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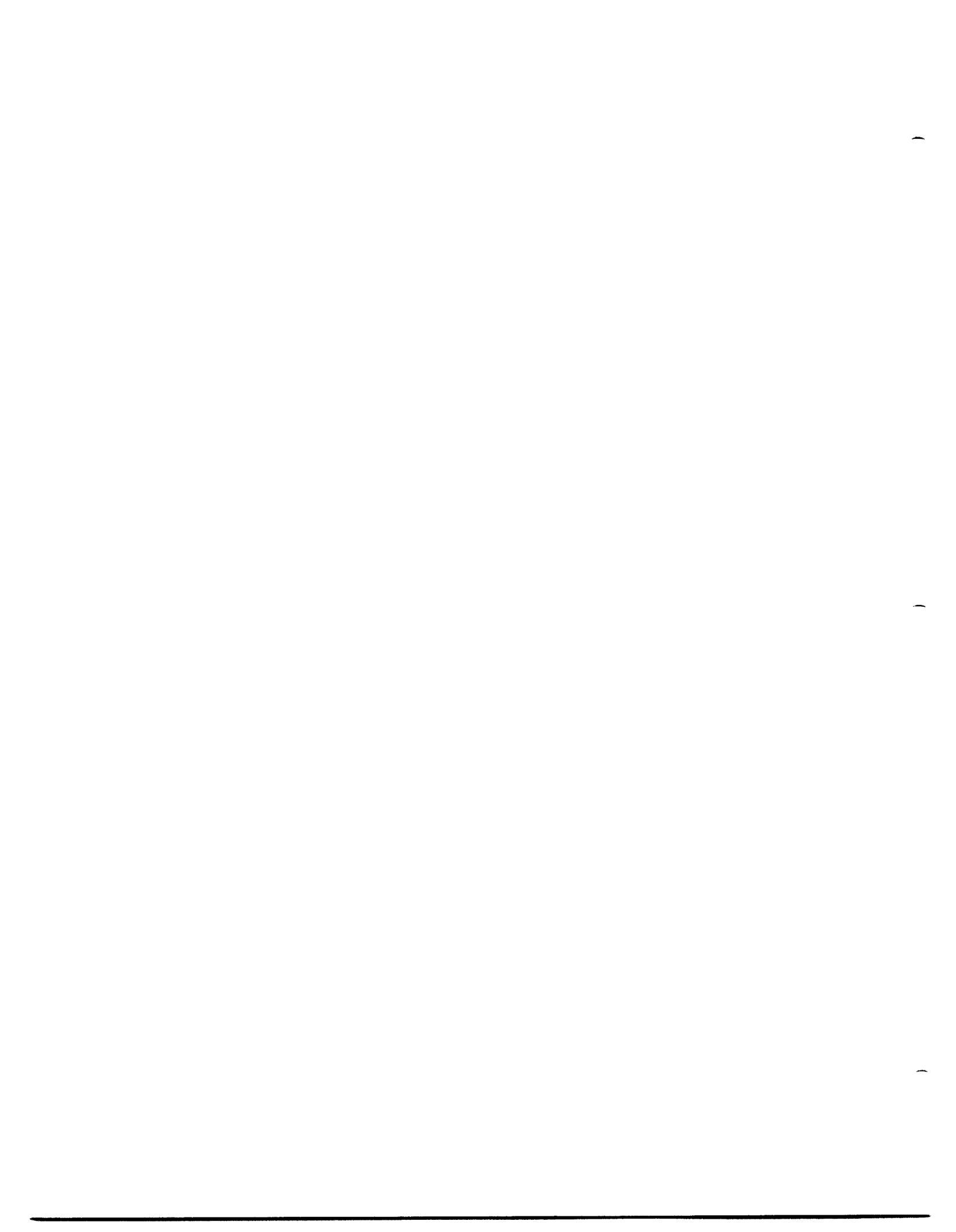
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Bogota, at least, it was found that aggregate land values rose at rates commensurate with increases in population and economic activity, rather than at the "excessive" rates of popular imagination. (See also Villamizar, "Land Prices in Bogota Between 1955 and 1978: A Descriptive Analysis.")

Gregory Ingram's paper on "Land in Perspective: Its Role in the Structure of Cities" analyzes data from Colombia (drawing upon the same data base as the Mohan/Villamizar study), the Republic of Korea, and the United States to gain insights about changes in urban land values as cities expand. The data confirm that land values are higher, the denser the population, and that, like population density, they decline as distance from the city center increases. In all size classes of city, land prices at the periphery have been rising faster than those at the center during the past fifteen years; the range of land values tends to be narrower in large cities than in small ones. Ingram's results confirm, though weakly, that a city's aggregate or average land values rise in proportion to the value of its output and the size of its population. After a discussion of market structure and tests for the influence of monopoly power on land prices, Ingram applies precepts from the literature on natural resource economics, which suggest that rates of return on urban land should be similar to those on other investments of similar riskiness.

Chapter IV of Dunkerley's "Overview" paper discusses the evaluation of urban land costs and benefits in the preparation of investment projects. He points out that the financial valuation of land to be used for projects has important influences on such measures as profitability, the value of assets, and the contribution of local agencies to project costs. Second, he discusses the economic valuation of land to be used in projects, and third, the economic evaluation of project benefits, as reflected in the values of project sites and neighboring land. The theoretical difficulties and practical problems of measurement affect not only the calculation of rates of return but also the appropriate intensity of land use, and hence the physical design of projects. After reviewing these problems, the author offers recommendations for practitioners.

Walters in "The Value of Urban Land," examines some of the conceptual difficulties associated with using the opportunity cost of land in project analysis (where the opportunity cost measures the

useful output that is forgone by using a piece of land for a given project). He also discusses some of the practical difficulties of applying this concept, given the frequent absence of natural and convenient ways of measuring the loss of useful output.

Land Tenure

Tenure systems have a basic influence on urbanization. As Dunkerley notes, the system of rights to own and use land in a city has important effects on population density and on the ability of the poor to find adequate shelter. The tenure system may make expansion of the urban area difficult and raise transfer costs for urban land to levels that exclude poorer groups from the market. And, in many cities of developing countries, the complexity of tenure systems, and a lack of clear titles to own and use land, raise important difficulties for the collection of property tax revenues and the recovery of project costs.

Rights to own and use land can have a strong influence on the distribution of wealth and income and are deeply embedded in a country's social and legal structure. Efforts to change them by public intervention, and the outcome of these efforts, will be shaped by political as much as by technical factors. In his paper on "Selected Issues in Urban Land Tenure" (in Working Paper No. 283), William Doebele of Harvard University stresses that the objectives of policy toward urban land tenure must, thus, be viewed in the setting of more general policies toward urbanization. At the same time, tenure policy can itself exert important influences on urbanization and the allocation of urban land.

There has been little study of the economic and social effects to be expected from different urban tenure arrangements. Doebele's paper, written with Bank operating staff and municipal authorities in mind, describes in detail various types of tenurial arrangements and compares them against broad policy objectives, of efficiency (whether maximum productivity, responsiveness to rapid increases in demand for land, or responsiveness to major changes in urban form); equity among income groups; compatibility with other policy instruments dealing with economic development and land use control; and continuity, to avoid unnecessarily abrupt breaks with existing cultural and political systems.

Chapter III of Dunkerley's "Overview" paper addresses tenure issues of particular concern in Bank urban operations. He notes that opportunities to change tenure rights and clarify title are apt to occur when infrastructure projects coincide with changes in land use, as they often do. Such tenure changes often require the balancing of objectives such as security of tenure and the maintenance of flexibility in land use as the urban area expands. Tenure arrangements are particularly crucial to the success of projects designed to stimulate the construction or improvement of housing by the beneficiaries; occupants must feel secure if they are to invest their labor and savings in building on their plots. In major sites and services or squatter upgrading projects, the Bank is concerned to help establish a program and set of institutions that will enhance the borrowing country's ability to deal with its housing problems—here, the advocacy of particular forms of tenure can be of far-reaching significance.

