Valorization Charges as a Method for Financing Urban Public Works: The Example of Bogotá, Colombia

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This paper provides an analysis of the financing of street improvements, sewer extensions, and other urban services by valorization charges, a system of taxation by which the cost of these services is allocated to neighboring properties in proportion to the benefits conferred. The experience of Bogotá, Colombia illustrates the impacts of this system as a means of facilitating the provision of urban public services in developing countries at a rate more nearly in line with urban growth.

On the basis of the Bogotá experience, it is possible to suggest that valorization could constitute an improvement in the fiscal capability of many major cities to install infrastructure benefiting families at all income levels. Particularly if they could be tied to a reasonably well organized training program and effective technical supervision during the early years of operation, valorization programs do not appear to be beyond the administrative capacity of many developing countries.

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1. INTRODUCTION AND SUMMARY

1.1 This report analyzes conceptually and empirically the financing of urban improvements by valorization charges in Bogota, Colombia, and assesses the usefulness of this system as a means of reducing capitalization requirements for the installation, expansion, and improvement of urban public facilities in developing countries. 1/ Such charges attempt to make urban services in cities of developing countries largely self-financing, thus reducing the burden on the system of general municipal taxation. By diminishing these financial constraints, valorization has the potential for these cities to facilitate the provision of urban infrastructure at a rate and rhythm commensurate with their rapid growth.

1.2 The concept of valorization, or the assessment of neighboring property owners for urban improvements, is not new. Indeed, it has been traced at least as far as the Roman Digest of the sixth century, and variations of the concept appear in the legislation of most European countries and in the United States in the form of "special assessments." Colombia, however,

1/ The research for this report was carried out on a mission to Colombia undertaken as part of research project No. 670-98 ("Urban Land Taxation and Control") and led by Mr. Grimes. Mr. Doebele subsequently drafted the body of the present paper, which Mr. Grimes has revised for the present publication. The authors benefited from comments on an earlier draft by Johannes Linn.
has perhaps used valorization techniques more extensively than any other developing country. 1/

1.3 Within Colombia, attention has been focused on Bogotá for several reasons. Not the least of these is its rapid physical and demographic expansion, particularly since the 1950s, and resulting demands for new services. Furthermore, as a national capital with a special administrative status, Bogotá has had to plan its growth so as to internalize and reconcile the interplay among various levels of government. Its experience in doing so with valorization extends back more than five decades, a record which should prove instructive to other countries considering the adoption of valorization techniques as public policy.

1.4 Valorization is a system of taxation by which the cost of public works is allocated to neighboring properties in proportion to the benefits conferred. Since valorization depends on the availability of liquid assets to pay charges, its application is less straightforward in lower income residential areas, in which higher property values resulting from public works may have to be realized through sale of the house in order to pay the charge. On the other hand, a variant of valorization, which encourages prepayment of 30% of costs, eliminates overhead charges, spreads installment payments at

1/ For a recent review of the experience of other Latin American countries with betterment collection, the interested reader is referred to Jorge Macon and Jose Merino Mañón, Financing Urban and Rural Development through Betterment Levies: The Latin American Experience (New York: Praeger, 1977).
low interest, and limits total chargescollectible has been a
considerable success in paving local streets.

1.5 The chief strength of valorization in Bogotá is the
flexibility shown in determining the distribution of benefits
from projects under widely varying conditions, so as to arrive
at a reasonably equitable distribution of charges. Adminis-
trative problems have often been a major disadvantage of
valorization and other forms of special assessment. The
Bogotá experience suggests that it is possible to maintain a
highly flexible approach, yet one which is basically equitable,
to deal with the central problem of distribution of the valori-
zation charge. The methodology of calculation, using a "Basic
Coefficient" and "Coefficient of Form" modified by any other
coefficients judged appropriate, seems both adequate and
capable of evolution into new forms to meet new conditions
without loss of continuity with other projects. The chief
problem in Bogotá has been the lack of a vigorous policy of
collection, though enforcement procedures and standards appear
to have recently been tightened. At least with respect to
allocation of the charges, the administrative costs of the system
do not seem to be excessively high.

1.6 Valorization appears to have important financial
benefits to the municipality, in addition to some positive
allocative and distributive effects. While it has not signi-
ficantly altered income disparities and has probably increased
the private return to land development in the cities affected,
it seems also to have been instrumental in enlarging the choice and accessibility of lower income groups to jobs and to residential building sites.

1.7 This study concludes that the system, while not without problems, could constitute an improvement in the fiscal capability of many major cities to install infrastructure at a rate more nearly commensurate with the pace of urban growth. Such programs are in fact more feasible politically and administratively under conditions of rapid urban growth, rising land values, and inflation, conditions prevailing in most major cities of developing nations. The operation of a valorization program does not appear to be beyond the administrative capacity of many developing countries, particularly if it could be tied to a reasonably well organized training program and effective technical supervision during the early years of operation. In this regard the Colombian system, with its detailed descriptions prepared for each project and long experience in administration, is a particularly suitable one for study.
2. VALORIZATION IN BOGOTÁ: THE SETTING

A. Antecedents

2.1 While some historians have traced references to the idea of valorization in Colombia to as early as 1599, valorization in its modern form began with Article 3 of National Law 25 of 1921, which defined the concept as:

"...a contribution from the real property which is benefitted by the execution of works of local public interest, such as the cleaning and channelization of rivers, the construction of dikes to prevent flooding, the drying of lakes, swamps and wet lands, irrigation and other analogous purposes, which contribution is to be exclusively designated to meet the costs required by said works." \(^1/\)

In 1936, these powers were conferred on the City Council of Bogotá. National Law 1 of 1943 extended the scope of valorization from the flood and irrigation areas defined in 1921 to all "works of public service," and removed the limitation of recovery of charges to the costs incurred. The national legislation of 1943 also gave municipalities almost complete freedom to determine the methods by which benefits should be calculated, and the form of administration they wished to use. A year later the highest judicial body on administrative matters made the important ruling that valorization charges could be assessed and

\(^1/\) In this report all translations of legislation and other documents are by the senior author unless otherwise noted. Laws and decrees pertaining to valorization are provided in Rafael Soto Pinedo, La Contribution Nacional de Valorization (Bogotá: Editorial Temis, 1974).
collected as soon as a plan and budget for a project had been
approved and before actual work had begun -- thus (in theory at
least) reducing substantially the amount of municipal interim
financing necessary. 1/

2.2 A national Legislative Decree of 1966 (No. 1604)
enlarged the definition to "... works of public interest
which are executed by the Nation, the Department, the Special
District of Bogotá, the Municipalities, or any public entity,
and which benefit real property..." (Article 1; underlining
added). The apparent meaning of this decree is that in Colombia
any public works project can be made the subject of valorization,
so long as it results in an increase in property values. In
1966 legislative action also provided that if a project subject
to a valorization tax in an urban area was in fact paid for out
of national or provincial funds, the municipality (even though
it had paid none of the costs) could still collect the tax, if
it acted within two years and had the consent of the other level
of government concerned. In such a case the collections would
go into the revolving fund or pool used to finance all valori-
zation projects in that city. 2/

1/ See Carolina Botero, "The Valorization Tax in Colombia as
Applied at the Municipal Level" (mimeo, Department of City
and Regional Planning, Harvard University, May 1975), pp. 6-7.

2/ This facet of the 1966 decree was pointed out by Botero,
op. cit., p. 7.
2.3 Bogotá began using the system for street construction in 1944, and in 1958 passed a comprehensive municipal "acuerdo" (ordinance) defining the procedures in great detail (Acuerdo 41/1958). Although this is still the basic legislation for the city's operations, subsequent ordinances have enlarged its scope and introduced new procedures. In 1959, for example, Acuerdo 85 extended a variant of valorization to the redevelopment of deteriorated parts of the city, although in fact this power has not yet been used, the category instead having been converted into a channel by which other budgetary funds have been mobilized for the construction of an office complex for the city administration. In Acuerdo 6/1963, presumably in response to criticism that road improvements were primarily benefitting the well-to-do portions of the city, a Local Paving procedure was created to help low income neighborhoods improve their streets. It sought to retain some of the advantages of valorization to the public treasury while easing the burden on property owners by providing for payments for as long as 36 monthly installments at 3% annual interest. 1/ As figures presented later in this report indicate, this has become a popular program.

1/ Currently the payment period is 30 months. See J. Linn, "Valorization in Bogotá, Colombia: Organization and Financing" (draft, World Bank; August 1976), p. 27.
2.4 The coverage of valorization was further extended when in 1968, the establishment of parking facilities ("Estacionamientos," Acuerdo 46/1968) and green spaces ("Zonas Verdes y Comunales," Acuerdo 45/1968) was included. In 1973, a small program in zones of historical interest was begun, and a so-called "Plan Muelas," to construct loading bays and widen streets in congested parts of the city, has also been added (see also paragraph 2.16).

2.5 Given the broad 1966 definition of valorization as including "...works of public interest ... which benefit real property ..." (see paragraph 2.2), it is possible that Bogotá can in the future extend valorization further than the seven areas just mentioned (streets, local paving, redevelopment, parking facilities, green and communal spaces, zones of historical interest and loading bays). Indeed, such expansion is contemplated in the enabling legislation (Acuerdo 19/1972) of the agency chiefly responsible for undertaking valorization-financed improvements in Bogotá, the Institute of Urban Development (IDU).

B. The Institute of Urban Development (IDU)

2.6 Valorization was traditionally administered by a department within the Bogotá Special District. 1/ In 1972, however, it

1/ As is often the case with capital cities, Bogotá enjoys a special status. Known technically as the "Distrito Especial de Bogotá," it has many of the powers of a "departamento" (or province). Its present boundaries include almost all of the urbanized area, with room to spare, except at a few points at its northern and southern extremities where urban growth has overspilled its limits to a minor degree.
became necessary to create a special institution to carry out the complex "Avenida de los Cerros" project, which involved not only the construction of a long, wide highway in the mountains behind the city, but also the building of a series of public service installations, especially in its southern portions, whose aim was to benefit low income groups. Acuerdo 19 of 1972 therefore created a semi-autonomous Institute of Urban Development (IDU) to execute this and other major public works. 1/

Simultaneously, the entire operation of the Valorization Department was shifted to the IDU. 2/

C. Valorization for Public Services not Directly Under the Jurisdiction of the Bogotá Special District

1. Water and Sewer Authority ("Empresa de Acueducto y Alcantarillado de Bogotá," or EAAB)

2.7 Water and sewer facilities in Bogotá (except for some site-related installations whose construction is the responsibility of the land developer) are planned and constructed by a separate enterprise known as the EAAB. It is a "public entity" with powers to impose valorization, and has its own Department of Valorization for distributing the cost of major trunk lines to

1/ Due to the public controversy surrounding it, the Avenida de los Cerros project was terminated after the change in national administrations in 1974.

2/ Administrative details of the IDU are covered in Linn, op. cit., pp. 3-6 and 8-10.
adjacent property owners. However, all actual collections of valorization charges are done by the District (now the IDU), for which it receives a 20% commission. The major undertaking of the EAAB now is the execution of a three stage Sewerage Master Plan, further discussed in paragraph 2.13 below.

