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Economic Development and the Capacity to Service
Foreign Investments

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Western Germany - Central Bank Policy and the
Interest Rate Pattern

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replaced by the period of net capital outflow. The device of looking at the problem in terms of two periods permits it to be formulated in terms of comparative statics. For many purposes it does not appear to do too much violence to the facts. The first period might be envisaged as encompassing many years, during which the country is receiving a net capital inflow in the form of loans and the second period might be envisaged as encompassing an equal number of years during which the country is obliged to reverse the flow.

Equating the amount received from foreign capital inflow in the first period to the deficit in the current account balance is simple enough. Equating the whole service transfer, including interest and dividends, to a surplus in the current account balance in the second period is somewhat strange, since ordinarily only repayment of foreign debt, not interest and dividend payments, are assumed to give rise to the need for a surplus in the current account balance. It is felt, however, that we have made a rather useful departure from the common practice. In our system the national income is defined as income accruing from the productive resources situated in the country rather than as income accruing to the residents of the country from productive resources wherever situated. Under the territorial or geographical concept 1/, as contrasted with the resident concept, interest and dividend payments abroad are not deducted from income originating in the borrowing country in order to arrive at the national income of the borrowing country. As a corollary of this, interest and dividend payments abroad are equivalent to a capital transfer and require the emergence of a balance of payments surplus on current account.

This treatment is justified strictly in terms of its convenience for handling the problem before us. It seems preferable to view the promise of the borrowing country to remit interest and dividends, as well as amortization payments, as an obligation which requires an act of saving or its equivalent (less domestic investment). 2/ This appears preferable to the conventional conception under which interest and dividends paid abroad are not included in the income of the paying country and thereby may be lost from sight in considering the capacity to service foreign investment. The conventional conception ignores the fact that in order to make interest payments abroad a geographical unit must use in internal consumption and investment less than is produced within its territory. With the de facto jurisdiction of governments in the underdeveloped countries extending through modern tax devices, exchange, and other direct controls to all income produced within the territory, rather than being limited to income accruing to residents, it seems more realistic to adopt the formulation presented in this paper. The necessity for a conscious act of saving or

1/ The U. N. Statistical Office characterizes this concept as "domestic national income" or "geographical national income".

2/ The formulation in this paper may also be preferred on the grounds that it permits the same analytical treatment of the case where "ability to service" is viewed simply in terms of capacity to pay interest and dividends as well as the case where amortization is also included.

its equivalent by the borrowing country in order to transfer interest is directly and explicitly emphasized when the government itself has assumed an obligation to pay interest abroad.

The following formula, the complete derivation of which is shown in the Appendix, provides the basis for our consideration of the debt service problem:

$$i = \frac{s}{K} P - \frac{\Delta I}{KI} - 1$$

Where: i = the service burden or required return on foreign capital (interest, dividends, and amortization as a ratio of the amount borrowed.)

K = amount borrowed as a ratio of total investment in first period.

s = marginal propensity to save, including government savings.

I = volume of net domestic investment, including government investment. ΔI thereby becomes the change (+ or -) in such investment between the two periods.

P = the increase in national income as a ratio of net investment in the first period.

KI = thereby becomes amount borrowed in first period.

Under this formula the capacity to service foreign debt (the service burden considered as a per cent of the amount borrowed) is positively related to the capacity of the borrowing country to increase its income (P) and to save out of this increased income (s). It is inversely related to the percentage of total investment financed from abroad (K) and to a positive change in domestic investment between the two periods (ΔI).

Application of service-capacity formula to common-sense test.

Prior to exploring the direct implications of our formula in more realistic terms, it is of interest to consider a common-sense test which is often applied to the capacity of a country to service investments from abroad. This test involves comparing the yield on the foreign investment with the cost of foreign capital. If the former is expected to equal or exceed the latter, the service burden can be met. It can be shown that our formula reduces to this common-sense test under very special assumptions. Let us assume that an underdeveloped country is relying exclusively on foreign enterprises for its own economic development, and let us examine the common-sense test in terms of our formula. Since in this case we can assume that there are no factors increasing income other than foreign-financed investment, P is equal to the yield on

