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INDEXATION OF FINANCIAL CONTRACTS
ISSUES PAPER

The attached paper on "Indexation of Financial Contracts" prepared by the Development Economics Department is distributed for information.

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SOME PROJECT ISSUES IN

INDEXATION OF FINANCIAL CONTRACTS

March 1977

Public and Private Finance Division
Development Economics

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SUMMARY AND CONCLUSIONS

This paper discusses the role that indexation of financial contracts might play in the mobilization and allocation of savings as well as in strengthening the viability of financial institutions in a period of inflation. It also explores the justification for indexation of Bank lending operations in agriculture and industry and assesses the experience gained so far with regard to agricultural loans made by the Bank during 1967-75 in the Latin American Region. Questions of overall financial policy and the level and structure of interest rates have been analyzed in a separate paper titled "World Bank's Approach to Interest Rate and Credit Allocation Issues".

The broad conclusions of the paper are summarized briefly below:

1. Indexation policy involves fairly high administrative costs and may also strengthen inflationary expectations. Hence, it is not an appropriate policy instrument for dealing with inflationary situations that are likely to be temporary or can be controlled by means of monetary-fiscal policies or are such as to result in a low and stable rate of inflation.

2. It is, however, a relevant policy instrument in countries which are likely to experience high and variable inflation. Here two situations must be distinguished. The first is where indexation is a part of a policy package for the elimination of inflationary pressures which have persisted in chronic form over a protracted period and which are likely to be brought under control in phases over several years. In this context, indexation has a distinctly subordinate role with fiscal, monetary and other measures occupying the center.

3. The second situation is one in which there is no effective anti-inflationary program, double-digit price rises are expected to continue and indexation is adopted to neutralize their impact on financial contracts. Here the principal contribution of indexation would be in bringing about some convergence of expectations of savers and investors; thus it can safeguard the saving-investment process, promote the growth of medium and long-term financial instruments and ensure the viability of financial institutions.

4. The success of an indexation experiment crucially depends on (a) its acceptance by the government as a desirable policy instrument for insulating the structure of interest rates from the impact of inflation, (b) its application to major medium and long-term financial instruments for savings mobilization and credit allocation on the basis

of a general price index relevant for each country, and (c) the adoption of complimentary policies in the field of exchange rates and the tax system. It is unlikely to succeed in its main objective if only a few instruments of limited importance are indexed.

5. It is difficult to identify the group of countries which are likely to experience serious inflationary pressures in the future. The situation during 1972-75 has been unusual and it would not be wise to extrapolate recent trends. However, it might be useful for the Bank to discuss the advantages of indexation with countries presently experiencing double digit inflation.

6. (a) The Bank should emphasize the desirability of applying indexation to all medium and long-term financial instruments. If, however, a country is unwilling to index all such instruments, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans. Such a policy would enhance the viability of DFCs and other credit institutions associated with the Bank. Further, experience with such indexation may induce the government to adopt it on a wider basis.

(b) In the case of a country which cannot be persuaded to adopt monetary correction or other appropriate interest rate policies, it would be counter-productive for the Bank to insist on the indexation of its sub-loans, particularly when the domestic financial intermediaries associated with the Bank do not occupy a dominant position in the medium and long-term credit market. Such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider the rationale of its loan operations and program in the country concerned.

I. Introduction

1. This paper has a narrow scope. It is not about overall financial policy or even about the level and structure of interest rates. These important subjects have been studied recently in the paper entitled, "World Bank's Approach to Interest Rate and Credit Allocation Issues", January 30, 1976. The present paper on indexation elaborates on one of many issues discussed in the above mentioned draft, namely how to insulate interest rates from the impact, generally unintended, of high and volatile rates of inflation. This issue would arise no matter what level of real interest rates is considered appropriate. Clearly, the indexation technique can make a more important contribution to development policy if the real interest rate structure is appropriate than if it is not. But even in the latter case, the role of indexation is not insignificant from the points of view of saving mobilization, allocation and the viability of the financial structure.1/

2. The paper is a response to questions raised by staff in the Latin American Regional Office about the indexation of 11 agricultural loans made by the Bank during 1967-75. This experience is reviewed in the annex and the main conclusions are reflected in the analysis and recommendations presented in the main text. In addition, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry. It does not discuss the application of indexation in other areas such as wages and taxes. The purview is limited to the area of financial contracts.

3. An active development policy trying to promote rapid growth in a country is likely to generate inflationary pressures. This danger is perceptibly greater in the LDCs partly because of the speed with which supply bottlenecks are encountered and partly due to the expansionary monetary-fiscal policies. The inflationary process in the LDCs, however, has accelerated since 1970 because of a significant rise in the prices of fertilizers and food, partly as a result of natural disasters and the quantum jump in the oil prices since 1973. Many LDCs are currently experiencing double digit inflation; and in some of them, this trend is likely to continue until 1980 or so. In this context, the application of the indexation technique to financial contracts assumes particular significance.

4. High rates of inflation pose a series of problems all of which are rooted in the unanticipated redistribution of resources between economic units involved in monetary transactions. To avoid the possibility of a resource loss during periods of high and variable inflation, individuals become reluctant to enter into agreements which bind them for a long period of time to financial terms expressed in current prices. This interferes

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1/ For a review of theoretical literature and empirical experience, see Index-Linking of Financial Contracts: A Survey of the State-of-the-Arts, World Bank Staff Working Paper No. 192, November 1974.

with the development of the financial sector, especially with the supply of term loans because the nature of the commitment increases the chances of incurring a loss. But aside from this, there is a flight from monetary transactions and into various forms of barter. Savers, fearing an erosion in the value of money balances, prefer to hold real estate, specie or even certain types of commodities. In general, inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

Policy Options

5. In the area of financial contracts, there are two possible ways of coping with the problem of inflation. In each case, the idea is to adjust the financial transaction so that it is more or less in step with the overall prices.

6. One solution is a policy of variable interest rates. This would allow interest rates to vary with current and expected increase in prices; in theory, it would protect both borrowers and lenders against the consequences of changes in the rate of inflation. Variable rates are a workable solution when the rate of price increase is fairly stable or predictable and the market has the freedom to generate a rational interest structure in the light of past experience and future expectations. However, available information indicates that Latin American countries with high rates of inflation also tend to experience fairly sharp fluctuations in the annual rate of increase of prices and this variance would very likely interfere with the markets' ability to arrive at a rational rate structure.

7. Where inflation is high and variable, a second solution, i.e. indexation, seems to be appropriate. Indexation preserves the real value of contractual obligations by tying them to a price index, and it thereby helps to avoid the anomalous situation, often found in LDCs, when real interest rates go down in times of inflation and up in times of a price decline. Such movements in real rates cannot be justified either in terms of a demand management policy or as an allocative measure.

8. Since indexation reduces the riskiness of financial transactions by safeguarding the individual transactor against losses due to unforeseen changes in the price level, it can have two beneficial results. Firstly, financial intermediaries can offer stable positive real interest rates on savings although available evidence on this point is weak. Indexation may encourage the financialization of savings presently invested in real assets and thereby enhance the efficiency of resource allocation. There are some indications of such a shift having occurred in Brazil. Furthermore, a change in interest rate policies appears to have affected the financialization of savings in both Korea and India although the available evidence is far

from being conclusive.[1/]

9. A second advantage of monetary correction is its impact on long-term lending. At present, there is a marked paucity of long-term funds in the financial markets of the LDCs due to the traditional preferences of lenders and the riskiness of lending long. This is especially marked in the agricultural sector as has been pointed out in the Policy Paper on Agricultural Credit (p. 16). For example, 75% of insitutional loans in Latin America and Africa are for two years or less while for Asia, the figure is around 65%. Such squeezing of the maturity spectrum may have an adverse effect on those projects that are subject to long gestation lags. If entrepreneurs have access only to short-term loans, the uncertainty of being able to roll over their loans may dampen their willingness to undertake long-term investment. As long as financial intermediaries are unable to cover themselves against the risks involved in making term loans, and as long as they are constrained from charging an interest on their long-term commitments, which is significantly different from that levied on short funds, they are unlikely to pursue long-term lending with much enthusiasm. Indexation could help activate this segment of the market by rationalizing the rate structure and protecting intermediaries from the so-called decapitalization problem, which is the erosion of the lenders capital base during times of rapidly rising prices.

Country Experience with Indexation

10. A number of countries have experimented with monetary correction during the last thirty years, with Finland being among the earliest to apply the concept. (See Table on page 7.) In most cases, a beginning seems to have been made with the indexation of wage contracts and long-term government bonds, the coverage being extended at a later stage to social security benefits, private lending and recently to taxes.

11. Concentrating on the financial sector, it appears that the initiative to index has usually been taken by the government and in each case it has been motivated by the desire to increase the rate of savings in forms amendable to policy regulation. A secondary and related objective has been to protect the interest of small savers from lower income groups who normally lack inflation proof outlets for their saving. Israel is one of the countries which has used monetary correction by issuing indexed government bonds from as early as 1948. Brazil adopted this device in 1964. Since then Indexation has been extended to some savings institutions in both Brazil and Colombia.

1/ W.L. Ness, Jr., Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience, Economic Development and Cultural Change, Volume 22, Nos. 3, April 1974. See Appendix I section on Brazil. See also Ronald I. McKinnon, Money and Capital in Economic Development, Brookings 1971 for Korea and D.J. Lakdawala, Financial Assets and Instruments for Mobilization of Savings, for India.

12. What emerges from the experience with the use of indexation as a policy instrument is the following:

(a) Indexation has been used selectively for a limited range of transactions to promote equity, resource mobilization by the government or resource mobilization and allocation by financial institutions;

(b) Where indexation has been used to minimize the impact of inflation on the distribution of resources, it has been part of a package consisting of deflationary credit and fiscal policies, price and wage controls and even direct physical controls;

(c) Indexation rules have served multiple policy objectives. The approach has been what may be called "discretionary indexation", analogous to "dirty" floating of exchange rates.

13. In the area of wage contracts, the Government of Brazil followed a rule of adjusting nominal wages with reference to an estimate of future inflation. In effect, this meant that wages were not indexed at all, and the wage increase which was granted depended more on government policy rather than actual inflation.1/ This phase lasted from 1965 to 1968 at which point the rule was changed permitting nominal wages to track the rate of price increases more closely, but there continued to be a large discretionary element in Brazil's policy of wage indexation. In the field of financial contracts discretionary changes have tended to favor the borrower at the cost of the lender. By only permitting a partial adjustment of the principal or the interest rate the government has engineered a transfer of resources from one party to the other.

1/ The mechanics of Brazilian indexation are discussed at length by Albert Fishlow. (Indexing Brazilian Style: Inflation without tears? Brookings Papers on Economics, No.1, 1974). He points out that "Brazilian wage policy has proven virtually completely discretionary... as so has most of the rest of the system of monetary correction...Indexing was an element of intervention and as such was substituted for other policies".

Summary of Countries' Experience of Indexing (a)

	Wage	Social Security Benefits: Pensions	Social Security Benefits: Other transfer	Investment: Govt. Bonds	Investment: Private Bonds	Investment: Mortgages	Investment: Other Loans	Investment: Rents	Taxes
Argentina				1962-	1959-				
Brazil	1964-			1964-		1964	1964-	1964-	1964-
Canada	1972-	1965-	1973-						1974
Chile	1960s	1952							
Colombia						1972-			
Finland	1945-67	1957-	1956-67	1945-67	1953-67		1952-67	1952-67	
Israel	1961-			1943-	1951-	1950s			

(a) Table covers period up to end of 1974.

Source: National Institute Economic Review, 1975.

Rationale for Indexation of Financial Contracts

14. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for individuals and for institutions. However, these administrative problems are not large and the additional expense seems like an insignificant price to pay for a substantial expansion in the breadth and scope of the financial market. Since indexation is likely to be limited to the long end of the market, the cost of supporting the system would be relatively small.

15. A more important problem is the difficulty of persuading the government. The indexing of financial transactions not only increases the burden of financing the national debt, but it also reduces the subsidy long enjoyed by businesses with access to institutional loans subject to fixed interest rate ceilings. The government is usually under pressure from these businesses to continue with the subsidy but at the same time it cannot ignore the distortions arising from inflation and its own arbitrary pricing policies. If inflation cannot be controlled, indexation may be an attractive way of injecting a degree of rationality into the pricing system. There is very little reason to believe that indexation will interfere with the government's ability to subsidize particular groups. Even if a number of transactions within the economy are subject to indexation, the government can still channel resources wherever desired through tax and subsidy devices.

16. Of course, the more moderate the rate of inflation and the more flexible the financial system -- implying both variability of interest rates and institutional diversity -- the less will be the attraction of, or the need for indexation. But those countries experiencing high rates of inflation in a milieu of pegged nominal interest rates and fragmented financial institutions, indexation of contracts may help to revive the financial sector.

17. Can indexing succeed if it is adopted by, say, long-term financial institutions but not by those engaged in short-term transactions? Such a regime would be created if, for example, the government decreed that deposits and loans <u>above</u> a certain maturity be indexed. A parallel system of indexed long-term and non-indexed short-term financial contracts would come into existence. Such a system is likely to prove beneficial to the economy. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the cost and nuisance of indexation may exceed the benefits. To the extent savers forego indexed long-term investments in favor of greater liquidity accompanied by negative returns, this will be the result of conscious choice rather than the unavailability of indexed instruments. And on the borrowers' side, the option would be to get long-term financing at a stable cost or go through the uncertainties of rolling over short-term loans at a variable cost. If there is no indexing, the banks have an incentive to borrow short and lend short. This is accepted by depositors who have no better alternatives and by borrowers who do not mind the shortness of maturities so long as real interest rates are

negative. By contrast, the indexed system, as described above, would encourage banks to differentiate between short and long-term markets in financial resources and this would contribute to economic development.

18. The next question is whether or not indexing can succeed if it is adopted only by some long-term financial institutions but not by others. If the institution which adopts indexing is already dominant in the long-term market for industrial or agricultural funds, the chances are that the new policy will be a success, unless the government lends its support to non-indexed competitor institutions. Assuming that the government accepts indexation as a part of its policy framework, the "indexing institution" will be able to expand its loanable funds, unless statutory restrictions on institutional savers prevent them from purchasing the newly created financial instrument. Existing borrowers of the "indexing institution" are unlikely to switch to rival long-term sources to any large extent. By definition, rival banks are small in size and cannot accomodate many new clients. Also, indexing need not raise real interest charges; it simply prevents borrowers from reaping a windfall gain. The "indexing institution" will pick up those new borrowers who are attracted by the availability of long-maturity funds at real interest rates which remain lower than expected rates of return on their investments.

19. Partial indexing in the long-term market can succeed but there is nothing inevitable about this outcome. If the "indexing institution" does not have a large share of the market, if government does not accept it as a policy instrument or if there is collusion between rival banks and key businessmen, the introduction of monetary correction may not survive for long.

Evaluation of Present World Bank Policy

20. From the stand point of the overall economy of the borrower country, all World Bank Group loans and credits are in fact indexed to the extent that changes in the rate of exchange are a proxy for the rate of inflation. This follows from the World Bank Group policy of denominating its loans in terms of foreign currencies. In other words, either the government or the intermediary institution or the sub-borrowers bear the cost -- in terms of local currency -- of any exchange rate devaluation vis a vis the foreign currency in which the World Bank has provided the loan.

21. As regards the on-lending operations of the World Bank through financial institutions, two types of indexing practice can be distinguished:

(a) Loans to sub-borrowers are denominated in foreign exchange. This applies to a substantial segment of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities or

some price indices, the exchange rate or a combination of the three. This applies to 16 of the active agricultural project loans in the Latin America and the Caribbean Region. (Details are given in the Appendix.)

22. In the case of on-lending through the DFC[1/] exchange risks were assumed by the sub-borrowers in 15 of the 50 cases. In the rest, the risk was assumed by the government (17), by the Central Bank (5) or shared by the governments and the sub-borrower (13). This contrasts with on-lending in agriculture, where except for the 11 projects in Latin America which included explicit indexation formulae, the exchange risks have always been assumed by the government or public agencies. In terms of the volume of commitments, the indexed agricultural loans amount to $217 million as compared to the total WBG agricultural credit operations of 516 billion by the end of June 1975.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial intermediary immune from the risks of exchange rate alignments was the dominant factor. This meant that the exchange risk had to fall either on the sub-borrower or on the government (or Central Bank). With lending rates of DFCs being pegged in many countries, the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.[2/]

24. Sixteen loans made by the Bank include indexation clauses as mentioned above. Nine of these loans are for livestock and two are for agro-industries and the construction of grain facilities. During the first half of 1976 five indexed loans were made to Brazil - one each for the industrial sector, the transport sector, two for the construction of water supply and sewage facilities and one for nutrition. All the loans have been made in the Latin America and Caribbean Region. Indexing in these operations has been of an experimental nature. An explicit policy

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1/ On-lending through the DFC, was $2.8 billion by the end of June 1975, representing about 50% of total WBG lending to the Industrial Sector.

2/ A table presented in the DFC policy paper Annex 6 indicates that there is no apparent correlation between the procedure used for allocating exchange risk and the average rate of inflation during the previous five years.

with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiations the annual rate of inflation was set at 8 percent or above. There is one loan where indexing is applied if and when a specified inflation rate is reached. In all cases, indexing is applied to the principal with the interest payments calculated at adjusted values of the principal. The price indices used were various combination of beef and wool prices, cost of living indices and the exchange rate. (See Appendix I for details.)

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and administrative sense in the environment of low interest policies for term lending, the introduction of indexation in Bank agricultural loans has been prompted from the start by an overall policy objective to ensure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indices other than the foreign exchange rate have been experimented with in these agricultural loans. The difference in the rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign financed component of DFC loans was linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending including use of own resources by the financial institutions - although this objective was not always accomplished.

26. The Bank's experience in the implementation of indexed loans over the past eight years is not easy to assess. Because of frequent changes in the terms of indexed loans, their impact has varied and it is doubtful whether it can be measured without a very large research effort. Of the six countries which have received indexed loans, only three appear to be seriously committed to the system, these being Uruguay, Argentina and Brazil. Each of them has experienced double digit inflation in the recent past and the trend is expected to continue during the next few years. Brazil has the additional incentive of having developed the indexation system to a point where it is widely accepted, and to a degree understood. The three remaining countries - Bolivia, Peru, Paraguay - are putting their faith on anti-inflationary fiscal and monetary policies.

27. There is a striking uniformity in both the responses of borrowers to the indexation of loans and in the efforts of governments trying to achieve a workable compromise. In every case where indexation has been incorporated into the loan agreement, the adjustment is determined by the movements in one of the two reference indices, usually, the Consumer Price Index and a composite index constructed from beef and wool prices. The Index which is actually used is the one which registers a lower rate of price increase. Through this and other devices, governments have sought to ease the terms offered to the final borrower and in the process have

reduced the effects of indexation on the interest rate and thereby the benefits accruing to the lending agency. These measures have been in response to the strenuous opposition that indexation has aroused among farmers who are used to subsidized loans, excessively conscious of the uncertainty which monetary correction introduces as regards the repayment of the loan, and powerful enough to force the government to soften the conditions of the loan.

A Frame for Future Bank Policy

28. While the experience of the Bank, as far as indexed loans are concerned, indicates the need for continuing study and evaluation, indexation does seem to be an appropriate policy instrument for countries which have to live with inflation and at the same time implement a broadly based policy of economic development.

29. Which countries: For the large category of countries with low and relatively stable rates of price increase, the need for indexation is limited, perhaps, to social security payments. A second category would include countries such as Brazil where inflation has averaged around 30% over the last two years. The government is determined to bring down the rate of price increase and in the meantime provide some measure of protection for income shares and the saving investment process. In these countries, indexation would serve a dual purpose: as a surrogate incomes policy and as a means of rationalizing the financial sector while inflation is being brought under control. For the third group of countries which have a long history of high and variable rates of inflation and where the government is disinclined to take the harsh measures needed to dampen inflationary pressures, indexation can serve a useful function in safeguarding the saving-investment process.

30. However, it is difficult to identify countries in the second and third groups. Recent experience (1973-75) is hardly any guide: for practically every country in the world was caught in the throes of double digit inflation. One cannot extrapolate recent price trends into the future and thereby separate countries into those in which inflation is expected to be serious and the rest. The projections contained in the recent CPPs for a large number of countries indicate that inflation is likely to be a problem in some countries - Argentina, Brazil, Chile, Peru, Syria, Yugoslavia, Uruguay, Turkey and Korea. (See Table IV, Annex II, for information on the projected rate of inflation; and Table V, Annex II, on proposed Bank lending to these countries over the next five years.) Several of these countries have introduced indexation schemes and are in a position to extend the scope of these measures should the need arise. So far, Yugoslavia, Syria, Turkey and Korea have not experimented with indexation but they can, perhaps, be encouraged to consider its application in the future.

31. Which Index: Not only have sub-loans through the DFCs been linked to the foreign exchange rate, but the foreign exchange rate has

also been used as an index for adjusting the principal on a few agricultural loans. Use of the exchange rate has the distinct advantage of providing a firm numerical basis for adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. Even with these qualifications, the exchange rate can be a good proxy for price inflation, particularly where rate changes take place frequently.

32. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of large adjustments introduces uncertainty into investment decisions. As prices rise, the over-valuation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two uncertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Further, sudden large adjustment creates a cash squeeze -- an abrupt increase in the liabilities of the businesses. For these reasons, in such a context the foreign exchange rate should not be used as a basis for indexation.

33. If it can be assumed that the various countries which apply the concept of monetary correction will adhere to a system of floating rates over the foreseeable future, the exchange rate can be used to index <u>all</u> transactions; this practice would have the additional advantage of effectively passing on the exchange risk to the sub-borrowers. However, if the assumption is invalid, it would be preferable to treat at least local currency transactions separately so as to avoid the problems arising from large, discrete exchange rate adjustments. Probably the optimal procedure in such a situation would be to index <u>all</u> loans with respect to a general domestic price index and deal separately with the exchange risk. Exchange risk in this case would disappear or at least be smaller than what it would be without indexation of <u>all</u> loans, and it may become possible for the government or the Central Bank to bear it by charging a small fee to the sub-borrowers.

34. A general price index with a wide coverage may be the most appropriate basis with which to link the principal of financial contracts. It is less suitable to use specific commodity or sectoral price indices because the main purpose of monetary correction is to neutralize the <u>overall</u> impact of inflation on financial contracts, without interfering with relative prices. Monetary correction based on specific commodities would tend to distort relative price structures and thus to misallocate resources.

35. There are some reservations, however, relating to the technically defective nature of general price indices, and due to the fears that these

indices can be tampered with for political reasons. Where there are several indices, the choice between them also present a problem. If the principle that indexing should be based on the general price index is accepted, the question of which index qualifies for this role becomes an empirical one and has to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are limited in favor of a more long-term trend.

36. In the case of more open economies which are vulnerable to price shocks emanating from abroad, it may be necessary to adopt a discretionary approach a la Brazil where the index is adjusted so as to net out sudden changes in the prices of traded commodities due to unforeseen circumstances in the world economy or natural calamities.

37. Since the idea is to take account of a resource loss experienced by the economy, it might be preferable to use a wage index where one is available, which may reflect more closely the changes in real purchasing power, rather than a CPI that has to be arbitrarily adjusted whenever the situation demands.

38. Modality of Negotiation: The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects. Chances of success are much greater if indexation is applied across the board in the long-term credit market than if it is applied piecemeal in the context of specific projects or specific institutions. It must be recognized that the Bank is likely to be the only international financier urging indexation. Unless there is genuine understanding on the part of the borrower about the virtues of monetary correction, there is not much prospect for the application of this technique. The borrower may be able to switch to other international lenders if the Bank applies pressure on this issue. (The conditions for the success of partial indexation are discussed on pp. 9-10.)

39. In its dialogue with countries likely to experience double digit inflation, the Bank should emphasize the desirability of applying indexation to all medium and long-term financial instruments for savings mobilization as well as allocation. In addition, the Bank is interested in the viability of the DFCs and other institutions that disburse Bank loans. From a long-term point of view, the success of the Bank's policy towards these institutions must be judged from the point of view of the latter's capacity to function effectively even when the Bank's support is withdrawn at some stage. Further, their dominance in the area of medium and long-term credit in a large number of countries makes it more likely that the indexation experiment will succeed. Finally, if these institutions link monetary correction to a general price index all or a greater part of the exchange risk would be borne by the sub-borrowers; a separate provision for exchange risk would therefore not be necessary. (See discussion on pp. 10-12.).

40. If the governments are persuaded to accept such policy measures, they are likely to adopt them also for other medium and long-term financial instruments like saving deposits and government bonds as a result of either their dialogue with the Bank or the demonstration effect of the experiment with indexation carried out by the long-term credit institutions.

41. If a country is unwilling to index all financial instruments of long-term credit institutions associated with the Bank, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans.

42. If, however, a country cannot be persuaded to adopt monetary correction or other appropriate interest rate policies even at a sectoral or sub-sectoral level, it would be counter-productive for the Bank to insist on the indexation of its sub-loans; such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider its loan operations and program in the country concerned.

Annex I: World Bank Loans Subject to Indexation and Country Experience with Indexation

Argentina

43. Argentina has received only a single agricultural loan from the Bank which contains an indexing clause. This has been for the Balcarce Livestock Project (505-AR) and was signed on July 31, 1967 but the first indexed sub-loan was made in September, 1973. According to the terms of the contract the sub-loan balances are adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower for each month, with interest charged at 6% per annum on adjusted balance. Indices used are: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers. Therefore, the reference index is a composite one and although cumulative is always less than either of the two basic indices. The Balcarce project has had its share of problems. During the last few months there has been an increase in the prices of finished steers without a commensurate increase in those of feeder steers marketed by project beneficiaries. Even though this has had little impact on the adjustment factor, farmers are beginning to express reservations regarding the use of indexation and there has been a decline in the applications for new loans.

44. The Argentinians have been experimenting with the indexation of government bonds over a long period of time extending as far back as 1962, when the National Recovery bonds bearing a nominal interest of 7% were used

with the principal adjusted with reference to an index of gold prices. Even earlier than this, in 1957, the State Petroleum Enterprise had floated bonds with a twenty year maturity, linked to an index based upon company productivity and changes in the salaries of company employees.

45. The government has continued to issue indexed bonds during the seventies but it was only in March 1975 that indexing was used in the banking sector, when the National Bank of Savings and Securities offered its customers monetary correction for deposits that are not transferable for one year. Indexed credit has also become important in the area of housing finance through the National Mortgage Bank and more recently through the mortgage branches of commercial banks. The adjustment procedures are rather complicated. There is some differentiation of terms according to income class with only a portion of the principal being subject to monetary correction. Furthermore, although the index is based on construction costs the actual adjustment cannot exceed 80% of the change in basic salaries of workers and officials in the industrial sector. This is how the scheme exists on paper; however, the actual experience of the mortgage bank indicates that indexing is not automatic. The administration of indexing is highly flexible, with the authorities deciding the time and the extent of the adjustment.

46. Indexation has got off to a slow start in Argentina, with experimentation proceeding on a small scale on many fronts. There still appear to be many misgivings as to its application on a larger scale in the financial sector.

Brazil

47. So far the Bank has made eight loans to Brazil which are subject to indexation. They are the following:

Brazil Livestock (516-BR) signed September 23, 1967: Originally, sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period). An interest rate of 14% was to be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers were offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Later, in June 1971 the Bank and the Government agreed that whatever adjustment made in sub-loan principal would not exceed the extent of inflation as measured by the general price index for the period. Subsequently, in July 1972, another

revision in sub-lending terms was agreed upon to simplify sub-lending terms and correct certain problems which had emerged. All sub-loans made after that date were subject to correction according to changes in the US Dollar rate for cruzeiros, with interest on the adjusted principal at 7-1/4%. It was also agreed that, if at any time the increase in the general price index exceeded the rise in the US Dollar/cruzeiro exchange rate by more than 7-1/4%, the Bank and the borrower would agree to a new indexing system in order to assure that the indexing system would not result in negative real interest rates. The revised system adopted in July 1972 also provided for the elimination of the lags which had existed in the previous systems in applying indexing during the early part of the grace period; and for the correction of the previous practice of calculating interest on the unadjusted, rather than the adjusted, principal during the grace period.

Brazil Grain Storage (857-BR) signed September 27, 1972: The principal of this loan was to be adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzeiros of the Central Bank at 7-1/2% per annum. In September 1974 the Bank and the borrower agreed to revise the indexing system so that the principal of loans made after that date would be corrected according to the ORTN index, with an interest rate of 5% on the adjusted principal. This made the sub-lending terms generally consistent with terms offered by official lending institutions for agro-industries and other industries. However, in order to spur what it felt was a serious lagging in the development of grain storage facilities, the Government created in April 1975 a new grain storage credit line. The new line offered unindexed loans with nominal interest rates ranging between 8% and 15%. Hence, demand for indexed credit declined sharply and the uncommitted balance of the Bank loan (about 20%) was cancelled in October 1975.

Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of the principal throughout the life of the loan was to be in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest of 7-1/4% being charged on the adjusted principal. However, as the combined effect of internal and external inflation patterns and the rate of change in the US dollar/cruzeiro exchange rate began to cause the agreed indexing system to result in negative real interest rates, the Bank proposed to the Brazilians the general adoption in the livestock sector of a system which would result in more predictable interest rates - i.e., 5% interest after ORTN correction of principal. The Brazilians did not agree, resulting in the Bank's withdrawal from active consideration of a third livestock loan. Subsequently, the Government created with its own funds a new livestock credit program with nominal interest rates of about 15%, without ex post monetary correction of principal (terms which are similar to other agricultural lending in Brazil). It also agreed to allow prepayment, and refinancing at these new terms, of all the sub-loans made from the proceeds of the two Bank loans. As a result, partial cancellation of Loan 868-BR and accelerated repayment of both Bank loans are planned.

Brazil Agro-Industries (924-BR) signed August 1, 1973: Under the initial agreement sub-loans carry an interest rate of 5% plus adjustment based on the National Treasury-Bond (ORTN) price. But in October 1975, in line with the Government's desire to encourage investments in several of the relatively less developed states participating in the project, the Bank and the Government agreed to lower the interest rate to 3% (after ORTN correction of principal) for beneficiaries in 4 states, retaining the 5% rate for the others.

48. These loans were all in the agricultural sector, but during the past year there have been a number of loans to other sectors: in the industrial sector, Loan 1206-BR, ($85 million) of March 1, 1976, for the BNDE (National Economic Development Bank) development banking project, provided for sub-lending to small- and medium-size industries, with the cruzeiro-denominated sub-loans indexed according to the ORTN (National Treasury Bond) price and with interest rates of 3% for beneficiaries in the less developed North and Northeast regions, 5% in the Center-South and 6% in Sao Paulo. These terms are standard for all of BNDE-financed small- and medium-size industry operations channelled through state and regional development banks. Also, the nutrition loan ($19 million) approved June 22, 1976 includes financing for BNDE's special food processing loans to be extended with interest rates of 3% after ORTN indexing of principal. In the transport sector, Loan 1207-BR ($55 million) of March 1, 1976, for the BNDE secondary and feeder road project provided for sub-lending to states or to municipal consortia, with the cruzeiro-denominated sub-loans indexed according to the ORTN price and with interest rates varying from 4% to 7% depending on the state concerned (the lower rates applying to relatively less developed areas). In the water supply and sewerage sector, Loan 1009-BR ($36 million) of June 17, 1974, and a second loan (of $40 million) approved July 6, 1976 to help finance through the National Housing Bank (BNH) sub-projects in the Minas Gerais state water supply and sewerage program provide for cruzeiro-denominated sub-loans to the state water company at a rate of interest of 4% (plus various fees amounting to about 2%) with principal subject to full monetary correction according to changes in the general price index. This is consistent with BNH's practice in all of its water supply and sewerage lending to fully correct the principal of sub-loans according to the general price index and then to charge interest rates ranging from 2% to 7%, depending on the relative stage of development of the state concerned.

49. A brief sketch of the Brazilian experience is useful. Indexing was introduced in 1964 and applied initially to government bonds with maturities ranging from 2 to 5 years. The principal was revalued quarterly with reference to the Whole Sale Price Index and the interest was paid on the revalued sum.1/ Since then over a hundred laws and implementing decrees have extended the

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1/ From December 1972 until March 1974 the index used combined a moving average of inflation during the previous three months with a forecast of inflation expected during the next six. A 50 percent weight was assigned to the two periods. In June 1976 a term for future inflation was reintroduced into the wage indexation formula but the weights were changed to 80 percent for past inflation and 20 percent for the expected increase in prices.

system to embrace many other areas of the financial system and sectors of the economy. Revaluation is widely applied to capital assets and property values and incomes are readjusted for tax purposes. But indexing is constrained by other policy objectives and a simple 100% link with prices has not always been used. In fact, indexing as applied to wage contracts has been distinctly regressive. The only visible positive impact of indexing has been the growth in non-monetary financial assets. Although even here it is difficult to isolate the net increase since there has been a substitution of indexed financial assets -- such as bonds and bank deposits -- for those not subject to monetary correction. What makes the Brazilian system so complex and from the purist's viewpoint a little unsatisfactory is the coexistence of different procedures for indexing and the absence of a universal coverage. For instance, the private sector has strenuously resisted indexation because business firms are unprepared to bear the risks and consequently financial intermediaries have been reluctant to offer indexed deposits. Commercial banks which use monetary correction on time deposits practice a form of preindexing by tying their adjustment to a projected rate of price increase which usually errs in the direction of conservatism. From December 1972 until March 1974 and again since June 1976 the correction offered on government bonds is also based upon projections which systematically underestimate the true increase in prices so as to control the rise in real incomes and thereby diminish inflationary pressures. The WPI which remains the cornerstone of the indexing system gives a low weight to housing and expenditure on public utilities, whose prices have been freed, and it neglects services that account for approximately half the consumption expenditure of the population. Thus, it is likely that the WPI grossly underestimates the true magnitude of the price rise. Another example of the anomalies, which abound within the system, is the treatment of mortgage loans. These were subjected to monetary correction at an early stage, but government eschewed full correction so as to encourage home ownership. However, the large number of defaults persuaded the authorities to switch to the technique of equal amortization as against the earlier procedure of equal total payment. Finally beginning in 1975 cash subsidies further alleviated the burden of mortgage payments.

50. After 11 years of operation the indexation system in Brazil is still in the throes of change and this affects the Bank loans that are subject to indexation. In May 1975, for instance, the ORTN and the ORTN cattle price index which had served as the basis for adjustment for some time was overshadowed by a system of monetary correction based on changes in the dollar-cruzeiro rate. According to the Brazilians, use of the ORTN index made World Bank loans uncompetitive against funds available from the Eurodollar market and it became difficult to find borrowers who were prepared to pay the high interest cost when loans with 5 to 6 year maturities could be obtained from other sources at 10% interest.

51. The contours of the agreement, presently being worked out, can be described in the following way. The cruzeiro is to be pegged to the actual basket of currencies disbursed by the Bank and the nominal rate of interest is to be fixed at 10%. Assuming rates of inflation of the order of 25% per annum in Brazil and 8% in the lending countries, along with continuous adjustment of the cruzeiro to correct for the discrepancy, the nominal rate would

be 27% while the real rate would be 2%. This is a reduction from real rates of 5% and 6% that were being recommended in the past. It appears that both sides have moved further away from the goal of an optimal real rate of interest towards a non-negative rate that is politically tolerable. The Bank looks upon index linking as a device for restoring the vigor of the market mechanism by offsetting the distributional and allocational distortions which arise from unanticipated inflation. Secondly, it wishes to enhance the viability of financial intermediaries. This is also partly the view of the Brazilian Government but the latter is also concerned with the feedback effect of monetary correction on inflation and the cost of long-term borrowing and therefore prefers to apply the system both flexibly and selectively instead of instituting a procedure for automatic indexation covering the entire economy.

52. Indexation is a part of the stabilization policy because it is easier to apply than an outright price freeze. The most recent modifications to the indexation formula should soften the feedback effect. Once again the objective is to prevent earnings regulated by indexed contracts from growing in line with the inflation by modifying the price index so as to exclude those increases which are due to accidental occurrences such as the oil price hikes or the frost, that recently damaged the coffee crop. Given the system's complexity, the frequent changes and the existence of segments within the economy not subject to indexing, it is doubtful whether monetary correction has helped the cause of efficient resource allocation although it might conceivably have raised the level of investment.

53. Indexing is used more widely in Brazil than in any other country, but the system still has many gaps. In particular the lending to the agricultural sector is not subject to monetary correction apart from the loans made by the Bank. Discussions with the Brazilians spanning a period of eight years indicate that they are unwilling to extend indexing to the entire sector and are anxious to dilute the indexing procedure applied to the Bank loans so as to enlarge the subsidy element.

Uruguay

54. The Bank has made five livestock loans to Uruguay of which the first 245-UR was signed on December 30, 1959. The disbursement of the loans is handled by the Livestock Fund which was established by the Central Bank in 1958. The resources obtained from the Bank plus some contributions made by the Government are made available to the farmers through the Bank of the Republic (BROU) which is the only participating bank. The Central Bank's loans to the BROU are made against documents for sub-loans to ranchers at interest rates that permit BROU to get a spread of 2% over the indexed principal to cover the administrative expenses. Of the subsequent loans - 698-UR, 816-UR, 940-UR and 1166-UR the most recently agreed terms for the latter three are outlined below.

Uruguay Fourth Livestock (816-UR) signed April 26, 1972 (First Stage): Sub-loan balances are subject to monetary correction not later than April 30 in each year on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year, furnished by Banco Central; subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic Y Finansas for the corresponding period. Loans made to farmers with holdings of less than 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

Uruguay Fourth Livestock (940-UR) signed October 25, 1973 (Second Stage): Sub-loan balances are subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to the corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

Uruguay Fifth Livestock Project Loan No. 1166-UR signed October 15, 1975: All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (Second Stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost-of-living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6% kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceding year as compared to the average for the previous 12 months. Repayment terms of sub-loans reflect the ability of the investment to service the debt. Terms range from 5 to 10 years and include grace periods of up to 5 years. If the indexing system (100% adjustment for all sub-loans) were applied to sub-loans made in 1969 with terms of seven years including two years grace, the real interest rate obtained would have ranged between -2% and -8%. It should be recognized that this is not a bad performance compared to other Latin American countries, where inflation has increased and medium and long-term agricultural credit has not been adjusted.

55. Uruguay was beset by inflationary pressures throughout the sixties and this spurred discussion of the concept of indexation - discussion which did not culminate in implementation till veiy near the close of the decade because of fears harbored by the government that the introduction

of indexation would create destabilizing expectations on the part of the public. When in 1969 collaboration between Uruguay officials, USAID and members of the Plan Agropecuario produced an acceptable scheme, it was tried on a pilot scale in the livestock sector.

56. In 1970, it was decided that if beef and wool prices rose faster than the Consumer Price Index (CPI), the latter would be used to adjust the loan. This involved an assymmetry in the treatment of borrowers and lenders because no protection was offered to the commercial banks in the reverse situation in which the CPI rose faster than the composite index of beef and wool. Hence the private institutions were not prepared to adopt the scheme for their lending operations.

57. In 1971 the graduation of adjustment according to the size of the farm was altered, allowing 50% adjustment to all farms under 400 hectares. In 1973 the concession was withdrawn and farmers in all size classes were required to adjust by the full amount. However, a hardening of the terms in this area was balanced by subsidization elsewhere. During 1973 the rate of inflation was 78%, but for the purposes of loan adjustment it was calculated at 65% and as an additional sweetner, the ranchers were returned a portion of their export taxes, which helped to bring the adjustment down to a mere 32%.