2. **Ministry of Public Works**

2.8 While most of the Ministry's road building activities are outside urban areas, it has constructed one very important work in Bogotá—a divided highway from the international airport to almost the center of the city. As in the case of the EAAB, the so-called Autopista Eldorado was planned and executed by the Ministry, but collections have been turned over to the IDU on 20% commission. For reasons which will be discussed later, the collection experience has been a poor one. As far as is known, the Ministry is not planning any more major works in the city which would involve valorization.

D. **The Record of Experience**

2.9 Until the administration of Mayor Virgilio Barco (1967-1971), valorization was not a major program in the Bogotá Special District. With the acceleration of civic projects which marked his administration, however, expenditures
on valorization projects in the single year 1968 were greater than in the entire eight years of 1959-1966. From 1967 to 1973, nearly five times as much money was expended for valorization projects as in the preceding eight years (Table 1):

Table 1: VALORIZATION EXPENDITURES, 1959-1973
(thousands of current pesos)

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditure</th>
<th>Year</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>19,781</td>
<td>1967</td>
<td>172,559</td>
</tr>
<tr>
<td>1960</td>
<td>19,777</td>
<td>1968</td>
<td>259,540</td>
</tr>
<tr>
<td>1961</td>
<td>26,570</td>
<td>1969</td>
<td>216,583</td>
</tr>
<tr>
<td>1962</td>
<td>18,342</td>
<td>1970</td>
<td>150,229</td>
</tr>
<tr>
<td>1963</td>
<td>28,726</td>
<td>1971</td>
<td>141,761</td>
</tr>
<tr>
<td>1964</td>
<td>42,277</td>
<td>1972</td>
<td>143,195 a/</td>
</tr>
<tr>
<td>1965</td>
<td>40,750</td>
<td>1973</td>
<td>122,296 a/</td>
</tr>
<tr>
<td>1966</td>
<td>55,253</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


a/ Excludes IDU element for comparability.

Sources: Bogota, Department of Valorization, Summary Budget 1959-1971; Summary Budget 1965-1972; 1973 Budget.

2.10 The Local Paving procedure of 1963, which began operations the following year, is in effect a special simplified version of valorization, applying only to smaller roads and streets. 1/ Unlike larger projects, there is no 20%

1/ i.e., those with a maximum support capacity of 8,000 to 24,000 pounds. For further information on the Local Paving program, see Linn, op. cit., pp. 25-27.
charge for administration in the budget of the Local Paving Fund, and no provision for participation of property owners. Furthermore, charges are distributed pro rata on the basis of meters of frontage of each property, instead of the more elaborate methods used for regular valorization, and are limited to 5% of the assessed value of the property.

2.11 Although Local Paving started as a very small program (only 4.9% of total expenditures in its first year), by 1973 it amounted to a fifth of the total and 40% of the outlay for streets and avenues, the oldest and most important of the valorization programs. If the comparison between these two programs is made in terms of investment in actual works in 1973—which would seem a truer measure of their physical impacts on the city—the relative importance of Local Paving is even greater. Looking at all six programs active in 1973 in this way, the following picture emerges (Table 2):
Table 2: EXPENDITURES ON VALORIZATION PROGRAMS, 1973
*(thousands of pesos)*

<table>
<thead>
<tr>
<th></th>
<th>Total Expenditure</th>
<th>Of which: Expenditure Devoted to Land and Construction Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>Percent</td>
</tr>
<tr>
<td>Streets and Avenues</td>
<td>61,792</td>
<td>50.5</td>
</tr>
<tr>
<td>Local Paving</td>
<td>24,496</td>
<td>20.0</td>
</tr>
<tr>
<td>Redevelopment</td>
<td>26,394</td>
<td>21.6</td>
</tr>
<tr>
<td>Parking Facilities</td>
<td>7,767</td>
<td>6.4</td>
</tr>
<tr>
<td>Green Spaces</td>
<td>1,700</td>
<td>1.4</td>
</tr>
<tr>
<td>Historic Zones</td>
<td>147</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>122,296</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Sources: Bogotá, Department of Valorization, *1973 Budget; Project Investments 1968-1973*.

Table 2 suggests that the Streets and Avenues and Green Space programs are heavily burdened with debt service, resulting in budgetary charges disproportionate to their physical impact. Thus, Streets and Avenues comprise half of the total 1973 expenditure for these six categories, while representing only about 40% of investment in land or construction. Liquidity and collection issues in valorization will be taken up later in more detail.

2.12 As will be noted from Table 2, the other applications of valorization are relatively small. Use of the system for the redevelopment of blighted areas ("Redesarrollo") did not appear in budgets until 1967, and as of 1974 involved only one project—the construction of the District Administrative Center. The parking program begun in 1969 has also been small and confined
to some badly needed facilities in the congested central part of the city. Green spaces and historical zones have also been, as the table suggests, of minor importance.

2.13 Sewers, however, are another matter. The Sewerage Master Plan calls for a massive investment in increased capacity, maintenance, and renovation in the metropolitan area, divided into North, Central and South Sectors. Valorization-financed works for the North Sector alone will amount to more than 153 million pesos (over US$4 million), which is greater than the 1973 expenditures for all other projects.

2.14 Conceptually there is no reason why valorization could not be applied to any public project which adds substantial values to adjoining land. Green or open spaces, often judged to create "spill-over" values which are very hard to estimate, have been financed in this way, although not yet on a scale sufficiently large to judge the system's effectiveness.

2.15 In terms of the physical layout and functioning of Bogotá, the impact of valorization has been quite substantial. Virtually all of the important arteries during 1967-1973 were constructed through its application, and now it also covers construction costs under the Sewerage Master Plan. It is difficult to imagine this scale of public works being achieved through conventional methods of public finance in a country at Colombia's stage of development.
E. The Valorization Process

1. Selection of Projects

2.16 All projects for the improvement of streets and avenues are part of the "Plan Vial," a comprehensive plan prepared by the District Planning Office which also includes the parking facilities program. As mentioned earlier, sewers are also being constructed subject to their own comprehensive Master Plan. It is not known whether a similar long range plan has been made for green spaces, but this is, in any case, a minor program. Valorization for "redevelopment" has been limited to the construction of the Administrative Center, and comprehensive planning for the older parts of the city has yet to be undertaken. However, an approach through valorization financing has been made to the most serious problem of the older city--traffic--by the so-called "Plan Muelas." A "muela" is a parking bay or cut into the sidewalk so that vehicles which must stop (such as buses and delivery vehicles) may do so without blocking the flow of other traffic. In narrow streets, this can become an important factor in the effective functioning, and hence the property values, of older commercial-administrative areas.

2.17 The major valorization projects which are not subject to comprehensive planning are Local Paving. These are initiated by the Junta de Accion Comunal, working in collaboration with the Department of Communal Action of the IDU, in the various
low income neighborhoods (barrios). The barrio Junta will ordinarily raise from its citizens 30% of the projected cost. When this occurs, IDU must immediately carry out the work, and the remaining 70% will be paid on 36 monthly installments. (See also paragraph 2.3 above).

2.18 All projects must be approved by the District Planning Board and the Board of Directors of IDU. Projects involving the seven programs of the IDU must be authorized by the District (City) Council, except for street works of under 200 meters in length, which may be authorized by the Mayor. Projects by the EAAB are, of course, authorized by its own board.

2. Technical Preparation

2.19 After approval is secured, the staff of IDU prepares an "Explanatory Memorandum of Provisional Liquidation" for each project. This document presents in a concise and complete form virtually all of the essential information about a project: its scope and objectives, its budgeted cost, and the system by which the cost is to be distributed by valorization. The standard sections of these reports are worth noting:

   a. Authorization: A brief summary of the legal basis of the project—the date and number of the Resolution of the Board on Valorization (Board of Directors of the IDU) and of the authorizing ordinance (acuerdo) of the District Council.
b. **Zone of Influence:** Normally, the area over which valorization charges are to be spread is established by the District Council (presumably on the recommendation of the Board of Valorization) in the same ordinance that authorizes the project. A frequent formulation is "all properties located within two parallel lines 500 meters on each side of the axis of the street." However, in some cases different zones are outlined by which the Council will, in effect, draw a specific map.

c. **Representatives of the Property Owners:** The law of valorization requires that the property owners in the Zone of Influence must be permitted to elect a "Representative" who oversees all the critical points of the administrative process, receives owners' complaints, and theoretically acts as a "watchdog" of the entire procedure. Representatives are paid for these efforts at a rate of 0.15% of total project cost. The formalities of the election of the principal representative and his alternate, from a list of candidates prepared by IDU, are quite detailed, and this section of the Memorandum certifies that they have been complied with and gives the names of the persons elected.

d. **Actual State of the Street:** This section describes in a few sentences the conditions which make improvement necessary.

e. **Description of the Work:** This lays out the specifications of the project.
f. **Budget**: This states the provisional budget, broken into (a) the cost of the land; (b) the cost of construction; (c) the cost of administration, always 20% of (a) plus (b); (d) contingency, generally 5-10% of (a) plus (b); (e) interest, equal to (a) plus (b) during the time period estimated to execute the project, presumably evaluated at the rate of interest at which money is currently available; and (f) the honoraria to the representative and alternate (0.15% of (a) to (e) for each). All of these together are the provisional cost which must be liquidated through valorization.

g. **"Factorizacion"**: This section of the Memorandum deals with the distribution of valorization charges in the project area, which are calculated by a set of coefficients more fully described in Section 4 below. When a final coefficient has been assigned to every parcel, the provisional budget described above is allocated among the parcels as outlined in Section 4.

h. **Statistical Analysis**: The Memorandum concludes with a rather elaborate statistical analysis of the valorization charges, grouped by type of charge per square meter, average charge, lowest and highest charges, and so on. Together these give quite a detailed picture of the general pattern of charges for the project.
F. Problems in Design and Application

2.20 Colombian legislation and practice on valorization, like similar programs elsewhere, have had to come to grips with two issues:

- Should the valorization charge be viewed as recovering a benefit otherwise bestowed gratuitously on the landowner by the State (that is, as recovery of betterment), or primarily as a way of increasing municipal solvency by recouping the actual cost of public investment?

- How is the principle of valorization to be applied in low income neighborhoods?

Since the benefits from public investment attach to the land, not the owner, land values will increase in low-income areas as well as in others. In practice, however, low-income owners may find it difficult to pay a valorization charge, since they have little savings and no means of converting the increased land value into cash except by sale of their home.

2.21 Betterment Recapture or Cost Recovery. As mentioned, the original national legislation of 1921 limited valorization to the cost of the works undertaken. This limitation was removed
in 1943, and Bogotá's comprehensive Acuerdo 41/1958 provided that not only should valorization consider the cost of the works, but also the increase in values stemming from the project. Two evaluations were called for, one before construction and one after, to determine the total contribution which could be imposed. 1/ This amount could, however, be reduced to collect only the sums actually expended on the works, including necessary complementary works, indemnizations, and administrative costs. Under these provisions the Board of Directors of the Valorization Department apparently could choose which philosophy of recovery to favor for each project.