The Capture of Surplus Values

The "surplus value" of a piece of real estate may be measured as the increase in its value that, after allowing for general inflation, cannot be attributed to the capital invested in it by its private owner (making a normal allowance for his holding costs, enterprise, and the risks involved). These windfall gains are one of the main ways in which the benefits of public provision of infrastructure and the agglomeration economies of urban growth are transformed into increased wealth. In his "Overview" paper, Dunkerley notes the growing conviction that these gains should be captured for public use.³ He describes three broad types of instruments for this purpose: charges for public services; public participation in land development; and property taxation.⁴ Discussing implementation issues, he stresses the need to gauge the adverse effects the capture of surplus values may have on private incentives, on the supply of urban land or its allocation, and on fairness between members of the same income group.

A paper by Orville Grimes, "Urban Land and Public Policy: Social Appropriation of Betterment," analyzes the economics of increases in urban land values and the policy instruments with which socially induced increases in these values may be captured for public use. Grimes finds that

in the developing countries considered, the instruments used have often been rendered ineffectual by inadequate assessment procedures, infrequent revaluation of properties, and limited administrative capacity. Public acquisition of land has faced similar difficulties at all levels of per capita income. Citing examples from a variety of developed and developing countries, Grimes nonetheless shows that land use planning can be important in shaping urban growth. The last section of his paper outlines some implications for project design.

Charges for access to and use of public services are a common way of retrieving a part of the surplus values created by such public investments as water and electricity supply. The quantity of urban services largely depends on the revenues that can be raised from charges to beneficiaries. Such charges may in principle cover the costs, less than the costs, or more than the costs, of providing the services.

Public authorities can also capture surplus values by intervention in the market for land. Chapter V of the paper by Donald Shoup, of the University of California, on "Land Taxation and Government Participation in Urban Land Markets" (in Working Paper No. 283) discusses the public acquisition of land, or rights to develop it. Aside from purchasing land needed directly for the provision of services, he explains, such intervention can be used to guide the process of urbanization in three ways: improving the land use planning of newly urbanized land; generating revenue to finance public infrastructure (by capturing appreciation in the value of publicly owned land); and allocating the serviced land to new residents, firms, and for government use.

For cities experiencing rapid growth, Shoup argues for a greater use of "land readjustment" schemes. In such schemes, a public authority assembles land for conversion from rural to urban use, installs all public services, and finances the cost of the operation from the increase in land value caused by the new infrastructure; the government sells

3. He cites, for example, the report and recommendations of the UN Habitat Conference, Vancouver, 1976, A/CONF. 70/15.

4. Some countries have experimented with property taxes designed specifically to capture surplus values but, with one exception, a general tax on land value increases has not appeared to work either in developing or industrialized countries. (See Grimes, "Urban Land and Public Policy," and Shoup, "Land Taxation and Government Participation in Urban Land Markets.")

enough of the serviced land to pay all its costs, and the remaining sites are returned to the original landowners in proportion to their initial contributions of land.

In "Land Policies in the Republic of Korea," Doebele and Myong Chang Hwang give a detailed account of the workings of land readjustment schemes in Korea.⁵ The scale of these schemes is impressive: as of 1976, they covered some 45 percent of all urban land in Korea classified as for "dwelling" purposes. The schemes have successfully opened up new land for urban uses, and have thus assisted significantly in increasing the supply of housing and in raising public funds, but most of their direct benefits appear to have gone to middle- and high-income landowners. Grimes, in "Urban Land and Public Policy: Social Appropriation of Betterment," and Alan Prest of the London School of Economics, in "Land Taxation and Urban Finances in Less Developed Countries," also comment on the Korean experience. Grimes notes that the schemes have been implemented in a period of rapidly rising land prices, which may be a vital ingredient in their success. Prest suggests that "South Korea ... may be an isolated example of the practicability and advisability of such schemes in LDCs."

Another way in which public improvements to land can potentially be made self-financing is the use of "valorization" charges. The valorization charge is a system of taxation by which the cost of public services, such as street improvements or sewer extensions, is allocated to neighboring properties in proportion to the benefits conferred on them. Colombia is one of the few developing nations to have used valorization extensively; Bogota has used it for over 30 years.

A paper by Doebele, Grimes, and Johannes Linn on "Participation of Beneficiaries in Financing Urban Services; Valorization Charges in Bogota"⁶ discusses the conceptual issues facing valorization programs, including their fiscal and financial implications and their likely effects on land use and income distribution, and then analyzes Bogota's experience, focusing particularly on the allocation and collection of valorization charges. It concludes that Bogota's system, though by no means an unqualified success, has brought the city significant financial benefits, reducing the burden on general municipal taxation. While probably not serving the

poor disproportionately, the system seems to have broadened the access of low-income groups to both jobs and residential building sites. The main difficulties have arisen in the collection of charges; payment terms have been generous, and there have been delays in enforcing a vigorous collection policy. The Colombian system aims only to recoup the *costs* of public projects (rather than trying to isolate the increases in land value due to these projects from those due to other factors). Costs are generally less than the apparent benefits, and this premise has helped to make the system generally accepted. Prest, in "Land Taxation and Urban Finances in Less Developed Countries," finds the evidence from Colombia persuasive, but suggests that "such techniques are not easily transplanted, and even sophisticated administration has not been able to make them effective on a number of occasions. The most that one should be prepared to advocate is small-scale experiments to see if they are a valuable technique in a particular city."

Land taxes are of two main types: those applied to the value of urban land or property, in general, and "betterment" levies, or assessments based on increases in the value of land or property judged to be within the zone of influence of benefits from individual public investment projects.

Chapter IV of Shoup's paper considers the possible objectives of a land tax policy:

- to provide general revenue;
- to provide revenue to finance expenditure on specific public services;
- to provide incentives for the efficient allocation of land—for example, by lowering land prices, promoting early development of vacant land, or curbing land speculation;
- to reduce inequities in the distribution of landownership, land income, or benefits of land use.

In evaluating a wide range of possible land taxes, Shoup's paper emphasizes that land taxation is an

5. See also Doebele's earlier paper, "Land Policy in Seoul and Gwangju, Korea." An annex to this paper contains a comprehensive list of Korea's legislation on national, regional and urban planning, housing, and urban redevelopment available in English translation.

6. This paper draws upon an earlier analysis by Doebele and Grimes, "Valorization Charges as a Method for Financing Urban Public Works. The Example of Bogota."

instrument that ideally allows two objectives that frequently conflict—efficient land use and fairness in the distribution of income or other benefits from land—to be pursued simultaneously.

Prest's paper, referred to above, appraises different taxes and charges on land as means of raising the revenue base of cities in developing countries. Drawing extensively on the literature and on examples from practical experience, he examines the implications of the different mechanisms for resource allocation and fairness among the urban residents and landowners affected, and discusses problems of implementing them. Those analyzed include property taxes; betterment levies; site value rating; land increment taxes (i.e., taxes on accruals or realizations of site value, and taxes on permitted changes of use under a system of land control); taxes on vacant land; transactions taxes; land readjustment schemes; and charges for public services.

Prest takes the view that the costs of abandoning a well established—even though inefficient—urban taxation system in favor of a new system are normally so high that such wholesale change is undesirable: improvements in the resource base are better sought by making existing arrangements more efficient. For most cities in developing countries, reform efforts should give priority to the property tax, which is their single largest source of tax revenues. In his concluding chapter Prest notes some of the areas where improvements are commonly needed: land and property titles need to be clearly defined in law; there needs to be an efficient mechanism for registering such titles; tax legislation needs to be carefully considered (and precisely drafted) before enactment; there should be as few exemptions and special reliefs as possible, partly because these are difficult to withdraw once provided, and partly because they appear to set precedents for others; and properties should be regularly reevaluated. As to collection, it is not advisable to permit payments to be delayed if they are under appeal; nor should titles be re-registered until tax arrears have been settled.

