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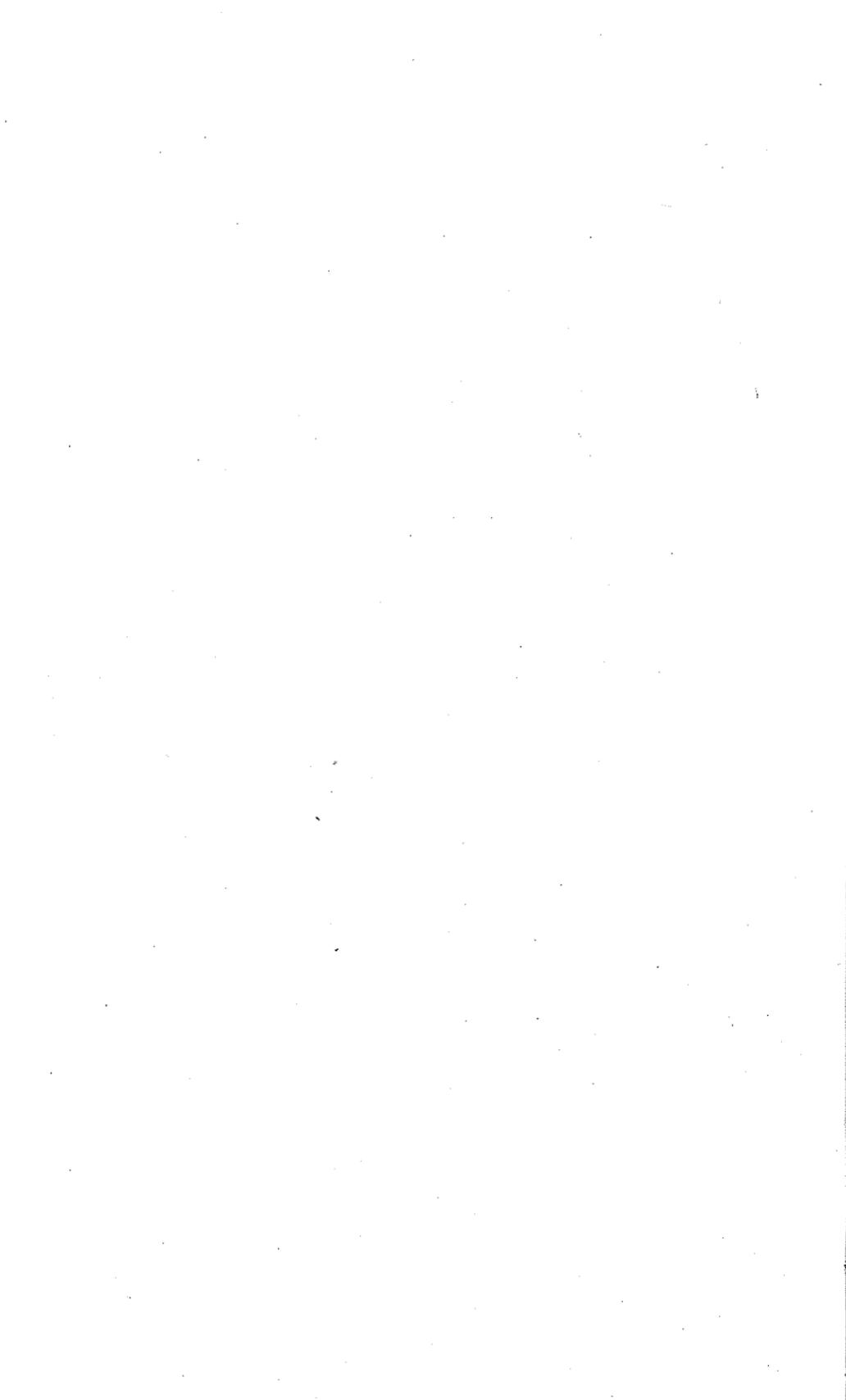
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Some Comments on Research Method

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It is a genuine pleasure to meet with this assembly of scholars who have convened to express appreciation of the work of the National Bureau of Economic Research during its first quarter century and our best wishes for the ensuing decades. All of us are under heavy obligation to the National Bureau for its pioneering work, especially in assembling and organizing quantitative data. As official representative of a sister institution, I am glad to have this opportunity to acknowledge our indebtedness.