2.22 In practice, however, no case has been found in which full recovery was attempted during the eight years in which this provision was in effect. In national Legislative Decree 1604/1966, total charges were limited to direct project costs plus a maximum of 30% for administrative overhead, and in no case more than the benefits received. A quite similar formula in a Bogotá decree of 1967 states that collections should be limited to direct costs plus 20% administration, plus a "prudent percentage" for contingencies, all "within the limits

1/ Acuerdo 41/1958, Articles 74 and 75.
of the benefit that it (the project) produces to the real property which is to be obligated." 1/

2.23 While the requirement of before and after evaluations--obviously a difficult task--is still on the books, the actual practice since 1967 has been to assume that the cost of the project is always within the benefit produced, and to get on with the more immediate task of a reasonable allocation of the costs themselves. In this the city officials appear to feel with Rhoads and Bird that in a growing city "the forecast of benefit exceeding tax will be true in almost all cases." 2/

Informal and fragmentary studies by the IDU section charged with land acquisition support the thesis that charges seldom exceed project benefits, especially if inflation provides an additional cushion. Benefits are not ignored; indeed, calculations of benefits--often detailed and elaborate--are the basis on which the project costs are allocated among individual properties. It is clearly, however, much less difficult to use a broad conception of benefits as a means of assigning relative costs than it is to specify a distribution of benefits conferred as the basis for a 100% recovery of them. Thus, valorization


recovery is based primarily on the cost of the works, not on recovering all the benefits the project may be expected to confer.

2.24 Adjustment for Low Income Property Owners. The basic 1958 Acuerdo provided that the Valorization Board would be able to exclude from payment the costs of physical construction (streets, sidewalks, utility networks, and so on) when the project was "in sectors of low economic level." 1/ On the other hand, the costs of land for the project, indemnities for damages caused, the 20% for administration, and the 0.15% for representatives could not be excluded. The 1967 statute did not change this provision, but it added another significant concept:

"In each activity the Board of Valorization will determine the method that is to be followed for the distribution of the contributions of valorization, in accordance with the characteristics of the undertaking and the types of benefit, to the end that the resulting contributions are adjusted to the legal norms and principles of equity that control the contributions of valorization..." 2/

2.25 In short, the Board would now seem to have two strings to its bow: (a) It may exclude from payment of a major share of project costs "sectors of low economic level;" and (b) In

1/ Article 76, Section 2.

determining the method of assigning the original contributions, it may use a formula which lessens burdens on any low income areas which may be involved. By the older procedure all properties must be burdened, and then an exclusion made. By the newer one, low-income characteristics are considered in assigning the original burden. While the two procedures can produce the same result, the second is administratively more efficient and is now being frequently used, as will be further discussed in Section 4 below.

2.26 The next three sections of this report will deal with three central technical problems of valorization: establishing the values of land and buildings, distributing valorization charges, and collecting the charges. Subsequent sections will assess the overall impacts of valorization and provide an appraisal of its effectiveness.
3. TECHNICAL PROBLEMS: ESTABLISHING ACQUISITION PRICES FOR LAND AND BUILDINGS

A. Creation of Price "Contours" for Land

3.1 IDU uses the general Colombian system of costing land and building acquisitions. Adopted by national law in 1939 and amplified by subsequent legislation, this system is in essence analogous to determining contours of elevation by topographic surveys. That is, as a first step the market prices of a certain number of "prototypical" points are established. The points are then connected by "isovalue" lines, building up a set of price "contours" which may then be read like a topographic map. Originally designed to determine cadastral values for tax purposes, the price contour system has been used in Bogotá since 1972-73 and in other Colombian cities since 1963 as the basis for establishing individual property values prior to public acquisition.

3.2 Three steps are taken to determine the market values of the key points. First, interviews are conducted with property owners in the area to be affected. Up to 20 interviews may be taken to determine a single point. Whether the results are adjusted for variations in the respondents' presumed knowledge of local conditions is not known. However, information useful for such a judgment, including experience in the real estate profession (if any) and length of residence, is collected
during the interview. Second, evidence of sales is obtained from two real estate associations which keep records of sales of property by their members. Finally, a sample of market transactions in the area during the preceding 18 months is taken from sales investigations recorded by Notary Offices. Despite the likely presence of some straw sales or underreporting, these figures do give another sense of the value range.

3.3 Next, by comparing specific bits of data with averages and calculating sampling errors, a confidence level is established for the estimate of key points. Data which lie outside the confidence interval are weighted accordingly. If further sampling is not required, the estimate becomes the officially adopted "price" for that location, and one of the key points for drawing the contours. When enough key points are established, the points and actual contours are placed on a detailed map of the area concerned. The values of all other properties are then read by linear interpolation, as one would do with an ordinary topographic map.

3.4 Since the prices for the key points and contours are for "prototypical" lots, the square meter prices of other lots, even those on the same contour, are adjusted for differences in street access, frontage, shape, and other physical characteristics. For even further precision, different sizes of "prototypical" lots are employed for residential, commercial, and industrial property.
B. The Value of Construction

3.5 While land costs are being determined by the methods described above, a simultaneous field study is made of construction. In areas in which building is conventional, this process is relatively simple, and can be more or less limited to buildings which are actually expected to be acquired. A fairly elaborate point system has been developed for evaluating every element of construction, with values assigned to different construction materials and techniques, weighted in each case by whether their condition is "good," "regular," or "poor." Overall age is also added as another modifying coefficient.

3.6 For non-conventional construction in low-income areas the procedure is more complex. In this case, a different set of construction categories is used, more suited to informal and auto-construction. Instead of three categories of quality (each with preassigned values) as with conventional construction, this form has four categories, only some of which are weighted in advance. Point-weightings for the remainder are left up to the field investigator to assign.

3.7 Furthermore, while the value of conventional construction is considered to be more or less uniform, it is felt that the value of informal construction tends to vary more among barrios. To convert the point totals decided upon to unit assessed values, therefore, separate tables are compiled for each affected barrio.
Moreover, the assessed values established are adjusted for dwelling age and size. As one illustration, values are adjusted in certain neighborhoods for houses over four years old and larger than 100 square meters in size.

3.8 As has been noted, great efforts have been made to make the evaluation system comprehensive and fair. But while very careful in what it does consider, the system also at times appears to have insufficiently considered other elements of importance in low-income areas. The requirement that title to property be demonstrated before the whole system of compensation applies, however much it facilitates the acquisition process, can negate much of the sophistication of the above valuation procedure, since the system under which a great proportion of the low income areas of Bogotá is urbanized frequently does not deliver clear title. 1/ Title can also be acquired by ten years' adverse possession under Colombian law, but this is clearly also difficult for low income families to document. A related problem is that renters, who often comprise over 25% of the population of

low income barrios, receive no compensation under the above system even though they may experience rent increases in a new location after incurring the cost of moving. Even owners who can establish sufficient claim of title, and receive compensation as outlined above, sustain moving expenses and all of the psychological and financial hazards of relocation in a tight market.

C. Preparing an Actual Offer

3.9 Once the values of land and construction are determined, a comprehensive worksheet is prepared for each property to be acquired. Proper title is verified; the worksheet calls for registration information for current and previous owners. A formal "Valuation Memorandum" is prepared, which is then transmitted to the appropriate office of IDU to begin negotiations. According to the officials interviewed, these offers are generally accepted by landowners so that compulsory acquisition procedures seldom need to be resorted to. Owners who question the value are informed of the procedures just outlined, and generally conclude that it would be very difficult for them to construct an opposing case as convincing as the evidence compiled by these methods.

3.10 The valuation system described above is similar in its essentials to those successfully used in many European countries for these purposes. Certainly its "cross-referencing" of information and attempts to record in writing and objectify all relevant
data are attractive in themselves and some check, at least, on subjectivity. It is clear from the description given that there are still many points at which individual judgments are critical, as they indeed must be in a system of assessment. Nonetheless, the system overall would seem superior to practices (such as those of the US) that rely more heavily on the personal judgments of assessors, and produce more litigation since it is normally possible for those who have the resources to find assessors of equal qualifications and differing judgments.
4. TECHNICAL PROBLEMS: DETERMINATION OF THE ZONE OF INFLUENCE AND ALLOCATION OF VALORIZATION CHARGES

A. Introduction

4.1 One of the most important technical problems in valorization is to apportion the total cost of the project in an equitable manner, so that no resident will pay more than he receives in benefits. The distribution of benefits from a public improvement raises a host of theoretical and pragmatic issues, which the system of valorization must somehow solve through bureaucratic and publicly defensible procedures. In Bogotá, the administration of valorization has approached these problems with a set of doctrines, defined partially by law and partially by tradition, but at the same time has shown great flexibility in applying the doctrines to specific cases.

4.2 The basic Bogotá ordinance of 1958 provided one method to allocate valorization charges, which was to create a series of equally wide parallel zones along the project, and to assign a prescribed benefit to each. 1/ After a second adjustment to take account of variations in lot size and frontage, charges could be allocated.

4.3 To this rather inflexible method a 1960 statute added a second system. 2/ Its provisions call for a detailed study of each property, including especially the following ten factors:

1/ Acuerdo 41/1958.
2/ Acuerdo 70/1960.
(a) Lot size
(b) Frontage in relation to area
(c) Distance from the project to be undertaken, considered a measure of access
(d) "The economic conditions of the road on which the property is located, such as destination, demand for transportation, accessibility, etc., in cases where these circumstances determine a greater or less attraction of the betterment emanating from the project" 1/
(e) Lot shape
(f) Topography
(g) Natural accidents, such as flows of water, swampiness, and "sources of unhealthiness"
(h) Proximity of the property to sectors of low economic and social level
(i) Inputs which the owner has voluntarily contributed to the project
(j) The change in economic activity on the property brought about by the project.

1/ A literal translation. This apparently means that some properties, due to preexisting economic development, profit more than others.
4.4 Moreover, although this list would seem to be fairly exhaustive, an ordinance adopted in the late 1960s, at the beginning of the surge of valorization projects in Bogotá, stated that the Valorization Department was not bound by either of the above two methods, but could proceed "in accordance with the characteristics of the project and the nature of the benefits, with the end that the resulting charges are adjusted to legal norms and principles of equity." 1/ As will be discussed below, the concept of equal parallel zones is now almost never applied, although the zone of influence is frequently identified as running parallel to the project. The ten factors, however, have had a great impact on the way administrators think about valorization benefits, even though all ten are not applied in each case, and many new ones have been added.

B. The Basic Coefficient

4.5 In the previous section, which dealt with establishing the price of land and buildings for acquisition, it was pointed out how the values of certain "prototypical" lots were first determined, and then other values from them. Somewhat analogously, as a rough first approximation at distributing total project costs

1/ Acuerdo 5/1967, Article 2.
according to benefits, a "Basic Coefficient" is established for an "ideal lot" measuring 10 meters of frontage by 25 meters of depth. The estimated rise in the value of properties affected by the project is the measure of benefits used in calculation of the Basic Coefficient. Such value increases are first estimated for properties that will receive the greatest, and the smallest, benefits. They are expressed as pure numbers, frequently in the range of 3-30 to 100-120, though varying greatly from project to project. Generally, but not always, the distance of the parcel from the project determines its position in the range of benefits. A curve is then constructed between the highest and lowest figure (of which more below) so that values can be given to all properties receiving intermediate increases. While it "tastes" of a money value, the Basic Coefficient is carefully identified as a pure number, not pesos, for ease of understanding of its use in combination with other coefficients to give a relative weight to every parcel within the zone of influence.