Much of the other work on urban land taxation sponsored by the Bank has been done under the aegis of a large-scale project on "Urban Public Finances in Developing Countries" (whose output on subjects other than property taxation is not considered here). That project undertook detailed

case studies of finances in ten cities, in Colombia, India, Indonesia, Jamaica, the Republic of Korea, the Philippines, and Tunisia.⁷ Experience with property taxation is evaluated from both the revenue and the income-distributional points of view.

Linn's concern in "Urban Finances in Developing Countries" is with the financial difficulties city governments encounter in trying to cope with rapid urbanization at low levels of income. After a statistical overview of the key dimensions of urban finance systems in developing countries, he analyzes in detail the expenditure and revenue trends of selected city governments, and gauges how much fiscal autonomy they have. He finds that, though property taxes are by far the largest source of revenue for most of the cities considered, city governments are not free to set the rates of these taxes. Betterment levies are of little importance except in Colombia and the Republic of Korea.

Roy Bahl's opening chapter on "The Practice of Urban Property Taxation in Developing Countries," in *The Taxation of Urban Property in Less Developed Countries*, describes the range of urban property tax practices in developing countries and reviews their importance in financing urban government. Like Linn's paper just mentioned, he uses a comparative approach based on the case studies undertaken for the Urban Finance project.

7. Reports on these studies are available from the Development Economics Department. Johannes F. Linn, "Urban Public Finances in Developing Countries: A Case Study of Cartagena, Colombia," Urban and Regional Report No. 77-1 (two volumes) (January 1977). Rémy Prud'homme, "Urban Public Finances in Developing Countries: A Case Study of Metropolitan Tunis," Urban and Regional Report No. 77-2 (January 1975). Roy W. Bahl and Michael J. Wasylenko, "Urban Public Finances in Developing Countries: A Case Study of Seoul, Korea," Urban and Regional Report No. 77-3 (April 1976). Roy W. Bahl, "Urban Public Finances in Developing Countries: A Case Study of Metropolitan Ahmedabad," Urban and Regional Report No. 77-4 (August 1975). Francine Bougeon-Maassen and Johannes F. Linn, "Urban Public Finances in Developing Countries: A Case Study of Metropolitan Kingston, Jamaica," Urban and Regional Report No. 77-7 (August 1975). Roy W. Bahl, Pamela Brigg, and Roger S. Smith, "Urban Public Finances in Developing Countries: A Case Study of Metropolitan Manila," Urban and Regional Report No. 77-8 (April 1976). Johannes F. Linn, "Public Utilities in Metropolitan Bogota: Organization, Service Levels, and Financing," Urban and Regional Report No. 78-2 (May 1976). Johannes F. Linn, R.S. Smith, and H. Wignjowijoto, "Urban Public Finances in Developing Countries: A Case Study of Jakarta, Indonesia," Urban and Regional Report No. 80-7 (May 1976).

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Bahl finds wide variations in urban property tax practices. He notes that local governments have made considerable adjustments in their tax structures to achieve particular goals, but in a piecemeal fashion, frequently with offsetting piecemeal adjustments in other areas of policy. He concludes that in assessing and projecting the economic effects of adjusting tax bases and rates, all aspects of the property tax system need to be considered.

A central question raised by the comparative study of urban property taxation is why the revenues from this source have usually grown slowly, if at all (after allowing for population increases and general inflation)—particularly since it is usually agreed that urban land values have been growing very fast. Bahl finds that the main reason appears to be a general failure to reassess property values frequently enough, in line with increases in value. Linn takes up the same question for one city, in "Property Taxation in Bogota: An Analysis of Poor Revenue Performance." His review of the determinants of growth of property tax revenues during the 1960s and early 1970s—including the rate structure of the tax, assessment procedures, exemption policies, collection practices, and the growth in the market value of real estate—suggests that the main cause of sluggish growth in revenue in Bogota was a low rate of growth in market property values.⁸ While different conclusions as to causes and possible remedies might be derived for other cities, Linn's approach is designed to be suitable for use elsewhere.

In judging the desirability of property tax reform, the revenue potential, allocative effects, and administrative aspects of property taxation are usually considered, but not so the effects it may have on the distribution of benefits from land. (In industrialized countries, the incidence of urban property taxation has had much more academic and popular attention.) Further, it is often argued that since in developing countries central government authorities have a comparative advantage in pursuing the more equitable distribution of wealth and income, concern with the distributional effects of local government finances is inappropriate. Linn takes issue with this view in "The Distributive Effects of Local Government Finances in Colombia." Having established that a very significant proportion of the public sector responsibilities in cities is borne by local governments, he assesses the distributive

impact of local fiscal policy in four areas: taxation, public expenditure, public service pricing, and access to public services. Methodological as well as empirical problems make it difficult to draw general conclusions, but his findings suggest that overall the incidence of local government activity is progressive, due to the progressivity of public expenditure and public service pricing. The literature offers contrasting opinions about the incidence of the property tax; Linn finds that, depending on which of these one subscribes to, the overall progressivity of local government is reduced or increased by local taxes.

In "The Incidence of Urban Property Taxation in Colombia,"⁹ Linn deepens his earlier analysis and introduces a new analytical framework designed to be widely applicable. This paper describes the administration and role of urban property taxation in Colombia, reporting on recent quantitative studies, and gives an empirical evaluation of the incidence of local and nationwide changes in the Colombian system. A review of the assumptions underlying the prevailing theory of property tax incidence, on which this evaluation is based, leads him to develop a new, although preliminary, analytical framework. The framework gives explicit consideration to the institutional structure of property tax administration; to the segmentation of capital, commodity, and housing markets into formal and informal sectors; to whether the property tax is nationwide or local; and to the time horizon within which incidence is considered, as this has implications for factor mobility. The paper concludes that for most practical purposes property taxation is progressive, and that reform which leads to increased reliance on property taxation is likely to have desirable effects on income distribution, especially when compared with increased reliance on alternative sources of local government revenue.

Reiterating that "it is necessary to dispel the common misconception that [the urban property tax] in its basic form—i.e., if levied at rates proportional to the value of real estate—is regressive in incidence," Linn, in "Policies for Efficient

8. See also Villamizar, "Land Prices in Bogota," and Mohan and Villamizar, "The Evaluation of Land Values in the Context of Rapid Urban Growth."

9. An earlier version of this paper is World Bank Staff Working Paper No. 264.

and Equitable Growth in Cities," urges city governments to seek their needed increases in revenue from property taxes rather than taxes that bear heavily upon the poor (notably, sumptuary taxes, on alcohol, tobacco and gambling, and local excise taxes). Chapter IV of this paper considers how urban fiscal policy can be designed to help alleviate poverty and, in particular, how tax policy can be adapted to reduce the tax burden on the poor. In common with Shoup, Linn argues that property taxes should probably be increased in many cities in developing countries. He notes that recent experience with urban property tax reform in Jamaica and Jakarta (Indonesia) shows that progressive change is possible. Some of the administrative features of a property tax that increase both its efficiency and its progressivity are: higher rates of taxes on site value than on the value of improvements; higher than average rates on vacant lots; and exemption of low value or slum properties.

