William A. Doebele, Orville F. Grimes, Jr.,
and Johannes F. Linn

Participation of Beneficiaries in Financing Urban Services: Valorization Charges in Bogotá, Colombia

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I. INTRODUCTION

Street improvements, sewer extensions, and other services have been financed in Bogotá, Colombia, by valorization charges, a system of taxation by which the cost of public works is allocated to affected properties in proportion to the benefits conferred. Such charges are designed to make urban services largely self-financing, thus reducing municipal tax burdens. Although the concept has been traced at least to the Roman Digest of the sixth century, with variations in most European countries and in the United States as "special assessments," Colombia is one of the few developing nations to have applied it extensively. Among Colombian cities, Bogotá has been expanding rapidly, particularly since the 1950s. Many recent extensions of the city's road and street network have been financed through the valorization system, and much of the current program to extend the sewerage system is supported in the same way. More than three decades of experience with valorization in Bogotá may thus be instructive to other countries considering similar techniques.

This paper analyzes the operation of valorization programs in Bogotá and evaluates the system as a means of facilitating urban service provision in the rapidly growing cities of developing countries. In the next section the major conceptual issues facing valorization programs are discussed. Section III provides a record of practical experience with these issues by focusing on two problems: the allocation of valorization charges, and the collection of charges. Section IV draws together the available evidence to assess the fiscal and financial consequences of valorization programs and their impacts on land use and...

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Doebele is Professor of Advanced Environmental Studies, Harvard University; Grimes and Linn are Economists, Development Policy Staff, World Bank. Research for this report was carried out during field visits to Colombia undertaken as part of World Bank research projects 670-70 ("Urban Public Finances") and 670-98 ("Urban Land Taxation and Control"), and was supported by the Urban and Regional Economics Division at the World Bank. This paper draws on two reports prepared separately by the authors (Doebele and Grimes [1977], and Linn [1976]), which deal in greater detail with the issues discussed in this paper. While gratefully acknowledging helpful comments received from Richard Bird, Doug Keare, and Deborah McCarthy, the authors remain responsible for any errors of fact or interpretation in expressing what is understood to be their personal views.

1 For a recent review of the experience of other Latin American countries with betterment collection, the interested reader is referred to Jorge Macón and José Merino Mañón [1977]. For earlier discussions of the Colombian experience, see Rhoads and Bird [1967], Gobernación del Valle del Cauca [1973], Pinedo [1974], Botero [1975], and Linn [1975].
income distribution. A closing section summarizes the lessons from this experience.

II. BASIC ISSUES

Colombian legislation and practice on valorization, like similar programs elsewhere, have had to come to grips with three issues: (1) Should the valorization charge be viewed as recovering a benefit otherwise bestowed gratuitously on the landowner by the State (that is, recovery of betterment), or primarily as a way of increasing municipal solvency by recouping the actual cost of public investment? (2) How is the principle of valorization to be applied in low-income neighborhoods? (3) How can a steady, self-sustaining series of valorization projects be maintained in the face of liquidity and collection problems?

Valorization consists basically of the recovery of project costs, not a recapture of all benefits the project is expected to confer. Bogotá’s officials appear to believe with Rhoads and Bird that in a growing city “the forecast of benefit exceeding tax will be true in almost all cases.”

Informal studies conducted in Bogotá support the thesis that charges seldom exceed project benefits. Benefits are not ignored, since their calculation is the basis for allocation of project costs among properties. Nevertheless, the prevailing view is that it is much easier to use a broad conception of benefits to assign relative costs than it is to identify all project benefits and their distribution as a basis for 100 percent recovery.

With little savings and limited means of converting the increased land value into cash except by sale of their home, low-income property owners often find it difficult to pay valorization charges.\(^3\)

Valorization has developed several ways of dealing with this problem. For projects located in “sectors of low economic level,” the amount to be recovered from beneficiaries may be reduced by excluding a major share of project costs, making up the difference from general tax revenues.\(^4\) Alternatively, in determining the method of assigning the valorization charges, a formula may be used which, though it recovers full project cost, places a lower burden on low-income areas. This in effect provides a subsidy to low-income owners from the other owners affected by the project. Furthermore, a Local Paving Fund, established in 1964 to finance the paving of streets in low-income neighborhoods, also excludes a portion of project costs as long as all direct costs are recovered. Finally, an interest-free extended payment schedule helps low-income groups meet their payments and, particularly in conditions of inflation, lowers the real burden of the charge.

Together with a scarcity of experienced professionals, a central problem of valorization programs has been the difficulty of maintaining a financially self-sustaining, steadily growing portfolio of projects. The expenditure trends reviewed in section IV demonstrate that

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\(^3\) Rhoads and Bird [1967, p. 406].

\(^4\) In many cases the land value increase will also be associated with increased earning opportunities of the property owners and occupants, for instance by improving access to employment, by facilitating commercial and handicraft activities on the premises, and by increasing the attractiveness of the property for boarders (apartamentos). However, these increased earnings are spread over time and do not solve the owner’s short-term liquidity problem.