58. The beef and wool price index rose less than the CPI in 1974 and the former index was reinstated in March 1975. To add to the confusion it should be mentioned that the nominal interest rate was changed a number of times and the index factor which is applied no later than April 30 is based on price changes during a 12 month period ending in the previous October. Depending on whether inflation is accelerating or slowing down this has introduced its own biases. In common with many other projects (Argentina and Bolivia), the Bank did not require the use of "cumulative" indices where a choice was given. The effect of this over the life of a sub-loan is probably that real positive interest rates under high inflation may not necessarily be achieved in practice. In addition, the Uruguayans did not compound inflation rates in calculating the index; they merely added them, and this further weakened the effectiveness of indexation.

59. Both the effectiveness and the popularity of the indexing system has been reduced by the government's inability to adhere to a single set of rules. Private lending institutions have been scared off by government actions which appear to be weighted against them and the farmers are unhappy because of the uncertainties regarding their future obligations. If indexing is retained they would prefer loans to be preindexed with a fixed mark up.

60. The government recognizes the political advantages of subsidizing agricultural producers. This is supposed to lower the cost of food to city dwellers. It is also apparent that merely indexing the livestock loans extended by the World Bank, which comprise a very small percentage of the total agricultural credit, may worsen the distortions present in the market.

61. The recent policy actions of the government suggest that the supporters of indexation have prevailed. A new law has been passed which calls for the indexation of all financial instruments where the term exceeds two years. This should greatly expand the scope of indexation within the financial sector which has so far been limited to the National Institute of Colonization (INC) and the Mortgage Bank of Uruguay. The INC, which serves as an intermediary on all land transactions as well as financing land sales, makes long-term loans, where the principal is linked to an index of agricultural products; the nominal interest is 3%. The Mortgage Bank uses a wage index to adjust its loans as well as its savings since this index reflects the repayment capacity of the borrower and the expectations of the savers. During the period over which indexing has been applied both these institutions have had problems in inducing borrowers to observe the terms of the original contract and eventually have yielded to pressure and have settled for easier terms. The INC has allowed its borrowers to defer payments while the Mortgage Bank scaled down the size of adjustment on mortgage payments in 1973.

62. The Uruguay experience is not encouraging. It has run afoul of the very same difficulties encountered by the Brazilians in the implementation of their own system. Excessive differentiation in order to deal with all situations is only one of the problems. Perhaps more serious, is the vacillation as regards terms and price indexes in the largely futile quest for a scheme that is fair to both parties and at the same time embodies the sectoral plans for the government. Through its willingness to bow to pressure from borrowers the government does not lessen the uncertainties inherent in an inflationary milieu, uncertainties which the indexing system was designed to neutralize. Each one of the indexes which can be used has its flaws and this remains an unavoidable weakness of the system. However, it is likely that the lower rate of inflation, which is expected in the next year or two, may make it easier to weed out the deficiencies in the system of indexation.

Bolivia

Bolivia Livestock (261-BO) signed June 25, 1971: Incorporates a trigger mechanism which becomes operative when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year. When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction. At present, two options are being offered on this livestock loan. One of them allows the farmers to make their payments in accordance with the above system of monetary correction. The other option - known as the dollar exchange clause - passes the exchange risk on to the farmer, i.e., the loan to the final borrower is denominated in dollars.

63. There is a great deal of resistance to the indexing system in Bolivia and it is unlikely that the foothold gained by the Bank in the livestock sector will lead to application on a larger scale. In fact, the recent experience suggests that the Bolivians intend to bring the curtain down on this small scale experiment.

Peru

Peru Agricultural Credit Project (933-PE) signed September 12, 1973: Sub-loans are not indexed until inflation is in excess of 9% for the fiscal year. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

64. Livestock loans made to Bolivia and Peru incorporate trigger clauses which require some form of adjustment if the chosen price index rises above a certain level during a specified period. Once again these are countries where the rate of inflation is moderate; and the financial system has not been forced to seek recourse in indexation.

Paraguay

65. During 1973-75 the inflation rate in Paraguay averaged 17.5%. It was therefore decided to apply indexation to the sub-loans made under the Fourth Livestock Project (1037-PA) signed September 6, 1974. The indexation clause stipulated the following conditions. A minimum real interest rate of 6% is to be charged and the principal outstanding is to be adjusted annually with reference to the cost-of-living index. Fondo Ganadero, the executing agency, charges 10% interest on principle adjusted on the basis of the CPI. However, in 1975, the change in the CPI was 6.7%. FG adjusted the principle on the basis of a 5% increase and the Bank, considering the high rate of interest already applied, agreed to this action.

66. Indexation has not been widely applied in Paraguay. So far the only other financial contracts subject to monetary correction are mortgage loans. Since inflation is projected to decline over the next five years it is unlikely that the system will be applied on a larger scale.

Other Countries

67. Many countries have used indexing in one form or another during the post war period and some have been led to abandon the concept after a long period of trial. The Finns, who had applied indexing to wages since 1945, found in 1967 that the system could not be made to work any longer and shifted to an incomes policy. Colombia has adopted the crawling peg in order to regulate the price of its currency and some form of indexing is applied to mortgage

loans, the investment of social security reserves and saving deposits. In the latter case the adjustment is limited to a maximum of 20% per annum. In general, the Colombians have resisted indexation. The Bank has made one DFC loan which includes a trigger mechanism but any agricultural loans made in the near future are not likely to include an indexation clause. For a long time both government and private sector bonds in Israel were linked to the official dollar rate but the sharp devaluation of 1962 with the concomitant jump in debtor obligations led to a discontinuation of linking with foreign exchange and a selection of the CPI as the index to be used for monetary correction.

68. One other feature as regards the application of indexing should be mentioned. "Dirty" indexing seems to be the rule and not something peculiar to the Latin American countries. Government usually exercise some form of discretion in their implementation of indexing. For instance, in Norway, the government decides the extent to which a price change will be compensated. Similarly, the Austrian government can overrule the automatic indexing of pensions and subsidies. Indirect taxes are used to regulate the index in Norway, Finland, Israel and the United Kingdom.

69. Even a brief survey of the experience with indexation leaves one with doubts as to its workability and its usefulness as a policy instrument. As the Economist pointed out,

> No system of indexation can be substituted for tackling the economic and social pressures which cause inflation. On the contrary the fewer the people who can lose because of inflation the faster prices will rise to transfer command over real resources to those who are determined and able to grab a larger share. But indexation, provided it begins in the right way, can shift the pain from inflation to politically more sensitive areas and so force the government to deal more promptly and effectively with the disease at its very early stages.

It is not clear that countries which are using indexation as a part of their stabilization program are aware of the larger problems that need to be tackled.

Annex II: Statistical Tables

Table I - Inflation and Related Statistics for Sixteen Latin American Countries, 1950-69*

	Rate of Inflation	
	Mean	S.D.**
Uruguay	43.0	34.9
Bolivia	41.3	55.9
Brazil	35.1	21.5
Chile	28.2	14.6
Argentina	26.4	23.4
Paraguay	12.5	17.5
Colombia	9.2	3.2
Peru	8.5	5.8
Mexico	5.3	5.3
Nicaragua	3.4	6.1
Ecuador	3.0	3.3
Honduras	2.1	3.4
Costa Rica	1.9	2.2
Guatemala	1.1	2.8
Venezuela	1.1	2.8
El Salvador	0.3	1.5

* Per cent per year.
** Standard Deviation.

Table II: Countries with Inflation in Excess of 10% during 1972-74

	1960-1971	1972-1974
Argentina	20.25	25.71
Bolivia	4.94	28.96
Brazil	37.83	12.81
Chile	23.51	201.73
Colombia	10.03	14.99
Ghana	6.52	11.10
India	5.36	14.33
Israel	5.67	18.97
Jamaics	3.96	14.80
Pakistan	3.47	16.28
Paraguay	3.08	11.95
Philippines	5.64	14.33
Uruguay	37.80	51.70
Yugoslavia	11.14	13.44
Zaire	16.65	14.66
Turkey	8.00	15.00

Table III: Indicators of Domestic Price Level Changes [a/]
(Average Annual Percentage Change)

Source: Date of CPP	Country	1965-70	1970-73	1973-75	(Estimate) 1975-80
2/18/75	Afghanistan	11.1	-2.3	6.4	5.2 e/
7/25/74	Argentina b/	16.1	43.2	-	-
10/16/74	Bangladesh	-	-	17.4	9.8
3/12/75	Bolivia	-	10.7	35.9	12.1
11/74	Brazil c/	26.5	17.6	31.0 g/	20.0 h/
	Chile	21.3	76.0	145.9*	
	Colombia	8.3	11.2	11.5*	9.07
5/15/74	Congo	-	-	17.8	9.5
3/74	Egypt	-	3.9	6.2	6.7 f/
	Ecuador	4.0	7.2	11.2*	
7/15/74	Ghana	-	12.0	-	-
7/22/74	Greece	2.4	3.0	-	-
	Guatamala	2.2	8.1	10.5	6.5
8/01/74	Guyana	-	4.3	-	-
4/22/74	Haiti	0.1	6.5	7.4	5.2
6/13/74	Honduras	1.9	3.7	10.0	7.5
6/06/74	India	6.5	18.5	9.7	6.0
6/05/74	Indonesia	-	23.0	20.0	-
6/03/74	Iran	1.9	8.1	7.4	4.7
12/27/74	Jamaica	-	10.8	17.6	10.0
8/30/74	Jordan	-	7.6	8.7	7.5
4/12/74	Korea	7.8	9.8	8.0	12.8 f/
11/29/74	Lebanon	2.0	4.4	14.0	9.5
10/07/74	Malawi	3.6	5.1	-	-
3/21/75	Mauritius	3.0	6.2	29.5	10.4
5/10/74	Mexico	3.4	6.7	17.7	7.2
5/17/74	Morocco d/	0.6	8.3	21.0	3.5
	Nicaragua	2.2	8.1	10.5	6.5
6/28/74	Pakistan d/	3.7	7.1	10.0	5.0
5/12/74	Paraguay d/	1.3	13.0	17.5	8.5
10/21/74	Peru d/	11.1	8.7	15.0	15.0 e/
7/15/74	Philippines	5.6	17.0	25.0	8.8
8/21/74	Romania	-	-	0.4	0.4 f/
6/26/74	Senegal	-	5.2	9.9	8.6
4/15/74	Sri Lanka	4.2	9.4	12.5	7.9 f/
9/26/74	Syria	3.5	6.2	14.4	10.1
3/27/74	Tanzania	-	5.1	6.0	5.9 f/
5/17/74	Thailand d/	1.2	5.9	-	-
6/10/74	Trinidad & Tobago	3.8	8.5	9.1	6.2 f/
	Turkey	8.1	14.0	15.0	15.1
	Uruguay			50.0	30.0
1/31/75	Venezuela	2.1	3.1	16.9	9.0
7/12/74	Yugoslavia	7.8	18.0	17.5	15.0
5/30/74	Zambia	-	6.7	12.4	7.5 f/

Note: (Based on explanation in CPP Attachments)
* 1973-74 only.

a/ General domestic price index not specified unless otherwise noted.
b/ Domestic wholesale index.
c/ General price index -- weighted average of wholesale (60%), the cost of living index (30%), and the cost of construction index (10%).
d/ GDP deflator.
e/ 1975-78.
f/ 1975-76.
g/ Average for 1974-75.
h/ Country economist.

Table IV: Estimates of Inflation, 1975-80 1/

Less than 10% rate of inflation	Percent	10% or more rate of inflation	Percent
Afghanistan	5.2	Argentina 2/	350.0 ('75)
Bangladesh	9.8 ('75-76)	Bolivia	12.1
Congo	9.5	Brazil	20.0 5/
Egypt	6.7 ('75-76)	Chile 3/	336.0 ('75)
Haiti	5.2		
Honduras	7.5		
India	6.0	Jamaica	10.0
Iran	4.7	Korea	12.8
Jordan	7.5	Mauritius	10.4
Korea	8.2 ('76-76)		
Lebanon	9.5	Peru	15.0 ('75-78)
Mexico	7.2	Syria	10.1
Morocco	3.5	Turkey	15.1
Pakistan	5.0	Uruguay 4/	30.0 ('75-80)
Paraguay	8.5	Yugoslavia	15.0
Philippines	8.8		
Romania	0.4 ('75-76)		
Senegal	8.6		
Sri Lanka	7.9 ('76-76)		
Tanzania	5.9 ('75-76)		
Trinidad & Tobago	6.2 ('76-76)		
Venezuela	9.0		
Zambia	7.5 ('76-76)		

1/ Source: CPP Attachments SI, Average Annual Percentage Change based upon the general domestic price index.

2/ Estimated inflation for 1975 alone is 350 percent. Therefore, it is safe to assume this country belongs to the over 10% category. There is some speculation that this rate may decline in 1976.

3/ Making projections of Chilean inflation is extremely difficult given their volatile record. Inflation for 1975 alone is estimated by Bank sources to be 336%. This in itself would be sufficient to place Chile in the over 10% category. It should be noted that the government is pursuing draconian policies to control inflation and the rate can be expected to fall considerably in the next few years.

4/ Inflation in 1975 is estimated at 50-60% and it is expected to decline steadily to around 10% by 1979-80.

5/ Country Economist.

Table V: Total Projected Lending by IBRD and IFC to High Inflation Countries 1/
FY1975-FY1980
(US$ millions)

Country/ Sector	Agriculture	Industry 2/	Transport	Utilities	Education 3/	Urban
Bolivia	150.6	88.5	84.0	31.5	40.0	-
Brazil	939.0	525.0	1,195.0	945.0	248.5	140.0
Chile	75.0	55.0	20.0	60.0	-	-
Colombia	425.5	400.5	145.0	392.0	110.0	100.0
Guatemala	20.0	-	60.0	146.0	40.0	15.0
Jamaica	59.0	-	71.0	57.0	15.0	20.0
Korea	705.0	20.0	540.5	-	77.5	-
Mauritius	10.0	25.0	10.0	16.5	17.0	-
Nicarague	12.0	8.0	13.0	53.0	27.0	6.0
Peru	245.0	150.0	160.0	100.0	70.0	40.0
Syria	185.0	20.0	40.0	265.6	40.0	-
Turkey	575.0	148.0	130.0	336.0	-	40.0
Uruguay	112.0	35.0	-	30.0	-	-
Yugoslavia	540.0	-	453.0	380.0	-	-

Source: CPPs Actual and Proposed Lending Program Through FY 80.

1/ Defined as having over 10% rates of inflation.

2/ Includes mining.

3/ Includes health and nutrition.

FORM NO. 678
(7-73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/M/76-3a

January 3, 1977

INDEXATION OF FINANCIAL CONTRACTS: ISSUES PAPER

MINUTES

Attendance:
Messrs. McNamara, Knapp, Adler, J., Bart, Bell, Bhatt, Chernick, Gordon, Gulhati, Hablutzel, Horsley, Karaosmanoglu, King, J., Lerdau, Rajagopalan, Thalwitz, Burki (Secretary)

1. A meeting of the Policy Review Committee was held on Thursday, August 5, 1976 to discuss the paper, Indexation of Financial Contracts.

2. There was general agreement that the paper provided useful background information on indexation as a policy instrument in situations of double-digit inflation. Since it was written as an issues paper, no attempt had been made to develop policy prescriptions for the Bank.

3. There was agreement that indexation could prove useful in situations of persistent double-digit inflation provided the governments were willing to use it for ironing out distortions from the economy. It was also pointed out that indexation could be used as a part of a package of anti-inflationary policies.

4. Doubts were expressed, however, as to whether it was useful to introduce indexation on Bank financed projects in countries where, despite double-digit inflation, governments were not prepared to adopt general indexation policies. It was pointed out that in some cases of this kind the introduction of indexation in Bank financed projects had considerably slowed down disbursements. Without ruling out the use of indexation in cases where the borrowing government itself wanted to experiment with the device, it was the concensus that the Bank should not insist on such arrangements in countries which had not been willing to apply them elsewhere in their economy.

5. Some speakers pointed out the need for some presentational changes before the paper was made available for wide circulation in the Bank. It was also felt

that the section on Brazil should be revised in consultation with the Region. It will be cleared by Senior Vice President, Operations, before circulation to the Bank staff.

Shahid Javed Burki
Secretary
Policy Review Committee

cc: Those Attending

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. J. Burke Knapp, Senior Vice President, Operations

DATE: January 18, 1977

FROM: Mahbub ul Haq, Director, EPR

SUBJECT: Issues Paper: Indexation of Financial Contracts

Attached is a copy of the final draft of the paper on Indexation of Financial Contracts. As decided in the PRC review of the paper (minutes attached), the draft, with recommended changes, is now submitted to you for clearance before circulation to the Bank staff for information.

Attachments

cc: Messrs. Chenery
Karaosmanoglu
Avramovic

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

File

TO: Mr. S. J. Burki, EPRPP

DATE: September 9, 1976

FROM: V. V. Bhatt, ECDPF

SUBJECT: Issues Paper on the Indexation of Financial Contracts

We have revised the paper yet again so as to incorporate the suggestions made at the PRC meeting and the comments which we received from the LAC region. I think our own views are close enough to those espoused by the regional department although differences remain over the scope of the paper and interpretation of Brazilian experience.

It appears that we have not been able to convey to some of our readers the limited nature of this undertaking. We did not set out to survey the theory of indexation; nor was it our intention to do a series of exhaustive studies of the countries that have experimented with monetary correction. It is the Bank's own experience which figures prominently in the discussion and gives a certain tone to the paper. We are painting on a restricted canvas; the larger picture was sketched out in an earlier article prepared by the division and we felt that it was unnecessary to squeeze the arguments developed there into the issues paper.

Keeping these ground rules in mind, we have moved as far as we can to accomodating the suggestions that have been offered.

cc: A. Karaosmanoglu
D. Avramovic
E. Stoutjesdijk

SOME PROJECT ISSUES IN
INDEXATION OF FINANCIAL CONTRACTS

September 1976

Public and Private Finance Division
Development Economics

TABLE OF CONTENTS

SUMMARY AND CONCLUSIONS

This paper discusses the role that indexation of financial contracts might play in the mobilization and allocation of savings as well as in strengthening the viability of financial institutions in a period of inflation. It also explores the justification for indexation of Bank lending operations in agriculture and industry and assesses the experience gained so far with regard to agricultural loans made by the Bank during 1967-75 in the Latin American Region. Questions of overall financial policy and the level and structure of interest rates have been analyzed in a separate paper titled "World Bank's Approach to Interest Rate and Credit Allocation Issues".

The broad conclusions of the paper are summarized briefly below:

1. Indexation policy involves fairly high administrative costs and may also strengthen inflationary expectations. Hence, it is not an appropriate policy instrument for dealing with inflationary situations that are likely to be temporary or can be controlled by means of monetary-fiscal policies or are such as to result in a low and stable rate of inflation.

2. It is, however, a relevant policy instrument in countries which are likely to experience high and variable inflation. Here two situations must be distinguished. The first is where indexation is a part of a policy package for the elimination of inflationary pressures which have persisted in chronic form over a protracted period and which are likely to be brought under control in phases over several years. In this context, indexation has a distinctly subordinate role with fiscal, monetary and other measures occupying the center.

3. The second situation is one in which there is no effective anti-inflationary program, double-digit price rises are expected to continue and indexation is adopted to neutralize their impact on financial contracts. Here the principal contribution of indexation would be in bringing about some convergence of expectations of savers and investors; thus it can safeguard the saving-investment process, promote the growth of medium and long-term financial instruments and ensure the viability of financial institutions.

4. The success of an indexation experiment crucially depends on (a) its acceptance by the government as a desirable policy instrument for insulating the structure of interest rates from the impact of inflation, (b) its application to major medium and long-term financial instruments for savings mobilization and credit allocation on the basis

of a general price index relevant for each country, and (c) the adoption of complimentary policies in the field of exchange rates and the tax system. It is unlikely to succeed in its main objective if only a few instruments of limited importance are indexed.

5. It is difficult to identify the group of countries which are likely to experience serious inflationary pressures in the future. The situation during 1972-75 has been unusual and it would not be wise to extrapolate recent trends. However, it might be useful for the Bank to discuss the advantages of indexation with countries presently experiencing double digit inflation.

6. (a) The Bank should emphasize the desirability of applying indexation to all medium and long-term financial instruments. If, however, a country is unwilling to index all such instruments, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans. Such a policy would enhance the viability of DFCs and other credit institutions associated with the Bank. Further, experience with such indexation may induce the government to adopt it on a wider basis.

(b) In the case of a country which cannot be persuaded to adopt monetary correction or other appropriate interest rate policies, it would be counter-productive for the Bank to insist on the indexation of its sub-loans, particularly when the domestic financial intermediaries associated with the Bank do not occupy a dominant position in the medium and long-term credit market. Such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider the rationale of its loan operations and program in the country concerned.

I. Introduction

1. This paper has a narrow scope. It is not about overall financial policy or even about the level and structure of interest rates. These important subjects have been studied recently in the paper entitled, "World Bank's Approach to Interest Rate and Credit Allocation Issues", January 30, 1976. The present paper on indexation elaborates on one of many issues discussed in the above mentioned draft, namely how to insulate interest rates from the impact, generally unintended, of high and volatile rates of inflation. This issue would arise no matter what level of real interest rates is considered appropriate. Clearly, the indexation technique can make a more important contribution to development policy if the real interest rate structure is appropriate than if it is not. But even in the latter case, the role of indexation is not insignificant from the points of view of saving mobilization, allocation and the viability of the financial structure.1/

2. The paper is a response to questions raised by staff in the Latin American Regional Office about the indexation of 11 agricultural loans made by the Bank during 1967-75. This experience is reviewed in the annex and the main conclusions are reflected in the analysis and recommendations presented in the main text. In addition, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry. It does not discuss the application of indexation in other areas such as wages and taxes. The purview is limited to the area of financial contracts.

3. An active development policy trying to promote rapid growth in a country is likely to generate inflationary pressures. This danger is perceptibly greater in the LDCs partly because of the speed with which supply bottlenecks are encountered and partly due to the expansionary monetary-fiscal policies. The inflationary process in the LDCs, however, has accelerated since 1970 because of a significant rise in the prices of fertilizers and food, partly as a result of natural disasters and the quantum jump in the oil prices since 1973. Many LDCs are currently experiencing double digit inflation; and in some of them, this trend is likely to continue until 1980 or so. In this context, the application of the indexation technique to financial contracts assumes particular significance.

4. High rates of inflation pose a series of problems all of which are rooted in the unanticipated redistribution of resources between economic units involved in monetary transactions. To avoid the possibility of a resource loss during periods of high and variable inflation, individuals become reluctant to enter into agreements which bind them for a long period of time to financial terms expressed in current prices. This interferes

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1/ For a review of theoretical literature and empirical experience, see Index-Linking of Financial Contracts: A Survey of the State-of-the-Arts, World Bank Staff Working Paper No. 192, November 1974.

with the development of the financial sector, especially with the supply of term loans because the nature of the commitment increases the chances of incurring a loss. But aside from this, there is a flight from monetary transactions and into various forms of barter. Savers, fearing an erosion in the value of money balances, prefer to hold real estate, specie or even certain types of commodities. In general, inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

Policy Options

5. In the area of financial contracts, there are two possible ways of coping with the problem of inflation. In each case, the idea is to adjust the financial transaction so that it is more or less in step with the overall prices.

6. One solution is a policy of variable interest rates. This would allow interest rates to vary with current and expected increase in prices; in theory, it would protect both borrowers and lenders against the consequences of changes in the rate of inflation. Variable rates are a workable solution when the rate of price increase is fairly stable or predictable and the market has the freedom to generate a rational interest structure in the light of past experience and future expectations. However, available information indicates that Latin American countries with high rates of inflation also tend to experience fairly sharp fluctuations in the annual rate of increase of prices and this variance would very likely interfere with the markets' ability to arrive at a rational rate structure.

7. Where inflation is high and variable, a second solution, i.e. indexation, seems to be appropriate. Indexation preserves the real value of contractual obligations by tying them to a price index, and it thereby helps to avoid the anomalous situation, often found in LDCs, when real interest rates go down in times of inflation and up in times of a price decline. Such movements in real rates cannot be justified either in terms of a demand management policy or as an allocative measure.

8. Since indexation reduces the riskiness of financial transactions by safeguarding the individual transactor against losses due to unforeseen changes in the price level, it can have two beneficial results. Firstly, financial intermediaries can offer stable positive real interest rates on savings although available evidence on this point is weak. Indexation may encourage the financialization of savings presently invested in real assets and thereby enhance the efficiency of resource allocation. There are some indications of such a shift in Brazil, Korea and India following the change in interest rate policies, although the available evidence is far from being

conclusive.1/

9. A second advantage of monetary correction is its impact on long-term lending. At present, there is a marked paucity of long-term funds in the financial markets of the LDCs due to the traditional preferences of lenders and the riskiness of lending long. This is especially marked in the agricultural sector as has been pointed out in the Policy Paper on Agricultural Credit (p. 16). For example, 75% of insitutional loans in Latin America and Africa are for two years or less while for Asia, the figure is around 65%. Such squeezing of the maturity spectrum may have an adverse effect on those projects that are subject to long gestation lags. If entrepreneurs have access only to short-term loans, the uncertainty of being able to roll over their loans may dampen their willingness to undertake long-term investment. As long as financial intermediaries are unable to cover themselves against the risks involved in making term loans, and as long as they are constrained from charging an interest on their long-term commitments, which is significantly different from that levied on short funds, they are unlikely to pursue long-term lending with much enthusiasm. Indexation could help activate this segment of the market by rationalizing the rate structure and protecting intermediaries from the so-called decapitalization problem, which is the erosion of the lenders capital base during times of rapidly rising prices.

Country Experience with Indexation

10. A number of countries have experimented with monetary correction during the last thirty years, with Finland being among the earliest to apply the concept. (See Table on page 7.) In most cases, a beginning seems to have been made with the indexation of wage contracts and long-term government bonds, the coverage being extended at a later stage to social security benefits, private lending and recently to taxes.

11. Concentrating on the financial sector, it appears that the initiative to index has usually been taken by the government and in each case it has been motivated by the desire to increase the rate of savings in forms amendable to policy regulation. A secondary and related objective has been to protect the interest of small savers from lower income groups who normally lack inflation proof outlets for their saving. Israel is one of the countries which has used monetary correction by issuing indexed government bonds from as early as 1948. Brazil adopted this device in 1964. Since then Indexation has been extended to some savings institutions in both Brazil and Colombia.

1/ W.L. Ness, Jr., Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience, Economic Development and Cultural Change, Volume 22, Nos. 3, April 1974. See Appendix I section on Brazil. See also Ronald I. McKinnon, Money and Capital in Economic Development, Brookings 1971 for Korea and D.J. Lakdawala, Financial Assets and Instruments for Mobilization of Savings, for India.

12. What emerges from the experience with the use of indexation as a policy instrument is the following:

(a) Indexation has been used selectively for a limited range of transactions to promote equity, resource mobilization by the government or resource mobilization and allocation by financial institutions;

(b) Where indexation has been used for price stabilization, it has been part of a package consisting of deflationary credit and fiscal policies, price and wage controls and even direct physical controls;

(c) Indexation rules have served multiple policy objectives. The approach has been what may be called "discretionary indexation", analogous to "dirty" floating of exchange rates.

13. In the area of wage contracts, the Government of Brazil followed a rule of adjusting nominal wages with reference to an estimate of future inflation. In effect, this meant that wages were not indexed at all, and the wage increase which was granted depended more on government policy rather than actual inflation.[1/] This phase lasted from 1965 to 1968 at which point the rule was changed permitting nominal wages to track the rate of price increases more closely, but there continued to be a large discretionary element in Brazil's policy of wage indexation. In the field of financial contracts discretionary changes have tended to favor the borrower at the cost of the lender. By only permitting a partial adjustment of the principal or the interest rate the government has engineered a transfer of resources from one party to the other.

1/ The mechanics of Brazilian indexation are discussed at length by Albert Fishlow. (Indexing Brazilian Style: Inflation without tears? Brookings Papers on Economics, No.1, 1974). He points out that "Brazilian wage policy has proven virtually completely discretionary... as so has most of the rest of the system of monetary correction...Indexing was an element of intervention and as such was substituted for other policies".

Summary of Countries' Experience of Indexing[(a)]

		Social Security Benefits		Investment					
	Wage	Pensions	Other transfer	Govt. Bonds	Private Bonds	Mortgages	Other Loans	Rents	Taxes
Argentina				1962-	1959-				
Brazil	1964-			1964-		1964	1964-	1964-	1964-
Canada	1972-	1965-	1973-						1974
Chile	1960s	1952							
Colombia						1972-			
Finland	1945-67	1957-	1956-67	1945-67	1953-67		1952-67	1952-67	
Israel	1961-			1948-	1951-	1950s			

(a) Table covers period up to end of 1974.

Source: National Institute Economic Review, 1975.

Rationale for Indexation of Financial Contracts

14. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for individuals and for institutions. However, these administrative problems are not large and the additional expense seems like an insignificant price to pay for a substantial expansion in the breadth and scope of the financial market. Since indexation is likely to be limited to the long end of the market, the cost of supporting the system would be relatively small.

15. A more important problem is the difficulty of persuading the government. The indexing of financial transactions not only increases the burden of financing the national debt, but it also reduces the subsidy long enjoyed by businesses with access to institutional loans subject to fixed interest rate ceilings. The government is usually under pressure from these businesses to continue with the subsidy but at the same time it cannot ignore the distortions arising from inflation and its own arbitrary pricing policies. If inflation cannot be controlled, indexation may be an attractive way of injecting a degree of rationality into the pricing system. There is very little reason to believe that indexation will interfere with the government's ability to subsidize particular groups. Even if a number of transactions within the economy are subject to indexation, the government can still channel resources wherever desired through tax and subsidy devices.

16. Of course, the more moderate the rate of inflation and the more flexible the financial system -- implying both variability of interest rates and institutional diversity -- the less will be the attraction of, or the need for indexation. But those countries experiencing high rates of inflation in a milieu of pegged nominal interest rates and fragmented financial institutions, indexation of contracts may help to revive the financial sector.

17. Can indexing succeed if it is adopted by, say, long-term financial institutions but not by those engaged in short-term transactions? Such a regime would be created if, for example, the government decreed that deposits and loans above a certain maturity be indexed. A parallel system of indexed long-term and non-indexed short-term financial contracts would come into existence. Such a system is likely to prove beneficial to the economy. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the cost and nuisance of indexation may exceed the benefits. To the extent savers forego indexed long-term investments in favor of greater liquidity accompanied by negative returns, this will be the result of conscious choice rather than the unavailability of indexed instruments. And on the borrowers' side, the option would be to get long-term financing at a stable cost or go through the uncertainties of rolling over short-term loans at a variable cost. If there is no indexing, the banks have an incentive to borrow short and lend short. This is accepted by depositors who have no better alternatives and by borrowers who do not mind the shortness of maturities so long as real interest rates are

negative. By contrast, the indexed system, as described above, would encourage banks to differentiate between short and long-term markets in financial resources and this would contribute to economic development.

18. The next question is whether or not indexing can succeed if it is adopted only by some long-term financial institutions but not by others. If the institution which adopts indexing is already dominant in the long-term market for industrial or agricultural funds, the chances are that the new policy will be a success, unless the government lends its support to non-indexed competitor institutions. Assuming that the government accepts indexation as a part of its policy framework, the "indexing institution" will be able to expand its loanable funds, unless statutory restrictions on institutional savers prevent them from purchasing the newly created financial instrument. Existing borrowers of the "indexing institution" are unlikely to switch to rival long-term sources to any large extent. By definition, rival banks are small in size and cannot accomodate many new clients. Also, indexing does not raise real interest charges; it simply prevents borrowers from reaping a windfall gain. The "indexing institution" will pick up those new borrowers who are attracted by the availability of long-maturity funds at real interest rates which remain lower than expected rates of return on their investments.

19. Partial indexing in the long-term market can succeed but there is nothing inevitable about this outcome. If the "indexing institution" does not have a large share of the market, if government does not accept it as a policy instrument or if there is collusion between rival banks and key businessmen, the introduction of monetary correction may not survive for long.

Evaluation of Present World Bank Policy

20. From the stand point of the overall economy of the borrower country, all World Bank Group loans and credits are in fact indexed to the extent that changes in the rate of exchange are a proxy for the rate of inflation. This follows from the World Bank Group policy of denominating its loans in terms of foreign currencies. In other words, either the government or the intermediary institution or the sub-borrowers bear the cost -- in terms of local currency -- of any exchange rate devaluation vis a vis the foreign currency in which the World Bank has provided the loan.

21. As regards the on-lending operations of the World Bank through financial institutions, two types of indexing practice can be distinguished:

(a) Loans to sub-borrowers are denominated in foreign exchange. This applies to a substantial segment of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities or

some price indices, the exchange rate or a combination of the three. This applies to 16 of the active agricultural project loans in the Latin America and the Caribbean Region. (Details are given in the Appendix.)

22. In the case of on-lending through the DFC[1/] exchange risks were assumed by the sub-borrowers in 15 of the 50 cases. In the rest, the risk was assumed by the government (17), by the Central Bank (5) or shared by the governments and the sub-borrower (13). This contrasts with on-lending in agriculture, where except for the 11 projects in Latin America which included explicit indexation formulae, the exchange risks have always been assumed by the government or public agencies. In terms of the volume of commitments, the indexed agricultural loans amount to $217 million as compared to the total WBG agricultural credit operations of 516 billion by the end of June 1975.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial intermediary immune from the risks of exchange rate alignments was the dominant factor. This meant that the exchange risk had to fall either on the sub-borrower or on the government (or Central Bank). With lending rates of DFCs being pegged in many countries, the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.[2/]

24. Sixteen loans made by the Bank include indexation clauses as mentioned above. Nine of these loans are for livestock and two are for agro-industries and the construction of grain facilities. During the first half of 1976 five indexed loans were made to Brazil - one each for the industrial sector, the transport sector, two for the construction of water supply and sewage facilities and one for nutrition. All the loans have been made in the Latin America and Caribbean Region. Indexing in these operations has been of an experimental nature. An explicit policy

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1/ On-lending through the DFC, was $2.8 billion by the end of June 1975, representing about 50% of total WBG lending to the Industrial Sector.

2/ A table presented in the DFC policy paper Annex 6 indicates that there is no apparent correlation between the procedure used for allocating exchange risk and the average rate of inflation during the previous five years.

with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiations the annual rate of inflation was set at 8 percent or above. Two loans have been indexed through a "trigger mechanism" which requires that loans be indexed if and when a specified inflation rate is reached. In all cases, indexing is applied to the principal with the interest payments calculated at adjusted values of the principal. The price indices used were various combinations of beef and wool prices, cost of living indices and the exchange rate. (See Appendix I for details.)

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and administrative sense in the environment of low interest policies for term lending, the introduction of indexation in Bank agricultural loans has been prompted from the start by an overall policy objective to ensure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indices other than the foreign exchange rate have been experimented with in these agricultural loans. The difference in the rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign financed component of DFC loans was linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending including use of own resources by the financial institutions - although this objective was not always accomplished.

26. The Bank's experience in the implementation of indexed loans over the past eight years is not easy to assess. Because of frequent changes in the terms of indexed loans, their impact has varied and it is doubtful whether it can be measured without a very large research effort. Of the six countries which have received indexed loans, only three appear to be seriously committed to the system, these being Uruguay, Argentina and Brazil. Each of them has experienced double digit inflation in the recent past and the trend is expected to continue during the next few years. Brazil has the additional incentive of having developed the indexation system to a point where it is widely accepted, and to a degree understood. The three remaining countries - Bolivia, Peru, Paraguay - are putting their faith on anti-inflationary fiscal and monetary policies.

27. There is a striking uniformity in both the responses of borrowers to the indexation of loans and in the efforts of governments trying to achieve a workable compromise. In every case where indexation has been incorporated into the loan agreement, the adjustment is determined by the movements in one of the two reference indices, usually, the Consumer Price Index and a composite index constructed from beef and wool prices. The Index which is actually used is the one which registers a lower rate of price increase. Through this and other devices, governments have sought to ease the terms offered to the final borrower and in the process have

reduced the effects of indexation on the interest rate and thereby the benefits accruing to the lending agency. These measures have been in response to the strenuous opposition that indexation has aroused among farmers who are used to subsidized loans, excessively conscious of the uncertainty which monetary correction introduces as regards the repayment of the loan, and powerful enough to force the government to soften the conditions of the loan.

A Frame for Future Bank Policy

28. While the experience of the Bank, as far as indexed loans are concerned, indicates the need for continuing study and evaluation, indexation does seem to be an appropriate policy instrument for countries which have to live with inflation and at the same time implement a broadly based policy of economic development.

29. Which countries: For the large category of countries with low and relatively stable rates of price increase, the need for indexation is limited, perhaps, to social security payments. A second category would include countries such as Brazil where inflation has averaged around 30% over the last two years. The government is determined to bring down the rate of price increase and in the meantime provide some measure of protection for income shares and the saving investment process. In these countries, indexation would serve a dual purpose: as a surrogate incomes policy and as a means of rationalizing the financial sector while inflation is being brought under control. For the third group of countries which have a long history of high and variable rates of inflation and where the government is disinclined to take the harsh measures needed to dampen inflationary pressures, indexation can serve a useful function in safeguarding the saving-investment process.

30. However, it is difficult to identify countries in the second and third groups. Recent experience (1973-75) is hardly any guide: for practically every country in the world was caught in the throes of double digit inflation. One cannot extrapolate recent price trends into the future and thereby separate countries into those in which inflation is expected to be serious and the rest. The projections contained in the recent CPPs for a large number of countries indicate that inflation is likely to be a problem in some countries - Argentina, Brazil, Chile, Peru, Syria, Yugoslavia, Uruguay, Turkey and Korea. (See Table IV, Annex II, for information on the projected rate of inflation; and Table V, Annex II, on proposed Bank lending to these countries over the next five years.) Several of these countries have introduced indexation schemes and are in a position to extend the scope of these measures should the need arise. So far, Yugoslavia, Syria, Turkey and Korea have not experimented with indexation but they can, perhaps, be encouraged to consider its application in the future.

31. Which Index: Not only have sub-loans through the DFCs been linked to the foreign exchange rate, but the foreign exchange rate has

also been used as an index for adjusting the principal on a few agricultural loans. Use of the exchange rate has the distinct advantage of providing a firm numerical basis for adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. Even with these qualifications, the exchange rate can be a good proxy for price inflation, particularly where rate changes take place frequently.

32. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of large adjustments introduces uncertainty into investment decisions. As prices rise, the over-valuation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two uncertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Further, sudden large adjustment creates a cash squeeze -- an abrupt increase in the liabilities of the businesses. For these reasons, in such a context the foreign exchange rate should not be used as a basis for indexation.

33. If it can be assumed that the various countries which apply the concept of monetary correction will adhere to a system of floating rates over the foreseeable future, the exchange rate can be used to index all transactions; this practice would have the additional advantage of effectively passing on the exchange risk to the sub-borrowers. However, if the assumption is invalid, it would be preferable to treat at least local currency transactions separately so as to avoid the problems arising from large, discrete exchange rate adjustments. Probably the optimal procedure in such a situation would be to index all loans with respect to a general domestic price index and deal separately with the exchange risk. Exchange risk in this case would disappear or at least be smaller than what it would be without indexation of all loans, and it may become possible for the government or the Central Bank to bear it by charging a small fee to the sub-borrowers.

34. A general price index with a wide coverage may be the most appropriate basis with which to link the principal of financial contracts. It is not appropriate to use specific commodity or sectoral price indices because the main purpose of monetary correction is to neutralize the overall impact of inflation on financial contracts, without interfering with relative prices. Monetary correction based on specific commodities would tend to distort relative price structures and thus to misallocate resources.