Land Use Regulation

Virtually all urban governments use controls to ensure that land is not used contrary to the general interest of the community. There are two long-standing arguments for the regulation of urban land use. The first is to prevent incompatible uses, such as the installation of a chemical factory in a residential neighborhood; the policy instruments for this purpose are designed to control private behavior—for example, through zoning restrictions. The second argument is to control monopoly power; this involves public intervention in the market—for example, through land banking. Another argument more recently gaining currency is that since "the market is not noted for its altruism,"¹⁰ controls on land use may help to improve housing and other aspects of living standards for low-income groups. As Dunkerley emphasizes in his "Overview," some types of land use controls need skillful planning, to avoid eliminating the market signals that guide the efficient allocation of land, or stifling private development initiatives. Further, certain controls can easily be subverted in the interests of politically influential groups. Papers by Malcolm Rivkin, of Rivkin Associates, Inc., and John Courtney, in "Urban Land Policy Issues and Opportunities," describe and evaluate various types of instruments for regulating land use, and Rivkin's last chapter

sets out some principles to guide thinking on land use regulation in Third World cities. Though the documentary evidence is scant, both Rivkin and Courtney emphasize that land use regulations to control private behavior have frequently failed to achieve their objectives.

The reasons include government failure to give sufficient priority to land use regulation, lack of information on the matters to be regulated, manpower shortages, the rapidity of urban growth and change, a failure to adapt precepts and techniques to local conditions, and the enormous economic significance of investment in real estate.¹¹ Courtney observes that direct public participation in the supply and development of urban land—which is a more visible method of control and more easily linked to project-oriented approaches to urban development—has generally been more successful. But since very few local authorities have the resources to use this approach widely, priority should go to the reform of existing controls.

The World Bank's urban operations inevitably involve land regulation issues. Urban plans, land use restrictions, and building restrictions influence the design of projects, and the pattern of urban development itself strongly affects the costs of providing urban services. Conversely, projects themselves, particularly those to provide infrastructure, can strongly influence the supply of urban land and patterns of urban development. Partly drawing on the papers by Rivkin and Courtney, Chapter VI of Dunkerley's "Overview" paper in the same volume analyzes some of the land regulation issues of particular significance in project planning.

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10. Rivkin, "Some Perspectives on Urban Land Use Regulation and Control."

11. Rivkin notes one senior urban official as saying, "How do you expect us to adopt control measures over land use and land speculation when we, the officials, are speculators ourselves?"

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COMPLETED RESEARCH

Land Reform in Latin America

Ref. No. 670-80

Land reform programs have aspired to change the distribution of rural property and income, to give peasants greater earning opportunities and better access to resources and markets. Land reforms in Latin American countries have been implemented at a variety of stages of economic development and in different political, social, and economic policy settings, in pursuit of goals as diverse as their methods of implementation. The decision to undertake a land reform is strongly influenced by political factors, as is the outcome of the measures taken. Though the Latin American experience is well documented, most of the studies available are more partisan than objective.

This relatively small study undertook a comparative analysis of the experience of different countries, seeking lessons for the design and implementation of development programs for the rural poor and, in particular, on the probable consequences of changes in land distribution and tenure reorganization in different circumstances and environments.

It examined the contribution of land reforms to increases in output and their impact on employment and the distribution of rural incomes, and offered judgments on how land reforms could be made more effective. The principal researcher was Shlomo Eckstein. Participating in the study were the Land Tenure Center of the University of Wisconsin, the Centro de Investigaciones Agrarias (Mexico), the Centro de Estudios del Desarrollo (Venezuela), the Fundación para la Capacitación e Investigación Aplicada a la Reforma Agraria (Venezuela), and the Fundación para el Desarrollo Nacional (Peru).

World Bank Staff Working Paper No. 275, "Land Reform in Latin America: Bolivia, Chile, Mexico, Peru and Venezuela," gives an account of the results. One of the principal conclusions is that the outcome of reform depends on whether the kind of reform adopted is appropriate to the particular circumstances and state of agricultural development. When prereform farming is carried out in small units operated by tenants, using traditional technology, a land reform which confers ownership on the former tenants is more likely to succeed than the organization of collective or state-managed large farming units. On the other hand, where large estates are operated by modern farming methods, a land reform which leads to small owner-operated units may have undesirable economic consequences. It may be preferable to preserve such large-scale managed operations, while conferring shares of ownership to the workers. The findings of the study have helped in the formulation of the Bank's policy toward land reform and in the design of rural development projects.

For more information, contact Shlomo Reutlinger in the Development Economics Department.

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No. 15. Cifuentes, Eduardo. "Land Reform in Chile."

No. 16. Dorsey, Jeff. "Bolivia Country Report."

No. 17. _____. "A Case Study of Ex-Hacienda Toralapa in the Tiraque Region of the Upper Cochabamba Valley."

No. 18. _____. "A Case Study of the Lower Cochabamba Valley, Bolivia."

No. 19. Eckstein, Shlomo. "Lessons from the Mexican Experience in Land Reform."

- No. 20. ———. "Mexico Case Study: Comparative Analysis of Economic Performance of Tenure Groups in the Laguna Basin."
- No. 21. Eckstein, Schlomo, and Carroll, Thomas. "Peasant Cooperation in Land Reform Programs: Some Latin American Experiences."
- No. 22. Horton, Douglas E.. "Peru Case Study Volume."
- No. 23. ———. "Land Reform and Group Farming in Peru."
- No. 24. ———. "Land Reform and Reform Enterprises in Peru."
- No. 25. Stanfield, David, and others. "The Impact of Agrarian Reform on Chile's Large Farm Sector."
- No. 26. Stanfield, David, and Smith, Stephen. "Asentamiento Management and Productivity Changes in Chile's Central Valley."

NEW RESEARCH AND APPLICATIONS

Development of a Social Accounting Matrix Basis for Planning and Modeling in Egypt

Ref. No. 672-25

This project is designed as a collaborative effort with the Development Research and Technological Planning Center (DRTPC) of Cairo University. The aim is to develop social accounting matrix (SAM) data bases as a framework for specifying and calibrating planning models, and to use these models to analyze policy issues. Much of the literature on applying the SAM approach to policy analysis and planning is the result of research done at, or sponsored by, the World Bank. The departments responsible for the present project are the Development Research Center and the Europe, Middle East, and North Africa Country Programs Department I.

The DRTPC is the Government of the Arab Republic of Egypt's chosen institute for improving its planning technology. The Center and the Massachusetts Institute of Technology (MIT) have jointly developed a SAM for Egypt, which is being used as the basis for general equilibrium and linear programming models. This work was financed by USAID. Under the present project, the Bank is to

advise on techniques for updating the data base for the SAM, which is for 1976, and to ensure that the Center has the capacity to maintain and improve it in future. Beyond this assistance, the project is designed to link the improved data base and the Cairo-MIT general equilibrium model with an extended version of a model developed and used by the Bank in support of its country economic analysis. The Bank model allows more detailed attention to be paid to the energy and food sectors and to the effects of government fiscal policy than is possible on the basis of the Cairo-MIT work.

Ultimately, it is hoped to share the modified Bank model with both the DRTPC and the Egyptian Planning Ministry. The model would enable users to identify potential microeconomic inconsistencies and to propose possible corrections—for example through reallocating investments, adjusting domestic prices, or changing rationing rules.

For further information, contact Wafiq Grais or Graham Pyatt in the Development Research Center, or Kemal Dervis in the Europe, Middle East, and North Africa Country Programs Department I.

Multisector and Macroeconomic Models of Structural Adjustment in Yugoslavia

Ref. No. 672-26

This project has two components. The first, the construction of a computable general equilibrium (CGE) model of the Yugoslav economy, involves the application of techniques that are already well known in the research literature, and in whose development bank research sponsorship has played an important role. The second component, to extend the CGE modeling framework to cover variables and phenomena typically handled only by macroeconomic models, involves new conceptual work.

