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E. R. SCHLESINGER

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COMMITTEE ON INDUSTRY AND TRADE

Working Party of Experts on Financial Aspects of Economic
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THE USE OF SPECIAL ASSESSMENTS TO FINANCE DEVELOPMENT PROJECTS

(For agenda item 7)

Report prepared by E.R. Schlesinger, a member of the Staff of the
International Bank for Reconstruction and Development. The views
expressed are not necessarily those of the Bank, and should not be
quoted as such.

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1. A special assessment is a compulsory levy made against certain properties in order to defray all or part of the cost of a public improvement which, although undertaken for the welfare of the community as a whole, confers special benefits on those properties. This memorandum examines the suitability of special assessments for the fiscal structures and problems of developing economies. It investigates the specific kinds of administrative and operational difficulties which have arisen in connection with the use of special assessments and appraises the possible applications of this form of levy to the financing of certain types of development projects. It concludes that special assessments are well-suited for financing projects in the fields of drainage and irrigation and also have some applicability to certain projects in the field of highway construction.

I. The General Suitability of Special Assessments for Developing Economies

2. Special assessments have, in the past, been used principally to finance urban improvements. The benefits taxed are usually in the form of increased property values. The receipts of the levy are sometimes used to pay for the improvements directly, but in the case of costly projects, the more usual procedure has been for the revenues to be earmarked for the servicing of "special assessment bonds" which are specially floated to finance the improvement. The special assessment bonds" which are specially floated to finance the improvement in accordance with the benefits which the respective properties are expected to receive from the improvement, with the stipulation that individual assessments are never to exceed individual benefits. In practice, many administrative and operational difficulties arise to upset the simplicity of the theoretical advantages, mainly because the size and distribution of the benefits must be estimated in advance. With careful planning and intelligent management, however, reasonably satisfactory results have frequently been obtained from special assessments.

3. The most readily apparent argument in favour of the more intensive use of this form of financing in the under-developed countries can be found in the tight fiscal position which almost invariably accompanies an economic development programme. The more sophisticated case for special assessments is based, however, not so much on the fact that levies of this form offer an additional non-inflationary source of financing to be exploited, as on their economic effects and their

/suitability for

suitability for meeting the financial problems associated with certain types of individual investment projects. If properly planned and executed, the burden of special assessments falls on the "unearned increment" made famous by Henry George.^{1/} As a consequence, they will have little or no adverse effects on private investment or work incentives and may be preferred to other types of taxes as a method of financing public improvements in a developing country. Moreover, special assessments may sometimes be the only non-inflationary method available to finance certain projects, even when the economic limit to general taxable capacity has not been reached. The use of general tax revenues collected on a country-wide basis to finance a project which will bring particular benefits to one region may be considered inequitable and politically inexpedient.

4. The general suitability of special assessments for the fiscal structures of developing countries can, moreover, be best demonstrated by a brief review of the evolution of this device in the history of world public finances. Special assessments have been primarily an American institution. Although traces of this type of levy can be found in ancient Rome and in England as early as 1427, and although similar techniques have been used by many other countries, special assessments have never assumed an importance elsewhere comparable to the position they achieved at one time in numerous localities in the United States. Students of the subject believe that the principal explanation of the widespread use of special assessments in the United States lies in the fact that this form of financing is particularly adaptable to the problems of new and rapidly-growing communities. In support of this contention, they point out that within the United States the use of special assessments in relatively newly-settled districts was, and still tends to be, far greater than in older well-established localities.^{2/}

/5. In the

^{1/} The "unearned increment" on land consists of that part of the appreciation in land values which results from the general growth of the community rather than from capital investment and labour by the individual owners. A special assessment taxes only that part of the "unearned increment" which comes from a specific public improvement; it should not be confused with the "land increment taxes" which have been used in Australia, New Zealand, and the United Kingdom and which are levied upon the total "unearned increment".

^{2/} There is a wide range in the popularity of special assessments among local government units in the United States. In 1941, for example, in cities with a population of more than 100,000, the relative importance of special assessments ranged from 27% of general property tax revenues in Spokane, Washington, to zero in several other cities.

