False Issues in the Debate on Interest Rate Policies in Less Developed Countries*

In the context of less developed countries (LDCs) interest rate policies rank as one of the most controversial policy instruments. After the flush of enthusiasm for low level of interest rates at the initial stages of the debate on problems of economic development, attention was shifted to high interest rate policies. Several attempts were made to articulate an appropriate rationale for these policies. The most favored justification for a high interest rate policy is derived from the scarcity of capital prevailing in LDCs. The rental price of capital, which is equated with the interest rate, should reflect that scarcity of capital. The empirical evidence in countries such as Taiwan, Korea, etc., where high interest rate policies are supposed to be instrumental in lifting these economies from a low growth-high inflation position to a high growth-relative price stability path is interpreted to support this particular analytical underpinning of interest rate policies. While a clear implication of this rationale is that interest rates in LDCs should be high, the meaning of "how high is high enough" is often left ambiguous [Patel (1966)]. One, and a more common way of judging the desired height of interest rates in LDCs is to compare their level with the corresponding level in the developed countries and to suggest that the interest rates in LDCs should be pitched higher than in the latter, endowed as these countries are with abundant supplies of capital [Myrdal (1967), Bruton (1973)]. Somewhat different is the argument that nominal interest rates in LDCs should be adjusted upward in order to make them positive in real terms because the marginal product of capital has to remain

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positive in a growing economy [Chandavarkar (1971), Khatkhate (1972), McKinnon (1973), Shaw (1973), Galbis (1977)]. It is important to note that in such a construct of the interest rate rationale, no explicit reference is made to the height of interest rates in relation to that in the developed countries. Though these two types of rationale are often treated as synonymous [Chandavarkar (1971), Emery (1971), McKinnon (1973), Brown (1973)], they embody two distinct analytical concepts with different policy implications. The capital scarcity basis of policy implies a high real interest rate, the level being compared with that in the developed countries, possessing higher per capita capital stocks. On the other hand, in the alternative theoretical formulation, the accent is predominantly on the "positive" part of the real interest rates and not on their "level", except in a limiting case where the value of marginal product of capital in LDCs is higher than in the developed countries.

It is argued in this paper that many of the issues that have figured in interest rate policy discussions in the context of LDCs are false, arising partly from terminological nuances, but largely from incorrect premises and approaches. As a result, there has been a fair amount of needless obfuscation in the design and pursuit of interest rate policies, and misdirection of effort in empirical research. An attempt is therefore made to unravel the various issues involved in the logical basis of the interest rate policies pursued in LDCs, and after winnowing the false ones, to synthesize them in a consistent and cohesive fashion so that the real import of such policies emerges more clearly. For analytical convenience, the following discussion will be in a framework of a closed economy.

I. Capital Scarcity as the Basis of Interest Rate Policies

In order to facilitate the analysis, the capital scarcity issue will be decomposed into four elements, which, though interrelated, are treated separately. These are:

1) whether the real interest rates reflective of capital scarcity have historically moved downward with the growth of capital stock, judging them by the experience of now developed countries:

2) the degree of responsiveness of saving to interest rates, saving being the source of increases in the capital stock;

3) whether capital scarcity is viewed as reflecting the rate of return on capital or the rate of interest; and

4) whether in capital-scarce LDCs, factor proportions respond to a change in factor prices such that less capital is necessarily used per unit of labor when interest rates are higher than otherwise.

In view of the spate of theoretical and empirical work, not much elaboration seems necessary on 1) and 2). It is observed that historically the real interest rates have remained stable in advanced countries, despite rapid capital accumulation, implying thereby that positing a simple link between the level of interest rates and the level of capital stock is unwarranted [J.A. Schumpeter (1912), Hicks (1967)]. As for the interest elasticity of savings, though it has received considerable attention from economists, no conclusive evidence is adduced, but what seems to have emerged unambiguously from the empirical research is that the interest rate has a predictable and much more definitive impact on the form in which savings are held [Houthakker (1965), J.G. Williamson (1968), Chandavarkar (1971), Mikesell and Zinser (1972), Brown (1973), Leff and Sato (1975)].