\(^4\) A 1958 statute specifies that all costs may be excluded except the costs of land, indemnities for damages caused, the 20 percent for administration, and 0.15 percent for “representatives.”
III. THE VALORIZATION PROCESS

A. Legal and Administrative Framework

While some historians have traced references to the idea of valorization in Colombia to as early as 1599, in its present form valorization began in 1921 with a national law permitting recovery of investment costs for flood control and irrigation projects through a contribution from benefiting property owners. The scope was subsequently extended by removing the limitation of recovery of charges to costs incurred and by permitting application to virtually all public works projects, so long as they resulted in an increase in property values. Today, though all levels of government in Colombia may recover project costs through valorization, municipalities have been the principal users.

Bogotá began applying the valorization system for street construction in 1944, and in 1958 passed a comprehensive municipal acuerdo ("ordinance") defining the procedures in detail (Acuerdo 41/1958). Subsequent legislation, while preserving the system laid down in 1958, extended its scope to the financing of redevelopment in deteriorated parts of the city; parking facilities; open spaces; the construction of loading bays and widening of streets in congested areas of the city; zones of historic interest; and, particularly in recent years, sewerage trunk lines and drainage canals. Administered before 1972 by a department within the Bogotá city government, valorization operations since that time have been the responsibility of the semiautonomous Institute of Urban Development (IDU), created to execute all major works in the Bogotá Special District. The District Water and Sewer Enterprise (EAAB) and national Ministry of Public Works have also carried out valorization projects within the Bogotá metropolitan area. Collection of charges for these two agencies is done by the District (now IDU), for which it receives a 20 percent commission.

B. Planning and Programming of Works

Selection of projects follows general plans developed for the city. Projects for the improvement of streets and avenues are part of the Plan Vial, a comprehensive transport plan prepared by the District Planning Office which also includes the parking facilities program. Sewer construction is subject to the Master Plan for Sewers. As a major exception, local paving projects are initiated by local community boards (Juntas de Acción Comunal), working in collaboration with IDU in the various low-income neighborhoods.

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4 For a detailed account of the legal history of valorization in Colombia and Bogotá, see Doebele and Grimes [1977, pp. 5-8].

5 As is often the case with capital cities, Bogotá enjoys a special status. Known technically as the "Distrito Especial de Bogotá," it combines the authority of a departamento ("province") with those of a municipality. 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.
Valorization projects must be approved by the District Planning Board and the Board of Directors of IDU, with the exception that sewer projects are entirely under the authority of the EAAB Board of Directors. Approval of the District (City) Council is also required, save for street works of under 200 meters in length which may be authorized by the mayor. Once approval is secured, the staff of IDU prepares an “Explanatory Memorandum of Provisional Liquidation,” which covers the scope and objectives of the project, its budgeted cost, the area over which the valorization charges are to be distributed (“zone of influence”), the system by which the cost is to be allocated, a statistical analysis of the charges, and an account of the legally required selection and participation of representatives of the property owners. When this report has been issued, collection of charges is initiated and project works may begin.

C. Determining the Zone of Influence and Allocating Charges

One of the most important technical problems in valorization is to apportion the total cost of the project in an equitable manner. In Bogotá, the administration of valorization has approached this problem with a set of doctrines defined by law and tradition, which it has applied with great flexibility.

The basic Bogotá ordinance of 1958 provided one method of allocating valorization charges, which was to assign a prescribed benefit to each of a series of equally wide parallel zones along the project (Acuerdo 41/1958). After an adjustment to take account of variations in lot size and frontage, charges could be allocated. To this rather inflexible method a 1960 statute added a second system calling for a detailed study of each property, with emphasis on ten features considered most important in determining value. At the beginning of the surge of valorization projects in Bogotá during the late 1960s, an ordinance was adopted stating that the Valorization Department was not bound by either method, but could proceed “in accordance with the characteristics of the project and the nature of the benefits, so that the resulting charges conform to legal norms and principles of equity” (Acuerdo 5/1967, Article 2). Today, the concept of equal parallel zones is seldom applied, although the zone of influence frequently does run parallel to the project. The ten factors of the 1967 statute, on the other hand, have had a great impact on the way administrators think about valorization benefits, even though all ten are

1 For a more detailed description of the format and contents of the “Explanatory Memoranda,” see Doebele and Grimes [1977, pp. 16-18].
2 A further important issue is the valuation of land and buildings for acquisition in valorization works. However, this issue is not dealt with in this paper since it is parallel to the task of the appraisal of parcels for property taxation and since, in fact, the same assessment techniques are used in both cases. Assessment procedures as applied to valorization and property taxation are described in Doebele and Grimes [1977] and Linn [1975].

* Acuerdo 70/1960. The ten features are (a) lot size; (b) frontage in relation to area; (c) distance from the project; (d) lot shape; (e) topography; (f) natural accidents, such as flows of water or swainliness; (g) proximity to low-income areas; (h) inputs which the owner has voluntarily contributed to the project; (i) the change in economic activity on the property brought about by the project, e.g., from residential to commercial use; and (j) “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 lesser attraction of the betterment emanating from the project” (a literal translation, apparently meaning that some properties, because of previous economic activity, benefit more than others).
rarely applied in a single case and many new ones have been added.

1. The Coefficient System. As a rough first approximation of distributing total project cost 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 used to measure the benefits conferred. 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 properties receiving the greatest and the smallest benefits, so that values can be given to properties with intermediate increases.