foreign investment. i is equal to the required return on the foreign investment. It remains to be demonstrated that as long as P is equal to i the service burden can be met in terms of our formula. Given the assumptions of the case where an underdeveloped country relies exclusively upon foreign investment to increase its income, values can easily be assigned to s , K and $\frac{\Delta I}{KI}$ which yield $i = P$. All of the investment in the country is financed from abroad, so that $K = 1.0$. A value of 1.0 can also be placed on s as a first approximation. This is justified because the total net income of a foreign enterprise is counted as savings and the increase in income which is to occur in this economy is also equal to the net income of the foreign enterprises. Thus, the marginal propensity to save is equal to one. A value of -1 can be assigned to $\frac{\Delta I}{KI}$, since after the net inflow of capital has ceased the level of investment in the country can be expected to drop by the amount of the foreign capital inflows, the residents of the country having zero savings and being unable to finance any investment. Thus, $i = P$ 1/ and the common-sense test appears to be fully justified.

A mere citing of the assumptions lying behind this hypothetical case reveals their precarious nature. In addition to assuming that there are no internal savings and domestically-financed investment at the beginning of the period, we have also assumed that the process of foreign investment in this country does not generate any savings over and above the amount which is necessary to service the foreign investment. This means that either all of the increase in the territorial income that resulted from the foreign investment leads to an increase in consumption of the residents of the underdeveloped country or is transferred abroad. 2/ Furthermore, we have assumed that there are no factors affecting the growth of territorial income other than the capital goods made available by foreign investors.

The unrealistic nature of these assumptions indicates the dangers of applying the "common-sense" formula in appraising the capacity of an underdeveloped country to service foreign investment. Furthermore, it supports those who oppose the "individual project approach" toward international lending operations. Expected values for s and P are not just "blown up" values of expected yields on foreign investments and are even less directly related to yields on any specific project that may be financed from abroad. The level of domestic investment neither in the first period nor the second period is simply a function of foreign financial resources.

Some implications of the formula

Let us consider now each of these variables, assigning certain values to some of them, in order to explore the implications of other variables. First, let us explore the significance of the change in investment between the two periods ($\Delta I/KI$). If we assume that the change in investment between the two

1/ In this case, $i = \frac{1}{1} P + 1 - 1$ $i = P$

2/ Strictly speaking, it was assumed that all of the increase in territorial income was transferred abroad, since the increase in income was equated to net income of foreign enterprises. For the common-sense test to apply unequivocally, none of the benefits can accrue to the underdeveloped country!

periods is zero, the value of $\frac{sP}{K}$ must be greater than 1 in order for any service burden to be manageable. This requires what appear to be surprisingly high values to be placed on s and P and a surprisingly low value to be placed on K. For example, if P (the increase in income as a per cent of investment) is 30 per cent and s (the marginal propensity to save) is 20 per cent, K must be lower than 6 per cent for i to be positive. Under these assumptions, less than 6 per cent of the total investment in the borrowing country can be financed from abroad. If the terms on loans incurred by the borrowing country during the first period require repayment at the rate of 7 per cent (including both interest and amortization) K must be less than 5 per cent.

If the assumption of no change in domestic investment between the two periods is dropped and we assume that domestic investment in the second period is reduced by the amount borrowed in the first period $\frac{\Delta I}{K}$ becomes -1 and it is sufficient for the value of $\frac{sP}{K}$ be a positive number rather than greater than 1. Under this circumstance, some service burden can be met so long as the product of sP is positive. With high values for s and P as assigned in the first case and with service burden (i) of 7 per cent, 83 per cent of total investment could be financed from abroad, as contrasted with 5 per cent in our first case.

This contrast highlights the importance of the change which takes place in the volume of total domestic investment between the period when an import surplus is financed by foreign loans and the period when an export surplus must be developed. If foreign loans are to be relied upon to any considerable extent in financing investment in the first period, the level of investment must be substantially reduced in the second period for the service burden to be met. In any economy where the price mechanism is to be relied upon to reduce the level of investment in the second period, investment incentives must then be lower and/or funds available for investment must be reduced (terms on which they are offered made more stringent). So long as profit opportunities for domestic investment are extensive, it is likely to be difficult to secure the necessary reduction in investment. 1/

One way in which investment may be reduced in the second period is by increasing income in the first period through investment in and efficient management of export industries and import-substitute industries. In this way, the hold which such industries have over resources may be maintained - or to put the same thing in other terms, the profitability of new investment in the second period reduced. The outcome is obviously dependent also on the value of s and the aggregate value of P to which arbitrary values were assigned above, as well as upon the composition of investment in the first period.