35. There are some reservations, however, relating to the technically defective nature of general price indices, and due to the fears that these

indices can be tampered with for political reasons. Where there are several indices, the choice between them also present a problem. If the principle that indexing should be based on the general price index is accepted, the question of which index qualifies for this role becomes an empirical one and has to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are limited in favor of a more long-term trend.

36. In the case of more open economies which are vulnerable to price shocks emanating from abroad, it may be necessary to adopt a discretionary approach a la Brazil where the index is adjusted so as to net out sudden changes in the prices of traded commodities due to unforeseen circumstances in the world economy or natural calamities.

37. Since the idea is to take account of a resource loss experienced by the economy, it might be preferable to use a wage index where one is available, which may reflect more closely the changes in real purchasing power, rather than a CPI that has to be arbitrarily adjusted whenever the situation demands.

38. Modality of Negotiation: The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects. Chances of success are much greater if indexation is applied across the board in the long-term credit market than if it is applied piecemeal in the context of specific projects or specific institutions. It must be recognized that the Bank is likely to be the only international financier urging indexation. Unless there is genuine understanding on the part of the borrower about the virtues of monetary correction, there is not much prospect for the application of this technique. The borrower may be able to switch to other international lenders if the Bank applies pressure on this issue. (The conditions for the success of partial indexation are discussed on pp. 9-10.)

39. In its dialogue with countries likely to experience double digit inflation, the Bank should emphasize the desirability of applying indexation to all medium and long-term financial instruments for savings mobilization as well as allocation. In addition, the Bank is interested in the viability of the DFCs and other institutions that disburse Bank loans. From a long-term point of view, the success of the Bank's policy towards these institutions must be judged from the point of view of the latter's capacity to function effectively even when the Bank's support is withdrawn at some stage. Further, their dominance in the area of medium and long-term credit in a large number of countries makes it more likely that the indexation experiment will succeed. Finally, if these institutions link monetary correction to a general price index all or a greater part of the exchange risk would be borne by the sub-borrowers; a separate provision for exchange risk would therefore not be necessary. (See discussion on pp. 10-12.).

40. If the governments are persuaded to accept such policy measures, they are likely to adopt them also for other medium and long-term financial instruments like saving deposits and government bonds as a result of either their dialogue with the Bank or the demonstration effect of the experiment with indexation carried out by the long-term credit institutions.

41. If a country is unwilling to index all financial instruments of long-term credit institutions associated with the Bank, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans.

42. If, however, a country cannot be persuaded to adopt monetary correction or other appropriate interest rate policies even at a sectoral or sub-sectoral level, it would be counter-productive for the Bank to insist on the indexation of its sub-loans; such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider its loan operations and program in the country concerned.

Annex I: World Bank Loans Subject to Indexation and Country Experience with Indexation

Argentina

43. Argentina has received only a single agricultural loan from the Bank which contains an indexing clause. This has been for the Balcarce Livestock Project (505-AR) and was signed on July 31, 1967 but the first indexed sub-loan was made in September, 1973. According to the terms of the contract the sub-loan balances are adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower for each month, with interest charged at 6% per annum on adjusted balance. Indices used are: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers. Therefore, the reference index is a composite one and although cumulative is always less than either of the two basic indices. The Balcarce project has had its share of problems. During the last few months there has been an increase in the prices of finished steers without a commensurate increase in those of feeder steers marketed by project beneficiaries. Even though this has had little impact on the adjustment factor, farmers are beginning to express reservations regarding the use of indexation and there has been a decline in the applications for new loans.

44. The Argentinians have been experimenting with the indexation of government bonds over a long period of time extending as far back as 1962, when the National Recovery bonds bearing a nominal interest of 7% were used

with the principal adjusted with reference to an index of gold prices. Even earlier than this, in 1957, the State Petroleum Enterprise had floated bonds with a twenty year maturity, linked to an index based upon company productivity and changes in the salaries of company employees.

45. The government has continued to issue indexed bonds during the seventies but it was only in March 1975 that indexing was used in the banking sector, when the National Bank of Savings and Securities offered its customers monetary correction for deposits that are not transferable for one year. Indexed credit has also become important in the area of housing finance through the National Mortgage Bank and more recently through the mortgage branches of commercial banks. The adjustment procedures are rather complicated. There is some differentiation of terms according to income class with only a portion of the principal being subject to monetary correction. Furthermore, although the index is based on construction costs the actual adjustment cannot exceed 80% of the change in basic salaries of workers and officials in the industrial sector. This is how the scheme exists on paper; however, the actual experience of the mortgage bank indicates that indexing is not automatic. The administration of indexing is highly flexible, with the authorities deciding the time and the extent of the adjustment.

46. Indexation has got off to a slow start in Argentina, with experimentation proceeding on a small scale on many fronts. There still appear to be many misgivings as to its application on a larger scale in the financial sector.

Brazil

47. So far the Bank has made eight loans to Brazil which are subject to indexation. They are the following:

Brazil Livestock (516-BR) signed September 23, 1967: Originally, sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period). An interest rate of 14% was to be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers were offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Later, in June 1971 the Bank and the Government agreed that whatever adjustment made in sub-loan principal would not exceed the extent of inflation as measured by the general price index for the period. Subsequently, in July 1972, another

revision in sub-lending terms was agreed upon to simplify sub-lending terms and correct certain problems which had emerged. All sub-loans made after that date were subject to correction according to changes in the US Dollar rate for cruzeiros, with interest on the adjusted principal at 7-1/4%. It was also agreed that, if at any time the increase in the general price index exceeded the rise in the US Dollar/cruzeiro exchange rate by more than 7-1/4%, the Bank and the borrower would agree to a new indexing system in order to assure that the indexing system would not result in negative real interest rates. The revised system adopted in July 1972 also provided for the elimination of the lags which had existed in the previous systems in applying indexing during the early part of the grace period; and for the correction of the previous practice of calculating interest on the unadjusted, rather than the adjusted, principal during the grace period.

Brazil Grain Storage (857-BR) signed September 27, 1972: The principal of this loan was to be adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzeiros of the Central Bank at 7-1/2% per annum. In September 1974 the Bank and the borrower agreed to revise the indexing system so that the principal of loans made after that date would be corrected according to the ORTN index, with an interest rate of 5% on the adjusted principal. This made the sub-lending terms generally consistent with terms offered by official lending institutions for agro-industries and other industries. However, in order to spur what it felt was a serious lagging in the development of grain storage facilities, the Government created in April 1975 a new grain storage credit line. The new line offered unindexed loans with nominal interest rates ranging between 8% and 15%. Hence, demand for indexed credit declined sharply and the uncommitted balance of the Bank loan (about 20%) was cancelled in October 1975.

Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of the principal throughout the life of the loan was to be in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest of 7-1/4% being charged on the adjusted principal. However, as the combined effect of internal and external inflation patterns and the rate of change in the US dollar/cruzeiro exchange rate began to cause the agreed indexing system to result in negative real interest rates, the Bank proposed to the Brazilians the general adoption in the livestock sector of a system which would result in more predictable interest rates - i.e., 5% interest after ORTN correction of principal. The Brazilians did not agree, resulting in the Bank's withdrawal from active consideration of a third livestock loan. Subsequently, the Government created with its own funds a new livestock credit program with nominal interest rates of about 15%, without ex post monetary correction of principal (terms which are similar to other agricultural lending in Brazil). It also agreed to allow prepayment, and refinancing at these new terms, of all the sub-loans made from the proceeds of the two Bank loans. As a result, partial cancellation of Loan 868-BR and accelerated repayment of both Bank loans are planned.

Brazil Agro-Industries (924-BR) signed August 1, 1973: Under the initial agreement sub-loans carry an interest rate of 5% plus adjustment based on the National Treasury-Bond (ORTN) price. But in October 1975, in line with the Government's desire to encourage investments in several of the relatively less developed states participating in the project, the Bank and the Government agreed to lower the interest rate to 3% (after ORTN correction of principal) for beneficiaries in 4 states, retaining the 5% rate for the others.

48. These loans were all in the agricultural sector, but during the past year there have been a number of loans to other sectors: in the industrial sector, Loan 1206-BR, ($85 million) of March 1, 1976, for the BNDE (National Economic Development Bank) development banking project, provided for sub-lending to small- and medium-size industries, with the cruzeiro-denominated sub-loans indexed according to the ORTN (National Treasury Bond) price and with interest rates of 3% for beneficiaries in the less developed North and Northeast regions, 5% in the Center-South and 6% in Sao Paulo. These terms are standard for all of BNDE-financed small- and medium-size industry operations channelled through state and regional development banks. Also, the nutrition loan ($19 million) approved June 22, 1976 includes financing for BNDE's special food processing loans to be extended with interest rates of 3% after ORTN indexing of principal. In the transport sector, Loan 1207-BR ($55 million) of March 1, 1976, for the BNDE secondary and feeder road project provided for sub-lending to states or to municipal consortia, with the cruzeiro-denominated sub-loans indexed according to the ORTN price and with interest rates varying from 4% to 7% depending on the state concerned (the lower rates applying to relatively less developed areas). In the water supply and sewerage sector, Loan 1009-BR ($36 million) of June 17, 1974, and a second loan (of $40 million) approved July 6, 1976 to help finance through the National Housing Bank (BNH) sub-projects in the Minas Gerais state water supply and sewerage program provide for cruzeiro-denominated sub-loans to the state water company at a rate of interest of 4% (plus various fees amounting to about 2%) with principal subject to full monetary correction according to changes in the general price index. This is consistent with BNH's practice in all of its water supply and sewerage lending to fully correct the principal of sub-loans according to the general price index and then to charge interest rates ranging from 2% to 7%, depending on the relative stage of development of the state concerned.

49. A brief sketch of the Brazilian experience is useful. Indexing was introduced in 1964 and applied initially to government bonds with maturities ranging from 2 to 5 years. The principal was revalued quarterly with reference to the Whole Sale Price Index and the interest was paid on the revalued sum.1/ Since then over a hundred laws and implementing decrees have extended the

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1/ From December 1972 until March 1974 the index used combined a moving average of inflation during the previous three months with a forecast of inflation expected during the next six. A 50 percent weight was assigned to the two periods. In June 1976 a term for future inflation was reintroduced into the wage indexation formula but the weights were changed to 80 percent for past inflation and 20 percent for the expected increase in prices.

system to embrace many other areas of the financial system and sectors of the economy. Revaluation is widely applied to capital assets and property values and incomes are readjusted for tax purposes. But indexing is constrained by other policy objectives and a simple 100% link with prices has not always been used. In fact, indexing as applied to wage contracts has been distinctly regressive. The only visible positive impact of indexing has been the growth in non-monetary financial assets. Although even here it is difficult to isolate the net increase since there has been a substitution of indexed financial assets -- such as bonds and bank deposits -- for those not subject to monetary correction. What makes the Brazilian system so complex and from the purist's viewpoint a little unsatisfactory is the coexistence of different procedures for indexing and the absence of a universal coverage. For instance, the private sector has strenuously resisted indexation because business firms are unprepared to bear the risks and consequently financial intermediaries have been reluctant to offer indexed deposits. Commercial banks which use monetary correction on time deposits practice a form of preindexing by tying their adjustment to a projected rate of price increase which usually errs in the direction of conservatism. From December 1972 until March 1974 and again since June 1976 the correction offered on government bonds is also based upon projections which systematically underestimate the true increase in prices so as to control the rise in real incomes and thereby diminish inflationary pressures. The WPI which remains the cornerstone of the indexing system gives a low weight to housing and expenditure on public utilities, whose prices have been freed, and it neglects services that account for approximately half the consumption expenditure of the population. Thus, it is likely that the WPI grossly underestimates the true magnitude of the price rise. Another example of the anomalies, which abound within the system, is the treatment of mortgage loans. These were subjected to monetary correction at an early stage, but government eschewed full correction so as to encourage home ownership. However, the large number of defaults persuaded the authorities to switch to the technique of equal amortization as against the earlier procedure of equal total payment. Finally beginning in 1975 cash subsidies further alleviated the burden of mortgage payments.

50. After 11 years of operation the indexation system in Brazil is still in the throes of change and this affects the Bank loans that are subject to indexation. In May 1975, for instance, the ORTN and the ORTN cattle price index which had served as the basis for adjustment for some time was overshadowed by a system of monetary correction based on changes in the dollar-cruzeiro rate. According to the Brazilians, use of the ORTN index made World Bank loans uncompetitive against funds available from the Eurodollar market and it became difficult to find borrowers who were prepared to pay the high interest cost when loans with 5 to 6 year maturities could be obtained from other sources at 10% interest.

51. The contours of the agreement, presently being worked out, can be described in the following way. The cruzeiro is to be pegged to the actual basket of currencies disbursed by the Bank and the nominal rate of interest is to be fixed at 10%. Assuming rates of inflation of the order of 25% per annum in Brazil and 8% in the lending countries, along with continuous adjustment of the cruzeiro to correct for the discrepancy, the nominal rate would

be 27% while the real rate would be 2%. This is a reduction from real rates of 5% and 6% that were being recommended in the past. It appears that both sides have moved further away from the goal of an optimal real rate of interest towards a non-negative rate that is politically tolerable. The Bank looks upon index linking as a device for restoring the vigor of the market mechanism by offsetting the distributional and allocational distortions which arise from unanticipated inflation. Secondly, it wishes to enhance the viability of financial intermediaries. This is also partly the view of the Brazilian Government but the latter is also concerned with the feedback effect of monetary correction on inflation and the cost of long-term borrowing and therefore prefers to apply the system both flexibly and selectively instead of instituting a procedure for automatic indexation covering the entire economy.

52. Indexation is a part of the stabilization policy because it is easier to apply than an outright price freeze. The most recent modifications to the indexation formula should soften the feedback effect. Once again the objective is to prevent earnings regulated by indexed contracts from growing in line with the inflation by modifying the price index so as to exclude those increases which are due to accidental occurrences such as the oil price hikes or the frost, that recently damaged the coffee crop. Given the system's complexity, the frequent changes and the existence of segments within the economy not subject to indexing, it is doubtful whether monetary correction has helped the cause of efficient resource allocation although it might conceivably have raised the level of investment.

53. Indexing is used more widely in Brazil than in any other country, but the system still has many gaps. In particular the lending to the agricultural sector is not subject to monetary correction apart from the loans made by the Bank. Discussions with the Brazilians spanning a period of eight years indicate that they are unwilling to extend indexing to the entire sector and are anxious to dilute the indexing procedure applied to the Bank loans so as to enlarge the subsidy element.

Uruguay

54. The Bank has made five livestock loans to Uruguay of which the first 245-UR was signed on December 30, 1959. The disbursement of the loans is handled by the Livestock Fund which was established by the Central Bank in 1958. The resources obtained from the Bank plus some contributions made by the Government are made available to the farmers through the Bank of the Republic (BROU) which is the only participating bank. The Central Bank's loans to the BROU are made against documents for sub-loans to ranchers at interest rates that permit BROU to get a spread of 2% over the indexed principal to cover the administrative expenses. Of the subsequent loans - 698-UR, 816-UR, 940-UR and 1166-UR the most recently agreed terms for the latter three are outlined below.

<u>Uruguay Fourth Livestock (816-UR) signed April 26, 1972 (First Stage):</u> Sub-loan balances are subject to monetary correction not later than April 30 in each year on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year, furnished by Banco Central; subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic Y Finansas for the corresponding period. Loans made to farmers with holdings of less than 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

<u>Uruguay Fourth Livestock (940-UR) signed October 25, 1973 (Second Stage):</u> Sub-loan balances are subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to the corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

<u>Uruguay Fifth Livestock Project Loan No. 1166-UR signed October 15, 1975:</u> All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (Second Stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost-of-living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6% kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceding year as compared to the average for the previous 12 months. Repayment terms of sub-loans reflect the ability of the investment to service the debt. Terms range from 5 to 10 years and include grace periods of up to 5 years. If the indexing system (100% adjustment for all sub-loans) were applied to sub-loans made in 1969 with terms of seven years including two years grace, the real interest rate obtained would have ranged between -2% and -8%. It should be recognized that this is not a bad performance compared to other Latin American countries, where inflation has increased and medium and long-term agricultural credit has not been adjusted.

55. Uruguay was beset by inflationary pressures throughout the sixties and this spurred discussion of the concept of indexation - discussion which did not culminate in implementation till very near the close of the decade because of fears harbored by the government that the introduction

of indexation would create destabilizing expectations on the part of the public. When in 1969 collaboration between Uruguay officials, USAID and members of the Plan Agropecuario produced an acceptable scheme, it was tried on a pilot scale in the livestock sector.

56. In 1970, it was decided that if beef and wool prices rose faster than the Consumer Price Index (CPI), the latter would be used to adjust the loan. This involved an assymmetry in the treatment of borrowers and lenders because no protection was offered to the commercial banks in the reverse situation in which the CPI rose faster than the composite index of beef and wool. Hence the private institutions were not prepared to adopt the scheme for their lending operations.

57. In 1971 the graduation of adjustment according to the size of the farm was altered, allowing 50% adjustment to all farms under 400 hectares. In 1973 the concession was withdrawn and farmers in all size classes were required to adjust by the full amount. However, a hardening of the terms in this area was balanced by subsidization elsewhere. During 1973 the rate of inflation was 78%, but for the purposes of loan adjustment it was calculated at 65% and as an additional sweetner, the ranchers were returned a portion of their export taxes, which helped to bring the adjustment down to a mere 32%.

58. The beef and wool price index rose less than the CPI in 1974 and the former index was reinstated in March 1975. To add to the confusion it should be mentioned that the nominal interest rate was changed a number of times and the index factor which is applied no later than April 30 is based on price changes during a 12 month period ending in the previous October. Depending on whether inflation is accelerating or slowing down this has introduced its own biases. In common with many other projects (Argentina and Bolivia), the Bank did not require the use of "cumulative" indices where a choice was given. The effect of this over the life of a sub-loan is probably that real positive interest rates under high inflation may not necessarily be achieved in practice. In addition, the Uruguayans did not compound inflation rates in calculating the index; they merely added them, and this further weakened the effectiveness of indexation.

59. Both the effectiveness and the popularity of the indexing system has been reduced by the government's inability to adhere to a single set of rules. Private lending institutions have been scared off by government actions which appear to be weighted against them and the farmers are unhappy because of the uncertainties regarding their future obligations. If indexing is retained they would prefer loans to be preindexed with a fixed mark up.

60. The government recognizes the political advantages of subsidizing agricultural producers. This is supposed to lower the cost of food to city dwellers. It is also apparent that merely indexing the livestock loans extended by the World Bank, which comprise a very small percentage of the total agricultural credit, may worsen the distortions present in the market.

61. The recent policy actions of the government suggest that the supporters of indexation have prevailed. A new law has been passed which calls for the indexation of all financial instruments where the term exceeds two years. This should greatly expand the scope of indexation within the financial sector which has so far been limited to the National Institute of Colonization (INC) and the Mortgage Bank of Uruguay. The INC, which serves as an intermediary on all land transactions as well as financing land sales, makes long-term loans, where the principal is linked to an index of agricultural products; the nominal interest is 3%. The Mortgage Bank uses a wage index to adjust its loans as well as its savings since this index reflects the repayment capacity of the borrower and the expectations of the savers. During the period over which indexing has been applied both these institutions have had problems in inducing borrowers to observe the terms of the original contract and eventually have yielded to pressure and have settled for easier terms. The INC has allowed its borrowers to defer payments while the Mortgage Bank scaled down the size of adjustment on mortgage payments in 1973.

62. The Uruguay experience is not encouraging. It has run afoul of the very same difficulties encountered by the Brazilians in the implementation of their own system. Excessive differentiation in order to deal with all situations is only one of the problems. Perhaps more serious, is the vacillation as regards terms and price indexes in the largely futile quest for a scheme that is fair to both parties and at the same time embodies the sectoral plans for the government. Through its willingness to bow to pressure from borrowers the government does not lessen the uncertainties inherent in an inflationary milieu, uncertainties which the indexing system was designed to neutralize. Each one of the indexes which can be used has its flaws and this remains an unavoidable weakness of the system. However, it is likely that the lower rate of inflation, which is expected in the next year or two, may make it easier to weed out the deficiencies in the system of indexation.

Bolivia

Bolivia Livestock (261-BO) signed June 25, 1971: Incorporates a trigger mechanism which becomes operative when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year. When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction. At present, two options are being offered on this livestock loan. One of them allows the farmers to make their payments in accordance with the above system of monetary correction. The other option - known as the dollar exchange clause - passes the exchange risk on to the farmer, i.e., the loan to the final borrower is denominated in dollars.

63. There is a great deal of resistance to the indexing system in Bolivia and it is unlikely that the foothold gained by the Bank in the livestock sector will lead to application on a larger scale. In fact, the recent experience suggests that the Bolivians intend to bring the curtain down on this small scale experiment.

Peru

Peru Agricultural Credit Project (933-PE) signed September 12, 1973: Sub-loans are not indexed until inflation is in excess of 9% for the fiscal year. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

64. Livestock loans made to Bolivia and Peru incorporate trigger clauses which require some form of adjustment if the chosen price index rises above a certain level during a specified period. Once again these are countries where the rate of inflation is moderate; and the financial system has not been forced to seek recourse in indexation.

Paraguay

65. During 1973-75 the inflation rate in Paraguay averaged 17.5%. It was therefore decided to apply indexation to the sub-loans made under the Fourth Livestock Project (1037-PA) signed September 6, 1974. The indexation clause stipulated the following conditions. A minimum real interest rate of 6% is to be charged and the principal outstanding is to be adjusted annually with reference to the cost-of-living index. Fondo Ganadero, the executing agency, charges 10% interest on principle adjusted on the basis of the CPI. However, in 1975, the change in the CPI was 6.7%. FG adjusted the principle on the basis of a 5% increase and the Bank, considering the high rate of interest already applied, agreed to this action.

66. Indexation has not been widely applied in Paraguay. So far the only other financial contracts subject to monetary correction are mortgage loans. Since inflation is projected to decline over the next five years it is unlikely that the system will be applied on a larger scale.

Other Countries

67. Many countries have used indexing in one form or another during the post war period and some have been led to abandon the concept after a long period of trial. The Finns, who had applied indexing to wages since 1945, found in 1967 that the system could not be made to work any longer and shifted to an incomes policy. Colombia has adopted the crawling peg in order to regulate the price of its currency and some form of indexing is applied to mortgage

loans, the investment of social security reserves and saving deposits. In the latter case the adjustment is limited to a maximum of 20% per annum. In general, the Colombians have resisted indexation. The Bank has made one DFC loan which includes a trigger mechanism but any agricultural loans made in the near future are not likely to include an indexation clause. For a long time both government and private sector bonds in Israel were linked to the official dollar rate but the sharp devaluation of 1962 with the concomitant jump in debtor obligations led to a discontinuation of linking with foreign exchange and a selection of the CPI as the index to be used for monetary correction.

68. One other feature as regards the application of indexing should be mentioned. "Dirty" indexing seems to be the rule and not something peculiar to the Latin American countries. Government usually exercise some form of discretion in their implementation of indexing. For instance, in Norway, the government decides the extent to which a price change will be compensated. Similarly, the Austrian government can overrule the automatic indexing of pensions and subsidies. Indirect taxes are used to regulate the index in Norway, Finland, Israel and the United Kingdom.

69. Even a brief survey of the experience with indexation leaves one with doubts as to its workability and its usefulness as a policy instrument. As the Economist pointed out,

> No system of indexation can be substituted for tackling the economic and social pressures which cause inflation. On the contrary the fewer the people who can lose because of inflation the faster prices will rise to transfer command over real resources to those who are determined and able to grab a larger share. But indexation, provided it begins in the right way, can shift the pain from inflation to politically more sensitive areas and so force the government to deal more promptly and effectively with the disease at its very early stages.

It is not clear that countries which are using indexation as a part of their stabilization program are aware of the larger problems that need to be tackled.

Annex II: Statistical Tables

Table I - Inflation and Related Statistics for Sixteen Latin American Countries, 1950-69*

	Rate of Inflation	
	Mean	S.D.**
Uruguay	43.0	34.9
Bolivia	41.3	55.9
Brazil	35.1	21.5
Chile	28.2	14.6
Argentina	26.4	23.4
Paraguay	12.5	17.5
Colombia	9.2	3.2
Peru	8.5	5.8
Mexico	5.3	5.3
Nicaragua	3.4	6.1
Ecuador	3.0	3.3
Honduras	2.1	3.4
Costa Rica	1.9	2.2
Guatemala	1.1	2.8
Venezuela	1.1	2.8
El Salvador	0.3	1.5

* Per cent per year.
** Standard Deviation.

Table II: Countries with Inflation in Excess of 10% during 1972-74

	1960-1971	1972-1974
Argentina	20.25	25.71
Bolivia	4.94	28.96
Brazil	37.83	12.81
Chile	23.51	201.73
Colombia	10.03	14.99
Ghana	6.52	11.10
India	5.36	14.33
Israel	5.67	18.97
Jamaics	3.96	14.80
Pakistan	3.47	16.28
Paraguay	3.08	11.95
Philippines	5.64	14.33
Uruguay	37.80	51.70
Yugoslavia	11.14	13.44
Zaire	16.65	14.66
Turkey	8.00	15.00

Table III: Indicators of Domestic Price Level Changes a/
(Average Annual Percentage Change)

Source: Date of CPP	Country	1965-70	1970-73	1973-75	(Estimate) 1975-80
2/18/75	Afghanistan	11.1	-2.3	6.4	5.2 e/
7/25/74	Argentina b/	16.1	43.2	-	-
10/16/74	Bangladesh	-	-	17.4	9.8
3/12/75	Bolivia	-	10.7	35.9	12.1
11/74	Brazil c/	26.5	17.6	31.0 g/	20.0 h/
	Chile	21.3	76.0	145.9*	
	Colombia	8.3	11.2	11.5*	9.07
5/15/74	Congo	-	-	17.8	9.5
3/74	Egypt	-	3.9	6.2	6.7 f/
	Ecuador	4.0	7.2	11.2*	
7/15/74	Ghana	-	12.0	-	-
7/22/74	Greece	2.4	3.0	-	-
	Guatamala	2.2	8.1	10.5	6.5
8/01/74	Guyana	-	4.3	-	-
4/22/74	Haiti	0.1	6.5	7.4	5.2
6/13/74	Honduras	1.9	3.7	10.0	7.5
6/06/74	India	6.5	18.5	9.7	6.0
6/05/74	Indonesia	-	23.0	20.0	-
6/03/74	Iran	1.9	8.1	7.4	4.7
12/27/74	Jamaica	-	10.8	17.6	10.0
8/30/74	Jordan	-	7.6	8.7	7.5
4/12/74	Korea	7.8	9.8	8.0	12.8 f/
11/29/74	Lebanon	2.0	-4.4	14.0	9.5
10/07/74	Malawi	3.6	5.1	-	-
3/21/75	Mauritius	3.0	6.2	29.5	10.4
5/10/74	Mexico	3.4	6.7	17.7	7.2
5/17/74	Morocco d/	0.6	8.3	21.0	3.5
	Nicaragua	2.2	8.1	10.5	6.5
6/28/74	Pakistan d/	3.7	7.1	10.0	5.0
5/12/74	Paraguay d/	1.3	13.0	17.5	8.5
10/21/74	Peru d/	11.1	8.7	15.0	15.0 e/
7/15/74	Philippines	5.6	17.0	25.0	8.8
8/21/74	Romania	-	-	0.4	0.4 f/
6/26/74	Senegal	-	5.2	9.9	8.6
4/15/74	Sri Lanka	4.2	9.4	12.5	7.9 f/
9/26/74	Syria	3.5	6.2	14.4	10.1
3/27/74	Tanzania	-	5.1	6.0	5.9 f/
5/17/74	Thailand d/	1.2	5.9	-	-
6/10/74	Trinidad & Tobago	3.8	8.5	9.1	6.2 f/
	Turkey	8.1	14.0	15.0	15.1
	Uruguay			50.0	30.0
1/31/75	Venezuela	2.1	3.1	16.9	9.0
7/12/74	Yugoslavia	7.8	18.0	17.5	15.0
5/30/74	Zambia	-	6.7	12.4	7.5 f/

Note: (Based on explanation in CPP Attachments)
* 1973-74 only.

a/ General domestic price index not specified unless otherwise noted.
b/ Domestic wholesale index.
c/ General price index -- weighted average of wholesale (60%), the cost of living index (30%), and the cost of construction index (10%).
d/ GDP deflator.
e/ 1975-78.
f/ 1975-76.
g/ Average for 1974-75.
h/ Country economist.

Table IV: Estimates of Inflation, 1975-80[1/]

Less than 10% rate of inflation	Percent	10% or more rate of inflation	Percent
Afghanistan	5.2	Argentina 2/	350.0 ('75)
Bangladesh	9.8 ('75-76)	Bolivia	12.1
Congo	9.5	Brazil	20.0 5/
Egypt	6.7 ('75-76)	Chile 3/	336.0 ('75)
Haiti	5.2		
Honduras	7.5		
India	6.0	Jamaica	10.0
Iran	4.7	Korea	12.8
Jordan	7.5	Mauritius	10.4
Korea	8.2 ('76-76)		
Lebanon	9.5	Peru	15.0 ('75-78)
Mexico	7.2	Syria	10.1
Morocco	3.5	Turkey	15.1
Pakistan	5.0	Uruguay 4/	30.0 ('75-80)
Paraguay	8.5	Yugoslavia	15.0
Philippines	8.8		
Romania	0.4 ('75-76)		
Senegal	8.6		
Sri Lanka	7.9 ('76-76)		
Tanzania	5.9 ('75-76)		
Trinidad & Tobago	6.2 ('76-76)		
Venezuela	9.0		
Zambia	7.5 ('76-76)		

1/ Source: CPP Attachments SI, Average Annual Percentage Change based upon the general domestic price index.

2/ Estimated inflation for 1975 alone is 350 percent. Therefore, it is safe to assume this country belongs to the over 10% category. There is some speculation that this rate may decline in 1976.

3/ Making projections of Chilean inflation is extremely difficult given their volatile record. Inflation for 1975 alone is estimated by Bank sources to be 336%. This in itself would be sufficient to place Chile in the over 10% category. It should be noted that the government is pursuing draconian policies to control inflation and the rate can be expected to fall considerably in the next few years.

4/ Inflation in 1975 is estimated at 50-60% and it is expected to decline steadily to around 10% by 1979-80.

5/ Country Economist.

Table V: Total Projected Lending by IBRD and IFC to High Inflation Countries 1/
FY1975-FY1980
(US$ millions)

Country/ Sector	Agriculture	Industry 2/	Transport	Utilities	Education 3/	Urban
Bolivia	150.6	88.5	84.0	31.5	40.0	-
Brazil	939.0	525.0	1,195.0	945.0	248.5	140.0
Chile	75.0	55.0	20.0	60.0	-	-
Colombia	425.5	400.5	145.0	392.0	110.0	100.0
Guatemala	20.0	-	60.0	146.0	40.0	15.0
Jamaica	59.0	-	71.0	57.0	15.0	20.0
Korea	705.0	20.0	540.5	-	77.5	-
Mauritius	10.0	25.0	10.0	16.5	17.0	-
Nicarague	12.0	8.0	13.0	53.0	27.0	6.0
Peru	245.0	150.0	160.0	100.0	70.0	40.0
Syria	185.0	20.0	40.0	265.6	40.0	-
Turkey	575.0	148.0	130.0	336.0	-	40.0
Uruguay	112.0	35.0	-	30.0	-	-
Yugoslavia	540.0	-	453.0	380.0	-	-

Source: CPPs Actual and Proposed Lending Program Through FY 80.

1/ Defined as having over 10% rates of inflation.

2/ Includes mining.

3/ Includes health and nutrition.

File

DRAFT
SJBurki:fvf
October 29, 1976

To: Mr. V.V. Bhatt, Chief, Public Finance

From: Shahid Javed Burki

Subject: Issues Paper on the Indexation of Financial Contracts

This is with reference to your memorandum accompanying the revised draft of the Indexation Paper. I have discussed the substance of your memorandum with Mr. Karaosmanoglu. We are of the view that the text to be sent to the Management should reflect consensus within the Bank. It is suggested that this difference in interpretation of the Brazilian experience should be removed between your Division and that of Mr. Skillings. You are urged to do this at your level. Please let me have the revised paper before November 15.

Cleared with Mr. Karaosmanoglu (draft attached)

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. S. J. Burki, EPRPP

DATE: October 7, 1976

FROM: V. V. Bhatt, ECDPF

SUBJECT: Issues Paper on the Indexation of Financial Contracts

We have discussed the paper with Miss Guerard, who is the country economist for Brazil. She suggested some minor changes which we have made, she also felt that we ought to delete para. 13. Miss Guerard feels that discretionary (or partial) indexation is not really indexation at all and should be classified as some kind of wages policy. Secondly, in her opinion, the paper should avoid making references to indexing of anything other than financial contracts. Thirdly, she believes that the wages policy of the Brazilian government had an appreciable effect on the pace of inflation, whereas we have echoed Fishlow's contention that the slackening in inflation was a result of fiscal-monetary actions and not the indexing rule followed in the adjustment of wage contracts. There is so much collinearity here that I am sure it would be extremely difficult to disentable the effects of individual policies; however, in the war of assertions, we prefer to side with Fishlow.

We think that it would not be terribly wise to adopt the purists attitude on the semantics of monetary correction. Complete and automatic indexation is a fairly rare phenomenon. If we were to strictly observe Miss Guerard's distinction, the empirical domain of indexation would shrink almost to nothingness.

Finally, the odd reference to the indexing of wage contracts is hardly reprehensible even in a paper dealing with financial transactions. For these reasons, we are against deleting para. 13 and we feel that something as innocuous as this does not warrant a further exchange with Mr. Skilling's division.

SOME POLICY ISSUES IN

INDEXATION OF FINANCIAL CONTRACTS

September 1976

Public and Private Finance Division
Development Economics

TABLE OF CONTENTS

SUMMARY AND CONCLUSIONS

This paper discusses the role that indexation of financial contracts might play in the mobilization and allocation of savings as well as in strengthening the viability of financial institutions in a period of inflation. It also explores the justification for indexation of Bank lending operations in agriculture and industry and assesses the experience gained so far with regard to agricultural loans made by the Bank during 1967-75 in the Latin American Region. Questions of overall financial policy and the level and structure of interest rates have been analyzed in a separate paper titled "World Bank's Approach to Interest Rate and Credit Allocation Issues".

The broad conclusions of the paper are summarised briefly below:

1. Indexation policy involves fairly high administrative costs and may also strengthen inflationary expectations. Hence, it is not an appropriate policy instrument for dealing with inflationary situations that are likely to be temporary or can be controlled by means of monetary-fiscal policies or are such as to result in a low and stable rate of inflation.

2. It is, however, a relevant policy instrument in countries which are likely to experience high and variable inflation. Here two situations must be distinguished. The first is where indexation is a part of a policy package for the elimination of inflationary pressures which have persisted in chronic form over a protracted period and which are likely to be brought under control in phases over several years. In this context, indexation has a distinctly subordinate role with fiscal, monetary and other measures occupying the center.

3. The second situation is one in which there is no effective anti-inflationary program, double-digit price rises are expected to continue and indexation is adopted to neutralise their impact on financial contracts. Here the principal contribution of indexation would be in bringing about some convergence of expectations of savers and investors; thus it can safeguard the saving-investment process, promote the growth of medium and long-term financial instruments and ensure the viability of financial institutions.

4. The success of an indexation experiment crucially depends on (a) its acceptance by the government as a desirable policy instrument for insulating the structure of interest rates from the impact of inflation, (b) its application to major medium and long-term financial instruments for savings mobilization and credit allocation on the basis

of a general price index relevant for each country, and (c) the adoption of complimentary policies in the field of exchange rates and the tax system. It is unlikely to succeed in its main objective if only a few instruments of limited importance are indexed.

5. It is difficult to identify the group of countries which are likely to experience serious inflationary pressures in the future. The situation during 1972-75 has been unusual and it would not be wise to extrapolate recent trends. However, it might be useful for the Bank to discuss the advantages of indexation with countries presently experiencing double digit inflation.

6. (a) The Bank should emphasise the desirability of applying indexation to all medium and long-term financial instruments. If, however, a country is unwilling to index all such instruments, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans. Such a policy would enhance the viability of DFCs and other credit institutions associated with the Bank. Further, experience with such indexation may induce the government to adopt it on a wider basis.

(b) In the case of a country which cannot be persuaded to adopt monetary correction or other appropriate interest rate policies, it would be counter-productive for the Bank to insist on the indexation of its sub-loans, particularly when the domestic financial intermediaries associated with the Bank do not occupy a dominant position in the medium and long-term credit market. Such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider the rationale of its loan operations and program in the country concerned.

I. Introduction

1. This paper has a narrow scope. It is not about overall financial policy or even about the level and structure of interest rates. These important subjects have been studied recently in the paper entitled, "World Bank's Approach to Interest Rate and Credit Allocation Issues", January 30, 1976. The present paper on indexation elaborates on one of many issues discussed in the above mentioned draft, namely how to insulate interest rates from the impact, generally unintended, of high and volatile rates of inflation. This issue would arise no matter what level of real interest rates is considered appropriate. Clearly, the indexation technique can make a more important contribution to development policy if the real interest rate structure is appropriate than if it is not. But even in the latter case, the role of indexation is not insignificant from the points of view of saving mobilization, allocation and the viability of the financial structure.1/

2. The paper is a response to questions raised by staff in the Latin American Regional Office about the indexation of 11 agricultural loans made by the Bank during 1967-75. This experience is reviewed in the annex and the main conclusions are reflected in the analysis and recommendations presented in the main text. In addition, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry. It does not discuss the application of indexation in other areas such as wages and taxes. The purview is limited to the area of financial contracts.

3. An active development policy trying to promote rapid growth in a country is likely to generate inflationary pressures. This danger is perceptibly greater in the LDCs partly because of the speed with which supply bottlenecks are encountered and partly due to the expansionary monetary-fiscal policies. The inflationary process in the LDCs, however, has accelerated since 1970 because of a significant rise in the prices of fertilizers and food, partly as a result of natural disasters and the quantum jump in the oil prices since 1973. Many LDCs are currently experiencing double digit inflation; and in some of them, this trend is likely to continue until 1980 or so. In this context, the application of the indexation technique to financial contracts assumes particular significance.

4. High rates of inflation pose a series of problems all of which are rooted in the unanticipated redistribution of resources between economic units involved in monetary transactions. To avoid the possibility of a resource loss during periods of high and variable inflation, individuals become reluctant to enter into agreements which bind them for a

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1/ For a review of theoretical literature and empirical experience, see Index-Linking of Financial Contracts: A Survey of the State-of-the-Arts, World Bank Staff Working Paper No. 192, November 1974.

long period of time to financial terms expressed in current prices. This interferes with the development of the financial sector, especially with the supply of term loans because the nature of the commitment increases the chances of incurring a loss. But aside from this, there is a flight from monetary transactions and into various forms of barter. Savers, fearing an erosion in the value of money balances, prefer to hold real estate, specie or even certain types of commodities. In general, inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

Policy Options

5. In the area of financial contracts, there are two possible ways of coping with the problem of inflation. In each case, the idea is to adjust the financial transaction so that it is more or less in step with the overall trend in prices.

6. One solution is a policy of variable interest rates. This would allow interest rates to vary with current and expected increase in prices; in theory, it would protect both borrowers and lenders against the consequences of changes in the rate of inflation. Variable rates are a workable solution when the rate of price increase is fairly stable or predictable and the market has the freedom to generate a rational interest structure in the light of past experience and future expectations. However, available information indicates that Latin American countries with high rates of inflation also tend to experience fairly sharp fluctuations in the annual rate of increase of prices and this variance would very likely interfere with the markets' ability to arrive at a rational rate structure.

