerably the consumption plans and actual consumption during the next period. To make the relation between consumption and *last* period's income the central thing in a *causal* analysis, which should

explain why people act as they act, is to overlook that these actions are determined by expectations, which often have only a loose connection with last period's realised income. This fact every American would willingly testify to-day; most of them expect growing incomes and base their consumption plans thereon. The term " propensity to consume " could well be used to indicate the relation between expected income and planned consumption. But even so it has the disadvantage of leading people to think that consumers plan a certain relation between the expected income during the *next* period and that period's consumption, whereas they actually correlate consumption plans and income expectations for many future periods. Therefore, it is better to indicate their attitude, when they are relating consumption plans to these expectations, with the term " propensity " or " disposition to save." The relation between expected income and planned consumption (or planned saving) during the *next* period can be called the " planned consumption ratio " (or the " planned savings ratio "). The consideration of income expectations for many future periods is, of course, the principal reason why people during depressions often consume much more than the income they expect or actually earn during the periods at the bottom of the depression. Note that the reasoning above takes into account the influence of windfall gains or losses. Having changed the individual's fortune, they directly influence his long-term expectations concerning income from interest, and they may set up expectations about future similar gains or losses.

Returning to the other circumstances which affect consumption plans, one must list chiefly two types : the expectations concerning future prices, and the expectations concerning future needs in comparison with the consumer's present needs. It is not necessary to dwell on these factors, the importance of which is obvious. The latter has been much discussed in the standard works on the theory of interest. The present and expected future position with regard to cash or credit plays the same rôle for consumption demand as for investment demand.

The above reasoning, in my opinion, provides a solution to the problem which bothered Wicksell a great deal, as seen from his last paper on " The Scandinavian Crowns," published as an appendix in the English edition of *Geldzins und Güterpreise*. He there expresses doubts about the limitation of purchasing power, which, in the absence of an inflationary credit policy that gave new credit exceeding the simultaneous saving, was supposed to prevent prices from rising more than in proportion to the reduction in the

supply of commodities due to war-time scarcity. If one man buys butter at high prices, his ability to buy other goods is reduced, but at the same time the farmer who sells the butter becomes in a position where he is able to increase his purchases. Hence it is not clear that a doubling of the price of butter, when its supply is reduced by one-fourth, should have any depressing influence at all on other prices.

Obviously Wicksell is right in this : there is no upper limit for purchases, which is fixed by the available purchasing power. The more people buy, the greater the total purchasing power in use. The holdings of cash and the amount of unused, available credit can be said at any given moment to indicate " unused purchasing power " ; it is not reduced by purchases, only transferred. What, then, determines purchases and thus price movements as far as the demand side is concerned ? The answer is given above. An individual's present cash or credit, plus what he receives during a period, sets the upper limit for what he can spend during that period, *i.e.* governs his ability to buy. His expectations, etc., determine his willingness to buy within that limit.

It goes without saying that a similar analysis of expectations, etc., is required to explain supply as to explain demand. But this is chiefly only another side of the entrepreneurs' investment plans, and need not detain us. I also pass over the analysis of the so-called period of investment. To be of any use this must be an *ex-ante* concept. One deficiency of the Vienna theories about the period of production is that it was not made clear when the concept was used *ex-post* and when *ex-ante*.[1]

4. Let us turn now to *a comparison of the ex-post and the ex-ante concepts*. Every one of the former has got a corresponding one among the latter. Thus we may simply fix an *a* at the bottom of each letter to indicate that it is *anticipated*, i.e., *expected or planned* income, savings, investment, etc., instead of *realised*. E.g. $E_a = S_a + C_a$.

Consider the relation of planned savings S_a to planned new investment I_a^n. There is no reason for assuming that they should be equal. But when the period is finished, new investment I^n is equal to savings S. How does this equality " come about " ? The answer is that the inequality of S_a and I_a sets in motion a process which makes realised income differ from expected income, realised savings from planned savings and realised new investment

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[1] See the illuminating paper on "The Period of Production and Industrial Fluctuation," by Martin Hill, in the ECONOMIC JOURNAL, 1933.

differ from the corresponding plan. These differences we can call : *unexpected income* E_u, *unexpected new investment* I_u and *unintentional savings* S_u (" unintentional " is preferable to unexpected in this connection). The business man who, after the closing of his accounts, finds that he has had a larger net income than he expected and that therefore the surplus over and above his consumption is greater than his planned savings, has provided " unintentional savings " which is equal to this extra surplus. Unexpected new investment which, like unintentional saving, may, of course, be negative, can mean simply that stocks at the end of the period are different from what the entrepreneur expected.