To adjust for any lot not 10 by 25 meters, a second coefficient, the "coefficient of form," is used. Following conventional assessment practices of most countries, it is held that of two lots equal in size or external dimensions, the one with less street frontage will have the lower value. The coefficient of form adjusts for lot shape using the following formula:

\[ I = 3.9174(F + 1)^{1.44}P^{-1.404} \]  

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 longer the parcel. Guidelines for use by nonspecialized personnel make the formula relatively easy to apply.

Other frequently employed coefficients include topography, land use, socioeconomic composition of the neighborhood, and additional influences beyond even those enumerated above. These other variables of benefit, expressed in terms of coefficients varying around 1.0, are then multiplied 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 the parcel's área virtual. As can be seen from the above, the área 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.

The sum of all áreas virtuales is then divided into the total budget of the project to yield a standard conversion factor for all properties. This factor (in pesos per square meter) is then multiplied with the área virtual to derive a valorization charge for each lot which is in proper weight relative to charges on other parcels, yet still yields the amount needed to cover the budgeted costs of the project.  

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10 In mathematical terms this procedure can be summarized as follows:

Derivation of área virtual for each property \( i \):

\[ A_i \cdot K_i \cdot \frac{1}{\sum A_i} = A_i \]

Standard conversion factor:

\[ \frac{C}{\sum A_i} = I \]

Valorization tax burden:

\[ A_i \cdot C_i = C \]

\[ C_i = \frac{A_i \cdot K_i}{\sum A_i \cdot K_i} \]

where \( A_i = \) area of property \( i \), \( A_i^* = \) área virtual of property \( i \), \( C = \) total cost of project, \( C_i = \) valorization tax on property \( i \), \( K_i = \) coefficient of factor \( f \) for property \( i \), \( f \) = product operator; and \( I \) = standard conversion factor.
TABLE 1
CARRERA 68, AUTOPISTA MEDELLIN TO 500 METERS SOUTHWEST OF CALLE 68: PROVISIONAL BUDGET
(In Colombian 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>Subtotal</td>
<td>14,526,077</td>
</tr>
<tr>
<td>Administrative costs</td>
<td>2,905,215</td>
</tr>
<tr>
<td>Contingencies</td>
<td>726,304</td>
</tr>
<tr>
<td>Interest at 6% for 10 months</td>
<td>726,304</td>
</tr>
<tr>
<td>Subtotal</td>
<td>18,833,900</td>
</tr>
<tr>
<td>Honoraria to representatives</td>
<td>56,652</td>
</tr>
<tr>
<td>Total Project Cost</td>
<td>18,940,552</td>
</tr>
</tbody>
</table>

Source: Technical Section, Department of Valorization, Bogotá, Colombia.

* 20% of 14,526,077.
* 5% of 14,526,077.
* 0.15% of 18,833,900, times two representatives (for discussion of representative system, see section V, subsection A of this paper).

2. 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 almost impossible. Nevertheless, the 26 projects studied have been grouped into categories, though the categories are quite rough and almost every project has features of groupings other than its own.11

(a) Standard Formulas. The Carrera ("highway") 68 street improvement project, approved in 1966 with a provisional budget of nearly 19 million pesos (Table 1), 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. (US $1.00 = 12.93 Colombian pesos, 1966.) The zone of influence was defined as extending 500 meters on each side of the road. It was decided to make the basic coefficient a single curve, with the 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 75 and 5, respectively; intervening points were determined by interpolation. Two modifications were made to the basic curve. All direct frontage parcels were increased in value by 35 percent as they were judged to have "evident and disproportionate" benefit from being on an arterial highway. In addition, project lots in a subdivision which already had urban services and had ceded land for construction were given a 25 percent lower coefficient.

Following standard practice, the modified basic coefficient was multiplied by the coefficient of form to arrive at a final coefficient which, when multiplied by the area of each property and summed over the zone of influence, yielded a total area virtual of 25,966,359 square meters. Since the provisional budget of the project was 18,940,552 pesos, a conversion factor of 0.7294 pesos per square meter was applied to each area virtual to obtain the peso valuation charge to be levied on each property.12

(b) Matrix of Points. In a number of projects the method of calculation of the basic coefficient has been somewhat

11 Only summaries of a few selected projects can be presented here. Doebele and Grimes [1977, pp. 37-56], and Linn [1976e, Appendix pp. A-1 to A-18] present more detailed descriptions of a number of projects including documentation of project costs and distribution of charges.

12 Five other projects studied, including further improvements on Carrera 68, used a similar methodology. In one instance (Avenida 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 percent of their area, coefficients of form of 0.70 and 0.65 were applied in another instance.
more complex. The zone of influence in one case was divided into a western and eastern segment, running not parallel but perpendicular to the project. A matrix of points was then laid out across the entire zone, with declining or increasing values of the basic coefficient determined according to the presumed desirability of the location after completion of the project. The range of values for a zone segment was quite broad, from a low of 1.5 to a high of 270. A value gradient map was then constructed from these points, and the value of the basic coefficient for any parcel was obtained by linear interpolation from the gradients. As no single formula is used in this system, heavy reliance is placed on the discretion of its practitioners for an accurate estimation of values.