Turning to the third element, it is necessary first of all to draw a distinction between the rate of return to capital and the rate of interest [Hicks (1965)]. Now the question is whether the rate of profit or the rate of return to capital is necessarily higher in LDCs than in developed countries. Following Leff (1975), the concept of the rate of return to capital will be used in this paper in preference to the marginal productivity of capital because a rapid rate of embodied technical progress tends to increase capital losses from obsolescence of capital stock in use, which are sizeable in LDCs as a result of the adoption of newer capital goods [Solow (1963)]. By rate of return on capital is meant the rate of return on reproducible capital in an economy as a whole and not on capital in any individual project or sector. However, it should be recognized that the economywide rate of return on capital may not mirror the rates of return on individual projects. It is conceivable that these rates of return on capital may be higher in certain projects while being lower economywide, because such a rate "clearly depends on the elasticity — as well as the height — of the marginal efficiency of investment schedule... although the marginal efficiency of investment schedule may be higher in a less developed than in a more developed economy — permitting some investment projects with

very high return — the elasticity is much lower. Consequently (depending upon the point of intersection with the saving schedule), the rate of return may be lower in the less developed country" [Leff (1975), pp. 824-830]. It is even more so when the marginal efficiency of capital itself is lower in LDCs than in the developed countries [Arndt (1954)].

Purely on *a priori* grounds, a lower rate of economywide return to capital in LDCs can be reconcilable with the prevalence of capital scarcity. Admittedly the smallness of the capital stock and the abundance of labor should tend to raise marginal productivity of capital and consequently the rate of return, but the productivity of capital is also importantly determined both by the skilled labor force, in short supply in LDCs, and the embodied technology which is relatively less advanced than in developed countries [Nelson (1968)].[1] The latter, in particular, being a function of the level of investment, remains a serious constraint on the productivity of capital so long as the investment ratio remains stagnant, as in many LDCs. There is, therefore, little support for the belief that rates of return to capital in LDCs should almost always be higher than in developed countries.

Whatever empirical evidence there is also does not bear out that the return to capital in LDCs is higher on an average than in developed countries. The empirical work is at two levels — one based on econometric studies and the other on the straightforward estimation of the rates of return to capital in both LDCs and developed countries. The econometric results, however, are suspect, both because of misspecification and the statistical bias in the choice of variables. One type of econometric evidence, though somewhat indirect, is derived from the marginal output/capital ratios in a number of developed and less developed countries, and the other is based on production function studies. A higher marginal aggregate output/capital ratio in LDCs than in developed countries is taken to suggest a higher marginal productivity of capital in the former. However, it can be shown that this is more a reflection of higher labor/capital and land/capital ratios. Since capital is the main bottleneck in these countries, increment in labor and land per unit of capital contribute more to output than

[1] The labor input in neoclassical theory is homogeneous and therefore it is inappropriate to treat, in practice, one man-hour in a less developed country as the same quantity of labor in a developed country.

capital.[2] The second kind of econometric study cited to support the higher marginal productivity of capital in LDCs is from production functions for a sample of developed and less developed countries [Chenery (1974), Hagen and Hawryshyn (1969)].The conclusions based on this study are, however, misleading for reasons such as misspecification of the variable representing capital, and upward bias of the coefficient on the capital term for LDCs in comparison with the corresponding coefficient for the developed countries [Leff (1975)]. It is difficult, therefore, to take these studies as substantiating unambiguously the hypothesis that rates of return to capital are higher in LDCs than in the developed countries.

The straightforward estimates of the rates of return to capital made by various researchers for selected LDCs and developed countries (Table 1) point to a considerable divergence in rates between the LDCs themselves as well as between LDCs and developed countries, though the rates given are an admixture of economywide and manufacturing sector rates. More importantly, in developed countries such as the United States, Germany, Japan, and Canada the rates of return to capital in the manufacturing sector are often higher than those prevailing in many of the LDCs like Colombia, Brazil, and Argentina. Though the economywide rates of return are not available for these LDCs, except Colombia, they would, in all probability, be even lower than the rates of return to capital in the manufacturing sector as the higher rate manufacturing sector has a lower weight in their economies.