5. In the struggling new communities of the United States, the argument runs, the expenses incidental to government development were vast, while revenues were limited. Although there was a constant demand for funds to finance public improvements, it was obviously impossible to install all desirable projects uniformly throughout the community at one and the same time, and some districts were bound to benefit more than others. Under such conditions, the use of special assessments represented an equitable and politically attractive method of raising revenue - particularly when, as happened in many communities, the affected group of taxpayers was given some rights to initiate and veto projects. Some of the popularity of special assessments in the United States must, as some critics of this argument have pointed out, be attributed to local institutional and legal factors: property which is otherwise tax exempt is almost invariably made subject to a special assessment, while most forms of special assessment bonds are usually exempted from statutory municipal debt limits.

6. Nevertheless, it seems quite clear that budgetary pressures resulting from rapid growth provide the chief explanation of the rise of this form of financing in the United States; the tremendous diversity of special assessment techniques employed by different localities are indicative of both the adaptability of the device and the separate ad hoc attempts of individual communities to grapple with their specific development financing problems. As would be expected, moreover, the descriptive material which is available clearly shows that the continued growth and development of the American economy has brought a gradual long-run decline in the importance of special assessments.^{1/}

7. In the United States, special assessments have been used by cities, counties, and other local government units exclusively. But there appears to be no reason why, in the under-developed countries, special assessments could not be used by national and state governments as well. In fact, as is demonstrated below, the special assessment form of financing seems in some respects to be better suited for use by the national governments of under-developed countries than by local governments. The economic nature of those types of investment /projects which

^{1/} Although comprehensive statistical data on special assessments are available only for recent years, they show that in 1951, special assessments provided an estimated \$140 million for all local government units or 1% of their total revenues, as compared with \$102 million or 2% in 1941. In certain localities, some part of this recent decline in the application of special assessments can be attributed to the fact that the increasing use of the automobile has weakened the concept of a localized special benefit for street construction.

projects which are usually the responsibility of the national government in these countries is such as to minimize the importance of many of the administrative and operational difficulties which have arisen in connection with the use of special assessments in the United States.

II. Essentials of Special Assessment Procedure

3. Although special assessments seem well-suited to conditions in under-developed countries, it must still be recognized that extremely careful planning and execution are required to obtain optimum effectiveness from levies of this form and to ensure that adverse economic and social effects are avoided. Successful utilization of special assessments entails finding workable solutions to three sets of problems.

- (a) What portion of the total cost of the public improvement is to be considered as creating a general benefit to be met from general government revenues and what portion is to be treated as giving rise to a special benefit to be financed by a special assessment?
- (b) What are the actual boundaries of the district (or districts) of localized special benefit in which the special assessment is to be imposed? And finally,
- (c) How is the levy to be apportioned among the individual properties within this district? 1/

4. Each of these problems gives rise to a number of administrative difficulties. But as a basis for working out reasonably satisfactory practical solutions for these, there is available a large body of experience and discussion to serve as a guide. Special assessments were introduced into the Massachusetts Bay Colony as early as 1658, but more important than the long history of special assessments in the United States is the fact that individual rural and urban communities have experimented with many forms of the device under varying local conditions. Different measures and ways of apportioning benefits have been tried, and various accounting methods and financing arrangements have been employed. Furthermore, at one time or another special assessments have been utilized to finance the paving and grading of streets, the installation of sidewalks, curbs, drains, and high-pressure fire protection, the construction of sanitary sewers, bridges, and storm sewers, and the implementation of large-scale drainage and flood control projects. /10. The major

There is, in some instances, an additional problem of co-ordinating the flow of special assessments receipts with the time schedule of disbursements for construction costs. This question is discussed in Section V.

10. The major conclusion that can be drawn from this wealth of experience is that most of the shortcomings that have been associated with the use of special assessments have arisen because of improper execution and of attempts to apply the device to situations in which it was clearly unsuited. There exists no detailed manual of procedures which will ensure that a special assessment will prove successful in any one individual case. Even improvements of the same character do not always produce the same effects because each new location brings with it some new elements which will affect the determination and apportionment of benefits. However, although a certain degree of flexibility must be introduced into assessment procedures in order to adapt them to particular local conditions, experience in the United States indicates that there are a number of general standards of practice which should be followed.^{1/}

11. The essentials of special assessment procedure can best be explained by the dual nature of this form of government revenue. From one standpoint, special assessments are similar to taxes because there is an element of compulsion in them which gives recognition to the benefits which the public improvement is expected to bring to the community at large. But from another point of view, special assessments are quite comparable to prices, for property owners are actually paying for the purchase of an improvement which is of benefit to their properties. This "price element" in special assessments is explicitly taken into consideration in the United States where the special assessment is the only form of state and local taxes on property which cannot be deducted for purposes of federal income tax calculation; it also helps to explain why property owners do not usually consider special assessments to be a form of "double taxation", since property valuations for general property tax purposes are almost invariably raised when an improvement is completed.^{2/}

