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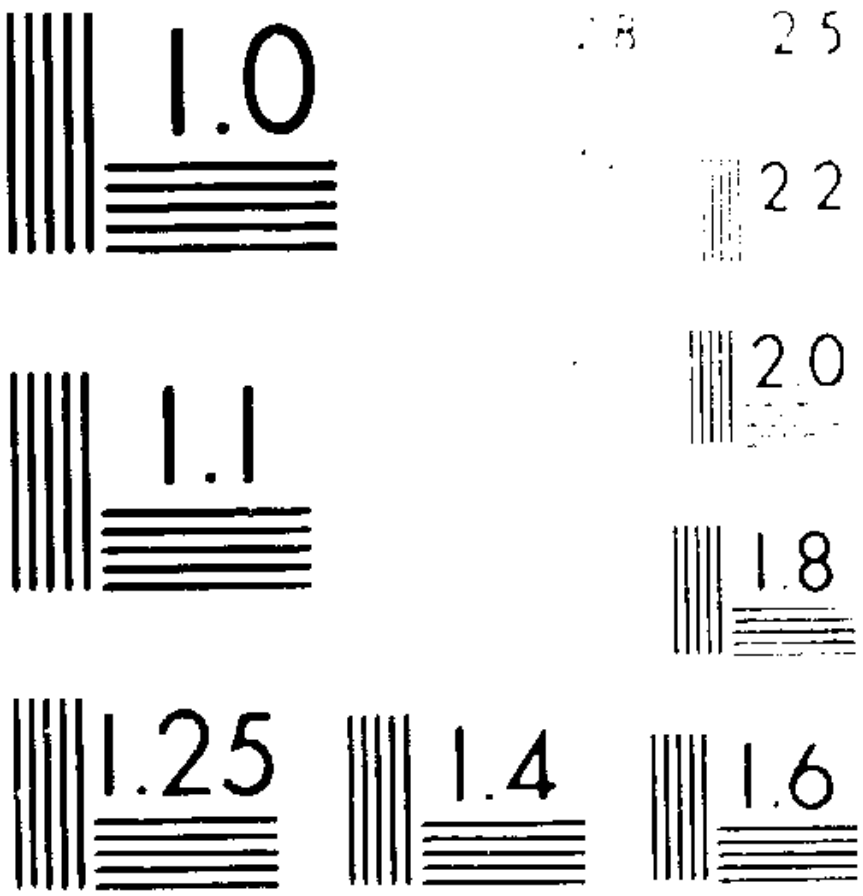
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IMPACTS OF TERMS, INTEREST AND EXCHANGE RATE FLUCTUATIONS OF DEBT AND EQUITY FINANCING ON INDUSTRIAL INVESTMENTS*

by

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** UNIDO Consultant

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Summary and Conclusions

(i) Substantial variations in foreign exchange rates and interest rates on foreign loans have become common for the DC's in the 1970's. Nevertheless, little or no consideration to these risks has been given in the financing plan and the financial structure of the investments, financed with major shares of foreign loans. Normally these risks are directly or indirectly absorbed by the respective DC Government, since most foreign borrowings are for general purpose or infrastructure projects. However, in case of industrial investment projects, the project entity is normally legally and financially independent from the Government, with the intention of full financial responsibility and independence. Therefore, any interest or exchange rate fluctuation directly affects the financial performance and viability of the industrial investment.

(ii) As a consequence of the interest rate increases and devaluation losses in recent years, many ex-ante financially viable industrial investments in DC's have suffered financial difficulties. For projects under implementation, these losses have led to substantial overruns which normally have to be financed with local funds or foreign commercial bank loans. For projects in operations, anticipated cash flows have not been sufficient to cover adequately the scheduled debt service

payments. The problems have been aggravated by ex-ante (i) generally unsuitable financing terms of foreign loans for investment financing in DC's, (ii) tight financial arrangements for individual projects and (iii) high inflation rates for equipment in industrial countries.

(iii) In many DC's, Governments have undertaken intermediation of unsuitable foreign loan terms into suitable local long-term loans and an adequate share of equity funds for the industrial entity. This has helped to establish and maintain the financial viability of industrial entities. Although this solves the problem of individual project entities on one side, it increases the burden of intermediation for the DC Government on the other side, resulting in potential debt service problems in future years. The financing terms of foreign loans from ODA or international development banks are normally quite suitable for financing industrial investment projects. However, these funds are normally (a) limited, (b) do not provide for overrun financing, (c) cannot be transformed into equity and (d) have to be mixed with shorter term commercial bank funds. Furthermore, commercial bank funds have become the predominant foreign exchange financing source for many DC's. This fragile financing pattern, in many industrial projects tight or insufficient, has been substantially endangered through the additional burden of devaluation losses and interest rate increases in recent

years.

(iv) The capability of an industrial entity, to meet its debt service, is also substantially influenced through its operational cash flow. The main variables for the operational cash flow are product prices, operating costs and productivity. Increasing debt service requirements from devaluation losses and interest rate increases are most commonly being met through increased product prices, provided that market circumstances and Government economic policy are permitting such price increases.

(v) This can result in domestic increases, which are purely the result of interest and exchange rate changes on foreign loans. In case of domestically oriented industrial projects, it appears questionable, whether such exchange rate and interest rate risks should be recovered through increased product prices of the respective entity, since the financial structure of a specific industrial entity should not be directly related to its product prices. It should be evaluated, if such risks should not be intermediated on a country basis.

(vi) Foreign exchange risks for project entities in DC's are twofold: The first one is vs. the US $ as the major international foreign currency (or any other reference currency of the respective DC) and the second is vs. currencies which revalue against the US $. Whereas the first one is practically unavoidable, the second one is

in some cases a matter of choice. From 1972 to 1980, the Swiss Franc has revaluated 130 % vs. the US $, the DM to the US $ 80 % and the Yen to the US $ about 50 %. At present, there exists no reasonable mechanism to hedge against foreign exchange risks, except among the major international currencies, usually for terms up to 1 or 2 years. In view of the increasing uncertainties over longer periods, as well as the restrictions of local currencies of the DC's vs. the major international currencies, it is not conceivable that such foreign exchange risks on long-term foreign loans could be covered at reasonable costs.