C. The Coefficient of Form

4.6 To adjust for any lot not exactly 10 x 25 meters, a second coefficient is invariably necessary. This Coefficient of Form, developed in a standard formula by the Geographic Institute of Colombia, deals not only with this problem but also with the effect of expropriating only a portion of a lot rather than the lot itself.
4.7 Conventional assessment practices of most countries hold that of two lots equal in size or external dimensions, the one with less street frontage will have the lower value. Thus, in the adjustment formula for lot shape

\[ I = 3.9174 \left( F + 1 \right) \frac{.144}{P} - .404, \]  

(1)

where \( I \) is an "Index of Form," \( F \) is frontage, and \( P \) is the perimeter of the lot, the index, which typically varies between 0.9 and 1.3, is lower the narrower and the longer the parcel. Guidelines for use by nonspecialized personnel make the formula relatively easy to apply.

4.8 Expropriating a portion of a lot raises a question of equity common in almost all countries. If a part is taken, the owner receives compensation at market value for what is lost, plus a large increment in value on the remainder as a result of the project. The owner who loses an entire parcel, however, gets only the compensation which, if awarded at current use value, contains no share of the future increments. Valorization increases the equality of treatment in these situations by applying a further adjustment with the formula

\[ I^* = 2I_b - I_a, \]  

(2)

where the adjusted Coefficient of Form \( I^* \) is twice the post-project Coefficient less the original Coefficient. For lots
not "cut" by the project, therefore, I_b and I_a will be equal, and consequently no adjustment of the original coefficient of form is made.

D. Other Coefficients

4.9 Beyond these two standard coefficients, any number of other variables which might affect benefits may be added, simply by expressing their presumed effects by coefficients varying around 1.0. Topography is probably the most common, but land use, socioeconomic composition of the neighborhood, and others beyond even the influences on value enumerated in paragraph 4.3 are frequently employed. As will be seen below, the possibilities are limited only by the circumstances of the project and the imagination of the administrator.

E. The Valorization Charge

4.10 All of the other variables of benefit are then multiplied together with the Basic Coefficient to arrive at a value known as the Final Coefficient. Expressed on a per square meter basis, the Final Coefficient is an index of the estimated benefit received by the parcel in question relative to benefits on every other parcel in the zone influenced by the project. When multiplied by the number of square meters in each parcel, the Final Coefficient gives what is called that parcel's "Area Virtual." As can be seen from the above, the "Area Virtual" (although expressed in square meters) is not an area at all, but a measure of benefit received by the parcel as a whole, ranked in scale relative to all others.
All of the Areas Virtuales are then summed to produce a figure whose magnitude may or may not be similar to that of the total budget of the project. Suppose that the former figure is 12.5 million square meters, while the project budget is 10 million pesos. A conversion factor of 0.8 pesos per square meter is then applied to the Area Virtual for each lot, to determine a valorization charge which (a) is in proper weight relative to charges on other parcels, and still (b) yields the amount needed to cover the budgeted costs of the project.

F. The Coefficient System in Practice:
   Selected Illustrations

The administrative discretion that characterizes valorization in practice results in a diversity of application that makes classification of projects into any completely satisfactory categories almost impossible. Nevertheless, based on their principal similarities the 26 projects studied have been grouped into seven categories, though the categories are quite rough and almost every project has features of groupings other than its own. At the same time, the supposedly formidable administrative complexities of valorization are commonly given as the reason why the system has not found greater acceptance in other developing countries. For this reason, there is greater need than usual to describe in some detail how individual projects are carried out, so that a reasonable understanding may be achieved of its effectiveness in practice.
1. **Standard Formulas**

4.13 One project begun in the 1960s (Carrera 68) illustrates the use of standard declining value curves and formulas to calculate the Basic Coefficient and Coefficient of Form, though with modifications to suit the project circumstances. Only 800 meters long, this street upgrading project was nevertheless a vital link in improving a major circumferential highway, and would affect areas previously lacking good road access and infrastructure. The project was approved in 1966 by the District Council, which at the same time set the zone of influence as "all properties located within two parallel lines 500 meters on each side of the axis of the road."

Preparation of the Explanatory Memorandum and the final distribution of valorization charges took a little more than two years. The provisional budget was nearly 19 million pesos, of which about 4.6 million represented the value of land and buildings to be acquired and an additional 9.7 million was actual project cost:
### Table 3

**Carrera 68, Autopista Medellin to 500 Meters Southwest of Calle 68: Provisional Budget**  
(pesos)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of land and construction to be acquired</td>
<td>4,840,845</td>
</tr>
<tr>
<td>Value of works</td>
<td>9,685,232</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>14,526,077</td>
</tr>
<tr>
<td>Administrative costs a/</td>
<td>2,905,215</td>
</tr>
<tr>
<td>Contingencies b/</td>
<td>726,304</td>
</tr>
<tr>
<td>Interest at 6% for 10 months</td>
<td>726,304</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>18,883,900</td>
</tr>
<tr>
<td>Honoraria to representatives c/</td>
<td>56,652</td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td>18,940,552</td>
</tr>
</tbody>
</table>

**Notes:**

- **a/** 20% of 14,526,077
- **b/** 5% of 14,526,077
- **c/** 0.15% of 18,883,900, times two representatives

Source: Technical Section, Department of Valorization

4.14 Since this project had a zone of influence 500 meters on each side of the road, it was decided to make the Basic Coefficient a single curve, with its highest point at the edge of the road and lowest point at the 500 meter parallel line. These values per square meter were determined to be 100 Pesos and 3 Pesos respectively. However, strict application of the standard formula $500 x = k \frac{1}{2} \log y - \log 30$, where $k$ is a constant, $x$ is the
distance from the property to the edge of the road, and \( y \) is the Basic Coefficient, would have yielded a reasonable range of values for the Basic Coefficient of 100 to 30, which did not correspond exactly to the anticipated range of variation in benefits. Accordingly, a slightly modified formula, to represent a Basic Coefficient range of 75 to 5 instead of 100 to 30, was used instead. 1/ Though in this case distance was probably determined using a straight line perpendicular to the project, the current, more pragmatic approach favors road distance. No distinction was felt necessary in this case between properties having access to a street perpendicular to the project and those with access to a street parallel to the project, since the benefits were judged to be sufficiently similar.

4.15 Two other modifications were then made to the basic curve. Because of their "evident and disproportionate" benefit from being on a new four-lane arterial highway, all direct

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1/ The formula decided upon was \( y = 30 \left[10 \frac{x'^2}{k^2} - 25\right] \), where the constant \( k \) is 675 and \( x' \) is \( 500 - x \), where \( x \) again refers to distance. Though most applicable to the middle range of properties (since it gives values over 100 pesos per square meter for very close-in parcels), the modified formula has also been applied in a number of other cases.
frontage parcels were increased in value by 35%. In addition, to account for the fact that an existing subdivision along part of the project already had urban services and had ceded land for construction, the project lots from this subdivision were given a 25% lower coefficient.

4.16 For a lot in this subdivision whose Basic Coefficient is 75.00, these modifications resulted in an increase of 10% -- 35% for having direct frontage minus 25% for being in the subdivision. The Basic Coefficient would then be 75.00 + 7.50, or 82.50, which, when multiplied by the Coefficient of Form (1.23 in this instance), gives a Final Coefficient of 101.48, per square meter. 1/ When multiplied by the area of each property (to produce the "Area Virtual") and summed, these calculations yielded a total of 25,966,359 square meters, compared with the total provisional budget of the project of 18,940,552 pesos. Distributing this project cost over the sum of benefits yields a conversion factor of 0.7294265582 pesos per square meter, which is applied to each "Area Virtual" to obtain the specific peso valorization charge to be levied on each property. The size distribution of charges for this project is given in Appendix Table 1.

1/ Since topography and other features in the zone of influence were uniform, no other coefficients were calculated for this project.
4.17 A substantially similar methodology was used in five other projects studied, including further improvements on Carrera 68. In one instance (Av. Caracas), a coefficient of topography, from 1.00 to 0.00, was used to adjust for land little benefited because of slopes. To account for very large parcels which could not be legally subdivided without ceding (for roads, public spaces, and so on) 30 to 35% of their area, in another instance Coefficients of Form of 0.70 and 0.65 were applied.

2. Matrix of Points

4.18 In a number of projects the calculation of the Basic Coefficient has been by a quite different and somewhat more complex system, reminiscent of the contouring method used to establish land values for acquisition. Like the preceding case of Carrera 68, improvement of Calle 100, an end-link of the same circumferential highway, was inscribed as a priority undertaking in Bogotá's Master Plan of Roads (Plan Vial). The zone of influence, which had been delineated boundary by boundary by the District Council, was divided into a western and eastern segment, running not parallel but perpendicular to the project itself. A series of points was then laid out, with declining or increasing values according to the presumed desirability of the location after completion of the project. The range of values was quite broad, from a low, at the edge of one zone
segment, of 1.5 to a high of 270. Other values formed a matrix of points across the entire zone. Since more than 20 points were designated, together with the gradients which connected them, the value for any parcel was easily obtained by interpolation. As in this system no single formula is used, however, heavy reliance is placed on the discretion of its creators for accurate estimation of values.

4.19 Calculation of the final valorization charges for this project illustrates that as long as the coefficients accurately represent the relationships among the factors influencing benefits in the project area, the absolute values attached to these factors are of no other consequence. In this case the sum of the "Areas Virtuales" was 39,551,262, or more than twice the budget of 17,618,746 pesos. This was no problem, however, since the conversion factor was simply set at their ratio (0.44546608), and all values then would be properly adjusted in the final conversion. The same is true when the sum of ascribed benefits is less than the budget, as was the case for a smaller project (Carrera 11) that used a variant of the matrix method. All properties in that project were adjusted upward by 1.374950509 to arrive at the final valorization charge.
3. **Multiple Factor Analysis**

4.20 The two largest projects undertaken to date in Bogotá—the Eldorado Highway to the airport, by the Ministry of Public Works, and Carrera 7, one of the main links of the high and middle income north to the central city and itself a stimulant to high-rise residential and office construction—also had technically the most sophisticated methods of allocating valorization. Equally complex are the Master Plans for Sewers (North and Central), which involve charges to literally hundreds of thousands of properties.

4.21 In the lengthy Explanatory Memorandum for the Eldorado project, prepared by a local consulting firm, five possible methods of allocating benefits are considered but rejected as too simplistic for a project of this size. Use of the value of each parcel before and after the project as the proportion of the burden it should share is deemed impractical because (a) it requires waiting for completion of the project before collecting any charges, resulting in a lack of funds for construction; (b) the criteria of the first and second valuations are impossible to hold constant; (c) an accurate second valuation may mean a long wait, since the extent of value increases from the project is not known until land use changes and new construction have fully exploited the changed conditions; and (d) changes in ownership are likely to occur which will make
collection difficult. Calculations based on frontage may be satisfactory for sidewalks, paving, secondary sewers, and the like, where the impacts are local and the costs small, but not for a major highway affecting a large surrounding area. Since the highway runs from the central city to rural zones, encompassing wide variations in impacts per square meter, methods based on area or mixed frontage and area are also rejected. Finally, for much the same reason, the parallel zone approach and its variations are regarded as unsuitable.