7. Where inflation is high and variable, a second solution, i.e. indexation, seems to be appropriate. Indexation preserves the real value of contractual obligations by tying them to a price index, and it thereby helps to avoid the anomalous situation, often found in LDCs, when real interest rates go down in times of inflation and up in times of a price decline. Such movements in real rates cannot be justified either in terms of a demand management policy or as an allocative measure.

8. Since indexation reduces the riskiness of financial transactions by safeguarding the individual transactor against losses due to unforeseen changes in the price level, it can have two beneficial results. Firstly, financial intermediaries can offer stable positive real interest rates on savings although available evidence on this point is weak. Indexation may encourage the financialization of savings presently invested in real assets and thereby enhance the efficiency of resource allocation. There are some indications of such a shift in Brazil, Korea and India following the change in interest rate policies, although the available evidence is far from being

conclusive.[1/]

9. A second advantage of monetary correction is its impact on long term lending. At present, there is a marked paucity of long-term funds in the financial markets of the LDCs due to the traditional preferences of lenders and the riskiness of lending long. This is especially marked in the agricultural sector as has been pointed out in the Policy Paper on Agricultural Credit (p. 16). For example, 75% of institutional loans in Latin America and Africa are for two years or less while for Asia, the figure is around 65%. Such squeezing of the maturity spectrum may have an adverse effect on those projects that are subject to long gestation lags. If entrepreneurs have access only to short-term loans, the uncertainty of being able to roll over their loans may dampen their willingness to undertake long-term investment. As long as financial intermediaries are unable to cover themselves against the risks involved in making term loans, and as long as they are constrained from charging an interest on their long-term commitments, which is significantly different from that levied on short funds, they are unlikely to pursue long-term lending with much enthusiasm. Indexation could help activate this segment of the market by rationalizing the rate structure and protecting intermediaries from the so called decapitalization problem, which is the erosion of the lenders capital base during times of rapidly rising prices.

Country Experience with Indexation

10. A number of countries have experimented with monetary correction during the last thirty years, with Finland being among the earliest to apply the concept. (See Table on page 7.) In most cases, a beginning seems to have been made with the indexation of wage contracts and long-term government bonds, the coverage being extended at a later stage to social security benefits, private lending and recently to taxes.

11. Concentrating on the financial sector, it appears that the initiative to index has usually been taken by the government and in each case it has been motivated by the desire to increase the rate of savings in forms amendable to policy regulation. A secondary and related objective has been to protect the interest of small savers from lower income groups who normally lack inflation proof outlets for their saving. Israel is one of the countries which has used monetary correction by issuing indexed government bonds from as early as 1948. Brazil adopted this device in 1964. Since then Indexation has been extended to some savings institutions in both Brazil and Colombia.

1/ W.L. Ness, Jr., Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience, Economic Development and Cultural Change, Volume 22, Nos. 3, April 1974. See Appendix I section on Brazil. See also Ronald I. McKinnon, Money and Capital in Economic Development, Brookings 1971 for Korea and D.J. Lakdawala, Financial Assets and Instruments for Mobilization of Savings, for India.

12. What emerges from the experience with the use of indexation as a policy instrument is the following:

(a) Indexation has been used selectively for a limited range of transactions to promote equity, resource mobilization by the government or resource mobilization and allocation by financial institutions;

(b) Where indexation has been used for price stabilization, it has been part of a package consisting of deflationary credit and fiscal policies, price and wage controls and even direct physical controls;

(c) Indexation rules have served multiple policy objectives. The approach has been what may be called "discretionary indexation," analogous to "dirty" floating of exchange rates.

13. In the area of wage contracts, the government followed a rule of adjusting nominal wages with reference to an estimate of future inflation. In effect, this meant that wages were not indexed at all, and the wage increase which was granted depended more on government policy rather than actual inflation.[1/] This phase lasted from 1965 to 1968 at which point the rule was changed permitting nominal wages to track the rate of price increases more closely, but there was a return to discretionary indexation as inflation accelerated in the early '70s. In the field of financial contracts discretionary changes have tended to favour the borrower at the cost of the lender. By only permitting a partial adjustment of the principal or the interest rate the government has engineered a transfer of resources from one party to the other. It is doubtful whether discretionary indexation of wage contracts has made an appreciable impression on the pace of inflation and until more evidence is available it is impossible to assess its impact on resource allocation.

1/ The mechanics of Brazilian indexation are discussed at length by Albert Fishlow. (Indexing Brazilian Style: Inflation without tears? Brookings Papers on Economics, No.1, 1974). He points out that "Brazilian wage policy has proven virtually completely discretionary...as so has most of the rest of the system of monetary correction....Indexing was an element of intervention and as such was substituted for other policies".

Summary of Countries' Experience of Indexing (a)

		Social Security Benefits		Investment					
	Wage	Pensions	Other transfer	Govt. Bonds	Private Bonds	Mortgages	Other Loans	Rents	Taxes
Argentina				1962-	1959-				
Brazil	1964-			1964-		1964	1964-	1964-	1964-
Canada	1972-	1965-	1973-						1974
Chile	1960s	1952							
Colombia						1972-			
Finland	1945-67	1957-	1956-67	1945-67	1953-67		1952-67	1952-67	
Israel	1961-			1948-	1951-	1950s			

(a) Table covers period up to end of 1974.

Source: National Institute Economic Review, 1975.

Rationale for Indexation of Financial Contracts

14. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for individuals and for institutions. However, these administrative problems are not large and the additional expense seems like an insignificant price to pay for a substantial expansion in the breadth and scope of the financial market. Since indexation is likely to be limited to the long end of the market, the cost of supporting the system would be relatively small.

15. A more important problem is the difficulty of persuading the government. The indexing of financial transactions not only increases the burden of financing the national debt, but it also reduces the subsidy long enjoyed by businesses with access to institutional loans subject to fixed interest rate ceilings. The government is usually under pressure from these businesses to continue with the subsidy but at the same time it cannot ignore the distortions arising from inflation and its own arbitrary pricing policies. If inflation cannot be controlled, indexation may be an attractive way of injecting a degree of rationality into the pricing system. There is very little reason to believe that indexation will interfere with the government's ability to subsidize particular groups. Even if a number of transactions within the economy are subject to indexation, the government can still channel resources wherever desired through tax and subsidy devices.

16. Of course, the more moderate the rate of inflation and the more flexible the financial system -- implying both variability of interest rates and institutional diversity -- the less will be the attraction of, or the need for indexation. But those countries experiencing high rates of inflation in a milieu of pegged nominal interest rates and fragmented financial institutions, indexation of contracts may help to revive the financial sector.

17. Can indexing succeed if it is adopted by, say, long-term financial institutions but not by those engaged in short-term transactions? Such a regime would be created if, for example, the government decreed that deposits and loans above a certain maturity be indexed. A parallel system of indexed long-term and non-indexed short-term financial contracts would come into existence. Such a system is likely to prove beneficial to the economy. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the cost and nuisance of indexation may exceed the benefits. To the extent savers forego indexed long-term investments in favor of greater liquidity accompanied by negative returns, this will be the result of conscious choice rather than the unavailability of indexed instruments. And on the borrowers' side, the option would be to get long-term financing at a stable cost or go through the uncertainties of rolling over short-term loans at a variable cost. If there is no indexing, the banks have an incentive to borrow short and lend short. This is accepted by depositors who have no better alternatives and by borrowers who do not mind the shortness of maturities so long as real interest rates are

negative. By contrast, the indexed system, as described above, would encourage banks to differentiate between short and long-term markets in financial resources and this would contribute to economic development.

18. The next question is whether or not indexing can succeed if it is adopted only by some long-term financial institutions but not by others. If the institution which adopts indexing is already dominant in the long-term market for industrial or agricultural funds, the chances are that the new policy will be a success, unless the government lends its support to non-indexed competitor institutions. Assuming that the government accepts indexation as a part of its policy framework, the "indexing institution" will be able to expand its loanable funds, unless statutory restrictions on institutional savers prevent them from purchasing the newly created financial instrument. Existing borrowers of the "indexing institution" are unlikely to switch to rival long-term sources to any large extent. By definition, rival banks are small in size and cannot açcomodate many new clients. Also, indexing does not raise real interest charges; it simply prevents borrowers from reaping a windfall gain. The "indexing institution" will pick up those new borrowers who are attracted by the availability of long-maturity funds at real interest rates which remain lower than expected rates of return on their investments.

19. Partial indexing in the long-term market can succeed but there is nothing inevitable about this outcome. If the "indexing institution" does not have a large share of the market, if government does not accept it as a policy instrument or if there is collusion between rival banks and key businessmen, the introduction of monetary correction may not survive for long.

Evaluation of Present World Bank Policy

20. From the stand point of the overall economy of the borrower country, all World Bank Group loans and credits are in fact indexed to the extent that changes in the rate of exchange are a proxy for the rate of inflation. This follows from the World Bank Group policy of denominating its loans in terms of foreign currencies. In other words, either the government or the intermediary institution or the sub-borrowers bear the cost -- in terms of local currency -- of any exchange rate devaluation vis a vis the foreign currency in which the World Bank has provided the loan.

21. As regards the on-lending operations of the World Bank through financial institutions, two types of indexing practice can be distinguished:

(a) Loans to sub-borrowers are denominated in foreign exchange. This applies to a substantial segment of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities or

some price indices, the exchange rate or a combination of the three. This applies to 16 of the active agricultural project loans in the Latin America and the Caribbean Region. (Details are given in the Appendix.)

22. In the case of on-lending through the DFC[1/] exchange risks were assumed by the sub-borrowers in 15 of the 50 cases. In the rest, the risk was assumed by the government (17), by the Central Bank (5) or shared by the governments and the sub-borrower (13). This contrasts with on-lending in agriculture, where except for the 11 projects in Latin America which included explicit indexation formulae, the exchange risks have always been assumed by the government or public agencies. In terms of the volume of commitments, the indexed agricultural loans amount to $217 million as compared to the total WBG agricultural credit operations of 516 billion by the end of June 1975.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial intermediary immune from the risks of exchange rate alignments was the dominant factor. This meant that the exchange risk had to fall either on the sub-borrower or on the government (or Central Bank). With lending rates of DFCs being pegged in many countries, the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.[2/]

24. Sixteen loans made by the Bank include indexation clauses as mentioned above. Nine of these loans are for livestock and two are for agro-industries and the construction of grain facilities. During the first half of 1976 five indexed loans were made to Brazil - one each for the industrial sector, the transport sector, two for the construction of water supply and sewage facilities and one for nutrition. All the loans have been made in the Latin America and Caribbean Region. Indexing in these operations has been of an experimental nature. An explicit policy

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1/ On-lending through the DFC, was $2.8 billion by the end of June 1975, representing about 50% of total WBG lending to the Industrial Sector.

2/ A table presented in the DFC policy paper Annex 6 indicates that there is no apparent correlation between the procedure used for allocating exchange risk and the average rate of inflation during the previous five years.

with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiation the annual rate of inflation was set at 8 percent or above. Two loans have been indexed through a "trigger mechanism" which requires that loans be indexed if and when a specified inflation rate is reached. In all cases, indexing is applied to the principal with the interest payments calculated at adjusted values of the principal. The price indices used were various combinations of beef and wool prices, cost of living indices and the exchange rate. (See Appendix I for details.)

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and admimistrative sense in the environment of low interest policies for term lending, the introduction of indexation in Bank agricultural loans has been prompted from the start by an overall policy objective to ensure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indices other than the foreign exchange rate have been experimented with in these agricultural loans. The difference in the rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign financed component of DFC loans was linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending including use of own resources by the financial institutions - although this objective was not always accomplished.

26. The Bank's experience in the implementation of indexed loans over the past eight years is not easy to assess. Because of frequent changes in the terms of indexed loans, their impact has varied and it is doubtful whether it can be measured without a very large research effort. Of the six countries which have received indexed loans, only three appear to be seriously committed to the system, these being Uruguay, Argentina and Brazil. Each of them has experienced double digit inflation in the recent past and the trend is expected to continue during the next few years. Brazil has the additional incentive of having developed the indexation system to a point where it is widely accepted, and to a degree understood. The three remaining countries - Bolivia, Peru, Paraguay - are putting their faith on anti-inflationary fiscal and monetary policies.

27. There is a striking uniformity in both the responses of borrowers to the indexation of loans and in the efforts of governments trying to achieve a workable compromise. In every case where indexation has been incorporated into the loan agreement, the adjustment is determined by the movements in one of the two reference indices, usually, the Consumer Price Index and a composite index constructed from beef and wool prices. The Index which is actually used is the one which registers a lower rate of price increase. Through this and other devices, governments have sought to ease the terms offered to the final borrower and in the process have

reduced the effects of indexation on the interest rate and thereby the benefits accruing to the lending agency. These measures have been in response to the strenuous opposition that indexation has aroused among farmers who are used to subsidized loans, excessively conscious of the uncertainty which monetary correction introduces as regards the repayment of the loan, and powerful enough to force the government to soften the conditions of the loan.

A Frame for Future Bank Policy

28. While the experience of the Bank, as far as indexed loans are concerned, indicates the need for continuing study and evaluation, indexation does seem to be an appropriate policy instrument for countries which have to live with inflation and at the same time implement a broadly based policy of economic development.

29. Which countries: For the large category of countries with low and relatively stable rates of price increase, the need for indexation is limited, perhaps, to social security payments. A second category would include countries such as Brazil where inflation has averaged around 30% over the last two years. The government is determined to bring down the rate of price increase and in the meantime provide some measure of protection for income shares and the saving investment process. In these countries, indexation would serve a dual purpose: as a surrogate incomes policy and as a means of rationalizing the financial sector while inflation is being brought under control. For the third group of countries which have a long history of high and variable rates of inflation and where the government is disinclined to take the harsh measures needed to dampen inflationary pressures, indexation can serve a useful function in safeguarding the saving-investment process.

30. However, it is difficult to identify countries in the second and third groups. Recent experience (1973-75) is hardly any guide; for practically every country in the world was caught in the throes of double digit inflation. One cannot extrapolate recent price trends into the future and thereby separate countries into those in which inflation is expected to be serious and the rest. The projections contained in the recent CPPs for a large number of countries indicate that inflation is likely to be a problem in some countries - Argentina, Brazil, Chile, Peru, Syria, Yugoslavia, Uruguay, Turkey and Korea. (See Table IV, Annex II, for information on the projected rate of inflation; and Table V, Annex II, on proposed Bank lending to these countries over the next five years.) Several of these countries have introduced indexation schemes and are in a position to extend the scope of these measures should the need arise. So far, Yugoslavia, Syria, Turkey and Korea have not experimented with indexation but they can, perhaps, be encouraged to consider its application in the future.

31. Which Index: Not only have sub-loans through the DFCs been linked to the foreign exchange rate, but the foreign exchange rate has

also been used as an index for adjusting the principal on a few agricultural loans. Use of the exchange rate has the distinct advantage of providing a firm numerical basis for adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. Even with these qualifications, the exchange rate can be a good proxy for price inflation, particularly where rate changes take place frequently.

32. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of large adjustments introduces uncertainty into investment decisions. As prices rise, the over-valuation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two uncertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Further, sudden large adjustment creates a cash squeeze -- an abrupt increase in the liabilities of the businesses. For these reasons, in such a context the foreign exchange rate should not be used as a basis for indexation.

33. If it can be assumed that the various countries which apply the concept of monetary correction will adhere to a system of floating rates over the foreseeable future, the exchange rate can be used to index all transactions; this practice would have the additional advantage of effectively passing on the exchange risk to the sub-borrowers. However, if the assumption is invalid, it would be preferable to treat at least local currency transactions separately so as to avoid the problems arising from large, discrete exchange rate adjustments. Probably the optimal procedure in such a situation would be to index all loans with respect to a general domestic price index and deal separately with the exchange risk. Exchange risk in this case would disappear or at least be smaller than what it would be without indexation of all loans, and it may become possible for the government or the Central Bank to bear it by charging a small fee to the sub-borrowers.

34. A general price index with a wide coverage may be the most appropriate basis with which to link the principal of financial contracts. It is not appropriate to use specific commodity or sectoral price indices because the main purpose of monetary correction is to neutralise the overall impact of inflation on financial contracts, without interfering with relative prices. Monetary correction based on specific commodities would tend to distort relative price structures and thus to misallocate resources.

35. There are some reservations, however, relating to the technically defective nature of general price indices, and due to the fears that these

indices can be tampered with for political reasons, Where there are several indices, the choice between them also present a problem. If the principle that indexing should be based on the general price index is accepted, the question of which index qualifies for this role becomes an empirical one and has to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are limited in favor of a more long-term trend.

36. In the case of more open economies which are vulnerable to price shocks emanating from abroad, it may be necessary to adopt a discretionary approach a la Brazil where the index is adjusted so as to net out sudden changes in the prices of traded commodities due to unforeseen circumstances in the world economy or natural calamities.

37. Since the idea is to take account of a resource loss experienced by the economy, it might be preferable to use a wage index where one is available, which may reflect more closely the changes in real purchasing power, rather than a CPI that has to be arbitrarily adjusted whenever the situation demands.

38. Modality of Negotiation: The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects. Chances of success are much greater if indexation is applied across the board in the long-term credit market than if it is applied piecemeal in the context of specific projects or specific institutions. It must be recognized that the Bank is likely to be the only international financier urging indexation. Unless there is genuine understanding on the part of the borrower about the virtues of monetary correction, there is not much prospect for the application of this technique. The borrower may be able to switch to other international lenders if the Bank applies pressure on this issue. (The conditions for the success of partial indexation are discussed on pp. 9-10.)

39. In its dialogue with countries likely to experience double digit inflation, the Bank should emphasise the desirability of applying indexation to all medium and long-term financial instruments for saving mobilization as well as allocation. In addition, the Bank is interested in the viability of the DFCs and other institutions that disburse Bank loans. From a long-term point of view, the success of the Bank's policy towards these institutions must be judged from the point of view of the latter's capacity to function effectively even when the Bank's support is withdrawn at some stage. Further, their dominance in the area of medium and long-term credit in a large number of countries makes it more likely that the indexation experiment will succeed. Finally, if these institutions link monetary correction to a general price index all or a greater part of the exchange risk would be borne by the sub-borrowers; a separate provision for exchange risk would therefore not be necessary. (See discussion on pp. 10-12.)

40. If the governments are persuaded to accept such policy measures, they are likely to adopt them also for other medium and long-term financial instruments like saving deposits and government bonds as a result of either their dialogue with the Bank or the demonstration effect of the experiment with indexation carried out by the long-term credit institutions.

41. If a country is unwilling to index all financial instruments of long-term credit institutions associated with the Bank, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans.

42. If, however, a country cannot be persuaded to adopt monetary correction or other appropriate interest rate policies even at a sectoral or sub-sectoral level, it would be counter-productive for the Bank to insist on the indexation of its sub-loans; such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider its loan operations and program in the country concerned.

Annex I: World Bank Loans Subject to Indexation and Country Experience with Indexation

Argentina

43. Argentina has received only a single agricultural loan from the Bank which contains an indexing clause. This has been for the Balcarce Livestock Project (505-AR) and was signed on July 31, 1967 but the first indexed sub-loan was made in September, 1973. According to the terms of the contract the sub-loan balances are adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower for each month, with interest charged at 6% per annum on adjusted balance. Indices used are: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers. Therefore, the reference index is a composite one and although cumulative is always less than either of the two basic indices. The Balcarce project has had its share of problems. During the last few months there has been an increase in the prices of finished steers without a commensurate increase in those of feeder steers marketed by project beneficiaries. Even though this has had little impact on the adjustment factor, farmers are beginning to express reservations regarding the use of indexation and there has been a decline in the applications for new loans.

44. The Argentinians have been experimenting with the indexation of government bonds over a long period of time extending as far back as 1962, when the National Recovery bonds bearing a nominal interest of 7% were used

with the principal adjusted with reference to an index of gold prices. Even earlier than this, in 1957, the State Petroleum Enterprise had floated bonds with a twenty year maturity, linked to an index based upon company productivity and changes in the salaries of company employees.

45. The government has continued to issue indexed bonds during the seventies but it was only in March 1975 that indexing was used in the banking sector, when the National Bank of Savings and Securities offered its customers monetary correction for deposits that are not transferable for one year. Indexed credit has also become important in the area of housing finance through the National Mortgage Bank and more recently through the mortgage branches of commercial banks. The adjustment procedures are rather complicated. There is some differentiation of terms according to income class with only a portion of the principal being subject to monetary correction. Furthermore, although the index is based on construction costs the actual adjustment cannot exceed 80% of the change in basic salaries of workers and officials in the industrial sector. This is how the scheme exists on paper; however, the actual experience of the mortgage bank indicates that indexing is not automatic. The administration of indexing is highly flexible, with the authorities deciding the time and the extent of the adjustment.

46. Indexation has gotten off to a slow start in Argentina, with experimentation proceeding on a small scale on many fronts. There still appear to be many misgivings as to its application on a larger scale in the financial sector.

Brazil

47. So far the Bank has made eight loans to Brazil which are subject to indexation. They are the following:

Brazil livestock (516-BR) signed September 23, 1967: Originally, sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period). An interest rate of 14% was to be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers were offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of 6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Later, in June 1971 the Bank and the Government agreed that whatever adjustment made in sub-loan principal would not exceed the extent of inflation as measured by the general price index for the period. Subsequently, in July 1972, another

revision in sub-lending terms was agreed upon to simplify sub-lending terms and correct certain problems which had emerged. All sub-loans made after that date were subject to correction according to changes in the US Dollar rate for cruzeiros, with interest on the adjusted principal at 7-1/4%. It was also agreed that, if at any time the increase in the general price index exceeded the rise in the US Dollar/cruzeiro exchange rate by more than 7-1/4%, the Bank and the borrower would agree to a new indexing system in order to assure that the indexing system would not result in negative real interest rates. The revised system adopted in July 1972 also provided for the elimination of the lags which had existed in the previous systems in applying indexing during the early part of the grace period; and for the correction of the previous practice of calculating interest on the unadjusted, rather than the adjusted, principal during the grace period.

Brazil Grain Storage (857-BR) signed September 27, 1972: The principal of this loan was to be adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzeiros of the Central Bank at 7-1/2% per annum. In September 1974 the Bank and the borrower agreed to revise the indexing system so that the principal of loans made after that date would be corrected according to the ORTN index, with an interest rate of 5% on the adjusted principal. This made the sub-lending terms generally consistent with terms offered by official lending institutions for agro-industries and other industries. However, in order to spur what it felt was a serious lagging in the development of grain storage facilities, the Government created in April 1975 a new grain storage credit line. The new line offered unindexed loans with nominal interest rates ranging between 8% and 15%. Hence, demand for indexed credit declined sharply and the uncommitted balance of the Bank loan (about 20%) was cancelled in October 1975.

Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of the principal throughout the life of the loan was to be in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest of 7-1/4% being charged on the adjusted principal. However, as the combined effect of internal and external inflation patterns and the rate of change in the US dollar/cruzeiro exchange rate began to cause the agreed indexing system to result in negative real interest rates, the Bank proposed to the Brazilians the general adoption in the livestock sector of a system which would result in more predictable interest rates - i.e., 5% interest after ORTN correction of principal. The Brazilians did not agree, resulting in the Bank's withdrawal from active consideration of a third livestock loan. Subsequently, the Government created with its own funds a new livestock credit program with nominal interest rates of about 15%, without ex post monetary correction of principal (terms which are similar to other agricultural lending in Brazil). It also agreed to allow prepayment, and refinancing at these new terms, of all the sub-loans made from the proceeds of the two Bank loans. As a result, partial cancellation of Loan 868-BR and accelerated repayment of both Bank loans are planned.

Brazil Agro-Industries (924-BR) signed August 1, 1973: Under the initial agreement sub-loans carry an interest rate of 5% plus adjustment based on the National Treasury-Bond (ORTN) price. But in October 1975, in line with the Government's desire to encourage investments in several of the relatively less developed states participating in the project, the Bank and the Government agreed to lower the interest rate to 3% (after ORTN correction of principal) for beneficiaries in 4 states, retaining the 5% rate for the others.

48. These loans were all in the agricultural sector, but during the past year there have been a number of loans to other sectors: in the industrial sector, Loan 1206-BR, ($85 million) of March 1, 1976, for the BNDE (National Economic Development Bank) development banking project, provided for sub-lending to small- and medium-size industries, with the cruzeiro-denominated sub-loans indexed according to the ORTN (National Treasury Bond) price and with interest rates of 3% for beneficiaries in the less developed North and Northeast regions, 5% in the Center-South and 6% in Sao Paulo. These terms are standard for all of BNDE-financed small- and medium-size industry operations channelled through state and regional development banks. Also, the nutrition loan ($19 million) approved June 22, 1976 includes financing for BNDE's special food processing loans to be extended with interest rates of 3% after ORTN indexing of principal. In the transport sector, Loan 1207-BR ($55 million) of March 1, 1976, for the BNDE secondary and feeder road project provided for sub-lending to states or to municipal consortia, with the cruzeiro-denominated sub-loans indexed according to the ORTN price and with interest rates varying from 4% to 7% depending on the state concerned (the lower rates applying to relatively less developed areas). In the water supply and sewerage sector, Loan 1009-BR ($36 million) of June 17, 1974, and a second loan (of $40 million) approved July 6, 1976 to help finance through the National Housing Bank (BNH) sub-projects in the Minas Gerais state water supply and sewerage program provide for cruzeiro-denominated sub-loans to the state water company at a rate of interest of 4% (plus various fees amounting to about 2%) with principal subject to full monetary correction according to changes in the general price index. This is consistent with BNH's practice in all of its water supply and sewerage lending to fully correct the principal of sub-loans according to the general price index and then to charge interest rates ranging from 2% to 7%, depending on the relative stage of development of the state concerned.

49. A brief sketch of the Brazilian experience is useful. Indexing was introduced in 1964 and applied initially to government bonds with maturities ranging from 2 to 5 years. The principal was revalued quarterly with reference to the Whole Sale Price Index and the interest was paid on the revalued sum.[1/] Since then over a hundred laws and implementing decrees

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1/ From December 1972 until March 1974 the index used combined a moving average of inflation during the previous three months with a forecast of inflation expected during the next six. A 50 per cent weight was assigned to the two periods. In March 1976 the weights were changed to 80 per cent for past inflation and 20 per cent fpr the expected increase in prices.

have extended the system to embrace many other areas of the financial system and sectors of the economy. Revaluation is widely applied to capital assets and property values and incomes are readjusted for tax purposes. But indexing is constrained by other policy objectives and a simple 100% link with prices has not always been used. In fact, indexing as applied to wage contracts has been distinctly regressive and has had little direct effect on the rate of inflation.[1/] A decline in the latter during the early '70s was more the result of an active fiscal and monetary policy. In fact, the only visible positive impact of indexing has been the growth in non-monetary financial assets. Although even here it is fifficult to isolate the net increase since there has been a substitution of indexed financial assets -- such as bonds and bank deposits -- for those not subject to monetary correction. What makes the Brazilian system so complex and from the purist's viewpoint a little unsatisfactory is the coexistence of different procedures for indexing and the absence of a universal coverage. For instance, the private sector has strenuously resisted indexation because business firms are unprepared to bear the risks and consequently financial intermediaries have been reluctant to offer indexed deposits. Commercial banks which use monetary correction on time deposits practice a form of preindexing by tying their adjustment to a projected rate of price increase which usually errs in the direction of conservatism. From December 1972 until March 1974 and again since June 1976 the correction offered on government bonds is also based upon projections which systematically underestimate the true increase in prices so as to control the rise in real incomes and thereby diminish inflationary pressures. The WPI which remains the cornerstone of the indexing system gives a low weight to housing and expenditure on public utilities, whose prices have been freed, and it neglects services that account for approximately half the consumption expenditure of the population. Thus, it is likely that the WPI grossly underestimates the true magnitude of the price rise. Another example of the anomalies, which abound within the system, is the treatment of mortgage loans. These were subjected to monetary correction at an early stage, but government eschewed full correction so as to encourage home ownership. However, the large number of defaults persuaded the authorities to switch to the technique of equal amortization as against the earlier procedure of equal total payment. Finally beginning in 1975 cash subsidies further alleviated the burden of mortgage payments.

50. After 11 years of operation the indexation system in Brazil is still in the throes of change and this affects the Bank loans that are subject to indexation. In May 1975, for instance, the ORTN and the ORTN cattle price index which had served as the basis for adjustment for some time was overshadowed by a system of monetary correction based on changes in the dollar-cruzeiro rate. According to the Brazilians, use of the ORTN index made World Bank loans uncompetitive against funds available from the Euro-dollar market and it became difficult to find borrowers who were prepared to pay the high interest cost when loans with 5 to 6 year maturities could be obtained from other sources at 10% interest.

51. The contours of the agreement, presently being worked out, can be described in the following way. The cruzeiro is to be pegged to the actual basket of currencies disbursed by the Bank and the nominal rate of interest is to be fixed at 10%. Assuming rates of inflation of the order of 25% per annum in Brazil and 8% in the lending countries, along with continuous adjustment of the cruzeiro to correct for the discrepancy,

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1/ See Fishlow, op. cit.

the nominal rate would be 27% while the real rate would be 2%. This is a reduction from real rates of 5% and 6% that were being recommended in the past. It appears that both sides have moved further away from the goal of an optimal real rate of interest towards a non-negative rate that is politically tolerable. The Bank looks upon index linking as a device for restoring the vigor of the market mechanism by offsetting the distributional and allocational distortions which arise from unanticipated inflation. Secondly, it wishes to enhance the viability of financial intermediaries. This is also partly the view of the Brazilian Government but the latter is also concerned with the feedback effect of monetary correction on inflation and the cost of government borrowing and therefore prefers to apply the system both flexibly and selectively instead of instituting a procedure for automatic indexation covering the entire economy.

52. Indexation is a part of the stabilization policy because it is easier to apply than an outright price freeze. The most recent modifications should soften the feedback effect and reduce the cost of government borrowing. Once again the objective is to prevent earnings regulated by indexed contracts from growing in line with the inflation by modifying the price index so as to exclude those increases which are due to accidental occurrences such as the oil price hikes or the frost, that recently damaged the coffee crop. Given the system's complexity, the frequent changes and the existence of segments within the economy not subject to indexing, it is doubtful whether monetary correction has helped the cause of efficient resource allocation although it might conceivably have raised the level of investment.

53. Indexing is used more widely in Brazil than in any other country, but the system still has many gaps. In particular the lending to the agricultural sector is not subject to monetary correction apart from the loans made by the Bank. Discussions with the Brazilians spanning a period of eight years indicate that they are unwilling to extend indexing to the entire sector and are anxious to dilute the indexing procedure applied to the Bank loans so as to enlarge the subsidy element.

Uruguay

54. The Bank has made five livestock loans to Uruguay of which the first 245-UR was signed on December 30, 1959. The disbursement of the loans is handled by the Livestock Fund which was estaboished by the Central Bank in 1958. The resources obtained from the Bank plus some contributions made by the Government are made available to the farmers through the Bank of the Republic (BROU) which is the only participating bank. The Central Bank's loans to the BROU are made against documents for sub-loans to ranchers at interest rates that permit BROU to get a spread of 2% over the indexed principal to cover the administrative expenses. Of the subsequent loans - 698-UR, 816-UR, 940-UR and 1166-UR the most recently agreed terms for the latter three are outlined below.

<u>Uruguay Fourth Livestock (816-UR) signed April 26, 1972 (First Stage)</u>: Sub-loan balances are subject to monetary correction not later than April 30 in each year on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year, furnished by Banco Central; subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic Y Finansas for the corresponding period. Loans made to farmers with holdings of less than 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

<u>Uruguay Fourth Livestock 940-UR signed October 25, 1973 (Second Stage)</u>: Sub-loan balances are subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to the corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

<u>Uruguay Fifth Livestock Project Loan No. 1166-UR signed October 15, 1975</u>: All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (Second Stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost-of-living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6% kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceding year as compared to the average for the previous 12 months. Repayment terms of sub-loans reflect the ability of the investment to service the debt. Terms range from 5 to 10 years and include grace periods of up to 5 years. If the indexing system (100% adjustment for all sub-loans) were applied to sub-loans made in 1969 with terms of seven years including two years grace, the real interest rate obtained would have ranged between -2% and -8%. It should be recognized that this is not a bad performance compared to other Latin American countries, where inflation has increased and medium- and long-term agricultural credit has not been adjusted.

55. Uruguay was beset by inflationary pressures throughout the sixties and this spurred discussion of the concept of indexation - discussion which did not culminate in implementation till very near the close of the decade because of fears harboured by the government that the introduction

of indexation would create destabilizing expectations on the part of the public. When in 1969 collaboration between Uruguayan officials, USAID and members of the Plan Agropecuario produced an acceptable scheme, it was tried on a pilot scale in the livestock sector.

56. In 1970, it was decided that if beef and wool prices rose faster than the Consumer Price Index (CPI), the latter would be used to adjust the loan. This involved an assymmetry in the treatment of borrowers and lenders because no protection was offered to the commercial banks in the reverse situation in which the CPI rose faster than the composite index of beef and wool. Hence the private institutions were not prepared to adopt the scheme for their lending operations.

57. In 1971 the graduation of adjustment according to the size of the farm was altered, allowing 50% adjustment to all farms under 400 hectares. In 1973 the concession was withdrawn and farmers in all size classes were required to adjust by the full amount. However, a hardening of the terms in this area was balanced by subsidization elsewhere. During 1973 the rate of inflation was 78%, but for the purposes of loan adjustment it was calculated at 65% and as an additional sweetner, the ranchers were returned a portion of their export taxes, which helped to bring the adjustment down to a mere 32%.

58. The beef and wool price index rose less than the CPI in 1974 and the former index was reinstated in March 1975. To add to the confusion it should be mentioned that the nominal interest rate was changed a number of times and the index factor which is applied no later than April 30 is based on price changes during a 12 month period ending in the previous October. Depending on whether inflation is accelerating or slowing down this has introduced its own biases. In common with many other projects (Argentina and Bolivia), the Bank did not require the use of "cumulative" indices where a choice w-- given. The effect of this over the life of a sub-loan is probably that real positive interest rates under high inflation may not necessarily be achieved in practice. In addition, the Uruguayans did not compound inflation rates in calculating the index; they merely added them, and this further weakened the effectiveness of indexation.

59. Both the effectiveness and the popularity of the indexing system has been reduced by the government's inability to adhere to a single set of rules. Private lending institutions have been scared off by government actions which appear to be weighted against them and the farmers are unhappy because of the uncertainties regarding their future obligations. If indexing is retained they would prefer loans to be preindexed with a fixed mark up.

60. The government recognizes the political advantages of subsidizing agricultural producers. This is supposed to lower the cost of food to city dwellers. It is also apparent that merely indexing the livestock loans extended by the World Bank, which comprise a very small percentage of the total agricultural credit, may worsen the distortions present in the market.

61. The recent policy actions of the government suggest that the supporters of indexation have prevailed. A new law has been passed which calls for the indexation of all financial instruments where the term exceeds two years. This should greatly expand the scope of indexation within the financial sector which has so far been limited to the National Institute of Colonization (INC) and the Mortgage Bank of Uruguay. The INC, which serves as an intermediary on all land transactions as well as financing land sales, makes long-term loans, where the principal is linked to an index of agricultural products; the nominal interest is 3%. The Mortgage Bank uses a wage index to adjust its loans as well as its savings since this index reflects the repayment capacity of the borrower and the expectations of the savers. During the period over which indexing has been applied both these institutions have had problems in inducing borrowers to observe the terms of the original contract and eventually have yielded to pressure and have settled for easier terms. The INC has allowed its borrowers to defer payments while the Mortgage Bank scaled down the size of adjustment on mortgage payments in 1973.

62. The Uruguayan experience is not encouraging. It has run afoul of the very same difficulties encountered by the Brazilians in the implementation of their own system. Excessive differentiation in order to deal with all situations is only one of the problems. Perhaps more serious, is the vacillation as regards terms and price indexes in the largely futile quest for a scheme that is fair to both parties and at the same time embodies the sectoral plans for the government. Through its willingness to bow to pressure from borrowers the government does not lessen the uncertainties inherent in an inflationary milieu, uncertainties which the indexing system was designed to neutralize. Each one of the indexes which can be used has its flaws and this remains an unavoidable weakness of the system. However, it is likely that the lower rate of inflation, which is expected in the next year or two, may make it easier to weed out the deficiencies in the system of indexation.

Bolivia

Bolivia Livestock (261-BO) signed June 25, 1971: Incorporates a trigger mechanism which becomes operative when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year. When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction. At present, two options are being offered on this livestock loan. One of them allows the farmers to make their payments in accordance with the above system of monetary correction. The other option - known as the dollar exchange clause - passes the exchange risk on to the farmer, i.e., the loan to the final borrower is denominated in dollars.

63. There is a great deal of resistance to the indexing system in Bolivia and it is unlikely that the foothold gained by the Bank in the livestock sector will lead to application on a larger scale. In fact, the recent experience suggests that the Bolivians intend to bring the curtain down on this small scale experiment.

Peru

Peru Agricultural Credit Project (933-PE) signed September 12, 1973: Sub-loans are not indexed until inflation is in excess of 9% for the fiscal year. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

64. Livestock loans made to Bolivia and Peru incorporates trigger clauses which require some form of adjustment if the chosen price index rises above a certain level during a specified period. Once again these are countries where the rate of inflation is moderate; and the financial system has not been forced to seek recourse in indexation.

Paraguay

65. During 1973-75 the inflation rate in Paraguay averaged 17.5%. It was therefore decided to apply indexation to the sub-loans made under the Fourth Livestock Project (1037-PA) signed September 6, 1974. The indexation clause stipulated the following conditions. A minimum real interest rate of 6% is to be charged and the principal outstanding is to be adjusted annually with reference to the cost-of-living index. Fondo Ganadero, the executing agency, charges 10% interest on principle adjusted on the basis of the CPI. However, in 1975, the change in the CPI was 6.7%. FG adjusted the principle on the basis of a 5% increase and the Bank, considering the high rate of interest already applied, agreed to this action.

66. Indexation has not been widely applied in Paraguay. So far the only other financial contracts subject to monetary correction are mortgage loans. Since inflation is projected to decline over the next five years it is unlikely that the system will be applied on a larger scale.

Other Countries

67. Many countries have used indexing in one form or another during the post war period and some have been led to abandon the concept after a long period of trial. The Finns, who had applied indexing to wages since 1945, found in 1967 that the system could not be made to work any longer and shifted to an incomes policy. Colombia has adopted the crawling peg in order to regulate the price of its currency and some form of indexing

is applied to mortgage loans, the investment of social security reserves and saving deposits. In the latter case the adjustment is limited to a maximum of 20% per annum. In general, the Colombians have resisted indexation. The Bank has made one DFC loan which includes a trigger mechanism but any agricultural loans made in the near future are not likely to include an indexation clause. For a long time both government and private sector bonds in Israel were linked to the official dollar rate but the sharp devaluation of 1962 with the concomitant jump in debtor obligations led to a discontinuation of linking with foreign exchange and a selection of the CPI as the index to be used for monetary correction.

68 One other feature as regards the application of indexing should be mentioned. "Dirty" indexing seems to be the rule and not something peculiar to the Latin American countries. Government usually exercise some form of discretion in their implementation of indexing. For instance, in Norway, the government decides the extent to which a price change will be compensated. Similarly the Austrian government can overrule the automatic indexing of pensions and subsidies. Indirect taxes are used to regulate the index in Norway, Finland, Israel and the United Kingdom.