I should perhaps state here that I have never regarded the National Bureau and the Brookings Institution as essentially competitive. They differ both in purpose and in methods of procedure. The Brookings Institution was organized for the purpose of aiding constructively in the development of sound national policy. Accordingly it was essential that our research program should embrace problems of a controversial character, and that it would always involve interpretation and the reaching of conclusions as well as the assembling of relevant information. The National Bureau, on the other hand, was organized in such a way as to avoid controversial issues of public policy and to confine its activities chiefly to the assembling and analyzing of factual information. The founders "stipulated that reports are to refrain scrupulously from saying 'what ought to be done' in any matter except the collecting and analyzing of economic data." Wesley Mitchell in his review of the first twenty-five years (Annual Report for 1944) stresses this "self-denying ordinance". The organizational principles are also different. The National Bureau chooses its Directors from diverse groups, including

labor, capital, and the general public, as well as scientific organizations; and the Directors have the duty of reading manuscripts and the right to express dissenting opinions in the final reports. In contrast, the Board of Trustees of the Brookings Institution is not chosen to reflect group interests or divergent points of view; and the Board divests itself of responsibility with respect to *specific* investigations. The interpretations in any given study are the sole responsibility of the scientific staff.

We have always felt that there are definite objective tests by which the validity of economic conclusions or recommendations may be judged. A primary goal of economic activity—in the view of almost everyone, including all political parties—is the progressive raising of the plane of living of the people. Accordingly, the analytical problem is to determine how the policies and activities of Government, of industry, of agriculture, and of labor affect the volume and quality of goods and services produced. Policies that further the realization of this goal may be regarded as sound, while those which work in the opposite direction may be regarded as unsound.

Because the processes involved are often complex, there may of course be considerable divergence of view as to the actual effects of given policies. But the approach can nevertheless be solely analytical—seeking to identify causes, to measure results, and to appraise the latter in terms of a commonly accepted goal. In arriving at conclusions or recommendations by such processes, one is not reflecting 'moral fervor for reform' or expressing ethical judgments of a personal character—to use Mr. Mitchell's expressions.

Methods of Gaining Insight

My discussion today pertains to the processes by which economic insight is most likely to be gained. There are three principal conceptions of the ways by which important theoretical generalizations, whether in the natural or the social sciences, may be derived. One view is that they come chiefly as a result of lonely

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reflection and artistic inspiration. In the words of Laski, "Some lonely thinker, brooding in solitude upon the meaning of facts, from the significance of which he cannot escape, . . . gets a sudden moment of illumination, and he proceeds to test the hypothesis by finding whether it will fit the facts at his disposal. . . . The great scientist, the great philosopher, the great historian, have always been in their essence great artists."

A second conception is that truth is derived chiefly by rigorous reasoning from given premises or assumptions. Some who have been preoccupied with this method are little concerned with the realism or validity of the assumptions, their primary interest being to develop a consistent and logically satisfying body of thought. Others—no doubt the majority—believe, or take it for granted, that the premises of the argument are sound and adequate and that in consequence the conclusions reached will have practical validity.

A third point of view is that significant generalizations, particularly in the field of the social sciences, usually come only as a result of extensive inductive inquiry. If one is to brood fruitfully, he must have something to brood upon, and the greater the body of factual information at his disposal, the more likely are his reflections to yield serviceable results.

It is my belief that new points of view, challenging hypotheses, flashes of inspiration, come to individuals in various ways; they come perhaps from brooding solitude; they come from reading the analyses and interpretations of others; they come from contacts and discussion with practical men of affairs as well as with one's colleagues; they come from reflection and ratiocination. But most of all they grow out of the inductive investigations in which the theorist is himself engaged.

The Importance of Group Cooperation

Traditionally, research in the social sciences has been individualistic in character. That is to say, the individual scholar has gathered, in the main single-handed, the information regarded

as essential for the verification of his thesis, and has perhaps sought the friendly criticism of a colleague or two. In speculative, or philosophical, or strictly deductive writings, this process is no doubt satisfactory. But with investigations of an inductive character, organization for the gathering of material and cooperation in its analysis and interpretation are of the greatest significance. In the first place, such inquiries are so time-consuming that the individual, even though he might possess the requisite ability, might never be able to carry the project to completion. Investigations requiring extensive field work and the gathering of masses of quantitative data can be carried out successfully only by means of organized research agencies.