1/ If profit opportunities are extensive, why need an export surplus be developed? Wouldn't the underdeveloped countries continue to attract foreign capital in large enough volume to offset the service burden and thus continue to be in our first period? This might be true if international capital flowed simply in response to higher yields in underdeveloped countries, and if higher yields were present in these countries. This we do not propose to consider in the present paper.

The conclusion that investments may have to be reduced materially in the second period if substantial amount of foreign borrowing is relied upon in the first period is dependent on the reasonableness of the values which were assigned to s and P in the above illustration. In this connection, certain characteristics of s and P should be noted. The value of s , the marginal propensity to save is a function of savings by government, as well as enterprises and households. Thus, if the government can develop a large surplus of receipts over current expenditures without materially reducing private savings, s will be larger. Furthermore, it should be noted that, in view of our definition of national income in territorial instead of resident terms, all of the net income earned in the underdeveloped country accruing to foreign residents is treated as part of the income of the underdeveloped country and also as part of savings. Thus, an increase of the net income of foreign-owned enterprises between our two periods, while it contributes to the necessity for developing an export surplus, may also lead to a large s for the community at large. Furthermore, it should be noted that the savings arising from the operations of the foreign-owned enterprise can be made available to the community at large for the servicing of other foreign investments through appropriate tax policy. A tax on the net income of foreign enterprises reduces the amount available to the enterprise for transfer abroad, thereby increasing the country's capacity to service governmental or other private foreign debt.

Actually, little is known of the level of savings in underdeveloped countries. Some recent studies indicate a range of 8-15 per cent for the average propensity to save in several Latin American countries. 1/ It is extremely difficult to determine how aggregate savings will respond when income is increased. However, it is interesting to note that the recorded movement of private savings relative to income over a considerable period of time in the now developed countries does not show any significant increase in the average propensity to save as incomes increase. 2/ Such records, it should be noted, are based on a resident rather than a territorial concept of national income; thus, they may understate the marginal propensity to save in our formula. Furthermore, reliable records do not go back to the period when the income per capita of the now developed countries were at the levels prevailing in many of the underdeveloped countries today. It seems more likely that as income rises above the bare subsistence level, savings relative to income will increase. If so, the marginal propensity to save in our formula might easily approach in many now underdeveloped countries the .2 cited above. This is particularly true if fiscal systems could be improved at an accelerated rate and if savings propensities in the private sector could be raised by a better control of inflation.

1/ These studies will be examined in some detail in later articles; data will be adjusted to conform to concepts employed here.

2/ For the U. S. see the discussion in James S. Duesenberry, "Income, Saving, and the Theory of Consumer Behavior," Cambridge, Mass., 1949, page 54.

Assigning realistic values to P constitutes an even more serious problem. Economists have not developed even rough techniques for putting into quantitative terms the effects of investment, population change, innovations, etc., on long-term movements of national income. It should be noted, however, that the more national income can be expected to increase as a result of factors other than capital formation, the higher will P be. Likewise, the more income is increased per unit of capital, the higher will P be.

Colin Clark, who has probably done more than any other economist on the quantitative aspect of this problem, has recently estimated that in Latin America (excluding Argentina) the increase in national income as a per cent of investment would be about 21, ^{1/} if the objective were to increase per capita national income by about 3 per cent per year. He estimates, furthermore, that with such an objective 65 per cent of domestic investment would have to be financed from abroad. During the course of our first period, these Latin American countries could be expected to save 10 per cent of their income, according to his estimates. On the assumption that the average rate of savings does not increase above 10 per cent in the second period (giving an s of .1 in our formula), and that investment can be reduced in the second period by the amount borrowed in the first period, Mr. Clark's estimates provide us with values for the variables on the right side of our equation with $P = .21$, $s = .10$, $K = .65$, then $i = .032$. Thus, on the basis of Mr. Clark's calculations, our formula reveals that the Latin American countries could support a service burden equivalent to over 3 per cent of the amount borrowed from abroad. However, if savings in the second period could be raised relative to income so that $s = .2$ instead of .1, a burden of 6.3 per cent could be supported.