(vii) Interest rate increases have been predominant mostly for roll-over credits from commercial banks, whereas long-term loans from ODA or international development banks have been granted on a fixed interest basis. However, interest costs have always to be considered in combination with exchange losses, in order to arrive at total borrowing costs. Therefore, optically low interest rates do not necessarily result in lower borrowing costs.

(viii) Devaluation losses and interest rate increases on the sensitivities of the debt service capabilities of the industrial entities, clearly indicate the magnitude of the problem. An interest rate increase of 3 %, combined with a devaluation loss of 20 % (which is much less

than the actual rates in recent years) bring an ex-ante viable project entity into financial difficulties. In order to maintain the same debt service coverage ratio, such losses would require approximately an 8 % increase in product prices.

(ix) Additional funding requirements for completing a project or to meet debt service requirements are usually the result of a combination of factors:

(a) unsatisfactory compliance with ex-ante requirements;

(b) unusual and unexpected increase in debt service requirements;

(c) operational cash flow.

Considering the different factors and parties involved in unsatisfactory debt and financial situations, the solution of the problem normally requires a joint effort of shareholders, project entity, foreign lenders and Government. So far, the burden of additional financing has been principally on the shareholders and the DC Government. Improved suitability of foreign loans as well as additional financing participation of foreign lenders, in case of devaluation losses or interest rate increases should be considered already in the original financing plan.

Increased intermediation of DC's (as it is usually required up to now) is only a short-term solution, since on an overall and long-term basis the repayment of funds needs to be in line with the benefits from the financed investment.

I. Introduction

1. Within the financing terms to Developing Countries (DC's), interest and exchange rate fluctuations have not been adequately considered. This was understandable, when considering the relatively small interest and foreign exchange rate fluctuations in the 1950's and 1960's, at the time when the basic structure for lending to DC's was established. Although, in this period, there have also been major interest and exchange rate fluctuations in some DC's vs. foreign currencies, such fluctuations have not been common in the major international markets.

2. With increasing differences in the development of the various national economies, particularly in inflation rates, increasing differences in interest and exchange rates have become a necessary consequence of such developments. Thus, widespread interest and exchange rate fluctuations have become an integral part of the international financial and commercial system and activities. With a tendency of increasing imbalances among the various economies, such fluctuations are likely to become even larger in the future. Although such fluctuations have affected financing plans and debt service payments considerably, no special provisions for such large fluctuations are existing or have normally been considered. This may be tolerable for project financing, administered by the respective DC government on a budgetary basis, as it is usually directly or

indirectly the case for infrastructure projects. In these cases, interest or exchange rate fluctuations are being absorbed by the Government, since the project entity is financially not independent and revenues and costs of the project entity should not be immediately and directly affected by such fluctuations.

3. However, in case of industrial investments, the project entity is normally legally and financially independent from the Government. Therefore, any interest or exchange rate fluctuation directly affects the financial performance and viability of the industrial investment. Such fluctuations are equally affecting profits and debt service obligations, as f. e. productivity, capacity utilization, product prices or loan maturities. The magnitude of the problem of these fluctuations, for the financial performance of the industrial entity, can become as crucial as the other most important aspects for the viability of an industrial project.

II. Sources and Terms of Financing for Industrial Investments

4. Industrial investments are usually financed with a mixture of loan and equity funds. Although the latter ones do not constitute any firm debt service obligation for the project entity, the shareholder expects a certain return on his investment (although normally somewhat lower in case of Government ownership of industrial entity).

An increased share of equity funds does not only (1) reduce debt service obligations and impacts of interest and exchange rate fluctuations, but also (2) improves the buffer possibilities to absorb such fluctuations within the project entity.

5. Within the loan portion of the financing plan (which is normally predominant), currency, interest rate, repayment schedule and grace period are the determining features for the debt service obligations and the impacts from fluctuations. Within the loan financing possibilities of industrial investments, there exists a wide range of terms, mostly depending on the source of funds.

1. Loan Financing

6. Loan financing for DC's is limited. Although some DC's have relatively little limitations on non-concessional funds, all DC's have serious limitations on concessional loans. This implies that keen competition exists among the different projects and sectors for the available concessional loans. In view of the higher revenue potential of industrial investments vs. some other sectors, industrial investments have often low priority among competing projects for concessional funds. Also, industrial investments are normally more preferable vehicles in attracting additional loans at commercial terms than infrastructure and general development projects. These features, in general, deprive industrial investments from the more generous and limited parts of loan financing.

7. Concessional funds normally give concessions as compared to market conditions in the following areas: (i) interest rate

(ii) grace period

(iii) final maturity and repayment

(iv) amount of loan (creditworthiness)

(v) technical assistance (development banks)

The predominant sources of concessional funds normally offer a combination of the above features, taking into account the individual DC's conditions. In official terms, normally only ODA funds are considered concessional funds, whereas f. e. export credits have been classified as non-concessional.

8. The net external financial receipts of the DC's have developped as follows from 1973 to 1978 (in billion US $):*

	1973	1974	1975	1976	1977	1978
1. ODA	11.6	15.2	19.5	18.8	19.8	21.6
2. Non-Concessional Flows	19.2	17.7	33.1	36.3	41.6	55.8
3. Total	30.8	32.9	52.6	55.1	61.4	77.4

* Source OECD

a) ODA

9. Given the normally generous terms of these funds for DC's, a mixture of political and economic considerations determines the availability of such funds from individual lending countries to individual DC's. Within the individual country limits and lending terms, allocation of funds for specific purposes depends on available projects and priorities of lender and borrower. Total volume of ODA-

funds has been relatively declining in recent years. Therefore, ODA-funds can not be considered as a major additional funding source for industrial investments, particularly since industrial investments are normally considered strong enough to borrow at commercial terms. A consideration of the lenders might also be that industrial investments in DC's should not improve competitive situation as compared to industrial countries, due to concessional financing. Normally, ODA terms (interest rate, repayment) are more than suitable for financing industrial investments. ODA-funds are also a convenient instrument for mixing different loan sources at acceptable overall terms. In case of ODA-funds for industrial investments, grant elements of such funds are often absorbed by the respective DC government through maturity intermediation and on-lending interest charges, thereby levelling loan conditions for the project entity to the normally available market terms. Lending by industrial country is normally in its own currency, at low fixed interest rates and final maturities exceeding 15 years. The benefits from the DC government intermediation are normally used to support the balance of payment situation.

