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URBAN PUBLIC FINANCES IN DEVELOPING COUNTRIES:
A CASE STUDY OF SEOUL, KOREA

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and
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FOREWORD

This is one of a series of case studies designed to provide a first overview of the public finances of urban governments in developing countries. These studies are as comparable as the local conditions and availability of information permit, and are to provide (a) an understanding of the operation of local finance systems in cities of developing countries; (b) a format for describing and analyzing these systems; (c) a menu of major problems facing these governments; and (d) a set of data which may be used to establish comparative norms against which aspects of the performance or problem severity of urban governments generally may be evaluated. It should be emphasized that, although each case study contains a section on conclusions and policy implications, the primary goal is not to offer a program of detailed fiscal reform for individual cities. Rather, it is to provide the beginnings of an analytic and informational base which will permit such judgments to be made on a consistent basis and with increasing confidence over time.

All but a very small portion of this work was carried out as a World Bank Research Project (670-70) under the direction of Professor Roy W. Bahl, of the Metropolitan Studies Program, The Maxwell School, Syracuse University, and of Mr. Johannes F. Linn, of the Urban and Regional Economics Division of the World Bank. The overall project includes case studies of ten cities, eight of which were conducted under Research Project 670-70; Ahmedabad and Bombay, India; Bogota and Cartagena, Colombia; Jakarta, Indonesia; Kingston, Jamaica; Seoul, Korea; and Tunis, Tunisia. In addition, case studies on Lusaka, Zambia, and on Manila, the Phillipines, were prepared as separate, but related efforts. On the basis of the practices and experience in these

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ten case cities as well as others for which comparable information exists, four comparative papers will be prepared dealing respectively with property taxation, metropolitan governance, intergovernmental relations, and urban expenditure and financing needs.

Largely as a result of the experience gathered in the preparation of these studies of urban public finances, further efforts to broaden our understanding of local finance issues in developing countries are currently ongoing in the Urban and Regional Economics Division. First, the World Bank Research Project (671-18) on the pricing and financing of urban public services, with a particular focus on water supply and sewerage services in two LDC cities, is well under way. Second, an investigation of the Colombian local finance system is proceeding on the basis of the two case studies prepared under Research Project 670-70, and using other city-specific and country-wide data gathered in subsequent missions. Third, the experience accumulated in the context of the research program on urban public finances will serve as a basis for inputs into the Bank's country sector work, and for the preparation of a set of guidelines which will assist the Bank's operational staff in dealing with public finance issues arising in the project context. Finally, research will continue in this area by focusing on a number of the specific issues raised in the broad overview presented in Research Project 670-70.

This case study of the Public Finances of Metropolitan Seoul is based on field work carried out in 1972 and 1973 by Professor Bahl and

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myself. During our missions we found exceedingly helpful cooperation from national and local government officials in Seoul, without whose assistance the present report could not have been written. Professor Roger Smith has provided valuable assistance in editing the final version of this study.

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Roy Bahl and Johannes Linn have been responsible for the final editing of all papers issued under--or in association with--this project, ensuring accuracy and consistency, etc.; however, a large number of other persons have been involved in their production:

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I. INTRODUCTION

Seoul Special City, with a population approaching six million in 1971 is one of the largest cities in the world. Moreover, in accounting for about 16 percent of national population, its level of primacy is also among the highest in the world. The composition of employment in metropolitan Seoul shows that its economic base is dominated by trade, services, and government -- only approximately two of every ten employed persons work in the manufacturing sector. The level of income, at \$390 per capita in 1970, compares favorably with other comparable size cities in Asia, \$135 in Jakarta, \$193 in Manila, and \$280 in Bombay.^{1/}

The fiscal problems of metropolitan Seoul must be viewed in a context of three major contributing factors: a) a substantial in-migration to urban Seoul, b) an already inadequate public infrastructure and c) high densities which exist both in the center of the urban area and in the poor squatter settlement areas.

The rate of population in-migration to Seoul has been substantial, as is evidenced by the differential between the average annual population growth rate of the nation as a whole (2.3 percent) and that of Seoul Special City (10.2 percent). This rapid growth in population places a strain on the existing infrastructure creating capital expenditure needs, and generating pressures on the level of current expenditures. Moreover, if in-migrants are relatively lower income families, the amount of tax base growth due to in-migration is all the more likely to be inadequate to cover the increased expenditure demands.

The level of public infrastructure already existing in Seoul Special City is insufficient and in need of expansion. The water supply

^{1/} Data are drawn from IBRD case studies, and were in each case obtained from government officials.

system, though improving, still serves less than two-thirds of the total households with in-house connections, and the absence of a piped sewerage system creates a potentially severe disposal problem. The problem is one of finding the resources necessary to finance capital expansions. Finally, the fiscal problems in metropolitan Seoul are further complicated by the greater need for the provision of public services in high density areas -- either in the high rise and congested center of the city or in the heavily overcrowded slum areas.

II. GOVERNMENT STRUCTURE AND PUBLIC ADMINISTRATION

The Seoul city government is a metropolitan government in the strict sense of the term. It is the only local government body operating within the Seoul urban area, and as such, it is responsible for a wide range of services. Seoul city government, which reports directly to the Prime Minister's Office, is able to bypass much of the administrative structure of the central government when carrying out its programs. Moreover, the city government conducts programs which remain a central government responsibility in other parts of the country. On the other hand, it is not an autonomous local government but a federal city under the direct control of the Korean central government. The fiscal dimension of this control takes the form of both regulation and planning, as well as limited dependence on the central government as a source of financing.

Local Government Structure in Korea^{1/}

Local government in Korea is a two-tier system of the (1) provincial (do) and (2) city (si) and county (gun) governments. There are

^{1/} See Local Finance in Korea 1973 (Seoul: Ministry of Home Affairs), and A. H. Marshall, Local Government Finance (The Hague: International Union of Local Authorities, 1969).

nine provincial governments, containing 30 cities and 139 counties, in addition to the "special cities" of Seoul and Pusan, which have the status of both city and province and are under the direct control of the central government. However, Pusan City is under the Ministry of Home Affairs, and thus has the status of an ordinary province for policy formulation purposes as opposed to the greater autonomy of Seoul Special City which is directly under the Prime Minister.

The do, or province, is a regional body, embracing both si and gun in its territory. As an intermediate local authority between the central government and the principal local governments, the province deals with the liaison and coordination of affairs among principal local governments. As a regional authority, it deals with larger area affairs which could not be accomplished by either si or gun alone. The cities of Seoul and Pusan are "special" in that each assumes the functional role of provincial as well as city government, i.e. neither is overlaid by a province. Indeed, Seoul city government is not overlaid by the various central government ministries since it is directly under the Prime Minister.

Both si and gun are principal local governments, the former being urban units and the latter rural. The prerequisite to the si (city) classification is a population of more than 50,000. A gun (county) is a rural unit of government composed of about 10 eup and myeon (towns and townships respectively). In 1961 the eup and myeon became merely administrative districts of gun. This increase in gun authority made possible the integration of education, agricultural extension, and fishery administration under the broad category of general autonomous affairs, and a wide expansion in the organization and function of the gun government.

Dong and ri are the lowest administrative districts of cities other than Seoul and Pusan, and gu are administrative subdivisions within

Seoul and Pusan.

The overall structure of Korean local government is summarized in Figure 1.

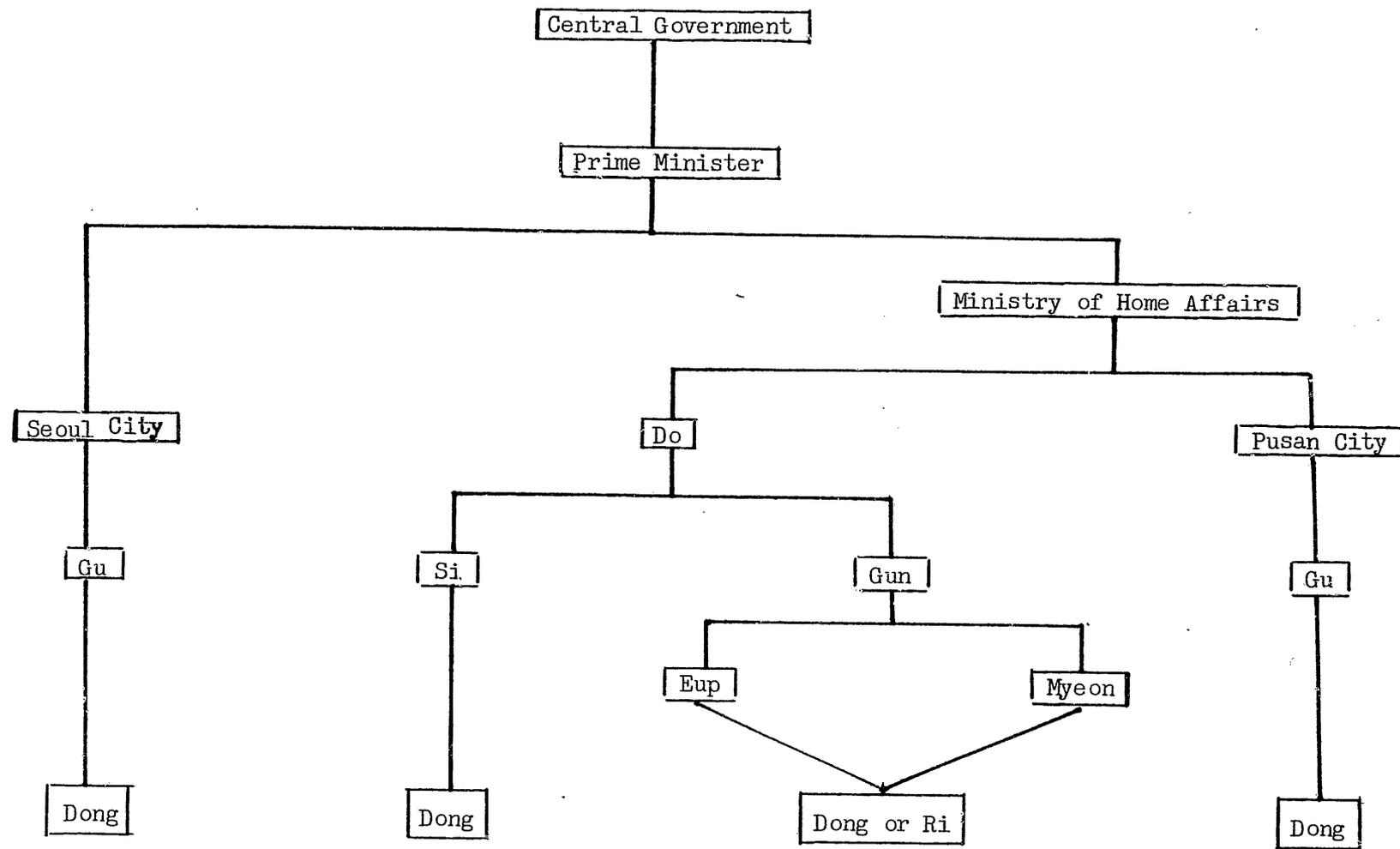
Central-local Government Relations

The fiscal relationships between the Seoul Special City (SSC) government and the central government are of two kinds: direct regulation, and intergovernmental fiscal relations.

In general, planned expenditure of local governments must be approved by the appropriate central government ministry, and the overall budget must be approved by the central government through the mayor. Local governments are now required to submit plans to both the Ministry of Construction and the Administration Division of the Local Affairs Bureau of the Ministry of Home Affairs, and local government plans must be adjusted to fit national plans and objectives. The basic responsibilities of the Ministry of Construction encompass water, transportation, and harbors, with the Ministry of Home Affairs responsible for most other functions. Seoul Special City (SSC) is an exception to these regulations, and in this respect appears to have greater autonomy. In 1962, the central government enacted a special law, the Special Measures Act for the Administration of Seoul City, which transferred control of the city of Seoul from the Ministry of Home Affairs to the Office of the Prime Minister. Thus SSC is under the direct control of the Prime Minister, and Seoul submits its budget and development/investment plans to the Office of the Prime Minister for approval.

On the revenue side, there is also a high degree of regulation. Local tax rates and bases are specified by national law, and local governments have virtually no latitude in determining the tax structures. It follows that all tax and user charge modifications are subject to central

Figure 1: THE ORGANIZATION OF LOCAL GOVERNMENT IN KOREA



government approval. Similarly, all local government borrowing requires the sanction of the central government.

Indirectly, there are also strong ties between the central government and city governments through a system of grants and shared taxes.^{1/} Together, these sources of external finance accounted for more than 15 percent of the total revenues raised by the SSC government in 1971.

Political Structure of Seoul Special City

The Seoul City Council is temporarily suspended by Addendum 10 of the Constitution Act on the reunification of Korea. The chief administrative officer in the city is the Mayor, who is appointed by the Prime Minister. The Mayor's functions include budget preparation and execution and the levying and collection of all local taxes, rents, and fees. Within the constraints set by the national government, the Mayor can exercise broad decision-making and/or executory powers, with little or no check at the local level.

There is little decentralization in fiscal decision-making within the city, either in terms of other local government bodies operating within the metropolitan area or in terms of neighborhood level influences on expenditure decisions. One exception is school finance. The education function in Seoul is administered by a semi-autonomous Board of Education. This Board, or Education Commission, is composed of six members appointed by the Prime Minister and is controlled by the Ministry of Education. The chairman of the commission is the Mayor of Seoul Special City. The commission is responsible for educational planning, including expenditure decisions, in conjunction with the Ministry of Education in the national government. On the revenue side, it is dependent on central government grants, a transfer from the general account of the city government budget, and tuition charges.

^{1/} See Section V, Central Government Assistance.

While the education budget is approved by the Ministry of Education and not the city government administration, it is nonetheless recorded as a special account of the Seoul city budget.

With respect to fiscal decision-making at the neighborhood level, there is little decentralization. The city of Seoul is divided into nine administrative wards known as gu. The gu boundaries appear to be more the result of history or geography than of design for planning purposes, since their land areas, population size, and population densities vary widely. (See Table 1). In fact, these administrative units serve (a) as a channel through which information on neighborhood problems can be transmitted to the central administration, (b) as tax assessment and collection units, and (c) as local centers for issuing licenses, permits, registrations, etc. However, decisions regarding the level and functional distribution of expenditures within any given neighborhood remain at the city level.

Table 1: CHARACTERISTICS OF ADMINISTRATIVE UNITS IN SEOUL
(1971)

	<u>Land Area</u> (km ²)	<u>Population</u> (in thousands)	<u>No. of</u> <u>Dong Offices</u>	<u>Population Density</u> (persons/km ²)
Jongro-gu	10.68	209	25	19,569
Jung-gu	6.34	127	21	20,031
Dongdaemun-gu	31.28	772	34	24,680
Seongdong-gu	155.74	871	44	5,593
Seongbuk-gu	106.49	1,063	45	9,982
Seodaemun-gu	62.35	842	41	13,504
Mapo-gu	11.28	352	17	31,206
Yongsan-gu	20.88	301	21	14,416
Yeongdeungpo-gu	208.00	1,314	59	6,318
Seoul City	613.04	5,851	307	9,544

Source: Seoul Statistical Yearbook, 1972

Administrative Structure of SSC

As can be seen from the organization chart presented in Figure 2 the administrative structure of the Seoul city government is relatively straightforward. A General Secretary and two Vice Mayors report directly to the Mayor. Seventeen separate departments, or sections, report to the Mayor through the two Vice Mayors.

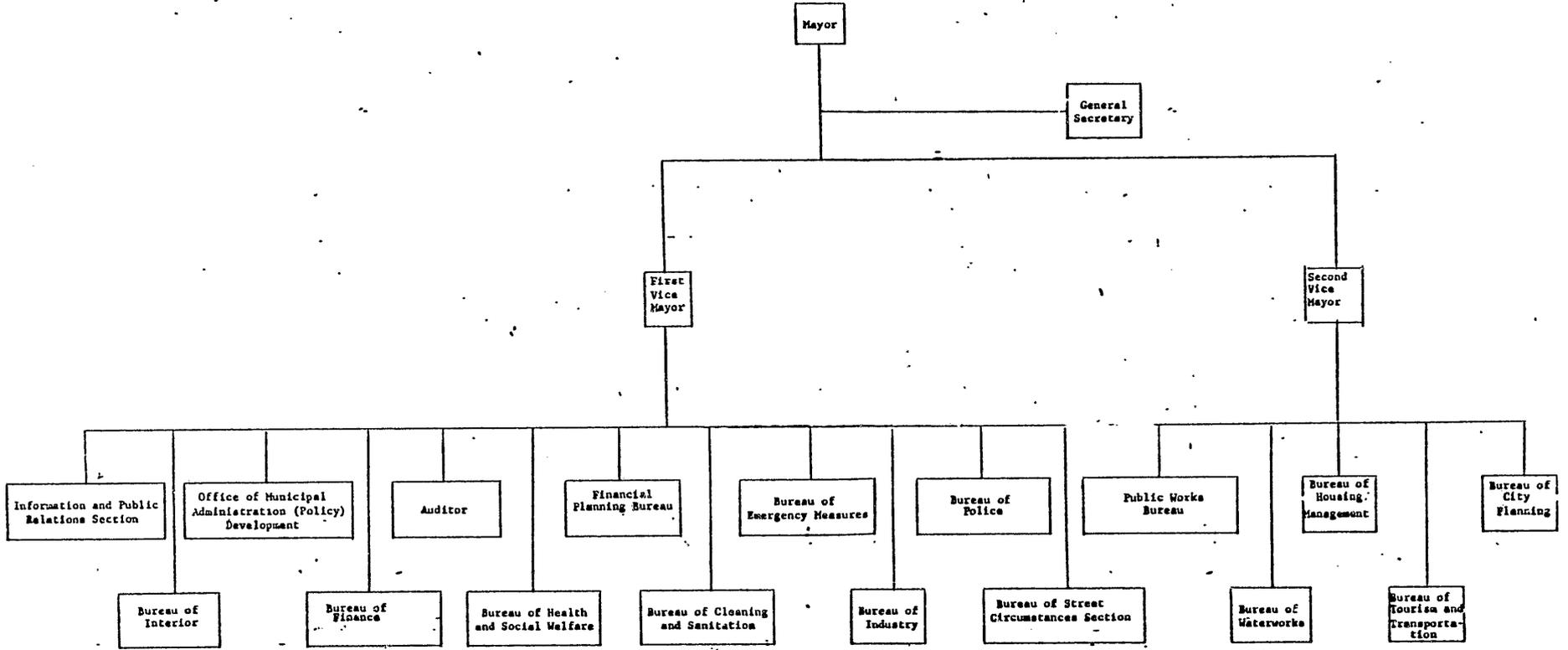
Particularly important for purposes of this study is an understanding of the meshing of this organizational arrangement with the budgetary process and structure. As to the actual preparation of the budget, primary responsibility lies with the Mayor, who centralizes the financial analysis in the Planning Bureau. On the expenditure side, each functional department, or bureau, submits its estimates to the Planning Bureau for consideration and, if necessary, revision. On the revenue side, responsibility for revenue estimation (including intergovernmental assistance transfers) lies with the Finance Bureau.