The CGE model is being developed jointly by the Development Economics Department and the EMENA Country Programs Department I. One of the researchers is also a principal author of a CGE model of Turkey¹ in use for Bank opera-

1. See Kemal Dervis and Sherman Robinson, "The Foreign Exchange Gap, Growth and Industrial Strategy in Turkey: 1973-1983", World Bank Staff Working Paper No. 306 (November 1978).

tional work and also being transferred to the Middle East Technical University in Ankara. Like the Turkey model, the CGE model of Yugoslavia will be designed to analyze issues of trade and industrial policy and to trace the implications for different sectors of alternative adjustment strategies over the medium term. It will be used for a review of Yugoslavia's new Five Year Plan (1981-85) to take place in mid-1981. When work on its design and use is completed, the model technology will be transferred to EMENA for continuing policy work. The model will also permit a richer analysis than hitherto of Yugoslavia's economic performance under the present Plan (1976-80)—a period which— despite difficulties in external trade and payments, and the stop-go macroeconomic policies adopted in response, has nonetheless seen continued economic growth and structural change.

Computable general equilibrium models have become increasingly popular² because they are able to capture the responses of decentralized decision makers to policy actions that change the structure of incentives in product and factor markets. At their present state of development, however, they are by nature unrealistic in several crucial respects. In particular, most of them analyze the structural effects of alternative policies over the medium term and do not give an adequate account of short-term changes in macroeconomic performance. For example, in the model of Turkey cited above the inflation rate was assumed to be given to the model exogenously. This lack of focus on macroeconomic variables is a serious shortcoming for, in many countries, the choice of policies to influence growth and change in the medium term is strongly influenced by the exigencies of short-term macroeconomic management.

Macroeconomic models, by contrast, emphasize short run adjustments, taking a more aggregate view of the economy and concentrating on changes introduced from the demand side. Adjustments in the structure of production on the supply side usually receive little or no attention.

The second phase of this research project aims to break new ground by incorporating variables, policies and processes that are common in macroeconomic modeling into the multisectoral structure of a CGE model. The research should yield valuable insights into the general problems of combining macroeconomic and CGE modeling techniques,

and contribute to the understanding of both equilibrium and disequilibrium processes in structural change and adjustment. Though Yugoslavia's economic institutions are not typical for a developing country, the underlying economic processes at work and the interactions between macroeconomic and structural variables are fundamentally similar to those characteristic of other semi-industrial countries.

For information, contact Sherman Robinson in the Development Economics Department or Suman Bery in Europe, Middle East, North Africa Country Programs Department I. Professor Laura Tyson of the University of California is also expected to participate in the project.

Research Support for the World Development Report

Ref. No. 671-66

Since 1974 the World Bank has been engaged in modeling the world economy—originally, to ensure that perceptions of the prospects of developing countries were consistent with what was thought likely to happen in the world economy, and, more recently, as an aid to understanding the implications of alternative policy choices, both at the sectoral level within developing economies, and at the international level, tracing the interdependence of groups of countries through trade and capital flows.

The first such efforts linked a set of models of individual developing economies with a simple global model, SIMLINK, designed in the tradition of trade gap models but with a more detailed treatment of loan flows and debt service. Its structure and results were quite strongly influenced by the assumption that the main constraint on the growth of developing economies was foreign exchange, whose availability largely depended on the policies of industrialized countries, as markets for exports and sources of capital, concessional and otherwise.³

2. For a survey, see Kemal Dervis, Jaime de Melo, and Sherman Robinson, *General Equilibrium Models for Development Policy* (Cambridge: Cambridge University Press, forthcoming).

3. Norman L. Hicks, et al. "A Model of Trade and Growth for the Developing World", *European Economic Review* 7:239-55.

The global framework that succeeded SIMLINK, and underpinned the analysis of international economic issues in the first three annual *World Development Reports*, gives more direct cognizance to the developing countries' scope for policy choices. It consists of a set of linked linear programming models in which the governments of developing countries—grouped into “regions” according to geographical proximity and per capita income—seek the best course of development subject to constraints on the balance of payments, savings, and industrial capacity. The regional models are linked by modules representing international trade in various goods and services, different types of capital flows, and debt service payments. The behavior of groups of industrialized economies, centrally planned economies, and oil exporting countries, enters the model separately.⁴

Extending this work for use in the 1981 *World Development Report* and subsequently by the Economic Analysis and Projections Department, Professor Jean Waelbroeck and associates at the Center for Econometrics and Mathematical Economics at the Free University of Brussels are developing a new global model. Supplementary funding has just been granted for this project, which began in 1978. Besides the modeling work, and contributing to it, the project also covers a study of trade and penetration of markets in industrialized countries.

The Waelbroeck model takes 1978 as its base year. It contains submodels representing nineteen developing “regions,” linked by trade equations that give individual treatment to twenty products. The growth of industrialized economies is specified outside the model, but an effort is being made to endogenize it; the import demand of these countries is treated endogenously. The model uses the general equilibrium approach developed in earlier research by the Bank and gaining increasing currency.⁵ This approach allows a high degree of price endogeneity, and is thus particularly suitable for examining how economic disturbances are transmitted from one region to another. A preliminary version of the model has been transferred to the Bank and has been used in exploratory sensitivity analyses.

Two aspects of the Brussels group's approach are particularly innovative. First, the rise in oil prices in mid-1979 prompted them to construct a second, more aggregative, world model, based on the first,

that can be used to analyze the adjustment of developing economies to external shocks. Such adjustments are often hampered by rigidities, so that markets frequently cannot be equilibrated by changes in prices. To allow for these rigidities, the model design draws on the recently developed “fixed price” general equilibrium theory.⁶ Second, it is planned to validate the aggregative model against historical data. To do this, the model will be run backwards from its base year by reversing the flow of time in the equations. In this way, the model can also be used to examine how developing countries have adjusted to external shocks and what they might have done to ease their adjustment, given the advantages of hindsight.

The project is due for completion in mid-1982. For information, contact P. Miovic in the Economic Analysis and Projections Department.

Applications of Programming in the Manufacturing Sector: Indian Fertilizer Model and a Model of the Madagascar Forest Industry

Ref. No. 672-22

The large research project on programming in the manufacturing sector (Ref. No. 670-24) was designed to formulate and evaluate methods of investment analysis for industrial activities subject to economies of scale. A series of manuals is being prepared, aimed at an analytically sophisticated but nonspecialist audience, to promote the use of

4. Syamaprasad Gupta, et al., “The World Bank Model for Global Interdependence: A Quantitative Framework for the *World Development Report*,” *Journal of Policy Modeling* 1(2) (1974).

5. Irma Adelman and Sherman Robinson, *Income Distribution Policy in the Developing Countries: A Case Study of Korea* (Stanford: Stanford University Press, and Oxford: Oxford University Press, 1978); Victor Ginsburgh and Jean Waelbroeck, *A General Equilibrium Model of World Trade, Part I: Full Format Computation of Economic Equilibria*, Cowles Foundation Discussion Paper No. 412 (New Haven, Conn.: Yale University, 1975); and Victor Ginsburgh and Jean Waelbroeck, *A General Equilibrium Model of World Trade, Part II: The Empirical Specification*, Cowles Foundation Discussion Paper No. 413 (New Haven, Conn.: Yale University, 1975).

6. The group are examining alternative approaches to using fixed-price equilibrium theory for global modeling. See Jan Gunning's paper listed at the end of this note.

the planning methodology by sector planners.⁷ The methodology has so far been applied in the fertilizer industry in the Arab Republic of Egypt, in Southeast Asia, and the Andean Common Market; the forestry and forest industry sector in Turkey and Southeast Asia; and the steel industry in Mexico. It has also been used in an analysis of the world fertilizer, copper, and aluminum industries. Decisions were recently made to contribute funds for two further applications: the use by the Government of India of a model of the Indian fertilizer sector, and the development of a model for a forestry project and associated industrial development in Madagascar.

The programming model of the Indian fertilizer sector is the product of joint work between the Industrial Projects Department and the Development Research Center over the past three years. It contains the most comprehensive data base on the Indian fertilizer sector now existing. The Government of India intends to use the model to assist in planning the large investments in fertilizer production and distribution that are envisaged for the Sixth Plan period. To transfer the model to India, the Bank will train a nucleus of specialists, including a systems analyst, economist, and chemical engineer.