There is, moreover, a second kind of cooperation that is quite as important as the cooperation of men drawn from different divisions of the social sciences. A group of individuals interested in the same division of the social sciences may supplement one another in vitally important ways. They cooperate through bringing to bear upon a given project varied interests and talents. One may have a special flair for statistical method; a second may have aptitude in and fondness for the hunt in out of the way places for relevant data, whether in historical archives or in statistical collections or in the experiences of men who have been concerned in one way or another with the problem in question. A third may have unusual language equipment. A fourth may have exceptional capacity in the organization and interpretation of material. One may be of an unusually reflective type of mind, always wondering whether the tentative conclusions reached do not need further qualification, elaboration, or modification, the type of mind that is perpetually revolving moot questions and seeking new light. Another may be particularly fruitful in suggesting leads for new lines of inquiry; and still another may be an excellent critic, as regards both the data and the logic of the analysis.

This is not to say that a group product is necessarily superior to an individual product. In fact, where synthesis is involved,

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the distillation of thought through the individual mind doubtless gives a more cogent and definitive result. Even so, the individual will usually profit greatly by the challenge and clarification that flow from group discussions.

Economists' Disagreements: An Explanation

The economics profession has in recent years been embarrassed by the disagreements and conflicts of opinion that prevail. This confusion derives in part from the fact that a multitude of so-called economists are in no sense of the word economic scientists; they are rather attorneys for special interests—labor organizations, farm bureaus, bankers' associations, industrial companies, government agencies. They are concerned with the welfare of particular groups rather than with the welfare of the community as a whole. The disagreements are in part also attributable to the emotional stress and strain to which the world has been subjected during a period of profound disorganization.

However, present differences are perhaps more largely attributable to the extremely rapid changes in economic organization that have occurred in recent times. I can best illustrate what I have in mind by referring to an unpremeditated public debate in which Robert A. Millikan and I engaged some fifteen years ago. Mr. Millikan began the discussion by stating that he had recently read a symposium on banking and was struck with the fact that there seemed so little agreement—in contrast to the situation in physics, where nearly all the laws he had learned about in 1890 were as true forty years later as they were then. He concluded that economics must be thoroughly unscientific.

My reply was substantially as follows: If Mr. Millikan had read the general economic treatises of 1850 he would have been struck by the *definitive* character of prevailing economic doctrine, and would have discovered little disagreement as to fundamentals. I went on to say that had he studied the textbooks of the 1890's he would have discovered that there was then con-

siderably less unanimity, though still substantial agreement with respect to basic doctrines. And I added that in the ensuing forty years there had been a strong tendency toward less rather than more agreement with respect to the so-called principles of economics. The interesting question was why the settled thinking of 1850 had been succeeded by the less settled thinking of 1890 and the highly unsettled thinking of 1930.

My answer to this conundrum was twofold: First, whereas the physical universe which physicists were studying had undergone little if any perceptible change, the changes in the economic organization of society which economists were studying had been revolutionary in character. The economic system of 1930 bore little resemblance to that of the early nineteenth century.

The second factor responsible for the growing diversity of thought among economists was the unequal knowledge we as individual workers came to possess with respect to both quantitative data and economic processes. It was becoming increasingly difficult for any individual to keep in touch with institutional changes in more than one or two fields. Meanwhile, there was developing a vast accumulation of quantitative data with which some were familiar, and others not. Moreover, these data were as yet so imperfect as to permit widely divergent conclusions on the part of objective investigators.

Fundamentalism in Economics

On this occasion I mention a third factor that has played its part in accounting for current disagreements among economists. I refer to the tendency of many individuals to cling to old doctrines and beliefs even in the face of convincing evidence to the contrary. In every field we find the fundamentalist, and I sometimes think we have more than a full quota in the economics profession. When I contemplate some of my economic colleagues I am reminded of the woman whose son, studying for the ministry, had been somewhat unsettled at university and divinity school with respect to the fundamental articles of faith. He in-

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formed his mother of some of the reasoning and evidence that had led him to question doctrines he had formerly regarded as settled. She listened patiently and finally said: "Well, my son, we'll hope it isn't true; but if we find that it is we'll keep still about it."

In view of the long history of human thought it has always been interesting to me to find economists becoming indignant over analyses that reach conclusions fundamentally at variance with classical doctrines. They feel called upon to rally to the defense of the faith and to show that the offender cannot really have understood the theory, or that the supporting data are not all that could be desired. I have even been criticized on the simple ground that I did not deal "in a more generous spirit with *received doctrine*". This worshipful attitude toward "received doctrine" of course binds the intellect and shuts out the light of new knowledge.