(c) Multiple Factors. The two largest valorization projects undertaken thus far in Bogotá have been the Eldorado Highway, running from the international airport almost to the city center, and Carrera 7, one of the main links of the northern suburbs to the city center and itself a stimulant to high-rise residential and office construction. These projects also had technically the most sophisticated method of allocating charges. Equally complex are those of the Master Plan for Sewers, involving charges to literally hundreds of thousands of properties. To illustrate the basic method used in these three (as well as other) instances, the Eldorado Highway project is described in some detail.

Since the Eldorado Highway extends from the central city to rural districts, encompassing wide variations in impacts per square meter, the usual methods of calculating charges were regarded as unsuitable. Instead, the method adopted was to determine with great care the benefits on a series of "base lots," and to extrapolate from them to the remaining parcels. This could have been done either by direct assignation of a value representing all benefits received by the base lot, or by a separate analysis of many coefficients for each base lot. In the initial computation the latter method was used, and the relevant coefficients were identified as (a) location; (b) distance; (c) size and shape; (d) access; and (e) disturbance from air traffic. The adjustment for location was made for differences in impact along the highway. This coefficient runs from 100 to 30, reflecting the judgment that actual increases in values would be 200 pesos per square meter where the highway enters the central part of the city and 60 pesos near the airport. For distance perpendicular to the road, a curve was derived to depict the pattern of declining benefits with distance. An equation similar to the standard formula for the coefficient of form, but with lot size as well as shape, was used to express the effects of different frontage and area combinations on values. The access factor recognized that some properties required indirect routes to enter the limited-access Eldorado Highway, and applied a coefficient of 1.20 for those on the highway to 0.50 for those with the most difficult access. Finally, a complicated set of specifications for disturbances from air traffic led to further adjustments.13

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13 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 condition. Several projects, including two additional improvements to Carrera 68, divide the zone of influence into two according to whether services were already avail-
(d) Verification of Ability to Pay. Several recent projects exemplify the more intensive efforts made since the early 1970s to take account of socioeconomic factors reflecting the capacity of a neighborhood to pay for valorization. One project applying this method (Avenida Boyacá) affects at least 17 neighborhoods of varying socioeconomic characteristics. Charges were calculated using the multiple factor approach. Neighborhood conditions were then studied in greater depth, with questionnaires administered in the field. A sample of property owners revealed that the difference between income and consumption (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 percent of the charges were less than 3,936 pesos, and over 86 percent 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.

3. Special Cases. A number of projects do not even fall into the somewhat forced categories outlined above. For instance, calculation of charges for a four-level underground parking garage (Plazolaeta del Rosario) was based on a wide zone of influence, but with very large benefits to nearby parcels and a rapidly dropping level of benefits with distance. Moreover, this project recognized that in practice, the authorities may sometimes wish to leave a "buffer" for the owner, to take account of the hardship of paying for improvements in the public interest without having to sell his property. The consultants recommended that estimates of value increase should contain "a margin of security to avoid errors about the value appreciation and injustice to the owners." However, since this policy would not have provided enough resources to finance the project, a parallel recommendation was made that the city absorb both the normal 20 percent administration cost and the contingency, or a total of 30 percent of the estimated project budget.

Many valorization projects in Bogotá have overlapping zones of influence, as is the case when two improved streets intersect. Double and triple burdens on one owner are therefore possible. The general rule for dealing with this problem is to lengthen the payment periods, without interest. However, this policy has resulted in collection problems, as discussed in the next section.

D. Collection and Administration

Problems in collection have been encountered by virtually all countries that...

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have attempted to recapture betterment. Although the record of recovery of valorization-type charges in Colombia is superior to that of most other Latin American countries, collection of charges has been one of the most difficult aspects of the system.

As of December 1973, 65 percent of payments on all valorization projects undertaken by the district government remained to be collected. On average, just over one-third of tax obligations are collected in the first year of a project and over one-half by the end of the second year. About four-fifths of project funds are recovered by the end of the five-year payment period, with payments virtually complete (96.2 percent) after the twelfth year. 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. Collection performance improved considerably for projects undertaken in the late sixties, compared with those begun between 1962 and 1964. This may be attributed to an increased collection effort, but also to greater taxpayer familiarity with the system and to improved tax distribution techniques. Between 1970 and 1973 the collection performance declined again, possibly because of the greater complexity of projects initiated in those years and the lower capacity to pay associated with an economic recession.

Normally, valorization charges must be paid within six months. However, persons showing proof of income within 20 days of being notified of the charge may claim a longer period of payments. If annual income is below 50,000 pesos (roughly US$2,000 in mid-1974), extensions of up to 60 months are granted, the exact period varying with the size of the valorization charge relative to income. For taxpayers with higher incomes, extensions of up to 20 months are permitted.

On projects underway by 1974 the average charge seldom exceeded 10,000 pesos (US$400), and was 3,000 pesos (US$120) or less for at least one-half of such projects. 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, with a monthly payment of 200 pesos or 20 percent of income. On the other hand, while these arrangements make payments easier, the granting of installments without interest charges causes IDU considerable financial losses.