The Seoul city budget is a one-year document. There is no long-term capital budget, and systematic revenue forecasting for periods longer than one year does not exist. It follows that the budget is not an instrument suitable for long-term fiscal planning.

As noted above, the Board of Education operates separately from the city government, even though its finances are included as a special account item within the Seoul city budget. The chief administrative officer is the Superintendent of Education, who is appointed by the Board and reports directly to it. The budgeting and/or financial planning function is centralized in the finance section, with the Superintendent responsible for preparing the budget document for the approval of the Board, and the ultimate approval of the Ministry of Education. As is the case for

FIGURE 2.

ADMINISTRATIVE STRUCTURE OF SEOUL SPECIAL CITY



the city government proper, the budget is a one-year document and is not used in the regular course of long-term planning.

Budget Structure

The budget of Seoul Special City is structured around three sets of accounts: a general account, an education special account, and a set of "other" special accounts. ^{1/} While these documents make no distinction between current and capital expenditures, the general account is primarily current and the special account primarily capital expenditures. Within the education special account there is no clear distinction drawn between current and capital expenditures.

Most general revenues, e.g. tax receipts, are included in the general account, as are most items of non-educational central government assistance and a portion of the proceeds from borrowing. The revenues of the special account are mainly receipts from specific activities whose expenditures are included in that account -- e.g. water charges, bus fares, land sales -- and transfers from the general fund and proceeds from borrowing. Revenues in the education special account are local charges earmarked for education, central government education grants, and transfers from the general fund. The format of each account, as presented in the 1972 budget, is shown in Figure 3.

The use of such a budget structure, for analysis or planning, is difficult for a number of reasons. For one, there are elements of capital (non-recurrent) expenditure in all three accounts, and these are often difficult to separate. It follows that secular study of the pattern of current and capital spending (as for projection purposes) is difficult. For another, consolidation of the budget to gain an overall picture of local government activity, on a function-by-function basis, is difficult.

^{1/} This category includes a large number of accounts which, for purposes of analysis have here been aggregated and will be referred to as the special account.

Figure 3: BUDGET FORMAT OF SEOUL SPECIAL CITY (1972)

I. GENERAL ACCOUNT

Revenues

Municipal tax
Property Income
Rents and fees
Carried over
National tax revenue
Shared subsidy with local treasuries
Contribution
Receipts from previous year
Transferred from
Local bonds
Collection
Miscellaneous receipts

Expenditures

Local assemblies
Election
Public Information
General admini-
strative expense
Gu & Dong admini-
strative expense
Measure for Defense
Finance
Health
Social works
Cleaning
Industry
Planning city
Construction works
Tourist & Trans-
portation
Safety management
City bonds
Transferred to
Reserve funds

II. SPECIAL ACCOUNT

Items

Water power
Citizen hall
Construction of Subway
Dwellings
Adjustment of land districts
Building land
Production works of materials
Relief works
Foul water disposal
Transportation
Toll road
Han River

III. EDUCATION SPECIAL ACCOUNT

Revenues

Property income
Rents & fees
National education tax revenue grants
Compulsory education finance
Subsidy
Contribution
Receipts from preceding year
Miscellaneous receipts
Transferred from
Carried over
Loan

Expenditures

Administration of
education
Management of
schools
The educational
circles services
Social physical service
Facilities services
Property
Subsidy
Miscellaneous
Local education debt
Reserve fund

This results primarily because the budget is less oriented toward a functional breakdown than toward a departmental or bureau breakdown. Accordingly, there are expenditures, for instance for road and street maintenance, included in both the general and special accounts but under heads such as "city planning" and "construction works". In order to obtain a functional breakdown of expenditures, a compatible set of expenditure functions and budget categories was developed by local authorities especially for this case study. This breakdown, as well as identification of the level of government responsible for the final expenditure on each function is presented in Table 2. The need for such a functional breakdown is clear: the planning of longer term expenditure targets relates to purposes of expenditure, and not to activities of city government departments.

III. EXPENDITURE STRUCTURE AND TRENDS

The data in Table 3 describe the fiscal importance of local government in Korea, in the absolute, and relative to the central government. Local government expenditure accounts for about one third of total government expenditure (counting expenditure from central government grants-in-aid as local government expenditures). Seoul Special City accounts for over one-fifth of local government expenditure or about 7.4 percent of total government expenditures.

Table 4 compares per capita expenditure levels by the SSC and by the Korean central government. If the central government spends the same per capita amount in Seoul as it does elsewhere in the country, then the absolute importance of the central government in Seoul is greater than that

Table 2: DESCRIPTION BY EXPENDITURE RESPONSIBILITY BY FUNCTION

	<u>LOCAL GOVT</u>	<u>CENTRAL GOVT</u>	<u>INSTITUTIONS</u>	<u>BUDGET ACCOUNT</u>
WATER			City Water Bureau, Current Revenues obtained primarily from the sale of water.	Some current expenditures derived from transfers from the General Account. <u>Capital Expenditure</u> - It is the only agency in the SSC allowed to float long-term bonds; all finances are listed in Special Account as "Waterworks".
SEWERAGE	SSG has the total responsibility for this function. SSC has only the beginning of a centrally piped Sewer System, most of this function consists of "Refuse Collection".			Current Revenue is derived from General Revenue. Current expenditure listed in General Account as part of Construction Work Capital Expenditure (nightsoil treatment plant) in Special Account as Foul Water Disposal.
ROADS & BRIDGES	All roads & highways within SSC limits are constructed & maintained by the City Govt, except access highways which are the responsibility of the City Govt between toll booths within the City but are the Korean Highway Authy.	Ministry of Construction pays all costs of inter-city roads, as well as costs of connecting facilities within one kilometer of the city. Beyond one kilometer the MOC pay only 50% of the costs of connection to urban areas; the central government has no responsibility for roads within Seoul.	Korea Highway Corporation operates toll facilities.	Part of the finances relating to toll roads are shown in the Special Account under toll roads. Other finances for roads and bridges are in the General Account under City Planning and part of Construction Works.
HEALTH	1970: 9 Health Centers, 8 city hospitals, orphanages & rehabilitation centers.	5 National Hospitals Ministry of Health & Social Welfare.		All SSC. Expenditure shown in General Account under Health. Some expenditure is financed from Rents and fees from hospitals but most revenue comes from General Account Revenue.
EDUCATION	Primary and Secondary schools.	Federal Gov't grant to SSC from Ministry of Education.	Education Commission is independent from the SSC government.	The Education Commission is part of the SSC budget as a special account. In addition to the federal grant, there is also a general fund transfer by the City Govt for Education.
WELFARE	Social Services for SSC. There are no direct transfer payments.	Ministry of Health & Social Welfare.		Welfare in the General Account is classified as "Social Works" and Welfare in the Special Account is under "Relief and Citizens Hall".
POLICE	No local police.	Ministry of Home Affairs.		

Table 2: DESCRIPTION OF EXPENDITURE RESPONSIBILITY BY FUNCTION (Continued)

FIRE	SSC has the entire responsibility for this function.	At national level Ministry of Home Affairs.		All expenditures are listed in General Account under Safety Management. There is a fire tax, which is a surcharge on the property tax, however only a portion of this is allocated to fire protection.
HOUSING	<p>Seoul City Housing Agency builds middle and low income housing.</p> <p><u>Low Income:</u> (30,000 p per month) around 12 pyong monthly 5-story constructions.</p> <p><u>Middle Income:</u> 15-40 pyong</p> <p>Low income financing consists of a grant of 10% of construction. Cost, 40% loan, at 8% interest for 15 years. The remainder is provided by buyers.</p>	Ministry of Home Affairs & Ministry of Construction	<p>Korea Housing Corporation depends on Ministry of Construction Maximum amount in 1971 \$ 270,000 at 8% interest for 15 yrs.</p> <p><u>Korea Housing Bank - Loan Conditions</u></p> <p>1) Private & cooperative housing 20 yrs at 14% interest.</p> <p>2) Construction comprises 20 yrs at 20% interest.</p> <p>66 m² upper limit for KHB finance 30 m² lower limit for KHB finance and only 50% of the Construction costs are financed.</p>	<p>All City built housing is sold (no rentals), and the expenditure is included in the Special Account of the City Government under "Dwellings" and "Building Lands".</p>
TRANSPORTATION	There is a city owned and operated bus company. The Subway will be completely operated and financed by the City. Traffic management is an SSC function under "Transport and tourism" in the General Account.	Railways are a Central Government function - Ministry of Rail Transit.		<p>Revenue and expenditure for Buses is included in Transportation in the Special Account and Tourism and Transport in the General Account; however these two accounts include more than Bus Service.</p> <p>Subway finances are listed in the Special Account under "Construction of Subway".</p>
INDUSTRY	<ol style="list-style-type: none"> 1. Commercial Licensing 2. Aid to small manufacturers. 3. Municipal 4. Agricultural activities - inspection. 5. Food distribution - Loans in kind. 6. Open space conservation - Public gardens. 			<p>Financed from General Lands Expenditure listed in General Account under "Industry" Special Account under "Public Pawn Shop" and "Production Works Material".</p>
LAND ADJUSTMENT	Improvement of the land, reshaping plots, to them in order to provide basic infrastructure services, roads, drainage etc. The areas adjusted are largely those located on the city's urban fringe and not extensively built up".			<p>Finance listed in Special Account under "Land Readjustment Revenues" are derived from borrowing, the resale of Land and Cash payments from landowners for improvements made on their properties.</p>

Table 3: BUDGET LEVELS OF CENTRAL, LOCAL
AND SEOUL GOVERNMENTS IN 1971
(In Millions of won)

	<u>Amount</u>
Total Government Expenditure	916,766
Central Government Expenditure excluding grants-in-aid	612,614
Central Government Expenditure as a percentage of Total Government Expenditure	66.8
Local Government Expenditure including grants-in-aid	304,152
Local Government Expenditure as percentage of Total Government Expenditure	33.2
Grants-in-Aid	176,243
Grants-in-Aid as a percentage of Local Government Expenditure	58.0
Total Government Expenditure of Seoul Special City	64,327
Seoul Special City Expenditure as a percentage of Local Government Expenditure	21.1
Seoul Grants-in-Aid (received)	10,192
Seoul Grants-in-Aid as percentage of Seoul Special City Government Expenditure	15.8

Source: Economic Planning Board; Summary of Budget for Fiscal Year 1972;
Ministry of Home Affairs, Financial Abstracts of Local Government,
1972 pp 476-488; Seoul Statistical Yearbook 1972, pp 125-127.

Table 4: PER CAPITA EXPENDITURE IN METROPOLITAN SEOUL
BY LOCAL AND CENTRAL GOVERNMENTS:
1965 and 1971
(In current won)

	<u>1965</u>	<u>1971</u>	<u>Annual Compound Growth Rate (in percent)</u>
Per Capita Expenditure by SSC	2,109	10,996	31.5
Per Capita Expenditure by Central Government excluding grants-in-aid	5,559	19,255	23.0

Source: Seoul Statistical Yearbook, 1965 and 1971; Korea Statistical
Yearbook, 1965 and 1971.

of the local government.^{1/} A further important fact to be noted from these data is the major and growing importance of local government in the delivery and financing of public services in Seoul.

It is an issue of some policy importance to understand the factors which underlie the rising level of expenditures by the SSC government. A thesis offered here is that the rapid increase is due mainly to the ability of the SSC government to raise additional resources from undertakings that are partly or wholly self-financing. This thesis is based on the notion that there are two possible explanations for the rapid expenditure increase: rising expenditure demand and/or an increase in resource availability. Since, in an LDC context, it seems reasonable to argue that the direction of causation runs from revenues to expenditures, a relaxation of the resource availability bottleneck seems the more likely explanation. If this is the case, the key to understanding Seoul's rapid expenditure increase lies in understanding the sources of its revenue increase.

The presentation below is made in three parts. First, the general pattern and trend of expenditure increase is quantified; second, the sources of financing the increase are detailed; and finally, the components of the expenditure increases are examined on a function by function basis, with particular emphasis on the financing of each.

^{1/} Since Seoul Special City government develops programs in many areas independently of the central government ministries, it seems likely that per capita central government expenditures for various services may be less in Seoul than in the rest of the country.

The Structure of Expenditure Increase

The rate of expenditure increase of the SSC government over the past decade has been dramatic. The growth in SSC expenditures has more than kept pace with increases in population and prices, with the consequence that the level of real per capita spending has risen (see Table 5). After adjustment for the rate of price increase,^{1/} (real) expenditures of the SSC increased at a rate of 22.5 percent per year between 1963 and 1971. However, government revenues as a fraction of locally earned income have not risen. Finally, the rate of expenditure increase of the SSC government is high by comparison with the rates of increase in the spending levels of the central government and of other local governments in Korea. Whereas in 1963 central government spending was 3,963 won per capita, or 2.54 times the level of per capita expenditures of the Seoul Special City government, in 1972 the disparity narrowed slightly, to 2.36.

The time series data presented in Table 6 describe the yearly trend in SSC expenditures from 1963. It can be seen that the rate of increase in city government expenditures has been particularly accelerated since 1965, and has raised per capita spending in current won by 700 percent over the 1963-72 period.

The change in per capita expenditure may be viewed as generally affected by increases in the price level, increases in population, and

^{1/}The consumer price index is used here to make the adjustment.

**Table 5: COMPOUND ANNUAL GROWTH RATES FOR 1963-1971:
SEOUL CITY EXPENDITURES AND SELECTED INDICATORS
(In per cent)**

	<u>Total</u>	<u>Per Capita</u>
SSC expenditures	34.52	26.93
Central government expenditures	26.52	24.50
Personal income (Seoul) ^{1/}	33.17	25.01
Prices (Seoul)	12.03	---
Population (Seoul)	7.59	---
Total local government expenditures ^{2/} in Korea	31.10	24.62

1/ 1964-1969. See Appendix B for personal income estimates.

2/ Excluding Seoul.

Source: Data on revenues, expenditures, prices, etc., which are utilized throughout this paper, have been provided by government officials in Seoul. These officials are with either Seoul Special City government or the central government. In some cases the data were drawn from the Seoul Statistical Yearbook, which is a compilation of data from a large number of other sources. In other cases, the data are drawn from the basic data available to the officials.

**Table 6: SEOUL SPECIAL CITY GOVERNMENT EXPENDITURE PATTERNS:
1963-1971**

Year	<u>Total Expenditures</u>		Per Capita Income (won)	Total Expenditure as a Percent of Income	Prices	Population
	<u>Total Amount</u> (In millions of won)	<u>Per Capita</u> (won)				
1963	5,076	1,560	n.a	n.a	100.0	3,254,630
1964	5,685	1,660	26,467	6.3	129.5	3,424,385
1965	7,320	2,109	34,472	6.1	147.0	3,470,880
1966	13,154	3,459	42,599	8.1	164.8	3,803,360
1967	17,293	4,357	60,538	7.2	182.7	3,969,218
1968	28,884	6,664	80,148	8.3	203.1	4,334,973
1969	37,689	7,891	105,984	7.4	223.5	4,776,928
1970	49,510	8,943	122,525	1/ 7.3	251.4	5,536,377
1971	64,327	10,996	139,782	1/ 7.9	282.3	5,850,925
1972	80,315	12,615	n.a.	n.a.	316.2	3/ 6,447,719
Average Annual Percent Increase	34.5	26.9	25.0		12.0	7.6

1/ Estimated according to the method described in Appendix B.

2/ Estimated assuming a 10.2 percent increase in population from 1971-72.

3/ Estimated assuming a 12 percent increase in prices from 1971-72, i.e. the same annual percentage increase as the average for the previous 8 years.

Source: See Table 5.

increases in real per capita expenditure.^{1/} Had per capita total expenditure remained constant at 2,019 won in real terms between 1965 and 1971, total expenditures in 1971 would have been 23,692 million won; that is total expenditures would have increased by only 41.6 percent of the actual increase.

Per capita SSC expenditures are growing faster than per capita income (see Table 6). The arc elasticity between per capita SSC expenditures and per capita income between 1970 and 1971 is 1.56. However, whether this elastic response of per capita expenditures to per capita income is due to demand conditions, that is, increasing demand for public service, or is primarily due to supply conditions, that is, increasing cost of services due to wage increases or other rising costs, cannot be discerned without a more detailed examination of item expenditures.