/12. Since the

^{1/} Some of the criticisms and conflicts of opinion over special assessments are peculiar to the American environment and have little applicability for this form of financing in under-developed countries. There has, for example, been a considerable difference of opinion with regard to the proper division of responsibility between state and local governments in determining general special assessment procedures. In many communities in the United States, moreover, special assessments developed originally as more or less voluntary grass-root attempts to grapple with local financial problems, and with the continued growth and expansions of these communities questions have arisen as to the ways in which the original rights of taxpayers to initiate and vote individual projects might have to be modified.

^{2/} The dual nature of the special assessment form of financing is also clearly recognized in the preliminary draft of the United Nations' Manual for the Classification of Government Accounts. This manual places special assessments in the category of "miscellaneous revenues", but indicates that in many countries levies of this type might be preferably classified as "taxes".

Since the rationale for special assessments rests on the concept of special benefits, the basic principle to be followed in imposing a levy of this type is to make the price element - rather than the tax element - the primary determinant of the size of the assessment. In the United States most of the undesired economic and social effects that have arisen in connection with special assessment financing can be traced to assigning too little weight to the price element. Frequently, the tax element was set at too high a level, with some individual taxpayers being forced to pay more than the benefits from the public improvement were worth to them.^{1/} Alternatively, taxpayers were often charged a higher price than they could afford relative to their incomes and other financial resources and irrespective of the size of the benefits involved; this brought about socially undesirable foreclosure sales of property since any appreciation in property values that resulted from the improvement was usually in an unrealized form.

The most effective method of guaranteeing that proper weight is assigned to the price element is to apply special assessments only to those projects in which the overall special benefits are large relative to costs of construction. This provides a margin of safety sufficiently great to render unimportant any errors of judgment made in apportioning the levy among individual properties. For even if some of the taxpayers are then forced to pay a higher price than others for the benefits they receive, the presence of the margin of safety will ensure that the absolute price these taxpayers pay for the benefits will be low and relatively equitable.

The size of the spread between costs and benefits depends primarily on the general type of public improvement under construction and the economic priorities of the particular case. In the under-developed countries, it seems quite clear that special localized benefits will greatly exceed costs in the case of many projects in the general fields of irrigation, drainage, and rural highway transportation. This is especially true of those projects which can be classified as agricultural-land improvement projects. Several of the International Bank's general survey mission reports give examples of the vast increases in the economic productivity of farm land which have already resulted from specific projects of this type and point to similar projects which would probably produce equally beneficial results.

/15. The margin

In some cases, notably those of street widening, the benefits to some property holders actually turned out to be negative in nature because the introduction of a larger and more noisy stream of traffic into the street often resulted in reduced residential property values.

15. The margin of safety between special assessments and benefits can, of course, be increased artificially. Although courts in the United States have usually insisted that the over-all special assessment should be no larger than the cost of the project, some state courts have gone even further in providing a margin of safety: in an attempt to give recognition to the considerable element of general benefit which accrues to the community as a whole from many public improvements, they have limited the special assessment to some fixed proportion of the construction cost (usually one-half or two-thirds). In some localities, additional protection has been given to the individual property owner by limiting his assessment to a fixed percentage of the value of his property.

16. A second method of seeing that proper account is taken of the price element in special assessments is to restrict the application of this form of levy to income-creating projects. This will ensure that taxpayers are not being charged too high a price relative to their incomes and other financial resources and will minimize forced sales of property. Those projects in the fields of irrigation, drainage, and rural highway transportation which can be classified as agricultural-land improvement projects also meet this criterion. If the special assessment levy is properly allocated among individual properties and if arrangements are made for spreading the payment of the assessment over a period of years, the enhanced productivity of farm land will generate sufficient income over time in most cases to enable the assessment to be met. Under these conditions, moreover, the effects of the levy will tend to be economically and socially desirable even in cases where effective advantage is not taken of the increased productivity of the land, for the special assessment would then be converted, in effect, into a form of tax on idle land.