b) Multilateral Development Banks

10. Development banks offer ample opportunity for financing industrial investments, provided that the projects quality standards of these institutions can be satisfied. However, in view of ample other financing possibilities for industrial investments with less strings attached, financing arrangements

with less favourable terms are frequently accepted (financing tied to procurement, high capital costs, unsuitable repayment terms). Development banks offer the advantage of in-built technical assistance (which can also be costly if it is time consuming), combined with suitable loan terms. Loan terms offer grace periods and maturities, which are adjusted to forecasted project needs (including consideration of other funding sources). Normally, maturities are considerably longer than from commercial sources. The advantage in interest rates is not so much (slightly lower than market interest rates), but the possibility of fixed interest rates at project related maturities. DC's normally have only limited possibilities of obtaining long-term market funds at fixed interest rates. Development banks with large funding sources and ample access to capital markets at prime conditions provide for the necessary intermediation. Lending of development banks usually is in the currencies, they borrow themselves. Since usually capital surplus currencies are being obtained by the development banks and lent to DC's, this implies a high foreign exchange risks with optically low interest rates. However, these above average foreign exchange risks are not considered in the financial analysis of the project, which is used as basis for fixing the repayment terms of the loans.

11. The financial receipts of the DC's, including multilateral development banks, has developped as followed (in billion US $):*

	1973	1974	1975	1976	1977	1978	Average current terms Matur. Years	Grace Years	Inter. %
Multilateral Development Lending Institutions	1.3	1.8	2.6	2.7	2.9	3.4	18	5	8.2
Direct Investment	4.7	1.1	10.5	7.8	8.8	11.4	-	-	-
Commercial Banks	9.7	10.0	12.0	15.0	15.5	22.2	10		15.0**
Officially Guaranteed Private Export Credits	1.2	2.5	4.1	5.4	8.1	9.7	7	1	8.0
Official Export Credits	1.1	0.7	1.4	1.8	2.3	3.5	11	1	7.0
Other	1.2	1.6	2.5	3.6	4.0	5.6	-	-	-
Total	19.2	17.7	33.1	36.3	41.6	55.8			

* OECD

** Temporarely at this extreme level in 1979/1980.

Maturities, grace periods and interest rates of multilateral development bank financing compare favourably with other non-concessional funds, although on a volume basis, funds have relatively limited importance.

c) Export Financing

12. Support for export financing is either provided through government guarantees or directly through government owned export financing institutions. Export financing has become the third largest source of financing, after ODA and commercial banks' funds. Given the nature of export financing, financing is tied to the exports of capital goods. Since industrial projects involve large amounts of capital goods exports, it is estimated that the most important use of export credits is for industrial projects. Lending terms of export credits have been somewhat standard-

ized (Berne Union), with maximum interest rates and maturities, in order not to distort competition through financing terms. However, in view of the different currencies involved, such standardization has almost become meaningless.

13. Terms of export credits with 7 to 10 years maturity and one year grace period are not sufficient for industrial investments in DC's. In view of the mutual benefits for lending and borrowing country, an expansion of export financing at improved terms should be acceptable for the industrial countries. Also, procurement ties and penalties should be minimized. This would considerably improve the financing possibilities of industrial investments. Export financing is normally extended in the currency of the equipment exporting country.

d) Local Funds

14. Local funds in the form of loan financing are normally only available from the local development banks. Direct access of industrial project entities to the few existing local capital markets in DC's has only little importance, in view of the limited availability of funds. Local development banks usually obtain funds from the government, from local capital markets (often with the help of government guarantees and tax exemptions) as well as foreign funds. Except for few higher income DC's, local development banks can normally only make a meaningful financing contribution to small and medium sized industrial investments. The necessary intermediation of terms of local funds is normally

undertaken by the local development bank, in order to extend suitable financing terms for the project entity. Except for on-lending of foreign loans, local development banks usually extend loans in local currencies and at fixed terms which are often below local inflation rates. The overall importance of local funds for long-term financing of industrial investments is limited, in view of the loan amounts required.

e) Commercial Banks

15. On a total basis, commercial bank financing has become the most important source of financing for DC's in recent years (30 % in 1978). However, Brazil, Mexico and the four OECD developing countries account for almost 75 % of the total commercial bank debt of non-OPEC DC's. Lenders are mostly the large international banks of the industrialized countries. Lending currencies are mainly US $ with a share of about 75 %, DM and Swiss Francs. Since 1974, lending from commercial banks has become the only source with substantial additional funds available, provided that the DC was judged creditworthy by the commercial banks. In view of the investment policy of the OPEC surplus coutries, to invest predominantly in the Euromarket in short term funds, commercial bank lending should remain an important source of financing for the DC's. To what extent the willingness or ability of the commercial banks for this intermediation needs additionall official support, remains to be seen.

16. The purpose of commercial bank borrowing has

ranged from general balance of payment support to specific projects. However, with increasing constraints by the commercial banks, project related financing should become predominant. This could also be increasingly combined with export financing or lending from international development banks (cofinancing). Maturities for commercial bank financing have reached 10 years and more, with grace periods of few years. In general, maturities have been around 7 to 10 years. The relative short maturities are understandable from a banking point of view, since funding is based on short-term deposits. Interest rates for commercial bank lending are mostly variable, depending on the short-term interest rates of the Euromarket deposits of the respective currencies. Additional to the deposit rate, banks charge a spread, covering credit risk, handling charges and return on capital.

17. Based on the nature of commercial bank lending with variable interest rates and relative short maturities, the suitability of commercial bank financing for industrial projects is limited; although on a volume basis, it would be an attractive source for industrial investment financing for lenders and borrowers. Additional official support for intermediation should be introduced, in order to make commercial bank funds more suitable for industrial investment financing in DC's. So far, the debt service burden and exposure for this type of borrowing has been excessive, resulting from the combination of exchange rate changes and high interest rates.

2. Equity Financing

18. In the case of equity financing, no debt service obligations exist. Any foreign exchange risks on investment and debt service obligations have to be absorbed by the shareholders. Therefore, from a project point of view, the higher the equity share is, the lower is the potential exposure to debt service and debt service changes. On the other hand, equity financing is primarily affected by debt service changes, which change cash flow and profits available for the entity and shareholders. Therefore, in the first instance, impacts of terms, interest and exchange rate fluctuations will be absorbed by the equity of the project entity. Only if the equity and cash flow situation is not adequate to provide the necessary debt service payments, the project entity needs outside support.