One method of describing the objects of the expenditure increase shown in Table 6 is with a division of total spending increments into those assignable to current, as opposed to capital, purposes. Another is to examine the distribution of expenditures by function. Neither

^{1/} The change in expenditure between 1965 and 1971 may be viewed as a total differential of total expenditure with respect to population, per capita expenditure and inflation. Let P, E_p, and I represent population, per capita expenditure, and inflation respectively for the base year 1965. Note that price = 1.00 in the base year. Also let ΔP, ΔE_p and ΔI denote changes in the variables between 1965 and 1971. ΔE^P is the change in total expenditure between 1971 and 1965. The object is to solve for the real change in per capita expenditure. The total differential is: $\Delta E = (E_p + \Delta E_p)(P + \Delta P)(I + \Delta I) - (E_p P I)$.

Using the total differential to determine the effects of the expenditure increase between 1965 and 1971, 11.8 is the percentage increase in total expenditure due to inflation at constant per capita expenditure and population, and 8.8 is the percentage increase in expenditure due to rising population at constant prices and per capita expenditure. The percentage increase in total expenditure due to rising real per capita expenditure at constant prices and population is 22.0, and 57.4 is the percentage due to the interaction of all three increases.

classification is easily made. Since the SSC budget is not easily amenable to either a current-capital or a functional breakdown, each budget item in each of the three accounts must be divided into components on the basis of individual study. Because of the difficulty of the task, only two years, 1963 and 1970, are disaggregated here by both function and current-capital status.^{1/}

The expenditure of the SSC government may be characterized by a relatively heavy and increasing emphasis on capital spending, a declining expenditure share for the social services (education and welfare), and a large and growing share of expenditures on specific projects and/or public enterprise type activities.

The data in Table 7 show, in total and by sector, the importance of the capital expenditure component of SSC fiscal activity. About 70 percent of the total expenditure increment over the 1963-1970 period is due to rising capital expenditures, with the result that by 1970, capital spending accounted for 65.2 percent of the total budget. Notwithstanding this increasing emphasis on capital spending, the current expenditures of the SSC government grew at the very rapid annual rate of 22 percent, largely because of heavy increases in current spending for health services and water supply.

This heavier emphasis on capital expenditures over the 1963-1970 period also gave rise to marked changes in the functional distribution of SSC government expenditures. (See Table 8). In general, the share of SSC resources devoted to social service type activities (education, health, welfare) tended to decline, and the share devoted to construction

^{1/} These comparisons are the result of a special study carried out in the budget division of the SSC government especially for this study. Annual functional breakdowns of expenditures (with no current-capital separation) is possible from budget data on a basis of several rough approximations.

Table 7: PER CAPITA EXPENDITURE BY FUNCTION
(In current won)

	1/				1/		
	1963	1970	Annual Percent Increase 1963-1970		1963	1970	Annual Percent Increase 1963-1970
Water	239.0	1,044.3	23.5	Housing	196.7	712.4	20.4
Current	86.3 (36.1)	500.2 (47.9)	28.5	Current	2.4 (1.2)	13.9 (2.0)	18.5
Capital	152.7 (63.9)	544.1 (52.1)	19.9	Capital	194.3 (98.8)	698.5 (98.0)	20.1
Sewerage	42.6	531.9	43.8	Transportation	4.1	182.5	72.8
Current	0.0	0.0	0.0	Current	4.1 (100)	144.7 (79.3)	66.5
Capital	42.6 (100)	531.9 (100)	43.8	Capital	0.0	37.8 (20.7)	n.a.
Roads & Bridges	312.8	1,896.1	29.2	Industry	57.6	221.2	21.3
Current	0.0	4.0 (0.2)	69.0	Current	10.6 (18.4)	57.1 (25.8)	27.1
Capital	312.8 (100)	1,892.1 (99.8)	29.1	Capital	47.0 (81.6)	164.1 (74.2)	19.6
Health	38.0	249.6	31.5	Debt Service	12.7	15.6	3.1
Current	37.4 (98.4)	191.7 (76.8)	26.5	Current	12.7 (100)	15.6 (100)	3.1
Capital	0.6 (1.6)	57.9 (23.2)	92.5	Capital	0.0	0.0	0.0
Education	391.8	1,764.2	24.2	Land Readjustment	21.6	578.8	60.0
Current	337.9 (86.2)	1,125.3 (63.8)	18.8	Current	0.0	0.0	0.0
Capital	53.9 (13.8)	638.9 (36.2)	42.5	Capital	21.6 (100)	578.8 (100)	60.0
Welfare	45.4	160.0	19.7	Han River Construction	0.0	746.4	n.a.
Current	45.4 (100)	142.0 (88.8)	17.7	Current	0.0	0.0	0.0
Capital	0.0	18.0 (11.2)	n.a.	Capital	0.0	746.4	n.a.
Police	0.0	30.2	n.a.	TOTAL	1,602.6	8,943.4	27.8
Current	0.0	13.8 (45.7)	n.a.	Current	755.6 (47.1)	3,102.4 (34.7)	22.5
Capital	0.0	16.4 (54.3)	n.a.	Capital	847.0 (52.9)	5,841.0 (65.3)	31.8
Fire	7.8	24.6	17.8	Population (000)	3,254.6	5,536.4	7.9
Current	6.3 (80.8)	15.5 (63.0)	13.7				
Capital	1.5 (19.2)	9.1 (37.0)	29.1				
Refuse Collection	51.1	355.8	31.9				
Current	49.3 (96.5)	280.4 (78.8)	28.2				
Capital	1.8 (3.5)	75.4 (21.2)	70.8				
General Administration	181.4	653.1	20.2				
Current	163.3 (90.0)	598.2 (91.6)	20.5				
Capital	18.1 (10.0)	54.9 (8.4)	17.2				

1/ Compound growth rate.

2/ Figures in parentheses are percentages of the total for the function.

Source: Statistical Yearbook 1964, 1971, and data supplied by local officials.

Table 8: PERCENTAGE DISTRIBUTION OF SSC EXPENDITURES BY FUNCTION: 1963, 1970

Function	1963		1970	
	Current	Total	Current	Total
Water	11.4	15.3	16.1	11.7
Sewerage	.0	2.7	.0	3.5
Roads & Bridges	.0	17.3	.1	21.2
Health	4.9	2.4	6.2	2.8
Education	44.7	25.1	36.3	19.7
Welfare	6.0	2.9	4.6	1.8
Police	.0	.0	.0	.3
Fire	.8	.5	.5	.3
Refuse Collection	6.5	3.3	9.0	4.0
General Admin.	21.6	11.6	19.3	7.3
Housing	.3	12.6	.4	8.0
Transportation	.5	.3	4.7	2.0
Industry	1.4	3.7	1.8	2.5
Debt Service	1.7	.8	.5	.2
Land Readjustment	.0	1.4	.0	6.4
Han River construction	.0	.0	.0	8.3
TOTAL ^{1/}	100.0	100.0	100.0	100.0

^{1/} Totals may not add to 100 because of rounding.

Source: See Table 5.

Table 9: FUNCTIONS WITH INCREASED/DECREASED SHARE OF TOTAL EXPENDITURES: 1963-1970 ^{1/}

<u>Increase</u>	<u>Decrease</u>
Sewerage (0.8)	Water (3.6)
Roads-Bridges (3.9)	Education (5.4)
Health (0.4)	Welfare (0.8)
Police (0.3)	Fire (0.2)
Refuse Collection (0.7)	General Administration (4.3)
Transportation (1.7)	Housing (4.6)
Land Adjustment (5.0)	Industry (0.8)
Han River Construction (8.3)	Debt Service (0.6)

^{1/} Figures in brackets show absolute value of change in percentage points.

Source: Computed from Table 8.

and infrastructure type activities, particularly land adjustment, Han River construction, and roads, increased. The functions are classified in Table 9 according to whether their share of total expenditures increased or decreased.

The Sources of Finance

The total amount of SSC expenditure increase over the 1964-1971 period is 58.6 billion won. The absolute amount of this increase has been growing at an increasing rate since 1964, with particularly large increases since 1968. These expenditure increases must be financed from some combination of (a) increased tax revenues, (b) increased non-tax revenues, (c) increased external assistance, (d) increased short and long-term borrowing, and (e) increased revenues from self-financed projects.^{1/} Though there are wide year-to-year variations in the importance of these sources of finance, the contribution of self-financed activities has been large and growing.

Tax revenues have accounted for less than one-third of the expenditure increase over the period, which is approximately the average share of total spending financed through general taxation (see Table 10).

^{1/} The term "self-financed" is used throughout this study to refer to projects or undertakings which are budgeted separately and which generate revenues that cover part of costs.

Table 10: THE FINANCING OF TOTAL EXPENDITURES 1964-1971

(In millions of won)

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Total Expenditure	5,685 (100) ^{1/}	7,320 (100)	13,154 (100)	17,293 (100)	28,844 (100)	37,689 (100)	49,510 (100)	64,327 (100)
Tax Revenues ^{2/}	1,612 (28.4)	2,223 (30.4)	3,497 (20.2)	5,041 (29.2)	8,711 (30.2)	12,319 (32.7)	17,099 (34.5)	19,481 (30.3)
General Non-Tax ^{3/} Revenues	2,144 (37.7)	1,569 (21.4)	1,938 (11.2)	2,407 (13.9)	4,004 (13.9)	6,141 (16.3)	8,013 (16.2)	8,652 (13.4)
Self-Financing Project Revenues	717 (12.6)	1,113 (15.2)	2,791 (16.1)	3,540 (20.5)	9,668 (33.5)	11,602 (30.1)	15,504 (31.3)	23,378 (36.3)
Revenues from Borrowing	87 (1.5)	0 (0)	230 (1.3)	0 (0)	0 (0)	0 (0)	531 (1.1)	2,624 (4.1)
Grants in Aid	1,125 (19.8)	2,415 (33.0)	4,698 (27.2)	6,305 (36.5)	6,461 (22.4)	7,627 (20.2)	8,363 (16.9)	10,192 (15.8)

^{1/} Figures in parentheses are percents of total expenditure.

^{2/} Tax revenues include these taxes: acquisition tax, automobile tax, entertainment tax, slaughter tax, parimutuel tax, license tax, property tax, city planning tax, fire service establishment tax.

^{3/} Non-tax revenues include revenue from property income, rents from land and housing, land building sales, rents and fees including revenues from public industry, admission fees, stamp revenues, surplus receipts from previous years. Transfers from special account and other miscellaneous receipts in both the general and education accounts.

Source: See Table 5

Taxation increases may result, in theory, from either discretionary (legal) changes in the tax structure or from automatic growth due to the income elasticity of the tax structure. As will be shown below, the modest amount of expenditure increase financed by taxation is due to the latter.

Self-financed project revenues are the major source of finance for this expenditure increase (see Table 11). However, the importance of self-financed activities is somewhat overstated in Table 10, and these statistics should be interpreted with caution, since long-term borrowing for these projects is included in this amount, as is some general fund transfer. A more accurate impression may be gained from the breakdown of self-financed project financing presented in Table 12.^{1/}

General non-tax revenues, e.g. fees, permits, licenses, etc., have declined in importance as a source of financing expenditure increase over the period since 1965. This is largely due to the low level of these charges and a structure of charges that does not respond proportionately to income increases.

External assistance has likewise dropped as a percent of total financing, primarily because of revisions in central government grant/subsidy distribution formulae. The proportion of expenditures financed from external assistance fell from 19.8 to 15.8 percent over the 1964-1971 period (see Table 10).

The Functional Sources of Expenditure Increase

As noted above, determination of the functional composition of SSC expenditures is complicated because the budget classification used by the city government in account for its expenditures are along the lines of

^{1/} As may be seen from a comparison of total self-financed project revenues, in Tables 10 and 12, there was a discrepancy in the amounts reported by each account and that reported by the central budget office.

Table 11: THE FINANCING OF EXPENDITURE INCREASE: 1965-1972

	<u>1965-66</u>	<u>1966-67</u>	<u>1969-70</u>	<u>1970-71</u>	<u>1971-72</u>	<u>1969-72</u>
Net Expenditure Increase (In millions of won) <u>1/</u>	1,635	5,834	8,845	11,821	14,817	35,483
<u>Financing:</u>	100.00	100.00	100.00	100.00	100.00	100.00
Percentages from						
Tax Revenues	37.37	21.84	40.79	40.44	16.08	30.06
General Non-Tax Revenues	-35.17 <u>2/</u>	6.32	24.12	15.84	4.31	13.09
Self-Financing Project Revenues	24.22	28.76	21.87	33.01	53.14	38.62
Revenues from Borrowing	-5.32 <u>2/</u>	3.94	0.00	4.49	14.14	7.40
External Aids	78.90	39.13	13.18	6.23	12.34	11.26

1/ Sum of expenditure increases from general, special and education special accounts less interaccount transfers.

2/ The negative percentage increases are summed for the columns in which they appear. This negative sum is then, in an off-setting fashion, subtracted from the column's sum of positive percentage increases.

Source: Computed from Table 10.

Table 12: THE COMPOSITION OF SELF-FINANCED PROJECT REVENUES

(In thousands of won)

	1968	1969	1970	1971	1972
Total Revenue	8,340,917 (100.0) ^{2/}	12,787,307 (100.0)	15,082,047 (100.00)	20,233,891 (100.0)	19,591,762 (100.0)
Transfer from General Account	1,576,655 (18.9)	4,161,300 (32.5)	387,572 (2.5)	788,000 (3.9)	2,425,300 (12.4)
Borrowing	803,450 (9.6)	100,000 (0.8)	0 (0.0)	4,500,000 (22.2)	5,362,731 ^{1/} (27.4)
User Charge	1,067,092 (12.8)	1,039,877 (8.1)	1,150,262 (7.6)	1,356,500 (6.7)	1,152,277 (5.9)
Sales of Assets	2,628,528 (31.5)	5,302,591 (41.5)	6,841,591 (45.4)	5,600,833 (27.7)	5,311,687 (27.1)
Other	2,265,192	2,183,539	6,702,622 (44.4)	7,968,558 (39.4)	5,339,967 (27.3)

I N C R E A S E S

	1972-1968	1969-1968	1970-1969	1972-1970	1972-1971
Total Revenue	11,250,845 (134.9) ^{3/}	4,446,390 (53.3)	2,294,740 (17.9)	5,151,844 (34.2)	642,129 (- 3.2)
Transfer from General Account	848,645 (35.0)	2,584,645 (163.9)	3,773,728 (90.7)	400,428 (103.3)	1,637,300 (207.8)
Borrowing	4,559,281 (567.5)	- 703,450 (- 87.6)	(- 100,000) (-100.0)	4,500,000 -	862,731 (19.2)
User Charges	85,639 (8.0)	- 27,215 (- 2.6)	110,385 (10.6)	206,238 (17.9)	204,223 (- 15.1)
Sales of Assets	2,683,159 (102.1)	2,674,063 (101.7)	1,539,000 (29.0)	- 1,240,758 (- 18.1)	- 289,146 (- 5.2)
Other	3,074,775 (135.7)	- 81,653 (- 3.6)	4,519,083 (207.0)	1,265,936 (18.9)	2,628,591 (33.0)

^{1/} Includes 3,675,867 thousand won borrowed from external sources.

^{2/} Figures in parenthesis are percentages of total general revenues.

^{3/} Figures in parenthesis are percentage increase in revenue between the years.

Source: Financial data for special accounts excluding revenues from nightsoil and refuse collection, not excluding pawn shop revenues however; compiled by Seoul officials 1968-72.

departmental responsibility rather than purpose of expenditure. As a result, expenditures are grouped, for example, under public works rather than under roads, bridges, street lights, etc. In order to obtain the data required for a functional expenditure analysis, a special analysis was carried out in collaboration with SSC fiscal officers. This analysis yielded the functional and current-capital expenditure cross-classification presented in Tables 7 and 8 above.^{1/} Hence, on a basis of either source of finance or functional distribution, these time series show that a substantial part of the total expenditure increase is attributable to special account items, or to projects which are to some extent self-financed (see Table 13). But the analysis above is much too aggregate to carry this argument very far, and is void of specific details on the financing. Accordingly, the examination here is a function-by-function study of the structure and causes of expenditure increase. First, an effort is made to identify in a more precise fashion the service responsibility associated with each category. Second, the sources of financing for each function are explored, with particular emphasis on service charges, earmarked taxes or fees, or self-financing mechanisms. Finally, some breakdown of expenditure amounts by functional subclassification is attempted.

The analysis is hampered throughout by the absence of comparable time series data; hence much of the discussion below places more emphasis on the structural analysis of expenditures at a single point in time than on trend analysis.

^{1/} In these tables, transfers from the general account are not reported as such, but as expenditures for the appropriate function in the special account or for education, depending on the destination of the transfer.

Table 13: THE FUNCTIONAL SOURCES OF EXPENDITURE INCREASE, 1963-70

Total expenditure increase 44,434
(In millions of won)

Percent due to:

Water	11.3	
Sewerage	3.6	
Refuse collection	4.1	
Roads & bridges	21.6	
Transportation	2.2	
Land Readjustment	7.0	
Han River Construction	<u>9.3</u>	
SUBTOTAL		59.1
Health	2.8	
Education	19.1	
Welfare	1.7	
Housing	<u>7.4</u>	
SUBTOTAL		31.0
Police	0.4	
Fire	0.4	
General Administration	6.8	
Industry	2.3	
Debt service	<u>0.1</u>	
SUBTOTAL		10.0

Source: Computed from Table 7.