69. Even a brief survey of the experience with indexation leaves one with doubts as to its workability and its usefulness as a policy instrument. As the Economist pointed out,

> No system of indexation can be substituted for tackling the economic and social pressures which cause inflation. On the contrary the fewer the people who can lose because of inflation the faster prices will rise to transfer command over real resources to those who are determined and able to grab a larger share. But indexation, provided it begins in the right way, can shift the pain from inflation to politically more sensitive areas and so force the government to deal more promptly and effectively with the disease at its very early stages.

It is not clear that countries which are using indexation as a part of their stabilization program are aware of the larger problems that need to be tackled.

Annex II: Statistical Tables

Table I - Inflation and Related Statistics for Sixteen Latin American Countries, 1950-69*

	Rate of Inflation	
	Mean	S.D.**
Uruguay	43.0	34.9
Bolivia	41.3	55.9
Brazil	35.1	21.5
Chile	28.2	14.6
Argentina	26.4	23.4
Paraguay	12.5	17.5
Colombia	9.2	3.2
Peru	8.5	5.8
Mexico	5.3	5.3
Nicaragua	3.4	6.1
Ecuador	3.0	3.3
Honduras	2.1	3.4
Costa Rica	1.9	2.2
Guatemala	1.1	2.8
Venezuela	1.1	2.8
El Salvador	0.3	1.5

* Per cent per year.
** Standard Deviation.

Table II: Countries with Inflation in Excess of 10% during 1972-74

	1960-1971	1972-1974
Argentina	20.25	25.71
Bolivia	4.94	28.96
Brazil	37.83	12.81
Chile	23.51	201.73
Colombia	10.03	14.99
Ghana	6.52	11.10
India	5.36	14.33
Israel	5.67	18.97
Jamaics	3.96	14.80
Pakistan	3.47	16.28
Paraguay	3.08	11.95
Philippines	5.64	14.33
Uruguay	37.80	51.70
Yugoslavia	11.14	13.44
Zaire	16.65	14.66
Turkey	8.00	15.00

Table III: Indicators of Domestic Price Level Changes a/
(Average Annual Percentage Change)

Source: Date of CPP	Country	1965-70	1970-73	1973-75	(Estimate) 1975-80
2/18/75	Afghanistan	11.1	-2.3	6.4	5.2 e/
7/25/74	Argentina b/	16.1	43.2	-	-
10/16/74	Bangladesh	-	-	17.4	9.8
3/12/75	Bolivia	-	10.7	35.9	12.1
11/74	Brazil c/	26.5	17.6	31.0 g/	20.0 h/
	Chile	21.3	76.0	145.9*	
	Colombia	8.3	11.2	11.5*	9.07
5/15/74	Congo	-	-	17.8	9.5
3/74	Egypt	-	3.9	6.2	6.7 f/
	Ecuador	4.0	7.2	11.2*	
7/15/74	Ghana	-	12.0	-	-
7/22/74	Greece	2.4	3.0	-	-
	Guatamala	2.2	8.1	10.5	6.5
8/01/74	Guyana	-	4.3	-	-
4/22/74	Haiti	0.1	6.5	7.4	5.2
6/13/74	Honduras	1.9	3.7	10.0	7.5
6/06/74	India	6.5	18.5	9.7	6.0
6/05/74	Indonesia	-	23.0	20.0	-
6/03/74	Iran	1.9	8.1	7.4	4.7
12/27/74	Jamaica	-	10.8	17.6	10.0
8/30/74	Jordan	-	7.6	8.7	7.5
4/12/74	Korea	7.8	9.8	8.0	12.8 f/
11/29/74	Lebanon	2.0	4.4	14.0	9.5
10/07/74	Malawi	3.6	5.1	-	-
3/21/75	Mauritius	3.0	6.2	29.5	10.4
5/10/74	Mexico	3.4	6.7	17.7	7.2
5/17/74	Morocco d/	0.6	8.3	21.0	3.5
	Nicaragua	2.2	8.1	10.5	6.5
6/28/74	Pakistan d/	3.7	7.1	10.0	5.0
5/12/74	Paraguay d/	1.3	13.0	17.5	8.5
10/21/74	Peru d/	11.1	8.7	15.0	15.0 e/
7/15/74	Philippines	5.6	17.0	25.0	8.8
8/21/74	Romania	-	-	0.4	0.4 f/
6/26/74	Senegal	-	5.2	9.9	8.6
4/15/74	Sri Lanka	4.2	9.4	12.5	7.9 f/
9/26/74	Syria	3.5	6.2	14.4	10.1
3/27/74	Tanzania	-	5.1	6.0	5.9 f/
5/17/74	Thailand d/	1.2	5.9	-	-
6/10/74	Trinidad & Tobago	3.8	8.5	9.1	6.2 f/
	Turkey	8.1	14.0	15.0	15.1
	Uruguay			50.0	30.0
1/31/75	Venezuela	2.1	3.1	16.9	9.0
7/12/74	Yugoslavia	7.8	18.0	17.5	15.0
5/30/74	Zambia	-	6.7	12.4	7.5 f/

Note: (Based on explanation in CPP Attachments)
* 1973-74 only.

a/ General domestic price index not specified unless otherwise noted.
b/ Domestic wholesale index.
c/ General price index -- weighted average of wholesale (60%), the cost of living index (30%), and the cost of construction index (10%).
d/ GDP deflator.
e/ 1975-78.
f/ 1975-76.
g/ Average for 1974-75.
h/ Country economist.

Table IV: Estimates of Inflation, 1975-80 1/

Less than 10% rate of inflation	Percent	10% or more rate of inflation	Percent
Afghanistan	5.2	Argentina 2/	350.0 ('75)
Bangladesh	9.8 ('75-76)	Bolivia	12.1
Congo	9.5	Brazil	20.0 5/
Egypt	6.7 ('75-76)	Chile 3/	336.0 ('75)
Haiti	5.2		
Honduras	7.5		
India	6.0	Jamaica	10.0
Iran	4.7	Korea	12.8
Jordan	7.5	Mauritius	10.4
Korea	8.2 ('76-76)		
Lebanon	9.5	Peru	15.0 ('75-78)
Mexico	7.2	Syria	10.1
Morocco	3.5	Turkey	15.1
Pakistan	5.0	Uruguay 4/	30.0 ('75-80)
Paraguay	8.5	Yugoslavia	15.0
Philippines	8.8		
Romania	0.4 ('75-76)		
Senegal	8.6		
Sri Lanka	7.9 ('76-76)		
Tanzania	5.9 ('75-76)		
Trinidad & Tobago	6.2 ('76-76)		
Venezuela	9.0		
Zambia	7.5 ('76-76)		

1/ Source: CPP Attachments SI, Average Annual Percentage Change based upon the general domestic price index.

2/ Estimated inflation for 1975 alone is 350 percent. Therefore, it is safe to assume this country belongs to the over 10% category. There is some speculation that this rate may decline in 1976.

3/ Making projections of Chilean inflation is extremely difficult given their volatile record. Inflation for 1975 alone is estimated by Bank sources to be 336%. This in itself would be sufficient to place Chile in the over 10% category. It should be noted that the government is pursuing draconian policies to control inflation and the rate can be expected to fall considerably in the next few years.

4/ Inflation in 1975 is estimated at 50-60% and it is expected to decline steadily to around 10% by 1979-80.

5/ Country Economist.

Table V: Total Projected Lending by IBRD and IFC to High Inflation Countries 1/
FY1975-FY1980
(US$ millions)

Country/ Sector	Agriculture	Industry 2/	Transport	Utilities	Education 3/	Urban
Bolivia	150.6	88.5	84.0	31.5	40.0	-
Brazil	939.0	525.0	1,195.0	945.0	248.5	140.0
Chile	75.0	55.0	20.0	60.0	-	-
Colombia	425.5	400.5	145.0	392.0	110.0	100.0
Guatemala	20.0	-	60.0	146.0	40.0	15.0
Jamaica	59.0	-	71.0	57.0	15.0	20.0
Korea	705.0	20.0	540.5	-	77.5	-
Mauritius	10.0	25.0	10.0	16.5	17.0	-
Nicarague	12.0	8.0	13.0	53.0	27.0	6.0
Peru	245.0	150.0	160.0	100.0	70.0	40.0
Syria	185.0	20.0	40.0	265.6	40.0	-
Turkey	575.0	148.0	130.0	336.0	-	40.0
Uruguay	112.0	35.0	-	30.0	-	-
Yugoslavia	540.0	-	453.0	380.0	-	-

Source: CPPs Actual and Proposed Lending Program Through FY 80.

1/ Defined as having over 10% rates of inflation.

2/ Includes mining.

3/ Includes health and nutrition.

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SOME POLICY ISSUES IN
INDEXATION OF FINANCIAL CONTRACTS

September 1976

Public and Private Finance Division
Development Economics

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SUMMARY AND CONCLUSIONS

This paper discusses the role that indexation of financial contracts might play in the mobilization and allocation of savings as well as in strengthening the viability of financial institutions in a period of inflation. It also explores the justification for indexation of Bank lending operations in agriculture and industry and assesses the experience gained so far with regard to agricultural loans made by the Bank during 1967-75 in the Latin American Region. Questions of overall financial policy and the level and structure of interest rates have been analyzed in a separate paper titled "World Bank's Approach to Interest Rate and Credit Allocation Issues".

The broad conclusions of the paper are summarised briefly below:

1. Indexation policy involves fairly high administrative costs and may also strengthen inflationary expectations. Hence, it is not an appropriate policy instrument for dealing with inflationary situations that are likely to be temporary or can be controlled by means of monetary-fiscal policies or are such as to result in a low and stable rate of inflation.

2. It is, however, a relevant policy instrument in countries which are likely to experience high and variable inflation. Here two situations must be distinguished. The first is where indexation is a part of a policy package for the elimination of inflationary pressures which have persisted in chronic form over a protracted period and which are likely to be brought under control in phases over several years. In this context, indexation has a distinctly subordinate role with fiscal, monetary and other measures occupying the center.

3. The second situation is one in which there is no effective anti-inflationary program, double-digit price rises are expected to continue and indexation is adopted to neutralise their impact on financial contracts. Here the principal contribution of indexation would be in bringing about some convergence of expectations of savers and investors; thus it can safeguard the saving-investment process, promote the growth of medium and long-term financial instruments and ensure the viability of financial institutions.

4. The success of an indexation experiment crucially depends on (a) its acceptance by the government as a desirable policy instrument for insulating the structure of interest rates from the impact of inflation, (b) its application to major medium and long-term financial instruments for savings mobilization and credit allocation on the basis

of a general price index relevant for each country, and (c) the adoption of complimentary policies in the field of exchange rates and the tax system. It is unlikely to succeed in its main objective if only a few instruments of limited importance are indexed.

5. It is difficult to identify the group of countries which are likely to experience serious inflationary pressures in the future. The situation during 1972-75 has been unusual and it would not be wise to extrapolate recent trends. However, it might be useful for the Bank to discuss the advantages of indexation with countries presently experiencing double digit inflation.

6. (a) The Bank should emphasise the desirability of applying indexation to all medium and long-term financial instruments. If, however, a country is unwilling to index all such instruments, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans. Such a policy would enhance the viability of DFCs and other credit institutions associated with the Bank. Further, experience with such indexation may induce the government to adopt it on a wider basis.

(b) In the case of a country which cannot be persuaded to adopt monetary correction or other appropriate interest rate policies, it would be counter-productive for the Bank to insist on the indexation of its sub-loans, particularly when the domestic financial intermediaries associated with the Bank do not occupy a dominant position in the medium and long-term credit market. Such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider the rationale of its loan operations and program in the country concerned.

I. Introduction

1. This paper has a narrow scope. It is not about overall financial policy or even about the level and structure of interest rates. These important subjects have been studied recently in the paper entitled, "World Bank's Approach to Interest Rate and Credit Allocation Issues", January 30, 1976. The present paper on indexation elaborates on one of many issues discussed in the above mentioned draft, namely how to insulate interest rates from the impact, generally unintended, of high and volatile rates of inflation. This issue would arise no matter what level of real interest rates is considered appropriate. Clearly, the indexation technique can make a more important contribution to development policy if the real interest rate structure is appropriate than if it is not. But even in the latter case, the role of indexation is not insignificant from the points of view of saving mobilization, allocation and the viability of the financial structure.1/

2. The paper is a response to questions raised by staff in the Latin American Regional Office about the indexation of 11 agricultural loans made by the Bank during 1967-75. This experience is reviewed in the annex and the main conclusions are reflected in the analysis and recommendations presented in the main text. In addition, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry. It does not discuss the application of indexation in other areas such as wages and taxes. The purview is limited to the area of financial contracts.

3. An active development policy trying to promote rapid growth in a country is likely to generate inflationary pressures. This danger is perceptibly greater in the LDCs partly because of the speed with which supply bottlenecks are encountered and partly due to the expansionary monetary-fiscal policies. The inflationary process in the LDCs, however, has accelerated since 1970 because of a significant rise in the prices of fertilizers and food, partly as a result of natural disasters and the quantum jump in the oil prices since 1973. Many LDCs are currently experiencing double digit inflation; and in some of them, this trend is likely to continue until 1980 or so. In this context, the application of the indexation technique to financial contracts assumes particular significance.

4. High rates of inflation pose a series of problems all of which are rooted in the unanticipated redistribution of resources between economic units involved in monetary transactions. To avoid the possibility of a resource loss during periods of high and variable inflation, individuals become reluctant to enter into agreements which bind them for a

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1/ For a review of theoretical literature and empirical experience, see Index-Linking of Financial Contracts: A Survey of the State-of-the-Arts, World Bank Staff Working Paper No. 192, November 1974.

long period of time to financial terms expressed in current prices. This interferes with the development of the financial sector, especially with the supply of term loans because the nature of the commitment increases the chances of incurring a loss. But aside from this, there is a flight from monetary transactions and into various forms of barter. Savers, fearing an erosion in the value of money balances, prefer to hold real estate, specie or even certain types of commodities. In general, inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

Policy Options

5. In the area of financial contracts, there are two possible ways of coping with the problem of inflation. In each case, the idea is to adjust the financial transaction so that it is more or less in step with the overall trend in prices.

6. One solution is a policy of variable interest rates. This would allow interest rates to vary with current and expected increase in prices; in theory, it would protect both borrowers and lenders against the consequences of changes in the rate of inflation. Variable rates are a workable solution when the rate of price increase is fairly stable or predictable and the market has the freedom to generate a rational interest structure in the light of past experience and future expectations. However, available information indicates that Latin American countries with high rates of inflation also tend to experience fairly sharp fluctuations in the annual rate of increase of prices and this variance would very likely interfere with the markets' ability to arrive at a rational rate structure.

7. Where inflation is high and variable, a second solution, i.e. indexation, seems to be appropriate. Indexation preserves the real value of contractual obligations by tying them to a price index, and it thereby helps to avoid the anomalous situation, often found in LDCs, when real interest rates go down in times of inflation and up in times of a price decline. Such movements in real rates cannot be justified either in terms of a demand management policy or as an allocative measure.

8. Since indexation reduces the riskiness of financial transactions by safeguarding the individual transactor against losses due to unforeseen changes in the price level, it can have two beneficial results. Firstly, financial intermediaries can offer stable positive real interest rates on savings although available evidence on this point is weak. Indexation may encourage the financialization of savings presently invested in real assets and thereby enhance the efficiency of resource allocation. There are some indications of such a shift in Brazil, Korea and India following the change in interest rate policies, although the available evidence is far from being

conclusive.[1/]

9. A second advantage of monetary correction is its impact on long term lending. At present, there is a marked paucity of long-term funds in the financial markets of the LDCs due to the traditional preferences of lenders and the riskiness of lending long. This is especially marked in the agricultural sector as has been pointed out in the Policy Paper on Agricultural Credit (p. 16). For example, 75% of institutional loans in Latin America and Africa are for two years or less while for Asia, the figure is around 65%. Such squeezing of the maturity spectrum may have an adverse effect on those projects that are subject to long gestation lags. If entrepreneurs have access only to short-term loans, the uncertainty of being able to roll over their loans may dampen their willingness to undertake long-term investment. As long as financial intermediaries are unable to cover themselves against the risks involved in making term loans, and as long as they are constrained from charging an interest on their long-term commitments, which is significantly different from that levied on short funds, they are unlikely to pursue long-term lending with much enthusiasm. Indexation could help activate this segment of the market by rationalizing the rate structure and protecting intermediaries from the so called decapitalization problem, which is the erosion of the lenders capital base during times of rapidly rising prices.

Country Experience with Indexation

10. A number of countries have experimented with monetary correction during the last thirty years, with Finland being among the earliest to apply the concept. (See Table on page 7.) In most cases, a beginning seems to have been made with the indexation of wage contracts and long-term government bonds, the coverage being extended at a later stage to social security benefits, private lending and recently to taxes.

11. Concentrating on the financial sector, it appears that the initiative to index has usually been taken by the government and in each case it has been motivated by the desire to increase the rate of savings in forms amendable to policy regulation. A secondary and related objective has been to protect the interest of small savers from lower income groups who normally lack inflation proof outlets for their saving. Israel is one of the countries which has used monetary correction by issuing indexed government bonds from as early as 1948. Brazil adopted this device in 1964. Since then Indexation has been extended to some savings institutions in both Brazil and Colombia.

1/ W.L. Ness, Jr., Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience, Economic Development and Cultural Change, Volume 22, Nos. 3, April 1974. See Appendix I section on Brazil. See also Ronald I. McKinnon, Money and Capital in Economic Development, Brookings 1971 for Korea and D.J. Lakdawala, Financial Assets and Instruments for Mobilization of Savings, for India.

12. What emerges from the experience with the use of indexation as a policy instrument is the following:

(a) Indexation has been used selectively for a limited range of transactions to promote equity, resource mobilization by the government or resource mobilization and allocation by financial institutions;

(b) Where indexation has been used for price stabilization, it has been part of a package consisting of deflationary credit and fiscal policies, price and wage controls and even direct physical controls;

(c) Indexation rules have served multiple policy objectives. The approach has been what may be called "discretionary indexation," analogous to "dirty" floating of exchange rates.

13. In the area of wage contracts, the government followed a rule of adjusting nominal wages with reference to an estimate of future inflation. In effect, this meant that wages were not indexed at all, and the wage increase which was granted depended more on government policy rather than actual inflation.[1/] This phase lasted from 1965 to 1968 at which point the rule was changed permitting nominal wages to track the rate of price increases more closely, but there was a return to discretionary indexation as inflation accelerated in the early '70s. In the field of financial contracts discretionary changes have tended to favour the borrower at the cost of the lender. By only permitting a partial adjustment of the principal or the interest rate the government has engineered a transfer of resources from one party to the other. It is doubtful whether discretionary indexation of wage contracts has made an appreciable impression on the pace of inflation and until more evidence is available it is impossible to assess its impact on resource allocation.

1/ The mechanics of Brazilian indexation are discussed at length by Albert Fishlow. (Indexing Brazilian Style: Inflation without tears? Brookings Papers on Economics, No.1, 1974). He points out that "Brazilian wage policy has proven virtually completely discretionary...as so has most of the rest of the system of monetary correction....Indexing was an element of intervention and as such was substituted for other policies".

Summary of Countries' Experience of Indexing[(a)]

	Wage	Social Security Benefits: Pensions	Social Security Benefits: Other transfer	Investment: Govt. Bonds	Investment: Private Bonds	Investment: Mortgages	Investment: Other Loans	Investment: Rents	Taxes
Argentina				1962-	1959-				
Brazil	1964-			1964-			1964-	1964-	1964-
Canada	1972-	1965-	1973-						1974
Chile	1960s	1952							
Colombia						1972-			
Finland	1945-67	1957-	1956-67	1945-67	1953-67		1952-67	1952-67	
Israel	1961-			1948-	1951-	1950s			

(a) Table covers period up to end of 1974.

Source: National Institute Economic Review, 1975.

Rationale for Indexation of Financial Contracts

14. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for individuals and for institutions. However, these administrative problems are not large and the additional expense seems like an insignificant price to pay for a substantial expansion in the breadth and scope of the financial market. Since indexation is likely to be limited to the long end of the market, the cost of supporting the system would be relatively small.

15. A more important problem is the difficulty of persuading the government. The indexing of financial transactions not only increases the burden of financing the national debt, but it also reduces the subsidy long enjoyed by businesses with access to institutional loans subject to fixed interest rate ceilings. The government is usually under pressure from these businesses to continue with the subsidy but at the same time it cannot ignore the distortions arising from inflation and its own arbitrary pricing policies. If inflation cannot be controlled, indexation may be an attractive way of injecting a degree of rationality into the pricing system. There is very little reason to believe that indexation will interfere with the government's ability to subsidize particular groups. Even if a number of transactions within the economy are subject to indexation, the government can still channel resources wherever desired through tax and subsidy devices.

16. Of course, the more moderate the rate of inflation and the more flexible the financial system -- implying both variability of interest rates and institutional diversity -- the less will be the attraction of, or the need for indexation. But those countries experiencing high rates of inflation in a milieu of pegged nominal interest rates and fragmented financial institutions, indexation of contracts may help to revive the financial sector.

17. Can indexing succeed if it is adopted by, say, long-term financial institutions but not by those engaged in short-term transactions? Such a regime would be created if, for example, the government decreed that deposits and loans above a certain maturity be indexed. A parallel system of indexed long-term and non-indexed short-term financial contracts would come into existence. Such a system is likely to prove beneficial to the economy. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the cost and nuisance of indexation may exceed the benefits. To the extent savers forego indexed long-term investments in favor of greater liquidity accompanied by negative returns, this will be the result of conscious choice rather than the unavailability of indexed instruments. And on the borrowers' side, the option would be to get long-term financing at a stable cost or go through the uncertainties of rolling over short-term loans at a variable cost. If there is no indexing, the banks have an incentive to borrow short and lend short. This is accepted by depositors who have no better alternatives and by borrowers who do not mind the shortness of maturities so long as real interest rates are

negative. By contrast, the indexed system, as described above, would encourage banks to differentiate between short and long-term markets in financial resources and this would contribute to economic development.

18. The next question is whether or not indexing can succeed if it is adopted only by some long-term financial institutions but not by others. If the institution which adopts indexing is already dominant in the long-term market for industrial or agricultural funds, the chances are that the new policy will be a success, unless the government lends its support to non-indexed competitor institutions. Assuming that the government accepts indexation as a part of its policy framework, the "indexing institution" will be able to expand its loanable funds, unless statutory restrictions on institutional savers prevent them from purchasing the newly created financial instrument. Existing borrowers of the "indexing institution" are unlikely to switch to rival long-term sources to any large extent. By definition, rival banks are small in size and cannot accomodate many new clients. Also, indexing does not raise real interest charges; it simply prevents borrowers from reaping a windfall gain. The "indexing institution" will pick up those new borrowers who are attracted by the availability of long-maturity funds at real interest rates which remain lower than expected rates of return on their investments.

19. Partial indexing in the long-term market can succeed but there is nothing inevitable about this outcome. If the "indexing institution" does not have a large share of the market, if government does not accept it as a policy instrument or if there is collusion between rival banks and key businessmen, the introduction of monetary correction may not survive for long.

Evaluation of Present World Bank Policy

20. From the stand point of the overall economy of the borrower country, all World Bank Group loans and credits are in fact indexed to the extent that changes in the rate of exchange are a proxy for the rate of inflation. This follows from the World Bank Group policy of denominating its loans in terms of foreign currencies. In other words, either the government or the intermediary institution or the sub-borrowers bear the cost -- in terms of local currency -- of any exchange rate devaluation vis a vis the foreign currency in which the World Bank has provided the loan.

21. As regards the on-lending operations of the World Bank through financial institutions, two types of indexing practice can be distinguished:

(a) Loans to sub-borrowers are denominated in foreign exchange. This applies to a substantial segment of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities or

some price indices, the exchange rate or a combination of the three. This applies to 16 of the active agricultural project loans in the Latin America and the Caribbean Region. (Details are given in the Appendix.)

22. In the case of on-lending through the DFC[1/] exchange risks were assumed by the sub-borrowers in 15 of the 50 cases. In the rest, the risk was assumed by the government (17), by the Central Bank (5) or shared by the governments and the sub-borrower (13). This contrasts with on-lending in agriculture, where except for the 11 projects in Latin America which included explicit indexation formulae, the exchange risks have always been assumed by the government or public agencies. In terms of the volume of commitments, the indexed agricultural loans amount to $217 million as compared to the total WBG agricultural credit operations of 516 billion by the end of June 1975.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial intermediary immune from the risks of exchange rate alignments was the dominant factor. This meant that the exchange risk had to fall either on the sub-borrower or on the government (or Central Bank). With lending rates of DFCs being pegged in many countries, the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.[2/]

24. Sixteen loans made by the Bank include indexation clauses as mentioned above. Nine of these loans are for livestock and two are for agro-industries and the construction of grain facilities. During the first half of 1976 five indexed loans were made to Brazil - one each for the industrial sector, the transport sector, two for the construction of water supply and sewage facilities and one for nutrition. All the loans have been made in the Latin America and Caribbean Region. Indexing in these operations has been of an experimental nature. An explicit policy

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1/ On-lending through the DFC, was $2.8 billion by the end of June 1975, representing about 50% of total WBG lending to the Industrial Sector.

2/ A table presented in the DFC policy paper Annex 6 indicates that there is no apparent correlation between the procedure used for allocating exchange risk and the average rate of inflation during the previous five years.

with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiation the annual rate of inflation was set at 8 percent or above. Two loans have been indexed through a "trigger mechanism" which requires that loans be indexed if and when a specified inflation rate is reached. In all cases, indexing is applied to the principal with the interest payments calculated at adjusted values of the principal. The price indices used were various combinations of beef and wool prices, cost of living indices and the exchange rate. (See Appendix I for details.)

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and administrative sense in the environment of low interest policies for term lending, the introduction of indexation in Bank agricultural loans has been prompted from the start by an overall policy objective to ensure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indices other than the foreign exchange rate have been experimented with in these agricultural loans. The difference in the rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign financed component of DFC loans was linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending including use of own resources by the financial institutions - although this objective was not always accomplished.

26. The Bank's experience in the implementation of indexed loans over the past eight years is not easy to assess. Because of frequent changes in the terms of indexed loans, their impact has varied and it is doubtful whether it can be measured without a very large research effort. Of the six countries which have received indexed loans, only three appear to be seriously committed to the system, these being Uruguay, Argentina and Brazil. Each of them has experienced double digit inflation in the recent past and the trend is expected to continue during the next few years. Brazil has the additional incentive of having developed the indexation system to a point where it is widely accepted, and to a degree understood. The three remaining countries - Bolivia, Peru, Paraguay - are putting their faith on anti-inflationary fiscal and monetary policies.

27. There is a striking uniformity in both the responses of borrowers to the indexation of loans and in the efforts of governments trying to achieve a workable compromise. In every case where indexation has been incorporated into the loan agreement, the adjustment is determined by the movements in one of the two reference indices, usually, the Consumer Price Index and a composite index constructed from beef and wool prices. The Index which is actually used is the one which registers a lower rate of price increase. Through this and other devices, governments have sought to ease the terms offered to the final borrower and in the process have

reduced the effects of indexation on the interest rate and thereby the benefits accruing to the lending agency. These measures have been in response to the strenuous opposition that indexation has aroused among farmers who are used to subsidized loans, excessively conscious of the uncertainty which monetary correction introduces as regards the repayment of the loan, and powerful enough to force the government to soften the conditions of the loan.

A Frame for Future Bank Policy

28. While the experience of the Bank, as far as indexed loans are concerned, indicates the need for continuing study and evaluation, indexation does seem to be an appropriate policy instrument for countries which have to live with inflation and at the same time implement a broadly based policy of economic development.

29. Which countries: For the large category of countries with low and relatively stable rates of price increase, the need for indexation is limited, perhaps, to social security payments. A second category would include countries such as Brazil where inflation has averaged around 30% over the last two years. The government is determined to bring down the rate of price increase and in the meantime provide some measure of protection for income shares and the saving investment process. In these countries, indexation would serve a dual purpose: as a surrogate incomes policy and as a means of rationalizing the financial sector while inflation is being brought under control. For the third group of countries which have a long history of high and variable rates of inflation and where the government is disinclined to take the harsh measures needed to dampen inflationary pressures, indexation can serve a useful function in safeguarding the saving-investment process.

30. However, it is difficult to identify countries in the second and third groups. Recent experience (1973-75) is hardly any guide; for practically every country in the world was caught in the throes of double digit inflation. One cannot extrapolate recent price trends into the future and thereby separate countries into those in which inflation is expected to be serious and the rest. The projections contained in the recent CPPs for a large number of countries indicate that inflation is likely to be a problem in some countries - Argentina, Brazil, Chile, Peru, Syria, Yugoslavia, Uruguay, Turkey and Korea. (See Table IV, Annex II, for information on the projected rate of inflation; and Table V, Annex II, on proposed Bank lending to these countries over the next five years.) Several of these countries have introduced indexation schemes and are in a position to extend the scope of these measures should the need arise. So far, Yugoslavia, Syria, Turkey and Korea have not experimented with indexation but they can, perhaps, be encouraged to consider its application in the future.

31. Which Index: Not only have sub-loans through the DFCs been linked to the foreign exchange rate, but the foreign exchange rate has

also been used as an index for adjusting the principal on a few agricultural loans. Use of the exchange rate has the distinct advantage of providing a firm numerical basis for adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. Even with these qualifications, the exchange rate can be a good proxy for price inflation, particularly where rate changes take place frequently.

32. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of large adjustments introduces uncertainty into investment decisions. As prices rise, the over-valuation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two uncertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Further, sudden large adjustment creates a cash squeeze -- an abrupt increase in the liabilities of the businesses. For these reasons, in such a context the foreign exchange rate should not be used as a basis for indexation.

33. If it can be assumed that the various countries which apply the concept of monetary correction will adhere to a system of floating rates over the foreseeable future, the exchange rate can be used to index <u>all</u> transactions; this practice would have the additional advantage of effectively passing on the exchange risk to the sub-borrowers. However, if the assumption is invalid, it would be preferable to treat at least local currency transactions separately so as to avoid the problems arising from large, discrete exchange rate adjustments. Probably the optimal procedure in such a situation would be to index <u>all</u> loans with respect to a general domestic price index and deal separately with the exchange risk. Exchange risk in this case would disappear or at least be smaller than what it would be without indexation of <u>all</u> loans, and it may become possible for the government or the Central Bank to bear it by charging a small fee to the sub-borrowers.

34. A general price index with a wide coverage may be the most appropriate basis with which to link the principal of financial contracts. It is not appropriate to use specific commodity or sectoral price indices because the main purpose of monetary correction is to neutralise the <u>overall</u> impact of inflation on financial contracts, without interfering with relative prices. Monetary correction based on specific commodities would tend to distort relative price structures and thus to misallocate resources.

35. There are some reservations, however, relating to the technically defective nature of general price indices, and due to the fears that these

indices can be tampered with for political reasons, Where there are several indices, the choice between them also present a problem. If the principle that indexing should be based on the general price index is accepted, the question of which index qualifies for this role becomes an empirical one and has to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are limited in favor of a more long-term trend.

36. In the case of more open economies which are vulnerable to price shocks emanating from abroad, it may be necessary to adopt a discretionary approach a la Brazil where the index is adjusted so as to net out sudden changes in the prices of traded commodities due to unforeseen circumstances in the world economy or natural calamities.

37. Since the idea is to take account of a resource loss experienced by the economy, it might be preferable to use a wage index where one is available, which may reflect more closely the changes in real purchasing power, rather than a CPI that has to be arbitrarily adjusted whenever the situation demands.

38. Modality of Negotiation: The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects. Chances of success are much greater if indexation is applied across the board in the long-term credit market than if it is applied piecemeal in the context of specific projects or specific institutions. It must be recognized that the Bank is likely to be the only international financier urging indexation. Unless there is genuine understanding on the part of the borrower about the virtues of monetary correction, there is not much prospect for the application of this technique. The borrower may be able to switch to other international lenders if the Bank applies pressure on this issue. (The conditions for the success of partial indexation are discussed on pp. 9-10.)

39. In its dialogue with countries likely to experience double digit inflation, the Bank should emphasise the desirability of applying indexation to all medium and long-term financial instruments for saving mobilization as well as allocation. In addition, the Bank is interested in the viability of the DFCs and other institutions that disburse Bank loans. From a long-term point of view, the success of the Bank's policy towards these institutions must be judged from the point of view of the latter's capacity to function effectively even when the Bank's support is withdrawn at some stage. Further, their dominance in the area of medium and long-term credit in a large number of countries makes it more likely that the indexation experiment will succeed. Finally, if these institutions link monetary correction to a general price index all or a greater part of the exchange risk would be borne by the sub-borrowers; a separate provision for exchange risk would therefore not be necessary. (See discussion on pp. 10-12.).

40. If the governments are persuaded to accept such policy measures, they are likely to adopt them also for other medium and long-term financial instruments like saving deposits and government bonds as a result of either their dialogue with the Bank or the demonstration effect of the experiment with indexation carried out by the long-term credit institutions.

41. If a country is unwilling to index all financial instruments of long-term credit institutions associated with the Bank, but is persuaded to index a sub-set of the medium and long-term loans (like the sub-loans of the Bank) on a trial basis, this should be an acceptable second best alternative and the Bank could then proceed with the indexation of its sub-loans.

42. If, however, a country cannot be persuaded to adopt monetary correction or other appropriate interest rate policies even at a sectoral or sub-sectoral level, it would be counter-productive for the Bank to insist on the indexation of its sub-loans; such insistence is unlikely to assist either in the wider diffusion of the technique or help the cause of economic efficiency. In such situations, when the response to the Bank's suggestions is entirely negative, it may become essential for the Bank to review and reconsider its loan operations and program in the country concerned.

Annex I: World Bank Loans Subject to Indexation and Country Experience with Indexation

Argentina

43. Argentina has received only a single agricultural loan from the Bank which contains an indexing clause. This has been for the Balcarce Livestock Project (505-AR) and was signed on July 31, 1967 but the first indexed sub-loan was made in September, 1973. According to the terms of the contract the sub-loan balances are adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower for each month, with interest charged at 6% per annum on adjusted balance. Indices used are: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers. Therefore, the reference index is a composite one and although cumulative is always less than either of the two basic indices. The Balcarce project has had its share of problems. During the last few months there has been an increase in the prices of finished steers without a commensurate increase in those of feeder steers marketed by project beneficiaries. Even though this has had little impact on the adjustment factor, farmers are beginning to express reservations regarding the use of indexation and there has been a decline in the applications for new loans.

44. The Argentinians have been experimenting with the indexation of government bonds over a long period of time extending as far back as 1962, when the National Recovery bonds bearing a nominal interest of 7% were used

with the principal adjusted with reference to an index of gold prices. Even earlier than this, in 1957, the State Petroleum Enterprise had floated bonds with a twenty year maturity, linked to an index based upon company productivity and changes in the salaries of company employees.

45. The government has continued to issue indexed bonds during the seventies but it was only in March 1975 that indexing was used in the banking sector, when the National Bank of Savings and Securities offered its customers monetary correction for deposits that are not transferable for one year. Indexed credit has also become important in the area of housing finance through the National Mortgage Bank and more recently through the mortgage branches of commercial banks. The adjustment procedures are rather complicated. There is some differentiation of terms according to income class with only a portion of the principal being subject to monetary correction. Furthermore, although the index is based on construction costs the actual adjustment cannot exceed 80% of the change in basic salaries of workers and officials in the industrial sector. This is how the scheme exists on paper; however, the actual experience of the mortgage bank indicates that indexing is not automatic. The administration of indexing is highly flexible, with the authorities deciding the time and the extent of the adjustment.

46. Indexation has gotten off to a slow start in Argentina, with experimentation proceeding on a small scale on many fronts. There still appear to be many misgivings as to its application on a larger scale in the financial sector.

Brazil

47. So far the Bank has made eight loans to Brazil which are subject to indexation. They are the following:

Brazil livestock (516-BR) signed September 23, 1967: Originally, sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period). An interest rate of 14% was to be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers were offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of 6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Later, in June 1971 the Bank and the Government agreed that whatever adjustment made in sub-loan principal would not exceed the extent of inflation as measured by the general price index for the period. Subsequently, in July 1972, another

revision in sub-lending terms was agreed upon to simplify sub-lending terms and correct certain problems which had emerged. All sub-loans made after that date were subject to correction according to changes in the US Dollar rate for cruzeiros, with interest on the adjusted principal at 7-1/4%. It was also agreed that, if at any time the increase in the general price index exceeded the rise in the US Dollar/cruzeiro exchange rate by more than 7-1/4%, the Bank and the borrower would agree to a new indexing system in order to assure that the indexing system would not result in negative real interest rates. The revised system adopted in July 1972 also provided for the elimination of the lags which had existed in the previous systems in applying indexing during the early part of the grace period; and for the correction of the previous practice of calculating interest on the unadjusted, rather than the adjusted, principal during the grace period.

Brazil Grain Storage (857-BR) signed September 27, 1972: The principal of this loan was to be adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzeiros of the Central Bank at 7-1/2% per annum. In September 1974 the Bank and the borrower agreed to revise the indexing system so that the principal of loans made after that date would be corrected according to the ORTN index, with an interest rate of 5% on the adjusted principal. This made the sub-lending terms generally consistent with terms offered by official lending institutions for agro-industries and other industries. However, in order to spur what it felt was a serious lagging in the development of grain storage facilities, the Government created in April 1975 a new grain storage credit line. The new line offered unindexed loans with nominal interest rates ranging between 8% and 15%. Hence, demand for indexed credit declined sharply and the uncommitted balance of the Bank loan (about 20%) was cancelled in October 1975.

Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of the principal throughout the life of the loan was to be in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest of 7-1/4% being charged on the adjusted principal. However, as the combined effect of internal and external inflation patterns and the rate of change in the US dollar/cruzeiro exchange rate began to cause the agreed indexing system to result in negative real interest rates, the Bank proposed to the Brazilians the general adoption in the livestock sector of a system which would result in more predictable interest rates - i.e., 5% interest after ORTN correction of principal. The Brazilians did not agree, resulting in the Bank's withdrawal from active consideration of a third livestock loan. Subsequently, the Government created with its own funds a new livestock credit program with nominal interest rates of about 15%, without ex post monetary correction of principal (terms which are similar to other agricultural lending in Brazil). It also agreed to allow prepayment, and refinancing at these new terms, of all the sub-loans made from the proceeds of the two Bank loans. As a result, partial cancellation of Loan 868-BR and accelerated repayment of both Bank loans are planned.

<u>Brazil Agro-Industries (924-BR) signed August 1, 1973</u>: Under the initial agreement sub-loans carry an interest rate of 5% plus adjustment based on the National Treasury-Bond (ORTN) price. But in October 1975, in line with the Government's desire to encourage investments in several of the relatively less developed states participating in the project, the Bank and the Government agreed to lower the interest rate to 3% (after ORTN correction of principal) for beneficiaries in 4 states, retaining the 5% rate for the others.