III. Special Assessment Financing of Drainage and Irrigation Projects

17. The use of special assessments to finance drainage and irrigation projects has one great advantage over their application to all other types of public improvements: the boundaries of the benefit district are determined by nature. Property values in areas adjacent to the drainage or irrigation basin will, it is true, also tend to rise, but such increases will be indirect and relatively small; the primary special benefits will be localized in a zone fixed by the contour of the land.

/18. The problem

18. The problem of apportioning the assessment among individual properties within the district still remains, however. A number of attempts to use special assessments to finance drainage projects in the United States turned out to be failures because apportionment was based on only one of the factors influencing the distribution of benefits, e.g. existing property valuation. Other factors of more or less equal importance, such as the type of property or the degree of drainage, were neglected. But on the basis of this experience, subsequent attempts to finance drainage and flood control projects by means of special assessments treated all important contributing factors in combination and took care to determine their inter-relationship and respective weights. Results were satisfactory in most of these cases.

19. One outstanding example of the success of a special assessment being primarily due to the careful selection and weighing of all major factors influencing the apportionment of the levy was the \$33 million Miami (Ohio) Flood Control Project. The methods employed there proved to be so effective that they served as a model for a number of subsequent projects of the same type. These procedures are described in some detail in Appendix I because they illustrate what can be accomplished in the case of a rather complicated assessment involving 77,000 separate parcels of property.

20. A typical "development" project of the same general nature would appear to be far easier - from the standpoint of administration - to finance by means of a special assessment. Cruder methods of apportionment could probably be utilized because the margin between costs and benefits would tend to be considerably larger in a predominantly agricultural region of an under-developed country.^{1/} Furthermore, not nearly so many assessment variables would be involved. One of the most difficult assessment problems which has arisen in the United States is that of giving reasonably fair and equal treatment to land and different types of improvements. The relative permanency of each improvement has to be evaluated by taking account of such factors as age, type, and degree of fire protection; allowances must be made for differences among commercial, industrial, and residential property, and a decision must be reached as to whether the levy on land is to be based on superficial area, front footage, or assessed valuation. Administrative problems of this sort would certainly tend to be far more manageable in the case of agricultural-land improvement projects, for the chief basis of allocation would
/be the grade

^{1/} Benefits of the Miami Project were estimated at \$77 million, as compared with the cost of \$33 million.

be the grade and area of land involved. Some problems in apportioning assessments would, of course, remain, but these would be minor in comparison to those found in any urban area that includes a high proportion of commercial and industrial property.

21. There might, however, be one source of difficulty which could prove to be significantly more serious in an under-developed farming region than in a largely urban setting. All the economic and technical data necessary for an adequate special assessment might not be readily available or even extant.^{1/} For this reason, it is possible that in under-developed countries the suitability of special assessments will tend to vary directly with the size of the individual development project. In the case of a large and expensive project, for example, it might actually pay the government to incur the additional expense of conducting a detailed survey to obtain the necessary data for an adequate assessment. The full advantages could thus be obtained from the special assessment form of financing without any of the disadvantages, and the cost of the survey might, as is done in many localities in the United States, be added to the cost of the project for assessment purposes. With less ambitious projects, on the other hand, the expenses necessary for obtaining adequate information might bulk too large in relation to the over-all cost of the project, and the net advantages to be derived from the special assessment form of financing would tend to be less clearly marked unless the incidence of the benefits were readily apparent.

22. The general principles involved in using special assessments to finance drainage and flood control projects can, with slight modifications, also be applied to irrigation projects. The utilization of special assessments in this latter field has tended to be quite limited because of the possibilities of financing irrigation projects through fees for water use. Nevertheless, definite economic and social advantages might be obtained from employing special assessments to finance some of the costs of irrigation projects in under-developed countries. Political

considerations:

^{1/} In addition to the engineering cost data for the project itself, the following types of information have usually been needed to obtain a usable basis for a special assessment: (1) a table of present land values taken not only from tax assessment roles but from actual prices in the going real estate market; (2) a projection of the increase in individual values which will probably result from the improvement, as determined by comparisons with similar projects in comparable territory; (3) an estimate of the extent to which the effects of the improvements have already been discounted, as measured by a comparison of real estate prices before and after the official announcement; and (4) if necessary, data concerning the character and value of private buildings within the district.

considerations frequently preclude charging fees which cover the full construction and operating costs of the project, and since water fees are usually based on the rate of water utilization rather than on the ownership of land affected by the irrigation project, unusually large windfall profits accrue to those property owners who continue to hold their land idle. Special assessment financing of the original costs of construction would, however, minimize such windfall gains. Moreover, since this policy would permit the size of water fees to be limited to the current operating expenses, maintenance, and depreciation of the facilities, land owners would be encouraged to make full and productive use of the available water supply.