Water Supply ^{1/} The supply of drinking water for the Seoul metropolitan area is drawn predominantly from the Han River and is treated to acceptable standards of purity in treatment plants at five locations. The water produced is then distributed to about 86 percent of the city's total population, or 90 percent of the population within the present service area. The service area includes all parts of the city except some low-density fringe areas at elevations of 100 to 120 meters. Water loss, that is, the difference between treated water produced and water recorded on customer meters, is high; it is attributable mainly to leakage from old pipework, under-recording by meters, and illegal connections. Loss due to "accepted" unmetered usage, such as fire-fighting and certain civic functions, appears to be normal. The Water Bureau, by devoting considerable effort and expenditure to loss correction, reduced loss from an exceptionally high 62 percent in 1960 to 44.5 percent in 1970. Sample testing carried out regularly on a random selection of meters, for the purpose of checking meter performance, indicates that under-recording could account for 12 to 15 percent of total loss. Faulty metering, then, appears to be an appreciable factor in the high loss experienced. ^{2/}

The provision of water in Seoul is administered by the Water Bureau of the Seoul Special City government. The Water Bureau was established in 1961 by separating the Water Works section of the city's Bureau of Construction; the actual separation of accounts of these two offices, however, did not take place until 1964. The Bureau is governed

^{1/} In the descriptive parts of this section, we draw from Asian Development Bank Appraisal of Seoul Water Supply Project in the Republic of Korea, 8 March 1971.

^{2/} Why the "faulty" metering tends to consistently under-record rather than over-record is not entirely clear.

by the rules and regulations laid down in the Revised Rules of Organization of the Special City of Seoul, viz City Rule 417 and Regulations 549, 624, and 627; and the Municipal Utility Law of January 29, 1969. It is headed by a director, who is assisted by a deputy director and includes six sections: Administration, Finance, Water Resources, Water Supply, Installation, and Machine and Electric. Under these sections are a total of 17 subsections. In addition, there are a number of field offices; a Water Service Shop, which has offices in every gu (district); a Central Regional Office, primarily for maintenance; treatment plants, auxiliary plants, and two reservoirs.

The Water Bureau was established to operate as a self-supporting entity, dependent primarily upon resources derived from the sale of water. The SSC Water Bureau has consistently generated a surplus on its current account and, accordingly, has financed both debt repayment and a portion of capital expenditures (see Table 14). There has been some transfer of resources from the city general account to meet a portion of the balance of capital spending, but this amount is relatively small and has actually declined as a proportion of total SSC general account revenues. The remainder of capital expenditures is financed through domestic and foreign borrowing for specific capital projects. The service on such debt becomes a current expenditure item of the Water Bureau and is covered from water charge revenues. Hence the water supply function is basically self-sufficient.

This self-sufficiency is a result of substantial revenue growth, which in turn may be attributed to increasing water consumption and to

Table 14: BUDGETARY POSITION OF THE SEOUL CITY WATER BUREAU
(In millions of Won)

	1965	1966	1967	1968	1969	1970	1971	1972
Total Current <u>1/</u> Revenue	1,486	1,476	1,834	2,530	3,753	3,937	5,059	7,612
Total Current <u>2/</u> Expenditure	735	917	1,172	1,423	2,155	2,365	2,887	3,724
Current surplus/ Deficit	751	559	671	1,107	598	1,572	2,172	3,888
Capital Expenditure	468	660	484	944				
Overall Surplus/ Deficit	+283	-101	+187	+ 110	- 96	-1,440	- 956	+ 806
Financing/Revenue Accumulation								
Transfers from								
General Account	0	0	40	124	265	120	167	0
Domestic Borrowing	120	175	110	150	192	1100	1000	0
Foreign Borrowing					73	652	364	35

1/ Total current revenue includes revenues from user charge, sales of assets, and other sources, it excludes transfers from the general account and borrowing. These figures differ from those in Table 15 because the figure for revenue in the table is only user charges.

2/ Includes debt service expenditures but excludes depreciation estimates (in millions of won) as follows:

1964: 216	1967: 274	1970: 428
1965: 242	1968: 321	1971: 576
1966: 274	1969: 416	1972: 601

Source: See Table 5

discretionary increases in water rates. With respect to the latter, the level of water charges is proposed by the Water Bureau and approved by the Mayor, who in turn obtains approval from the Prime Minister. There have been only three changes in the rate structure over the past decade. In 1968 and 1970, the city raised its water charges for industrial and commercial uses, and in 1972, residential rates were approximately doubled. The present and past water rate structures of the city are shown in Table 15.

Apart from discretionary rate changes, receipts from water charges^{1/} have increased because of additions to the population served and because of increased water usage on the part of the population presently served. The (population) elasticity (η_p) of water charges revenues may be written: ^{2/}

$$\eta_p = \left[\frac{\partial R_t}{\partial P_t} \right] \left[\frac{P_t}{R_t} \right] = \left[\frac{\partial R_t}{\partial C_t} \cdot \frac{C_t}{R_t} \right] \left[\frac{\partial C_t}{\partial P'_t} \cdot \frac{P'_t}{C_t} \right] \left[\frac{\partial P'_t}{\partial P_t} \cdot \frac{P_t}{P'_t} \right] \quad (1)$$

where R_t = receipts from residential water charges in year t,
 C_t = residential consumption in year t,
 P'_t = population served in year t,
 P_t = total population in year t.

-
- ^{1/} Excluding the revenues from the customer connection services (which are exactly matched by the expenses for the same service), over 90 percent of the Water Bureau's operating revenues are from water charges.
^{2/} Assuming away interaction terms, on grounds that they are so small as to be inconsequential.

Table 15: SEOUL WATER RATES, 1972

Rates		Basic Quantity (m ³)	Rate Per m ³ (won)	Excessive Use (m ³)	Rate Per m ³ (won)
Use					
Home Use		10	15	11 - 20 21 - 30 31 - 40 41 and over	15 20 30 40
Business Use	Class 2	30	45	31 - 200 201 - 1000 over 10001	70 90 120
	Class 2	30	30	31 and over	35
Industrial Use		200	30	31 and over	35
Public Bath	Class A	600	80	601 - 1000 1001 - 3000 over 30001	100 160 200
	Class B	600	20	601 and over	25
Public Use		100	10	101 and over	10
Special Use (Government & Army etc)		20 won per 1 m ³ used			
Fire Extinguishing Use		100 won per month			
Others		1. The use of a private hydrant for fire drill use shall be subject to the rate for "Special Use". 2. The temporary user shall be subject to 70 won per m ³ of water used.			

1/ "A" designates larger public baths and "B" smaller.

Source: '72: The Water for Seoul, Water Works Bureau, Seoul Metropolitan Government.

and is therefore dependent on: (a) the marginal and average rate of water charge per unit of water consumed; (b) the marginal and average rate of consumption per person served; and (c) the marginal and average rate of population served per person in the city.

The estimation of equation (1) above requires separate estimates of the marginal and average rates. These are obtained in equations (2) to (4), but there are data problems associated with these estimates. First, residential and non-residential water consumption data are not separable; second, it is not possible to fully remove the discretionary effects of the industrial water rate increase in 1968; and third, more years of data than are available here are necessary to establish these results with some confidence. These limitations notwithstanding, equations (2) to (4) are estimated by ordinary least squares ^{1/} with the following results:

$$R_t = - 859.2 + 10.98 C_t, \quad (2)$$

(17.8)

$$C_t = - 47.95 + 76.21 P'_t, \quad (3)$$

(14.9)

$$P'_t = - 1,418 + 1.115 P_t. \quad (4)$$

(23.3)

From equation (1), the elasticity of water receipts with respect to population growth may be estimated, at 1971 levels of the variables, as

$$\eta_p = 1.416 \quad (5)$$

Thus the revenue elasticity of water charges with respect to population growth is 1.416, i.e., a one percent increase in population is associated with a 1.416 percent increase in water revenues.

^{1/} All of the estimates above are based on eight years of data. t-statistics are in parentheses.

This high population-revenue elasticity of the water charge structure may or may not be accompanied by an efficient pricing of water, i.e., the setting of a price that is equal to marginal cost. If it is, there will be an efficient allocation of the water resource and, if marginal cost is rising and greater than average cost, a revenue surplus for the city general account. Preliminary study of the relationship between current expenditures and the quantity of water produced indicates a linear pattern.^{1/} A water cost function for current operating expenses may be estimated from:

$$C_t = \alpha + \beta Q_t \quad (6)$$

where: C_t = current operating expenses for water in year t,
 Q_t = total quantity of water produced.

Equation (6), when estimated using ordinary least squares, yields

$$C_t = -353.1 + 8.57 Q_t \quad R^2 = .95 \quad (7)$$

(11.4)

^{1/} A parabola was forced to the data, and the following relationship was estimated using ordinary least squares:

$$C_t = -1,716.8 + 18.5 Q_t - 0.015 Q_t^2 \quad R^2 = .97$$

(8.6) (4.7)

where C_t is current expenditure for water in year t including debt service expenditures and Q_t is total quantity of water produced. The figures in parentheses are the t-values. The t-statistics cannot be interpreted with any confidence, because the correlation coefficient between Q_t and Q_t^2 is .97. This high degree of collinearity is probably due to the limited number of observations (eight), so that the relationship between Q_t and Q_t^2 is approximated quite well linearly. This collinearity makes any interpretation of the significance of the coefficients using the t-statistic invalid, because of the bias in the estimated variance caused by the collinearity. Furthermore, the almost perfect collinearity suggests that the relationship can be postulated without one of the terms, either Q_t or Q_t^2 .

Although the t-statistic indicates that the estimated relationship is significantly different from zero at the .01 level of significance, no economic sense can be made of a negative fixed cost. Forcing the curve through the origin, since the dependent variable includes no fixed costs, the estimated relationship becomes:

$$C_t = \beta Q_t \quad (8)$$

and the marginal equals the average cost, β , which can be estimated directly from the data for each year. That is the β in any year is C_t / Q_t for that year. If such an average cost estimate is used, the price of water in 1972 would have been 7.36 won per cubic meter of water. In fact, the average rate in 1972 was 12.26 (see Table 16) won per cubic meter of water, hence the Seoul Water Bureau is already charging a rate above average cost. Table 17 shows the revenue raised in each year from the user charge and the revenue that would have been raised using the average cost pricing of equation (8). The data in Table 14 show that the actual user charge more than covers current expenditures including debt service. It is not clear that it is sufficient to cover the sum of current expenditures and the appropriate share of capital costs for the year.

Table 16: REVENUES FROM WATER CHARGES

Year	Revenue From Current Charges (million won)	Total Water Production (million m ³)	Revenue per m ³ (won)	Production Per Capita (m ³)	Population Served (millions)	Production per person served (m ³)	Total population (millions)	population served to total population
1964	642	122	5.26	35.63	2.325	52.47	3.424	.679
1965	787	154	5.11	44.38	2.557	60.23	3.470	.737
1966	924	162	5.70	42.60	2.710	59.78	3.803	.713
1967	1,103	184	5.99	46.36	2.972	61.91	3.969	.749
1968	1,447	215	6.73	49.61	3.440	62.50	4.334	.794
1969	2,015	251	8.03	52.55	4.106	61.13	4.776	.860
1970	2,842	295	9.63	53.29	4.737	62.28	5.536	.856
1971	3,352	358	9.36	61.20	5.030	71.17	5.850	.859
1972	6,206 ^{1/}	506 ^{2/}	12.26	81.61	5.460	92.00	6.250	.874

^{1/} These figures are the actual user charges

^{2/} Estimate based on 304 liters/day/per person receiving water, and 1 cu. decimeter = 1 liter.

Source: Seoul Statistical Yearbook, 1971.

Table 17: ESTIMATED DIFFERENCE BETWEEN THE CURRENT WATER RATE REVENUE
AND THE WATER REVENUE RAISED PRICING AT AVERAGE COST

(In millions of won)

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Revenues from</u>								
(a) Average Cost Price	735	917	1,172	1,423	2,155	2,365	2,887	3,724
(b) Current User Charge	787	924	1,103	1,447	2,015	2,842	3,352	6,206
<u>Surplus/Deficit</u>								
(c) = (b) - (a)	52	7	-69	24	-140	477	465	2,482

Source: Table 16, and data derived using equation (8)

Sewerage. The city of Seoul has only the modest beginnings of a centrally piped sewerage system, serving at present less than 2 percent of its population. Disposal is carried out almost entirely through a nightsoil collection process. Thus, nearly all current expenditures for sewage disposal are classified under refuse collection.

The general account budgetary head labelled "sewerage expenditures" and shown in Tables 7 to 9 above, includes design, construction, and operation outlays for sewerage mains, drains, and river and flood control. There are no earmarked revenues for this function; hence, total financing is from the general fund.

The only capital expenditure shown for sewerage above is that incurred in connection with the construction of a nightsoil treatment plant, which is being financed completely from a foreign loan. This expenditure is recorded in the special account. No operating expenses will be incurred until the plant is completed.

A breakdown of the composition of total sewerage expenditures, and their financing, is shown in Table 18. Clearly, these sewerage outlays represent a net burden on the general revenues of the city and there is no evidence of self-financing.

Land Adjustment. The SSC has a land adjustment scheme, so called, under which certain areas of the city are designated for improvement. The improvement consists of rearranging the shape of plots, land grading, laying out and constructing roads, and provision of other basic infrastructure. The objectives of the program are (a) to facilitate the development of areas, usually on the city's urban fringe and usually

Table 18: FINANCING EXPENDITURE ON SEWERAGE
(In thousands of won)

	<u>1969</u>	<u>1970</u>	<u>1971</u>
Total Revenue	4,125,386	7,266,797	7,556,732
From General Account	4,125,319	7,265,223	7,154,910
Borrowing	0	0	400,000
Internal	0	0	400,000
Others	67	1,574	1,822
Total Expenditure	4,125,386	7,266,797	7,556,732
Current Expenditure	4,111,915	6,906,747	7,017,461
Debt Service	5,328	7,710	14,152
Capital Expenditure	13,471	360,050	539,271

Sources: Financial data of special accounts; data supplied by Seoul officials; Seoul Statistical Yearbook; Financial Abstracts of Local Government in Korea.

difficult to develop because of their physical characteristics (plot shape, size, or topography); and (b) to recover public sector costs from such development. Fiscal transactions under this scheme are made through a land adjustment special account and administered by the Land Adjustment Bureau of the SSC government. The Land Adjustment Bureau has no maintenance responsibilities after the development takes place.

The city administration has a five-year plan with respect to areas designated for land adjustment. The decisions on which lands are to be adjusted are made by the Mayor and the city administration. Technically, it is required that a majority of land owners agree to the program.

The finances of the land adjustment program are entirely in the special account, with the fiscal resources for the program derived primarily from borrowing, and the resale of land. The landholders must surrender some of their land to the government as payment in lieu for the improvements they receive on their land. More specifically, the landowner whose land will be improved donates to the government an amount of the land adequate to meet the costs of the improvement plus an amount for general uses such as parks, and open spaces. The government then resells the land to recoup the cost of improving the land. As of October 1972 there were 38 land adjustment schemes undertaken, 27 of which are complete, and the expenditure for the adjustment of land amounted to about 40 billion won in Seoul Special City.

Land adjustments can be initiated either by decree of the Minister of Construction or by those who are connected with the lands which are being adjusted, for example the city government, the housing corporation, a land-owner association which is formed for that purpose. In the latter case, the land adjuster must submit an application to and obtain formal permission from the Ministry of Construction. The land adjuster first designates a certain area for land adjustment. Next, the land adjustment scheme is announced to the public and remains open to those concerned for public reference for a period of 14 days. The proposed scheme, the method of covering costs, and other matters must be approved by at least two thirds of the land-owners. If the land-owners approve, the land adjuster then submits the land adjustment scheme to the Ministry of Construction and procures a permit.

Technically all the costs of land adjustment are borne by the land owners in the adjusted area, however, the land adjuster, generally the SSC government, undertakes the planning and execution of the scheme. A precise description of the allocation of these costs among land-owners is beyond the scope of this research, but a general description is provided in Appendix A.

As may be seen from Tables 13 and 19, land adjustment activities are a major factor in the increase in SSC expenditures. Since the revenues generated are for a specific purpose, an adjustment might be viewed as an enterprise. In that sense, it is self-sufficient and generates revenues adequate to cover costs, including debt service.

Han River Project. Although the Han River Project is a form of land adjustment, it is treated as a separate special account in Seoul. The purpose of the project, which started in 1968 and ended in 1972, was to construct several toll roads around the Han River connecting the city of Seoul with Yoido island, which is located in the middle of the Han River and was granted by the central government to Seoul Special City. The project was also designed to develop Yoido Island, and included the construction of a protective dam around the island, filling and levelling ground, construction of roads, a public square and the provision of public utilities. The total area of the island is 870,000 pyong, of which 60 percent was developed for commercial use and 40 percent for housing. Most of the cost of the Yoido development was covered by sales of the improved land to the private sector and to other special accounts of Seoul City, such as Housing. Little by way of general account subsidy has been necessary in the overall financing of the Han River Project (see Table 20).