48. These loans were all in the agricultural sector, but during the past year there have been a number of loans to other sectors: in the <u>industrial</u> sector, Loan 1206-BR, ($85 million) of March 1, 1976, for the BNDE (National Economic Development Bank) development banking project, provided for sub-lending to small- and medium-size industries, with the cruzeiro-denominated sub-loans indexed according to the ORTN (National Treasury Bond) price and with interest rates of 3% for beneficiaries in the less developed North and Northeast regions, 5% in the Center-South and 6% in Sao Paulo. These terms are standard for all of BNDE-financed small- and medium-size industry operations channelled through state and regional development banks. Also, the nutrition loan ($19 million) approved June 22, 1976 includes financing for BNDE's special food processing loans to be extended with interest rates of 3% after ORTN indexing of principal. In the transport sector, Loan 1207-BR ($55 million) of March 1, 1976, for the BNDE secondary and feeder road project provided for sub-lending to states or to municipal consortia, with the cruzeiro-denominated sub-loans indexed according to the ORTN price and with interest rates varying from 4% to 7% depending on the state concerned (the lower rates applying to relatively less developed areas). In the water supply and sewerage sector, Loan 1009-BR ($36 million) of June 17, 1974, and a second loan (of $40 million) approved July 6, 1976 to help finance through the National Housing Bank (BNH) sub-projects in the Minas Gerais state water supply and sewerage program provide for cruzeiro-denominated sub-loans to the state water company at a rate of interest of 4% (plus various fees amounting to about 2%) with principal subject to full monetary correction according to changes in the general price index. This is consistent with BNH's practice in all of its water supply and sewerage lending to fully correct the principal of sub-loans according to the general price index and then to charge interest rates ranging from 2% to 7%, depending on the relative stage of development of the state concerned.

49. A brief sketch of the Brazilian experience is useful. Indexing was introduced in 1964 and applied initially to government bonds with maturities ranging from 2 to 5 years. The principal was revalued quarterly with reference to the Whole Sale Price Index and the interest was paid on the revalued sum.[1/] Since then over a hundred laws and implementing decrees

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1/ Since 1972 a scheme which falls halfway between pre- and post-indexing has been used. The indexing coefficients applied to credit instruments are calculated on a five month basis -- the moving average of inflation during the previous three months plus an official estimate of the next two.

have extended the system to embrace many other areas of the financial system and sectors of the economy. Revaluation is widely applied to capital assets and property values and incomes are readjusted for tax purposes. But indexing is tied to other policy objectives and a simple 100% link with prices has rarely been used. In fact, indexing as applied to wage contracts has been distinctly regressive and has had little direct effect on the rate of inflation.1/ A decline in the latter during the early '70s was more the result of an active fiscal and monetary policy. In fact, the only visible positive impact of indexing has been the growth in non-monetary financial assets. Although even here it is difficult to isolate the net increase since there has been a substitution of indexed financial assets -- such as bonds and bank deposits -- for those not subject to monetary correction. What makes the Brazilian system so complex and from the purist's viewpoint a little unsatisfactory is the coexistence of different procedures for indexing and the absence of a universal coverage. For instance, the private sector has strenuously resisted indexation because borrowers are often unprepared to bear the risk and consequently have been reluctant to offer indexed deposits. Commercial banks which use monetary correction on time deposits practice a form of preindexing by tying their adjustment to a projected rate of price increase which usually errs in the direction of conservatism. Since December 1972, the correction offered on government bonds is also based upon projections which systematically underestimate the true increase in prices so as to control the rise in real incomes and thereby diminish inflationary pressures. The WPI which remains the cornerstone of the indexing system gives a low weight to housing and expenditure on public utilities, whose prices have been freed, and it neglects services that account for approximately half the consumption expenditure of the population. Thus, it is likely that the WPI grossly underestimates the true magnitude of the price rise. Another example of the anomalies, which abound within the system, is the treatment of mortgage loans. These were subjected to monetary correction at an early stage, but government eschewed full correction so as to encourage home ownership. However, the large number of defaults persuaded the authorities to revise the procedure so that mortgage payments are allowed to decline in real terms over time.

50. After 11 years of operation the indexation system in Brazil is still in the throes of change and this affects the Bank loans that are subject to indexation. In May 1975, for instance, the ORTN and the ORTN-cattle price index which had served as the basis for adjustment for some time was overshadowed by a system of monetary correction based on changes in the dollar-cruzeiro rate. According to the Brazilians, use of the ORTN index made World Bank loans uncompetitive against funds available from the Euro-dollar market and it became difficult to find borrowers who were prepared to pay the high interest cost when loans with 5 to 6 year maturities could be obtained from other sources at 10% interest.

51. The contours of the agreement, presently being worked out, can be described in the following way. The cruzeiro is to be pegged to the actual basket of currencies disbursed by the Bank and the nominal rate of

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1/ See Fishlow, op. cit.

interest is to be fixed at 10%. Assuming rates of inflation of the order of 25% per annum in Brazil and 8% in the lending countries, along with continuous adjustment of the cruzeiro to correct for the discrepancy, the nominal rate would be 27% while the real rate would be 2%. This is a reduction from real rates of 5% and 6% that were being recommended in the past. It appears that both sides have moved further away from the goal of an optimal real rate of interest towards a non-negative rate that is politically tolerable. The Bank looks upon index linking as a device for restoring the vigor of the market mechanism by offsetting the distributional and allocational distortions which arise from unanticipated inflation. Secondly, it wishes to enhance the viability of financial intermediaries. This is also partly the view of the Brazilian Government but the latter has also used monetary correction as an instrument of stabilization (and anti-inflation) policy and prefers to apply the system both flexibly and selectively instead of instituting a procedure for automatic indexation covering the entire economy.

52. Indexation is a part of the stabilization policy because it is easier to apply than an outright price freeze and could be a fairly effective device for restraining the growth of incomes. The most recent modifications may enhance its suitability for the anti-inflation role. Once again the objective is to prevent earnings regulated by indexed contracts from growing in line with the inflation by modifying the price index so as to exclude those increases which are due to accidental occurences such as the oil price hikes or the frost, that recently damaged the coffee crop. The government hopes that this measure will bring inflation down from 30% to a more acceptable level. Given the system's complexity, the frequent changes and the existence of segments within the economy not subject to indexing, it is doubtful whether monetary correction has helped the cause of efficient resource allocation although it might conceivably have raised the level of investment.

53. Indexing is used more widely in Brazil than in any other country, but the system still has many gaps. In particular the lending to the agricultural sector is not subject to monetary correction apart from the loans made by the Bank. Discussions with the Brazilians spanning a period of eight years indicate that they are unwilling to extend indexing to the entire sector and are anxious to dilute the indexing procedure applied to the Bank loans so as to enlarge the subsidy element.

<u>Uruguay</u>

54. The Bank has made five livestock loans to Uruguay of which the first 245-UR was signed on December 30, 1959. The disbursement of the loans is handled by the Livestock Fund which was established by the Central Bank in 1958. The resources obtained from the Bank plus some contributions made by the Government are made available to the farmers through the Bank of the Republic (BROU) which is the only participating bank. The Central Bank's loans to the BROU are made against documents for sub-loans to ranchers at interest rates that permit BROU to get a spread of 2% over the indexed principal to cover the administrative expenses. Of the subsequent

loans - 698-Ur, 816-UR, 940-UR and 1166-UR the most recently agreed terms for the latter three are outlined below.

Uruguay Fourth Livestock (816-UR) signed April 26, 1972 (First Stage): Sub-loan balances are subject to monetary correction not later than April 30 in each year on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year, furnished by Banco Central; subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic Y Finansas for the corresponding period. Loans made to farmers with holdings of less than 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

Uruguay Fourth Livestock 940-UR signed October 25, 1973 (Second Stage): Sub-loan balances are subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to the corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

Uruguay Fifth Livestock Project Loan No. 1166-UR signed October 15, 1975: All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (Second Stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost-of-living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6% kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceding year as compared to the average for the previous 12 months. Repayment terms of sub-loans reflect the ability of the investment to service the debt. Terms range from 5 to 10 years and include grace periods of up to 5 years. If the indexing system (100% adjustment for all sub-loans) were applied to sub-loans made in 1969 with terms of seven years including two years grace, the real interest rate obtained would have ranged between -2% and -8%. It should be recognized that this is not a bad performance compared to other Latin American countries, where inflation has increased and medium- and long-term agricultural credit has not been adjusted.

55. Uruguay was beset by inflationary pressures throughout the sixties and this spurred discussion of the concept of indexation - discussion which did not culminate in implementation till very near the close of the decade because of fears harboured by the government that the introduction

of indexation would create destabilizing expectations on the part of the public. When in 1969 collaboration between Uruguayan officials, USAID and members of the Plan Agropecuario produced an acceptable scheme, it was tried on a pilot scale in the livestock sector.

56. In 1970, it was decided that if beef and wool prices rose faster than the Consumer Price Index (CPI), the latter would be used to adjust the loan. This involved an assymmetry in the treatment of borrowers and lenders because no protection was offered to the commercial banks in the reverse situation in which the CPI rose faster than the composite index of beef and wool. Hence the private institutions were not prepared to adopt the scheme for their lending operations.

57. In 1971 the graduation of adjustment according to the size of the farm was altered, allowing 50% adjustment to all farms under 400 hectares. In 1973 the concession was withdrawn and farmers in all size classes were required to adjust by the full amount. However, a hardening of the terms in this area was balanced by subsidization elsewhere. During 1973 the rate of inflation was 78%, but for the purposes of loan adjustment it was calculated at 65% and as an additional sweetner, the ranchers were returned a portion of their export taxes, which helped to bring the adjustment down to a mere 32%.

58. The beef and wool price index rose less than the CPI in 1974 and the former index was reinstated in March 1975. To add to the confusion it should be mentioned that the nominal interest rate was changed a number of times and the index factor which is applied no later than April 30 is based on price changes during a 12 month period ending in the previous October. Depending on whether inflation is accelerating or slowing down this has introduced its own biases. In common with many other projects (Argentina and Bolivia), the Bank did not require the use of "cumulative" indices where a choice was given. The effect of this over the life of a sub-loan is probably that real positive interest rates under high inflation may not necessarily be achieved in practice. In addition, the Uruguayans did not compound inflation rates in calculating the index; they merely added them, and this further weakened the effectiveness of indexation.

59. Both the effectiveness and the popularity of the indexing system has been reduced by the government's inability to adhere to a single set of rules. Private lending institutions have been scared off by government actions which appear to be weighted against them and the farmers are unhappy because of the uncertainties regarding their future obligations. If indexing is retained they would prefer loans to be preindexed with a fixed mark up.

60. The government recognizes the political advantages of subsidizing agricultural producers. This is supposed to lower the cost of food to city dwellers. It is also apparent that merely indexing the livestock loans extended by the World Bank, which comprise a very small percentage of the total agricultural credit, may worsen the distortions present in the market.

61. The recent policy actions of the government suggest that the supporters of indexation have prevailed. A new law has been passed which calls for the indexation of all financial instruments where the term exceeds two years. This should greatly expand the scope of indexation within the financial sector which has so far been limited to the National Institute of Colonization (INC) and the Mortgage Bank of Uruguay. The INC, which serves as an intermediary on all land transactions as well as financing land sales, makes long-term loans, where the principal is linked to an index of agricultural products; the nominal interest is 3%. The Mortgage Bank uses a wage index to adjust its loans as well as its savings since this index reflects the repayment capacity of the borrower and the expectations of the savers. During the period over which indexing has been applied both these institutions have had problems in inducing borrowers to observe the terms of the original contract and eventually have yielded to pressure and have settled for easier terms. The INC has allowed its borrowers to defer payments while the Mortgage Bank scaled down the size of adjustment on mortgage payments in 1973.

62. The Uruguayan experience is not encouraging. It has run afoul of the very same difficulties encountered by the Brazilians in the implementation of their own system. Excessive differentiation in order to deal with all situations is only one of the problems. Perhaps more serious, is the vacillation as regards terms and price indexes in the largely futile quest for a scheme that is fair to both parties and at the same time embodies the sectoral plans for the government. Through its willingness to bow to pressure from borrowers the government does not lessen the uncertainties inherent in an inflationary milieu, uncertainties which the indexing system was designed to neutralize. Each one of the indexes which can be used has its flaws and this remains an unavoidable weakness of the system. However, it is likely that the lower rate of inflation, which is expected in the next year or two, may make it easier to weed out the deficiencies in the system of indexation.

Bolivia

Bolivia Livestock (261-BO) signed June 25, 1971: Incorporates a trigger mechanism which becomes operative when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year. When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction. At present, two options are being offered on this livestock loan. One of them allows the farmers to make their payments in accordance with the above system of monetary correction. The other option - known as the dollar exchange clause - passes the exchange risk on to the farmer, i.e., the loan to the final borrower is denominated in dollars.

63. There is a great deal of resistance to the indexing system in Bolivia and it is unlikely that the foothold gained by the Bank in the livestock sector will lead to application on a larger scale. In fact, the recent experience suggests that the Bolivians intend to bring the curtain down on this small scale experiment.

Peru

Peru Agricultural Credit Project (933-PE) signed September 12, 1973: Sub-loans are not indexed until inflation is in excess of 9% for the fiscal year. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

64. Livestock loans made to Bolivia and Peru incorporates trigger clauses which require some form of adjustment if the chosen price index rises above a certain level during a specified period. Once again these are countries where the rate of inflation is moderate; and the financial system has not been forced to seek recourse in indexation.

Paraguay

65. During 1973-75 the inflation rate in Paraguay averaged 17.5%. It was therefore decided to apply indexation to the sub-loans made under the Fourth Livestock Project (1037-PA) signed September 6, 1974. The indexation clause stipulated the following conditions. A minimum real interest rate of 6% is to be charged and the principal outstanding is to be adjusted annually with reference to the cost-of-living index. Fondo Ganadero, the executing agency, charges 10% interest on principle adjusted on the basis of the CPI. However, in 1975, the change in the CPI was 6.7%. FG adjusted the principle on the basis of a 5% increase and the Bank, considering the high rate of interest already applied, agreed to this action.

66. Indexation has not been widely applied in Paraguay. So far the only other financial contracts subject to monetary correction are mortgage loans. Since inflation is projected to decline over the next five years it is unlikely that the system will be applied on a larger scale.

Other Countries

67. Many countries have used indexing in one form or another during the post war period and some have been led to abandon the concept after a long period of trial. The Finns, who had applied indexing to wages since 1945, found in 1967 that the system could not be made to work any longer and shifted to an incomes policy. Colombia has adopted the crawling peg in order to regulate the price of its currency and some form of indexing

is applied to mortgage loans, the investment of social security reserves and saving deposits. In the latter case the adjustment is limited to a maximum of 20% per annum. In general, the Colombians have resisted indexation. The Bank has made one DFC loan which includes a trigger mechanism but any agricultural loans made in the near future are not likely to include an indexation clause. For a long time both government and private sector bonds in Israel were linked to the official dollar rate but the sharp devaluation of 1962 with the concomitant jump in debtor obligations led to a discontinuation of linking with foreign exchange and a selection of the CPI as the index to be used for monetary correction.

68. One other feature as regards the application of indexing should be mentioned. "Dirty" indexing seems to be the rule and not something peculiar to the Latin American countries. Government usually exercise some form of discretion in their implementation of indexing. For instance, in Norway, the government decides the extent to which a price change will be compensated. Similarly the Austrian government can overrule the automatic indexing of pensions and subsidies. Indirect taxes are used to regulate the index in Norway, Finland, Israel and the United Kingdom.

69. Even a brief survey of the experience with indexation leaves one with doubts as to its workability and its usefulness as a policy instrument. As the Economist pointed out,

> No system of indexation can be substituted for tackling the economic and social pressures which cause inflation. On the contrary the fewer the people who can lose because of inflation the faster prices will rise to transfer command over real resources to those who are determined and able to grab a larger share. But indexation, provided it begins in the right way, can shift the pain from inflation to politically more sensitive areas and so force the government to deal more promptly and effectively with the disease at its very early stages.

It is not clear that countries which are using indexation as a part of their stabilization program are aware of the larger problems that need to be tackled.

Annex II: Statistical Tables

Table I - Inflation and Related Statistics for Sixteen Latin American Countries, 1950-69*

	Rate of Inflation	
	Mean	S.D.**
Uruguay	43.0	34.9
Bolivia	41.3	55.9
Brazil	35.1	21.5
Chile	28.2	14.6
Argentina	26.4	23.4
Paraguay	12.5	17.5
Colombia	9.2	3.2
Peru	8.5	5.8
Mexico	5.3	5.3
Nicaragua	3.4	6.1
Ecuador	3.0	3.3
Honduras	2.1	3.4
Costa Rica	1.9	2.2
Guatemala	1.1	2.8
Venezuela	1.1	2.8
El Salvador	0.3	1.5

* Per cent per year.
** Standard Deviation.

Table II: Countries with Inflation in Excess of 10% during 1972-74

	1960-1971	1972-1974
Argentina	20.25	25.71
Bolivia	4.94	28.96
Brazil	37.83	12.81
Chile	23.51	201.73
Colombia	10.03	14.99
Ghana	6.52	11.10
India	5.36	14.33
Israel	5.67	18.97
Jamaics	3.96	14.80
Pakistan	3.47	16.28
Paraguay	3.08	11.95
Philippines	5.64	14.33
Uruguay	37.80	51.70
Yugoslavia	11.14	13.44
Zaire	16.65	14.66
Turkey	8.00	15.00

Table III: Indicators of Domestic Price Level Changes a/
(Average Annual Percentage Change)

Source: Date of CPP	Country	1965-70	1970-73	1973-75	(Estimate) 1975-80
2/18/75	Afghanistan	11.1	-2.3	6.4	5.2 e/
7/25/74	Argentina b/	16.1	43.2	-	-
10/16/74	Bangladesh	-	-	17.4	9.8
3/12/75	Bolivia	-	10.7	35.9	12.1
11/74	Brazil c/	26.5	17.6	31.0 g/	20.0 h/
	Chile	21.3	76.0	145.9*	
	Colombia	8.3	11.2	11.5*	9.07
5/15/74	Congo	-	-	17.8	9.5
3/74	Egypt	-	3.9	6.2	6.7 f/
	Ecuador	4.0	7.2	11.2*	
7/15/74	Ghana	-	12.0	-	-
7/22/74	Greece	2.4	3.0	-	-
	Guatamala	2.2	8.1	10.5	6.5
8/01/74	Guyana	-	4.3	-	-
4/22/74	Haiti	0.1	6.5	7.4	5.2
6/13/74	Honduras	1.9	3.7	10.0	7.5
6/06/74	India	6.5	18.5	9.7	6.0
6/05/74	Indonesia	-	23.0	20.0	-
6/03/74	Iran	1.9	8.1	7.4	4.7
12/27/74	Jamaica	-	10.8	17.6	10.0
8/30/74	Jordan	-	7.6	8.7	7.5
4/12/74	Korea	7.8	9.8	8.0	12.8 f/
11/29/74	Lebanon	2.0	4.4	14.0	9.5
10/07/74	Malawi	3.6	5.1	-	-
3/21/75	Mauritius	3.0	6.2	29.5	10.4
5/10/74	Mexico	3.4	6.7	17.7	7.2
5/17/74	Morocco d/	0.6	8.3	21.0	3.5
	Nicaragua	2.2	8.1	10.5	6.5
6/28/74	Pakistan d/	3.7	7.1	10.0	5.0
5/12/74	Paraguay d/	1.3	13.0	17.5	8.5
10/21/74	Peru d/	11.1	8.7	15.0	15.0 e/
7/15/74	Philippines	5.6	17.0	25.0	8.8
8/21/74	Romania	-	-	0.4	0.4 f/
6/26/74	Senegal	-	5.2	9.9	8.6
4/15/74	Sri Lanka	4.2	9.4	12.5	7.9 f/
9/26/74	Syria	3.5	6.2	14.4	10.1
3/27/74	Tanzania	-	5.1	6.0	5.9 f/
5/17/74	Thailand d/	1.2	5.9	-	-
6/10/74	Trinidad & Tobago	3.8	8.5	9.1	6.2 f/
	Turkey	8.1	14.0	15.0	15.1
	Uruguay			50.0	30.0
1/31/75	Venezuela	2.1	3.1	16.9	9.0
7/12/74	Yugoslavia	7.8	18.0	17.5	15.0
5/30/74	Zambia	-	6.7	12.4	7.5 f/

Note: (Based on explanation in CPP Attachments)
* 1973-74 only.

a/ General domestic price index not specified unless otherwise noted.
b/ Domestic wholesale index.
c/ General price index -- weighted average of wholesale (60%), the cost of living index (30%), and the cost of construction index (10%).
d/ GDP deflator.
e/ 1975-78.
f/ 1975-76.
g/ Average for 1974-75.
h/ Country economist.

Table IV: Estimates of Inflation, 1975-80 1/

Less than 10% rate of inflation	Percent
Afghanistan	5.2
Bangladesh	9.8 ('75-76)
Congo	9.5
Egypt	6.7 ('75-76)
Haiti	5.2
Honduras	7.5
India	6.0
Iran	4.7
Jordan	7.5
Korea	8.2 ('76-76)
Lebanon	9.5
Mexico	7.2
Morocco	3.5
Pakistan	5.0
Paraguay	8.5
Philippines	8.8
Romania	0.4 ('75-76)
Senegal	8.6
Sri Lanka	7.9 ('76-76)
Tanzania	5.9 ('75-76)
Trinidad & Tobago	6.2 ('76-76)
Venezuela	9.0
Zambia	7.5 ('76-76)

10% or more rate of inflation	Percent
Argentina 2/	350.0 ('75)
Bolivia	12.1
Brazil	20.0 5/
Chile 3/	336.0 ('75)
Jamaica	10.0
Korea	12.8
Mauritius	10.4
Peru	15.0 ('75-78)
Syria	10.1
Turkey	15.1
Uruguay 4/	30.0 ('75-80)
Yugoslavia	15.0

1/ Source: CPP Attachments SI, Average Annual Percentage Change based upon the general domestic price index.

2/ Estimated inflation for 1975 alone is 350 percent. Therefore, it is safe to assume this country belongs to the over 10% category. There is some speculation that this rate may decline in 1976.

3/ Making projections of Chilean inflation is extremely difficult given their volatile record. Inflation for 1975 alone is estimated by Bank sources to be 336%. This in itself would be sufficient to place Chile in the over 10% category. It should be noted that the government is pursuing draconian policies to control inflation and the rate can be expected to fall considerably in the next few years.

4/ Inflation in 1975 is estimated at 50-60% and it is expected to decline steadily to around 10% by 1979-80.

5/ Country Economist.

Table V: Total Projected Lending by IBRD and IFC to High Inflation Countries 1/
FY1975-FY1980
(US$ millions)

Country/ Sector	Agriculture	Industry 2/	Transport	Utilities	Education 3/	Urban
Bolivia	150.6	88.5	84.0	31.5	40.0	-
Brazil	939.0	525.0	1,195.0	945.0	248.5	140.0
Chile	75.0	55.0	20.0	60.0	-	-
Colombia	425.5	400.5	145.0	392.0	110.0	100.0
Guatemala	20.0	-	60.0	146.0	40.0	15.0
Jamaica	59.0	-	71.0	57.0	15.0	20.0
Korea	705.0	20.0	540.5	-	77.5	-
Mauritius	10.0	25.0	10.0	16.5	17.0	-
Nicarague	12.0	8.0	13.0	53.0	27.0	6.0
Peru	245.0	150.0	160.0	100.0	70.0	40.0
Syria	185.0	20.0	40.0	265.6	40.0	-
Turkey	575.0	148.0	130.0	336.0	-	40.0
Uruguay	112.0	35.0	-	30.0	-	-
Yugoslavia	540.0	-	453.0	380.0	-	-

Source: CPPs Actual and Proposed Lending Program Through FY 80.

1/ Defined as having over 10% rates of inflation.

2/ Includes mining.

3/ Includes health and nutrition.

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

JUL 21 1976

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OFFICE MEMORANDUM

TO: Mr. R. Gulhati, Director, ECDDR
(thru J. Meerman, Acting Division Chief, ECDPF) JM

DATE: July 20, 1976

FROM: Shahid Yusuf SY

SUBJECT: Indexation Paper

Following the staff review meeting on the indexation paper, we made the suggested revisions and sent the paper to Mr. Burki on June 21st. I enclose copies of our memos as well as one we received from him.

On July 6th Mr. Laursen from Mr. Burki's division called us and said that the paper had been reviewed by Mr. Knapp who had suggested the deletion of two paragraphs. Paragraph 36 was to be eliminated entirely along with about half of para. 33 (see appended copy). Mr. Laursen also said that the Policy Planning Division would make the changes and handle the circulation of the final version.

On July 15th, I met Mr. Peter Jacob, who mentioned that Mr. McNamara had asked for a special review session on the indexation paper in the near future. Mr. Jacob discussed the timing of the review meeting with Mr. Meerman on July 16.

Mr. Haq / Karaosmanoglu

1) I would expect in future that the Dept responsible for a paper (including its front office) would be able to participate in discussions on that paper with senior management

Attachments

Knapp

2) Before making changes, we ought to obtain full understanding of why such changes are desired by senior management.

3) I am sure you agree that what happened in the case of the Indexation paper ~~[illegible]~~ should not recur.

RG

FORM NO. 678
(7-73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/s/M/76-3a

June 15, 1976

INDEXATION OF FINANCIAL CONTRACTS ISSUES PAPER

STAFF REVIEW - MINUTES

Attendance:
Messrs. Karaosmanoglu (Chairman), Alter, de Azcarate, Bhatt, Colaço, de la Fortelle, de Vries, Di Tullio, K., Glaessner, Hendry, Hyde, G., Kavalsky, Kuczynski, Laursen, Pilvin, Powell, R.L., Ringlien, Stoutjesdijk, van der Tak, Vita, Yusuf, Burki (Secretary)

1. A staff review of the issues paper on Indexation of Financial Contracts was held on Thursday, June 3, 1976.

2. The discussion focused on the following areas: (i) purpose and scope of indexation; (ii) relationship of indexation to other measures of economic policy; (iii) identification of circumstances under which indexation is an appropriate instrument; and (iv) World Bank policy.

Purpose and Scope

3. There was agreement that the purpose of indexation is to reduce or eliminate the consequences of inflation. In periods of high and particularly of volatile rates of inflation, real interest rates tend to be low or even negative, and according to the authors this retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and allocation of resources.

4. Most participants in the discussion felt that indexation should be general rather than limited to a few sectors of the economy, and that the appropriate index would be a general price index. In some circumstances the exchange rate would reflect the general increase in prices and could therefore be used, but normally such a procedure would have certain shortcomings.

5. One objection was raised, however, to the use of a general price index for indexation purposes. It was argued that if inflation was accompanied by a change in relative prices, it might appear unfair to the producers of products, the prices of which lag behind, to index their borrowing according to a general index. The case in point was agriculture, and it was strengthened by the fact that discrimination against this sector are common in the developing countries.

Relationship to Other Measures

6. It was stressed by several speakers that indexation should be an element in a more general context of macro-economic policy. There was agreement that indexation per se could not be effective as an anti-inflationary measure. In fact, it was argued, indexation might even accelerate the rate of price increases. The paper should examine more closely how indexation fits into general stabilization policies.

When is Indexation Appropriate?

7. The authors found that it was difficult to identify the exact circumstances under which indexation would be an appropriate policy, and hence to point out the countries to which such a measure might be recommended. This is due among other things to the difficulty of predicting inflation rates.

8. It was agreed that a definition is difficult of the precise circumstances under which indexation should be the preferred solution to the problems created by inflation. But it was argued that the paper should try to be more explicit on this question, and try to identify the countries which should adopt this policy. One criterion might be flexible exchange rates.

9. Several participants in the discussion held the view that inflation in the foreseeable future would be considerably higher in many developing countries than during the 1960s, and they questioned that CPP projections were reliable. According to some it is reasonable to expect inflation rates of 50-90% in a number of developing countries. Such situations are not dealt with in the academic research on indexation and interest rates. The basic issue: is indexation the appropriate instrument in such circumstances to deal with uncertainty and negative real interest rates should be treated more explicity, including the question of the type of financial contracts that should be indexed.

10. On the other hand, it was argued that indexation could also be appropriate in much less inflationary circumstances.

Bank's Experience and Policy

11. It was noted by several that the factual information quoted in the paper on the Bank's experience did not fully reflect the actual situation. It was agreed that suitable changes will be made in the statistical section with the help of the Regions.

12. There was agreement that the Bank cannot impose indexation on governments, but it was important to establish guidelines for the Bank to be alert to the question, and in appropriate circumstances the Bank can advocate that indexation be applied.

Conclusion

13. It was agreed that the paper should be redrafted to reflect the discussion. In particular, it should try to identify circumstances in and countries for which indexation may be recommended. It should not, however, contain any strong policy recommendations. No major change in the structure of the paper or any new research should be undertaken for the purpose of finalizing this paper.

Shahid Javed Burki
Secretary
Policy Review Committee

cc: Those Attending

Form No. 630
(4–73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/s/M/76-3(rev.)

June 1, 1976

INDEXATION OF FINANCIAL CONTRACTS

CHANGE OF MEETING

The meeting to discuss the paper on "Indexation of Financial Contracts" has been changed to Thursday, June 3, 1976, at 11:30 a.m., in Conference Room D-556.

Please inform this office if you can not attend.

Shahid Javed Burki
Secretary
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I

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT

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Policy options

a - Pegging of interest rates

b - Variable interest rates

c - indexation

Advantages of indexation.

a - Financial intermediaries

Can offer stable positive interest rates → increase aggregate savings

b - increase in long term lending potential

11

Country Experience

~~Areas applied~~ Wage contracts
Government Bonds.
Social Security Benefits
Private Lending
Taxes.

Objectives

- increase savings
- protect small savers

Results of Experience

- Used selectively for limited range transactions (equity resource mob. & allocation) promote
- price stabilization - part of a deflationary package
- Served multiple objectives

INTERNATIONAL BANK FOR
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Rationale for Indexation

- Costs small
- increases burden of national debt and reduces subsidy to big borrowers
- helps differentiate short + long term markets
- Difficulties of partial indexing in the long-term market.

World Bank Policy

- on lending operations
  - denomination in foreign exchange
- (1) Active [illegible] Explicit indexation (all LAC)

In your summing up I suggest that you ask for a quick redraft of the paper to include
- Bhatt's opening remarks
- relation with the Alter paper
- more definite statement on the utility of this instrument in various country situations.

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT

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INTERNATION. FINANCE
CORPORATION

— Where do we stand on indexation

—

Form No. 630
(4–73)

CONFIDENTIAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/s/M/76-3

May 26, 1976

INDEXATION OF FINANCIAL CONTRACTS

STAFF REVIEW

A meeting to discuss the paper on "Indexation of Financial Contracts" will be held on Wednesday, June 2, 1976, at 10:00 a.m., in Conference Room D-556. The paper has already been circulated.

Please inform this office if you cannot attend.

Shahid Javed Burki
Secretary
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IBRD Department Directors
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Development Economics

SOME POLICY ISSUES IN

INDEXATION OF FINANCIAL CONTRACTS

25 February, 1976

Public and Private Finance Division
Development Economics
Development Policy Staff

I. Introduction

1. This paper has a narrow scope. It is not about overall financial policy or even about the level and structure of interest rates. These important subjects have been studied recently in a draft entitled, "The World Bank and Financial Development" January 30, 1976. The present paper on indexation elaborates on one of many issues discussed in the above mentioned draft, namely how to insulate interest rates from the impact, generally unintended, of high and volatile rates of inflation. This issue would arise no matter what level of real interest rates is considered appropriate. Clearly, the indexation technique can make a more important contribution to development policy if the real interest rate structure is appropriate than if it is not. But even in the latter case, the role of indexation is not insignificant from the points of view of saving mobilization, allocation and the viability of the financial structure.1/

2. The paper is a response to questions raised by staff in the Latin America Regional Office about the indexation of 11 agricultural loans made by the Bank during 1967-75. This experience is reviewed in the annex and the main conclusions are reflected in the analysis and recommendations presented in the main text. In addition, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry. It does not discuss the application of indexation in other areas such as wages and taxes. The purview is limited to the area of financial contracts.

1/ For a review of theoretical literature and empirical experience, see Index-Linking of Financial Contracts: A Survey of the State-of-the-Arts, World Bank Staff Working Paper No. 192, November 1974.

3. An active development policy trying to promote rapid growth in a country is likely to generate inflationary pressures. This danger is perceptibly greater in the LDCs partly because of the speed with which supply bottlenecks are encountered and partly due to the expansionary monetary-fiscal policies. The inflationary process in the LDCs, however, has accelerated since 1970 because of a significant rise in the prices of fertilizers and food, partly as a result of natural disasters and the quantum jump in the oil prices since 1973. Many LDCs are currently experiencing double digit inflation; and in some of them, this trend is likely to continue until 1980 or so. In this context, the application of the indexation technique to financial contracts assumes particular significance.

4. High rates of inflation pose a series of problems all of which are rooted in the unanticipated redistribution of resources between economic units involved in monetary transactions. To avoid the possibility of a resource loss during periods of high and variable inflation, individuals become reluctant to enter into agreements which bind them for a long period of time to financial terms expressed in current prices. This interferes with the development of the financial sector, especially with the supply of term loans because the nature of the commitment increases the chances of incurring a loss. But aside from this, there is a flight from monetary transactions and into various forms of barter. Savers, fearing an erosion in the value of money balances, prefer to hold real estate, specie or even certain types of commodities. In general, inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

Policy Options

5. In the area of financial contracts, there are three possible ways of coping with the problem of inflation. In each case, the idea is to adjust the financial transaction so that it is more or less in step with the overall trend in prices. One possibility involves the pegging of interest rates at a level commensurate with expected inflation. This option, however, is applicable only in a situation where inflation has been and is expected to be relatively stable.

6. A second solution is a policy of variable interest rates. This would allow interest rates to vary with current and expected increase in prices; in theory, it would protect both borrowers and lenders against the the consequences of changes in the rate of inflation. Variable rates are a workable solution when the rate of price increase is fairly stable or predictable and the market has the freedom to generate a rational interest structure in the light of past experience and future expectations. However, available information indicates that Latin American countries with high rates of inflation also tend to experience fairly sharp fluctuations in the annual rate of increase of prices and this variance would very likely interfere with the markets'ability to arrive at a rational rate structure.

7. Where inflation is high and variable, the third solution, i.e. indexation seems to be appropriate. Indexation preserves the real value of contractual obligations by tying them to a price index, and it thereby helps to avoid the anomalous situation, often found in LDCs, when real interest rates go down in times of inflation and up in times of a price decline. Such movements in real rates cannot be justified either in terms of a demand management policy or as an allocative measure.

8. Since indexation reduces the riskiness of financial transactions by safeguarding the individual transactor against losses due to unforeseen changes in the price level, it can have two beneficial results. Firstly, financial intermediaries can offer stable positive real interest rates on savings deposits instruments. This measure may lead to an increase in aggregate savings although available evidence on this point is weak. Indexation would certainly encourage the financialization of savings presently invested in real assets and thereby enhance the efficiency of resource allocation. Such a shift has been observed in both Brazil and Korea following the change in interest rate policies. For instance, the Brazilian financial savings rate rose from 3.6% in 1962-4 to 8.5% in 1967-69.[1/]

9. A second advantage of monetary correction is its impact on long term lending. At present, there is a marked paucity of long-term funds in the financial markets of the LDCs due to the traditional preferences of lenders and the riskiness of lending long. This is especially marked in the agricultural sector as has been pointed out in the Policy Paper on Agricultural Credit (p. 16). For example 75% of institutional loans in Latin America and Africa are for two years or less while for Asia, the figure is around 65%. Such squeezing of the maturity spectrum may have an adverse effect on those projects that are subject to long gestation lags. If entrepreneurs have access only to short-term loans, the uncertainty of being able to roll over their loans may dampen their willingness to undertake long-term investment. As long as financial intermediaries are unable to cover themselves against the risks

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1/ W.L. Ness, Jr., Financial Markets Innovation as a Development Strategy: Initial Results from the Brazilian Experience, Economic Development and Cultural Change, Volume 22, Nos. 3, April 1974. This finding is subject to some qualifications. See Appendix I section on Brazil.

involved in making term loans, and as long as they are constrained from charging an interest on their long-term commitments, which is significantly different from that levied on short funds, they are unlikely to pursue long-term lending with much enthusiasm. Indexation could help activate this segment of the market by rationalizing the rate structure and protecting intermediaries from the so called decapitalization problem, which is the erosion of the lenders capital base during times of rapidly rising prices.

Country Experience with Indexation

10. A number of countries have experimented with monetary correction during the last thirty years, with Finland being among the earliest to apply the concept. (See Table on page 7.) In most cases, a beginning seems to have been made with the indexation of wage contracts and long-term government bonds, the coverage being extended at a later stage to social security benefits, private lending and recently to taxes.

11. Concentrating on the financial sector, it appears that the initiative to index has usually been taken by the government and in each case it has been motivated by the desire to increase the rate of savings in forms amenable to policy regulation. A secondary and related objective has been to protect the interest of small savers from lower income groups who normally lack inflation proof outlets for their saving. Israel is one of the countries which has used monetary correction by issuing indexed government bonds from as early as 1948. Brazil adopted this device in 1964. Since then Indexation has been extended to some savings institutions in both Brazil and Colombia.

12. What emerges from the experience with the use of indexation as a policy instruments is the following:

(a) Indexation has been used selectively for a limited range of transactions to promote equity, resource mobilization by the government or resource mobilization and allocation by financial institutions;

(b) Where indexation has been used for price stabilization, it has been part of a package consisting of deflationary credit and fiscal policies, price and wage controls and even direct physical controls;

(c) Indexation rules have served multiple policy objectives. The approach has been what may be called "discretionary indexation," analogous to "dirty" floating of exchange rates.

13. The discretionary nature of indexation policy can be illustrated from Brazilian experience. In the case of indexed wage contracts, for instance, the Brazilian government has intervened to limit the full adjustment of nominal wages to the cost of living index so as to restrain the increase of real incomes and thereby dampen aggregate demand. In the field of financial contracts, discretionary changes have tended to favour the borrower at the cost of the lender. By permitting only a partial adjustment of the principal or the interest rate, the government engineers a transfer of resources from one party to the other making indexation serve an additional purpose, that of resource allocation. An example of discretionary indexation is the policy towards mortage loans in Uruguay (see Appendix I).

Summary of Countries' Experience of Indexing[(a)]

	Wage	Social Security Benefits		Investment					Taxes
		Pensions	Other transfer	Govt. Bonds	Private Bonds	Mortgages	Other Loans	Rents	
Argentina				1962-	1959-				
Brazil	1964-			1964-			1964-	1964-	1964-
Canada	1972-	1965-	1973-						1974
Chile	1960s	1952							
Colombia						1972-			
Finland	1945-67	1957-	1956-67	1945-67	1953-67		1952-67	1952-67	
Israel	1961-			1948-	1951-	1950s			

(a) Table covers period up to end of 1974.

Source: National Institute Economic Review, 1975.

Rationale for Indexation of Financial Contracts

14. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for individuals and for institutions. However, these administrative problems are not large and the additional expense seems like an insignificant price to pay for a substantial expansion in the breadth and scope of the financial market. Since indexation is likely to be limited to the long end of the market, the cost of supporting the system would be relatively small.

15. A more important problem is the difficulty of persuading the government. The indexing of financial transactions not only increases the burden of financing the national debt, but it also reduces the subsidy long enjoyed by businesses with access to institutional loans subject to fixed interest rate ceilings. These businesses exercise a powerful influence on government policy. Nevertheless, fiscal advantages derived from the tax imposed by inflation on holders of government debt do not outweigh losses caused by distortions introduced into the economy by rapid inflation. Hence, if inflation cannot be controlled, indexation may be an attractive way of coping with the situation. There is very little reason to believe that indexation will interfere with the government's ability to subsidize particular groups. Even if a number of transactions within the economy are subject to indexation, the government can still channel resources wherever desired through tax and subsidy devices.

16. Of course, the more moderate the rate of inflation and the more flexible the financial system -- implying both variability of interest rates and institutional diversity -- the less will be the attraction of, or the

need for indexation. However, some LDCs lie at the other end of the spectrum. High rates of inflation, pegged nominal interest rates and fragmented financial institutions are quite common characteristics of such economies. In an environment defined by these characteristics, indexation of financial contracts may be attractive.