4.22 The method ultimately adopted was to determine with great care the benefits on a series of "base lots" (much as was done in the Calle 100 example described in paragraph 4.18), and then extrapolate from them to the remaining parcels. This could have been done either by direct assignation of a value representing all of the benefits received by the base lot (as for Calle 100), or by a separate analysis of many coefficients for each of the base lots. Project managers chose the latter approach, identifying the relevant coefficients as:

a. **Location:** An adjustment was made for differences in the impact on properties along the highway where it enters the central part of the city, and those near the airport, where at the time of the Memorandum there was little development. This coefficient runs from 100 to 30, representing
the judgment that actual increases in values at the two locations were 200 and 60 Pesos respectively.

b. Distance: While the location coefficient adjusts for position along the length of the highway, "distance" takes account of position perpendicular to the axis. Various non-linear relationships were experimented with before arriving at a curve which adequately depicted the pattern of declining benefits with distance.

c. Size and Shape: An equation similar to the standard formula for the Coefficient of Form, but with lot size as well as shape, expresses the effects of different frontage and area combinations on values:

\[ Y = 2.9622 -0.1359 A + 0.1364 (F+1) -0.7692 P \]  

where \( Y \) is percent of the frontage price, \( A \) is area in square meters, and \( F \) and \( P \) are frontage and perimeter in meters, as in equation (1). In addition, another adjustment is made for large parcels which will have to cede 35-40% of their land to the District before being urbanized.
d. **Access:** This factor takes into account that some of the properties will have to use indirect routes to enter the limited-access Eldorado Highway. A coefficient of 1.20 applies to those on the highway, running to 0.50 for those whose access is more difficult than their physical proximity would suggest. Parcels which are swampy are also adjusted under this Coefficient.

e. **Disturbance from Air Traffic:** A complicated set of specifications for the landing and approach zones to the airport, permitting an adjustment from 1.00 (for those outside the zones entirely) to 0.20 for those most severely affected.

4.23 The coefficients are then multiplied together to obtain a first estimate of the value attributable to each parcel, which is then subjected to a final adjustment to ensure that each lot stands in reasonable relation to its neighbors, and in particular that the factors of distance and access appear to be equitable.  

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1/ It appears that values for each parcel were also calculated directly, using the factors just described, rather than only valuing base lots and extrapolating from them to the rest.
4.24 A similar method was used by the same consulting firm in calculating charges on the Carrera 7 project, as of 1974 the most costly (with a total budget of nearly 50 million pesos) and, from the standpoint of urban development, the most important single project undertaken by valorization in Bogotá. Since this major arterial runs from the heart of the new office and commercial center for 36 blocks through a variety of land uses, topography, street patterns and lot configurations, the apportionment of charges posed the most difficult problems of any valorization project.

4.25 With an undertaking which would radically transform many middle and low income residential neighborhoods and improve access to the city center, the expected benefits might well be high in relation to costs. Such was indeed the case for Carrera 7. Direct benefits to properties within the zone of influence, which extended over 5 kilometers with a width between 140 and 600 meters, were estimated to be 300 to 1,000 Pesos per square meter, as against individual tax burdens of 60 to 150 Pesos. While properties not facing the Carrera were expected to increase an average of 30 Pesos per square meter over some 2,200,000 square meters, those with direct frontage would go up in value as much as 60 to 70%. The grand total of increment turned out to be three times
the project cost. 1/ This fact, however, did not remove the
difficult task of an equitable allocation of the valorization
burden.

4.26 Charges were determined by the "base lot" method
modified by the application of several other coefficients.
After 36 "key" points along the route were selected, a lot,
neither the highest nor the lowest valued, was taken as the
base lot and assigned a coefficient of 100. One of three
"location" coefficients, from 1.20 to 0.70, was applied to
each base lot depending on land use in relation to the central
city and established residential and commercial districts.
Other factors such as distance and topography were also
applied. A special "improvements" factor of 1.20 to 2.00 was
added where a parcel contained a building of 10 or more stories,
on the premise that the improved street adds more value to land
employed in this fashion than land which is not. Moreover, it
was predicted (quite accurately) that many of the unoccupied
lots affected by the project would be used in a similar manner,
for high rise apartments and offices. Parcels of the depth
required for such buildings would gain enormously in value.
However, rigid application of the standard formula for the

1/ Despite the large overall capital gain, representatives of
the property owners objected to the inclusion of street
lighting and traffic lights in the project, but were over-
rulled by the Board of Valorization.
Coefficient of Form, because of its tendency to give low square meter values to lots with small frontage and large depth, would have allowed much of the gain to go uncaptured. Regularity of lot size with neighbors was consequently given priority over application of the standard formula in adjusting for shape. Results for the base lots were then further modified following discussions with representatives of the property owners.

4.27 An undertaking of even greater scope is the ten-year construction program being carried out under the Sewerage Master Plan and financed through valorization. In fact, this project was judged to be beyond the size feasible for identification of a single zone of influence and levies on all property owners at once. Under the law of valorization, once a charge is levied the public body has an obligation to complete the work as programmed. Since the Master Plan extends for ten years, it would be intolerably constricting to give a multitude of owners the right to immediate improvements. The solution was to divide the Plan into three sectors (North, Central, and South), and to create up to 100 or more districts in each sector, so that properties are charged according to localized, not global, costs and benefits. For the most part, the districts established have been sufficiently homogeneous as to land use, socio-economic composition, density, and the like that the coefficient for a single influence, while varying between
districts, can be the same for all properties within a district.

For the North Sector, the Explanatory Memorandum for which was issued in March 1969, five major factors have been identified. A land use coefficient ranges from 1.00 for high density residential properties to 0.70 for institutional, industrial, and recreational land, based on uses permitted by the Planning Department. To incorporate the notion that valuable parcels receive a greater proportional increase in price from sewers than less valuable ones, a land price differential factor is 1.00 if the pre-project land value is 110 Pesos or more, and as low as 0.40 if it is 10 Pesos or less. Another factor, for existing sewer services, accords the greatest gain to land which has been urbanized, but lacks sewers now (1.00). Next come those not urbanized and needing additional private investment before being able to benefit (0.90). Those already urbanized and with sewers gain least (0.80). A fourth coefficient, given far greater weight than the others, adjusts for neighborhood income levels, in five categories from 10.00 for high income districts to 6.00 for working class areas. If a district is mixed in economic levels, an intermediate value is taken from the above and applied to all parcels. Finally, flooded areas receive special benefits from having drainage, while other parcels may actually be damaged by having these works installed, and
a fifth coefficient (1.20 to 0.40) was therefore applied. When multiplied together times the total area of each district, these five factors yielded the district "Area Virtual," which was adjusted by a conversion factor to the actual budget needed to carry out the North Sector program of works.

4.29 Calculations for the Central Sector, completed in 1973, continued the innovation of determining the "Areas Virtuales" directly from a set of descriptive coefficients, but tended in other ways to return to more traditional concepts. Since in the city center land prices vary much more widely (from an estimated 30 to 10,000 Pesos per square meter) than in the North, a land value parameter ranging from 10.00 to 38.33 was made the "basic" factor. The effect of distance from the project was incorporated using a conventional curve for Basic Coefficients, though here this factor was a modifying coefficient rather than the "basic" one.

4. Adjustment for Degree of Urbanization

4.30 When the same project influences both properties already urbanized and those still in large unsubdivided acreage, an equitable allocation of charges would need to take account of the greater impact likely from an improvement on raw land than on land already subdivided and at least partially serviced. Consideration must also be given to the fact that investment is necessary to put the unsubdivided acreage into marketable condi-
tion. Several projects, including two additional improvements to Carrera 68 (see also paragraph 4.13), divide the zone of influence into two according to whether services were already available, and make a further adjustment for the specific services lacking in each zone.

4.31 Basic Coefficients in the unurbanized zones of these projects have typically been calculated using a standard curve of declining value with distance from the road. The valorization resulting from road accessibility alone is modified by a set of factors (nine in one case) denoting the value of services that will be available in the road bed. It is then assumed that the value of access to services declines at the same rate with distance as road access benefits, which adds an equal percentage gain, sometimes as much as 50%, to the original values. In the already urbanized sector the Basic Coefficient is calculated in a similar manner, and another set of special factors accounts for the additional services which the project will give to certain neighborhoods not yet fully serviced.

5. Adjustment for Inflation

4.32 A special problem arises in connection with the construction of loading bays along streets in the older parts of the city. Under a 1948 statute an owner wishing to participate in this program may cede a part of his land necessary

\[1/ \text{Acuerdo 44.}\]
for the street widening. The value of his contribution will then be carried on the books of the city until the project is undertaken by valorization, at which time the value will be offset against the valorization charge. If the project takes several years to accomplish, as is often the case, the ceding owner will receive no credit for the effects of increases in land values, while his neighbors, whose land is purchased at the time of construction, will receive compensation in current prices.

4.33 In two cases which illustrate this point (Carrera 9 and Calle 13), a sliding scale from 1.00 to 0.70 was established. In effect, this gave no adjustment (1.00) to owners receiving all payment in cash at the time of the project, and as much as a 30 to 40% reduction in valorization charges for owners who had made cessions, with intermediate values for those making some payments in cash.

6. Ability to Pay

4.34 Several recent projects exemplify the more intensive efforts since the early 1970s to take account of socioeconomic factors reflecting the capacity of a neighborhood to pay for valorization. In earlier projects these factors were handled as one of many modifying coefficients to the basic charges. The more recent tendency is to determine, with judgments derived in part from field investigations, if the charges are
within the owners' ability to pay. In cases where charges would amount to more than a maximum percent of income per month, the method of payment (not the charge itself) is adjusted.

4.35 One project applying this method (Av. Boyacá) \(^1\) affects at least 17 neighborhoods of varying socioeconomic characteristics. Using the multiple factor approach, charges were first calculated. Neighborhood conditions were then studied in greater depth, with questionnaires administered in the field to a representative sample of owners in the zone of influence. In one segment of the project studied, a 0.5% sample of low and middle income owners revealed that the difference between income and consumption expenditure (which was taken to be the capacity for monthly payment) was 588 Pesos per month in the low income area and 1,577 Pesos per month in the middle income neighborhoods. Since nearly 70% of the charges would be less than 3,936 Pesos, and over 86% were less than one-tenth of the average market value of land and buildings in the zone, the burden was felt to be easily accommodated provided installment payments were arranged on a sliding scale according to the size of the charge.

\(^{1}\) Information is taken from a staff memorandum, dated November 23, 1973.
7. **Special Cases**

4.36 As will be clear from the above discussion, valorization in Bogota has resisted standardization of methodology. A number of projects do not even fall into the somewhat forced categories outlined in this section, but still contain elements that warrant a brief summary.

4.37 Calculation of charges for a four level underground parking garage (Plazoleta del Rosario) in the central area of the city was based on a wide zone of influence, but with extremely large benefits to nearby parcels and a very rapidly dropping level of benefits with distance. Moreover, this project recognized that in practice, the desired level of collections might well be less than that to which the city is theoretically entitled. The authorities, it was argued, ought to leave a "margin of benefit" for the owner, to reimburse him for the stress of paying for improvements in the public interest without having to sell his property to realize the higher value. Estimates of value increase should contain "a margin of security to avoid errors about the value appreciation and injustice to the owners." 1/

4.38 However, the recommended policy of recovering not more than 80% of full benefits would not have provided enough resources to finance the project. In order to carry it out, a parallel recommendation had to be made that the city absorb both the normal 20% cost of administration charges and the contingency, or a total of 30% of the estimated project budget. Actual distribution among parcels was highly differentiated, and was done essentially on a parcel by parcel basis without an elaborate system of coefficients.

4.39 As is indeed inevitable whenever two improved streets intersect, many valorization projects in Bogotá have overlapping zones of influence. Double and triple burdens on one owner are possible. The general rule for dealing with this problem is to grant--upon application, but automatically--extensions in payment periods, without interest. However, this policy has resulted in collection problems, which will be discussed in the next section.