In connection with the proposed Second Mangoro Forestry Project in Madagascar, the Development Economics Department and Development Research Center are developing a model with which to evaluate alternatives for processing logs. Previous applications of the methodology have shown its advantages over the "one-shot" type of investment analysis: once the model is formulated and implemented, the data base, assumptions, and underlying projections can be updated as necessary, so that the project's characteristics can be revised relatively rapidly if circumstances change.

Two other applications of the methodology have recently been started. The first is a study of the forest industry in Portugal, organized by the UN Food and Agriculture Organization, involving the same team that worked with the Bank's staff on the forest industry in Southeast Asia. The second is a study of the petrochemical and oil refinery sector in the Republic of Korea, proposed by the Korean Government and being funded by the Korean petrochemical industry.

For more information, contact Ardy Stoutjesdijk in the Development Economics Department or Alexander Meeraus in the Development Research Center.

Application of the General Algebraic Modeling System to Agricultural Sector Models

Ref. No. 672-24

The General Algebraic Modeling System (GAMS), now being completed in the Development Research Center, is designed to make mathematical models more generally accessible. The lack of a common documentation system and shared conventions has meant that existing models are difficult to communicate, and has been an important barrier to their more widespread use. GAMS uses a language comprehensible to both people and machines, which stays close to the conventions of algebra and is easily transferable among different computers. Because it permits more stages to be automated in the specification and solution of models, the system also reduces the likelihood of errors and makes modeling cheaper and less demanding of highly specialized skills.

GAMS has been used very successfully for the design and operation of models in the area of industrial planning, but it has not yet been applied to models of the agriculture sector. To demonstrate its use in this area, work has begun on the "translation" into GAMS of two models: the model of the Indian agriculture sector developed by the International Institute for Applied Systems Analysis in Vienna (IIASA), and the Algerian agricul-

7. The Planning of Investment Programs, edited by Alexander Meeraus and Ardy Stoutjesdijk. David Kendrick and Ardy Stoutjesdijk, *Volume I: The Planning of Industrial Investment Programs: A Methodology* (Baltimore and London: The Johns Hopkins University Press, 1979); Armeane M. Choksi, Alexander Meeraus, and Ardy Stoutjesdijk, *Volume II: The Planning of Investment Programs in the Fertilizer Industry* (Baltimore and London: The Johns Hopkins University Press, 1980). A book, combining volumes I and II, has recently been published in French under the title, *La Programmation des Investissements Industriels, Méthode et Etude de Cas* (Paris: Editions Economica, 1980). The series is currently planned to contain four more volumes, three of which are at an advanced stage of preparation. These volumes deal with investment analysis in the steel industry, the forestry industries, and with investment analysis in a multicountry context.

ture sector model developed by the Bureau National d'Etudes du Développement et de l' Economie Rurale (BNEDER), which is collaborating in the project. This work should render the models computationally more accessible and make their structure easier to comprehend. The experience will be documented for presentation at an international Conference on Agricultural Sector Models to be held by IIASA in August 1982.

For information, contact Wilfred V. Candler or Alexander Meeraus in the Development Research Center.

Industrial Statistics

Ref. No. 671-92

Funds have recently been approved for an extension of this project, which was started in 1979. Its purpose is to compile a file of consistent and detailed data on manufacturing for as many countries as possible. "Consistency" has several dimensions in this context: the aim is to make the data conform throughout to the categories of the new United Nations Standard Industrial Classification (ISIC) and also to the definitions used by censuses and sample surveys. Further, different countries report manufacturing data for different minimum sizes of establishment. Largely by using supplementary information from each country covered, it has been possible to adjust the data to the level of establishments employing five or more persons. Estimates have been made where data are missing.

At present the data files assembled by the project cover the period 1970-76. They provide, for about 50 countries, the only time series at the 4-digit level of ISIC, on establishments, employment, wages and salaries, gross output, and value added. Data for an additional 20 countries are available at the 3-digit manufacturing level. Data on international trade have been organized into the same categories as the industrial data at the 4-digit level, allowing the two types of data to be reported together and compared.

The data are organized for easy access by Bank staff. Tables can be reported which give an indicator for a particular country over time at the 4-digit ISIC level; a particular 4-digit sector and particular indicator can be reported for all countries for a year; and certain analytical tables,

showing, for example, the share of wages in value added, can be reported across countries or across sectors. The data files can be updated or backdated as more information becomes available. Part of the supplementary financing just granted will cover their extension backwards to 1960.

The main element of the project's extension covers the creation of an integrated system which would make the data easier to use for Bank operating staff—for example, by reporting rates of growth and import and export ratios. In the course of 1981, EPD hopes to be able to produce virtually all the types of manufacturing information generally needed for country reports, in tables that are comparable in format and analytically. It is also planned to give explanatory seminars for operating staff and to enable data users to consult with the principal researcher, Professor John Weeks of American University, on a regular basis.

For further details, contact Sang Eun Lee, Economic Analysis and Projections Department.

Food Policy Analysis for Practitioners

Ref. No. 672-18

Since the World Food Conference of 1974, there has been increased awareness of the extent and nature of malnutrition in developing countries. This has led to calls for efforts to provide food security for the populations of these countries—the provision of reliable supplies of adequate nutrition at acceptable prices. Analyses of the dimensions of "food security" have revealed that this cannot be addressed simply as a global issue (in terms of trade, aid, buffer stocks, and stabilization), nor simply through government or private programs (whether broad spectrum interventions such as ration shops, or closely targeted programs providing income or food supplements to deprived groups). Rather, it has become obvious that a whole range of policy variables, from agricultural prices, taxes, and subsidies to agricultural research and development activities, from food storage and distribution systems to emergency distribution programs, needs to be adjusted at the national level if food security is to be improved.

Unfortunately, there is no simple prescription for making these policy adjustments. Many of the policy instruments can have a positive effect on

agricultural production, particularly in the medium and longer run, but they may adversely affect human nutrition and food security. For instance, raising domestic prices, to increase the incentives to farmers, could seriously reduce the real incomes and nutritional status of poor urban consumers, at least in the short run. How should national food policies, programs, and projects in the developing countries be devised and implemented so as to attack undernutrition in the short run and stimulate self-reliant growth in the medium and longer run?

Consumption and production perspectives have rarely been joined in the analysis of food policy at the country level. Agricultural and economic planners, particularly in such areas as agricultural pricing and technology, have frequently paid little heed to the effects of policies and programs on nutrition. Nutrition planners, who often have a predilection for direct interventions, have perhaps missed some of the most important mechanisms for altering nutritional status.

This project will seek to elaborate an analytical base for the development of national food strategies that reconcile production and consumption issues. In doing so, the authors, led by Professor Walter Falcon, Director of the Food Policy Research Institute at Stanford University, will draw upon their research, teaching, and advisory experiences in Asia and Africa over the past fifteen years. After workshops with the Bank's operating staff and policy makers from developing countries, a manual will be produced that will contain an operational framework for policy analysis, and illustrate key policy issues with case materials.

For information, contact Graham Donaldson in the Agriculture and Rural Development Department.

Fertility and Contraceptive Behavior in Bangladesh

Ref. No. 672-23

There is an urgent need for more information on the socioeconomic forces influencing fertility and contraceptive use in Bangladesh. The Government of Bangladesh has committed a substantial amount of resources to its population program, but recognizes the need for greater efforts to reduce the

population growth rate, which is still high at 2.8 percent a year. Among the countries to which the Bank lends for population projects, Bangladesh has received the largest IDA credit for the population sector; yet, the information base for deciding program priorities in family planning and health remains sketchy. This research application project will make it possible to begin analysis of a massive set of household data on fertility and socioeconomic characteristics, and to produce a policy-oriented report on the socioeconomic forces influencing the fertility and contraceptive behavior of households.