IV. Special Assessment Financing of Highway Transportation Projects

23. In the field of highway transportation, the chief special assessment problem is almost the direct opposite of that faced in the fields of irrigation and drainage: the zone of benefit is not determined by nature and often tends to be widely diffused. For this reason, the applicability of special assessment financing is somewhat limited. The issues involved are clearly brought out by the United States experience in financing inter-city turnpikes and urban trunk highways that connected outlying residential areas with the central business district. Early attempts to utilize special assessments for these purposes placed the major portion of the levy on abutting property when the principal benefits actually went to transit traffic. Subsequently, many cities were able, with frequently satisfactory results, to develop the use of preliminary surveys sufficiently to shift a larger and more equitable portion of the levy to the owners of non-abutting property. But as inter-city highways increasingly became the responsibility of state rather than local governments, attempts to develop improved special assessment procedures for this type of road were more or less abandoned. The concept of special benefit financing was continued in another form, however, with heavy reliance being placed on gasoline taxes, road tolls, and other types of motor-use revenues.

24. In under-developed countries, priority road building projects can be said to fall into two broad categories: those highways which are constructed in order to integrate economically isolated regions more closely into the national economy, and those roads which are designed to lower transportation costs between two regions (e.g., a seaport and a large inland city) that are already integrated

/economically

economically. The special assessment form of financing appears well-suited for highway projects of the first type because these can be classified as agricultural land improvements projects. It is, on the other hand, considerably less applicable to inter-city highways since any increases in land values and agricultural and forestry output that result from the construction of highways of this type would be incidental to the primary objective of lowering transportation costs between the terminal points.

25. In the case of highways that are built primarily to integrate relatively remote regions into the framework of the national economy, the determination of some fairly realistic zone of benefit may frequently be a comparatively easy procedure because a definitely localized special benefit accrues to property owners in a district that is being opened up economically for the first time. The problem of determining a zone of benefit for a highway project in the United States is made difficult by the existence of an already well-developed road system. It is far easier to measure the economic effects of the first or second modern road in a district than to determine those of the forty-ninth or fiftieth road. No matter how widely some of the benefits may be diffused, for example, there seems to be no doubt that the construction of the first few major roads across a continental divide would produce an extremely large and a very special type of benefit for properties in the interior region.

26. After the extent of the benefit district has been determined, the apportionment of the assessment among individual properties within the district can be based on a very small number of factors. The primary basis of allocation would be the surface land area of the properties involved. Real estate improvements could almost invariably be disregarded. Refinement of the apportionment base could, if desired, be introduced by the addition of two other contributing factors: (a) grade of land and (b) distance from road. The procedures used to do this need not be very complex. Reasonably equitable results could be obtained on the basis of a survey which classified land into three or four different grades while the use of a small number of broad sub-districts would adequately compensate for the fact that the benefits derived from the new road will vary inversely with the distance from it. The limits of these sub-districts could be specially determined by the circumstances of each individual highway project, or some sort of over-all formula could be developed under which these

/limits would

Limits would be determined automatically by such factors as the width of the highway.

27. In cases where a projected highway actually opens up a new district effectively and the construction of a network of secondary roads is contemplated, some more elaborate method of assessment procedure - which would eliminate any problems of subzoning and allocate the levy more equitably - might be justified by the greater over-all costs involved. One possibility would be the adaptation to the field of highway financing of methods which have been used very successfully in connection with the construction of sewer systems in localities like New York City.

28. Under one possible variation of a system of this type, the road network for the entire district would be considered as a single unit for special assessment purposes and it could then be reasonably assumed that, regardless of individual locations, all properties of equal size within the district would - except for differences in grade of land - eventually benefit equally from the road network as a whole. Thus, when the main road into the district was built, the abutting properties could be assessed - and immediately pay - for a full share of the cost of the entire road system. Properties along the planned routes of primary feeder roads would, however, make a smaller initial payment because they would receive an allowance equal to the amount of their future assessment for these lower cost feeder roads. If desired, the method could be extended further, with properties situated along the planned routes of secondary feeder roads receiving a still greater allowance on the initial payment because they would have two additional assessments to meet. In any event, when the road system was finally completed, each property owner in the district would have paid approximately the same amount towards its total cost, and individual payments would have been staggered in direct relation to the period of time that elapsed before full benefits were received.