19. Sources of foreign equity financing have been considerable, with a share of about 20 % of total financial receipts of DC's. However, the importance vs. loan financing has been limited. The predominant sources of equity financing in DC's have been local, with a large share of DC government involvement in large industrial investments.

III. Borrowing Structure for Industrial Investments

1. Principal Features

20. Industrial investments are almost exclusively undertaken through individual project entities,

which have to be financially independent. This implies that the full responsibility for the debt service burden and changes is with the project entity. In case of general purpose lending or infrastructure projects, such responsibility has to be seen usually on a much more general or country basis. Therefore, in these cases, the debt service burden becomes a matter of budget priorities and general policies and normally does not have direct impacts on the investments, financed with specific loans. Also, the benefits of the investments undertaken (f. e. infrastructure) have usually no relationship with the changes in exchange rates or interest rates. However, in case of industrial investments, a much closer relationship between foreign and local goods and services exists. Most products of industrial investments are tradable and represent either import substitution or are being exported. Therefore, changes in exchange rates or interest rates have at least a medium or longer term impact on the production costs and prices of industrial goods in all economies, which are not completely closed.

21. This explains and justifies the strict accountability and financial self-reliance of industrial project entities, as compared to general purpose or infrastructure projects, where debt service payments are not necessarily directly undertaken with the proceeds of the products or services of the financed investments. In case of industrial investments, any change in debt service payments has to be absorbed by the project entity

itself. Therefore, impacts of ex-ante and ex-post financing requirements must be coordinated with other company measures and policies.

2. Project Entities

22. Access to foreign loans and impacts of changes in debt service payments depend on the ownership, access to government guarantees and the background of the project entity. Large new investments, undertaken by new project entities will have more difficulties and exposure, since risks in implementation and operations cannot be secured with an existing proven project entity and operations. Commercial banks are normally prepared to finance higher loan amounts at less restrictive terms, if such an investment is undertaken by a viable, existing company. An existing company normally is also in a better position to absorb fluctuations in debt service payments in subsequent years.

23. The ownership structure also affects the borrowing and debt service potential of an industrial entity. Large industrial investments in DC's normally require government or foreign participation. Due to the government policies and the large investment amounts required, the role of the private investors in large industrial investments in DC's has become quite limited. Government participation as shareholder usually opens the possibility of government guarantees for the foreign loans. On the other hand, increasing government participation in industrial investments decreases the independence of the respective industrial project entities,

in establishing and maintaining a separate financial identity.

3. Procurement and Foreign Financing

24. Most of the foreign loans are, in one way or another, tied to procurement, except the general purpose loans of the commercial banks and funds from the international development banks. This leads often to higher investment costs for the DC's; in view of the scarcity of foreign loans, competition becomes limited. This is particularly true in view of the present handling of most foreign export financing loans, which are decided on a deal by deal basis for larger investments, closely tied to the suppliers. DC's should have ampler possibilities of procurement and competition. Foreign loans, especially export financing, should become available on a much more automatic basis, if basic requirements of accountability and viability of investment are being met. Financing from industrial countries should be (within mutually agreed standards and country limits) automatically available for all equipment imports, once the DC has decided to procure in a specific country. This would untie procurement from financing, on the basis of individual contracts. However, on an overall basis, the individual industrial countries would still obtain procurement for the amounts they are prepared to finance. At the same time, an improvement of export financing terms could be introduced, in order to suit the investment requirements. The results would be

lower investment costs for the DC's and more suitable financing terms, at relatively low costs for the industrialized countries.

4. Borrowing Intermediation

25. Foreign loans can be borrowed (i) directly by project entity without government guaranty, (ii) directly by project entity with government guaranty or (iii) through the intermediation of the government or government institution (development bank, central bank). Only established project entities in the upper income DC's have normally the possibility of obtaining foreign loans without government guaranty. Additional guarantees are required to improve the creditworthiness, in order (i) to obtain the loan at all or to increase the loan amount and (ii) to improve the borrowing terms (interest rate, spread, maturity, grace period). Although most lenders prefer to have also involvement of the project entity in the borrowing transaction, there are also direct government borrowings with onlending to industrial project entities (mostly ODA).

26. Normally, all foreign lending activities are coordinated in DC's by the central bank or a similar institution, which also undertakes the conversion of any loan proceeds (made available to borrower) and the debt service payments. In case of government guaranty, the government usually charges a guaranty fee to the project entity in local currency (unless the entity is govern-

ment controlled). For all foreign exchange risks and interest rate changes, the project entity would be directly responsible; reflected in the debt service payments with corresponding changes in the local currency amounts to be paid to the central bank.

27. Additional intermediation is possible in case of onlending through the government. Depending on the government policy, in order to bring actual and expected foreign loan costs in line with local prices and conditions, intermediation could be undertaken in the following areas:

(i) amount of onlending charge for guaranty or as adjustment of interest rate to take account of competitive situation with other local and foreign entities·

(ii) interest rate,
difference to original loan terms would be absorbed by government;

(iii) maturity and grace period, variation of original loan terms according to project entity needs with difference being absorbed by government (balance of payment);

(iv) foreign exchange risks,
the government could assume the foreign exchange risks.

Above intermediation measures must be seen in the overall context of domestic industrial policies and the balance of payment situation of the respective DC. These measures could also be used on a combined basis. Taking into account the variety of terms from the different funding sources, DC governments would

have intermediation gains from ODA funds, which could be used for intermediation of industrial projects, if the original loan terms are not suitable for the project.

IV. Funding Requirements and Variations

28. Funding requirements and variations are the result of all activities of a project entity, and debt service payments are only one important element which has to be taken into consideration. Impacts of terms, interest and exchange rate fluctuations of debt and equity financing form the debt burden of the project entity. Any sustained change in the debt service burden, as a result of exchange rate or interest rate changes, is usually the result of different economic developments (particularly inflation). This implies that, at least on a medium- or longer term basis, there will be also changes in the economic environment, especially in costs and prices, somehow corresponding to the exchange rate and interest changes. Although, these elements need to be discussed in view of the close relationship and the context to the debt service burden, this study will concentrade on the financial impacts of changes in the debt service burden.