Starting in 1976, the Bangladesh Institute of Development Studies (BIDS) initiated an ambitious series of household surveys for a study of the determinants of fertility as part of the first World Bank population project in the country. These surveys were subsequently extended and combined with a study of rural poverty. The resulting data cover about 4,000 households in four contrasting areas. The data offer detailed information on the households' economic characteristics and relationships, as well as their demographic characteristics, health and nutritional status, occupations, social status, and access to services. For various reasons, including BIDS's lack of access to modern computing technology, the data have not yet been analyzed.

The Bank's Development Economics Department is to collaborate with BIDS in processing and managing the data, and in developing a policy-oriented framework for its analysis. In so doing, the department will draw upon its experience in studies of household fertility in Botswana, India, and Sri Lanka, and particularly in analyzing the very large body of data collected for a population study of Narangwal in the Indian Punjab (research project Ref. No. 672-03). The present project will produce an interim report expected to be of immediate interest to policy makers and to the Bank's operating staff, but its main objective is to help BIDS develop the capacity to handle and analyze large volumes of household survey data.

For information, contact Rashid Faruquee in the Development Economics Department.

NEW AND FORTHCOMING PUBLICATIONS

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NEW BOOKS

Agroindustrial Project Analysis

James E. Austin

The Johns Hopkins University Press for the Economic Development Institute of the World Bank, 1981. 224 pages.

LC 80-550
ISBN 0-8018-2412-5 \$16.50 (£9.00) hardcover
0-8018-2413-3 \$ 6.50 (£4.00) paperback

Agroindustries contribute significantly to a developing country's economic growth: they are the primary method of transforming raw agricultural products into consumable products and, in the process, of adding value to the raw materials. Agroindustries often constitute the base of the manufacturing sector, and their products are frequently the principal exports of a country. The food system of which they are a central part provides nutrients required by the nation's population.

Agroindustrial projects have often been evaluated as either agricultural or manufacturing projects. This book, however, presents a framework for project analysis that treats agroindustries as one component in a larger system of related stages, from seed to consumer. The proposed methodology encompasses this systems approach and the traditional tools of financial and economic analysis. It

also considers the nutritional consequences of the ways agroindustrial projects are designed.

The principal activities of an agroindustrial enterprise—procurement, processing, and marketing—are discussed in detail. Basic questions that an analyst needs to ask in assessing project planning in these areas are summarized in an appendix checklist. Another appendix illustrates typical costs of alternative food processing technologies, and a comprehensive bibliography is arranged by subject.

Employment Policy in Developing Countries: A Survey of Issues and Evidence

Lyn Squire

Oxford University Press, 1981 (forthcoming).
About 208 pages.

ISBN 0-19-520266-x \$16.95 hardcover
0-19-520267-8 \$ 7.95

In contrast to much of the existing literature, this study finds that the well-being of the underemployed will not be significantly enhanced by policies to increase the efficiency of labor markets: efforts are needed to increase labor demand and reduce labor supply. In support of this argument, the author shows that rates of industrial labor absorption in the developing countries are similar to those that the now-industrialized countries experienced at similar stages of development. The author also assesses the significance of a variety of labor market distortions. He finds that when allowance is made for the heterogeneity of workers and the dynamics of disequilibrium in the market, labor markets secure a reasonably efficient allocation of human resources. As a result, most of the policy discussion in the volume relates to influences on the demand for labor—notably, industrial trade policy, agricultural development, and the operation of capital markets, and on the supply of labor—notably, family planning programs and education policy.

Made in Jamaica: The Development of the Manufacturing Sector

Mahmood Ali Ayub

World Bank Staff Occasional Papers, Number 31.
The Johns Hopkins University Press, 1981 (forthcoming). About 144 pages.

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ISBN 0-8018-2568-7 \$6.50 paperback

Jamaica, a country of just over two million inhabitants, has a remarkably varied manufacturing sector. The initial impetus for industrial development came from the demands of the sugar and other food subsectors, but the country now produces a variety of manufactures, from garments and processed goods to machinery and electrical equipment.

This book, the first detailed study of Jamaica's manufacturing sector, provides a comprehensive assessment of the important characteristics of the sector and of its structure. It relates the development of the sector during the past two decades, describes the extent of protection provided to the sector in 1978, and examines the prospects for growth of manufactured exports during the coming years. Policy recommendations are made on the basis of this analysis.

Rigorous empirical analysis is combined with more informal study. Macroeconomic data from private and government institutions are used, as well as disaggregated microeconomic data from a survey of about seventy-five manufacturing firms. The extensive survey questionnaire, which requested both qualitative and quantitative information, is reproduced as an appendix.

National Urbanization Policy in Developing Countries

Bertrand Renaud

Oxford University Press, 1981 (forthcoming).
About 208 pages.

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National urbanization policies in developing countries often attempt, without a full understanding of the forces at work, to block the growth of the largest cities and to induce decentralization. This book takes a critical look at such policies and their conceptual foundations and describes some of the problems inherent in their implementation. Both global and national trends are analyzed.

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AN OVERVIEW OF WORLD BANK RESEARCH ON URBAN LAND ISSUES

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Development Policy¹*

By the end of this century, nearly half the population of the developing world will live in urban areas. Urban populations in developing countries have been growing at 4 percent a year for the last three decades, and are expected to continue expanding rapidly (3.5 percent a year) in the twenty years to come.² Many towns and cities have doubled their population in a decade. Such rapid growth, particularly at low levels of income, puts strong pressure on urban land and the resources and institutions used to service it. The systems by which urban land is acquired, allocated, and serviced for industrial, commercial, and residential use, have an important influence on the character of urban growth and the quality of life of urban residents. Land also plays a key role in urban fiscal affairs: taxes and charges on real property contribute a high proportion of the revenue from which municipal governments provide services.

Widespread dissatisfaction with the urban forms resulting from present land use practices makes it important to consider whether and how these practices might be improved. Urban governments are extremely short of capital to finance infrastructure and services, and of skilled manpower with which to conceive and implement policies, plans, and regulations. Yet present government decisions—or the lack of them—have long lasting consequences: once built, roads, power distribution networks, sewers, or office buildings have long lives.

The World Bank's urban lending operations unavoidably require decisions on land issues. Many of the projects it helps to finance have a strong influence on the supply, demand, and prices of urban land. Designers of these projects must commonly consider policies for procuring public land, land tenure arrangements, the structure of land taxation, and the systems that govern land use

planning and regulation. More broadly, since patterns of landownership and use are intrinsic to the pattern of future urban expansion and, frequently, to the distribution of wealth and income, land questions also require consideration in the design of urban lending strategies and in dialogues on urban development policy with governments.

Understanding of urban land issues has been growing as the Bank's urban operations have expanded. The research on these issues thus far supported by the Bank ranges from studies with a direct bearing on lending procedures—for example, of approaches to be used for valuing land in cost-benefit analysis—to empirical studies—for example, on the incidence of urban property taxation or the financing of urban services through betterment levies—that have potential implications for the design of urban fiscal systems and policies to influence the distribution of income.

This overview describes some recent studies supported by the Bank, in four main subject areas: land values; tenure; the capture of "betterment" or "surplus value" by various forms of land taxation; and land regulation, including the public acquisition of land. All of these areas are dealt with in "Urban Land Policy Issues and Opportunities" (World Bank Staff Working Paper No. 283), with an "Overview" by Harold Dunkerley and contributions by five other authors, currently being prepared for publication; other work has been done in the context of research projects on "Urban Land Use Policies: Taxation and Control" (Ref. No. 670-98); "Urban Public Finance and Administration" (Ref. No. 670-70), and "The City Study" (Ref. No. 671-47).

Land Values

Land values are an important underlying element in many types of urban policy decisions, ranging from the structure and rates of property taxation to the location and design of investment projects. Urban land values in developing countries are

1. The author wishes to thank Orville Grimes, Gregory Ingram, and Johannes Linn for their generous advice and very useful comments. Responsibility for any errors of interpretation or emphasis remains with the author.