29. In view of the complexities inherent in systems such as this, however, it might well be asked if broadly similar results would not be obtained much more economically and easily by the relatively simple procedure of placing a special surcharge on the existing property tax rate for the benefit district. This would appear, at first glance, to be a workable method in these underdeveloped countries where the assessments for land and improvements are carried separately on the tax rolls. Experience in the United States has shown, however,
/that special

that special levies based on listed assessed valuations have been among the least successful types of special assessments, and as the reports of various fiscal missions to under-developed countries indicate, inaccuracies and inequities in property tax assessments there, are often even greater than in the United States. Special valuation would therefore be necessary.

30. Of perhaps greater importance is the fact that the use of special surcharge on property tax rates makes it very difficult to co-ordinate adequately the financial and physical aspects of a construction plan. The over-all yield and timing of revenue receipts can be estimated more accurately with the pure type of special assessment, and the use of this device also tends to make special assessment bonds more attractive market-wise whenever the circumstances of a case indicate that the floatation of such an issue is necessary or desirable.

V. Fiscal Aspects of Special Assessments:

31. The payment of the special assessment will usually have to be spread over time in the case of any large project; the minimum number of years necessary will be more or less determined by the length of the period of construction, but it may often be desirable to stretch this period out to as long as ten years when a public improvement is very costly. Such a policy will create a fiscal problem, however, for some arrangement will have to be made for paying the contractor during the construction period.

32. There are three general methods by which the gap between this disbursement and the receipt of the special assessment revenues can be bridged. First, a "revolving fund" for paying for selected types of current public improvements can be created from the general revenues of the government and then be replenished continually with the special assessment revenues received from earlier projects. Secondly, an issue of special assessment bonds can be floated, with the special assessment revenues earmarked for its service. Or finally, special assessment warrants - also secured by future special assessment revenues - can be issued directly to the contractors in payment for their work.

33. The first or "revolving fund" method seems, in general, to be best suited to conditions in under-developed countries. Because of the limited size of the securities market, the floatation of special assessment bonds may be difficult, or even impossible. On the other hand, the issuing of special assessment warrants is to be avoided. Under this form of arrangement, it is the contractor who is

/forced to

forced to assume the costs of collection and the risks of non-payment, and as experience has shown, this usually results in higher bids - with the financing costs frequently exceeding the construction costs in cases where the contractor knows he cannot finance himself and will have to dispose of the warrants at a substantial discount.

14. It should be noted, however, that the "revolving fund" approach has not worked too successfully in many of the communities in the United States where it has been tried. Care must therefore be exercised to avoid the many possible abuses attached to this method. Frequently, difficulties arise in completing improvements for which no delinquencies in assessment payments exist because the collected funds have already been used to pay for other projects or diverted for the general purposes of the community. Under the "revolving fund" system, moreover, the special assessments do not have to be levied immediately upon completion of the project, and if there are any irregularities in the procedure, they may not be detected right away and thus be permitted to accumulate over a period of years.

15. Some governments might, of course, wish to experiment with special assessment bonds. If this is the case, it is recommended that use be made of "individual project" bonds rather than of general special assessment bonds secured by the general revenues of the community. Under the "individual project" system, which has worked more successfully in the United States, new bonds are issued for each project, and the source of their retirement is the special assessment levied especially for that specific project. If the assessment has been adequately apportioned and the project well chosen, the credit rating of the bonds will tend to be relatively high because prospective purchasers can judge each individual case on its own merits. An additional guarantee of the local or national authorities - secured by the general revenues of the community - would, of course, do no harm.

16. With an adequate programme to educate the public as to the relatively high credit rating of this type of security, some issues of "individual project" special assessment bonds might be more readily acceptable than the general obligations of local or even national authorities. This would be particularly true in those under-developed countries where investors show a marked preference for intermediate-term loans or for securities which are associated with individual pieces of real property.

VI. Conclusions

37. There seems to be a definite place for special assessment financing in the fiscal programmes of developing economies. The precise role which special assessments should assume in any individual country will depend on the size and composition of the public programme and on the comparative suitability of other financing methods. An analysis of the special assessment experience of the United States and of the applicability of this to conditions in under-developed countries shows that special assessments will probably work best in the cases of high priority development projects which create substantial agricultural-land improvement benefits and which are, at the same time, sufficiently large in size to warrant the added expense of making an adequately surveyed apportionment of the levy. With projects where the margin of safety between costs and special benefits is not so large, on the other hand, the case for special assessments is less persuasive. Nevertheless, even if the results of a special assessment depart significantly from the theoretical ideal, the device may still prove to be of use in practice.