The penalty for defaults is an interest charge of 1.5 percent per month for six months on overdue installments, after which it becomes 1 percent per month on the entire balance. An additional incen-

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16 A second provision which formerly affected payments should also be noted: a system of discounts based on 20-year "Urban Progress" bonds. Within six months of notification or within the terms of any extended payments period, a 9 percent discount was obtained if payment of the valorization charge was made in these bonds. Up to 1968 the bonds were issued by the Valorization Department to its contractors in lieu of cash payments. They have sold on the Bogotá stock exchange at a fixed discount of 9 percent. Thus, to pay a 1,000-peso charge, 900 pesos in bonds could be purchased at the 9 percent discount (cost: 819 pesos). Face value becomes 990 pesos with the 10 percent premium, requiring an additional payment of 10 pesos. In this example, the 1,000-peso charge is paid off at a cost of 829 pesos, a 17.1 percent discount. The loss to IDU from these discounts has been quite significant: about 6.5 percent of revenues from valorization payments in 1972, 6.0 percent in 1973, and 5.4 percent in 1974. Due to contractor resistance no new bonds have been issued since 1968. This relative cost should drop further, therefore, as the number of bonds outstanding continues to decline.
tive to pay is the fact that in Colombia, land cannot be transferred without a release from local taxing authorities, which includes a certification that no valorization charges are outstanding. Despite these provisions, significant collection problems have persisted. In 1972, for instance, receivables on account of valorization payments for the streets and avenues program were almost five times actual collections. Even for those relatively solvent projects initiated between 1965 and 1969, delays in payment beyond two years were the rule. A 1970 provision that those who pay the balance due receive an amnesty on interest on late payments has had a minimal effect on collections. It appears that property owners tend to pay the charges when they have money, with or without interest forgiveness, but regard borrowing to do so as not profitable since commercial interest rates are generally higher than the IDU charge. Properties may eventually be auctioned in settlement of the charge, but if there is opposition the process takes up to ten years; very few auctions have actually taken place.

Conventional enforcement instruments are even less effective when applied to public debtors. According to IDU records, in 1973 debts from official entities amounted to 46 percent of total arrears.17 Over half of these debts were owed by the national government and by the Beneficiencia de Cundinamarca, a public charitable foundation which provides a number of 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 percent was owed by the city itself. 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 nonexempt 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.

When properties are subject to multiple valorization charges, installments run consecutively, the second beginning when the first expires. Consequently, if an individual is eligible for five years of installments on three projects, payments may continue over 15 years, all without interest or adjustment for inflation. Collection problems also arise from the large number of properties located near the edges of zones of influence, which bear small charges. It is clearly uneconomic to devote much effort to collecting overdue payments on such properties. At times it has also been difficult to extract payment from those required to pay very large amounts. Nevertheless, it is difficult to conclude that collections have varied significantly with the size of the levy. In recent years, in fact, the program whose collection performance has been most successful has been the local paving fund, which specializes not in widening major thoroughfares but in small, local improvements benefiting low- and middle-income neighborhoods. Evidently the attention to residents' capacity to pay, plus a close association between valorization charges and bene-

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17 Only certain church property and "properties of public use" are legally exempt from the valorization tax.
fits, have helped increase the acceptability of this program.

Other problems occur when land is being occupied by squatters. In such cases, sanctions on owners for nonpayment of valorization would have little effect, since they may not care if the land is taken for taxes. Similarly, in the more common case of extralegal or "pirate" subdivisions where occupants have "contracts to buy" but not actual title, owners are frequently reluctant to pay because possession has effectively passed out of their hands. In these instances the IDU suspends attempts to collect until the title can be resolved. Delays may be considerable, however, and collections meanwhile fall further behind schedule.

IV. IMPACTS OF VALORIZATION

This section discusses the effects of valorization in Bogotá mainly in terms of the adequacy of the fiscal resources at

### TABLE 2
THE ROLE OF VALORIZATION ACTIVITIES IN BOGOTA: 1959-1974

<table>
<thead>
<tr>
<th>Year</th>
<th>Total per Capita Valorization Expenditures in 1959 Prices (Pesos)</th>
<th>Valorization Expenditure as Percentage of Total Local Authority Spending (%)</th>
<th>Valorization Contributions as Percentage of Property Tax Revenues (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>16.4</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>1960</td>
<td>14.8</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>1961</td>
<td>17.1</td>
<td>n.a.</td>
<td>5.9</td>
</tr>
<tr>
<td>1962</td>
<td>10.8</td>
<td>n.a.</td>
<td>19.5</td>
</tr>
<tr>
<td>1963</td>
<td>12.0</td>
<td>3.2</td>
<td>41.9</td>
</tr>
<tr>
<td>1964</td>
<td>14.1</td>
<td>5.8</td>
<td>20.7</td>
</tr>
<tr>
<td>1965</td>
<td>12.4</td>
<td>5.5</td>
<td>21.6</td>
</tr>
<tr>
<td>1966</td>
<td>13.3</td>
<td>6.6</td>
<td>29.7</td>
</tr>
<tr>
<td>1967</td>
<td>36.4</td>
<td>14.3</td>
<td>59.2</td>
</tr>
<tr>
<td>1968</td>
<td>49.1</td>
<td>15.9</td>
<td>60.2</td>
</tr>
<tr>
<td>1969</td>
<td>35.3</td>
<td>10.3</td>
<td>66.9 (68.0)*</td>
</tr>
<tr>
<td>1970</td>
<td>21.7</td>
<td>6.8</td>
<td>62.0 (75.4)</td>
</tr>
<tr>
<td>1971</td>
<td>17.8</td>
<td>5.1</td>
<td>44.6 (57.6)</td>
</tr>
<tr>
<td>1972</td>
<td>15.2</td>
<td>4.2</td>
<td>31.0 (38.8)</td>
</tr>
<tr>
<td>1973</td>
<td>9.8</td>
<td>n.a.</td>
<td>22.0 (27.5)</td>
</tr>
<tr>
<td>1974</td>
<td>16.9</td>
<td>n.a.</td>
<td>18.2 (34.1)</td>
</tr>
<tr>
<td>Average</td>
<td>13.3</td>
<td>5.3b</td>
<td>23.2</td>
</tr>
<tr>
<td>1961-1966</td>
<td>35.6</td>
<td>11.8</td>
<td>62.1 (65.7)</td>
</tr>
<tr>
<td>1971-1974</td>
<td>14.9</td>
<td>4.7c</td>
<td>29.0 (39.5)</td>
</tr>
</tbody>
</table>