2. World Bank, *World Development Report, 1979*. (New York: Oxford University Press, 1979):72.

often popularly perceived to have risen far more rapidly than the general level of prices, and to yield unduly high profits. These perceptions may or may not be correct. However, they are a seductive means of justifying policy measures designed to further equity among urban residents—particularly in cities where large and visible numbers of the poor must squat illegally on land they could not afford to purchase, if they are to live close enough to their jobs. Not enough is known about how urban land markets work, or the extent to which land prices reflect true demand or are influenced by monopoly power. But the literature increasingly emphasizes that, if interventions designed to further distributional objectives affect land prices, they risk reducing the incentives to private developers and interfering with the efficient allocation of land among alternative uses, possibly with adverse effects for all urban residents. In this section we first note recent studies on land values and the working of land markets, and then refer to work with a bearing on the valuation of land in project analysis.

Measuring and predicting urban land values poses both conceptual and practical problems. As Dunkerley notes in his "Overview" (in "Urban Land Policy Issues and Opportunities"), the extent to which increases in land prices can be expected to exceed the cost of infrastructure and other developmental expenses, the relative strength of the various components of demand for urban land, and the elasticity of its supply, are still subjects of controversy. The empirical basis for analysis of these questions, and of the influence of monopoly power on prices, has improved only slightly over the past few decades.

In the opening sections of his paper, Dunkerley reviews the influences on urban land values. Underlying the rapid increases in these values is the rapid expansion in urban populations and real incomes, which raises the economic value of land already within urban boundaries or about to be incorporated. In analyzing the failure of the supply of urbanized land to expand in step with the rapid increase in demand, Dunkerley emphasizes the financial and institutional limitations on urban governments' ability to provide services, adding that these limitations are often compounded by the use of inappropriate design standards and a failure to charge economic rates for the use of the services. Controls on land use, sometimes in themselves, but

more often because of the cumbersome way in which they are implemented, also limit the supply of urban land both in general and for specific purposes.

In market economies, the yields from private investments in land should in principle relate closely to the yields obtainable from other types of investment. In fact, Dunkerley observes, rising urban land prices can result in real returns to land that for long periods exceed those to other investments of comparable risk. Among the possible contributory causes cited by Dunkerley are an underestimation by investors of the speed of urban growth and the consequent benefits from holding urban land; reductions in effective tax rates on land as a result of inflation; and overestimation of the risks of forfeiture or other government interventions to reduce private benefits; monopoly power may also have an influence.

The last part of a paper by Alan Walters, "The Value of Urban Land," in the same volume, also addresses the reasons for rapid increases in urban land prices. Walters finds them attributable in part to administrative and financial restrictions on the supply of urban services and—assuming that the yields obtainable from private holdings of urban land will relate closely to those obtainable from other types of investment—in part to the high rates of return on risk capital.

In "The Evolution of Land Values in the Context of Rapid Urban Growth: A Case Study of Bogota and Cali," Rakesh Mohan and Rodrigo Villamizar use data from these Colombian cities to test the predictions of a simple model of urban land values. Their study confirms that land prices, and population density, decline as distance from the city center increases. Looking at a city as a whole, land values are closely associated with population density. Looking at land values within radial segments (pie slices) of a city, the same pattern of declining values is seen, apparently unaffected by contrasts between the segments in income levels and population density. (Population density is greater toward the city center in high-income segments, but it is roughly uniform in low-income segments.) The authors also find that, as a city grows, land values at its periphery increase, with a jump in value occurring in advance of development; at the city center, land values may or may not increase, but overall land values within the city will rise. In

WORLD BANK COUNTRY STUDIES

World Bank country studies are prepared mainly for the Bank's own use, with distribution restricted to member governments and international organizations that deal with development problems. Where the issues studied have attracted a wide interest, where it appears that the Bank's study could contribute substantially to knowledge and understanding of these issues, and where the authorities of the country concerned are agreeable, such reports are made available to a wider audience. Potential readers are advised that these are working documents, not prepared with a view to broad distribution.

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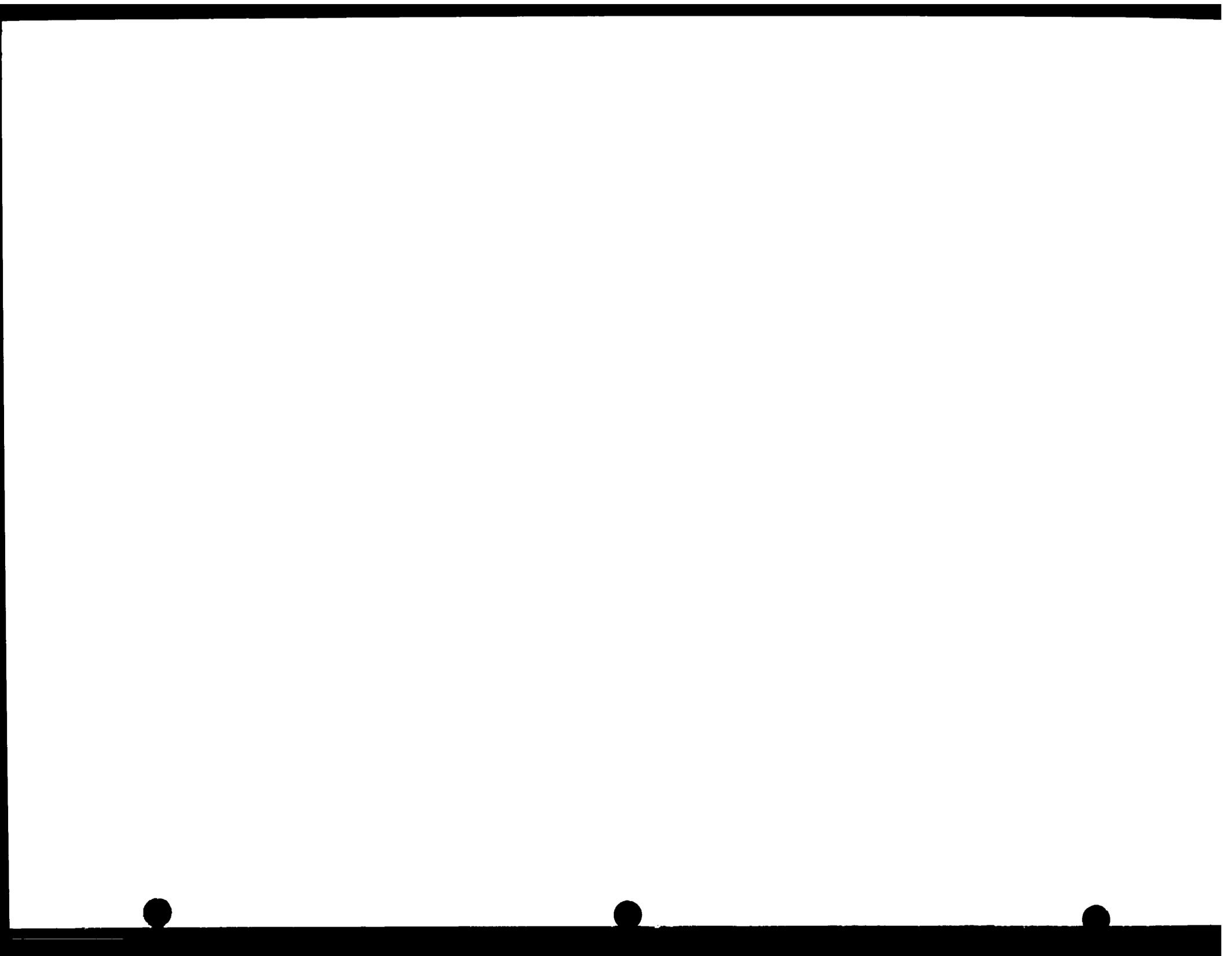
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