All this is very simple. Many readers may wonder if it is worth bothering about in such detail. The answer is that unless the difference between *ex-ante* and *ex-post* concepts is kept quite clear, confusion is bound to ensue. The profit concept in Keynes' *Treatise on Money*—which in most places was an *ex-post* concept where certain items had been deducted and reckoned as belonging to the next period, but which was used in the causal analysis as if it had been an *ex-ante* concept—is a case in point. Subsequently I shall demonstrate that even in Keynes' "General Theory" a similar though perhaps less important lack of precision is to be found.

To avoid misunderstanding of the above terminology, I wish to stress the fact that income has nothing to do with the actual receipt of cash. The term is used very much in the sense of the ordinary business account. It is not surprising, therefore, that— according to my experience—people with practical experience of business but with no training in economic theory find the system of terms I have sketched and their use in analysis of real problems relatively easy.

Finally, it is obvious that one has to make a distinction between income and " *Capital gains or losses.*" This latter is a little wider than Keynes' " *Windfall gains or losses.*" I return to this question later.

5. Let me now indicate very briefly how an account of various processes can be given with the above terms. Considerations of space force me to make it somewhat " short-hand." Assume that people decide to reduce their savings and increase their consumption during the next period by 10 million, as compared with the realised savings and consumption during the period which has just finished. They expect their income to be unchanged. Assume further that the planned investment is equal to the realised investment during the last period. What will be the result ? Retail

sales of consumption goods will rise 10 million and the stocks of retailers will at the end of the period be down, *e.g.* 7 million, the remaining 3 million being the extra income of the retailers. This latter sum is " unintentional " savings. Thus realised saving is down only 7 million, or the same amount as realised investment. For the next period planned investment by retailers will be higher. Furthermore, their income expectations will be more favourable, and therefore their planned consumption greater also. Both investment purchases and consumption purchases will be greater during this second period than during the former, if consumers' disposition to save is the same. Output will rise, or prices go up, or both. While planned savings will be a little greater than during the former period—owing to the retailers' expectations of greater income—planned investment will go up more. For stocks of consumption goods will need refilling. Thus, during this period also, planned new investment will exceed the planned savings, and the process of expansion of the sum of transactions—and thereby quantities, or prices, or both—will go on.

The discrepancy between planned savings and planned investment can be regarded as the cause of the process. A similar development will follow if the original change is an increase of planned investment unaccompanied by any growth in planned savings.

This, however, is only one side of the story. Even if planned savings and planned investment should happen to be equal, a process of expansion is possible. The only thing then required is that expected incomes grow, and that consequently consumers increase their purchases. This fact has often been overlooked by writers who, under the influence of Wicksell or Keynes, start from the saving-investment analysis.

6. *The Speed of Reactions.*—Obviously, in each case one has to study the actual transactions in their relation to the plans and expectations. The different reactions depend on that. As these reactions often go in opposite directions, it is necessary to consider the relative strength and speed of these tendencies. What happens first ?

Take a simple case. Assume that the wheat crop in important producing countries promises to be unusually large, as in 1928. The price of wheat then falls so heavily that the expected total value of the crop is lower than its average value, and lower than in previous years. Consequently farmers expect lower incomes during the next year. (This is one illustration of the impossibility of making any general assumption that everybody expects his income during the next period to be what it was during the last

one.) So far nobody else expects higher incomes. On the contrary, wheat merchants are apt to have more pessimistic income expectations owing to the fall in the value of their stock of wheat. Farmers and perhaps merchants decide to reduce their consumption purchases, and carry this out. But does not a compensatory increase in demand for consumption goods come from consumers who get their bread cheaper, and therefore have more money left for other things? Perhaps, but not at once. Mills do not reduce their prices immediately nor bakers their bread prices. Hence, to begin with, a decline in the total demand for consumption goods ensues. This may set up pessimistic profit expectations in some lines of industry—those selling to the farmers—and lead to a decline in investment, employment, and workers' income expectations, etc. Some such thing may have happened during the period immediately before the great depression, contributing towards its outbreak and severity. (A more complete analysis should, of course, as pointed out to me by Prof. Rogin, deal also with the speed of the reaction of supply. The above is only an illustration.)

Turn for a moment to the case above of a reduction in planned savings. I tacitly assumed that the banking system did not change its credit conditions. If, however, banks should immediately curtail credit—perhaps because they find that the flow of money into savings accounts is reduced—then investment purchases may be curtailed to the same extent as consumption purchases are increased. Hence, total purchases do not grow during the first period, compared with the last one, and what happens during the second one is uncertain. There is no greater probability that an expansion is caused than a contraction.