* Figures in parentheses show the percentage of valorization charges relative to property tax revenues when the valorization revenues from the Sewerage Master Plan are included.


its disposal. The available information on land use and income distribution impacts is also summarized.

A. Adequacy of Fiscal Resources

As shown in Table 2, over the period 1959–1974 real per capita valorization expenditures in Bogotá did not expand significantly. However, during the years of major use of the system (1967–1970) annual per capita spending was on average almost three times that of all other years, indicating the considerable fiscal potential of this system. Moreover, valorization spending amounted to nearly 16 percent of all local government expenditures in Bogotá (including the substantial outlays of water, sewerage, electricity, and telephone enterprises) at the height of its usage in 1968. Finally, valorization charges were more than 60 percent of receipts from the district property tax—a major source of local revenue—during the period 1967–1970.

The high degree of fluctuation in valorization activity shown in Table 2 raises a concern about the ability of valorization charges to provide a steady fiscal base for cities that face rapidly growing expenditure requirements. Three major phases may be distinguished in the development of valorization-financed activities in Bogotá over the period 1959–1974. In the first phase (1959–1966) the valorization program played a minor role since only a few large-scale projects were initiated, and since the local paving program, which was to supply a steadily growing portfolio of small neighborhood paving projects in later years, only began operations in 1964.

The second phase (1967–1970) was marked by heavy expenditures on valorization projects, stimulated in part by preparation for the Eucharistic Congress held in Bogotá in 1969. From 1967 to 1971 annual per capita spending for valorization projects almost tripled in real terms compared with the preceding years. This high rate of spending was financed mainly by grants from the District administration, by a considerable increase in borrowing, and by increased valorization tax revenues, especially after 1968.

During the third period (1971–1974) real per capita spending on valorization activities reverted nearly to its pre-1967 level. Capital outlays declined, and as a result of heavy borrowing, debt service accounted for a much larger share of expenditure. This decline in activity can be explained by the absence of transfers from the District administration, by the low level of borrowing, but most of all by the failure to develop large-scale infrastructure programs in Bogotá at a steady pace. In 1974, however, a substantial increase in spending occurred in connection with the Bogotá Eastern Zone Development Program, financed primarily by heavy borrowing.

This pattern of valorization activity resulted mainly from wide fluctuations in the oldest and most important of the valorization programs: the construction of major arterial streets and avenues. By contrast, the local paving program showed a much steadier growth. Although local paving started as a very small program (4.9 percent of total expenditure in 1964, its first year of existence), it amounted to a fifth of the total in 1974 and 35.8 percent of the out-

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18 It is of some interest that another international event, the Panamerican Games held in 1971 in Cali, led to a similarly rapid expansion of valorization-financed activities in that city.
### TABLE 3
EXPENDITURE AND FINANCING PATTERNS OF VALORIZATION ACTIVITIES: 1972-1974

<table>
<thead>
<tr>
<th>Program</th>
<th>Investment as Percent of Total Expenditure</th>
<th>Valorization Contributions as Percent of Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streets and Avenues</td>
<td>56.0</td>
<td>57.8</td>
</tr>
<tr>
<td>Local Paving</td>
<td>93.3</td>
<td>98.4</td>
</tr>
<tr>
<td>Other</td>
<td>68.2</td>
<td>77.7</td>
</tr>
</tbody>
</table>

Source: Financial Reports of District Valorization Department and IDU, as compiled in Linn [1976c, pp. 30, 32].

If the comparison between these two programs is made in terms of investments in actual works—which would seem a truer measure of their physical impacts on the city—the relative importance of local paving is even greater. For this program a consistently higher percentage of total spending was devoted to capital outlays than was the case for the other valorization programs (Table 3). Moreover, a higher proportion of revenues has been derived from valorization tax payments, all the more surprising as local paving projects are carried out mainly in low-income neighborhoods and are not designed to recover overhead costs. This experience suggests strongly that the simpler the infrastructure projects, the more directly perceived the benefits to adjoining properties, and the greater the participation of affected property owners, the easier it is to plan and carry out a steady stream of works and to recover their costs.