Now a case could be logically built for an interest rate policy linked to capital scarcity (by which is meant the argument that real interest rates in LDCs should be higher than in the developed economies) *only if* the rate of profit or return to capital in LDCs could be shown to be always higher than in developed countries. This is, however, not the case in LDCs, as seen above. As interest rates have to bear some relationship with rates of return to capital, the level of interest rates sought by policy should be perceived in

[2] This will be clear from the totally differentiated aggregate production function $Y = F(K, L, T)$ where Y, K, L and T represent output, capital, labour and land, respectively.

$$\frac{dY}{dK} = \frac{\partial Y}{\partial K} + \frac{\partial Y}{\partial L}\frac{dL}{dK} + \frac{\partial Y}{\partial T}\frac{dT}{dK}$$

Note that dY/dK can be higher even when $\partial Y/\partial K$, which is the marginal productivity of capital, is lower so long as the other two terms on the right-hand side remain higher in LDCs [Leff (1975)].

relation to what is warranted by rates of return to capital in a given country and not in relation to those in developed countries. If the rate of return to capital is lower in LDCs, the appropriate interest rate level must also be lower for these countries, irrespective of whether they are capital-rich or capital-poor.

TABLE 1.

AVERAGE RATES OF RETURN CAPITAL IN CERTAIN DEVELOPED AND LESS DEVELOPED COUNTRIES

Economywide rate of return to capital			
Country	Years	As per cent of capital	Rate of return to capital in the manufacturing sector
Argentina	1961-1967		16-20
Brazil	1960-1967		14.00
Canada	1948-1952		19.40[1]
	1953-1957		14.30
Chile	1940-1965	15.0[2]	
Colombia	1960-1967	8-10.5[3]	11.5-13[3]
		10.2[4]	(excluding housing)
		18.2[4]	
Egypt			
Germany	1954-1958		15.98
India	1948-1952		20.69
	1953-1955		
	and 1957		19.13
		11.0[4]	
Ivory Coast			
Japan	1953-1957		17.92
Kenya		11.0[4]	
Mexico	1940-1965	20.0[2]	
Philippines		19.9[4]	
Turkey		14.0[4]	
United Kingdom	1949-1953		16.75
	1954-1958		15.79
United States	1949-1953		19.75

[1] B.S. Minhas (1963), Solow (1963).
[2] A.H. Petri (1973).
[3] A.C. Harberger (1972).
[4] IBRD (1975).

The fourth issue relates to factor prices and factor proportions. When the scarcest factor in LDCs is capital, it is argued that its price should be pitched at a level high enough to ensure that less of that factor and more of the abundant factor is used in production.

The factor proportions problem, however, cannot be simply resolved by influencing the factor prices, in a desired direction. A host of other, complex and often intractable issues have to be disentangled before coming to any definitive conclusions about the magnitude and direction of the effect changes in factor prices would have on factor combinations. Issues that need to be clarified are:

— whether it is appropriate to look at interest rates as a determinant of factor proportions;

— whether to deduce from the prevalence of capital scarcity in LDCs that capital-intensive techniques should always be shunned in their development programs;

— whether LDCs can obtain suitable technology in conformity with their factor endowments, assuming that there is a choice available to them between more or less capital-intensive techniques in producing a given output;

— whether, assuming the appropriate technology is available, changes in techniques can be brought about by changing factor prices.

In this context, aspects such as how producers respond to changes in factor prices, and the nature and effectiveness of intervention in the factor market are particularly important.

The first issue, whether the producers consider interest rates to be reflective of the price of capital, which, in turn, determines factor proportions, is a very crucial one from the point of view of implementing interest rate policy. The rate of interest and the price of capital are two interrelated concepts and often tend to overlap with one another, but they are analytically distinct. The price of capital denotes the cost of capital goods, while an interest rate is the cost of borrowed funds and is comparable to the rental price of capital. Though the interest rate affects the demand for capital (the present value of the yield from capital is inversely related to the rate of interest), the supply price of capital depends on the cost of producing it. While the two (present value and production cost) must be the same in full neoclassical equilibrium, this will rarely if ever be the case in the fragmented capital markets of the LDCs. For this reason the actual purchase price of capital goods, the relevant magnitude for deciding factor proportions, is more closely related to supply costs than to the rate of interest. Aside from this, "...intervention with the price of capital is an ambiguous concept covering profit taxation, depreciation and investment allowance

(relating to the return on invested capital), the rate of interest (relating to the price of borrowed capital), and the indirect taxation on machines (relating to the price of physical capital). Translating our rules of thumb into alternative formulations using these variables is itself a complex business" [Ahluwalia (1973), p. 408].

