

INTEREST RATE DETERMINATION IN A BARTER ECONOMY¹

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In this article we will try to identify the forces which are at work in some underdeveloped countries to determine what we shall call the pure rural rate of interest. We will also try to show how these forces can be manipulated in a manner which will reduce the cost of borrowing to the indigenous farmer.

By "pure rural rate of interest", we mean that rate which exists apart from charges for the administration of, risk over on,² or monopoly profits associated with,³ private agricultural loans, and we will demonstrate that this pure rate of interest in underdeveloped areas can often be defined as the reward for parting with stocks of goods. This becomes apparent if we consider that loans in many, if not most, of these areas are generally made by traders who advance a certain value of goods against an expected repayment in terms of a higher value of goods.⁴ These values can be

- ¹ The author is indebted to Professor R.H. Green of Yale University and Mr David Williams of the University of Hull for their comments on this article. The usual disclaimers apply.
- ² For a discussion of the administration and risk costs on loans in backward rural areas, see: *A Summary Report of the Conference on Farm Credit*, Berkeley: University of California, 1953, p. 69; K. S. Suryanaryana, "Reorganisation of Rural Credit in India, *Indian Journal of Agricultural Economics*, XI, April-June, 1956, p. 43; U. Tun Wai, "Interest Rates Outside the Organized Money Markets of Underdeveloped Countries", *Staff Papers of the International Monetary Fund*, VI, 1957-58, p. 123; *Report of the Committee of Direction—All India Rural Credit Survey*, Bombay: Reserve Bank of India, 1954, p. 53; J. E. Metcalfe, *The Agricultural Economy of Indonesia*, Washington: U. S. Government Printing Office, 1952, p. 30; and S. G. Panandikar, *Banking in India*, Madras: Orient Longmans Ltd., 1956, pp. 58-59, 62-63.
- ³ For a discussion of the monopolistic elements in rural money lending in underdeveloped countries, see: G. M. Meier and R. E. Baldwin, *Economic Development*, New York: John Wiley and Sons, Inc., 1957, p. 392; U. Tun Wai, *op. cit.*, p. 82 and 124; All India Rural Credit Survey, *op. cit.*, p. 102; S. G. Panandikar, *op. cit.*, p. 57.
- ⁴ See, for example: All India Rural Credit Survey, *op. cit.*, p. 27. This report gives a detailed breakdown of the proportion of borrowing in kind as opposed to the proportion of borrowing in money in various parts of India; S. G. Panandikar, *op. cit.*, pp. 47-55; G. P. Gupta, *The Reserve Bank of India and Monetary Management*, Bombay: P. S. Jayasinghe, Asia Publishing House, 1959, pp. 17-18. Edwin C. Johnson, *Farm Credit Activities in Selected Countries with Reference to Credit Programs for Underdeveloped Areas*, Mimeographed for: The Ford Foundation, The International Bank for Reconstruction and Development, The United States Foreign Operations Administration, and Harvard University, September, 1954, *passim*, K. R. Chou, "A Report on the Credit System of the Distributive Trade in Sarawak", included in T. H. Silcock, *The Fiscal Survey Report of Sarawak* (Kuching: F. W. Lane, Government Printer, 1956), *passim*; and J. A. Lindberg, *A General Economic Appraisal of Libya*, ST/TAA/K/Libya/1, Sept. 22, 1952, New York, United Nations Technical Assistance Administration, p. 24.

expressed as certain money sums, and so ultimately may the rate of interest, but this description should not disguise the fact that the whole transaction has been carried out by means of lending and repaying goods, and that the interest paid, however it may have been expressed, is the reward for parting with goods. Moreover, as we shall see, the fact that loans may sometimes be made in purely money terms will not greatly alter the situation which we have described in areas where commodity lending and repayment continue to predominate. Under these circumstances, it will still be the demand to hold certain values of goods, taken in conjunction with the value of their whole supply (or stock), which will determine the pure rural rate of interest.¹ Any examination of the determinants of the pure rural rate of interest must, therefore, consist of identifying the components of the demand for goods to hold, as well as the considerations determining their supply.

