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1. Toward an Understanding of Interest Rates

About half a dozen years ago the National Bureau of Economic Research, with the cooperation of the Life Insurance Association of America, began to explore the possibilities of developing a major study of interest rates. It was first decided to undertake an initial project which would clear the ground and provide a number of specific studies that might become part of a larger undertaking. As that first project draws to a close, the decision to follow it with a second has been made. We should like now to direct our thoughts both to the results achieved thus far in the first and to the kind of studies that should be included in the second. We begin with a general consideration of the problem and ways by which study of it might be attempted. We also review the reasons for our choice of studies since these have relevance for future as well as past work.

It is hardly necessary to argue that an understanding of interest rates is important. Our perspective will be aided, however, if we recall two types of consideration that led to this study. In all National Bureau planning—and this was fully recognized also by the Life Insurance Association, which supported the work—the importance of understanding interest rates was stressed partly from the standpoint of public policy. Monetary policy is one of the two major instruments whereby government seeks to steer a course between unemployment and inflation by means that avoid detailed and direct economic controls. How to use this instrument, and how far it may be necessary to rely on other governmental powers, are problems that require an understanding of interest rates. Next is the continuous need for better information and analysis if the business and financial community, indeed the public generally, is to form sound judgments about prospects for future interest rate movements on the wide variety of financial assets now in use.

The many aspects of each of these reasons need not be detailed here. But both take on great force when we contemplate how little any of us really knows about interest rate behavior. During the first twenty years after Keynes wrote his *General Theory*, a long controversy raged and then began to subside regarding the theory of interest. But even with the outline of that controversy largely settled, most important real-world problems are still characterized by ignorance and wide differences of opinion. It is important to decide whether the price of wheat is in fact determined by supply and demand; but when that is done, it still remains fundamental to know what these supply and demand curves look like, and what influences them to shift or change in shape. Without such knowledge the usefulness of the theory is largely lost, and this is also true of the rate of interest.

A theory of interest widely held today and for many past decades states that interest rates for a given period of time are determined by the relation between the supply of funds entering the loan market and the demand for those funds.¹ Many economists would prefer a "liquidity preference" theory of interest, which appears on the surface to be very different. But it can be shown that if terms are properly defined it is possible to translate the liquidity preference theory into a statement which is consistent with the loanable funds statement just made.

It is important to give the loanable funds statement more meaning by describing the components of funds entering the loan market and funds being demanded there. Before Keynes' *General Theory* it was common to give an extremely simple statement of this problem. Funds were demanded for financing the acquisition of capital goods. In the parlance of these theories this demand is called "investment demand," a terminology which must be clearly distinguished from the common usage of "investment" to refer to the purchase of securities. The supply of loanable funds was presumed to be the saving of the community during the period in question. Thus any funds we receive as income we may either respnd for consumer goods or save and lend on the loan market. In American and British formulations

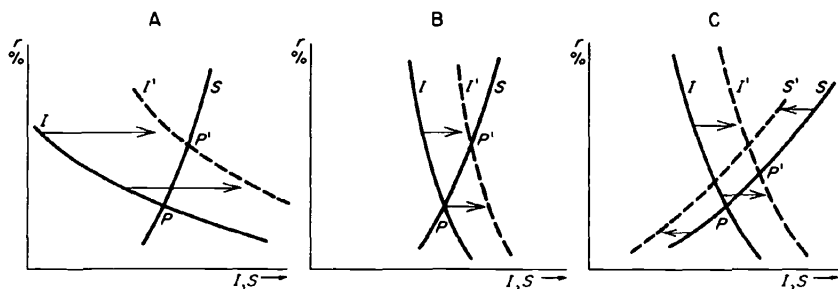
¹ No attempt has been made here to present the historical background of this theory, or to credit the numerous economists who have contributed to it. For a historical survey of interest rate theory, see Joseph W. Conard, *An Introduction to the Theory of Interest*, Berkeley and Los Angeles, 1959, Chapters I-V.

of this theory it was commonly assumed that income "received for spending" was the income earned in the previous "day" or time period. Thus saving was equal to "last period's" income minus this period's consumption spending.

The next step in the pre-Keynesian theory was to presume that in any given circumstance the amount of funds demanded for investment would be greatest when interest rates are low, since a reduced cost of borrowing funds would make it profitable to undertake capital outlays that would have been impossible if funds had to be borrowed at higher rates of interest. This makes it possible to draw a curve expressing the demand for investment, hence the demand for loanable funds, at various possible rates of interest. (See the "I" curves in Chart 1, panels A to C, where investment is measured to the right from the vertical axis.)

CHART 1

Hypothetical Demand and Supply Curves for Loanable Funds



NOTE: In each panel, the horizontal distance between the r axis and the curves labeled I and S represents the planned savings and planned investment, respectively, for the indicated rates of interest.