I have no little tolerance with respect to disagreements that arise from varying degrees of factual and other knowledge, or from differences in experience. I find it less easy to be patient with the economic fundamentalist. And while, for once, I am having my say on this subject, I cannot refrain from quoting Robert G. Ingersoll with reference to the fundamentalist in religion:

"There he sits like a wise owl on a withered branch of the growing tree of knowledge hooting the same old hoots that have been hooted for a hundred years."

Some Illustrations of Obsolete Theory

In the remainder of this discussion I shall give a few illustrations, among many that might be cited, of the way in which traditional economic doctrines require modification in the light of twentieth century knowledge and twentieth century conditions. In the space here available, the presentation must of necessity be brief and inadequate and be phrased in somewhat dogmatic terms.

Commercial Banking

The basic principle of commercial banking was effectively stated by Adam Smith. He pointed out that inasmuch as a commercial bank obligates itself to pay depositors on demand, and inasmuch as cash reserves may frequently be inadequate for this purpose, it is necessary to arrange the maturity dates of loans so as to ensure an inflow of funds reasonably adequate to meet potential demands. For this purpose short-term bills of exchange arising from the sale of goods through distributive channels are essential. They mature automatically with the consummation of the final sale; and, since the bills arise from actually completed transactions and carry the name of both seller and buyer, they also represent the highest form of security.

This statement of the fundamental requirements for sound bank management was unquestionably well conceived. It was based on intimate knowledge of banking practices and operations and was an accurate appraisal of requirements in the light of the financial organization in eighteenth century Glasgow and other British cities. It was written at a time when the great bulk of commercial transactions was carried out through the medium of trade acceptances, and when promissory notes were usually of a speculative character; it was written before clearing house associations and correspondent relations between banks in different cities had been developed; it was written before the origin of nationwide bond markets and the organization of stock exchanges; and it was written before the establishment of central banks with their reservoirs of credit. The theory was applicable to the individual commercial bank, which must depend wholly on its own incoming funds to meet demands for cash.

Once elaborated in economic treatises, this analysis came to be universally regarded as the accepted principle of commercial bank operation. One hundred and fifty years later it was incorporated as an underlying requirement of the Federal Reserve System. The Federal Reserve Act stressed the importance,

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from the standpoint of bank liquidity, of short-term paper arising out of actually completed commercial transactions, and it sought to re-establish the trade and bank acceptance as the crucially important financial instruments of a soundly organized banking system.

Meanwhile, however, commercial credit extension practices and the organization of business and finance as a whole had undergone profound change. The trade acceptance had disappeared in the United States because of the credit exigencies existing in the period of greenback currency; and it was replaced by a system of credit extension by banks directly to merchants and manufacturers alike. The credit was evidenced by promissory notes and based on analyses made possible by the evolution of modern accounting. The margin of safety under the new system was substantially greater than under the old. The financial evolution of the nineteenth century had also created an interrelated financial system, as a result of which the individual bank in time of need could realize on other assets more quickly than on commercial paper. My studies of the practical operations of the commercial banking system in the United States twenty-five years ago revealed conclusively that true commercial paper was the least rather than the most liquid asset in banking portfolios. The test of liquidity had become the *shiftability* rather than the maturing dates of assets. The Federal Reserve System was scarcely installed when the facts of life began to force amendments in order to permit the system to perform the services required. Moreover, the vigorous campaign to restore acceptances failed. The significance of the change time has wrought is perhaps best indicated by the fact that today more than 80 percent of the assets of our banking system are of a kind that at the time the Federal Reserve Act was passed were regarded as bad.

The moral of this story is that had Adam Smith in a new incarnation studied banking problems in twentieth century Chicago, he could not possibly have formulated a principle bearing

much resemblance to the statement he made on the basis of conditions in eighteenth century Glasgow.

International Debt Payments

I select the second illustration from the theory of international trade, with particular reference to reparation and other war debt obligations. This theory dates back to Ricardo and Thornton. As related to the German reparation problem, it was restated by Taussig in 1919 as follows: ¹

Where a debt-paying country is on a specie basis the order of events would be: (1) a rise of foreign exchange in Germany, owing to the Government's demand for bills, would quickly lead to an export of specie; (2) the outflow of specie would be followed by falling prices in Germany and rising prices in foreign countries; (3) exports from Germany would increase; imports into Germany decline. "The gap between merchandise imports and exports will steadily increase until finally that stage is reached when the total spread between the two will be equal in money value to the sum total which the German government needs annually to remit."