Obviously, the effects of a certain primary change varies with the time sequence and the speed of the secondary reactions. The consequences of changes in wage rates, tariffs, etc., will be different under different conditions.

The alternative processes which are caused do, of course, assume different developments with regard to the quantity or the velocity of the means of payments. But it is the time sequences and the time-lags between the various reactions—both the psychological reactions and the actual transactions—which govern the process much more than the construction of the monetary and banking system. Except when the latter reacts by causing a change in credit conditions, it has very little influence. It does not, therefore, seem very practical—although it is quite possible—to study the processes in terms of what happens to the velocity

of money, *i.e.* by following the monetary units round their way in the economic system, in order to find out whether they are hoarded or not, etc. It is better to direct attention to the circumstances which make people change supply and purchases, and to analyse the speed of these reactions, studying the monetary mechanism only as one factor among several. The reactions of purchases depends, *e.g.*, on (1) the speed with which profit and other income expectations are affected (see the crop-variation case above); (2) the speed with which (*a*) the amounts of cash in the hands of different firms or individuals are changed, and (*b*) the willingness of credit institutions and others to give credit is affected; (3) the actual cash and credit position when the primary change occurs. The latter circumstances concern the ability to buy, the first one the willingness to buy within the limits of ability. If the actual resources of many people are ample, then factor No. (2) is of little consequence.

It seems probable that in many cases the changes in the willingness to buy exercise the decisive influence. Hence, it is not then the speed with which the means of payments move, but rather the speed of the psychological reactions which is the governing factor. *E.g.* during a severe depression many firms have more cash and credit facilities than they need for any purchases under consideration.[1]

7. *The Sources of Increased Savings during an Expansion.*—If the interest level is reduced, or the profit expectations raised or public works started, and thereby the total volume of investment expanded, while the planned saving is, to begin with, unchanged, how then is a larger volume of saving—corresponding to the increased investment—called forth ? The answer is simple. At the end of each period some individuals and firms find that they have had larger incomes than they expected. In other words, realised savings exceed planned savings. Secondly, the negative incomes which reduce the net savings for society as a whole are reduced. Thirdly, as incomes and expected incomes rise, planned savings grow also.

There is in this explanation no room for such expressions as the common one, that " the expansion of investment has been financed by credit expansion," *e.g.* the printing of new notes, " injection of new money," and the like. Whether the note circulation is increased or not is immaterial, and has nothing to do with the question how the savings which correspond to the increased invest-

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[1] The reader may expect some discussion of the speed of supply reactions and their relation to stocks, unused capacity, etc. But as the reasoning above is only an illustration, I have felt free to leave these things out.

ment are called forth. Even when the State finances public works with the printing of new notes, the increased investment is matched by increased " real " savings. At the end of the period some people hold more cash than at its beginning. This is evidence that they have had an income which they have not consumed, *i.e.* that they have saved. *Ex-post* there is *ex definitione* equality between savings and investment. The usefulness of this construction is that one has to show through what process it is " brought about," even though, as in this case, planned savings differed from planned investment. This process has little or nothing to do with the question whether new notes are printed or not. It is just as possible during a period of constant quantity of money. Naturally, in that case the velocity increases. But to say that either the quantity of money or its velocity, or both, must increase is a truism and no explanation. It amounts to saying that in order that the total money value of transactions shall be able to rise, MV must rise; but MV *is* the total money value of transactions. Hence, it would seem that the quantity theory of money approach and the " injection of new money " idea have led to some confusion.

Are the new savings called forth by the larger investment " forced " ? This is, of course, a matter of terminology. To talk about forced savings seems, however, unfortunate, as the people with fixed incomes who reduce their consumption when prices go up, nevertheless probably save less than before. A " forced levy " is therefore a better term. But it is not certain that prices go up. Output may expand at constant prices. In any case, the extra savings come from people who get larger incomes than they expected. Hence, the thing to be stressed is this " unintentional " saving. As already explained the decline in negative incomes and the later rise in planned positive savings and reduction in planned negative savings are also part of the process.

The character of the further process depends on which kind of new savings are created. To the extent that increased investment leads to larger planned savings, without any increase in expected income, it is void of expansionary force. Consumption demand is then reduced as much as investment purchases expanded. If this condition is not fulfilled, total purchases grow, incomes rise, unintentional savings rise, and later planned savings also. But this latter increase in planned savings comes later than it should have done to prevent the process of expansion from continuing.

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[To be continued.]

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[Footnotes]

[1] **The Period of Production and Industrial Fluctuations**
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