Taking the second issue, there is a strong view, well substantiated by economic logic, as well as by the reality of the development process, that the use of the most capital-intensive techniques is perhaps inevitable and desirable on several grounds, regardless of whether capital is abundant or scarce. Superiority of capital-intensive techniques stems from the scale effects as well as the narrowness of the choices facing the producers. More labor-intensive techniques with a higher labor/capital ratio entail higher capital per unit of output than more capital-intensive methods of production and this is because of the existence of economies of scale. A corollary of this is that where large-scale production is warranted, profitable techniques would be those which are more capital intensive; labor-intensive techniques would be appropriate only when output is for a limited market [Boon (1964), Strassman (1968), Stewart and Streeten (1971)]. Another reason is simply that the alternative available labor-intensive techniques involve greater use of both capital and labor than the more capital-intensive techniques [Sen (1960, Dhar and Lydall (1961)]. The use of capital-intensive techniques is further supported on the ground that low wages do not imply low labor cost per unit of output in view of low labor productivity in LDCs. Under these conditions, employment of capital-intensive techniques augments labor productivity "... first because machinery is peculiarly capable of enforcing a production pace for management and labor, second, because workers learn through the experience of working with machinery acquiring industrial skills on the job... and third, because technology is embodied in the machinery so that a source of continuing productivity increase is available through the replacement of the machinery" [Beckerman (1978)]. In such a production milieu, any policy that aims at reducing the cost of the capital would succeed in giving a stimulus to innovations to raise the productivity of capital rather than labor.

A choice of technology for LDCs is often a Hobson's choice if these countries are wide open to the influence of international trade, either because they have been pursuing an export-oriented strategy of industrialization or because trade forms a large

proportion of their GDP. Trading with the developed countries involves production of sophisticated products which are necessarily capital intensive, and this holds true even in markets of the developing countries where products of LDCs have to compete with those of the technologically highly advanced countries [Baranson (1972), Stewart (1974)]. It follows, therefore, that the larger the sector in the LDCs' economies catering to the demands of foreign markets, the narrower is the choice of technology available to the LDCs, no matter how they are endowed with relative factor availabilities.

Considering situations where a choice of techniques is possible in a purely formal sense, the question is whether a meaningful choice can be made through policy maneuvers such that a technology conforming to the factor endowment in LDCs is employed. Most of the technology is researched and developed in advanced countries and consequently both in conception and design it embodies the factor proportions prevailing there (OECD 1974). It is possible to hark back to the older blueprints of capital goods produced in the advanced countries which are discarded but which are relatively more labor intensive, but in reality chances of benefitting from them are meagre both because the "know-how" is not at the disposal of the users and because actual production of these goods has to be undertaken in the LDCs themselves. But then the problem does not remain confined only to choosing an appropriate technology but goes beyond to the problem of choosing an investment pattern in the development strategy. However, the adjustment in the investment pattern is not a consequence of a particular policy decision; it crucially depends on the availability of skilled labor and management, the very critical factors which are even scarcer than capital in LDCs [Little and Mirrless (1968), Morawetz (1974), Bhatt (1977)].

Furthermore, since the technological options are already embedded in capital goods at the design stage, the entrepreneurs in LDCs have perforce to pick one from those offered to them by the engineers, even though the one chosen does not reflect factor scarcity [Mason (1973), Morawetz (1974)]. Indeed, unless a full range of technological competence is developed, which means upgrading the entire level of economic structure through an accelerated investment program and research on labor skill formation, LDCs would have only limited technological options [Kornai (1972), Streeten (1973)].

The choosing of techniques also tends to become difficult for LDCs as the range in which labor could be substituted for capital is very limited. In an early investigation of the problem, Eckaus has demonstrated that the almost fixed coefficient of modern technology makes the factor combinations impervious to change in relative factor prices [Eckaus (1955)]. Since then there has been a great deal of empirical evidence which is inconclusive insofar as factor substitution possibilities are concerned; it also highlights conceptual and statistical inadequacies of empirical investigations [Bhatt (1956), Acharya (1974), Morawetz (1974)]. Even the studies based on CES production functions provide insufficient guidance as regards the response of factor proportions to changes in factor prices. [Acharya (1974), Ahluwalia (1974)].