Rhoads and Bird [1967] raised the question of whether valorization charges complement or substitute for established sources of public revenue. Their conclusion was that in general valorization charges are complementary. This appears to be confirmed in at least one sense for the case of Bogotá: during the period of major valorization works the Special District of Bogotá also rapidly expanded its education services, by drawing mainly on its own taxes on real property and beer consumption. It seems unlikely that the financial resources generated by valorization were offset by significant reductions in other local revenues.

Since not all project costs are normally recovered in valorization pro-

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19 Other applications of valorization were relatively small until 1974. 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, confined to a few badly needed facilities in the congested city center, has also been small since its inception in 1969. Green spaces and historical zones have similarly been of minor importance. Sewers, however, are another matter. The present Master Plan for Sewers calls for a massive investment in increased capacity, maintenance, and renovation in the metropolitan area divided into three subsectors. In the North sector alone, valorization financed works will amount to more than 153 million pesos (over U.S.$4 million) more than the 1973 expenditures for all other projects.

20 Transfers from central to local government also increased during the same period, but by less than the increase in education spending. For a discussion of education finance in Bogotá, see Linn [1976d, pp. 3-18].
grams, the fiscal impact of the system has undoubtedly been less than with a policy of full cost recovery. To the extent that the resulting liquidity problems have impeded the use of valorization in recent years, they have also reduced the net benefits generated by the system. On the other hand, the failure to recover full cost is partly attributable to the objective of adapting the system for application in low-income areas. If a vigorous valorization program is to be maintained while pursuing limited subsidization of low-income neighborhoods, the resulting need for transfers from local general revenues should be recognized and met.

B. Land Use and Values

To the extent that valorization in Bogotá has permitted the installation of most arterial and local streets and of the sewer system at a more rapid rate than would have otherwise been possible, it has had far-reaching effects on patterns of land use and values in the city. Without these extensive infrastructure works the old central area would undoubtedly have reached the saturation point many years ago. Valorization projects as a result have probably enhanced the value of real estate in the central city.

However, while in general valorization programs raise land values in the benefit area, they probably exert a downward overall pressure on land prices as valorization permits the city to extend service networks more rapidly, increasing the aggregate supply of serviced land. A further expected impact of valorization works is a lowering of residential densities and improved access to housing and employment.

C. Income Distribution

Since it was argued above that valorization charges and the works which they finance have largely been complementary to other expenditure programs in Bogotá, the distributive impact of valorization may be judged by considering the distribution of its net benefits, rather than having also to consider the potential impacts of other programs for which it might have substituted.

The rapid extension of infrastructure throughout the Bogotá metropolitan area made possible by valorization has benefited all income groups. High-income families have benefited from the continued rapid development of the central city, and from projects like Carrera 7 and the recent improvements of Calle 10 which have greatly increased the accessibility of their living areas in the north end of the city to employment in the center.

In spite of these benefits, however, the rich have traditionally been the strongest opponents of valorization. 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 revenues their relative burden would be less than under valorization. The persistence of this phenomenon-

21 Apart from this effect, however, one should not expect that valorization will result in lower land values as compared with other financing mechanisms. Since the valorization contribution is a lump-sum tax and therefore does not affect the rate of return to land after development, the price of the land will be the same whether or not development is financed from valorization. The only (temporary) effect will be to reduce the value before the project below what it would have been without valorization, since the expected gain to the owner from development is reduced by the contribution.

22 See, for example, Rhoads and Bird (1967, p. 409).
non lends support to the suggestion of Rhoads and Bird that valorization is probably more progressive than other forms of municipal taxation.

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

In addition to the local paving program (a significant improvement given Bogotá's rainy climate), low-income neighborhoods have also benefited. 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.

Valorization also appears to have aided the poor, though indirectly, by contributing to an arterial street system that has permitted a relatively spread out 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 percent of those surveyed investigated at least one other neighborhood before making a final choice of residence.

Possibly even more important, the transportation system and the resulting lower land values permit 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.

Small commercial and craft activities in the house are probably also easier to undertake on larger lots; in a survey of one such neighborhood, 19 percent of all occupied lots had activities of this kind. 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 without valorization, improved access to employment and housing opportunities has enhanced the economic position of low-income groups along with that of others.

Even though the poor have undoubtedly benefited less than middle- and

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

25 G. Vernez (1973, p. 104). In the three barrios studied, rental income ran from 18.5 percent to 48.8 percent of the total in various income ranges. Some 46 percent 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.

26 To the extent that valorization "internalizes" some of the otherwise "external" costs of urban growth, the lower densities it achieves reflect a socially desirable allocation of resources. There remains, however, considerable scope for externalities (e.g., resulting from subsidized transport) which leads to less than optimal urban spatial patterns. These, however, should not be attributed to valorization per se.
upper-income groups, the valorization charge itself is probably more progressive than if the same projects had been conventionally financed.\footnote{For a review of the distributional consequences of alternative methods of financing urban improvements, see Linn (1976a).} 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-income sections of the city, but this is less the case now. With respect to sewers, although the Master Plan gives priority to the higher-income North and Central sectors, another program, based on installation payments and a revolving fund, is bringing sewer services to a large number of low-income neighborhoods. Many recent projects (Avenida Caracas) and programs (local paving) have similarly been directly beneficial. IDU is currently trying to find mechanisms by which these may be continued without the necessity of unreasonably heavy charges falling on families without liquid assets.