It is interesting to note that with a marginal propensity to save of .2 and with a high per cent of total investment financed from abroad, P (the increase in income as a per cent of investment) must be greatly in excess of i (expected return on foreign investment). An expected return of 6.3 per cent as in the above example requires a value of 21 per cent to be assigned to P . Even with investment declining in the second period by the amount borrowed from abroad in the first, it is only when K does not exceed s , that P need not exceed i . When the ratio of foreign borrowing to domestic investment is no greater than the marginal propensity to save, the increase in income as a ratio of investment need only equal the required rate of return on foreign investment. Does this suggest that something of the common-sense test previously cited, in which the direct yield on foreign investment need only exceed the expected rate of return, might be salvaged? It does in this sense: If all domestic investment and not merely the part financed from abroad yields on the average a return at least equal to the required rate of return on foreign investment, the underdeveloped country can finance from abroad during the first period a

^{1/} This figure can be derived from the table contained in Mr. Clark's article, "The World Will Save Money in the 1950's", Fortune, July, 1950, page 90. The bases for the computations are not explicitly stated.

percentage of total investment equal to the marginal propensity to save. This is, of course, on the assumption that investment can be reduced in the second period by the amount borrowed in the first.

It is questionable, however, whether the new rule is any more useful than its common-sense counterpart. A determination as to an underdeveloped country's capacity to service varying amounts of foreign investment must be based at least on an appraisal of all the factors included in our formula, which itself represents only a starting point for the analysis of the problem.

APPENDIX

Derivation of Formula on Capacity to
Service Foreign Investment

In the derivation of the formula presented on page 3, the following basic variables are employed:

- Y = net income (territorial basis)
- S = net savings
- I = net domestic investment
- C = consumption
- F = balance of payments on current account.

In order to designate the value of these variables in the second period, primes (') are used.

Let s = marginal propensity to save, or the change in savings between the first and second period as a ratio of the change in income.

$$(1) \quad s = \frac{\Delta S}{\Delta Y}$$

Employing the familiar national income definitions, $Y = I + C + F$, $S = Y - C$, and $S = I + F + C - C$ or $S = I + F$, we obtain,

$$(2) \quad \Delta S = \Delta I + \Delta F$$

Substituting for ΔS in (1),

$$(3) \quad s = \frac{\Delta I + \Delta F}{\Delta Y}$$

ΔF in (3) is equal to $F' - F$. Since the current account surplus (F') in the second period is equal by assumption (see page 1) to the service on the investment, iKI may be substituted for F' , where

- i = the service burden or required return on foreign capital (interest, dividends, and amortization as a ratio of the amount borrowed.)
- K = amount borrowed as a ratio of domestic net investment in first period.
- I = as noted above, domestic net investment in first period.

For F we may substitute $-KI$ since the current account balance in the first period is a deficit equal by assumption to the amount invested from abroad.

Substituting $iKI - (-KI)$ for ΔF in (3) we have

$$(4) \quad s = \frac{\Delta I + iKI + KI}{\Delta Y}$$

ΔY may be written PI , when P equals the increase in income between the two periods as a ratio of net domestic investment in the first period.

$$(5) \quad s = \frac{\Delta I + iKI + KI}{PI}$$

Solving for i , equation (5) becomes:

$$(6) \quad i = \frac{sP}{K} - \frac{\Delta I}{KI} - 1$$

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WESTERN GERMANY - CENTRAL BANK POLICY AND THE INTEREST RATE PATTERN
Gordon B. Grimwood

As in the United States, the interest-rate structure problem and its relation to the operations of the central banking system has recently become a matter of discussion in Western Germany. The emphasis placed on this matter in the two countries is, however, quite different; in the United States it is a question of the impact of changes in the interest structure upon the monetary system, while in Western Germany the primary concern is to attract sufficient private capital to permit the reestablishment of a normal capital market.