Thus, while intervention in factor markets is unnecessary in the absence of evidence on any noticeable degree of factor substitutability, it is less than an optimal policy even assuming that factor proportions can be manipulated. To the extent that output mix determines the economywide choice of factor proportions, intervention should be in the commodity and not the factor markets [Acharya (1974)], and should be of a nature far different from what is indicated by a single fiscal or monetary instrument or combination thereof. If the pattern of output is to be altered to induce more labor-intensive output, the attack must be on the inequality in income distribution in LDCs. At the lower end of the income distribution scale, labor-intensive output is consumed more than at the higher end, and for that reason income distribution has to be altered radically for which fiscal-monetary intervention by itself is inadequate [Ahluwalia (1974)]. A more fundamental objection against factor market intervention may be raised in a general equilibrium context. Policy directed toward correcting distortions in factor prices, if operated in fragmented markets, may yield perverse effects [McKinnon (1973)]. Different isolated submarkets in factors have different factor prices and intervention in one may well ignore its spillover effects on factor prices in other submarkets. The optimum policy in such situations is not intervention in factor markets but the unification of all markets [Harris and Todario (1970)].

Analysis thus far seems to point to the fact that the prevalence of relative capital scarcity by itself may be a necessary but not a sufficient condition for choosing labor-intensive techniques in LDCs. There may as well be other considerations, equally important as capital scarcity, which exercise a decisive influence on the decision in regard to factor proportions. Therefore, intervention in the market for factors through changes in factor prices may not be an appropriate policy.

II. Toward an Alternative Theoretical Underpinning of Interest Rate Policies in LDCs.

A fruitful alternative approach to the problem of interest rate determination is to perceive it as essentially a monetary phenomenon; it can be treated as the price of credit — loanable funds — or any other financial asset. However, in an interdependent world, where everything is dependent on everything else, real and monetary factors have to be enmeshed into a single integrated theory. Savers' primary act is to forego consumption — a flow concept; but at the second remove, they readjust their portfolios in a manner which enables them to spread their savings into different forms in order to maximize gains — stock concept. Once this link between real and monetary, or flow and stock concepts is identified, it is then relatively easy to know the basis of interest rate policy in LDCs.

A beginning in this direction may be made by acknowledging the real import of recent refinements in the Keynesian liquidity preference theory. The essence of this theory lies in the separation of the demand for money arising from income — a transactions demand — and that arising from speculative motives, with the latter only being made dependent on the rate of interest. This dichotomy, however, being both mechanical and superfluous, has been discarded [Tobin (1947), J. Robinson (1952), R.F. Kahn (1954), Hahn (1955), M. Friedman (1956)], though "the elaboration of liquidity preference theory into a general theory of the relative prices of (rates of return on) assets of different types" [H.G. Johnson (1962)]. Such an extension of the liquidity preference theory has placed it at once on a higher pedestal both because it could be of more universal application and because it could explain more relevant situations where real and monetary factors operate simultaneously. If money is considered an asset comparable to other financial assets, there is no reason to stop at only the financial assets of one sort or another — cash at one end and long-term bonds at the other. Investment and consumption goods, among others, are also assets available to be held by the public with given income and wealth. The interest rate can then be viewed

in its role as the rate of return or yield consequent on holding different types of assets.

Individuals with a given income and wealth at their command hold it in such assets as consumption goods, production goods (real assets), cash, bank deposits, bonds, etc. Taking the first, the individual may consume goods now rather than later and derive a certain degree of subjective satisfaction which may be denoted as a return on consumption. If production goods are held, which is the same thing as investment, a certain value added will accrue which can be called a rate of return on production. Cash holding, though not yielding any quantifiable gain, has an implicit rate of return since its possession bestows certain subjective benefits on the holder. Bank deposits other than current accounts and bonds give their holders access to a stream of goods and services larger in magnitude than they forego by holding those assets, which constitutes the explicit part of their rate of return. The assets enumerated above are only the more important ones, but there are others, such as inventories of both consumption and investment goods, owned not for use in immediate consumption or investment but for reaping the gain from a rise in their prices.

Assets will tend to be held in combinations such that the marginal rates of return (both implicit and explicit) on all assets are equal. It is thus obvious that all relevant factors are taken into account in connection with the determination of interest rates, though the relative weights assigned to each varies from asset to asset. At one end of the spectrum is consumption, the yield (utility) from which must be met at the margin by all forms of postponing consumption, i.e., saving. The point at which this equality occurs is determined by time preference. One way of postponing consumption is adding to cash holding the rate of return on which is the reduced cost of transacting plus any increase in its purchasing power, i.e., fall in commodity prices. These factors influence the demand for money, or what Keynes called "liquidity preference".