29. When designing the financial structure of the investment, a structure of debt to equity ratio and debt terms should be obtained, which would ensure financial viability of the project entity

under normally expected circumstances. Additionally, financing provisions for unforeseen circumstances during the investment and operation phase should be included, in order to operate the entity without financial constraints. These ideal financial conditions can rarely be obtained in DC's, in view of the overall resource constraints. Therefore, financial provisions in DC's have to concentrate on overcoming essential and common problems. Unfavourable exchange rate changes and interest rate increases during the life of the loan as well as tight or unsatisfactory loan terms from the beginning, have become a serious concern for the financial survival of industrial project entities in DC's. This has not only resulted in debt service probelms but has also contributed to decreased and unattractive returns on investment.

1. Investment Cycle

30. When considering maturities and grace periods of loans (average of various loans), the normal investment cycle of a project in a DC should be considered. Industrial projects in DC's have a typical construction period of 3 to 4 years. The first two or three operating years are usually difficult from an operational point of view, until the project reaches a reasonable capacity utilization. Thereafter, an industrial project has an operating life of about 12 to 18 years. It is only during this period, when repayments should become due. Considering this pattern of the investment cycle, the average of the loans should have a grace

period of at least 5 years with a repayment period of 10 years, resulting in a final maturity of 15 years from the starting date of project implementation. Most loan terms do not meet these requirements, indicating that the project entity cannot or has difficulties to meet its normally expected debt service requirements, even without ex-post debt service increases in later years.

2. Debt/Equity Structure

31. An increased share of equity financing would decrease debt service payments and increase the buffer for unforeseen ex-post debt service increases. Therefore, it would absorb to some extent ex-ante unsatisfactory loan terms and subsequent increases in debt service payments. However, in many cases, equity financing has become even scarcer than foreign loan financing. In view of this and the unsatisfactory loan terms, an increased intermediation of foreign loans into equity should be discussed. Although several industrial countries have development institutions for equity investments, the importance has been relatively limited. This may have been partly caused by the general DC's reluctance of accepting foreign shareholders. In view of the equity needs for industrial investments, the DC's as well as the lending institutions should consider an increased intermediation of foreign loans into equity by the respective DC government, in order to make up for insufficient terms and foreign exchange and interest rate increases. In order not to overextend the in-

termediation of the DC countries, the industrial countries, through bilateral agencies or guarantees to other financial institutions, should be prepared to extend the loan maturities for that specific purpose, which could be in the form of special loans for equity intermediation. Also international development banks could facilitate equity financing through longer term loans to the DC Government, which in turn would undertake intermediation as required to the local industrial investment entity. Depending on the type of industrial project, a debt share of total financing of about 55 to 65%, has usually been found acceptable. However, if loan terms and profit prospects of the project are poor, a higher equity portion is usually required.

32. The return on equity is directly affected through exchange rate and interest rate changes. Any increase in borrowing costs reduces the profit of the project entity, which implies, that the fiscal authorities loose income tax and the investors income. To the extent, debt service increases can not be covered through an increased cash flow, such increases even reduce the shareholders' investment and outside help may be required. An increased share of equity financing might lower the return on equity, as long as the interest charges are below the return on the total investment, which traditionally should be the case (leverage effect).

3. Fiscal Implications

33. Exchange rate and interest rate increases are mostly the result of developments in industrial countries. However, if the project entity in the DC is fully exposed to foreign loans, it needs to adapt its local conditions accordingly, in order to make up for the increased costs. In many cases, project entities in DC's have been measured and

restricted in local terms on one side and have been with substantial foreign exposure on the other side. Part of this problem are local taxes on investment and operations. These taxes are justified, if the industrial entity is fully integrated into local market conditions, including financing. However, in case a project entity assumes full responsibility for foreign loans, such taxes should be seen as an integral part of the development of the exchange rate, local interest rates and adjustment possibilities of local costs and prices.

34. Interest payments on foreign loans are in many DC's subject to additional taxes. In such cases, lenders normally increase their gross interest rates accordingly, in order to have the desired net interest. This results in a transfer payment from the project entity to the government, which should be also seen in the context of overall requirements (para. 32). Some DC's have double taxation treaties with the major industrial countries, which allow the recovery of such taxes by the lender. The financial and economic justification and merits of such taxes on interest payments on foreign loans for the project entities as well as for the respective DC government should be evaluated in detail, particularly in view of the high effective interest rates of foreign loans in recent years.

4. Operational Cash Flow

35. The operational cash flow is influenced by the following principal elements: productivity,

operating costs and prices. Timely completion of an investment is not only important to keep down investment costs (interest costs and inflation); however, equally important is the timely start of production and attainment of capacity. Any production losses at the beginning of operations have a major and critical impact on the operational cash flow and debt service payments. Normally, the critical years for the debt service obligations are within the first five years of operations. Thereafter, on one side, repayments of debt decrease the interest burden and, on the other side, the operational build-up increases the cash flow, combined with an improved inflationary gap between the existing investment and increased product prices.

36. Even if the project entity is doing well in output and productivity, it does not necessarily imply that the cash flow generation is satisfactory; international and local developments of operating costs and product prices have equal importance. Industrial project entities in DC's often suffer from unfavourable price regulations. With industrial products having a major and visible impact on cost of living increases, many DC governments attempt to control industrial product prices at levels which are often inadequate, even for efficient project entities. On the other hand, labor costs usually increase overproportionately and eventual foreign inputs in materials are taxed heavily. In such situations, any increase in interest rate or exchange rate cannot be recovered through higher local prices, on a short term basis, and the project

entity needs a certain buffer to absorb the increased debt service charges. Longer term interest rate increases on foreign loans are usually the result of generally increasing inflation in the country of the currency. Exchange rate changes can either be the result of domestic policies and developments of the respective DC or of an exchange rate change among the currencies of the industrialized countries (see details in chapter 43.). The effects for the project entity will be the same, although the latter cause is not likely to have any significant near or long term effect on domestic costs and prices of the respective DC. In case of local exchange rate changes, only the extent and timing of related price adjustments is unknown. Usually, such exchange rate changes are part of an overall economic policy of the DC, affecting the industrial project entity in many ways, depending on policy directions. The financial impacts of inflation, exchange rate and interest rate changes will vary for each individual situation.