Table 19: THE COMPOSITION AND FINANCING OF LAND ADJUSTMENT EXPENDITURE
(in thousands of won)

	<u>1963</u>	<u>1965</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Total Revenue</u>	119,472 (100.0)	251,279 (100.0)	917,846 (100.0)	2,064,519 (100.0)	1,704,477 (100.0)	3,461,160 (100.0)	5,962,797 (100.0)	5,458,929 (100.0)
Transfer from General Account	0 (0.0)	35,000 (13.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Internal Borrowing	5,000 (4.2)	90,000 (35.8)	0 (0.0)	250,000 (12.1)	0 (0.0)	0 (0.0)	2,100,000 (35.2)	1,686,864 (30.9)
User Charges	5,447 (4.6)	27,982 (11.1)	114,205 (12.4)	128,496 (6.2)	56,500 (3.3)	49,217 (1.4)	6,750 (0.1)	14,925 (0.3)
Sales of Assets	40,799 (34.2)	37,169 (14.8)	525,495 (57.3)	942,869 (45.7)	1,000,799 (58.7)	2,860,662 (82.6)	2,417,886 (40.6)	3,465,668 (63.5)
Other	68,266 (57.1)	61,128 (24.3)	278,146 (30.3)	743,154 (36.0)	647,178 (38.0)	551,281 (15.9)	1,438,161 (24.1)	291,632 (5.3)
<u>Total Expenditure</u>	70,223 (100.0)	157,029 (100.0)	872,193 (100.0)	1,981,445 (100.0)	1,509,367 (100.0)	3,182,102 (100.0)	5,916,104 (100.0)	5,316,953 (100.0)
Debt Service	18,447 (26.3)	40,832 (26.0)	80,922 (9.3)	91,719 (4.6)	206,102 (13.6)	306,733 (9.6)	133,592 (2.3)	542,891 (10.2)
Capital Expenditure	51,776 (73.7)	116,197 (74.0)	791,271 (90.7)	1,889,726 (95.4)	1,303,265 (86.4)	2,875,369 (90.4)	5,782,512 (97.7)	4,774,062 (89.8)

Source: Financial data of special accounts supplied by Seoul officials.

Table 20: THE COMPOSITION AND FINANCING OF THE HAN RIVER PROJECT

(In thousands of won)

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Total Revenue</u>	2,589,328 (100.0)	2,864,642 (100.0)	4,237,493 (100.0)	3,179,169 (100.0)	1,490,868 (100.0)
Transfer from General Account	1,490,000 (57.5)	150,000 (5.2)	0 (0.0)	0 (0.0)	0 (0.0)
Internal Borrowing	300,000 (11.6)	100,000 (3.5)	0 (0.0)	1,000,000 (26.5)	0 (0.0)
Sales of Assets	789,436 (30.5)	2,544,262 (88.8)	3,402,496 (80.3)	2,661,961 (70.4)	1,376,777 (92.4)
Other	9,892 (0.4)	70,380 (2.5)	834,997 (19.7)	117,200 (3.1)	114,091 (7.6)
<u>Total Expenditure</u>	2,534,977 (100.0)	2,838,953 (100.0)	4,131,819 (100.0)	3,675,994 (100.0)	1,471,425 (100.0)
Debt Service	38,918 (1.5)	69,793 (2.5)	96,066 (2.3)	1,219,255 (33.2)	831,210 (56.5)
Capital Expenditure	2,546,059 (98.5)	2,769,160 (97.5)	4,035,753 (97.7)	2,456,739 (66.8)	640,215 (43.5)

Source: Financial data of special accounts, supplied by Seoul officials.

Roads and Bridges. The responsibility for planning, constructing and maintaining all roads within the Seoul urban area is divided between the SSC government, the central government, and the Korea Highway Authority.^{1/}

The city government operates two toll roads and several toll tunnels. The fiscal operations of these are accounted for within the city special account. By 1973, budgeted toll road receipts were more than adequate to cover expenses associated with the maintenance and improvement of the toll roads.

Expenses incurred for all other roads and bridges by the SSC are shown in the general account of the budget and are financed exclusively from general revenues (see Table 21).

Transportation The transportation function in Seoul is taken to include traffic control as well as the capital and current support of mass transit facilities. For the period before 1971, the bus system is the only form of mass transit included in the budget. The financing of subway construction first appears in the 1971 budget. Both bus service and subway construction are special account items, and together they account for almost all of the increase in transportation expenditures over the past decade.

The city bus company, which began operations in 1965, operates throughout the SSC and beyond the city limits. Bus routes are recommended by the city administration, but are ultimately decided by

^{1/} The sole exception to this is that if a national road toll gate falls within the capital planning region and also inside the city boundaries, the city is responsible for construction and maintenance only up to the toll gate.

Table 21: FINANCING EXPENDITURE ON ROADS AND BRIDGES
(In thousands of won)

	<u>1969</u>	<u>1970</u>	<u>1971</u>
Total Revenue	3,086,109	4,960,672	8,233,634
From General Account	2,935,422	4,823,508	7,933,726
User Charges (Tolls)	150,687	137,164	299,908
Total Expenditure	3,086,109	4,960,672	8,233,634
Current Expenditure	3,070,193	4,925,124	8,156,192
Debt Service	119,513	85,000	200,000
Capital Expenditure	15,916	35,548	77,442

Source: Financial data of special accounts, data supplied by Seoul officials; Seoul Statistical Yearbook; Financial Abstracts of Local Government in Korea.

Table 22: FINANCES OF THE MUNICIPAL BUS SERVICE
(In thousands of won)

	<u>1968</u>	<u>1970</u>	<u>1972</u>
Current Revenues	535,896	774,693	932,530
(Fares)	(533,536)	(772,373)	(930,428)
Current Expenditures	<u>309,752</u>	<u>822,918</u>	<u>948,737</u>
Current Surplus/Deficit	226,144	- 48,255	- 16,207
Capital Expenditures	<u>236,810</u>	<u>157,956</u>	<u>529,138</u>
Overall Surplus/Deficit	- 10,666	-206,181	-545,345
Financed by:			
Transfers	187,468	56,695	393,608
Sales of Property	300	106,644	148,753
Other	400	43,640	3,341
Reserve Increase/Decrease	177,502	798	357

Source: See Table 5.

the Mayor. Operational policy is that fares must at least cover current (operating and maintenance) costs. With respect to fares, the Prime Minister's Office gives guidelines and criteria for raising fares every two to three years. SSC bus fares were adjusted from 15 won for standing passengers and 25 won for seated passengers in 1971-72 to 20 and 30 won respectively in 1972-73.

The expenditure and revenue breakdown for the city bus system is shown in Table 22. Over the past four years, bus company expenditures have doubled, with the increase about evenly divided between current and capital expenditures. The financial sufficiency of the bus operation has weakened over this period, and the amount of transfer from the city general budget has increased. Even with the recent increments in bus fares, the growth in current receipts is not sufficient to match the growth in current expenditures.

Subway construction began in 1971 and is completely a special account item. The 1972 accounts show an expenditure for subway construction of 6.4 billion won, or an amount roughly equal to 10 percent of all SSC government expenditures. Budgeted financing in 1972 suggests a transfer from the general account of 1.6 billion won, or about 3 percent of general revenues of the city government in 1971 (see Table 23).

The traffic control function of the SSC results in an expenditure of about 15 million won, all of which is included in the general account. These expenditures include, primarily traffic management, regulation, and licensing. There are no earmarked revenues. The transfer from the general account to the special account for the transportation function is not a substantial amount. The 180 million won transferred in 1971 is only 0.6 percent of general revenues of the city government.

Table 23: THE FINANCING OF THE SUBWAY EXPENDITURES
(In thousands of won)

	<u>1971</u>	<u>1972</u>
<u>Total Revenue</u>	1,470,009	6,475,574
Transfer from General Account	470,000	1,600,000
Borrowing	1,000,000	3,675,867
External	0	3,675,867
Internal	1,000,000	0
Other	9	1,139,707
<u>Total Expenditure</u>	1,468,576	5,814,523
Debt Service	728	290,560
Capital Expenditure	1,467,848	5,523,963

Source: Financial data of special accounts, supplied by Seoul officials.

Housing Both the city government and the national government are involved in public housing in the Seoul urban area. The SSC government's housing activities include housing construction for rental, housing construction for sale, and the rehabilitation of low-income housing.

The rental program stems from city government apartment construction for slum dwellers. During the 1962-1967 period, five pilot projects, including 240 housing units, were constructed. The city retains ownership of these units.

At least three schemes may be identified whereby the SSC government constructs and then sells houses. First, under slum renewal, during the three years 1969-71, there was a total investment of 6.3 billion won in 430 "citizens' apartment buildings." These contained 22,000 house-

holds and were constructed on cleared squatter areas. A second program, primarily for middle-income people, was begun in 1970 with financing done through private mortgage banks and the Korean Housing Bank. The city administration provides administrative assistance, and advice, and land upon request. The third scheme is a special apartment complex on Yoido Island.

The city government is also involved in the rehabilitation of low income housing. Under this program, squatters on government-owned land are given a chance to build according to prescribed standards. If they fail to do so after a certain time, they are evicted; if they meet acceptable standards, they are granted title to their dwellings.

Finally the city government is involved in urban resettlement. This includes the Kwan-Ju urban development project and small settlement projects in approximately 43 locations around the city. The city has spent about 16 billion won on these developments, which are planned for about 36,000 households. The dwelling units vary in lot size from 10 to 27 pyong per household. The occupiers are obligated to pay the total cost of development in 10 annual installments, with no interest.

Expenditures on citizens' apartments, rehabilitation, and resettlement have averaged about 4 billion won per year. Loans for housing schemes for higher income groups, including both apartments and detached housing units, amount from between 500 and 700 million won per year. In terms of the object of expenditure, debt repayment constitutes less than 2 percent of the total.

The expenditures for housing consist of two special account items; namely, "building lands" and "dwellings". The financing of

housing expenditures is primarily through tenant payments. For the loan amount, the city government borrows from a bank; the tenant pays a monthly rental which the city government uses to amortize the bank loan until the debt is fully repaid. Ownership then passes to the tenant.

There was a sizeable subsidy from city general revenues to support the housing program in 1969, but this has diminished in recent years. As can be seen from the data presented in Table 24, the city government general fund transfer accounted for 76 percent of total housing expenditures in 1969, but diminished to 0, 0, and 0.4 percent in 1970, 1971 and 1972, respectively.

Health There are three basic activities of the SSC Health Department: the regulation of health-related establishments, the maintenance of health centers, and the construction and maintenance of hospitals. The regulation of restaurants, hotels, bars, nightclubs, barbershops, etc., involves investigations twice per year, or whenever necessary (as determined by complaints). Licenses are issued on a one-time basis at the opening of the establishment. Two kinds of licenses are issued: one on the worker(s), and the other on the place of business. For a hotel, club, or bar, the cost of the license is 5,000 won. For a barbershop or restaurant, the cost is 3,000 won. For personnel of these establishments, licenses are 1,000 won per person. There is no additional tax on the licensee. In 1972, the total license amount collected was about 10 million won; these receipts are general fund revenues. The regulation function accounts for a very small fraction of total health expenditures. Regulatory activities, together with expenditures for a sanitary institute and a center for contagious disease protection,

Table 24: FINANCING THE CITY HOUSING PROGRAM
(In thousands of won)

	<u>1963</u>	<u>1965</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Total Revenue</u>	231,982	276,584	554,494	942,691	5,207,652	4,574	5,313,851	2,657,446
Transfer from General Account	10,000	35,000	20,000	45,600	3,980,000	0	0	9,000
Borrowing	106,081	115,616	18,232	253,450	0	0	0	0
External	0	0	0	0	0	0	0	0
Internal	106,081	115,616	18,232	253,450	0	0	0	0
User Charges	1,830	1,603	0	565	0	13,006	0	0
Sales of Assets	38,411	45,419	284,593	606,318	451,962	113,315	61,598	74,066
Others	75,460	98,946	231,669	36,758	775,690	4,448,300	5,332,253	2,493,380
<u>Total Expenditure</u>	159,907	252,983	526,498	904,293	5,192,391	3,944,093	5,227,041	2,576,567
Debt Service	18,193	100,267	114,584	106,588	159,873	145,161	93,371	64,230
Capital Expenditure	141,714	152,716	411,914	797,705	5,032,518	3,998,932	5,133,670	2,512,337

Source: Financial data of special accounts; supplied by Seoul officials.

accounted for about 12 percent of the departmental budget in 1970.

The second major function of the Health Department is the operation of nine district health offices. Established in 1963, these offices perform a variety of functions, including vaccination, spraying, and the provision of free clinical health services for the poor. Each district health office is staffed by 8 to 10 physicians and approximately 20 nurses. About 300 patients are seen each day in each office. The district health offices accounted for about 30 percent of total health expenditures in 1970.

The hospital function of the Health Department actually has three component activities. The first, and most important, is the maintenance and construction of municipal hospitals. The second is the control of private hospitals, and the third is the control of pharmacies. With respect to the control of private hospitals and pharmacies, there is an inspection function, the granting of permission to operate, and the issuance of licenses for the personnel of these institutions. There is no charge to private hospitals for the license to operate. This activity constitutes a small portion of total spending for hospitals, which accounted for 60 percent of the Health Department budget in 1970.

The SSC government is also responsible for eight municipal hospitals. All of the employees in these institutions are city employees. Of the eight hospitals, four are general hospitals with about 400 beds each, and the other four are a tuberculosis and acute infectious disease hospital (750 beds), a children's hospital (for patients under 15 years of age; 160 beds), a mental hospital (200 beds), and a children's tuberculosis hospital (90 beds). In 1972, the total budget for the

hospitals component of health expenditures was 886 million won, including capital expenditures; of this amount, 471 million was for general hospitals, and 414 million was for other hospitals. Total revenues received from the eight hospitals included 281 million won in rents and fees. For the four non-general hospitals, there is effectively a 90 percent subsidy, which must be met from general account revenues.

As can be seen in Table 25, there has been a rapid increase in expenditures, with the primary growth coming from hospital expenditures. Among the important reasons for this increase are the expansion of hospital facilities, the purchase of new equipment, including x-rays, increasing levels of wages, and remodeling, i.e., much of the increase is due to the expansion of services.

Table 25: FINANCING EXPENDITURES ON HEALTH
(In thousands of won)

	<u>Total Current Revenue and Expenditures 1/</u>
1964	168,015
1965	222,484
1966	294,756
1967	522,878
1968	615,101
1969	1,009,392
1970	1,381,659
1971	1,246,701

1/ All financing from general account

Source: Seoul Statistical Yearbook, 1965-1972

Welfare: Recurrent welfare expenditures by SSC include relief for the poor, support for the aged, women's affairs, job placement for the unemployed, and the regulations of vagrants, beggars, etc. This category also includes some expenditures for cultural activities. These expenditures are all financed from general revenues and included in the general account. ^{1/}

Non-recurrent welfare expenditures included in the special account budget are expenditures for the Citizens' Hall (an entertainment or concert hall which is a community facility) and for disaster relief services. Citizens' Hall expenditures are supported largely through proceeds from the mutual benefit society. Disaster relief is financed largely through accrued savings. These two special account items are combined to obtain welfare expenditures in the special account in Table 26. Both special accounts are almost totally self-supporting. However in 1972 transfers from the general account amounted to 75 million won, but this was less than 0.01 percent of general revenues in 1971.

^{1/} In thousands of won, the amounts are as follows: 272,790 (1965); 367,625 (1966); 430,490 (1967); 441,824 (1968); 617,771 (1969); 794,541 (1970); and 2,588,788 (1971).

Table 26: FINANCING WELFARE EXPENDITURES IN THE SPECIAL ACCOUNT
(In thousands of won)

	<u>1965</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Total Revenue</u>	29,244	47,405	62,611	85,127	104,423	89,855	239,070
From General Account	4,932	3,560	3,023	11,000	19,572	6,000	75,300
User Charges	20,992	42,294	58,097	73,661	82,854	78,245	123,796
Other	3,320	1,551	1,491	466	1,997	5,610	39,974
<u>Total Expenditure</u>	26,325	35,904	50,007	68,226	91,088	86,752	194,686
Debt Service	0	0	3,000	0	0	0	0
Capital Expenditure	26,325	35,904	47,007	<u>1/</u> 68,226	91,088	86,752	194,686

1/ Welfare expenditures in the special account are categorized as Citizens, Hall and relief.

Source: Data supplied by SSC officials.

Education: Local governments in Korea have a major responsibility for primary and secondary education. The administrative responsibility lies with the local Board of Education, which, as noted above, operates separately from the city government. Education revenues are derived from three main sources: tuition, a contribution from the SSC government general account, and external assistance. Of the three, tuition and the general account transfer together account for about 40 percent of total receipts, with central government assistance accounting for the remaining 60 percent. Revenues from tuition have grown markedly in recent years. Junior and senior high school students are subject to a tuition fee of 20,000 won per year (primary school students are exempt). Enrollments have grown substantially.

Central government assistance is the largest component of Seoul Education Board finances. There is both a subsidy and a grant element in the external financing of the Seoul Education Board, though the subsidy portion is not of great importance in Seoul. The subsidy is allocated among local education boards in Korea as follows: 90 percent is to be used for payment of teachers' salaries, and 10 percent for expenditures for practical training and laboratories. These allocations result in about half of middle and high school teachers' salaries being covered by the first element (except in Seoul and Pusan, which receive none of the subsidy but benefit from alternative transfer). About 35 percent of expenditures for practical training and laboratories by the Seoul Education Board are covered under the second element.

The grant assistance is considerably more important for Seoul, and before the reforms of August 1972 was composed of an education shared tax (called a surtax) and a compulsory education grant. Now these are integrated under the new education law. Prior to the change in 1972, the education shared tax amounted to 1.43 percent of total national tax revenues, and the compulsory education grant included total primary school teachers' salaries plus 11.55 percent of total national tax revenues. Thus, the total distribution under the two amounted to total primary school teachers' salaries plus 12.98 percent of total national tax revenues. This percentage remains under the new formula as well.

Until the reform, the education surtax was used mainly for city and provincial boards of education, with a small portion being provided for the administrative expenses for middle and high schools.

The distribution was made on a formula basis whereby the amount distributed to a city or province would be a function of the gap between total educational expenses (excluding primary education) and total student tuition fees.