17. Can indexing succeed if it is adopted by, say, long-term financial institutions but not by those engaged in short-term transactions? Such a regime would be created if, for example, the government decreed that deposits and loans above a certain maturity be indexed. A parallel system of index long-term and non-indexed short-term financial contracts would come into existence. Such a system is likely to prove beneficial to the economy. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the cost and nuisance of indexation may exceed the benefits. To the extent savers forego indexed long-term investments in favor of greater liquidity accompanied by negative returns, this will be result of conscious choice rather than the unavailability of indexed instruments. And on the borrowers' side, the option would be to get long-term financing at a higher cost or go through the uncertainties of rolling over short-term loans at a lower cost. If there is no indexing, the banks have an incentive to borrow short and lend short. This is accepted by depositors who have no better alternatives and by borrowers who do not mind the shortness of maturities so long as real interest rates are negative. By contrast, the indexed system, as described above, would encourage banks to differentiate between short and long-term markets in financial resources and this would contribute to economic development.

18. The next question is whether or not indexing can succeed if it is adopted only by some long-term financial institutions (e.g. those associated with the

World Bank) but not by others. If the institution which adopts indexing is already dominant in the long-term market for industrial or agricultural funds, the chances are that the new policy will be a success, unless the government lends its support to non-indexed competitor institutions. Assuming that the government is neutral, the "indexing institution" will be able to expand its loanable funds, unless statutory restrictions on institutional savers prevent them from purchasing the newly created financial instrument. Existing borrowers of the "indexing institution" are unlikely to switch to rival long-term sources to any large extent. By definition, rival banks are small in size and cannot accommodate many new clients. Also, indexing does not raise real interest charges; it simply prevents borrowers from reaping a windfall gain. The "indexing institution" will pick up those new borrowers who are attracted by the availability of long-maturity funds at real interest rates which remain lower than expected rates of return on their investments.

19. Partial indexing in the long-term market can succeed but there is nothing inevitable about this outcome. If the "indexing institution" does not have a large share of the market, if government is not neutral or if there is collusion between rival banks and key businessmen, the introduction of monetary correction may not survive for long.

Evaluation of World Bank Policy

20. From the stand point of the overall economy of the borrower country, all World Bank Group loans and credits are in fact indexed to the extent that changes in the rate of exchange are a proxy for the rate of inflation. This follows from the World Bank Group policy of denominating its loans in terms of foreign currencies. In other words, either the government or the interme-

diary institution or the sub-borrowers bear the cost -- in terms of local currency -- of any exchange rate devaluation vis a vis the foreign currency in which the World Bank has provided the loan.

21. As regards the on-lending operations of the World Bank through financial institutions, two types of indexing practice can be distinguished:

(a) Loans to sub-borrowers are denominated in foreign exchange. This applies to a substantial segment of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities or some price indices, the exchange rate or a combination of the three. This applies to 11 of the active agricultural project loans in the Latin America and the Caribbean Region. (Details are given in the Appendix.)

22. In the case of on-lending through the DFC[1/] exchange risks were assumed by the sub-borrowers in 15 of the 50 cases. In the rest, the risk was assumed by the government (17), by the Central Bank (5) or shared by the government and the sub-borrower (12). This contrasts with on-lending in agriculture, where except for the eleven projects in Latin America which included explicit indexation formulae, the exchange risks have always been assumed by the government or public agencies. In terms of the volume of commitments, the indexed agricultural loans amount to $217 million as compared to the total WBG agricultural credit operations of 5.6 billion by the end of June 1975.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial

1/ On-lending through the DFC, was $2.8 billion by the end of June 1975, representing about 50% of total WBG lending to the Industry Sector.

intermediary immune from the risks of exchange rate alignments was the dominant factor. This meant that the exchange risk had to fall either on the sub-borrower or on the government (or Central Bank). With lending rates of DFCs being pegged in many countries, the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.[1/]

24. Eleven agricultural loans made by the Bank include indexation clauses as mentioned above. Nine of these loans are for livestock while the other two are for agro-industries and the construction of grain facilities. All the loans have been made in the Latin America and Carribean Region. Indexing in these operations has been of an experimental nature. An explicit policy with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiation the annual rate of inflation was set at 8 percent or above. Two loans have been indexed through a "trigger mechanism" which requires that loans be indexed if and when a specified inflation rate is reached. In all cases, indexing is applied to the principal with the interest payments calculated at adjusted values of the principal. The price indicies used were various combinations of beef and wool prices, cost of living indicies and the exchange rate. (See Appendix I for details.)

1/ A table presented in the DFC policy paper Annex 6 indicates that there is no apparent correlation between the procedure used for allocating exchange risk and the average rate of inflation during the previous five years.

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and administrative sense in the environment of low interest policies for term lending, the introduction of indexation in Bank agricultural loans has been prompted from the start by an overall policy objective to ensure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indicies other than the foreign exchange rate have been experimented with in these agricultural loans. The difference in the rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign financed component of DFC loans was linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending including use of own resources by the financial institutions - although this objective was not always accomplished.

26. The Bank's experience in the implementation of indexed loans over the past eight years has been far from encouraging even in those countries, where the government finds the principle acceptable and has applied it to other sectors of the economy. Of the six countries which have received indexed loans, only three appear to be seriously committed to the system, these being Uruguay, Argentina and Brazil. Each of them has experienced double digit inflation in the recent past and the trend is expected to continue during the next few years. Brazil has the additional incentive of having developed the indexation system to a point where it is widely accepted, and to a degree understood. The three remaining countries - Bolivia, Peru, Paraguay - are putting their faith on anti-inflationary fiscal and monetary policies. They have been sufficiently discouraged by their short-term experimentation with monetary correction to want to terminate it at the earliest possible date.

27. There is a striking uniformity in both the responses of borrowers to the indexation of loans and in the efforts of governments trying to achieve a workable compromise. In every case where indexation has been incorporated into the loan agreement, the adjustment is determined by the movements in one of the two reference indices, usually, the Consumer Price Index and a composite index constructed from beef and wool prices. The Index which is actually used is the one which registers a lower rate of price increase. Through this and other devices, governments have sought to ease the terms offered to the final borrower and in the process have reduced the effects of indexation on the interest rate and thereby the benefits accruing to the lending agency. These measures have been in response to the strenuous opposition that indexation has aroused among farmers who are used to subsidized loans, excessively conscious of the uncertainty which monetary correction introduces as regards the repayment of the loan, and powerful enough to force the government to soften the conditions of the loan. In short, the results are highly unsatisfactory. Neither the borrowing countries nor the Bank itself have been able to come to an agreement on the procedure for indexation which is to be applied in each country. Furthermore, because of frequent changes in the terms of indexed loans, it is very difficult to evaluate the effects of the system.

A Frame for Bank Policy

28. Although the experience of the Bank, as far as indexed loans are concerned, has not been encouraging, this does not mean that indexation is not an appropriate policy instrument for countries which have to live with inflation and at the same time implement a broadly based policy of economic development.

29. Which Countries: For the large category of countries with low and relatively stable rates of price increase, the need for indexation is limited, perhaps, to social security payments. A second category would include countries such as Brazil where inflation has averaged aroung 30% over the last two years. The government is determined to bring down the rate of price increase and in the meantime provide some measure of protection for income shares and the saving investment process. In these countries, indexation would serve a dual purpose: as a surrogate incomes policy and as a meansof rationalizing the financial sector. For the small group of countries which have a long history of high and variable rates of inflation and where the government is disinclined to take the harsh measures needed to dampen inflationary pressures, indexation can serve a useful function.

30. However, it is difficult to identify countries in this third group. Recent experience (1973-75) is hardly any guide; for, practically every country in the world was caught in the throes of double digit inflation. One cannot extrapolate recent price trends into the future and thereby separate countries into those in which inflation is expected to be serious and the rest. The projections contained in the recent CPPs for a large number of countries indicate that inflation is likely to be a problem in only a handful of countries--Argentina, Bolivia, Brazil, Chile, Colombia, Guatemala, Jamaica, Mauritius, Nicaragua, Peru, Syria, Yugoslavia, Uruguary, Turkey, Korea and Pakistan. (See Table IV, Annex II, for information on the projected rate of inflation and Table V, Annex II, on proposed Bank lending to these countries over the next five years).

31. Which Index: Not only have sub-loans through the DFCs been linked to the foreign exchange rate, but the foreign exchange rate has also been used as an index for adjusting the principal on a few agricultural loans as well. Use of the exchange rate has the distinct advantage of providing a firm numerical basis for adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. Even with these qualifications, the exchange rate can be a good proxy for price inflation, particularly where rate changes take place frequently.

32. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of large adjustments introduces uncertainty into investment decisions. As prices rise, the over-valuation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two uncertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Further, sudden large adjustment creates a cash squeeze -- an abrupt increase in the liabilities of the businesses by as much as 200-300%. For these reasons, the foreign exchange rate in such a context cannot be used as a basis for indexation.

33. If it can be assumed that the various countries which apply the concept of monetary correction will adhere to a system of floating rates over the foreseeable future, the exchange rate can be used to index <u>all</u> transactions; this practice would have the additional advantage of effectively passing on the

exchange risk to the sub-borrowers. However, if the assumption is invalid, it would be preferable to treat at least domestic resource transactions separately so as to avoid the problems arising from large, discrete exchange rate adjustments. Probably the optimal procedure in such a situation would be to index all loans with respect to a general domestic price index and deal separately with the exchange risk. Exchange risk in this case would be smaller than what it would be without indexation of all loans, and it may become possible for the government or the central bank to bear it by charging a small fee to the sub-borrowers. However, the problem of exchange risk, arising from changes in the exchange rates between the foreign currency of the loan and the actual foreign currency of use, would remain. This risk can be avoided if the WBG lending were in terms of the currency of use. Even if it is not possible for the World Bank to ensure this, it may be possible for the Bank to lend in terms of not one currency but a basket of currencies (if not in terms of SDR) so that this type of risk can be minimized for the borrowing countries and institutions.

34. A general price index with wide coverage may be the most appropriate basis with which to link the principal of financial contracts. There are some reservations, however, relating to the technically defective nature of the indices, and due to the fears that these indices can be tampered with for political reasons. Where there are several indices, the choice between them also presents a problem. If the principle that indexing should be based on the general price index is accepted, the question of which index qualifies for this role becomes an empirical one and has to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are limited in favor of a more long term trend.

35. In the case of more open economies which are vulnerable to price shocks emanating from abroad, it may be necessary to adopt a discretionary approach a la Brazil where the index is adjusted so as to net out sudden changes in the prices of traded commodities due to unforeseen circumstances in the world economy or natural calamities. Since the idea is to take account of a resource loss experienced by the economy, it might be preferable to use a wage index where one is available, which may reflect more closely the changes in real purchasing power, rather than a CPI that has to be arbitrarily adjusted whenever the situation demands.

36. The practice so far has been to index the principal of the loan to the sub-borrower and to calculate interest payments on the basis of the adjusted principal. A less rigorous and simpler alternative is to raise the level of interest rates and apply monetary correction only to interest payments and not to the principal. Such an arrangement will be much more acceptable to the tax-paying sub-borrower (e.g. a client of a DFC). In many countries interest payments can be deducted from taxable income and the borrower can pass on to the exchequor the burden of indexation. He cannot do this if amortization payments are also indexed because most tax systems do not allow adjustment of depreciation allowances to offset the rising cost of replacement.

37. Modality of Negotiation: The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects. Chances of success are much greater if indexation is applied across the board in the long-term credit market than if it is applied piecemeal in the context of specific projects or specific institutions. It must be recognized that the Bank is likely to be the only international financier urging indexation.

Unless there is genuine understanding on the part of the borrower about the virtues of monetary correction, there is not much prospect for the application of this technique. The borrower may be able to switch to other international lenders if the Bank applies pressure on this issue. (The conditions for the success of partial indexation are discussed on pp 9-10.)

38. Agricultural Credit: The principle applied in the case of 11 Bank agricultural loans to Latin American countries should be reconsidered in the light of experience gained. Instead of linking loans to the price of meat or wool, an attempt should be made to search for 1) a more general price-index. It is not easy to see the rationale for indexation in Latin American countries, Bank agricultural credit operations in other countries also subject to fairly high rates of inflation remain unindexed. In the context of future lending, 2) a more uniform approach towards the question of indexation should be evolved.

39. Industrial Credit: There is no precedent for indexation of Bank industrial loans, except that the practice of passing on the foreign exchange risk to the sub-borrower is a form of monetary correction. In future operations, the following issues should be considered:

(a) Is it desirable to link debt service payments (or interest payments only) of sub-borrowers to the DFC arising out of Bank loans to some general price-index? (See discussion on p. 18)

(b) Should the principle applied in (a) be extended to cover loans financed from the DFC's own resources and from local borrowing?

(c) For countries with a floating exchange rate system, it may be desirable to index the loans to DFC sub-borrowers on the basis of the exchange rate. In this case, exchange risk would be effectively borne by the sub-borrowers.

(d) If a general domestic price index is used for all DFC loans, it is likely that a greater part of the exchange risk would be borne by the sub-borrowers. The question is: who should bear the residual risk? Should the government or central bank bear it by charging a small fee to the sub-borrowers? (See discussion on pp. 16-18.)

(e) Is it desirable to minimize the exchange risk arising from changes in exchange rates between the foreign currency of the loan and the foreign currency of use? If so, should the WBG lend in terms of a basket of currencies instead of a single currency? (See discussion on pp. 16-17)

(f) Should IBRD, IDA and IFC direct loans to industrial enterprises be linked to some general price index?

Annex I: World Bank Loans Subject to Indexation and Country Experience with Indexation

Argentina

40. Argentina has received only a single agricultural loan from the Bank which contains an indexing clause. This has been for the Balcarce Livestock Project (505-AR) and was signed on July 31, 1967. According to the terms of the contract the sub-loan balances are adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower, with interest charged at 6% per annum on adjusted balance. Indices used are: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers.

41. While the Balcarce project has been relatively trouble free, the spread of indexing to other areas has been fairly slow. The Argentinians have been experimenting with the indexation of government bonds over a long period of time extending as far back as 1962, when National Recovery bonds bearing a nominal interest of 7% were used with the principal adjusted with reference to an index of gold prices. Even earlier than this, in 1957, the State Petroleum Enterprise had floated bonds with a twenty year maturity, linked to an index based upon company productivity and changes in the salaries of company employees.

42. The government has continued to issue indexed bonds during the seventies but it was only in March 1975 that indexing was used in the banking sector, when the National Bank of Savings and Securities offered its customers monetary correction for deposits that are not transferable for one year. Indexed credit has also become important in the area of housing finance through

the National Mortgage Bank and more recently through the mortgage branches of commercial banks. The adjustment procedures are rather complicated. There is some differentiation of terms according to income class with only a portion of the principal being subject to monetary correction. Furthermore, although the index is based on construction costs the actual adjustment cannot exceed 80% of the change in basic salaries of workers and officials in the industrial sector. This is how the scheme exists on paper; however, the actual experience of the mortgage bank indicates that indexing is not automatic. The administration of indexing is highly flexible, with the authorities deciding the time and the extent of the adjustment.

43. Indexation has gotten off to a slow start in Argentina, with experimentation proceeding on a small scale on many fronts. There still appear to be many misgivings as to its application on a larger scale in the financial sector.

Brazil

44. So far the Bank has made four loans to Brazil which are subject to indexation. They are the following:

Brazil livestock (516-BR) signed September 23, 1967: Originally, sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period) or the inflation rate during the year, whichever is lower. An interest rate of 14% was to be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers were offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of 6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Indexing is to be applied throughout the life of the sub-loan including the grace period.

Brazil Grain Storage (857-BR) signed September 27, 1972: Principal adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzerios of the Central Bank at 7-½% per annum.

Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of principal throughout the life of the loan in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest on the adjusted principal at 7-¼% per annum.

Brazil Agro-Industries (924-BR) signed August 1, 1973: Sub-loans carry an interest rate of 5% plus adjustment based on the National Treasury-Bond (ORTN) price.

45. A brief sketch of the Brazilian experience is useful. Indexing was introduced in 1964 and applied initially to government bonds with maturities ranging from 2 - 5 years. The principal was revalued quarterly with reference to the Whole Sale Price Index and the interest was paid on the revalued sum.[1/] Since then over a hundred laws and implementing decrees have extended the system to embrace many other areas of the financial system and sectors of the economy. Revaluation is widely applied to capital assets and property values and incomes are readjusted for tax purposes. But indexing is tied to other policy objectives

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1/ Since 1972 a scheme which falls halfway between pre- and post- indexing has been used. The indexing coefficients applied to credit instruments are calculated on a five month basis -- the moving average of inflation during the previous three months plus an official estimate of the next two.

and a simple 100% link with prices is almost never used. In fact, indexing has probably brought about a more inequitable distribution of income within the economy and has had little direct effect on the rate of inflation. A decline in the latter during the early 70's was more the result of an active fiscal and monetary policy. In fact the only visible positive impact of indexing has been the growth in non-monetary financial assets. Although even here it is difficult to isolate the net increase since there has been a substitution of indexed financial assets -- such as bonds and bank deposits -- for those not subject to monetary correction. What makes the Brazilian system so complex and from the purist's viewpoint a little unsatisfactory is the coexistence of different procedures for indexing and the absence of a universal coverage. For instance, the private sector has strenuously resisted indexation because borrowers are often unprepared to bear the risk and consequently have been reluctant to offer indexed deposits. Commercial banks which use monetary correction on time deposits practice a form of preindexing by tying their adjustment to a projected rate of price increase which usually errs in the direction of conservatism. Since December 1972, the correction offered on government bonds is also based upon projections which systematically underestimate the true increase in prices so as to control the rise in real incomes and thereby diminish inflationary pressures. The WPI which remains the cornerstone of the indexing system gives a low weight to housing and expenditure on public utilities, whose prices have been freed, and it neglects services that account for approximately half the consumption expenditure of the population. Thus, it is likely that the WPI grossly underestimates the true magnitude of the price rise. Another example of the anomalies, which abound within the system, is the treatment of mortgage loans. These were subjected to monetary correction at an early stage, but government eschewed full correction so as to encourage home ownership. However, the large number of defaults persuaded the authorities to revise the procedure so that mortgage payments are allowed to decline in real terms over time.

46. After eleven years of operation the indexation system in Brazil is still in the throes of change and this affects the Bank loans that are subject to indexation. In May 1975, for instance, the ORTN and the ORTN-cattle price index which had served as the basis for adjustment for some time was overshadowed by a system of monetary correction based on changes in the dollar-cruziero rate. According to the Brazilians, use of the ORTN index made World Bank loans uncompetitive against funds available from the Euro-dollar market and it became difficult to find borrowers who were prepared to pay the high interest cost when loans with 5-6 year maturities could be obtained from other sources at 10 percent interest.

47. The contours of the agreement, presently being worked out, can be described in the following way. The cruzeiro is to be pegged to the actual basket of currencies disbursed by the Bank and the nominal rate of interest is to be fixed at 10%. Assuming rates of inflation of the order of 25% per annum in Brazil and 8 percent in the lending countries, along with continuous adjustment of the cruzeiro to correct for the discrepancy, the nominal rate would be 27 percent while the real rate would be 2%. This is a reduction from real rates of 5% and 6% that were being recommended in the past. It appears that both sides have moved further away from the goal of an optimal real rate of interest towards a non-negative rate that is politically tolerable and the numerous revisions that have taken place along the way suggest a fundamental divergence between the position adopted by the Bank and the approach of the Brazilians towards the allocation of resources. The Bank looks upon index linking as a device for restoring the vigor of the market mechanism by offsetting the distributional and allocational distortions which arise from

unanticipated inflation. Secondly, it wishes to enhance the viability of financial intermediaries. This is a long-run "global" approach. The Brazilians seem much less concerned with these matters. Instead they look upon indexing as a tool to be used for short run stabilization (and anti-inflation) policy and are not inclined to select one uniform procedure, apply it to the entire economy and adhere to it in a consistent fashion.

48. Indexation serves as a plank for the anti-inflation policy because it is easier to apply than an outright price freeze and is a fairly effective device for restraining the growth of incomes. The most recent modifications enhance its suitability for the anti-inflation role. Once again the objective is to prevent earnings regulated by indexed contracts from growing in line with the inflation by modifying the price index so as to exclude those increases which are due to accidental occurences such as the oil price hikes or the frost, that recently damaged the coffee crop. The government hopes that this measure will bring inflation down from 30% to a more acceptable level. Given the system's complexity, the frequent changes and the existence of segments within the economy not subject to indexing, it is doubtful whether monetary correction has helped the cause of efficient resource allocation although it might conceivably have raised the level of investment.

49. Indexing is used more widely in Brazil than in any other country, but the system still has many gaps. In particular the lending to the agricultural sector is not subject to monetary correction apart from the loans made by the Bank. Discussions with the Brazilians spanning a period of eight years indicate that they are unwilling to extend indexing to the entire sector and are anxious to dilute the indexing procedure applied to the Bank loans so as to enlarge the subsidy element. It is rather unusual to find the Bank attempting to force the concept of indexing on a country which

embraced it eleven years ago and presumably is well aware of its advantages and its shortcomings. As has been suggested earlier there appears to be some divergence in attitudes towards indexing. The Bank feels that it can be used to encourage the spread of financial intermediation and could nudge factor prices closer to their optimal levels; the Brazilians are more concerned with reducing inflation and are relectant to take steps that might bring about a rise in food prices. Hence they are not prepared to withdraw the interest subsidy being offered on loans to agricultural producers. This is the nub of the problem and it overshadows the Bank's policy not only in Brazil, but in other Latin American countries to which indexed loans have been made.

Uruguay

50. There have been two Livestock loans from the Bank to Uruguay where indexing is applied:

Uruguay Fourth Livestock (816-UR) signed April 26, 1972 (First Stage): Sub-loan balances subject to monetary correction not later than April 30 in each year based on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year, furnished by Banco Central; subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic Y Finansas for the corresponding period. Loans made to farmers with holdings of less that 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

Uruguay Fourth Livestock (Second Stage): Sub-loan balances subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

Uruguay Fifth Livestock Project Loan No. 940-UR signed August, 1975 :

All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (second stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost of living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6 kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceeding year as compared to the previous 12 months.

51. Uruguay was beset by inflationary pressures throughout the sixties and this spurred discussion of the concept of indexation - discussion which did not culminate in implementation till very near the close of the decade because of fears harboured by the government that the introduction of indexation would create destabilizing expectations on the part of the public. When in 1969 collaboration between Uruguayan officials, USAID and members of the Plan Agropecuario produced an acceptable scheme, it was tried on a pilot scale in the livestock sector.

52. In 1970, it was decided that if beef and wool prices rose faster than the Consumer Price Index (CPI), the latter would be used to adjust the loan. This involved an assymmetry in the treatment of borrowers and lenders because

no protection was offered to the commercial banks in the reverse situation in which the CPI rose faster than the composite index of beef and wool. Hence the private institutions were not prepared to adopt the scheme for their lending operations.

53. In 1971 the graduation of adjustment according to the size of the farm was altered, allowing 50 percent adjustment to all farms under 400 hectares. In 1973 the concession was withdrawn and farmers in all size classes were required to adjust by the full amount. However, a hardening of the terms in this area was balanced by subsidization elsewhere. During 1973 the rate of inflation was 78% but for the purposes of loan adjustment it was calculated at 65% and as an additional sweetner, the ranchers were returned a portion of their export taxes, which helped to bring the adjustment down to a mere 32%.

54. The beef and wool price index rose less than the CPI in 1974 and the former index was reinstated in March 1975. To add to the confusion it should be mentioned that the nominal interest rate was changed a number of times and the index factor which is applied no later than April 30 is based on price changes during a 12 month period ending in the previous October. Depending on whether inflation is accelerating or slowing down this has introduced its own biases.

55. Both the effectiveness and the popularity of the indexing system has been reduced by the government's inability to adhere to a single set of rules. Private lending institutions have been scared off by government actions which appear to be weighted against them and the farmers are unhappy because of the uncertainties regarding their future obligations. If indexing is retained they would prefer loans to be preindexed with fixed mark up to cover the lender's risk.

56. The government still appears to be in two minds about the concept of indexing. It recognizes the political advantages of subsidizing agricultural producers. This is supposed to lower the cost of food to city dwellers. It is also apparent that merely indexing the livestock loans extended by the World Bank, which comprise a very small percentage of the total agricultural credit, may worsen the distortions present in the market.

57. The recent policy actions of the government suggest that the supporters of indexation have prevailed. A new law has been passed which calls for the indexation of all financial instruments where the term exceeds 2 years. This should greatly expand the scope of indexation within the financial sector which has so far been limited to the National Institute of Colonization (INC) and the Mortgage Bank of Uruguay. The INC, which serves as an intermediary on all land transactions as well as financing land sales, makes long term loans, where the principal is linked to an index of agricultural products; the nominal interest is 3 per cent. The Mortgage Bank uses a wage index to adjust its loans as well as its savings since this index reflects the repayment capacity of the borrower and the expectations of the savers. During the period over which indexing has been applied both these institutions have had problems in inducing borrowers to observe the terms of the original contract and eventually have yielded to pressure and have settled for easier terms. The INC has allowed its borrowers to defer payments while the Mortgage Bank scaled down the size of adjustment on mortgage payments in 1973.

58. The Uruguayan experience is not encouraging. It has run afoul of the very same difficulties encountered by the Brazilians in the implementation of their own system. Excessive differentiation in order to deal with all situations is only one of the problems. Perhaps more serious is the vacillation as regards terms and price indexes in the largely futile quest for a scheme

that is fair to both parties and at the same time embodies the sectoral plans for the government. Through its willingness to bow to pressure from borrowers the government does not lessen the uncertainties inherent in an inflationary milieu, uncertainties which the indexing system was designed to neutralize. Each one of the indexes which can be used has its flaws and this remains an unavoidable weakness of the system.

Bolivia

Bolivia Livestock (261-BO) signed June 25, 1971: Incorporates a trigger mechanism which becomes operative when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year. When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction. At present, two options are being offered on this livestock loan. One of them allows the farmers to make their payments in accordance with the above system of monetary correction. The other option - known as the dollar exchange clause - passes the exchange risk on to the farmer, i.e. the loan to the final borrower is denominated in dollars.

59. There is a great deal of resistance to the indexing system in Bolivia and it is unlikely that the foothold gained by the Bank in the livestock sector will lead to application on a larger scale. In fact, the recent experience suggests that the Bolivians intend to bring the curtain down on this small scale experiment.

Peru

Peru Agricultural Credit Project (933-PE) signed September 12, 1973:
Sub-loans are not indexed until inflation surpassed 9% for any fiscal year of Peru. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

60. Livestock loans made to Bolivia and Peru incorporates trigger clauses which require some form of adjustment if the chosen price index rises above a certain level during a specified period. Once again these are countries where the rate of inflation is moderate; and the financial system has not been forced to seek recourse in indexation.

Paraguay

61. During 1973-75 the inflation rate in Paraguay averaged 17.5%. It was therefore decided to apply indexation to the subloans made under the Fourth Livestock Project (346-PA) signed March 5, 1974. The indexation clause stipulated the following conditions. The real interest rate of 8% is to be charged and the principal outstanding is to be adjusted annually with reference to the cost of living index.

62. Indexation has not been widely applied in Paraguay. So far the only other financial contracts subject to monetary correction are mortgage loans. Since inflation is projected to decline over the next five years it is unlikely that the system will be applied on a larger scale.

Other Countries

63. Many countries have used indexing in one form or another during the post war period and some have been led to abandon the concept after a long period of trial. The Finns, who had applied indexing to wages since 1945, found in 1967 that the system could not be made to work any longer and shifted to an incomes policy. Colombia has adopted the crawling peg in order to regulate the price of its currency and some form of indexing is applied to mortgage loans, the investment of social security reserves and saving deposits. In the latter case the adjustment is limited to a maximum of 20% per annum. In general, the Colombians have resisted indexation. The Bank has made one DFC loan which includes a trigger mechanism but any agricultural loans made in the near future are not likely to include an indexation clause. For a long time both government and private sector bonds in Israel were linked to the official dollar rate but the sharp devaluation of 1962 with the concomitant jump in debtor obligations led to a discontinuation of linking with foreign exchange and a selection of the CPI as the index to be used for monetary correction.

64. One other feature as regards the application of indexing should be mentioned. "Dirty" indexing seems to be the rule and not something peculiar to the Latin American countries. Government usually exercise some form of discretion in their implementation of indexing. For instance, in Norway, the government decides the extent to which a price change will be compensated.

Similarly the Austrian government can overrule the automatic indexing of pensions and subsidies. Indirect taxes are used to regulate the index in Norway, Finland, Israel and the United Kingdom.

65. Even a brief survey of the experience with indexation leaves one with doubts as to its workability and its usefulness as a policy instrument. As the Economist pointed out,

> No system of indexation can be substituted for tackling the economic and social pressures which cause inflation. On the contrary the fewer the people who can lose because of inflation the faster prices will rise to transfer command over real resources to those who are determined and able to grab a larger share. But indexation, provided it begins in the right way, can shift the pain from inflation to politically more sensitive areas and so force the government to deal more promptly and effectively with the disease at its very early stages.

It is not clear that countries which are using indexation as a part of their stabilization program are aware of the larger problems that need to be tackled.

Annex II: Statistical Tables

Table I - Inflation and Related Statistics for Sixteen Latin American Countries, 1950-69*

	Rate of Inflation	
	Mean	S.D.**
Uruguay	43.0	34.9
Bolivia	41.3	55.9
Brazil	35.1	21.5
Chile	28.2	14.6
Argentina	26.4	23.4
Paraguay	12.5	17.5
Colombia	9.2	3.2
Peru	8.5	5.8
Mexico	5.3	5.3
Nicaragua	3.4	6.1
Ecuador	3.0	3.3
Honduras	2.1	3.4
Costa Rica	1.9	2.2
Guatemala	1.1	2.8
Venezuel	1.1	2.8
El Salvador	0.3	1.5

* Per cent per year.
** Standard Deviation.

Table II: Countries With Inflation in Excess of 10% during 1972-4

	1960-1971	1972-1974
Argentina	20.25	25.71
Bolivia	4.94	28.96
Brazil	37.83	12.81
Chile	23.51	201.73
Colombia	10.03	14.99
Ghana	6.52	11.10
India	5.36	14.33
Israel	5.67	18.97
Jamaica	3.96	14.80
Pakistan	3.47	16.28
Paraguay	3.08	11.95
Philippines	5.64	14.33
Uruguay	37.80	51.70
Yugoslavia	11.14	13.44
Zaire	16.65	14.66

Table III: Indicators of Domestic Price Level Changes a/
(Average Annual Percentage Chan

Source: Date of CPP	Country	1965-70	1970-73	1973-75	(Estimate) 1975-80
2/18/75	Afghanistan	11.1	-2.3	6.4	5.2 e/
7/25/74	Argentina b/	16.1	43.2	-	-
10/16/74	Bangladesh	-	-	17.4	9.8
3/12/75	Bolivia	-	10.7	35.9	12.1
11/74	Brazil c/	26.5	17.6	31.0 g/	20.0 h/
	Chile	21.3	76.0	145.9*	
	Colombia	8.3	11.2	11.5*	9.07
5/15/74	Congo	-	-	17.8	9.5
3/74	Egypt	-	3.9	6.2	6.7 f/
	Ecuador	4.0	7.2	11.2*	
7/15/74	Ghana	-	12.0	-	-
7/22/74	Greece	2.4	3.0	-	-
	Guatemala	2.2	8.1	10.5	6.5
8/ 1/74	Guyana	-	4.3	-	-
4/22/74	Haiti	0.1	6.5	7.4	5.2
6/13/74	Honduras	1.9	3.7	10.0	7.5
6/ 6/74	India	6.5	18.5	9.7	6.0
6/ 5/74	Indonesia	-	23.0	20.0	-
6/ 3/74	Iran	1.9	8.1	7.4	4.7
12/27/74	Jamaica	-	10.8	17.6	10.0
8/30/74	Jordan	-	7.6	8.7	7.5
4/12/74	Korea	7.8	9.8	8.0	12.8 f/
11/29/74	Lebanon	2.0	4.4	14.0	9.5
10/ 7/74	Malawi	3.6	5.1	-	-
3/21/75	Mauritius	3.0	6.2	29.5	10.4
5/10/74	Mexico	3.4	6.7	17.7	7.2
5/17/74	Morocco d/	0.6	8.3	21.0	3.5
	Nicaragua	2.2	8.1	10.5	6.5
6/28/74	Pakistan d/	3.7	7.1	10.0	5.0
5/12/74	Paraguay d/	1.3	13.0	17.5	8.5
10/21/74	Peru d/	11.1	8.7	15.0	15.0 e/
7/15/74	Philippines	5.6	17.0	25.0	8.8
8/21/74	Romania	-	-	0.4	0.4 f/
6/26/74	Senegal	-	5.2	9.9	8.6
4/15/74	Sri Lanka	4.2	9.4	12.5	7.9 f/
9/26/74	Syria	3.5	6.2	14.4	10.1
3/27/74	Tanzania	-	5.1	6.0	5.9 f/
5/17/74	Thailand d/	1.2	5.9	-	-
6/10/74	Trinidad & Tobago	3.8	8.5	9.1	6.2 f/
	Turkey				15.1
	Uruguay			50.0	30.0
1/31/75	Venezuela	2.1	3.1	16.9	9.0
7/12/74	Yugoslavia	7.8	18.0	17.5	15.0
5.30/74	Zambia	-	6.7	12.4	7.5 f/

Note: (Based on explanation in CPP Attachments)
* 1973-74 only.

a/ General domestic price index not specified unless otherwise noted.
b/ Domestic wholesale index.
c/ General price index -- weighted average of wholesale (60 percent), the cost of living index (30 percent), and the cost of construction index (10 percent).
d/ GDP deflator.
e/ 1975-78.
f/ 1975-76.
g/ Average for 1974-5.
h/ Country economist.

Table IV: Estimates of Inflation, 1975-80 1/

Less than 10% rate of inflation	percent	10% or more rate of inflation	percent
Afghanistan	5.2	Argentina 2/	350.0('75)
Bangladesh	9.8('75-76)	Bolivia	12.1
Congo	9.5	Brazil	20.0 7/
Egypt	6.7('75-'76)	Chile 3/	336.0('75)
Haiti	5.2	Colombia 4/	
Honduras	7.5	Guatemala 5/	
India	6.0	Jamaica	10.0
Iran	4.7	Korea	12.8
Jordan	7.5	Mauritius	10.4
Korea	8.2('76-'76)	Nicaragua 5/	
Lebanon	9.5	Peru	15.0('75-78)
Mexico	7.2	Syria	10.1
Morocco	3.5	Turkey	15.1
Pakistan	5.0	Uruguay 6/	30.0('75-'80)
Paraguay	8.5	Yugoslavia	15.0
Philippines	8.8		
Romania	0.4('75-76)		
Senegal	8.6		
Sri Lanka	7.9('76-'76)		
Tanzania	5.9('75-'76)		
Trinidad & Tobago	6.2('76-'76)		
Venezuela	9.0		
Zambia	7.5('76-'76)		

1/ Source: CPP Attachments SI, Average Annual Percentage Change based upon the general domestic price index.

2/ Estimated inflation for 1975 alone is 350 percent. Therefore, it is safe to assume this country belongs to the over 10% category. There is some speculation that this rate may decline in 1976.

3/ Making projections of Chilean inflation is extremely difficult given their volatile record. Inflation for 1975 alone is estimated by Bank sources to be 336%. This in itself would be sufficient to place Chile in the over 10% category. It should be noted that the government is pursuing draconian policies to control inflation and the rate can be expected to fall considerably in the next few years.

4/ Source: Country Economist memorandum.

5/ Due to openness of the economy, world inflation rates are considered to be a good proxy for domestic inflation.

6/ Inflation in 1975 is estimated at 50-60% and it is expected to decline steadily to around 10% by 1979-80.

7/ Country Economist

Table V: Total Projected Lending by IBRD and IFC to High Inflation Countries 1/
FY1975 - FY1980
(US $millions)

Country/ Sector	Agriculture	Industry 2/	Transport	Utilities	Education 3/	Urban
Bolivia	150.6	88.5	84.0	31.5	40.0	-
Brazil	939.0	525.0	1,195.0	945.0	248.5	140.0
Chile	75.0	55.0	20.0	60.0	-	-
Colombia	425.5	400.5	145.0	392.0	110.0	100.0
Guatemala	20.0	-	60.0	146.0	40.0	15.0
Jamaica	59.0	-	71.0	57.0	15.0	20.0
Korea	705.0	20.0	540.5	-	77.5	-
Mauritius	10.0	25.0	10.0	16.5	17.0	-
Nicaragua	12.0	8.0	13.0	53.0	27.0	6.0
Peru	245.0	150.0	160.0	100.0	70.0	40.0
Syria	185.0	20.0	40.0	265.6	40.0	-
Turkey	575.0	148.0	130.0	336.0	-	40.0
Uruguay	112.0	35.0	-	30.0	-	-
Yugoslavia	540.0	-	453.0	380.0	-	-

Source: CPPs Actual and Proposed Lending Program Through FY 80

1 / Defined as having over 10% rates of inflation.

2 / Includes mining.

3 / Includes health and nutrition.

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

Mr. Karaosmanoglu
File

OFFICE MEMORANDUM

TO: Mr. V. V. Bhatt

DATE: June 9, 1976

FROM: Barend A. de Vries BdV

SUBJECT: Indexation of Financial Contracts (February 1976 Draft)

The recent staff review of this draft paper has already brought out a number of points which you may want to take into account in revising it. As you know, our project and country economists have a number of comments and I suggest you or the author obtain their views separately. I also suggest you discuss the paper with the Programs divisions whose countries are dealt with in the annex. As I mentioned to you, the Brazil Division and Mr. Ringlien (Projects Department Agriculture Division) are preparing notes.

I understand that you already intend to make some substantive changes in the draft; in particular, linking it to the Bank's more general review of experience with indexing and the omission of the discussion of denominating Bank loans in currency packages. An understanding of the case for general indexing is, in my view, significant for the analysis of indexing of financial contracts. Experience with general indexing has brought out some of its shortcomings and limitation, and these in turn may be relevant for analyzing the effectiveness of financial indexing.

It may be well to emphasize that the objective of the paper is a limited one. We have the earlier paper by the Financial Development Unit which concluded that medium- to long-term lending rates should be significantly positive (5 - 8%) in real terms. Given that objective, the question is under what conditions indexing is indicated. My answer to this is, generally, that if a government follows indexing of financial contracts as a general policy, and it makes sense, there is no reason why the Bank should not do likewise for its sub-loans. Or, if the government does not follow the policy but we feel it to be well advised to do so, we might try indexing our sub-loans. However, in the latter case, I would make this part of a more general discussion with the government on using indexing in financial contracts.

There seems to be some ambiguity in the paper about two important points in the indexing puzzle. One is that indexing in itself will not bring about stabilization, but at best is merely an element in a stabilization program; instead it is a way of living with inflation and inducing development of financial intermediation in inflationary situations. Secondly, in my view, countries in the middle-income range are likely to experience quite strong inflationary pressure in the years ahead. The prospects of inflation are more serious and the uncertainties associated with fluctuations and inflation prospects are more severe than is implied in the paper (or the CPPs, which for this purpose are not an analytical source). The latter observation would suggest that financial indexing be used more extensively in the future, especially if 1976-77 do not turn out to be significantly less inflationary than the recent 1973-75 period of disturbance and recession.

cc - Messrs. Krieger
Karaosmanoglu
Gulhati
Goffin
Pfeffermann/Nowicki
Ross/Greene
Malik
Ringlien

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. Robert S. McNamara

DATE: August 3, 1976

FROM: S. E. Chernick, Acting Director, PP & PR

SUBJECT: Issues Paper on Indexation of Financial Contracts

1. The issues paper on "Indexation of Financial Contracts," prepared by the Development Economics Department, is attached, together with the minutes of the staff level discussion.