5. Investment Costs

36. During the implementation period, any increase in interest rate or exchange rate will result in higher investment costs, since all costs are considered investment costs. Financing for such unexpected increases in investment costs has either to be taken from contingency funds or additional financing needs to be arranged. In case of the financing contracted in the same currency as the

supplies (including the timing of payments), no financing problems exist until operations (assuming that interest during construction is financed as well), when increased debt service payments (expressed in local currency) become due. However, in case of different foreign or local currency financing, a financing gap can already exist during the investment phase. Based on the present mechanism of foreign loans, such financing risks have usually been borne by the project entity, implying that additional equity or loan financing has been provided for from the beginning or needs to be arranged in addition.

37. After completion of the investment, investment costs appear in the form of debt service payments and depreciation charges in the accounts of the project entity. Any increase in debt service obligations has to be borne by the operations. For debt service increases, resulting from adjustments within industrial countries (f. e. DM, SF and Yen vs. US $ in the 1970's), there have been arguments that normally also procurement originated from these countries at relatively favorable prices. These arguments may be justified in specific cases with heavy international competition, long delivery items and exchange rate changes soon after contract signing. Normally, the assets of the project entity do not have a special relation to increased debt service requirements and benefits of the project entity are only in the form of general medium- or long-term adjustments, related to increased interest rates and changes in exchange rates in the industrial countries and the respective DC.

38. Increased interest payments and devaluation losses are usually charged to the profit and loss statements. In some countries with high inflation rates, corresponding increases in the book value of the investment have to be made, thereby adjusting depreciation for future years. Thus, devaluation losses would be compensated with book gains from the revaluation of assets. Such accounting practise seems adequate in countries with high inflation, since the financed assets have in fact appreciated (expressed in local currency). Nevertheless, such appreciation needs to be financed. Theoretically, an increase of costs for new investments should lead to corresponding increasing of product prices, at least on a longer term basis. However, in practise, increased debt service payments normally have to be absorbed by the project entities immediately, without direct or immediate link to increased product prices.

V. Fluctuation of Interest and Exchange Rates

1. General

39. In case of the major international currencies, there is a close linkage between expectations on inflation, interest rates and foreign exchange rates. Interest rates of different convertible currencies are equalized through forward foreign exchange transactions. For example, borrowing costs for a twelve months DM or US $ loan would be made up as followed:

	DM	US $
Interest Rate % p. a.	8	15
Forward Contract Costs % p. a.	7	-
Total Borrowing Costs in % p. a.	15	15

If a US $ oriented company wants to borrow in DM, it would pay 7 % less in interest than for US $. However, it would have a foreign exchange risk. At the time of borrowing, the company would obtain DM, which it would change into US $ for payment of its US $ obligations. After the twelve months period, it would have to repay in DM. If the US $ vs. the DM has declined in the meantime, it would have a foreign exchange loss, which might be smaller or larger than the interest advantage it has obtained. Usually, industrial entities do not have substantial uncovered foreign exchange exposure, because of the risks involved. Therefore, any investment or commitment is financed by the currency of the country, in which the investment is located. If this is not feasible, the entities attempt to secure their foreign exchange exposure through forward transactions. Usually forward foreign exchange coverage is only available up to one year and only in the major international currencies. Also, longer-term coverage tends to be more expensive, in view of the higher uncertainties. In order to cover longer periods (as in case of long-term loans), forward coverage can only be undertaken through continued short-term forward contracts, at the respectively prevailing forward exchange rates, which vary according to market developments. Such transaction costs amount to the interest differential between the two currencies involved. In case of industrial investments in DC's, such forward transactions would be additional foreign exchange costs for several years and could only be undertaken among the currencies of

the major industrial countries. However, the major foreign exchange risks between foreign loans and local investments in DC's could not be secured or only at excessive costs. If an industrial entity in a DC is at the same time obtaining foreign exchange from its product sales, securing through forward foreign exchange transactions should be affordable and desirable.

40. The bulk of industrial investments in DC's needs a bridging of foreign exchange exposure from foreign loans to local investments and sales. Since the existing financial system cannot provide such coverage at reasonable costs, industrial entities in DC's have no choice but taking these risks. The increasing costs need to be covered through increased product prices, in order to meet increased debt service payments (on a short term basis, profit reductions can provide a buffer). Therefore, the project entity is confronted with a problem, which is not related to its operations. Whether and when the project entity can recover the increased costs (interest and devaluation losses), depends largely on the government's economic policy of exchange rate, domestic inflation (operating costs) and flexibility on product pricing. In order to avoid all these frictions, governments or government institutions could assume all foreign exchange risks and charge project entities domestic interest rates without exchange risks and at suitable maturities. The policy of many central banks, to maintain exchange rates at certain levels or to differentiate exchange rates according to the purpose of the foreign exchange transaction, is also frequently

encountered. However, central banks are normally not in a position to maintain such policies of supporting unrealistic exchange rates for extended periods. In any case, the maintenance of unrealistic exchange rates would have its economic costs which would have to be evaluated against the benefits of increased stability in exchange rates. Similar considerations would have to be applied for differentiated exchange rates, according to the purpose of the foreign exchange transactions. If consistently applied, this might generally be a more justified approach for domestically oriented industrial investments. The economic implications of such procedure should be investigated further.

2. Interest Rates

41. Fluctuations in interest rates have been large and diversified for the different major borrowing currencies. Local currencies have not been considered because they are generally not available and interest rates are fixed by the government. Interest rates (except for ODA which has substantial grant elements) for financing of international development banks and exports has largely been on a fixed term basis, related to the development of the long-term interest rates of the currencies of the major capital exporting industrial countries. Thus, on these types of financing, there is by definition no increase in the interest rate during the life of the loan. However, this does not imply that interest payments cannot increase. Any devaluation of f. e. 10 % would result in increased interest payments by 10 % after the date of devaluation. Therefore, on fixed interest loans (like fixed interest long-term bond issues), debt service risks are limited to devaluation losses on interest payments and repayments of the outstanding loan amount. Fixed interest rates of long term bond issues (as basis) for the different currencies have developped as followed (in %):*

December 31	1974	1975	1976	1977	1978	1979	Jan-May 1980
US $	9.4	8.5	7.4	8.0	8.6	10.1	10.9
DM	9.3	8.0	7.4	6.8	6.8	7.6	8.4
SF	8.0	6.7	5.5	5.3	5.7	6.6	7.1