The compulsory education grant allocation, which is for primary school usage only, can be broken down as follows:

(a) All primary school teachers' salaries are paid, all over the country.

(b) In addition to this, 11.55 percent of national tax revenues is used to support primary schools in the following fashion.

(1) School maintenance.

(2) Special projects, including textbooks, school feeding, and new school construction.

(3) The residual (an adjustable amount) is allocated to administration on the basis of number of schools and number of classes.

In 1973, the budgeted allocation is 300,000 won per school, 62,000 won per class. As a result of these distribution formulae, Seoul receives a percentage of the compulsory education grant which is very much less than its percentage of total population (roughly 5.5 percent of the total grant, as opposed to over 20 percent of total population). The result is that the grant is strongly income-equalizing within the country.^{1/} The reasons why the grant formulae (per school and per class) discriminate against Seoul are principally the following:

(a) The schools are much larger in Seoul than elsewhere (average

^{1/} Among the nine provinces the simple correlation between per capita income and per capita local educational grants is $-.84$.

size is 3,700 students per school, vs. a national average of approximately 900; see Table 27).

(b) There are much higher pupil-teacher and pupil-classroom ratios in Seoul. (Seoul has approximately 77 pupils per teacher vs. a national average of 59.7.)

(c) There is a greater school deficiency of long standing elsewhere than in Seoul, since Seoul received a disproportionate share of funds and attention in the earlier days of development. Therefore, at present, proportionately more new school construction (funds for which are allocated on a project basis) is occurring outside Seoul.

(d) Private schools skim off approximately 5 percent of students (and therefore of the compulsory education grant base) in Seoul; private schools are virtually nonexistent elsewhere in the country.

Though the Education Board is semi-autonomous from the city government it is heavily dependent on city general revenues. The growth in the relative dependence on city general revenues for school financing has increased over the past few years to its current level of approximately 20 percent of total education revenues (see Table 28).

Table 27: PRIMARY PUPILS PER SCHOOL AND PER CLASS IN SEOUL AS COMPARED WITH THE NATION AS A WHOLE, 1973

	Schools	Classes	Teachers	Pupils	Pupils per School	Pupils per Class
NATION	6,197	96,647	105,672	5,775,880	932	59.67
SEOUL						
Total	222	10,783	11,514	832,332	3,749	77.18
Public	181	9,965	10,553	785,559	4,340	78.18
Private	39	782	913	44,627	1,144	57.06
National	2	36	48	2,146	1,073	29.80

Source: See Table 5.

Table 28: EDUCATION FINANCE IN SEOUL
(In millions of won)

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Current Revenues	1,389	1,604	3,006	5,357	7,300	8,648	10,513
Sources (in percent):							
Tuition	19.3%	21.4	14.2	12.2	14.6	19.3	23.8
External Assistance	58.9%	60.3	82.4	77.4	66.9	68.2	67.7
Current Expenditures	1,109	1,400	1,828	3,069	4,353	6,230	8,138
Current Surplus/Deficit	280	204	1,178	2,288	2,947	2,418	2,375
Capital Expenditures	314	467	1,106	2,771	3,666	3,537	4,328
Overall Surplus/Deficit	-34	--263	72	-483	-719	-1,119	-1,853
Financing:							
Borrowing	0	0	0	0	0	31	124
General Fund Transfer	106	302	346	794	1,092	1,694	2,555

Source: See Table 5

Sanitation. There are two subfunctions within the SSC sanitation responsibility: refuse collection and nightsoil collection. The finances of both are included entirely within the general account.

The activities of the refuse collection section include collection from households, streets, markets, and commercial and industrial establishments. The frequency of service is daily for activities generating a large amount of organic garbage, such as restaurants and markets, and every two or three days for households and most other activities. Within a radius of approximately 10 kilometers from the center of the city, full service is provided; between 10 and 15 kilometers, partial service is provided (this implies approximately weekly service to households); outside a 15 kilometer radius, no service is provided. Services are entirely public, with the exception of pickup of overflows from market areas, which occur from time to time; these pickups are handled by private truckers.

Fees are collected by the crews on their rounds. The fee schedule is not based directly on the amount of refuse collected, but rather is based on household space, monthly income, and property value criteria (see Table 29). A family's rate may be adjusted semi-annually if an owner, or his property, exceeds the limit in any one category. There is no charge to residents for street cleaning. The charge at markets and for commercial and industrial establishments is a mass refuse fee amounting to 2,000 won per 4.5 tons (essentially one truckload).

For nightsoil collection, the fee is 15 won per 18 liters throughout the city. Frequency of collection depends on size of reserve tank. For households, the frequency varies from 10 days to one month, averaging perhaps every 15 days. For institutions such as restaurants, schools, etc. which do not have water-borne sewerage systems, the

Table 29: REFUSE COLLECTION FEE SCHEDULE

	<u>Semi-Annual Collection Charge</u>	<u>Household (interior space)</u>	<u>Monthly Income of Owner ^{1/}</u>	<u>Property Tax ^{2/}</u>
Grade 1	720 won	99 sq meters (min)	50,000 won (min)	3,000 won (min)
Grade 2	660 won	72	40,000	2,000
Grade 3	510 won	66	30,000	1,000
Grade 4	360 won	40	15,000	500
Grade 5	240 won	23	8,000	200
Grade 6	150 won	Less than 23	Less than 8,000	Less than 200

1/ As estimated by the dong officer.

2/ On improvements and/or buildings.

Source: See Table 5

collection frequency is variable, depending on size of tank.

Both refuse collection and nightsoil collection lead to serious disposal problems. In the case of refuse, there is no incineration; all solid waste is dumped in open dumps at distance of 18 to 25 kilometers from the central business district. With respect to nightsoil, it appears that more than a third of the collections are dumped directly into the Han River.^{1/}

On the financing side, both nightsoil and refuse collection are general account items, and though sanitation charges exist, there is no earmarking of receipts. Still, the existence of collection charges suggests that it is possible to meet operating costs through collection, at least partially. As can be seen from the data presented in Table 30, these charges are of an amount that is substantially less than refuse and nightsoil collection expenditures; actually, the charges cover only about 20 percent of expenditures.

Police. The police function is primarily a central government responsibility in Korea, though the SSC government does have a small police department which provides guard duty, traffic control, and some citizen assistance services. Still, the budget of the SSC police department is under the direct control of the central government. The Economic Planning Board (EPB) submits budget forms to the Ministry of Home Affairs (MOHA), which in turn remits them to the city Police Bureau. The latter, in turn, routes them back to EPB through MOHA. The forms then go to the budget bureau of the Cabinet and are eventually returned via the same route.

^{1/} The breakdown of sewage disposal is as follows: river (11.1%), septic tanks (36.4%), farmers (12.8%), piped (5.9%), unaccounted for (33.8%).

Table 30: REVENUES AND EXPENDITURES FOR SANITATION, 1966-1972

(In thousands of won)

	<u>Revenue</u>	<u>Expenditure</u>	<u>Deficit (Surplus)</u>
Nightsoil Collection			
1966	n.a.	41,201	n.a.
1967	n.a.	225,127	n.a.
1968	480,460	433,679	(46,781)
1969	314,302	703,166	388,864
1970	289,128	744,900	485,772
1971	331,569	994,808	663,239
1972	318,324	1,436,956	1,118,632
Refuse Collection			
1966	19,077	316,350	297,271
1967	189,567	606,922	417,355
1968	313,737	762,894	449,157
1969	460,291	901,718	441,427
1970	578,893	1,347,443	768,550
1971	640,028	1,689,524	1,049,496
1972	384,043	1,900,309	1,516,266
Total			
1966	n.a.	357,552	n.a.
1967	n.a.	832,050	n.a.
1968	794,197	1,196,573	402,376
1969	774,593	1,604,884	830,291
1970	868,021	2,122,344	1,254,323
1971	971,597	2,684,332	1,712,735
1972	702,367	3,337,265	2,634,898

Source: See Table 5

The expenditures of the Police Bureau are supported primarily through the SSC general account revenues, under three kinds of allocations: fees for testing for drivers' licenses;^{1/} allocation for traffic facilities, such as signals, traffic lights, etc., and allocations for assistance, e.g., child guidance, self-defense courses, etc. No other fees or charges collected by the SSC government are earmarked for police services. All fines for law-breaking are the responsibility of law enforcement agencies at the national level, though the local police stations often act as collecting agents.

Police expenditures for guard, traffic control, and citizen assistance services result in a relatively small drain on the SSC budget. The total amount involved in 1972 was only 347 million won.

Fire Protection. The fire-fighting facilities of the SSC government have not kept pace with the changing physical structure of the city, particularly with respect to the needs occasioned by the growing number of tall buildings. A disastrous hotel fire in the winter of 1971-72 changed this situation to some degree; some 59 pieces of equipment suitable for fighting fires in tall buildings have been ordered. Still, this recognition falls short of the total need, since the government has not yet approved a fire brigade training course or school which would deal with improved methods of fighting fires in tall buildings.

The major activities and responsibilities of the fire brigade are divided into prevention and fire-fighting. The prevention activity is handled under building regulation, inspection, and enforcement with respect to materials, number of exits, alarms, water outlet requirements etc.

^{1/} The SSC government collects these fees, but remits less than the total to the Police Bureau.

All expenditures are in the general account, and no central government assistance is offered. There is a fire tax, which is a surcharge on the property tax; however, only a portion of this tax passes through the general account and is truly allocated to fire protection.

The fire brigade budget in 1971 was 280 million won, and included no equipment expenditure. In 1972, the budgeted amount rose to 377 million won, of which 65 million won was for equipment. Before 1972, all equipment was financed through direct grants from the national government, and principally involved the transfer of surplus US military and US AID equipment. After the serious hotel fire during the Christmas season of 1971, there was a change in this practice, and the five year budget for the period beginning in 1973 includes 649 million won for the financing of the 59 pieces of equipment mentioned above.^{1/} The 1973 budget totals 569 million won, out of which equipment expenditures account for 130 million. (See Table 31 for fire and police expenditure).

Overall Budgetary Position of the Special Accounts

Although the special accounts are intended to be self-financed, the important balancing variable for the special account is the amount of revenue transferred from the general account to the special account. This transfer occurs in order to alleviate any deficit in the special accounts. Table 32 presents the total revenue of the capital account, transfers from the general account to the special account, and transfers from the general account to the special accounts as a percent of general account revenue and special account total revenue respectively.

^{1/} The 59 pieces of equipment, of Japanese and German manufacture, have been purchased by the government on five-year supplier credit terms.

Table 31: FINANCING EXPENDITURE FOR FIRE AND POLICE ^{1/}

(In thousands of won)

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u> ^{2/}	<u>1969</u>	<u>1970</u>	<u>1971</u>
Total Revenue	58,297	84,578	129,014	141,066	186,039	303,308	393,246
From General Account	58,297	84,578	129,014	141,066	186,039	303,308	393,246
Total Expenditure	58,297	84,578	129,014	141,066	186,039	303,308	393,246
Current Expenditure	58,297	84,578	129,014	141,066	186,039	303,308	393,246

^{1/} The police service is provided by the central government, Seoul maintains a small force for traffic control and guard duty.

^{2/} From 1965-1967 the expenditures are for fire only; police is not recorded. From 1968-1971 police and fire are combined into one function called "safety management". Thus expenditures from 1965-1967 are for fire only and from 1968-1971 both police and fire.

Source: Seoul Statistical Yearbook

Table 32: BUDGETING POSITION OF SPECIAL ACCOUNTS, 1967-1972

(In thousands of won)

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
Total Revenue	4,457,582	10,351,469	16,312,134	20,023,053	25,853,759	25,097,208
Revenue from own Sources	4,233,750	7,897,334	11,520,618	17,763,471	19,013,898	17,274,560
Transfer from General Account	95,600	1,700,685	4,426,300	507,572	975,000	2,425,300
Borrowing	128,232	753,450	365,216	1,752,010	5,864,861	5,397,348
Transfer from General Account to Special Account as a percent of General Account Reserve	1.0	12.3	23.6	2.0	3.2	8.0 ^{1/}
Transfer from General Account to Special Account as a percent of Special Account Total Revenue	2.1	16.4	27.1	2.5	3.8	9.7

^{1/} General account revenues were not available for 1972; however, if 1971 revenues are used the figure is 8.0 percent, that is if general account revenues increased from 1971 to 1972, then the figure is below 8.0 percent.

Source: See Table 5

In three years, 1968, 1969 and 1972, there were substantial transfers from the general account. However, in each year the transfer is primarily attributable to one function. 1968 was the first year of the Han River Project. The Han River Project in that year accounted for 83 percent (1,490,000 thousand won of a total of 1,700,685 thousand won) of the total amount transferred from the general account to the special account. In 1969, housing accounted for over 90 percent (3,980,000 thousand won of 4,426,300 thousand won) of the total amount transferred to the special account. Finally, in 1972, subway expenditures accounted for about 65 percent (1,600,000 of 2,425,300 thousand won) of the transfer from the general account to the special account. Thus to a large extent the special accounts are self-financed and do not consistently drain general revenues.

IV. REVENUE STRUCTURE AND GROWTH

The expenditure analysis above points to three major sources of financing expenditure increases: locally raised general-purpose revenues, external assistance, and charges associated with specific projects. The latter were discussed above in conjunction with the financing of specific projects. The focus here is on locally raised general-purpose revenues, and on intergovernmental flows.

The Tax System

Tax revenues constitute about one third of total SSC revenues, and about 70 percent of locally raised general-purpose SSC revenues (see Table 33). The fact that the relative share of expenditures financed from taxation has increased since 1967 means that tax revenues have grown at a rate greater than that of total SSC expenditures.

Table 33: THE COMPOSITION OF SSC REVENUES

	1964	1965	1966	1967	1968	1969	1970	1971
1. Per Capita Total Tax Revenues (won)	471	641	920	1,270	2,010	2,579	3,089	3,330
2. Taxes as a percent of total SSC Revenues	28.4	30.4	26.6	n.a.	30.2	32.7	34.5	30.3
3. Percentage distribution of tax revenues								
a) General property tax	19.2	15.5	12.6	10.0	12.3	10.7	10.9	11.7
b) City planning tax	----	----	----	----	7.3	6.4	7.0	7.3
c) Fire fighting tax	2.5	2.1	1.7	1.4	1.6	1.4	1.3	1.6
d) Acquisition tax	26.2	30.4	36.5	40.0	32.6	32.2	36.2	34.8
e) Entertainment & restaurant tax	13.5	18.7	21.0	19.8	21.5	21.8	16.8	16.4
f) Automobile tax	23.0	20.6	18.0	18.9	18.1	21.1	22.2	22.2
4. Per capita non-tax general revenues (won)	626	452	510	n.a.	924	1,286	1,477	1,479
5. Non-tax general receipts as a percent of total SSC revenues	37.7	21.4	14.7	n.a.	13.9	16.3	16.2	13.5
6. Per capita external assistance (won)	329	696	1,235	n.a.	1,491	1,579	1,511	1,742
7. External assistance as a percent of total SSC revenues	19.8	33.0	35.7	n.a.	22.4	20.2	16.9	15.8
8. Per capita self-financing revenues (won)	209	321	734	n.a.	2,231	2,429	2,801	3,996
9. Self-financing as a percent of total SSC revenues	12.6	15.2	21.2	n.a.	33.5	30.8	31.3	36.3
10. Per capita total revenue (won)	1,660	2,110	3,459	n.a.	6,655	7,871	8,763	10,996

Source: See Table 5

Hence, it would appear that either there is a substantial income elasticity in the SSC tax structure, or that discretionary changes have resulted in substantial revenues to the city.

The tax system of the SSC government is composed of eight taxes,^{1/} of which the four most important, general property, entertainment and restaurant, acquisition, and automobile taxes, account for 80 percent of the tax revenue yield. The legal structure and administration of these major local taxes will be discussed in the following sections, and an effort will be made to estimate their responsiveness to growth in the urban economy. The remaining smaller taxes and the general non-tax revenues are given less detailed attention.

General Property Tax

There are four taxes levied on real property by the SSC government: the acquisition tax, the property tax, the public facilities tax (or fire-fighting tax) and the city planning tax. Because the latter three are most alike in terms of base, they will be treated together here. The property transfer (acquisition) tax is examined in the next section.

Base. The property tax in Seoul is a real estate tax levied on urban land, buildings, mine lots, and ships, with the base of each determined separately.^{2/} From 1960 to 1967, the property tax on land was based on gross annual rental value, as determined from a national survey

^{1/} Counting as one the three property value based taxes: the property tax, the fire-fighting tax, and the city planning tax.

^{2/} There exists no property tax on farmland or personal property. A tax called "farmland tax" is levied on crops. Land which is neither farmland nor urban land (e.g. prime tourist attractions) is not taxed.

of land rental value completed in 1960.^{1/} The survey was made by the Office of National Tax Administration (ONTA) with the collaboration of local government and MOHA officials. In the survey, every parcel of land was classified into one of 70 grades. A rental price was determined for each class and fixed by national law at a given won amount per pyong (see Table 34).

The annual value of these classes has not been revised on a comprehensive basis since 1961, though the rental values were partially adjusted upward for those lands where quality or conditions changed considerably through land improvement, city planning, or other reasons.^{2/} Accordingly, the taxable value of land did not respond well to increases in the market value of land over the 1961-1967 period.

In 1967, the base of the property tax on land was changed to the current market value of the land. The land grades used previously were retained, though the number of land grades was increased in 1969 from 70 to 100.^{3/} From this classification system, market value (V) is obtained as the product.

$$V = \frac{v}{m} (M)m^2 \quad (9)$$

where:

$$\frac{v}{m} = \text{annual value per square meter,}$$

$$M = \text{assessment multiplier} = \frac{V}{v} .$$

The multiplier, which is now derived annually, is essentially an estimate of full value divided by (1961) annual rental value.