4.40 One project (Calle 68) illustrates another possibility, of assuming that when double valorization occurs, the level of benefits changes. The zone of influence of this project was divided into two, on the basis that one of the sub-zones would soon be subject to valorization from another project. The Basic Coefficient of the first, unaffected sub-zone runs from 75 to 5. The range of the second is 25 to 1, to account for the benefits forthcoming from the neighboring project.
5. TECHNICAL PROBLEMS: COLLECTION OF VALORIZATION CHARGES

A. The Collection Experience

5.1 Problems in collection have been encountered by virtually all countries that have attempted to recapture betterment, even those such as Great Britain with highly developed administrative systems. Though the record of recovery of valorization-type charges in Colombia is superior to that of most other Latin American countries, collection of charges has indeed been one of the most difficult aspects of valorization.

5.2 As of December 1973, 65% of payments on all valorization projects undertaken by the District government remained to be collected. Considering the life span of each project it is found that, on average, about four-fifths of project funds are recovered by the end of the five year statutory payment period, with payments virtually complete (96.2%) after the twelfth year. 1/ These figures, however, mask a considerable variation in the performance of individual projects, stemming from the nature and incidence of benefits, the collection arrangements in force, and the duration of the project.

1/ Linn, op. cit., p. 49.
B. Provisions for Payment

5.3 Two legal provisions govern the method of payment. First, since 1958 the repayment period has varied according to the taxpayer's income. 1/ Normally, the charge must be paid within six months, but if, within 20 days of being notified of the tax, a person obtains a certification of his taxable income from the Ministry of Finance, he may claim a longer period. If annual income is less than 50,000 Pesos (roughly $2,000 in mid-1974, when field research was conducted), he must pay on the following terms:

<table>
<thead>
<tr>
<th>If the charge is:</th>
<th>Payment must be made within:</th>
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<tr>
<td>10% or less of annual income</td>
<td>6 months</td>
</tr>
<tr>
<td>20%</td>
<td>12 months</td>
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<tr>
<td>30%</td>
<td>18 months</td>
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<tr>
<td>90%</td>
<td>54 months</td>
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<tr>
<td>More than 90%</td>
<td>60 months</td>
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If income is more than 50,000 Pesos, two-month extensions (up to 20 months) will be granted on a scale which in effect requires that no more than 60% of annual income need be paid. However,

even if the charge exceeds 100% of annual income it still must be paid within the 20-month extension period. Clearly, for a middle income family earning, say, 55,000 Pesos per year, 60% could pose a considerable burden.

5.4 On projects underway by 1974 the average charge seldom exceeded 10,000 Pesos (US$400), and one-half or more were 3,000 Pesos (US$120) or less. For an unskilled worker earning about 1,000 Pesos per month (US$40) these sums are not small. However, if his charge were, say, 3,600 Pesos, he would have 18 months to pay, for a charge of 200 Pesos per month or 20% of income. Such calculations demonstrate why adjustments need to be made for the socioeconomic characteristics of lower income neighborhoods, and why the Board of Valorization is able to grant relief in specific hardship cases. While these arrangements make payments easier particularly in conditions of rapid inflation, the granting of installments, which carry no interest charges, is a considerable loss from the standpoint of IDU.

5.5 The second legal provision which affects payments established a system of discounts. 1/ This system arose from the notion, prevalent in the early days of valorization (1944 to the early 1960s), that it was not feasible to impose charges prior to the completion of a project. The resulting liquidity problem was handled by creating a Revolving Fund ("Fondo

1/ Article 119, Acuerdo 41/1958.
Rotatorio de Valorizacion") which paid contractors in bonds instead of cash. When contractors objected to the lack of a market in such bonds, however, the Valorization Department agreed to accept the bonds as payment for valorization charges.

5.6 Bonds were the usual method of payment to contractors until 1965, when their use began to be phased out. Since the last issue was made in 1968 (at 6% interest for 20 years, the same terms as the 15 previous issues made between 1946 and 1968), alternative financing from international and other sources has been available. The bonds have sold on the Bogotá stock market at a fixed discount of 9%; moreover, if an individual pays his valorization charge within three months, he may use the bonds at face value and, in addition, receive a 10% premium. 1/ If he pays in three to six months the special discount is lost, but bonds will still be redeemed at face value. After six months, unless installment privileges have been granted, payments must be in cash, and interest at 1.5% per month begins to run. If installments are permitted, each installment of up to 1,000 Pesos may be paid in bonds (again resulting in a 9% saving) if done within the month due, otherwise only in cash plus accrued interest. When an individual is in delay on six installments, the installment privilege is cancelled, and the entire sum is due, at an interest of 1% per

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1/ Thus, to pay a 1000 peso charge, 900 pesos in bonds could be purchased at the 9% discount (cost: 819). Face value becomes 990 with the 10% premium, requiring an additional payment of 10 pesos. In this example the 1000 peso charge is paid off at a cost of 829, a 17.1% discount.
month until paid. The loss from these discounts and premiums has been far from insignificant: about 6.5% of collections in 1972 and 6.2% in 1973. This cost should drop further, however, as the number of bonds outstanding continues to decline.

C. Buildup of Arrears

5.7 As noted above, interest on defaults is 1.5% per month for six months on overdue installments, after which it becomes 1% per month on the entire balance. While not compounded, it clearly mounts rapidly, making repayment more difficult. A 1970 statute attempted to give amnesty on interest for those who would pay the balance due. However, since at the time commercial interest rates were higher than the IDU charge, borrowing to take advantage of the amnesty offer was not profitable. This provision has had only a minimal effect on actual collections. From experience distilled so far, it appears that property owners tend to pay valorization when they have money, with or without interest forgiveness, but not to borrow to do so. Monthly interest charges, designed to provide an incentive to pay promptly, have instead probably had the opposite effect.

5.8 The extent to which 16 valorization projects were in arrears at the end of five years, and the distribution by source of these deficits, are given in Appendix Table 2. Whether

\[ \text{1/ Acuerdo 1/1970.} \]
attributable to the accumulation of interest or simply to the psychology of debt, it is seen from the table that collection problems appear to become more difficult after a lapse of time, irrespective of whether private or public owners are involved. Nor does collection performance seem related to the size of the project.

5.9 When an owner is clearly in arrears, the administrative unit charged with enforcing payment can have the claim entered as an encumbrance on the property, and eventually sell the property at auction in settlement of the charge. This process can be done in ten months if there is no opposition, but it can occupy two to ten years if there is. Very few auctions have actually taken place, however, since owners almost always pay when their land is judicially attached. 

D. Financial Relations with Government and Charitable Organizations

5.10 Under Colombian law there are few exemptions from the valorization charge. Only Church property as defined by the Concordat of 1888 and "properties of public use" are exempted. In practice, however, administrative difficulties arise in attempting to collect on property owned by a national Ministry, the Church, charitable foundations, or units of the municipal government itself.

5.11 Taken together, these amounts in 1973 represented 35% of outstanding obligations. Over half the amounts due from official entities were owed by the national government

1/ An additional incentive to pay is the fact that in Colombia, land cannot be transferred without a "Paz y Salvo" document obtainable from local taxing authorities, which includes a certification that no valorization charges are outstanding.
and by the Beneficiencia de Cundinamarca, a public charitable foundation which provides a number of public facilities and social services in Bogotá, and whose heavy investment in land has made it one of the largest owners of peripheral land in the city. Another 18% was owed by the city itself. 1/ In a few cases, IDU has been able to cancel a debt on one project by having a public body donate land for another, but this is, of course, dependent upon favorable accidents of location. For non-exempt Church properties, the procedure has been for IDU to notify the District Council of charges levied on Church holdings, after which the Council passes an appropriation to cover them. This system does not seem to have been consistently carried out in practice, and Church property appears as a significant portion of the "private" deficit in valorization, though with great variation from project to project.

5.12 Another source of difficulty is the failure of the District government in recent years to deliver annual subventions from general tax receipts to IDU at the rate it is committed to do so. For 1974, only 15% of the amount owed from general funds appears actually to have been paid to IDU. 2/


2/ See Linn, op. cit., p. 61.
E. Special Administrative Problems

5.13 As mentioned earlier, many properties in the city will be subject to two, three, or even four valorization charges from different projects. In such cases installments run consecutively, the second beginning when the first expires. \(^1/\) Consequently, if an individual is eligible for five years of installments and liable for three projects, payments may continue over 15 years, all without interest or adjustment for inflation. Arrears on at least four of the 16 projects listed in Appendix Table 2 are lower than indicated because the existence of simultaneous projects means that some payments have been deferred.

5.14 Collection problems also arise from the large number of properties, generally near the edges of zones of influence, with quite small charges. On these it is clearly uneconomic to devote much effort to collecting overdue payments. Nevertheless, it is difficult to conclude that collections have varied in any significant way with the size of the levy. In recent years, in fact, the record most closely exemplifying the kind of sustained, self-supporting financial performance hoped for in valorization projects has been turned in by the Local Paving Fund, which specializes not in widening major thoroughfares but in small, local improvements benefiting low and middle

\(^1/\) Article 124, Acuerdo 41/1958.
income neighborhoods. Evidently the greater attention to residents' capacity to pay, plus the close association between valorization charges and benefits in such projects, have helped increase the acceptability of this program.

5.15 In a process as complicated as valorization, errors will inevitably be made: in the size of parcels, in application of the correct coefficients, in simple mathematical and clerical slips. The system of Representatives does apparently catch many of these, and the total quantity is in any case small: 0.1% of total collections in 1972 and 0.8% in 1973. Correction of these errors does take time, however, and many months may pass before an individual can be properly billed.

5.16 Other problems occur when land is being occupied by squatters. In such cases, sanctions on owners for non-payment of valorization would have little effect, since they may not care if the land is taken for taxes or not. Similarly, in the more common case of extralegal or "pirate" subdivisions where occupants have "contracts to buy" but not actual title, the owners will be reluctant to pay because possession has effectively passed permanently out of their hands. The IDU in these instances suspends attempts to collect until the title can be resolved, and it has a special section to deal with such matters. Delays can be considerable, however, and collections meanwhile fall further behind schedule.
6. IMPACTS OF VALORIZATION

A. Access to Employment and Housing

6.1 In considering the effects of valorization on urban growth and incomes, one should look at changes in the overall distribution of services it has helped to produce as well as the impact of individual projects. Systems of municipal finance in the large cities of most developing countries are normally hard-pressed to meet the costs of rapid urban infrastructure expansion. Valorization in Bogotá, to the extent that it has put most arterial streets, the sewer system, and local street paving on a more or less self-financing basis, has probably permitted the city to install these services at a more rapid rate than would otherwise have been possible. This, in turn, has had consequences for all income groups.

6.2 Valorization projects have unquestionably enhanced the value of Bogotá central city real estate. Without them, traffic in the old central area would undoubtedly have reached the saturation point many years ago, and the surge of investment taking place in the early 1970s might not have occurred. High income groups have also benefited from projects like Carrera 7 and the recent improvements to Calle 100, which have greatly increased the accessibility of their living areas in the north end of the city to employment in the center.
6.3 In spite of these benefits, however, the rich have traditionally been the strongest opponents of valorization. 1/ Presumably they have felt that their influence was sufficiently strong to obtain good infrastructure in their neighborhoods, and that if services were financed from general municipal revenues their relative burden would be less than under valorization. The persistence of this phenomenon tends to support the suggestion of Rhoads and Bird that this in itself is evidence that valorization is more progressive than other forms of municipal taxation.