/APPENDIX I

APPENDIX I

SPECIAL ASSESSMENT PROCEDURES UNDER
THE MIAMI (OHIO) FLOOD CONTROL PROJECT 1/

1. The Miami (Ohio) Flood Control Project, which was financed in 1926 by means of special assessments, included parts of nine counties and cost \$33 million.^{2/} The original construction fund was provided by a bond issue secured by special assessments against properties benefited. A board of three appraisers was in charge of ascertaining the benefits and damages accruing to each piece of property affected. This board was assisted by engineers and other experts who not only furnished the data upon which the appraisals were made but outlined in considerable detail the methods used.
2. The base factors entering into the determination of benefits were: (a) the degree of flood menace; (b) the degree of protection provided by the project; and (c) the value of the property. Since the project afforded complete protection to nearly all properties within the district, it was necessary to consider the second factor in only a few cases. Broadly speaking, the benefit was considered as being the difference in property value with flood protection and without such protection. While details varied somewhat for different locations, the general principles applied in the city of Dayton, were used in other cities and towns in the district.
3. Under the Dayton procedure certain areas deeply flooded by the 1913 flood could be readily delimited as the zones which would receive the maximum benefit in case of complete protection. After considerable consultation with the engineers, and with real estate and businessmen familiar with local values and conditions, the appraisers estimated that the general depreciation of property values in these areas, due to flood menace, amounted to about 40 per cent of the value of the property when protected. The maximum benefit that
/could accrue

1/ This description of the Miami (Ohio) Flood Control Project is a modified abridgment of material contained in A.R. Burstan, Special Assessment Procedure, Special Report No.1, New York State Tax Commission, Albany, 1929. The procedures have served as a model for a number of other flood control projects.

2/ At the present level of prices, the Miami Project would have cost more than twice this figure.

could accrue to any property was therefore established at 40 per cent of its value with protection. The controlling reason for the selection of this basis of value - rather than the existing assessed valuation or the estimated value without flood protection - was that by the time the plans had been worked out and approved and the appraisals made, public confidence in the project has already become sufficient to establish market values approximately equivalent to those expected with flood protection.

4. The depth of flooding represented by the maximum benefit factor ranged from ten feet in some places to fifteen feet or over in other areas of the city. With these depths as a starting point a schedule of intermediate benefits was established on the basis of land contours. Benefits ranged from 100 per cent of the possible maximum on properties subject to the highest degree of flood menace to zero on lands which were never flooded.

5. Various modifying factors were introduced when necessary. A greater benefit, for instance, obtained where the street frontage only was flooded than in a case where only the alley frontage was flooded. In order to take account of situations like this, experimental tests were run to develop methods which, after approval by the board of appraisers, could be rapidly applied by engineering assistants to many different cases having similar conditions. Railroads and public utilities were, with some necessary minor modifications, treated in much the same manner as other types of property, while benefits to counties, cities, and towns as units were determined on the basis of the protection afforded to government revenue sources and to such public property as bridges, highways, buildings, and water supply facilities.

6. Damages, or flood easements for lands in the retarding basins, were determined in a manner somewhat similar to that used to determine benefits. The main factors considered were (a) frequency, extent, depth, and duration of flooding and (b) value and kind of property. To determine the first factor the engineers supplied the data based on past flood records, and arranged for application by suitable formulae and diagrams. In many cases, when it was difficult to come to an agreement with the owner, the land was bought outright, and later resold with a flood easement. All buildings were removed from areas subject to flooding and damages incurred by such removal were paid by the district.

/7. The over-all

7. The over-all special assessment totalled \$33 million and was equal to the cost of the entire project. Individual assessments were levied in direct proportion to the benefits determined for each piece of property, with total benefits from the project being estimated at \$77 million. The appraisers' report of benefits and damages, as well as the purchase price of lands to be acquired, was subject to public hearing and court approval, with the proviso that any owner not satisfied with the court decree should have the right to appeal for jury trial of his case. Less than five hundred cases were appealed, following the appraisals of benefits and damages on about 77,000 parcels of property. Thus, it could be said that the appraisal was more than 99 per cent efficient.

/APPENDIX II

APPENDIX II.

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