* Morgan Guaranty

42. Most borrowing from commercial banks is undertaken on a variable interest basis. Given the additionality of these funds, as compared to the limitedness of most other funds, as well as the short-term investment pattern of OPEC surplus countries, borrowings from commercial banks on a variable interest basis, are likely to become an even more important funding source for DC's in the future. Interest increases and fluctuations, resulting in increased debt service requirements, have been substantial and mainly a result of increasing and more different inflation rates in the major industrial countries. Development of 6 months - Eurocurrency deposit interest rates for the different currencies has been as followed (in %):*

December	1975	1976	1977	1978	1979	Jan-May 1980
US $	6.6	5.4	7.5	12.3	14.4	15.0
DM	4.0	4.8	2.8	3.7	8.4	9.2
SF	3.3	2.1	1.9	0.1	5.9	6.1
Yen	6.2	6.4	2.8	1.9	8.6	11.3
£ stg	11.3	14.8	7.1	13.3	16.8	17.3
FF	7.3	12.6	14.0	9.9	14.1	13.6

* Morgan Guaranty

Interest rates for the US $ were as low as 5.4 % in 1976 and have peaked with over 19 % in March 1980. This has resulted in fluctuations for the major borrowing currency of DC's, which are normally beyond the possibilities of individual project entities, as well as for the DC's on a longer term basis. Interest rates for the DM have also varied between 2 % and 10 % in the past 5 years;

SF rates have even reached 0 % as low and about 6 % as high. However, all currencies have about doubled interest rates, comparing the 1975/1976 levels with 1980 interest rates. The general increase in interest rates is closely related to the substantially higher inflation rates. The differences in interest rates among the different currencies must be related to the exchange rate developments. In addition to the interest rate increases, the borrowers have also to assume devaluation losses on interest payments and repayments (expressed in local currency).

3. Exchange Rates

43. From the point of view of a project entity in a DC, there are two types of exchange rate exposure. The first one is vs. the US $ as the major international foreign currency (share of about 75 %) or any other reference currency of the respective DC, and the second one is vs. currencies which revalue against the US $. Since local funds are not available in sufficient quantities, the first type of risk is practically a necessity for any major industrial investment in DC's. The second type of risk is in many cases a matter of choice and has to be evaluated against the advantages in interest rates of strong currencies. Also, the first type of exchange risk has more likelihood to be covered through exchange rate and adequate domestic price adjustments (at least on a medium term basis), since all borrowers of foreign currencies in the respective DC will be affected. The implications of any devaluation are proportionate increases in debt service payments after the devaluation.

44. Development of devaluation rates between most of the DC's currencies and the US $ has varied considerably for each DC. For the DM, f. e. the development indices vs. other currencies of industrial countries have been as followed:*

December	1972	1974	1976	1978	May 1980
US $	100	131	135	171	180
SF	100	189	86	75	78
Yen	100	128	125	109	133
£ stg	100	132	189	203	183
FF	100	116	132	145	147
As compared to 23 most important trading partners of F. R. G.	100	116	129	145	150

* Source: Deutsche Bundesbank

As can be seen, revaluation from 1972 to 1980 of the SF to the US $ has reached 130 %, DM to US $ 80 % and Yen to US $ between 35 and 65 %. Devaluation losses in these currencies have not been fully compensated by the interest advantages during this period, resulting in additional debt service burden for project entities, which obtained DM, SF and yen loans.

4. Sensitivities of Debt Service Ratio

45. The sensitivities of the debt service ratio to the different increases in debt services re-

quirements have been calculated on the basis of an actual appraisal report of a petrochemical project in a DC. The project has been financed with a debt to equity ratio of 60 to 40. Debt service ratios under different assumptions for the different years would be as followed:*

	- implementation -				— operations			
Year	-4	-3	-2	-1	1	2	3	4
Base Case					1.2	1.7	2.1	2.3
Interest rate + 5 % (from 8.5 % to 13.5 %)					0.9	1.4	1.8	1.9
Devaluation 20 %					1.0	1.4	1.7	1.9
Interest Rate + 3 % combined with Devaluation of 20 %					0.8	1.2	1.5	1.7
Investment Costs + 20 %					1.0	1.4	1.7	1.9
Product Prices + 10 %					2.0	2.3	2.8	3.0

* In year 1 no repayments have been scheduled.

As can be seen from above realistic example, that only modest increases in interest rates, combined with devaluation losses are needed, in order to bring an ex-ante viable project entity into financial difficulties. The base case shows an acceptable debt service coverage rate of 1.2 in the first year, gradually increasing to 1.7 and 2.1 in the subsequent operating years. Based on the assumption, that revenue and operating cost estimates have been realistic, such debt service coverage would provide a limited buffer for cash flow shortages. Such cash flow shortages can be the result of a variety of unforseeable reasons (para. 35), which have to be provided for in the financial structure of an idustrial entity, thereby ensuring its financial viability (repayment of existing obligations and for obtaining of additional funds required).

If the industrial entity has to absorb exchange and interest rate increases from its own resources, such buffer in the original financing plan needs to be considerably larger. Already with a 3 % increase in interest rates, combined with devaluation losses of 20 %, the satisfactory debt service ratios for the base case turn into unsatisfactory ratios of 0.8, 1.2 and 1.5 in the first three and most critical operating years. This would assume no shortfalls from the assumed operational cash flow. However, actual adverse effects on debt service requirements have been much larger in recent years. Whether a project entity can overcome such additional debt service requirements without additional external financing, largely depends on the price increases of its products and the phase of the project (implementation, early operations) at the time of the impacts. On the other hand, product pri in- creases have a substantial impact on the improvement of the debt service ratio, to make up for the in- creased debt service requirements. An 8 % increase in product prices approximately offsets an interest rate increase of 3 %, combined with a devaluation of 20 %, from an industrial entity point of view. From a Government economic policy point of view, the costs and benefits of stability in pricing policy has to be evaluated together with the stability in interest and exchange rates. For both elements, Government policy is of paramount importance for the industrial entities, because the wellbeing of in- dustrial entities largely depends on the Government policy of these two elements, apart from the market

possibilities. However, on a larger term basis, Government obligations on foreign loans need to be in line with foreign exchange resources as well as the production from the industrial entities, for which financing has been used for.