The contemporary situation

During the past year it has become apparent that the "capital shortage" problem in Western Germany is not so much one of an absolute lack of savings, but rather one of a failure to place available funds in the capital market. Savings deposits in German commercial banks have increased from 1.7 billion marks as of January 1949 to 3.7 billion as of June 1950. During the same period, commercial banks' medium- and long-term loans to non-bank customers have increased from 0.5 billion to 3.2 billion marks, and in the first half of 1950 alone the total amount of medium- and long-term credits outstanding increased by 1.6 billion marks. From January 1949 to June 1950, sight and time deposits increased from 7.4 billion to 10.6 billion marks and short-term credits to non-bank customers from 4.6 billion to 10.6 billion marks. The liquidity position of the banks thus became very tight and they have been unable to meet all demands for credits during the past few months.

The deterioration in the liquidity position of commercial banks was the result of three primary factors: (1) excess of in-payments on foreign account; (2) an increase in the amount of notes and coin in circulation; and (3) an excess of deposits over withdrawals by public authorities at the central bank. Late reports indicate that the liquidity position has been eased somewhat by the steady decrease in the import deficit. Many loans made at short term are, however, being used by customers for medium- or long-term purposes, and as a result the commercial banks have shown an increasing reluctance in recent months to grant longer-term loans.

Expansion in the issue of securities has taken place at a much lower rate than the expansion of credit by commercial banks. The total issue of bonds and shares increased from 0.1 billion marks as of January 1949 to 1.7 billion as of July 1950, of which just over 1 billion had actually been sold. The effective yield on bonds ranges from 5.14 per cent per annum on 5 per cent mortgage bonds issued at 98 to from 6.3 to 8 per cent on converted Reichsmark mortgage and industrial bonds at the going market price. Interest rates on savings deposits, by comparison, range from 2.5 per cent to 4 per cent per annum, depending upon the call period.

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This situation very clearly reflects an extremely high liquidity preference on the part of individual savers which, together with the increasing reluctance of the commercial banks to grant long-term credits, has resulted in anxious discussions among German monetary authorities during the past two or three months. Stated simply, the issue has been whether to support the sale of bonds and, if so, at what level. There was general agreement that stagnation in the capital market was caused primarily by the price-risk factor and that it might be overcome by support through open market operations. There was, however, a cleavage among monetary authorities as to what level the support should be applied. The Federal Minister of Finance favors maintaining the 5 per cent rate, while the Minister of Economics wants to raise the rate to 7 or 7.5 per cent. In order to strengthen the confidence of the public in the stability of fixed-interest bearing securities, the Board of Directors of the Bank deutscher Laender has voted to support temporarily the prices of mortgage bonds and municipal bonds already issued on the stock exchange - in other words, at the 5 per cent rate for mortgage bonds. This policy, however, is considered to be flexible and will be reviewed constantly with an eye both to its success in strengthening the capital market and to its impact upon the monetary system.

Arguments for increasing the long-term rate

Proponents of an increased long-term rate base their argument primarily upon the efficacy of attacking the problem by stimulating the supply of capital through the price mechanism. They point to the spread between going rates of interest on long-term loans and the rate at which it is proposed to support the market, and warn that any attempt to support an "unrealistic" rate is doomed to failure. They deprecate the statement that the preference for savings deposits is caused by fear of the price risk rather than the interest factor, and assert as an undisputable fact that the level of interest rates now, as before, plays an important role in the disposition of surplus funds by the saver. They admit that an increased rate of interest would cause hardship to several industries with more or less fixed receipts (particularly housing, public utilities, and transport) but state confidently that the increased flow of investment funds resulting from a higher rate of interest would soon develop into a gradual downward trend of interest rates; in the meantime, if it seems desirable to furnish capital to investment fields contrary to market conditions, it could be done through the device of direct subsidies from the public budget. In conclusion, the proponents of a market rate of interest state that the primary function of open market operations is to create and ensure the functional capacity of the capital market, and they contend that any intervention contrary to market conditions is bound to fail and that funds employed in doing so are wasted.