6.4 Middle income groups, who also live in the north and northwest, have also been afforded better access by valorization, presumably at a faster rate than would otherwise have occurred. The half-dozen new projects to improve Carrera 68 stand especially to benefit the most recent band of middle income subdivisions.

6.5 In addition to the Local Paving program (a significant improvement given Bogotá's rainy climate), low income neighborhoods have also benefited from valorization projects. Two early projects involving Carrera 10 directly improved bus transportation to low income areas to the south of the central city, as did the two projects (February 1968 and February 1973) for the improvement of Carrera 14.

1/ See, for example, Rhoads and Bird (1967), p. 409.
6.6 Aside from individual projects, however, a persuasive, if indirect, case can be made for valorization as an aid to the poor through its contribution to an adequate arterial street system that has permitted a relatively spread pattern of urbanization and ease of movement by public transportation. With a highly competitive bus system, operating largely with ungraded fares, lower income families have a relatively large choice of housing locations and wide accessibility to jobs at low cost, with reasonable speed and convenience. In a small survey of three new neighborhoods, for example, 62.6% of those surveyed investigated at least one other neighborhood before making a final choice of residence. 1/ Possibly even more important, the transportation system permits employment access from more remote locations and hence higher residential lot sizes: 150-170 square meters is not uncommon in the "pirate" neighborhoods. Higher lot size facilitates the creation of rental accommodations without taking away space needed by the family. In Bogotá, about one-fifth of the income of persons in the "pirate" neighborhoods is from rent of this type. 2/ Small commercial and residential projects have also been made possible in these neighborhoods.

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1/ Survey of 115 heads of household in three "pirate" barrios in Bogotá, conducted under the supervision of William A. Doebele, April 1974.

2/ G. Vernez, "Bogotá's Pirate Settlements: An Opportunity for Metropolitan Development" (Ph.D. dissertation, University of California, 1973), p. 104. In three barrios studied, rental income ran from 18.5% to 48.8% of the total in various income ranges. Some 46% of all Bogotá families live in "pirate" neighborhoods. While they cannot be afforded by the very lowest income households, and would not be chosen by the upper middle class and above, these neighborhoods are the overwhelmingly popular form of housing for the upper-lower and lower-middle segments of the population.
craft activities in the house are probably also easier to undertake on larger lots; in a survey of one such neighborhood, 19% of all occupied lots had activities of this kind. 1/ Vegetable gardens in the back yard and other such activities are also facilitated. To the extent that the arterial street system of Bogotá is significantly better now than it would have been in the absence of valorization, improved access to employment and housing opportunities has enhanced the economic position of low income groups along with that of others.

6.7 In summary, middle and upper income groups have undoubtedly benefited more directly from valorization projects than the poor, although the valorization charge itself is probably more progressive than if the same projects had been conventionally financed. 2/ Ability of an area to pay was a criterion for the selection of valorization projects for a number of years, automatically limiting them to middle and high value sections of the city, but this is less the case now. As mentioned, the present approach is to do much more careful studies of socioeconomic conditions and capacity to pay before levying valorization charges. Lower income groups have indirectly

1/ Field survey of barrio San Blas by Lisa R. Peattie, March 1974. Vernez (op. cit., p. 105) gives a figure of 20% from another study of three barrios.

benefited from the city's having, at least in part from valorization, an exceptionally good arterial street system, improving accessibility to work and housing. With respect to sewers, although the Master Plan is giving priority to the higher income North and Central Sectors, another program, based on installment payments and a revolving fund but not administered by the IDU Department of Valorization, is bringing sewer services to a large number of low income neighborhoods. Many recent projects (Av. Caracas) and programs (Local Paving) have similarly been directly beneficial, and IDU is trying hard to find mechanisms by which these may be continued without the necessity of unreasonably heavy charges falling on families without liquid assets.

B. Land Use and Values

6.8 While the valorization process clearly raises land prices within the zone of influence, there is little evidence that this is more than price levels would reach had the improved services or accessibility been provided by more conventional means. Indeed, to the extent that valorization permits the city to extend the service network more quickly, the aggregate supply of accessible serviced land is increased, exerting downward pressure on land prices and lowering the threshold of ownership for low income families. While this effect is hard to isolate and even harder to quantify, there is little doubt that for low income families, the opportunities to acquire a home site in Bogotá compare favorably with most cities of similar size in the developing world.
It is also argued, however, that the rapidly declining curve used for the Basic Coefficient puts a heavy tax on frontage property, and hence tends to force it into intensive use. 1/ This argument seems well taken in the case of a project like Carrera 7. Other major projects have also tended to attract new development, increasing the congestion they are designed to relieve. One partial method of dealing with this problem would be strict setback and other building controls on, for example, the first 100 feet of adjoining property. This would in effect push the high valuation back by the same distance, and give a lower value and valorization charge to the frontage zone, decreasing the incentive to build it up so intensively. Although such measures may not reduce the amount of new traffic generated, they would likely facilitate the flow of such traffic, and permit later enlargements, if needed, to be more easily undertaken.

Another proposal along the same lines would be to modify the assumption that valorization concentrates so near to the project, and spread the charge more equally over the total zone of influence. Non-frontage owners would then have an incentive to increase revenues from the property, thus diluting

1/ See, for example, Bogotá Urban Development Phase II Study, Technical Appendix: Housing Patterns and Standards (Bogotá, September 1973), p. 47.
the effects of new building over a much larger area and easing the burden both on the project and on other utility systems.

6.11 Valorization does put landowners with little liquidity under pressure to sell their properties, in a way which does not occur under conventional financing of public works where the tax burden is more highly diffused. Conceivably, the result would be that large numbers of low income families would sell their land and dwellings precipitously, at below-market prices. Though this had not previously been a problem, in 1973 the general uncertainty over whether the large "Avenida de los Cerros" project (see paragraph 2.6) would be undertaken apparently caused some panic selling and disinclination to invest in housing improvements in the areas likely to be affected. Some poor families were fearful that without clear proof of title (which most lacked) they would receive no compensation for their land if needed for construction, or, if not taken, they would be liable for heavy valorization charges. The uncertainty was finally resolved in this instance when a new national administration cancelled the project. Little concrete evidence exists, therefore, that the forced sale of homes has been a serious problem.

C. Financial Viability

6.12 Persons able to mobilize cash within three months of notice of a valorization charge can obtain discounts of up to 17%,
which decrease to a still considerable 9% if payments are made within six months. Both of these discounts, however, are based on the use of urban development bonds. The regressive nature of the discount system, which clearly favors the well-to-do over those without access to liquid funds, will diminish as these bonds are withdrawn from the market.

6.13 Although impossible to quantify from existing records, the installment system has almost surely been a greater net subsidy, and is becoming more so with increases in interest rates and in the rate of inflation. The legally automatic installment periods vary progressively with income. Extensions of time because of double or triple valorizations of the same property are, in theory at least, multiples of this basic time period. Installment privileges can also be given for economic hardship. Consequently, to the extent that installment privileges are not given outside these criteria (and it is difficult to ascertain whether this does occur), some subsidization of lower income persons occurs. The sources from which this subsidy is drawn are difficult to determine, however, given the present organization of the IDU and District budgets.

6.14 The failure to collect full betterment from valorization projects also has financial impacts. Valorization attempts only to recover costs plus administration, not the actual increase in property values, on the grounds that the latter is technically too difficult to establish quantitatively. While this is certainly
true, the administrative problem could be avoided by making certain assumptions—for example, that actual betterment was cost plus 30%—and shifting to the landowner the burden of showing in a specific case that such an increase had not occurred. If infrastructure tends to benefit high value land proportionately more than low value land, moves toward the collection of full betterment would be progressive in effect, and would also add to general municipal revenues, or, more accurately, decrease the subsidy needed by IDU. At the same time, however, valorization would likely become much less acceptable politically. Collections from low income families, who have few means of raising cash, would become more difficult, and the differential between properties in the zone of influence and those just outside it would be sharpened.

6.15 Uncollected charges represent an implicit subsidy not only from IDU to other municipal and governmental agencies, but also to those who understand that considerable delays can be made in payment without serious penalty. Although substantial monthly interest charges do run, they have an insignificant impact when no recourse is had to the court system for collection. Large developers, whose land benefits substantially from being brought into the road and service network, benefit further to the extent that they are able to shift the burden to their purchasers.
6.16 Valorization is therefore not a zero-sum game, but has apparently been a net benefit to all income groups. Its redistributive effects, however, seem small and mixed. While valorization may have opened areas previously inaccessible for low income housing and hence improved the economic position of the poor, it has done little to stem rising profits from land development, and may even be said to have accelerated the process. These considerations should not, however, obscure the fact that valorization appears generally to be more progressive than conventional means of financing urban infrastructure, and, under a framework permitting some skewing of charges, could be much more so. Currently, the installment schedule relating payments to income in effect provides some reduction of the burden on low income property owners.
A. Project Design and Implementation

7.1 Flexibility within consistently applied criteria has been central to the success of valorization in Bogotá. Freedom from rigid formulas for distributing the charges among property owners has meant that common sense exceptions to the standard rules can be applied as situations demand. In keeping with the notion that in a growing city the benefits of urbanization will almost always exceed the costs, the present pragmatic attitude of calculating charges on the cost of the project, not on benefits conferred, seems justified. Now that valorization has become well established, careful study of projects to ensure that increased site values at least equal the cost of the project is probably less necessary. Individual cases where this is not so can be adjusted with the Board of Valorization's discretionary powers.

7.2 Valorization also appears to be applicable to projects of widely differing sizes. One project (Carrera 11) was only one block long, and involved five properties. In this case the Basic Coefficient was computed directly, from an estimation (based partly on the acquisition cost of property needed for the project) of the
future values per square meter. Of contrasting scope are undertakings such as the Carrera 7 project, with a budget of nearly 50 million pesos, \(^1\) and the projects of the Sewerage Master Plan, which suggest that valorization can be an effective tool even for very large elements of urban development.

7.3 As mentioned earlier, some recent projects have incorporated a more systematic analysis of capacity to pay for valorization charges. In this process a persuasive case is made that in general the charges can be borne, and through rescheduling of the most onerous individual obligations, specific cases of hardship are relieved. On the other hand, the capacity to pay concept embodies the assumption that valorization has a legitimate moral claim to all of the economic surplus of a family for as long as five years. It could, of course, be questioned whether valorization, or any other charge or tax, has a right to all of the surplus resources of a family on the margin of subsistence. In calculating capacity to pay as the difference between current income and expenditures, therefore, adequate attention may not always be paid to the expected growth of consumption expenditure over time. Nevertheless, this approach puts the issue for the first time on a basis of systematic field survey information, rather than on judgmental determination of the socioeconomic level of a neighborhood.

\(^1\) In 1974, about US$1.8 million.
7.4 Charges based more squarely on ability to pay have apparently generated no more complaints than others. It could not be determined whether this is primarily due to the system being generally accepted as fair, to complaints being considered fruitless, or to the operation of the representative system. Complaints are few, however, even in middle and high income neighborhoods where individuals have the means to initiate and follow through with objections.