^{1/} Law on Urban Land Tax Base Survey, 1961.

^{2/} According to Article 187.2 of the local tax law.

^{3/} The classes from 72 to 100 are not of practical importance at the present time, since most land in Seoul is still classified as 72 or lower.

Table 34: ASSESSED GROSS ANNUAL LAND VALUE BY PROPERTY CLASS

<u>Class</u>	<u>Rental Price/Pyong</u>	<u>Increment Between Classes</u>	<u>Rental Price per m²</u>
1-10	.10 to 1 won	.10 won	0.03 to 0.30
10-15	1 to 2 won	.20 won	0.30 to 0.61
15-19	2 to 4 won	.50 won	0.61 to 1.21
19-25	4 to 10 won	1 won	1.21 to 3.03
25-30	10 to 20 won	2 won	3.03 to 6.06
30-34	20 to 40 won	5 won	6.06 to 12.12
34-40	40 to 100 won	10 won	12.12 to 30.30
40-45	100 to 200 won	20 won	30.30 to 60.60
45-49	200 to 400 won	50 won	60.60 to 121.21
49- 55	400 to 1,000 won	100 won	121.21 to 303.03
55-60	1,000 to 2,000 won	200 won	303.03 to 606.06
60-64	2,000 to 4,000 won	200 won	606.06 to 1,212.12
64-70	4,000 to 10,000 won	1,000 won	1,212.12 to 3,030.30
70-75 ^{1/}	10,000 to 20,000 won	2,000 won	3,030.30 to 6,060.61
75-79	20,000 to 40,000 won	5,000 won	6,060.61 to 12,121.21
79-85	40,000 to 100,000 won	10,000 won	12,121.21 to 30,303.03
85-100	100,000 to 400,000 won	20,000 won	30,303.03 to 121,212.12

^{1/} Classes 71 to 100 added in 1969 according to the Regulations on Implementation of Land Tax Base Survey Law.

Source: See Table 5

From 1961 to 1967, the base for the property tax on buildings was determined on the basis of location, physical structure, and existing use. Each lot was classified in one of 23 categories, based on aggregations of the original 70 land grades; for example, grade 5 for buildings corresponded to categories 30 to 33 in the classification established for land. Three classes of building structure were considered:

Class A: Steel reinforced buildings; stone buildings,

Class B: Brick or wooden buildings,

Class C: Other buildings.

The three possible existing use classifications of buildings for tax purposes were business, residence, and other. The final assessment was then determined according to the schedule of values described below:^{1/}

<u>A</u>			<u>B</u>			<u>C</u>		
1	2	3	1	2	3	1	2	3
1.00	.58	.50	.70	.41	.35	.50	.28	.25

In 1967, the method of assessing buildings was changed to the estimated current construction costs. The system of assessment units described above was dropped and the number of classes for housing structures was increased to four:

Class I: Stone or granite; red brick; steel frame; concrete with steel, steel plate, or similar building;

Class II: Big wooden and brick; cement brick and red brick; cement brick and cement block house with slate roof and similar houses;

Class III: Wooden or cement block house with slate, asbestos or zinc sheet roof; tar paper or tenting construction; cement bricks, and similar structures;

^{1/} The schedule of the assessment base as shown here is in fact a table where (n-1) columns are derived from the nth one. The value of the assessment unit of the highest grade of lots is approximately 16 times higher than that of the lowest grade of lot. This means that the property tax base on buildings is 1 to 16.

Class IV: Wooden and straw; wooden and clay; clay and lime; brick; similar structures.

The building classes were further broken down in 1969 into 8 sub classes, depending on the construction of the building and of its roof, as described in Table 35. Annually, there is an assessment, on a per pyong basis, of construction costs in various areas of the city, and a construction cost per pyong is estimated for each of the classes.

Rate. The present nominal rate applied to assessed value for the general property tax in Seoul Special City is 0.1 percent on land and 0.3 percent on buildings. There have been no discretionary rate changes since the 1967 reforms. Before that period, the tax rate on land was 2 percent of rental value and 3 to 4 won per assessment unit on buildings.

Exemptions. The following properties are exempt from the property tax:

- (a) property owned by the central or municipal government;
- (b) property owned and exclusively used by public organizations approved by the government, such as agricultural cooperatives, the Chamber of Commerce, the Red Cross, etc;
- (c) privately owned property which is used for purposes of public welfare approved by the government, such as sacrificial rites, religious services, educational services, and philanthropy;
- (d) property belonging to a foreign government and used exclusively by its diplomatic representatives in Korea, provided reciprocity is assured;
- (e) reclaimed lands and waste lands (for 5 to 10 years).

Article 9 of the law regulating tax exemption also stipulates exemptions for the following types of property:

- (a) property owned and used by the Bank of Korea and a number of other specified quasi-government agencies;

Table 35: BUILDING CLASSES BY TYPE OF STRUCTURE AND ROOF
BEGINNING IN 1969

Type of Structure \ Type of Roof	Slate	Tile	Cement Tile	Asbestos Slate	Zinc Sheet	Tar paper or Tenting	Straw
Steel, Steel Plate, Steel Concrete and Stone	1	1	2	2	2		
Red Brick	2	2	3	3	3		
Wooden	2	3	4	4	4	6	6
Cement Brick	3	3	4	4	4	5	5
Cement Block	3	3	4	5	5	6	6
Lime mixed with brick		5	6	6	6	7	7
Clay brick		6	7	7	7	8	8
Clay and stone		7	7	8	8	8	8

Source: Local Tax System in Korea, 1972 (Seoul: Ministry of Home Affairs)

- (b) property established by the Juvenile Welfare Law;
- (c) property established by the Law for the Development of the Export Industrial District;
- (d) property established by the Law for the Promotion of Sightseeing Services.

Property whose tax is less than 50 won, and (in 1969) houses with a floor space of less than 20 m² if located in a designated construction area are also exempt. Before 1967, the exemption was for land less than a 20-won property tax liability, and houses of less than 20 m² floor space.

The data in Tables 36 and 37 indicate the percentage of the total property tax base that is foregone as a result of tax-exempt buildings and land. The percentage has been erratic, especially during the period surrounding the change in the assessment base. Estimates of the amount of taxes foregone in 1970 because of tax-exempt land and buildings might be made by applying the nominal property tax rates to the total value (exempt and taxable) of property and to the taxable value of property. From the results presented in Table 37, it might be argued that the costs of such exemptions is 667,000,000 won, or, in other words, that the removal of these exemptions would raise property tax revenues by about 20 percent of the present level.

Assessment and Collection Procedure. The local gu administration has sole responsibility for property tax collections. All property tax bills are paid in the local administration office, or at specified banks. Taxes are levied once per year, with separate bills for land and buildings.

Table 36: PERCENT OF THE AREA OF PROPERTY TAX BASE WHICH IS EXEMPT

<u>Year</u>	<u>Total</u>	<u>Land</u>	<u>Buildings</u>
1965	20.8	20.5	37.6
1966	22.5	22.4	30.1
1967	7.1	6.7	25.9
1968	21.1	31.5	4.6
1969	20.0	23.8	12.3
1970	18.3	19.6	14.4
1971	17.6	22.1	12.3

Source: See Table 5.

Table 37: ESTIMATE OF PROPERTY TAX FOREGONE IN 1970
AS A RESULT OF EXEMPTIONS
(In thousands of won)

	<u>Amount</u>	<u>Percent of Actual Collections</u>
Land	469,717	24
Buildings	197,104	12
Total	666,821	19

Source: See Table 5.

The determination of current market values is done jointly by local (gu level) and national (ONTA) tax officials, with an equal number of officers from each organization participating in the assessment function. The ONTA officials, in addition to property tax assessment, use these results to provide valuation data for the levying of the registration tax, the inheritance or gift taxes, and the real estate speculation control act, all of which are national taxes related to real estate.

The survey of land and the inventory specifics for the property tax rolls are kept by the local administration. Land is assessed twice per year, in May and October, and the duration of the assessment process is approximately two months.

The assessment method is indirect, and values are established primarily on the basis of the opinions of real estate agents. This is supplemented with some comparative sales analysis. Assessed values for individual plots are determined on a sample basis as follows:

- (a) within each dong, the predominant land grades are selected;
- (b) within each of these grades, about eight parcels are selected at random;
- (c) the arithmetic mean of these eight values is taken as assessed value.

The assessed value is then expressed as a percent of the annual rental value specified for that grade (see Table 34 above) in order to determine the assessment multiplier. Hence the assessed value of the land is determined as the product of the per pyong rental price of that grade of land, the assessment multiplier, and the land area in pyong.

The assessment of buildings is based on estimated construction costs for structures of different types. First, each building is classified by material, as shown in Table 35. Second, a per pyong construction cost for each area and each type of construction is estimated.

Estimates of Building Costs. Estimates of building costs are developed by ONTA from several sources. The Ministry of Construction assembles building cost estimates throughout the country and ONTA then uses these estimates as guidelines. In addition, ONTA checks with contractors and others in the building industry. Due to the rapid pace of building, particularly in the larger cities, building costs can be determined fairly accurately, even for the smaller areas within the cities.

In assessing building value, there is no distinction among industrial, residential, and commercial structures. However, for factories and warehouses there is a 30 percent reduction in the estimated assessed value of the building, on the grounds that the normal assessment overstates the actual construction cost, since such buildings have few, if any, partitions or walls and other appointments inside.

A further adjustment in the assessment is that buildings of six stories or more receive a 20 percent addition to the normal assessment. This is done on the grounds that buildings of that height are probably more expensive than might be estimated on the basis of building materials alone, because of costs of reinforcing the foundation, installing elevators, etc. Apartment houses, however, are excluded from the six story ruling.

City Planning Tax. The city planning tax is levied on the same base as the urban property tax, i.e., the market value of the land and the new construction cost of buildings, all determined by the ONTA market value survey. The tax rate is currently .001 of assessed value. (The maximum rate allowable by the Government of Korea is .002, and approval of the Prime Minister would be required to enable SSC to raise the rate from .001.) Exemptions to this tax are the same as those to the general property tax.

Revenues from the city planning tax are general account revenues. However, the receipts are designated (not earmarked) for preparation of a master plan for the city, for road paving, and for compensation for the purchase of rights-of-way. Since 1968, the planning tax has been levied city wide. Before that, it was limited to designated "planning areas."

Public Facility (Fire) Tax. The base of the fire tax is property tax revenues collected on buildings. The rate structure is progressive in terms of the level of building property tax paid. The rate is 20 percent of the building property tax when the building property tax liability is below 30,000 won. It is 30 percent when the building property tax is from 30,000 to 150,000 won, 40 percent from 150,000 to 300,000 won, and 50 percent when the building property tax liability is over 300,000 won. The tax is levied city-wide on all buildings, but as earlier noted only a portion of this tax is truly allocated to fire protection.

Elasticity: Total Property Taxes. Total property taxation, then, consists of a general tax, a city planning tax, and a fire tax component. The data in Table 33 show the relative growth of these components, and

show that the general property tax has accounted for a substantial portion of the growth.

Analysis of the growth in property tax revenues necessarily centers around the automatic responsiveness of property tax receipts to growth in the local economy. This relationship is estimated here in terms of the responsiveness to both income and population. Operationally, this involves estimating the tax revenue increase per unit of income increase or per resident increase, i.e., the marginal tax-income rate or the marginal tax-population rate.

The marginal tax-income ratio for the property tax $\frac{\partial T}{\partial Y}$ may be defined as:

$$\frac{\partial T}{\partial Y} = \frac{\partial T}{\partial Y} \ell + \frac{\partial T}{\partial Y} b = \frac{\partial T}{\partial L} \frac{\partial L}{\partial Y} + \frac{\partial T}{\partial B} \frac{\partial B}{\partial Y} \quad (10)$$

where: T = property tax revenues,
 Y = income,
 L = assessed value of land,
 B = assessed value of buildings,
 b, ℓ = subscripts to denote buildings, land.

Hence the marginal rate depends on the rate structure of the tax on land and buildings, and on the responsiveness of assessed land and building values to income changes. The values for $\frac{\partial T}{\partial L} \ell$ and $\frac{\partial T}{\partial B} b$ might be established on an a priori basis. Combining the three forms of property tax,

$$T = .002L + (1 + r).004B \quad (11)$$

where r = average fire tax per won of assessed building valuation.

From equation (11),

$$\frac{\partial T}{\partial L} \ell = .002 \quad (12)$$

and
$$\frac{\partial T}{\partial B} b = (1 + r).004 \quad (13)$$

The effective rate on the fire tax (r) is 0.07 percent for 1970 and is assumed to be 0.07 percent for this analysis.

What remains is the need to estimate the marginal rate of income responsiveness of the land and building assessed value basis, i.e., $\frac{\partial L}{\partial Y}$ and $\frac{\partial B}{\partial Y}$. Time series data on the growth in assessed land and building values are presented in Table 38. The tax revenues presented are those generated from the general property tax, excluding the city planning and fire tax.

The general property tax is levied at a flat rate so that if assessed value of land increases by 1 percent, tax revenues from land will increase by 1 percent and similarly for the growth on assessed value of buildings. While proportional taxes have an elasticity of unity, an estimate of the rate elasticity is still necessary because the tax rate on land, 0.01, is not equal to the tax rate on buildings, 0.03. More specifically, if the tax base on land and buildings is combined as in equation (10) property tax revenue will respond differently to a 1 percent increase in the total tax base, depending on whether a larger proportion of the growth in the tax base was due to growth in the assessed value of land or buildings.

The overall elasticity of the general property tax can be calculated in two stages. First the rate elasticity or the response of tax revenues to the tax base can be calculated and second the base elasticity or the response of the tax base to income can be calculated. The total elasticity of the general property tax is the product of the rate and base elasticities. Dummy variables could be used to adjust for the changes in assessment methods in 1967 in order to achieve ordinary least squares estimates of the elasticities. However, inclusion of the dummy variables would so lower the degrees of freedom that the elasticity estimate would not be meaningful. Hence, an arc elasticity estimate is made here for the rate and base of the general property tax.

The rate arc elasticity for the combined tax revenue response to the combined base between 1970 and 1971 can be calculated from the following formula:

$$\eta_r = 2 (TR_{71} - TR_{70}) / (TR_{70} + TR_{71}) \bigg/ 2 (TB_{71} - TB_{70}) / (TB_{71} + TB_{70}) \quad (14)$$

where the subscripts 71 and 70 refer to the years, η_r refers to the rate elasticity, TR is property tax revenue, and TB is assessed value of property or the tax base.

The base arc elasticity for the combined tax base response to growth in total income in Seoul (see Appendix B) can be calculated from the following formula:

$$\eta_b = 2 (TB_{71} - TB_{70}) / (TB_{71} + TB_{70}) \bigg/ 2 (Y_{71} - Y_{70}) / (Y_{71} + Y_{70}) \quad (15)$$

where η_b refers to the base elasticity, and Y is total personal income of the SSC.

Table 38: GENERAL PROPERTY TAX ON LAND AND BUILDINGS
(In thousands of won)

	Land			Buildings		
	Value of Base	Revenues	Effective Rate	Value of Base	Revenues	Effective Rate
1965	5,275,546	105,462	2.0	71,887 ^{1/}	239,792	3.3
1966	6,509,862	129,944	2.0	101,538 ^{1/}	332,310	3.3
1967	7,454,849	151,058	2.0	116,117 ^{1/}	373,569	3.2 ^{2/}

1968	475,913,880	456,381	0.1	218,874,385	656,569	0.3
1969	598,401,422	598,344	0.1	264,786,043	794,217	0.3
1970	965,819,680	965,720	0.1	327,254,900	983,334	0.3
1971	1,131,972,271	1,132,265	0.1	443,355,361	1,241,487	0.3

^{1/} The base here is measured in terms of assessment units.

^{2/} The effective rate here is tax revenues per unit of assessment.

The results of these calculations indicate that the rate elasticity is 1.00 and the base elasticity is 1.05 between 1970 and 1971, and so the overall income elasticity of the property tax is only 1.05. Thus, while property tax revenues keep pace with the growth in income, they do not grow significantly faster than income.

Since assessment of property and buildings is at full market value of the property, the base elasticity of the property tax is simply the response of housing and land value to income growth. If assessments are accurate, the government cannot affect this relationship. Thus the only policy device the government can implement if they want to increase tax revenues from the property tax is to raise the tax rate or broaden the coverage of the base by reducing exemptions.

Acquisition Tax

The acquisition tax is a property transfer tax levied by the SSC government on transfers of tangibles and intangibles. The national government also levies transfer taxes: the registration tax and the land speculation tax. Only the SSC levy is considered here.

Legal Structure -- Base and Rate. The acquisition tax is levied on the full value of tangible and intangible property. The taxed items include land, buildings, ships, vehicles, mining and fishing licenses, and heavy equipment. It is also assessed when the value of land increases because of a change in its classification, and when remodeling of a building

increases the building's value. Property transfers which are exempt from the tax are, among others, acquisitions by government or charitable institutions, acquisitions for timber or mining use, and acquisition through inheritance. There is also a general exemption for land acquired for less than 10,000 won and newly built buildings for less than 20,000 won. The liability of the tax is on the transferee, and payment must be made within 15 days from the day of notice by local tax officers. The amount of the tax is reduced by 10 percent^{1/} in case of voluntary return. The tax rate is a flat 2 percent of the assessed value of the property transferred. This rate has remained constant over the last decade.

Assessment Procedure. The assessment and collection of the acquisition tax are conducted by local government officials. The district office may send copies of registry documents to local officials, or local officials may inspect the registration records of the district office to determine which transfers may be subject to taxation. The taxpayer is then contacted and informed of his liability, and the tax is collected. Alternatively, the taxpayer may pay his tax liability at the gu office when obtaining the necessary seal documents which accompany the national registration documents.