Similarly it was presumed that the amount of saving would, in any given set of circumstances, be determined by the rate of interest: if interest rates were high, people would save more because of the greater reward for doing so. Panels A to C also illustrate this assumption, with saving, like investment, measured to the right of the vertical axis.

As in all conventional analyses of supply and demand, the "price" would rise or fall until supply equals demand. In this case the rate of

interest (price) will seek a level which equates saving with investment. This familiar statement is thus seen to represent a simplified version of the neoclassical "loanable funds" theory of interest.

But neoclassical writers knew what Keynes emphasized, namely, that in a monetary economy at least two other elements play important parts in the supply and demand for loanable funds. If, in addition to our saving, newly created funds were lent to businessmen, this would represent an additional source of loanable funds. Furthermore it might be that one will at some point wish to lend not only his current saving, but also some money he had been holding idle from former accumulations. These considerations suggest that in a monetary economy the supply of loanable funds must consist not only of saving but of additions to the money supply and "dishoarding" from idle balances. Conversely, if the money supply were reduced, the supply of loanable funds would be smaller by that amount. If there were additions to idle balances, then the demand for loanable funds would be correspondingly increased. It will simplify this picture if we consolidate "hoarding" and "dishoarding," placing the net change in idle balances on the demand side, with an addition to demand if the net change is positive and a deduction if it is negative.

We may now summarize as follows. According to this theory the rate of interest is determined at that level which equates the supply and demand for loanable funds, where the demand may be regarded as the investment demand plus the demand for net increases in idle funds, and the supply consists of current saving plus any increase in the money supply (or minus a decrease).

It may be asserted here, without taking space for proof, that this model will properly reflect the effects on interest rates of actions that appear on the surface to be omitted, such as consumer borrowing, increases in money supply going directly to consumers, transactions in outstanding securities, and so forth. Despite that fact, however, the financial analyst will be rightly disturbed by the oversimplifications of this picture. Indeed, it would require a volume to detail these oversimplifications and to explore them. But the schema does provide a useful skeleton for comment on the scope of the National Bureau's present and planned studies of the interest rate.

Briefly, our initial work concentrates on detailed studies regarding specific aspects of interest rate relationships. Such studies seem essen-

tial both for the light they contribute directly to an understanding of interest rates and because they are necessary for an understanding of any more general schema such as that described above. In the studies we plan for the future there will be a more general attack on the specific kind of problem raised by the theoretical model I have outlined.

In order to explain more fully the rationale of this procedure, I should like to comment on some of the difficulties inherent in what might appear to be more simple and direct approaches. In the first place, it should be recognized that even if this simple model is accepted, the implications of the theory depend greatly upon the actual shapes of the curves and the forces that cause them to shift. For example, if the investment demand curve is very flat, a small decrease in interest rates might greatly encourage business activity. On the other hand, if it is very steep, the same decline in interest rates will scarcely encourage business expansion at all.

A number of previous empirical studies have attempted to find the shapes of the investment demand curve and the saving curve. Most of the earlier studies found both curves to be quite steep. But confidence in these conclusions is weakened by the fact that there are so many forces operating on saving and investment that the role of interest rates is easily obscured. Observers familiar with capital markets are skeptical about the typical finding that savings and investment curves are inelastic with respect to interest rates. A number of recent studies suggest that at least the investment demand curve may be much flatter, that is, more elastic, than the earlier work indicates. The issue is far from decided.

One difficulty in determining empirically what the shapes of the curves are arises from the fact that we can observe only the points where they intersect. Consider the panels of Chart 1. If the equilibrium point moves from P to P' when we compare average rates for January with average rates for February, it is possible that a flat investment demand curve moved greatly to the right, pushing rates up the savings curve, S , which may be steep as drawn in panel A; or that a steep investment demand curve moved slightly to the right, pushing the interest rate up the same steep S curve as in panel B; or that S was itself flatter, as in panel C, and P' was achieved by simultaneous and opposite movements of both I and S .

We would like to hope that the interest rate studies we have begun may ultimately contribute to a determination of the probable shapes of the supply and demand curves for loanable funds. But we decided not to attack that problem head on because the difficulties encountered in previous efforts seem to be inherent in the gross amount of aggregation required to derive them, and in the severe oversimplifications of the model. If empirical work can provide understanding of the curves in this simple model, it will not be through aggregative statistical studies alone but also through detailed observation of the real-world elements that a model summarizes. Our first major decision, therefore, was to attempt a highly disaggregative study.

When a study is made in this piecemeal way, it is necessary to make a decision which would be meaningless under the aggregative approach. We had to decide whether to begin by studying the apparent effects of interest rates or the apparent determinants of them. It was our judgment that study of the determinants should come first, partly because it is a much more tractable problem, and partly because we believe that an analysis of the effects of interest rates would be greatly aided by an understanding of the major elements entering into their determination.