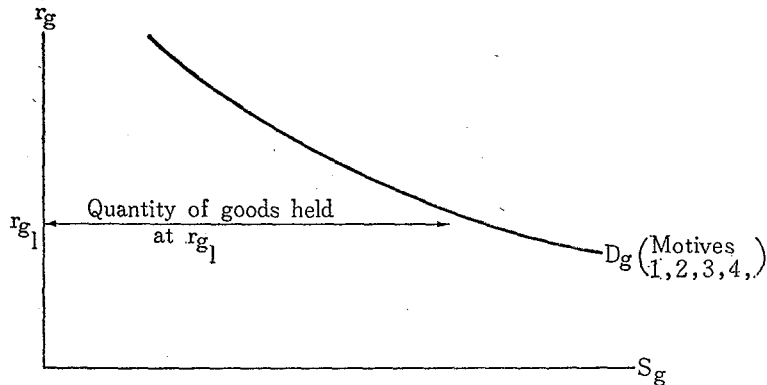
Let us, then, begin with the separate motives which lie behind the whole demand for goods to hold in underdeveloped rural areas. These motives can be divided into the following segments:

1. The demand to hold goods against expected consumption in the near future (consumption demand); such things as food in the household store, or furniture in the house itself would belong to this category.
2. Demand to hold goods for transactions purposes; *i.e.* trader's stocks.
3. Demand to hold goods for precautionary purposes; *i.e.* harvested food crops held by farmers in case of a crop failure and consequent threat of starvation at a later date, as well as silver and gold ornaments held as a store of value, etc.
4. The demand to hold goods for speculative purposes; *i.e.* stores of crops held against the prospect of a future bad harvest and consequent rising commodity values.

If, then, we take all of these motives for holding goods and compare their strength with varying *expected* rates of interest at any particular moment in time, theoretically we would be able to construct a demand curve for goods to hold which would be analogous to Keynes' liquidity preference schedule. (See the following figure)

It would seem safe to assume that this whole schedule of the demand for goods to hold will display some elasticity with reference to the rate of interest, although particular components of it may not. The consump-

¹ This blunt evaluation of the situation is complicated in reality by the offering of security on loans. It may be, for example, that the trader/moneylender will accept ornaments, etc. into his safekeeping against the eventual repayment of a loan (see for example: S. G. Panandikar, *op. cit.*, p. 58), and when this happens the interest rate will be derived from the difference between the lender's lesser desire to hold the ornaments offered as collateral, as against his greater desire to hold the goods which he is persuaded to lend.



Where:

r_g = the pure rate of interest expressed in terms of the difference between the value of goods advanced for a specific period (plus the administrative and risk costs of the transaction, together with any anticipated monopoly profit), and the expected value of the goods to be returned.

S_g = the aggregate value of the stock of goods held in the area under consideration at the time a loan is made.

D_g = the aggregate demand to hold particular values of goods at differing rates of pure interest (under the four motives which have been outlined) at a particular moment in time.

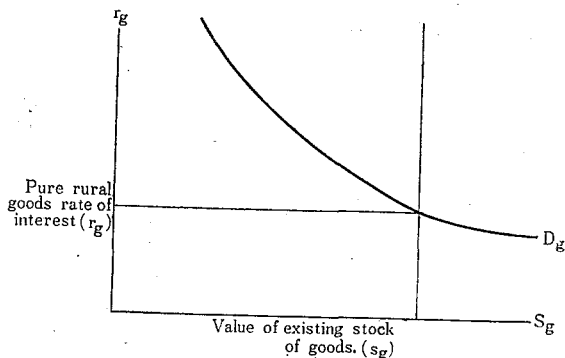
tion demand will not be likely to vary greatly, if at all, with the rate of interest, and neither will the transactions or precautionary demand, but we can probably say that the speculative demand will display some interest elasticity, and we may, therefore, draw the whole schedule with a downward slope from left to right.

Now if we take the total supply of goods in a particular rural area as given at any moment in time, we can also draw the value of this stock on our graph as a vertical straight line, and the point at which it intersects with the schedule of the demand for goods to hold at the time a loan is made will give us our pure rural rate of interest in terms of the difference between the value of the goods advanced (plus administration, risk, and monopoly charges on the loan), and the expected value of the goods which the lender hopes to have returned at the end of the period under review. (See the following figure)

We are, therefore, now at a point where we have enumerated the components of the demand forces working to determine the pure rural rate of interest in terms of goods values, and it remains for us to identify the factors which will contribute to the value of the whole supply.

The value of the supply of goods in a depicted area at the end of a particular period (*i.e.*, the moment in time in the diagram) will be dependent upon a number of considerations. They are:

1. The value of the stocks held over from a previous period, includ-



- ing durable items in process of consumption.
2. The value of net production (*i.e.* production minus consumption) during the period under review.
 3. The value of the net imports (exports minus imports) into the area during the period under review.
 4. Changes in the values, probably expressed in money terms, of the goods making up the whole supply. (For the purposes of this article, however, we will assume that these values do not change during the period in question, and we will not consider this item further.)