7.5 Although the theoretical importance of owner participation in valorization has been emphasized, only two of the 25 Explanatory Memoranda examined allude to the Representatives which are elected by property owners in the zone of influence to safeguard their interests. A number of provisions would indeed seem to militate against active participation of the Representatives. They are not permitted to be owners in the zone of influence, for example, and in addition must be "professionally titled." While all landowners are notified, the procedures for electing a Representative require a personal appearance and authentication of ownership at the IDU office. Generally the vote totals are low, and so long as one candidate receives a majority, any number

1/ Rhoads and Bird (1967, p. 410) stress that an important element in the success of valorization is participation of property owners in planning and execution of projects without obstructionist or veto powers.
of votes is sufficient to elect. There appears to be a pool of about a dozen professionals who are regularly available to serve as representatives and alternates. Although they are supposed to spend two hours a day at the valorization offices during the period of execution of the project, they are generally busy men who reputedly tend to minimize this time, which in any case is largely unproductive since few complaints are made. And although they have considerable ombudsman-like powers to look into all aspects of the process and object to irregularities, they can be overridden by a vote of the Board of Valorization. Possibly because valorization seems to work to general satisfaction, this "watchdog" function seems to have languished.

7.6 A further aspect of the process contributing to its acceptance is that, as the proverb has it, it is not only important that justice be done, but that it appear to be done. The Explanatory Memoranda go to great lengths to make the allocation process as scientific and objective as possible. Like the Land Readjustment procedures of Korea, much use is made of tables, formulas, graphs, and other indications of mathematical certainty. Moreover, the entire process is done
in an established sequence, assuring, at least in theory, that no important considerations are left out, and that allocations are based on the same premises from project to project. Though no full-fledged cost-benefit analysis is undertaken and no internal rate of return calculated, the appearance and, to a considerable extent, the substance of objectivity is preserved.

7.7 These practices have two important results. They first impress the property owner with the appearance—probably to a considerable extent true—that the official allocation will be hard to attack. Second, they impose a certain objectivity on the administrative process, and encourage officials to think objectively about the judgments which must be made.

B. Collection and Administration

7.8 Valorization, it has sometimes been asserted, is administratively too complex for wide application in developing countries. Theoretical discussion supports this view, since the isolation of betterment due to the improvement from all other influences on land values is indeed an almost impossible undertaking. Thus the simplification in the Colombian system that recovery is to be limited to project cost, which is generally less by a considerable degree than estimated benefits, has made an important contribution to its general acceptance. Since the landowner nearly always emerges with a net gain, errors in calculating the charge are tolerable. The rapid growth of Bogotá and other Colombian cities,
which keeps the price of serviced land at a premium, heightens awareness that receiving roads and services is a very good proposition, even when valorization seems a burden in the near term. 7.9 Be that as it may, the right of owners to enjoy increases in urban land values resulting from either population growth or public investment is so engrained in many societies that recovery in any form is difficult. Officials of the collecting agencies find themselves dealing with powerful forces which exert pressures for compromises, exceptions, and delays. 1/ Thus it is not surprising that the indebted position of certain valorization programs, particularly streets and avenues and green space, has often been worrisome. Liquidity problems are difficult to avoid, since total costs are unlikely to be recovered prior to payment for the project even when billings are begun in advance. However, as mentioned above, non-collection from public and charitable bodies and liberal installment plans for private applicants have also been responsible for arrearages in many projects.

1/ Sweden, for example, finds it difficult, even with its highly skilled civil service, to administer a leasing system with full equity. See William A. Doebele, "A Commentary on Urban Land Policy in Sweden" (Mimeo, World Bank; December 1974).
7.10 On balance, the collection problems of IDU, at least with respect to non-public owners, are due less to a lack of effective administrative machinery than to a lack of effective coordination of the mechanisms that exist. After a long period of rather relaxed collection policies, it appears that a gradual but firm tightening of enforcement administration is necessary and is currently under way. Improved data storage and retrieval methods are permitting classification and statistical analysis of defaults, and billings are being put on a monthly basis. Another important development has been a tendency in recent years for IDU to negotiate land donations or other direct contributions in lieu of cash charges. While these may raise questions of the fair valuation of the property received, they can greatly reduce the collection problem, and may be especially useful in dealing with other governmental units, institutions, or large developers.

C. Transferability

7.11 Although a considerable effort may be necessary to adapt the Colombian system and experience to the conditions of another country, especially where concepts of property were markedly different, the problems should not be insuperable. The Colombian experience is now
in a reasonably operational form, and thanks in part to the concise and instructive Explanatory Memoranda, could be readily communicated. Its application would be compatible with legal systems derived either from the European civil code or the Anglo-American common law concepts of property, which are used in a great many developing countries. Whether or not it is the most suitable means of recovering betterment is a larger question. Yet it may be valuable as a practical tool for other countries who might feel it appropriate to their needs.

7.12 Any country considering the use of valorization, or indeed any other type of betterment recovery, should realistically recognize the stresses that occur when a bureaucracy, no matter how technically able, is put into the position of enforcing a tax or charge on powerful interest groups. In the light of these obstacles, the undeniable success of valorization in Bogotá is a remarkable achievement. Together with Medellín and other Colombian cities in which it effectively operates, the system is far in advance of any other country in Latin America in which such methods have been attempted. The lessons of this experience would consequently seem to be worth study by administrative officials of other major cities in the world.
### Table 1

Carrera 68: Distribution of Valorization Charges

<table>
<thead>
<tr>
<th>Total Charge (pesos/m²)</th>
<th>No. of Properties</th>
<th>Percent of Total</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00 - 2.99</td>
<td>28</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>3.00 - 3.99</td>
<td>284</td>
<td>7.6</td>
<td>8.4</td>
</tr>
<tr>
<td>4.00 - 4.99</td>
<td>488</td>
<td>13.1</td>
<td>21.5</td>
</tr>
<tr>
<td>5.00 - 5.99</td>
<td>520</td>
<td>14.0</td>
<td>35.5</td>
</tr>
<tr>
<td>6.00 - 6.99</td>
<td>270</td>
<td>7.3</td>
<td>42.8</td>
</tr>
<tr>
<td>7.00 - 7.99</td>
<td>221</td>
<td>5.9</td>
<td>48.7</td>
</tr>
<tr>
<td>8.00 - 9.99</td>
<td>376</td>
<td>10.1</td>
<td>58.8</td>
</tr>
<tr>
<td>10.00 - 11.99</td>
<td>361</td>
<td>9.7</td>
<td>68.5</td>
</tr>
<tr>
<td>12.00 - 14.99</td>
<td>261</td>
<td>7.0</td>
<td>75.5</td>
</tr>
<tr>
<td>15.00 - 19.99</td>
<td>318</td>
<td>8.6</td>
<td>84.1</td>
</tr>
<tr>
<td>20.00 - 24.99</td>
<td>202</td>
<td>5.4</td>
<td>89.5</td>
</tr>
<tr>
<td>25.00 - 29.99</td>
<td>124</td>
<td>3.3</td>
<td>92.8</td>
</tr>
<tr>
<td>30.00 - 39.99</td>
<td>109</td>
<td>2.9</td>
<td>95.7</td>
</tr>
<tr>
<td>40.00 - 49.99</td>
<td>96</td>
<td>2.6</td>
<td>98.3</td>
</tr>
<tr>
<td>50.00 - 59.99</td>
<td>13</td>
<td>0.4</td>
<td>98.7</td>
</tr>
<tr>
<td>60.00 - 79.99</td>
<td>45</td>
<td>1.2</td>
<td>99.9</td>
</tr>
<tr>
<td>80.00 and over</td>
<td>4</td>
<td>0.1</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>3,720</td>
<td>100.0</td>
<td>100.0</td>
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</table>
# Table 2

Delays in Valorization Payments, Bogotá

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Total Charge (pesos '000)</th>
<th>Percent in Arrears&lt;sup&gt;a/&lt;/sup&gt;</th>
<th>Percent of Deficit Unpaid 5 Years or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>Av. Caracas, Calle 11 to 36 Sur</td>
<td>24,948</td>
<td>21.0</td>
<td>28.3</td>
</tr>
<tr>
<td>47</td>
<td>Av. 68, Carrera 37 to 57</td>
<td>8,273</td>
<td>27.4</td>
<td>61.4</td>
</tr>
<tr>
<td>48</td>
<td>Calle 100, North Highway to Viscaya</td>
<td>22,809</td>
<td>15.6</td>
<td>54.2</td>
</tr>
<tr>
<td>49</td>
<td>Av. 68, Carrera 67 Av. Boyacá</td>
<td>6,595</td>
<td>24.5</td>
<td>74.4</td>
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<tr>
<td>50</td>
<td>Carrera 68, Medellin Highway</td>
<td>18,940</td>
<td>27.4</td>
<td>70.5</td>
</tr>
<tr>
<td>51</td>
<td>Calle 100, North Highway Cra.7a</td>
<td>17,619</td>
<td>5.5</td>
<td>46.5</td>
</tr>
<tr>
<td>52</td>
<td>Carrera 68, Eldorado Highway</td>
<td>34,883</td>
<td>93.5</td>
<td>86.1</td>
</tr>
<tr>
<td>53</td>
<td>Carrera 68, Av. 1 de Mayo, South Highway</td>
<td>21,293</td>
<td>21.2</td>
<td>42.4</td>
</tr>
<tr>
<td>54</td>
<td>Av. Quito</td>
<td>39,833</td>
<td>46.3</td>
<td>62.2&lt;sup&gt;b/&lt;/sup&gt;</td>
</tr>
<tr>
<td>55</td>
<td>Carrera 68, Av. 1 de Mayo, Av. Americas</td>
<td>26,993</td>
<td>44.9</td>
<td>47.9&lt;sup&gt;b/&lt;/sup&gt;</td>
</tr>
<tr>
<td>56</td>
<td>Av. 1 de Mayo, C. Kennedy</td>
<td>19,587</td>
<td>35.8</td>
<td>79.8&lt;sup&gt;b/&lt;/sup&gt;</td>
</tr>
<tr>
<td>60</td>
<td>Av. 68, Av. Boyacá</td>
<td>10,066</td>
<td>17.9</td>
<td>49.5&lt;sup&gt;b/&lt;/sup&gt;</td>
</tr>
<tr>
<td>61</td>
<td>Av. Suba</td>
<td>47,926</td>
<td>40.4</td>
<td>72.0&lt;sup&gt;c/&lt;/sup&gt;</td>
</tr>
<tr>
<td>62</td>
<td>Carrera 7, Calle 26 to 72</td>
<td>49,954</td>
<td>19.9</td>
<td>85.8&lt;sup&gt;c/&lt;/sup&gt;</td>
</tr>
<tr>
<td>63</td>
<td>Av. Suba, Calle 100, Medellin Highway</td>
<td>10,840</td>
<td>44.8</td>
<td>81.5&lt;sup&gt;c/&lt;/sup&gt;</td>
</tr>
<tr>
<td>64</td>
<td>Av. 32, Carrera 13, Calle 24</td>
<td>14,254</td>
<td>45.0</td>
<td>86.5&lt;sup&gt;d/&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a/</sup> As of December 31, 1973.

<sup>b/</sup> Four years or more.

<sup>c/</sup> Three years or more.

<sup>d/</sup> Two years or more.

Source: Section of Systematization, IDU, Bogotá
References

1. Botero, Carolina. "The Valorization Tax in Colombia as Applied at the Municipal Level." Department of City and Regional Planning, Harvard University, May 1975; mimeo.


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