"A paper money regime and the great and rapid shifts in foreign exchange which it renders possible will apparently exercise pressure on the movement of goods more rapidly than would the same operations under a gold regime. It promises to play into Germany's hands in an unexpected way. . . . The whole situation obviously will tend to attract labor and capital to the German exporting industries and to repel them from the importing industries. . . . The exporting industries provide goods which go to foreign countries. No imports arrive in return."

The single phase of this complex problem to which I here direct attention is the assumption that German exports might be very greatly expanded at a time when imports were being greatly curtailed, or even eliminated. The truth is that under then existing conditions something like 15 million German people

¹ *American Economic Review*, Vol. 10, No. 1, Supplement, pp. 33-49.

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would have starved to death had food imports been cut off, and the whole German factory system would have broken down completely had imports of raw materials been wiped out. In a highly developed industrial country like the Germany of 1920 there is not one group of importing industries and another distinct and unrelated group of exporting industries. On the contrary, most of the exporting industries were also importing industries. These had to import raw materials if they were to operate at all; and at the same time much of the food supply required by factory workers had to be purchased abroad. Hence essential food and raw material imports could not be eliminated without crippling Germany's export capacity. Nor was it possible to *process* higher priced imports into lower priced exports. Thus however valid this theory may have been before the days of international economic interdependence it had little relevancy to the German situation of 1920.²

Interest Rates

The third illustration is concerned with the theory of interest rates in relation to business conditions. As an application of the general theory of value, it was long ago stated that an increase in the rate of interest, other things equal, would result in a curtailment of business loans; and vice versa. This theory came to be regarded as of great practical significance because it was believed by many to furnish the key for the stabilization of business activity. In periods of rapid business expansion, an increase in the Central Bank discount rate would, through the influence exerted upon the rates charged by member banks, check the volume of borrowing; and similarly in a period of recession the lowering of the discount rate would stimulate a resumption of borrowing operations and attending expansion of business. In fact, it came to be believed that before the first World War central banking institutions had demonstrated their capacity,

² For a fuller statement with respect to this and other phases of the issues involved, see the writer's War Debts and International Trade Theory, *American Economic Review*, December 1925, pp. 700-16.

through manipulation of the discount rate, to exert a profound influence upon business conditions.

My studies of commercial bank credit led me long ago to the conclusion that the interest rate is a matter of negligible importance in determining the volume of current lending. As a cost factor, interest is usually insignificant in comparison with wage and other costs—*especially when one takes into account the reduction in unit costs that ordinarily accompanies an expanding scale of output and a relatively full use of capacity.* Moreover, it would require only a slight rise in price to absorb a substantial rise in interest rates. So far as short-term loans are concerned, the interest cost simply does not count in the calculations of business men. At the most, rising interest rates are regarded as a warning sign that troubles may lie ahead. On the down side, falling interest rates neither check the contraction of business nor warn that better days are ahead.

This theory, moreover, finds no statistical verification in our financial and business experience. The theory had apparently appeared so obviously correct to classically-minded scholars that it was deemed unnecessary to examine the historical record.

In this connection, I recall a conversation I had in London in 1924 with Keynes, who was at that time absolutely certain that the business cycle could readily be leveled out by a proper Central Bank discount policy. I challenged the underlying validity of his assumption and pointed to the evidence afforded by the great depressions of the 'nineties and the 'seventies, in both England and the United States. I referred specifically to the article by Bonamy Price³ showing that even a discount rate as low as 1 percent at the Bank of England and $\frac{1}{2}$ of 1 percent in the market during 1874-75 brought no expansion of loans; that, on the contrary, banking houses were going out of business for want of borrowers. But to no avail. Whatever the facts, the theory had to be regarded as sound.

³ One Per Cent, *Contemporary Review*, April 1877, pp. 778-99.

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In the light of this experience, it was a bit amusing when Keynes visited this country in the early 'thirties to have him inform me of his discovery that the short-term interest rate is not an effective instrument of control. But he was now equally confident that the long-term interest rate could be counted upon.

Since fluctuations in the volume of manufacturing are of crucial importance in the business cycle problem, it would seem clear that if manipulation of the long-term interest rate is to be effective it must influence the volume of borrowing by manufacturing concerns. Under present day conditions, whatever may have been true in the past, the interest obligation is commonly a negligible factor. Many manufacturing corporations have no bonds, or even preferred stock, outstanding, and the over-all volume of such issues is rapidly declining. It is *possible* (I do not predict) that the day will come when there are no bonds or preferred stock outstanding; in that event the influence of the interest rate would of course be zero.