The value of these components will, therefore, determine the total value of the stock of goods available to the community in question at any one particular time (*i.e.*, the end of the period under discussion), and, together with the motives influencing the demand for goods to hold, they will establish the pure rural rate of interest within that community. Moreover, this situation is not greatly altered if we include a flow of money in the analysis. In this event, we may say that the pure money rate of interest will be determined by the overall demand to hold assets in cash taken in conjunction with the overall money supply in a particular rural area. However, where the greater part of the lending and repayment transactions are still carried out in terms of goods, the considerations determining the goods interest rate will theoretically dominate the money rate, and this becomes evident if we consider the forces at work in the following way.

Suppose, for example, that the return on money loans falls below the return on goods loans. In this event, it would seem likely that there would be a tendency for lenders to transfer their loanable assets out of money into goods, and this tendency would manifest itself in terms of a movement of cash out of the rural economy to pay for an inflow of goods. This, in turn, would result in rising money rates and falling goods rates, and, in theory at least, the process should go on until the two rates are equal with, perhaps, some allowance for the difference of convenience

involved in making loans in money as opposed to goods. It seems reasonable, therefore, to concentrate on the determinants of the goods rate wherever lending and repayment transactions are predominantly carried out with real assets, as may well be the case in most underdeveloped rural areas.

Neither will the provision of services within an area greatly alter this situation since services are generally consumed as they are produced; except, of course, where the service increases the value of some particular commodity, as would be the case, say, with repairs. Changes in the value of services provided within a particular area may, however, have their effect on the demand to hold goods, but this effect will be indirect and we will not consider it here.

The question of what determines interest rates in areas where loans and repayments are principally made in goods devolves, then, upon the factors which we have previously outlined, and lower pure rates of interest to indigenous borrowers in rural areas will be largely dependent upon decreases in the demand to hold goods under the motives which we have mentioned and/or increases in the whole supply of goods. Let us, then, examine each of these factors in their turn, and see what, if anything, a government or a central bank might do to bring rural rates of interest down.

If our analysis is correct, interest rates should fall if the demand to hold a certain value of goods can be reduced, or if the value of the supply of goods can be increased. We may, therefore, first mention the demand to hold goods for expected or present consumption. However, this demand probably cannot be substantially reduced, and we need not consider it further. Neither can we hope to reduce traders' demand to hold goods for transactions purposes (inventories) by any sizeable amount. It might be possible, however, to reduce the precautionary and speculative demand to hold goods by virtue of a single line of action, but this would involve a movement away from the barter economy. Take, for example, the situation which obtains in an area which is subject to violent fluctuations in the harvest so that a farmer cannot be sure that his crop will yield enough to feed himself and his family, or to provide seed for the following year.¹ Under these conditions in a primitive economy, the farmer will always keep a proportion of a satisfactory harvest on hand against eventualities. He may also build up his reserves by holding gold and silver ornaments, and such actions arise from the precautionary motive for holding goods. Then too, local speculators may hold harvested crops against future crop failures which will allow them to advance their stored goods for seed or consumption at unusually high rates of return—this would be the speculative motive for holding goods. Both of these motives for holding goods would be assuaged if the channels of trade with the

¹ See, for example: "Establishment of a Grain Storage Organization", Development Council of Libya, Tripoli, Nov. 1, 1956, *passim*. (Mimeographed.)

outside world could be improved so that commodities would more easily flow into an area stricken by harvest failure. This would reduce the incentive to hold foodstuffs for precautionary and speculative purposes and thus allow the goods rate of interest to fall. Of course, any such solution as this requires either an improvement in the system of granting money credit by the outside world for the purchase of the extra foodstuffs in times of harvest failure, and/or a guarantee of the systematic distribution of, say, United States surplus stocks of food whenever this kind of need arises. The credit requirements here are complex, however, and an examination of these needs would take us, for example, into the intricate considerations involved in a central bank's ability to extend timely credit through various intermediaries to the village trader/moneylender.¹ However, it cannot be denied that an improvement in the distribution of (American) agricultural surpluses and in the credit facilities extended to traders or lending agents would enormously reduce the desire in many underdeveloped countries to hold crops on hand against future harvest failures; which holding, incidentally, further contributes to a rise in the goods rate interest by reducing the ultimate stock of goods available as part of the harvest deteriorates in stores.²