In addition, saving is achieved by acquiring financial assets such as bonds and bank deposits. Ultimately an economy as a whole saves by adding to the stock of productive capital, the rate of return on which is the marginal product of capital or more generally the rate of profit, which, therefore, is the foundation for all the rates of return. Given these assets, and given the rates of return on each, the asset holder will maximize the yield from his wealth when the marginal rates of substitution between different

assets are equal. If the marginal rate of return on any one asset is lower than the corresponding rates on other assets, he will gain by shifting out of that asset into higher-yielding ones. If, for example, the rate of return on inventories of goods increases, say as a result of an increase in the rate at which the prices of these goods are rising, the resources of the asset-holding public will be diverted toward them from other assets, until at the margin the rates of return (implicit as well as explicit) are again equal.[3]

Posing the problem of interest rate determination in terms of the choice of assets and their corresponding yields helps to capture the institutional reality in LDCs much more authentically than any other approach. Investment, saving, and finance are three crucial variables in these countries and the behavior of the rates of return on these three, interlinked as they are, acquire particular significance. However, the maximization doctrine is not allowed full play in LDCs, as in a neoclassical world, because of market imperfections and the consequent wide dispersion of the rates of return [McKinnon (1974)].

If equalization of the rates of return on assets (of course, allowing for differences arising from risk and liquidity characteristics), is an equilibrium condition, the next question is which of the various rates of return should be taken as a "lead" rate for others to follow. Clearly, the crucial rate from this point of view is the rate of return on investment (i.e., capital), as all other financial assets are claims on or ultimately motivated by the desire to finance such capital. However, though the rate of return on capital is an understandable concept in theory, in operational terms it is difficult to identify it in LDCs. Because of the fragmented capital markets the rates of return on capital are many and disparate, but the critical one from amongst them is one given by the rate of return on capital in the technologically advanced sector [Galbis (1977)], around which other rates of return should revolve.

However, the difficulty with the policy prescription that emerges from the theoretical frame that stresses equalization of the rates of return is that the increased stock of real money balances that would be held as a result might compete with real capital.

[3] Equality of rates of return is a simplification for analytical purposes. In equilibrium rates of return on assets will be so related to each other that the differences between them would be reflective of only differing risk and liquidity characteristics.

This is an area in monetary theory of much disputation and conclusions drawn are more tentative. In the neoclassical monetary growth models, money holdings are treated as assets which compete with capital accumulation in the portfolios of individuals.[4] However, this neoclassical world is a far cry from the world of developing countries. The substitution effect between real money balances and real capital accumulation is a logical result of a certain set of assumptions in neoclassical monetary theory, such as that real money balances consist only of "outside" money, that the saving rate is constant, and that money is not a producer good. None of these assumptions is necessarily valid. Money consists of both "outside" and "inside" money, but even more important than this is money's role as a producer goods, particularly when LDCs are passing through a process of monetization [Thirlwall (1974)]. An increase in the holdings of real money balances releases real resources for increasing investment and output, out of which new saving takes place. The role of money balances as a producer good falsifies the assumption of a constant savings rate, which is also inconsistent with existing intertemporal utility maximizing models, implying no substitutability between money and capital even of the "outside" type.

McKinnon (1973) has proposed a model more appropriate for LDCs which contemplates a complementary relationship between real money balances and capital formation. Though general and a lot more applicable to LDCs, it suffers from the highly stylized set of assumptions of its own, such as reliance of the producing units on self-financing without any recourse to borrowing, indivisibilities of investment and the abstinence of government from any saving-investment activity. However, none of the assumptions restricting the application of McKinnon's mode of analysis to LDCs is really essential for retaining complementarity between real money balances and capital accumulation, provided it is recognized that money is a vehicle through which real resources are made available for investment by those who are well equipped to do so. When the public holds more money it gives up its command over capital and labor which can be put to use somewhere else in the economy, thereby ensuring simultaneous growth of both. This is made possible because those who increase their holdings of money balances are not necessarily those who undertake new investment [Khatkhate (1972), (1973)]. Furthermore, since in LDCs monetary assets form a larger proportion of community savings, the resources so released are transmitted to investment primarily via the financial intermediaries. In the latter case the higher the accumulation of liabilities by the intermediaries the greater is the amount of investment. Thus it seems quite evident that in LDCs money balances and capital formation continue to be complementary to each other, which, in turn, suggests that adjusting the rate of return on money balances upward would not impinge on the real investment so long as it is lower than the rate of return to the most productive addition to capital.