V. VALORIZATION: A GENERAL ASSESSMENT

While by no means an unqualified success, valorization in its application in Bogotá is a fiscal instrument which in some recent years has resulted in significant financial benefits for the city. Although it has not perceptibly altered income disparities and has probably increased the private return to land development in the cities affected, it seems to have been instrumental in enlarging the choice and accessibility of lower-income groups to jobs and to residential building sites. The major difficulties with the system in Bogotá have centered on collection problems resulting from generous payment terms and delays in enforcing a vigorous collection policy.

A. Project Design and Implementation

Flexibility within consistently applied criteria has been central to the operation of valorization programs in Bogotá. Freedom from rigid formulas for distribution of charges among property owners has meant that common sense exceptions to the standard rules can be made 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 through IDU’s discretionary powers.\footnote{One case where insufficient attention appears to have been paid to special circumstances is the Eldorado Highway project. Despite careful studies of expected land value increments as a basis for the allocation of project costs among adjoining properties, widespread resistance developed to the valorization charges. It appears that property owners felt it was unfair that they should have to bear the entire cost of the project while a major share of the benefit was perceived to accrue to the users and operators of the airport. In spite of this, it is a sign of the basic strength of the valorization system that its overall viability and popular acceptance was not seriously undermined.}

Valorization also appears to be applicable to projects of widely differing sizes. One project (Carrera 11) was only one block long, and involved five prop-
properties. Of contrasting scope are undertakings such as the Carrera 7 project, with a budget of nearly 50 million pesos (US$2 million), and the projects of the Master Plan for Sewers, which suggest that valorization can be an effective tool even for very large elements of urban development.

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-Day concept embodies the assumption that valorization has a legitimate 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 field survey information, rather than on judgmental determination of the socioeconomic level of a neighborhood.

The ordinances governing valorization require that all landowners affected by a project be notified and given an opportunity to elect "representatives" to monitor the entire process on their behalf. Although the theoretical importance of this device has been emphasized, only two of the 26 Explanatory Memoranda examined allude to active intervention. Possibly because valorization seems to work to general satisfaction, this "watchdog" function seems to have languished.

Charges based more squarely on the 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. However, according to available information there have been few complaints, even in middle- and high-income neighborhoods where individuals have the means to initiate and follow through with objections.

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. 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.

These practices have two important results. They first impress the property owner with the appearance—probably to a considerable extent true—that the

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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.
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 Problems and Financial Viability

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. The premise in the Colombians system that recovery is to be limited to project cost, which is generally less than estimated benefits, has been an important factor in 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.

However, 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 forces which exert pressures for compromises, exceptions, and delays.

Incomplete collection of project costs, whether by design (in low-income areas) or default, leaves valorization operations short of funds to repay their debts or to carry out future projects. Furthermore, extended payment schedules with no interest penalty lead to liquidity problems, particularly during years of program expansion, because of the failure to match the timing of expenditures and receipts and because of the loss in real purchasing power as well as interest on outstanding debts.

Gaps between receipts and outlays could be bridged by short-term borrowing, provided the project beneficiaries also bear the interest cost. However, this has not occurred in recent years as a matter of public policy. Instead, the District (City) Council has attempted to direct a portion of general revenues of the district administration to valorization operations. The streets and avenues program is endowed with a share of the district property tax, the local paving program has received some grants from the district budget, and IDU has been granted a 5 percent share in all district administration revenues as well as the receipts from a few smaller district taxes. However, these statutory transfers have not been made on a regular basis. Only two solutions appear to exist to the resulting liquidity problem: regular transfers from district revenues in accordance with statutory requirements, or full recovery of project costs by tightening collection practices, allowing for estimated defaults in the project budget, and charging interest on deferred payments.

On balance, the collection and resulting liquidity problems of IDU are attributable less to a lack of administrative machinery than to a lack of effective co-

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10 Sweden, for example, finds it difficult, even with its highly skilled civil service, to administer a leasing system with full equity. See Doebele [1974].
oordination of the mechanisms that exist and to the failure of other public agencies to pay their valorization obligations. After a long period of rather relaxed collection policies, it appears that a gradual tightening of enforcement administration 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

Although a considerable effort may be necessary to adapt the Colombian system and experience to the conditions of another country, the problems should not be insuperable. 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 nations.

The experience in Bogotá has shown that it is likely to be easier to start with small-scale infrastructure programs, where benefits are perceived to accrue predominantly to adjoining properties and where it is easier to tailor the project to the preferences and ability to pay of the beneficiaries. Starting in this gradual fashion will permit the staff in charge of the program to learn from experience. As the system expands, coordination with overall city planning, so that a steady stream of projects is prepared, becomes more important.

Any country considering the use of valorization, or indeed any other type of betterment recovery, should recognize the stresses that occur when a bureaucracy, no matter how technically able, is put into the position of enforcing a tax or charge. In this respect the experience of valorization in Bogotá is an achievement of some proportions. Together with Medellin, Cali, and other Colombian cities in which it operates, the system appears to be more successful than in other Latin American countries in which it has been attempted. The lessons of this experience would consequently seem to be worth study by administrative officials of other major cities in the world, in both developed and less-developed nations.

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