Arguments for maintaining present rate

The major argument for maintaining the present rate starts from the point that the rate of interest is a "recompense for the renunciation of liquidity." Proponents of this idea argue that the proposed limited

increase in the long-term rate would not be considered an adequate recompense under present conditions and would have little or no effect upon the total volume of funds offered for investment; the increase would, therefore, result only in a heavier interest burden to the borrower. To prove this point, figures are cited which show that during the last two quarters of 1949 and the first quarter of 1950 the excess of deposits over withdrawals in savings institutions has increased by 78 per cent. Over the same period the increase in placement of 5 per cent mortgage and communal bonds has increased by 12 per cent (from 60 million to 67 million marks) while the placement of industrial bonds, which yield 6.5 per cent per annum or more, has declined steadily. Therefore, the argument runs, support of the safest issue at 5 per cent would be preferable to raising the rate to 7 or 7.5 per cent and supporting the latter level.

In answer to the suggestion that hardship cases be taken care of by government subsidy, those who favored maintaining the 5 per cent long-term rate point out that this step would be just another method of circumventing the market economy as long as major sectors of the economy were unable to meet higher interest charges and at the same time increase their production.

Conclusions

Under the conditions existing in Western Germany today, an increase in the long-term rate would probably hamper rather than help the production effort, while there is no certainty that such a move would in fact increase the amount of money brought to the capital market. In addition, if higher subsidies resulted from an increased long-term rate, an already threatening government deficit would become larger.

The bulk of available funds in Western Germany is presently held by commercial banks, and there is no reason to believe that a rise in the interest rate would induce the banks to increase their investments in long-term claims. Medium- and long-term loans to non-bank customers during the first half of 1950 rose by 55 per cent, even at existing rates, while short-term loans increased by only 10 per cent. This situation, together with the fact that many short-term loans are being used for long-term purposes, causes commercial banks to feel that they are already holding more long-term paper than is prudent. Any further development will be affected by considerations of liquidity rather than of yield.

As for the individual saver, at whom open market operations are primarily directed, it seems doubtful that he will consider even a government-backed security in preference to the more liquid savings deposit. A continued purchasing operation on the part of the central bank might, however, instill a confidence in the stability of long-term security prices which is presently lacking and result in larger purchases of securities by individual savers. Sales of securities remained low during June and July; developments over the next few months will indicate the success or failure of open market operations in this field.

With respect to the impact of open market operations upon the monetary system, the Bank deutscher Laender has minimized the usual inflationary results of open market purchases by restricting support to securities already issued. Such issues were limited and central bank operations in the market up to the present have been on a very small scale. Any attempt to analyze possible future developments, however, must take into consideration the financial position of the public authorities.

The federal and state governments face an estimated combined deficit for 1950/51 of approximately 2 billion marks. It is proposed to cover 500 million of this deficit by seignorage from an issue of coin and the remainder by borrowing. Direct advances to the government by the central bank are limited by law to 1.5 billion marks, and as of June 30, 1950, such advances amounted to almost 1.2 billion. In consequence, it seems likely that the government may wish to approach the market in the near future with a long-term bond issue.

One of the stated objectives of the Bank deutscher Laender in engaging in open market operations is to establish a capital market which would be favorable for the issuance of government securities. If this objective is attained, central bank support of the issue would not be necessary and the issue would have no inflationary effect. If, however, a normal capital market is not reestablished by the time the government finds it necessary to float a loan, the Board of Directors of the Bank deutscher Laender will have to decide whether to support that loan. A decision to do so would represent a direct inflationary impact upon the economy; such an impact would be particularly serious in view of the fact that, in the absence of a normal capital market, anti-inflationary open market operations would be restricted to the negative action of withdrawing support.

It appears that open market operations can, under these conditions, have only a limited effect in drawing out savings. Purchases by the central banks, undertaken on a large scale during a period of growing inflationary pressures, might have a serious effect upon the economy. Since the bulk of current savings is being held by the banking system in the form of time and sight deposits, it would seem wiser to bring the central banking machinery to bear upon the banks; for instance, by encouraging long-term loans through the rediscount policy.

An alternative method would be increased public investment financed by increased taxes. Such investment would, however, suffer all the disadvantages usually attributed to government control. Moreover, an increase in taxes for purposes of investment would make it very difficult for the government to raise taxes again if it became necessary to syphon off excess purchasing power. Increased public investment would, therefore, remove from the hands of the government a potent anti-inflationary weapon.