[4] The following investment function is derived:

$I = dk/dt = sY + (s-1)(\mathring{M} - \mathring{P})M/P$ and $(s-1)(\mathring{M} - \mathring{P}) < O$

where I = aggregate investment
k = the stock of physical capital
t = the index of time
s = proportion of income saved
M/P = real money balances
$\mathring{M}$ = percentage change in money stock
$\mathring{P}$ = percentage change in price level.

The negative coefficient of M/P means that investment tends to decline with the rise in demand for real balances [McKinnon (1973)].

III. Some Broad Conclusions

An alternative formulation of the basis of interest rate policies in LDCs, as presented above, embodies a synthetic view of other theories underlying these policies, but in a way that it cuts loose from the umbilical chord of capital scarcity which has dominated the scene for so long. A policy conclusion that the rate of return on financial assets needs to be adjusted upward is not novel; but the comparator which has hitherto been the level of interest rates in developed countries is now the rate of return on capital in LDCs which may or may not be higher than in the advanced countries. In which case, the desired level of interest rates on money balances may or may not be higher than in the developed countries.

A further ramification of the analysis pertains to the effects of higher real interest rates on investment demand. While a plausible and acceptable explanation could be provided to justify higher interest rates from the point of view of mobilization of savings, it has not often been easy to shrug off its impact on investment. Two kinds of justification are furnished on this point. One is that the higher the real yield on money balances, the greater could be the

amount of real resources for investment, the implicit assumption being that the lack of resources is an impediment to new investment [McKinnon (1973)]. Another emphasized that the weighted average cost of investment would tend to decline even with a higher interest rate policy because of the erosion of "credit market dualism" in LDCs [Khatkhate (1972)]. Of the two, the latter is erroneous, while the former is incomplete. McKinnon resolved the "availability" question but skirted around the "cost" problem. Under the alternative analytic underpinning in this paper, a high return on money balances can be reconciled with its cost impact on investment demand by underlining that the level of raised real interest rates would still be below the rate of return on capital.

There are more important implications of the analysis for the mode or determining interest rates in the unorganized money markets in LDCs. There has been a sharp divergence of opinion as regards how the interest rates in the unorganized money markets are determined — whether by supply or by demand factors, or by the "peculiar characteristics of the agrarian credit markets". According to the approach that emphasizes the supply side, interest rates are high because of high administrative costs, default risks and the presence of a "security syndrome" in credit distribution; alternatively, from the demand perspective, lenders maintain high rates of interest on loans purveyed because they include the loss of principal into interest rate calculation and also because of seasonality in credit demand [Bottomley (1971), Tun Wai (1957), (1977)]. A different explanation for the determination of interest rates in unorganized credit markets has recently been offered by Amit Bhaduri. He builds into his theory certain institutional features of the agricultural credit markets such as personal valuation of collateral assets as opposed to market valuation, unequal access to the organized credit market by lenders and borrowers, and the relative segregation of the agrarian credit market from the organized market [Bhaduri (1977)]. However, in terms of the foregoing analysis, such differences in explaining interest rate determination in unorganized markets would appear to be more apparent than real and arise mainly because the connection between the interest rate charged on loans is seen in isolation from the rate of return to capital in that market. Administrative costs are high because of inadequate creditworthiness which is an increasing function of the rate of return to capital; repayment difficulties are due to the low profitability of investment in the rural sector; valuation of collateral differs as between lenders and

borrowers, again because the lender has reservations about the rate of return to investment undertaken by the borrowers. Thus, all the so-called different explanations of interest rate determination are very closely related to the low rate of return prevailing in rural markets. As the experience of several underdeveloped countries has shown, a most fruitful approach to this problem has been to improve the social and economic infrastructure in those markets through provision of communication facilities, managerial skills and a marketing network which eventually help to raise the rate of return to capital. Once this occurs, interest rates in the rural markets will tend to decline in automatic response.

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