To indicate how deeply this interest rate theory has been embedded in economic literature and how tenaciously it has continued to be held, I must refer in passing to the investigation conducted by a group at Oxford University as late as 1937. A questionnaire was sent to thirty-seven business executives asking for estimates as to the effect of short- and long-term interest rates on business borrowings. To the astonishment of the investigators, there was almost unanimous agreement that short-term rates of interest have no direct effect, while the majority held that the long-term interest rate has no appreciable effect.⁴

Savings and Capital Formation

The final illustration with which I shall tax your patience relates to savings and capital formation. The classical writers looked upon money savings and capital formation as identical concepts; indeed, the term 'savings' was commonly used simply to connote the amount of new capital actually constructed. This conception

⁴ See *Oxford Economic Papers*, 1, October 1938, pp. 14-31.

that capital formation and money savings are identical was based on the explicit assumption that when an individual saves money he spends it for capital goods instead of for consumption goods.

Observation reveals, however, that in a complex pecuniary society the process of creating new capital usually involves three distinct stages: (1) the decision by the receivers of money income to save rather than spend such income—this I call *money saving*; (2) the purchase of securities with the money saved—this I call *market investment*; and (3) the use of the funds thus rendered available by business enterprisers who employ labor and materials in the actual construction of new capital goods—this I call *capital formation*. Each stage is influenced by particular forces or considerations, and it may fairly be said that they are *independent variables*.

In the first stage—the refraining from consumption or the decision to save money—the main factors involved are the magnitude and the distribution of the national income (which are independent of individual ‘propensities’); the desire to provide security, to enlarge future income, to build an estate, etc. The individuals who save money income, moreover, do not themselves, as a rule, demand or construct new plant and equipment.

In the second stage—the investing in securities—the primary consideration is safety. This depends upon the prospective stability of business conditions. When the situation appears favorable, virtually all money savings are promptly invested market-wise—either directly by the individual savers or indirectly through savings institutions. But in periods of instability the hoarding of cash by both individuals and savings institutions is practiced on an extensive scale. Thus, in any given period the amount of the money savings and the amount of investment may diverge sharply.

In the third stage—the employment of investment funds in constructing capital goods—the decisions are not usually made by those who save and invest in securities. In a highly developed

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capitalistic society, they are commonly made by business enterprisers who employ savings funds in their profit-making activities. In gauging the situation, they are not motivated by the same considerations that govern the decisions of individuals to save money. They are influenced by a combination of factors that may best be described as the *general business outlook and the prospect for profitable expansion*.

Since the three stages in the roundabout process of capital formation in a pecuniary society are thus independently motivated, there never was any reason for assuming that the volume of money savings, of investment, and of capital formation would ordinarily be identical. Moreover, the assumption has never been in accordance with the facts. Until recent historical times the great bulk of money savings was not invested at all, but was hoarded in the form of precious metals or jewels—a practice that has continued in such countries as China and India even to the present day. In the United States prior to World War I, the volume of money savings made by the American people was ordinarily quite inadequate for the needs of American business men bent on expanding plant and equipment—the deficiency being met in part from foreign borrowings and in part from commercial bank credit expansion. After World War I, the balance between savings and capital formation was reversed. That is, the volume of current money savings greatly exceeded the volume of new capital construction. In England and other advanced countries, current savings have long greatly exceeded the amounts demanded for domestic capital expansion. There have even been cases in which in a given year a nation had a large supply of money savings and no domestic flotations of securities for purposes of new capital formation. Nor were there foreign outlets.

The implications of the fact that money savings, market investment, and real capital formation are independent variables cannot of course be discussed here. It is enough to note that they reach to the heart of economic organization in modern society.

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In these selected illustrations I have been endeavoring to make two points. The first is that economic theory must be continuously revised in the light of structural and organizational changes in a rapidly evolving economic system. Only thus can it be *relevant* and of service to society. By revision, I mean a thorough overhauling, even scrapping of many doctrines—not mere qualifications, refinements, or extensions of deeply rooted misconceptions.

My second point is that in economic analysis something more is required than is usually connoted by the term 'inductive approach', or by the gathering and analysis of quantitative data. The types of problem to which I have referred require for their appraisal an intimate knowledge of economic *processes*—a knowledge that can be gained only through continuous close observation of the practical operations of business, and of what Veblen called the interstitial relationships within the modern enterprise system.