2. The paper discusses the role that indexation of financial contracts might play in the mobilization and allocation of savings, as well as its effect on the viability of financial institutions in a period of inflation. It also explores the justification for indexation of Bank lending operations in agriculture and industry and assesses the experience gained so far with regard to agricultural loans made by the Bank during 1967-75 in the Latin American Region.

3. The broad conclusions of the Indexation paper are:

(i) Indexation is a relevant policy instrument in countries which are likely to experience high and variable inflation.

(ii) In such circumstances a general price index should be used to index major medium- and long-term financial instruments.

(iii) Complementary policies in the fields of exchange rates and taxes should be adopted.

(iv) It might be useful for the Bank to discuss the advantages of indexation with countries presently experiencing double digit inflation. As a first step, the Bank should try to develop a procedure for applying indexation to all medium- and long-term loans by agricultural institutions and DFCs associated with the Bank.

4. The broader issues of the Bank's approach to interest rates and credit allocation have already been discussed at the PRC meeting of July 15, 1976 (see attached minutes). The issues involved in indexation of financial contracts might therefore usefully be discussed against the background of the earlier decision to include a definitive section on the financial sector in selected economic reports to be produced within the next twelve months. Based on such economic work in particular countries, the question of appropriate indexing policies could then be made part of the policy dialogue with the governments as suggested by this issues paper.

Attachments

cc: Messrs. Alter o/r (w/o Indexation paper)
Karaosmanoglu " " "
Gulhati " " "

FORM NO. 678
(7–73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/s/M/76-3a

June 15, 1976

INDEXATION OF FINANCIAL CONTRACTS ISSUES PAPER

STAFF REVIEW - MINUTES

Attendance:
Messrs. Karaosmanoglu (Chairman), Alter, de Azcarate, Bhatt, Colaço, de la Fortelle, de Vries, Di Tullio, K., Glaessner, Hendry, Hyde, G., Kavalsky, Kuczynski, Laursen, Pilvin, Powell, R.L., Ringlien, Stoutjesdijk, van der Tak, Vita, Yusuf, Burki (Secretary)

1. A staff review of the issues paper on Indexation of Financial Contracts was held on Thursday, June 3, 1976.

2. The discussion focused on the following areas: (i) purpose and scope of indexation; (ii) relationship of indexation to other measures of economic policy; (iii) identification of circumstances under which indexation is an appropriate instrument; and (iv) World Bank policy.

Purpose and Scope

3. There was agreement that the purpose of indexation is to reduce or eliminate the consequences of inflation. In periods of high and particularly of volatile rates of inflation, real interest rates tend to be low or even negative, and according to the authors this retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and allocation of resources.

4. Most participants in the discussion felt that indexation should be general rather than limited to a few sectors of the economy, and that the appropriate index would be a general price index. In some circumstances the exchange rate would reflect the general increase in prices and could therefore be used, but normally such a procedure would have certain shortcomings.

5. One objection was raised, however, to the use of a general price index for indexation purposes. It was argued that if inflation was accompanied by a change in relative prices, it might appear unfair to the producers of products, the prices of which lag behind, to index their borrowing according to a general index. The case in point was agriculture, and it was strengthened by the fact that discrimination against this sector are common in the developing countries.

Relationship to Other Measures

6. It was stressed by several speakers that indexation should be an element in a more general context of macro-economic policy. There was agreement that indexation *per se* could not be effective as an anti-inflationary measure. In fact, it was argued, indexation might even accelerate the rate of price increases. The paper should examine more closely how indexation fits into general stabilization policies.

When is Indexation Appropriate?

7. The authors found that it was difficult to identify the exact circumstances under which indexation would be an appropriate policy, and hence to point out the countries to which such a measure might be recommended. This is due among other things to the difficulty of predicting inflation rates.

8. It was agreed that a definition is difficult of the precise circumstances under which indexation should be the preferred solution to the problems created by inflation. But it was argued that the paper should try to be more explicit on this question, and try to identify the countries which should adopt this policy. One criterion might be flexible exchange rates.

9. Several participants in the discussion held the view that inflation in the foreseeable future would be considerably higher in many developing countries than during the 1960s, and they questioned that CPP projections were reliable. According to some it is reasonable to expect inflation rates of 50-90% in a number of developing countries. Such situations are not dealt with in the academic research on indexation and interest rates. The basic issue: is indexation the appropriate instrument in such circumstances to deal with uncertainty and negative real interest rates should be treated more explicity, including the question of the type of financial contracts that should be indexed.

10. On the other hand, it was argued that indexation could also be appropriate in much less inflationary circumstances.

Bank's Experience and Policy

11. It was noted by several that the factual information quoted in the paper on the Bank's experience did not fully reflect the actual situation. It was agreed that suitable changes will be made in the statistical section with the help of the Regions.

12. There was agreement that the Bank cannot impose indexation on governments, but it was important to establish guidelines for the Bank to be alert to the question, and in appropriate circumstances the Bank can advocate that indexation be applied.

Conclusion

13. It was agreed that the paper should be redrafted to reflect the discussion. In particular, it should try to identify circumstances in and countries for which indexation may be recommended. It should not, however, contain any strong policy recommendations. No major change in the structure of the paper or any new research should be undertaken for the purpose of finalizing this paper.

Shahid Javed Burki
Secretary
Policy Review Committee

cc: Those Attending

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(7-73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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Shahid Javed Burki
Secretary
Policy Review Committee

cc: Those Attending

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(7-73)

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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

POLICY REVIEW COMMITTEE

PRC/M/76-8a

July 20, 1976

WORLD BANK'S APPROACH TO INTEREST RATE AND CREDIT ALLOCATION ISSUES

MINUTES

Attendance:
Messrs. McNamara (Chairman), Knapp, Alter, Baum, Chadenet, Chenery, Bell, Chaufournier, Krieger, Please, Stern, Bart, Goodman, Kuczynski, van der Tak, Hyde, Burmester, Jacob (Acting Secretary)

1. The meeting of the Policy Review Committee on the issues paper, "World Bank's Approach to Interest Rate and Credit Allocation Issues", was held on Thursday, July 15, 1976 at 2:30 p.m. in the President's office.

2. The paper was found to be useful and timely in highlighting the importance of interest rate policies and their effect on savings mobilization and resource allocation. It was recognized, however, that it was difficult to translate even the generally accepted principle of positive real interest rates as a policy goal into operational policies for the Bank Group. It was felt, in particular, that the relationship of the macro-economic objectives in the financial sector to individual project investment decisions, which may aim at other objectives such as income distribution, needed to be more carefully formulated to assure consistency of approach and practicality in implementation.

3. There was agreement that the Bank's economic work would have to provide a better basis for appropriate judgments on a country-by-country basis. It was therefore decided that the Regions should examine their plans for basic economic and special economic reports to determine in which countries it would be appropriate to include in these reports a definitive section on the financial sector. A plan of proposed action with respect to the reports to be produced within the next twelve months should be submitted to the Vice President DPS and the Senior Adviser, Office of the Senior Vice President Operations, in preparation for consideration by the President and the Senior Vice President Operations.

4. It was further decided to again review the subject in one year's time, based on the experience gained in the interim.

5. A separate PRC discussion of the paper on "Indexation of Financial Contracts" ill be held shortly; time and place of the meeting will be announced within the next week.

Peter R. Jacob
Acting Secretary
Policy Review Committee

cc: Those Attending

E 1243

Mr. Mahbub ul Haq, Director, PP&PR

February 24, 1976

Karsten Larsen

Issues Paper on Indexation

1. The paper is an elaboration of one issue mentioned in the draft paper "The World Bank and Financial Development", January 30, 1976, namely how to insulate interest rates from the impact of high and volatile rates of inflation. Moreover, the paper explores the relevance of indexation for Bank lending operations in agriculture and industry.

2. It is concluded that:

(i) Inflation interferes with the monetization of the economy; it retards the financialization of savings and reduces the efficiency of the market mechanism in the mobilization and the allocation of resources.

(ii) There are three possible ways of dealing with such distortions: (a) the pegging of interest rates at a level commensurate with expected inflation, (b) a policy of variable interest rates, and (c) indexation.

(iii) Where inflation is high a variable indexation seems to be the appropriate policy option. In such circumstances indexation will enhance the efficiency of resource allocation through its impact on real interest rates in short and particularly in long markets.

(iv) Recent price trends cannot be extrapolated into the future and, therefore, it is difficult to identify the countries in which inflation is expected to be serious. Projections contained in recent CPPs indicate that inflation is likely to be a problem in Argentina, Bolivia, Brazil, Chile, Colombia, Guatemala, Jamaica, Mauritius, Nicaragua, Peru, Syria, Yugoslavia, Uruguay, Turkey, Korea and Pakistan.

(v) Where exchange rates adjustments take place frequently, this rate can be used as a basis for indexation of all transactions. If not, the optimal procedure would be to index all loans with respect to a general price index with wide coverage or with respect to a wage index where one is available.

(vi) The practice so far has been to index the principal of the loan. A simpler alternative is to apply monetary correction to interest payments. For tax reasons such an arrangement will be more acceptable to the tax-paying sub-borrower.

(vii) The question of indexation should be discussed by the Bank with member governments at the macro and sectoral levels before it is taken up in the context of individual projects.

(viii) In the context of future lending, a more uniform approach to the question of indexation of agricultural credit should be evolved. In the past the principle has been applied to 11 loans to Latin American countries.

(ix) In future operations concerning industrial credit a number of questions should be considered. These concern the extent of indexation of IFC loans, the type of index to be used, the exchange risk, the use of a basket of currencies instead of a single currency and the indexation of direct IBRD, IDA and IFC loans.

3. I suggest that the discussion at the PRC staff level review focus on the following issues:

(i) Is indexation the appropriate policy to deal with the distortions created by inflation. In my opinion indexation may be useful if prices accelerate; but as long as the rate of inflation is fairly constant, even if it is high, a policy of variable interest rates is sufficient. Cf., however, (iv) below.

(ii) Is indexation an important instrument in the formulation of a rational financial policy. Indexation if properly designed may prevent real interest rates from falling as a consequence of inflation, but it is neither a necessary nor a sufficient condition for solving the problem of establishing a correct level and structure of real interest rates.

(iii) What is the scope of the Bank's interest in indexation. In this context the questions raised in paras. 38 and 39 should be discussed.

(iv) Will indexation of interest rates rather than the principal of the loan be an appropriate option. I think not. As a general rule interest payments are taxed and deductible. Therefore, the rate of inflation is not neutral with respect to the distribution of income between lenders and borrowers if interest rates are indexed. This argument also applies to a policy of variable interest rates.

cc: Messrs. Chernick
Burki
PPD Staff

KLaursen:ls

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. M. Haq, EPRDR

DATE: October 29, 1975

FROM: Ravi Gulhati, ECDDR

SUBJECT: Some Policy Issues on Indexation of Financial Contracts

Attached is a draft prepared by O. Yenal which discusses some policy issues relating to the indexation of financial contracts in developing economies and in the context of Bank operations. This is the follow-up we had promised to the survey of the literature on indexation " Index-Linking of Financial Contracts: A Survey of the State-of-the Arts", by K.B. Bhatia, Working Paper No. 192, November 1974. We would like to have a first discussion of the draft paper by a small group of interested people before Mr. Yenal's pending departure on November 12. You may also wish to include this paper in the inventory of policy and issues papers. We can decide how the paper should be further processed after the small group discussion proposed above.

Attachment

cc: Messrs. Chenery/Karaosmanoglu, VPD
SBurki, EPRPP
VVBhatt
ECD Division Chiefs

RG/mo

This will develop into an issues paper for the Policy Review committee therefore we should keep up

new file on Indexation

O. Yenal
Draft
October 24, 1975

SOME POLICY ISSUES IN INDEXATION OF FINANCIAL CONTRACTS

Introduction

1. Indexation means establishing contractual obligations in real terms, as different from the usual contracts in money terms. In the former, the real value of the obligation is fixed and the money value is adjusted according to the price level. In the latter, the money value is fixed and the real value depends on the price change.

2. Various types of contracts which have been the subject of indexation present somewhat different issues. For example, the indexation of wages is an important topic in the context of incomes policy, not only for its role in industry-labor relations, but also for its implications for demand management. Recent interest in linking the prices of raw materials to the prices of manufactured goods in world trade, which is also referred to as indexation -- is an attempt by the raw material exporters to introduce an indexed contract into an (imperfect) market situation. Another topic discussed under the heading of indexation, the indexation of the foreign exchange rate, is not concerned with a contract, but refers to an adjustment in the exchange rate somewhat approximating the inflation rate, such as the floating rate or the crawling peg. Still another topic in indexation, the adjustment of tax rate-base structures in response to inflation, relates not to a voluntary contract but to a compulsory fiscal obligation. The discussion below will concentrate only on the policy issues that relate to the indexation of financial contracts in the less developed countries.

3. Indexation of financial contracts present issues of general economic policy which can be grouped under (a) what should be the scope of indexation (i.e. which instruments should be indexed) and (b) what impact this would have on the unindexed financial markets. In addition, to these general policy questions, the discussion on which can serve as basis for the policy advice given by the Bank, there are the specific issues concerning Bank operations, namely to what extent, under what circumstances and what types of indexation should be applied on the on lending rates charged on the World Bank financed projects. These are discussed below.

Indexation Issues

4. It is useful to distinguish problems introduced by the existence of price inflation from the issues that have to do with the public policy measures aimed at regulating the financial institutions and affecting the financial transactions -- even in the absence of inflation. The pros and cons of market-determined vs. government-imposed rates or high vs. low interest rates are related to but not the same as the issue of whether or not monetary contracts should be adjusted for price changes. Free (flexible) interest rates and high interest rates can, to an extent, serve as alternative means of adjusting the contracts for inflation. But even in countries with price stability, the interest policy is a keenly debated issue. On the other hand, free interest rates would be a substitute for indexation only if the rate of inflation was correctly anticipated by both the borrowers and the lenders[1/] -- this appears unlikely because the process of learning is

1/ Two qualifications need to be made. (a) Concerted action by the banks may preclude the free rate to internalize expectations; (b) Even under correct anticipation, free rate would be higher than indexed rate to account for risk aversion.

rendered difficult if there are substantial fluctuations in the rate of price increase.

5. Irrespective of the relative merits of free versus fixed interest rates and high versus low interest rates -- a controversy which has produced a great deal of heat but not much light -- the question to be asked in connection with indexation is whether there is any plausible reason for letting the real interest rates go down in times of inflation or up in times of price decline. It is hard to see any justification for this either in a context of a demand management policy or as an allocative measure. On the contrary, there are strong arguments against allowing such an erosion of the real value of financial contracts, both from economic and social points of view.

Why Index

6. Arguments for indexing financial contracts in times of rapid inflation arise from considerations of income distribution as well as from concerns for improving the efficiency of the financial system. In the absence of indexation, and in a flexible interest rate regime, the division of losses and gains between the transacting parties is dependent on the elasticity of expectations and the subsequent rate of inflation. If lenders have elastic expectations their rates will be biased in the upward direction reflecting their anticipations regarding the future rate of inflation. If the increase in prices is lower than the one built in to rates at which loans have been contracted, then it is the lender who stands to gain. Aside from expectations, it matters whether the market is dominated by sellers or by buyers.

7. In the more realistic environment of fixed interest rates, if financial contracts are not indexed, lenders would by definition lose and the borrowers would gain when the price level rises. Since most lower income groups are net lenders to the banking system and most of the banking funds are borrowed by high income earners -- a generalization which is certainly

applicable to the commercial banks although no systematic study has yet been made -- there is a strong case from the social point of view for adjusting money contracts in financial markets to compensate for price increases.

8. Empirical evidence is insufficient to provide an assessment of the impact of indexation on economic efficiency -- resource mobilization and resource allocation in the financial markets. We do not know how indexation of financial contracts in an inflationary environment can affect the saving behavior of the individuals simply because we do not know how savings are related to interest rates on financial assets. Nor do we have plausible evidence on how indexation has influenced the flow of resources to the productive sectors of the economy. Comparing indexed financial contracts with pegged interest systems in inflationary environments, a priori reasoning under static assumptions would suggest that positive return as compared to negative return, particularly when the differential is significant, would induce individuals to increase their aggregate saving. This of course assumes that the savers facing negative monetary interest rates have no other investment opportunities. Although other investment opportunities are usually available -- such as real estate and own business -- the lumpiness and the risk factors would often make them imperfect substitutes for financial savings.

9. Even if indexation did not lead to a rise in the aggregate savings in the economy, it would probably increase the degree of financial intermediation. Indexation would prevent a tendency towards the disintermediation that usually occurs when real interest rates become negative. And to the extent financial intermediation has a positive impact on allocation, then indexation can be expected to have a positive effect as well.

What evidence there is indicates a marked paucity of long term funds in the financial markets of the LDCs. The attenuation of the longer end of the market is due partly to the ingrained preferences of the lenders and partly to the riskiness of lending long. A priori reasoning would suggest that this squeezing of the maturity spectrum may adversely affect certain types of investment particularly in industrial projects with long gestation lags. If entrepreneurs have only short funds available to them, the uncertainty of being able to roll over their loans or to obtain additional financing when the loans become due may increase the variance of returns from an investment and hence its attractiveness. Although interest rate structure is not the only factor which discourages the expansion of term lending in the developing economies, -- perhaps, the historical bias of commercial banks plays a more crucial role -- it is obvious that there would be no incentive on the part of any financial institution to lend long when the interest they could charge on these was not significantly higher than the rates on shorter lending. Even if the controls on the interest rates were removed, the divergence between the expectations of the borrowers and the lenders would rule out the evolution of a long-term interest rate that would adequately internalize these expectations. Thus it appears that indexation (or a variable interest rate policy) is a necessary condition for the development of term loans, even though it may not be sufficient by itself in developing countries experiencing rapid inflation.

11. The question of whether the indexation of financial contracts fuels or starves inflation and to what extent financial contracts may be a barrier to stabilization efforts is also an important issue. To the extent indexation neutralizes the effects of inflation, it would diminish the forces critical of

inflationary policies. This, however, applies more to the indexation of wages and salaries than to the indexation of financial contracts. To the extent indexation helps breed expectations about future inflation, it would fuel inflation and make stabilization efforts difficult. To the extent indexation raises the cost of public borrowing from the banking system, it would reduce policy -- indexation of wages and salaries -- the indexed of financial contracts would probably not be an important determinant of the trend of inflation. It becomes a sensitive issue, however, when a stabilization program is put into effect.

12. Indexation is not costless. The management and accounting of contracts with a changing numeraire has administrative costs both for the individuals and for the institutions. This is why indexation becomes attractive only in times of severe inflation. Even with considerable inflation, the net benefits from the introduction of indexation may not be attractive if some of the functions that would be performed by indexation can be carried out by the other institutions -- such as risk taking, term transformation and formulation of realistic prices for credit.

13. As a general rule, then, the more moderate the rate of inflation and the more flexible the financial system -- implying both flexibility in interest rates and institutional diversity -- the less will be the attraction of, or the need for indexation (and vice versa). This may be one reason why the indexation of financial contracts did not receive much attention in the developed economies during the recent inflation. A large number of LDCs, however, lie at the other end of the spectrum. High rates of inflation, pegged nominal interest rates and fragmented financial institutions are quite common characteristics of such economies. In a policy environment defined by these characteristics, indexation of financial contracts would commend itself.

However, indexation is impractical in some areas, and may have excessive administrative costs in other areas. Hence, the scope of indexation is a genuine issue which has to be discussed in an institutional context.

There is the difficulty of inducing the government to acquiesce to the scheme because the indexing of financial transactions not only increases the burden of financing the national debt but it also reduces the government's power to reallocate income. This redistribution has been one of the significant consequences of the policy of fixing rate ceilings in inflationary times and it is the unwillingness to relinquish such discretionary power which lies at the root of the unwillingness on the part of official agencies in the LDCs to move towards some form of indexing. Unless one can make a compelling case for the development of a long term loan market and the critical role of indexing in its maturation it may be difficult to persuade governments to make the institutional changes necessary for the adoption of the scheme.

Which Market to Index

14. In countries where financial contracts are not free and where financial markets are not developed, an important social consideration would be to provide at least one easy means for the small savers to protect the real value of their savings. To provide an opportunity to those for whom investments in real assets is either impossible (direct business investment) or difficult (real estate and inventory), the government should either issue indexed bonds with low minimum denominations or induce some financial institutions to offer indexed saving bonds or deposit facilities.

15. The first type of such institutions which can be induced to issue indexed savings instruments would be the savings banks or institutions similar

to them in functions. Since the assets of these banks can also be easily indexed, i.e. by indexing the mortgage loans they offer, matching the liability structure with similarly indexed assets should not pose insuperable problems. In fact, this is the segment of the economy where indexation has been successfully applied in Brazil. Depending on the maturity distribution of saving banks' assets, it may be feasible for savings institutions to issue indexed certificates of deposit or even bonds. The development of secondary markets in these savings instruments can also be encouraged.

16. The important policy question that arises is the effect that indexing of the assets and the liabilities of the savings banks will have on the other segments of the financial market. Unless the savings banks are completely segregated from the rest of the financial system, indexation in the former would have an effect on the latter, particularly if the interest rates in the latter are pegged. Through large leakages, the deposits of the non-indexed banks would shift to the indexed banks and the borrowers from the indexed banks would shift the non-indexed banks offering low interest loans, resulting in excess demand for the loans of unindexed banks and short supply of their funds, probably intensifying the under-the-counter arrangements.

17. At the least, compulsory indexation of the deposits and loans of savings banks should be accomponied by allowing the other banks and issuers of financial assets free to index the values of their obligations. (It is worth noting that this is consistent -- at least from the point of administration -- with a controlled interest rate system where interest rates may be pegged by the government, but the indexation of the principal could be allowed.) This may be the simplest approach, permitting the institutions to choose the most practicable areas for indexation. In order to protect against monopolistic

practices, and in economies where savings banks are not a strong and separate component of the financial system, the government can decree that deposits above a certain time maturity should be indexed. The banks could then be left to choose which sorts of loans they would want to index. To protect the depositors, margins may be specified within which the banks will be required to match their indexed assets and liabilities.

18. A system would evolve where indexed supply and demand for financial savings would coexist with unindexed supply and demand for shorter liquidities. There is nothing inherently wrong or unstable in such a situation. The error in forecasting inflation over the short period is small; the short duration reduces its impact so that the costs of nuisances of full indexation may exceed the benefits. To the extent savers forgo indexed investments in favor of greater liquidities with negative returns, this will be from conscious choice rather than due to the unavailability of instruments as is presently the case. And on the borrowers' side, the option would be to get long-term financing at a higher cost or go through the uncertainties of short-term financing at a lower cost. The incentives in the present systems with pegged interest rates encourage the banks to borrow short and lend short. This is accepted by the depositors (in the absence of better alternatives) and by borrowers (who do not mind the shortness of maturities so long as the real interest rates are negative). The incentives in the models as described above would encourage the banks to differentiate between the short and the long-term markets in financial resources.

19. A regime where indexed supply and demand for financial savings could coexist with unindexed supply and demand for shorter liquidities still leaves open the question of the price at which these short-term funds will

be transacted -- that is the issue of the short-term interest rate. Given the practical impossibilities of indexing money -- currency and demand deposits -- the banking system will benefit from the money creation windfall -- that is, being able to mobilize funds at near zero nominal rate and negative real rate. The availability of indexed savings instruments may reduce proportionate volume of demand deposits, but is unlikely to render them insignificant. A similar windfall accrues to the monetary authority that issues the currency, that is the central bank. And these windfalls usually increase parallel with inflation because of the rise in the negative interest.1/ The ultimate beneficiaries of this windfall can be the government, the private borrowers from the banking system or the banks themselves depending on whether the additional money is lent to the government or to the private sector on a cost plus basis, or whether the banks carry out their lending at a higher rate or use indexed terms.2/ Even in this latter case, the government can tax the differential surplus either directly or through legal reserve systems. Government borrowing at very low rates either from the central bank or from the commercial banks, as is quite common, can be viewed as an effort to share in this windfall -- which can itself also be the cause of inflation. On the other hand, the existence of this surplus may be the motivation behind the widespread policy of keeping loan rates low but then also attempting to specify who the beneficiaries will be.

1/ This explains, in large part, the ability of the banking systems all over the world to offer loans at negative interest rates during inflations.

2/ Another alternative would be for the banks to offer higher interest rates on demand and short-term deposits thus passing a part of the windfall to the depositors. This may have a deflationary affect by inducing the individuals to increase their real cash balances.

World Bank Policy

20. From the point of domestic financial markets of the borrowing countries, all World Bank Group loans and credits are, in terms of the definition given above, indexed with respect to the rate of exchange. This follows from the World Bank policy of denominating all loans and credits in terms of dollars or other currencies. In other words, viewed in the context of the domestic economies of the borrowing countries, either the governments or the intermediary institutions or the sub-borrowers bear the cost -- in terms of local curreucy -- of any exchange rate devaluation vis a vis the obligations of the country to the World Bank.

21. As regards the on-lending operations of the World Bank through the financial institutions, two types of indexing practice can be distinguished:

(a) Loans to the sub-borrowers denominated in foreign exchange. This applies to the majority of DFC loans and credits.

(b) Explicit indexation of the principal of the sub-loans, linking them to the prices of specific commodities, to some price indices, to the exchange rate or a combination of these. This applies to ten of the active agricultural projects in the Latin America and the Caribbean Region. (Details are given in the appendix.)

22. In the case of on-lending through the DFCs which reached a volume of 2.8 billion dollars in 1955-1975, in 15 of the 50 countries exchange risks were assumed by the sub-borrowers. In the rest, the risk was assumed by the government (13 countries), by the central bank (4 countries) or shared between these parties. This contrasts with on-lending in agriculture where except for the ten projects in Latin America which included explicit indexation formulas, the exchange risks have always been assumed by the government or public agencies.

In terms of the volume of commitments, the indexed loans amount to $217 million as compared to the total WBG agricultural credit operations of $1.422 million from 1969 to 1973.

23. Although the assumption of the exchange risk by the sub-borrowers from the DFCs is a form of indexation, the major concerns which led to the evolution of this practice were not so much to make allowance for the effect of inflation on financial contracts; rather, the principle of keeping the financial intermediary immune from the risks of exchange rate allignments was the dominant factor. This meant that the exchange risk had to be born either by the sub-borrower or by the government (or central bank). With lending rates of DFCs being pegged in many countries. the sub-borrowers were usually in a position to cover such risks. Furthermore, as a practical matter, governments have frequently been prepared to accept the transfer of the foreign exchange risk to the ultimate borrower, even when they were reluctant to accept reasonable approximations to market rates of interest on term loans payable in local currencies.

24. Ten agricultural loans made by the Bank include indexation clauses on on-lending to the sub-borrowers. All of these loans are for livestock and all are in the Latin America and the Caribbean Region. Indexing in these operations have been of an experimental nature. An explicit policy with respect to the circumstances under which indexation will be applied and the types of indexation to adopt has not yet evolved. The pragmatic approach adopted in the case of the agricultural loans has been to press for indexation if at the time of the appraisal or negotiation the annual rate of inflation was set at 8 percent or above. Two loans have been indexed through a "trigger mechanism", which requires that loans be indexed if and when a specified inflation rate is reached. In all cases, indexing applied to the principal

with the interest payments calculated at adjusted values of the principal. The price indices used were various combinations of beef and wool prices, cost of living indices and the exchange rate. (See Appendix).

25. Whereas the assumption of the devaluation risk by the sub-borrowers from the DFCs was conceived originally as making economic and administrative sense in the environment of low interest policies for term lending, the introduction of indexation to Bank loans in agriculture has been prompted from the start by an overall policy objective to assure that all sub-loans of Bank/IDA funds carry a meaningful interest rate in an inflationary environment. This is probably why indices other than the foreign exchange have been experimented with in these agricultural loans.

26. The difference in the main rationale behind the exchange risk provisions in on-lending by DFCs and the indexed agricultural loans is also reflected in the fact that whereas only the foreign exchange component of DFC loans were linked to exchange rates, in the case of the agricultural projects the objective was to index the total project lending -- including own resources of the financial institutions -- although this was not always accomplished.

27. The attempt to extend indexation to the total project funds rather than just to the portion provided by the WBG arises from another Bank concern, namely to reduce the erosion through inflation of the loanable funds turned over by the financial intermediaries -- the so called "decapitalization problem". If private lending agencies (or autonomous public banking institutions) are to be preserved and induced to expand, then they need to be sheltered from the worst effects of inflation and here is where indexing becomes important. By adjusting the principal of a loan for instance, with reference to a price index the lending agency can ensure that it will receive some positive real

return and this will enhance its viability in times of rapidly rising prices, i.e. it will remain solvent, creditworthy and capable of growth and be in a position to mobilize resources from sources other than the Bank.

Issues for Bank Policy

28. High rate vs. indexation: In principle, the realization of a positive real interest and the preservation of the real value of the loanable fund by the financial institutions can be achieved through appropriate adjustments in the nominal interest rate alone. In practice, however, the higher the inflation rate, the more difficult it becomes to use the interest rate alone to compensate for the erosion caused by the inflation. Particularly, for longer-term loans, high interest rates would impose an undue risk on the borrowers -- the risk of commitment to very high real rates if the actual inflation turns out to be slower than expected. This would result in the disappearance of any long-term market in financial obligations. However, from a bureaucratic point of view, it is unclear whether governments prefer indexation to a steep rise in the nominal interest rate structure.

29. It appears that indexation has advantages over a high interest policy in correcting the distortions caused by high rates of inflations particularly in the markets for long-term funds. But to the extent the inflationary trend is moderate and the financial market in question is one dealing with shorter maturities, the ease of managing high interest policies may outweigh the advantages of index linking.

Scope for Partial Indexation

30. The feasibility of either indexing Bank/IDA sub-loans or establishing high enough nominal rates so that real positive interest rates will obtain is constrained by the interest rate policies prevalent in the economy. When lending or on-lending operations are conceived in a narrow project context -- that is, financing a package program the totality of which is deemed desirable

-- than a wide range of real interest rate -- indexation combinations are conceivable. However, both the success and the rationale of this approach are predicated upon the segregation of the segment of the economy from the general financial system. The program can work if the terms offered to the sub-borrowers are better than what they can get elsewhere; and the financial intermediaries become mere conduits either for World Bank or government funds for financing a target group of sub-borrowers. This is not only difficult to achieve, but also contrary to the avowed policies of the Bank.

31. Since the Bank operations aim at making a contribution to the development of the financial system as well as accomplishing the particular project objectives, then indexation of loans to such borrowers needs to be considered in the wider context of the financial flows and the interest regimes prevalent in the economy. When indexation is already applied for the type of loans that the Bank intends to finance, then obviously the strategy should be either to adopt the existing system or to attempt only marginal improvements. Where loans similar to those that the Bank will finance are not indexed, but the nominal interest charged is high enough to yield positive real rates, then the options would be between adopting the current system or attempting to introduce a system of lower nominal interest rates coupled with indexation. Depending on the administrative exigencies, an experiment with indexation merits serious considerations.

32. A more realistic case presents itself when a gap in the existing credit allocation is identified in an environment of interest controls which amount to negative real interest rates. If the gap is genuine enough -- that is, an excess demand for credit by an economic activity is not satisfied in the existing system of credit flows -- then the indexation of loans would be desirable provided (a) the expected returns on investments could cover positive

interest rates, (b) there were no overriding reasons for subsidizing the target group, and (c) the economic activity was deprived of credit because of inflation cum low interest rates. This would usually correspond to the area of long-term lending for capital accumulation since this is the category that is most seriously affected by inflation.

33. Under these conditions, partial indexation could have positive consequences on resource mobilization and allocation. On the plausible assumption that the savings propensity of the financial intermediary is higher than that of the sub-borrowers, savings would increase. To the extent indexation would resuscitate price-rationing mechanism reducing the need for rationing according to the non-price attributes of the customers, it would contribute to better allocation and reduce the handicaps of the unpriviledged units. Indexation of Bank sub-loans would also relieve the intermediary or the government from bearing the full burden of exchange adjustments.

34. The index to be used: Not only have most sub-loans through the DFCs been linked to the foreign exchange rate, but foreign exchange rate has also been used as an index for adjusting the principals in a few agricultural loans as well. Linking the adjustments of nominal obligations with the exchange rate has the distinct advantage of providing a firm numerical basis for the adjustment. However, the link between domestic inflation and exchange rate may be weak due to various reasons such as capital movements and the lack of congruence between the prices of traded goods and the price level in general. On the other hand, exchange rate would be affected by changes in the purchasing power of other currencies as well as by changes in purchasing power of the domestic currency. With these qualifications, in countries with high rates of inflation where the exchange rate is adjusted quite frequently (crawling or floating), the exchange rate can be a good proxy for price inflation as well

as providing a direct link to the repayment obligations to the World Bank. However, when exchange rate adjustments are infrequent in an economy experiencing high rates of inflation, the timing of the large adjustments introduces uncertainty into investment decisions. As prices rise in a country, given the fixed exchange rates, the overvaluation of the country's currency gets larger while the probability of devaluation increases. The reaction of the borrowers to these two undertainties -- the timing of the devaluation and the trend of inflation -- will affect the timing of their investments. Given the expectations of borrowers concerning the trend of future inflation and the date of the next devaluation, the timing of their investments will depend on the repayment profile of the loans -- particularly if foreign exchange can be acquired at official rates elsewhere. On the other hand, sudden large adjustments create a cash squeeze -- a sudden increase in the liabilities of the business by as much as 200-300%. For these reasons, value linking the liabilities of the sub-borrowers to the domestic price level seem to have advantages over a linking to the exchange rate.

35. The advantages of linking credit transactions to the particular prices or price index components -- such as prices of agricultural output, mineral prices, export prices, etc. -- are not evident. In general, a sound credit policy should not aim at extracting the total producer surplus from each type of borrower; nor should the financial intermediary assume the risk arising from the changes in relative prices. Any subsidy element can be taken into account while determining the level of the real interest rate. Of course, when lending or on-lending operations are conceived in a narrow project context -- that is, financing a package program the totality of which is deemed desirable -- then a wide range of real interest rate-indexation combinations are conceivable. Value linking to the prices of the outputs of

the borrowers could also be necessary in situations where price controls would introduce regidities into the trends of individual prices.

36. Under normal circumstances, a general price index with wide coverage would be the most appropriate basis for linking the principals of the financial contracts. There are serious reservations, however, relating to the technically defective nature of the indices, and due to the fears that these indices can be tempered with for political reasons. Where there are several general indices, the choice between them also presents issues. If the principle that indexing should be based on the general price index is accepted, however, the question of how much a certain index qualifies for this role becomes an empirical question which needs to be studied in the country context. In most circumstances, it may be useful to smooth the curve of price changes as reflected by price indices so that the year to year fluctuations are eliminated in favor of a more long term trend.

INDEXED CURRENT BANK GROUP AGRICULTURAL LOANS AND CREDITS

IN LATIN AMERICA AND THE CARIBBEAN

1. Brazil Livestock (516-BR) signed September 23, 1967: Originally sub-loans were to be subject to monetary correction based on the index of cattle prices or cattle/wool prices as published by the Getulio Vargas Foundation (subject to a deduction of ten points from the price index for each year of the grace period) or the inflation rate during the year, whichever was lower. An interest rate of 14% would be applied on the nominal balance outstanding. These conditions appeared too onerous to potential sub-borrowers and, in May 1970, agreement was reached whereby sub-borrowers would be offered the following alternatives: (a) under the original indexing mechanism, a decrease in the nominal interest rate from 14% to 12%; or (b) an interest rate of 6% on the principal fully indexed by either the cattle or cattle/wool price index or the index of the Central Bank official selling cruzeiro/dollar exchange rate. Indexing would be applied throughout the life of the sub-loan including the grace period.

2. Brazil Interim Second Livestock (868-BR) signed December 19, 1972: Monetary correction of principal throughout the life of the loan in proportion to the changes in the US dollar rate for cruzeiros of the Central Bank with interest on the adjusted principal at 7-1/4% per annum.

3. Brazil Grain Storage (857-BR) signed September 27, 1972: Principal adjusted throughout the life of the loan in accordance with variations in the US dollar selling rate for cruzeiros of the Central Bank. Interest charged on corrected principal at 7-1/2% per annum.

4. Brazil Agro-Industries (924-BR) signed August 1, 1973: Sub-loans carry an interest rate of 5% plus adjustment based on the National-Treasury-Bond (ORTN) price.

5. Bolivia Livestock (261-BO) signed June 25, 1971: Trigger mechanism to operate when, at the time a sub-loan interest or principal payment becomes due, the average index of food prices established by the Bolivian National Institute of Statistics and the average index of meat prices established by the Bolivian Ministry of Industry and Commerce have each increased by more than 3% compared with such average indices for the corresponding six months period of the preceding year (N.B. - the meat price index applying to beef producers is that relating to beef and the index applying to sheep producers is that relating to mutton.) When both indices have increased by more than 3% then the outstanding loan principal is to be increased by the amount of the lower of the percentage increases of the two

indices less 3%. Interest is to be applied to the corrected principal at 9% per annum except that sub-borrowers of loans made prior to November 1, 1972 shall be permitted to opt to pay interest at 12% per annum on loan balance without monetary correction.

6. Argentina Balcarce Livestock (505-AR) signed July 31, 1967: Sub-loan balances adjusted on the basis of increases in the cost-of-living index or the index of cattle prices, whichever is the lower, with interest charged at 6% per annum on adjusted balance. Indices used: (a) index of the cost-of-living in the federal capital provided by the National Institute of Census and Statistics; and (b) prices of cattle in the Market of Liniers.

7. Uruguay Fourth Livestock (816-UR) signed April 26, 1972: Sub-loan balances subject to monetary correction not later than April 30 in each year based on the average increase in the beef and wool ranch-gate price index for the 12-month period ended on October 31 in the preceding year furnished by Banco Central subject to the adjustment not exceeding that which would have resulted had the monetary correction been based on the increase in the cost-of-living index of the Ministerio de Economic y Finanzas for the corresponding period. Loans made to farmers with holdings of less than 400 hectares are adjusted by only 50% of the increase in the applicable index. Interest is charged at 11% per annum on the adjusted principal.

8. Uruguay Fourth Livestock (Second Stage) not yet signed: Sub-loan balances subject to monetary correction in the same way as First Stage sub-loans except that all sub-loans are subject to full indexing. Interest rates applicable to corrected loan principals are as follows: (a) 3% per annum in the case of sub-borrowers operating holdings covering in the aggregate up to 250 hectares; (b) 6% per annum for sub-borrowers operating holdings in excess of 250 hectares but not exceeding 400 hectares and (c) 8% per annum for sub-borrowers operating holdings exceeding 400 hectares.

9. Peru Agricultural Credit Project (933-PE) signed September 12, 1973: Sub-loans are not indexed until inflation surpassed 9% for any fiscal year of Peru. Then, upon notification thereof by the Bank, no further sub-loans shall be made until the Bank and BFA have agreed on an increase of the minimum effective interest rate to be charged.

10. Uruguay Fifth Livestock Project Loan No. 940-UR: All sub-loans are subject to full indexing and the interest rates charged are the same as in the Fourth Livestock Loan (second stage). The sub-loans are adjusted on April 30 of each year by applying an index constructed by adding to the value of the index at the end of the previous year the lower of the percentage increase in (a) the average cost of living index for the 12 months ending on October 31 of the immediately preceding year compared with the average for the previous 12 months, (b) the average price of 41.6 kg of live weight of beef and 5.2 kg of wool during the 12 months ending on October 31 of the immediately preceding year as compared to the previous 12 months.