VI. Coverage of Increased Debt Service Requirements

1. Ex-Ante Requirements

46. In view of the uncertainties in economic developments, any planning requires the inclusion of provisions. Debt service requirements are the result of operations and the financial structure of a project entity. Therefore, financing of an industrial investment should be based on adequate assumptions on implementation and investment costs, as well as operations including costs and prices. The resulting operational cash flow will be available for the coverage of debt service requirements and return on investment. Debt service requirements are a function of the share and terms of loan financing. The debt service capability of a project entity is therefore, on one side determined through the assurance of an operational cash flow (productivity, costs and product prices) and the debt service requirements on the other side. Whereas adequate provisions on the operational cash flow have always been included in financial forecasts by prudent project sponsors (considering risks), increased debt service requirements as a result of interest rate increases and devaluation losses have mostly been ignored.

47. The lack of adequate provisions and structure of the financial plan of an industrial investment in DC's is not necessarily a matter of poor judgement, but probably a matter of survival, given the overall resource constraints in DC's. Even if an

adequate financial structure can be achieved by individual industrial projects, on a macro basis, there are definitively not sufficient funds at adequate terms. Therefore, there are bound to be many industrial investments in DC's, which do not only lack adequate provisions in the financial plan, but which have already ex-ante unsatisfactory financing. The financial vulnerability of such entities is large, even without additional interest rate increases and devaluation losses. In view of the common and increasing interest rate increases and devaluation losses, additional provisions need to be included in the original financing plan, as part of the likely implications during the life of the project, in particular during the period of implementation and early operating years.

2. Additional Requirements

48. In case of unusual and unexpected requirements, even provisions under prudent assumptions would not be sufficient to meet debt service obligations without major difficulties. Usually, only a combinantion of operational cash flow shortfalls and unexpected debt service increases should pose problems to an ex-ante reasonably financed project entity, in view of the in-built buffer. However, since any negative impacts will first affect profits and equity, profits of the entity could be affected seriously. Problems in meeting debt service requirements of industrial entities in DC's are usually the result of a

combination of the following factors:

(i) unsatisfactory compliance with ex-ante requirements
- poor estimates (investment, operations)
- unavailability of adequate loan funds (amount and terms)
- unavailability of sufficient equity funds

(ii) unusual and unexpected increase in debt service requirements
- increase in interest rates in case of variable interest loans or refunding of short- and medium term loans
- devaluation losses impacts on interest and principal
- increase in investment costs

(iii) operational cash flow
- delay in start of production
- low productivity and capacity utilization
- unfavorable development of product prices and operating costs

3. Coverage of Shortfalls

49. Considering the different factors and parties involved in unsatisfactory debt situations, the solution of the problem is likely to require a joint effort of shareholders, project entity, government and foreign lenders, depending on the seriousness of the financial constraints. If it is only a liquidity problem, short-term bridge financing from local or foreign commercial banks should be obtainable at tolerable costs. However, usually the financial

constraints are a matter of liquidity as well as of the creditworthiness of the project entity, as a result of extended liquidity and profit problems.

a) Shareholders

50. Existing shareholders are usually willing to invest additional equity in a project entity (if needed and available), if the longer term prospects of the entity are favorable. In case of serious debt service problems, additional equity is required in order (1) to meet debt service payments on existing debt, (2) repay existing long-term debt to reduce debt burden and (3) to obtain additional short-term borrowings if needed.

b) Government

51. The government can contribute in many ways:

(i) reduction in taxes

(ii) economic policy on exchange rate, product price and operating costs, suitable for industrial sector and projects

(iii) ad hoc intermediation in case additional funds are required

(iv) ex-ante improved intermediation to increase equity and improve loan terms.

Measures (i) and (ii) have to be seen in the overall context of the industrial sector and the individual project's situation. If the financial difficulties of the project entity are partly caused by inadequate local policies, there should either be direct corrections or loan contributions of the government in order to solve the financial problems. Measure (iii) would provide government funds in the form of

new loans or rescheduling of existing loans at mutually acceptable terms. In practise, the government would take over the debt service of the foreign loans of the entity and extend a loan to the entity at longer maturities (preferable) and/or reduced interest rates.

52. In view of the limitedness of foreign funds at reasonable terms as well as equity funds, the government could assume the foreign loans already at the beginning and provide equity or loans at extended maturities at local terms to the project entities (for domestically oriented activities). This would bring project entities completely into local business environment and would increase the government's freedom to pursue local economic policies. The individual project entities would then have adequate financing plans and would not be affected by foreign interest rate increases or foreign exchange rate changes. Any economic costs and benefits would be assumed by the government. For that purpose, volume and terms of foreign loans could be improved and brought into special funds, administered by the respective DC government, in order to provide more adequate financial means for the financing of industrial projects in the form of equity and long-term loans. This would take care of the insufficient terms of foreign loans as well as of the domestic financing needs, leaving all benefits and risks of intermediation to the DC Government. Foreign interest payments and foreign exchange losses should be covered through the results of the investments

undertaken (on a project, industry or national economy basis). On a longer term basis, costs for foreign loans (interest rate + foreign exchange loss) should be similar to local interest rates, unless major Government intervention is undertaken in the financial flows (quantitative and/or qualitative nature) and/or the pricing of industrial entities. Therefore, the policy of Government/ Central Bank intermediation of the respective DC has to be seen in relation to its

(i) overall policy on industry

(ii) its foreign exchange situation
- borrowing potential
- debt service obligations
- foreign exchange earnings and reserves

(iii) quality of industrial investments
- return on investment, indicating attractiveness of invested financial resources with resulting export earnings or foreign exchange savings exceeding borrowed foreign resources.

c) Foreign Loans

53. On an ex-ante basis, terms of foreign loans should be improved, in order to become suitable for project financing. Maturities and grace periods of export financing could be easily extended, if agreement among industrial countries can be reached. Benefits would be mutual, because this measure would increase the purchasing power of DC's for equipment and would provide more adequate financing for project entities. Commercial bank financing for projects should only be used to the extent it can be mixed with other longer term funds. Otherwise, industrial or DC governments should provide for intermediation.

54. In case of debt service problems on foreign loans, and in the absence of the possibility or willingness of the respective DC government to intervene, there exist the following principal possibilities:

(i) additional foreign loans;

(ii) renegotiation of existing loans
- extension of maturities
- reduced interest rates;

(iii) default.

An extension of maturities of existing loans or new loans is usually the first step to decrease the actual debt service burden of the project entity. However, in any case it would be preferable, if the loan terms would be made more suitable on an ex-ante basis.