Let us now turn to the goods supply side of rural interest rate determination—the factors governing the value of the stock of goods in a particular rural area at the end of a particular period. There is first the value of the stock of goods left over from the previous period, and this is probably not subject to much control by a government or a central bank. Increases in the net production value too (*i.e.* the value of the goods produced during the period minus the value of the goods consumed) are not likely to be amenable to manipulation by the authorities, although it is interesting to note that under the theory thus far developed increased production not matched by increased consumption will allow interest rates to fall in accordance with the elasticity of the demand for goods to hold. Net imports might, however, be rapidly increased, but again this will depend very largely upon increases in credit extended by the outside world for the importation of additional quantities of goods into the rural area, and/or increases in aid.

The consideration of aid (*i.e.*, in the form of U.S. surplus agricultural

¹ Relations of the most tenuous kind exist between the organized (urban) and the unorganized (rural) money markets in most underdeveloped countries—see for example: U. Tun Wai, *op. cit.*, pp. 95 and 129; All India Rural Credit Survey, *op. cit.*, p. 180; S. N. Sen, *Central Banking in Underdeveloped Money Markets*, Calcutta: Bookland Private Ltd., 1952, pp. et. seq.; Seiw Nim Chee, "Central Banking in Malaya," included in *Central Banking in South-East Asia* (Gethyn Davies, ed., Hong Kong: Hong Kong University, Press, 1960, p. 125; S. G. Panandikar, *op. cit.*, pp. 50 and 58; and U. Tun Wai, *Burma's Currency and Credit*, Bombay: Orient Longmans Ltd., 1953, pp. 64–65.

² In Libya, losses of up to 25 per cent a year in the quantity of barley stored by the farmers themselves are not uncommon (see: Minutes of the Third Meeting, Nov. 27, 1956, Development Council of Libya, Tripoli, p. 2 [in the files of the Council]).

commodities¹) enters in, then, on both the demand and supply sides of the factors determining interest rates. Quite often a country can exercise some control over the nature and quantity of the aid which it receives simply by learning the techniques of making successful application to national and international agencies. These techniques are, however, sometimes difficult for civil servants to master, and it has been said that when a country reaches the stage at which it can correctly comply with foreign agencies' aid granting regulations, it will no longer be backward and in need of help. There is, no doubt, some germ of truth in this remark, and it would probably be correct to say that any civil service which can learn the techniques of increasing its country's receipts of foreign aid to agriculture will also be successful in bringing its pure rural rate of interest down. Furthermore, as has been pointed out, the ease with which credit can be extended to the rural areas likewise enters in on both the demand and supply sides for goods to hold, and this again is subject to some manipulation by the government or the central bank of an underdeveloped country.

We are, then, brought to the conclusion that both the demand for goods to hold (for the precautionary and speculative motives), and the supply of goods within a rural area, will be very much subject to the credit and aid relations of that area with the outside world, and that pure rural rates of interest can only be expected to decline in the near future if more overall credit and/or aid, together with more timely advances (*i.e.*, for harvest failure), can be extended to the area in question. But this is scarcely surprising, and this analysis has not been presented with a view to formulating novel policy recommendations. The willingness and ability of village traders-cum-moneylenders to discount bills with their urban wholesalers, together with the willingness and ability of these wholesalers to rediscount these same bills with a bank, which, in turn, might again present the bill to the central bank as security on a further loan, is the sort of chain² which is essential in reducing the demand for, and increasing the supply of, goods to hold in such a way as to allow the pure (goods) rate of interest to fall. Moreover, even if all institutional obstructions to the flow of credit from a central bank to the village moneylender could be eliminated, there would still remain the problems which high administration and risk charges, together with expectations of monopoly profits on rural loans would raise, and the magnitude of these charges may render insignificant any possible fall in the pure goods rate of interest. The pure rate is only one of the components of the rural rate of interest which needs to be reduced, and a more efficient means

¹ In at least one recipient country these surpluses are already distributed in the form of loans (see: "Annual Report for the year ending 31st March 1954", Tripoli, L. P. D. S. A., p. 4. (Mimeographed.)

² For reference to published discussions of the difficulties involved in establishing such a chain, see footnote 1. p. 76 to this article.

of lending which would minimize administration and risk costs, together with a higher degree of competition among rural credit agents which would eliminate monopoly profits without raising other costs, are equally desirable. But these are subjects which can be dealt with separately.