Part of the acquisition tax is collected by local officials on the basis of their knowledge of unrecorded ownership transfers. Information received from various officials indicates that tax revenues collected in this manner are not a significant amount.

^{1/} Reduction was 15 percent until 1966.

The determination of value for real estate, which is more crucial than the discovery of unrecorded transactions, is dependent on either the price stated in the registry document or the value determined from the ONTA yearly report on real estate values, whichever is higher. It is difficult to find fault with this method of determining the tax base. The intent of the tax is not simply a flat charge on the transfer of property rights, for such a condition would warrant a fixed-fee basis of assessment similar to a stamp or license fee. It may be argued that the tax is designed to recover for local governments some of the increase in values resulting from the process of growth -- which is partly the result of the provision of governmental goods and services. However, since the tax is not levied solely on the increase in value, it is a poor instrument for this purpose.

Revenue Yield. The tax is based on value and therefore varies directly with inflation, population, land pressures, rising productivity and economic growth. As can be seen from the data in Table 39 the growth in taxable property transfers in Seoul has been about 50 percent a year since 1964. Since the tax rate is a flat 2 percent, any income elasticity in revenues will be a result of growth in the tax base. Though only seven years of data are available, the income elasticity might be estimated as follows:

$$\eta = \left[\frac{\partial R}{\partial B} \cdot \frac{B}{R} \right] \left[\frac{\partial B}{\partial Y} \cdot \frac{Y}{B} \right] = \left[\frac{\partial R}{\partial B} \cdot \frac{\partial B}{\partial Y} \right] \left[\frac{Y}{R} \right] \quad (16)$$

where R = acquisition tax revenues,
 Y = income,
 B = value of taxable property transfers.

Since there is a flat two percent rate and the actual effective rate is

Table 39: ACQUISITION TAX REVENUES

Year	Revenues (000 won)	Value of Transfers (000 won)	Value of Transfers of Land as a Percent of total	Actual Tax Rate Percent	No. of Taxable Objects	Value per Taxable Object (000 won)	Income (000,000 won)	Value of Transfers	
								Per won of income	In won per capita
1964	479,137	23,313,404	n.c. ^{1/}	2.05	n.a.	n.a.	90,624	0.257	6,808
1965	812,156	89,114,684	n.c.	0.91	151,427	588.50	119,621	0.745	25,675
1966	1,452,146	70,650,041	n.c.	2.05	203,271	347.57	162,005	0.436	18,577
1967	2,265,082	115,272,738	n.c.	1.96	213,406	540.16	240,277	0.479	18,566
1968	3,182,253	159,349,835	33.4	1.99	207,649	767.40	347,363	0.459	36,759
1969	4,956,130	230,420,570	38.5	1.99	250,471	919.95	506,184	0.455	48,236
1970	6,956,130	354,093,218	36.7	1.96	289,527	1,223.01	678,300	0.522	63,957

^{1/} n.c. is non-comparable. Land was assessed at rental value prior to 1967, and the value of transfers is their capital value.

Source: See Table 5

close to 2 percent, (see Table 39) equation (16) may be rewritten as:

$$\eta = (.02) \left(\frac{\partial B}{\partial Y} \right) \frac{Y}{R} \quad (17)$$

An estimate of $\partial B/\partial Y$ may be obtained from:

$$B = \alpha + \beta Y \quad (18)$$

then

$$\eta = (.02) \frac{\beta Y}{R} \quad (17a)$$

An ordinary least squares estimate of equation (18) yields

$$B = - 22020 + .536 Y \quad R^2 = .989 \quad (19)$$

(12.7)

thus $\partial B/\partial Y$ (β) is 0.536, and the elasticity of the tax using 1971 levels for income and revenues is obtained by substitution in (17a).

$$\eta = (.02) (.536) \frac{678,300}{6956} = 1.045 \quad (20)$$

The total elasticity of the acquisition tax in Seoul is 1.045, or for every one percent increase in income there is a 1.045 increase in tax revenues. Not unexpectedly, this is very close to the estimate obtained for general property taxes.

Entertainment and Restaurant Tax

Legal Base and Rate Structure. The entertainment and restaurant tax is the only sales tax at the disposition of local governments in Korea. In theory, it is levied on the retail price of food and drinks sold in restaurants and entertainment places. In practice, it is collected on the gross sales of businesses. The tax rates are structured, according to the type of establishment, as shown below.

Class I establishments include high-class restaurants, dance halls, cabarets, bars, night clubs, and taverns. The tax rate is 20 percent on

gross sales. Class II establishments include higher-class Korean restaurants, Japanese restaurants, Western restaurants, Chinese restaurants, hotels, and wine shops. The tax rate is 10 percent on gross sales. Class III establishments include lower-class Korean restaurants, Japanese restaurants, Western restaurants, Chinese restaurants, tearooms, wine shops and similar places. The tax rate is 5 percent of gross sales. Some exemptions from this tax are granted, mainly where raw wine is sold and when the price of the food and drink is less than 100 won per person.

The nature of the base of the entertainment and restaurant tax has not changed significantly since 1961. In 1966, the coverage of sales in high-class hotels was extended, and in 1967 the tax was extended to cover purchases by foreign sightseers for amusement, meals and lodging.

Revenue Yield. Revenues from the entertainment and restaurant tax account for about 16 percent of all tax revenues. (See Table 33). In terms of the composition of revenue yield, Class II establishments account for about half of total collections and about three fourths of the total base; their share has been increasing in recent years.

Administration. Local tax officials estimate the tax liability of each operator. An identical function is performed at the central government level by ONTA, which determines the tax base of the business and income taxes. Indeed, when the entertainment and restaurant tax became a local government tax in 1961, collections indicated that the tax base was not as high as it had been previously. Since 1967 local government officials must reconcile their estimates of the tax base with that of ONTA, the latter usually being higher. On the other hand, if local government estimates are greater than ONTA's, the local government is not required to lower its estimates.

Elasticity. The elasticity of the entertainment and restaurant tax can be estimated from the following expression:

$$\log (TR) = a + b \log (Y) \quad (21)$$

where TR = tax revenues from the entertainment and restaurant tax,
 Y = total income in Seoul,
 b = the elasticity coefficient.

The above equation was estimated using ordinary least squares with data for years 1964 through 1971 (see Table 40). The results are:

$$\log (TR) = -3.42 + 1.19 \log (Y) \quad R^2 = .95 \quad (22)$$

(11.42)

The figure in parenthesis is the t-statistic, and indicates that the parameter is significantly different from zero at the .01 level.

The results indicate that the elasticity of the entertainment and restaurant tax is approximately 1.2, or that for a one percent increase in total income, tax revenues from this tax will increase by about 1.2 percent.

Table 40: ENTERTAINMENT AND RESTAURANT TAX REVENUES
 FOR SEOUL 1964-1971
 (In millions of won)

	Tax Revenues	Total Income	Effective Tax Rate %
1964	218	90,624	0.2
1965	416	119,621	0.3
1966	734	162,005	0.5
1967	998	240,277	0.4
1968	1,875	347,363	0.5
1969	2,685	506,184	0.5
1970	2,873	678,300	0.4
1971	3,195	817,854	0.4

Source: See Table 5.

Automobile Tax

Legal Structure -- Base and Rate. The tax is levied on the owners of registered vehicles. The main taxable categories of vehicles are: cars, buses, trucks, and vehicles with two or three wheels. Since 1967, the tax rate structure also includes consideration of the distance between the axles, and cylinder displacement. Finally, each taxable vehicle is further classified according to business, non-business and government use. A specific tax rate is applied to each type of vehicle, as shown in Table 41.

The automobile tax rates were changed twice over the last decade: in 1963, the tax rate went up by 60 percent on non-business high-class sedans, and was again increased in 1967. The tax is collected quarterly.

Elasticity. The elasticity of the automobile tax can be estimated from the following expression:

$$\log (TR) = a + b \log (Y), \quad (23)$$

where TR = tax revenues from the automobile tax,
Y = total income in Seoul,
b = the income elasticity coefficient.

Ordinary least squares was used to estimate the above equation for data from 1964 through 1971 (see Table 42). The results are:

$$\log (TR) = -3.27 + 1.17 \log (Y) \quad R^2 = .99 \quad (24)$$

(35.878)

The t-statistic, in parentheses, indicates that the parameter is

Table 41: RATE AND BASE CLASSIFICATION FOR AUTOMOBILE TAXATION
(In won)

Classification	Classification of Taxation	Tax Amount of a Year per a Vehicle	
		Business	Non Business
Automobile for riding (over 4 cylinder)	1st Class:		
	over 275cm of the distance between the axel	35,000	275,000
	under 274cm of the distance between the axel	25,000	200,000
	2nd Class:		
	over 275cm of the distance between the axel	23,000	220,000
	under 275 cm of the distance between the axel	20,000	160,000
Small automobile for riding (under 4 cylinder)	1st Class:		
	over 1,400cc	19,000	104,000
	1,000-1,400cc	16,100	72,000
	below 1,000cc	13,100	40,000
	2nd Class:		
	over 1,400cc	15,200	83,200
	1,000-1,400cc	12,900	57,600
	below 1,000cc	10,500	32,000
Other small car			40,000
Bus	Seating Capacity:		
	below 30 persons	7,100	11,400
	30 - 39	8,600	13,700
	40 - 49	10,300	16,500
	50 - 59	11,700	19,000
	60 and over	14,600	24,100
Minney Bus	Seating Capacity:		
	16 and above		16,000
	15 and below		12,500
Truck	Weight:		
	below 1,000kg	1,900	3,900
	1,000 - 2,000kg	2,700	4,800
	2,000 - 3,000kg	3,700	6,700
	3,000 - 4,000kg	5,000	8,800
	4,000 - 5,000kg	6,200	11,000
	5,000 - 8,000kg	10,100	18,200
above 8,000kg	11,200	20,400	
	Over 4 ton corresponding with the loading capacity	10,000	418,200
Special Automobile			
	Under 4 ton corresponding with the loading capacity	3,700	6,700
Small car with two or three wheels	Three wheel-car	1,700	4,960
	Three wheel-truck	1,300	2,400
	Two wheel-car (large)	900	2,500
	Two wheel-car (small)	450	1,200

Source: See Table 5

significantly different from zero at the .01 level of significance. The elasticity of automobile tax with respect to income is approximately 1.2, or for one percent rise in income there is a 1.2 percent rise in revenues.

Table 42: AUTOMOBILE TAX REVENUES FOR SEOUL
1964-1971
(In millions of won)

<u>Year</u>	<u>Tax Revenue</u>	<u>Total Income</u>
1964	372	90,624
1965	459	119,621
1966	629	162,005
1967	953	240,277
1968	1,588	347,363
1969	2,599	506,184
1970	3,796	678,300
1971	4,325	817,854

Source: See Table 5.

Other Local Taxes

Three other local taxes together account for less than 20 percent of total revenues and are not given much attention here. (See Table 33). The slaughter tax is levied on the butchering of a cow (500 won) or pig (70 won). The horserace tax is imposed at a rate of 10 percent on parimutuel betting at race tracks. The license tax is a charge for most licenses issued by the city, with the rate varying widely among the 208 different classes of licenses.

Overall Growth in Tax Revenues

An important issue in the study of SSC's fiscal system is the balance in growth of total tax revenues and total expenditures with

respect to the growth in income, prices and population. The concern is whether tax revenues respond to income growth at a greater rate than do expenditure needs. If so, one might conclude that the growth in locally raised revenues is adequate to accommodate the expected growth in current expenditures, and that major tax reform is not required. It should be noted here that special account expenditures are excluded from the expenditure side because they are assumed to be self-financed. In order to determine these relationships, two structural equations are estimated. The first is the elasticity of tax revenues with respect to income. The second is the elasticity of general account expenditures with respect to income. The reduced form relationship to be derived is the ratio of the elasticities of tax revenues to expenditures. If the latter is less than unity, the implication is for a "fiscal gap" facing the SSC government.

The above two relationships are specified as follows:

$$\log (TR) = a_1 + b_1 \log (Y) \quad (25)$$

$$\log (GAE) = a_2 + b_2 \log (Y) \quad (26)$$

where TR = total tax revenue,

GAE = general account expenditure,

Y = total income in Seoul.

Equations (25) and (26) are estimated using ordinary least squares with data for years 1964 through 1971. (See Table 43). The results are reported in equations (27) and (28) below:

$$\log (TR) = -2.47 + 1.15 \log (Y) \quad R^2 = .99 \quad (27)$$

(38.70)

$$\log (GAE) = -1.49 + 1.01 \log (Y) \quad R^2 = .98 \quad (28)$$

(20.13)

The figures in parentheses are the t-statistics, and both indicate that

their respective parameters are significantly different from zero. The elasticity parameters indicate that tax revenues increase by 1.15 percent if income increases by one percent, while general account expenditures increase approximately one percent if income increases one percent. Hence, tax revenues are growing at a rate significantly faster than general account expenditures in response to growth in income and are an increasing share of general account expenditures. Nevertheless, the absolute gap in current won between tax revenues and general account expenditures has continued to grow since general account expenditures were nearly double tax revenues in 1964.

Table 43: TAX REVENUES, LOCALLY RAISED NON-TAX REVENUES, GENERAL ACCOUNT EXPENDITURE, AND TOTAL INCOME IN SEOUL for 1964-1971
(In millions of won)

<u>Year</u>	<u>Tax Revenue</u>	<u>Non-Tax Revenues</u>	<u>General Account Expenditure</u>	<u>Ratio of Tax Revenue to General Account Expenditure</u>	<u>Ratio of Non-Tax Revenues to General Account Expenditure</u>	<u>Total Income</u>
1964	1,612	2,144	3,178	.507	.678	90,624
1965	2,223	1,569	3,860	.576	.406	119,621
1966	3,497	1,938	7,313	.478	.265	162,005
1967	5,041	2,407	9,743	.517	.247	240,277
1968	8,711	4,004	13,728	.635	.292	347,363
1969	12,319	6,141	18,679	.660	.329	506,184
1970	17,099	8,177	24,827	.689	.329	678,300
1971	19,484	8,674	30,261	.644	.287	817,854

Source: See Table 5.

Locally Raised Non-Tax Revenues

Locally raised non-tax revenues consist of income from property owned by the government, rents and fees, revenues from the previous fiscal

year and other miscellaneous revenues. Table 43 shows non-tax revenues of Seoul from 1964 to 1971. The question addressed here is how have non-tax revenues grown as income has grown. In order to determine this relationship, the following equation is estimated:

$$\log (\text{NTR}) = a + b \log (\text{Y}) \quad (29)$$

where NTR = non-tax revenue,

Y = total income,

b = the income elasticity of non-tax revenues.

Equation (29) is estimated using ordinary least squares for data from 1965 through 1971, the year 1964 was omitted from the analysis because of the sharp drop in non-tax revenues after 1964 and its steady increase thereafter.

The results of the estimation were the following:

$$\log (\text{NTR}) = -1.70 + 0.96 \log (\text{Y}) \quad R^2 = .98 \quad (30)$$

(18.29)

The t-statistic indicates that the elasticity is significantly different from zero at the 0.01 level of significance. However, a more important test is whether the elasticity is significantly different from one. The test yields a t-statistic of 0.82 which indicates that the hypothesis that the elasticity is equal to unity cannot be rejected even at the 0.20 level. The data indicate that non-tax revenues have approximately kept pace with the growth in income, and since general account expenditures have also approximately kept pace with income growth, non-tax revenues are approximately a constant share of general account expenditures.

V. CENTRAL GOVERNMENT ASSISTANCE

Central government assistance is provided to the SSC government in two forms: categorical aids primarily for education, and general

purpose assistance. The distribution formulae for the latter are described below.

Distribution Formulae: General Purpose Assistance

Central government assistance to SSC presently takes the form of direct subsidy and grants, and, including education assistance, accounts for about 20 percent of SSC revenues. The non-education subsidy element is a mix of a number of subsidies from different ministries, and there is no particular set of formulae.

The major general purpose grant is the local share allotment tax, which is administered by the Ministry of Home Affairs. This form of external assistance replaced the system of shared national taxes in 1967. The distribution formula provided by the law is rather complex.

The total amount to be allocated by the central government is 16.1 percent of national government tax revenues. This amount is further divided into an ordinary shared tax and a special shared tax.

The amount of ordinary shared tax is based on a budget deficit concept, i.e., the difference between "basic financial revenue" and "basic financial requirement." The latter two concepts are defined by presidential decree. Basic financial requirements (expenditure needs) are defined as the product of the number of units (e.g., employees, length of road, area of land) and a "basic" cost per unit.^{1/} Basic financial revenue is defined as the income from taxes that would accrue at a rate equal to 0.8 of the standard local tax rate. Hence, the grant is meant to compensate for a budget deficit, but only with respect to a part of the budget, i.e., only designated expenditure functions and only "ordinary" tax sources.

^{1/} The latter may be adjusted because of increases in commodity prices of more than 15 percent at the discretion of the central government.

The special shared tax is governed by less stringent cost-revenue computations. For a local government to receive a special shared tax, one of the following conditions must prevail: (a) a special financial need not covered by the computation method above, (b) a natural disaster, or (c) special financial requirements for construction, expansion, or repair of local government office buildings or welfare facilities. The allocation of the total amount of special shared tax is specified by law: 20 percent of the total amount for Seoul, Pusan, and the provincial governments; 30 percent for cities; and 50 percent for counties.

Before the 1967 reforms, the main type of central government assistance was a set of national surtaxes. These surtaxes covered the business tax, automobile tax, individual and corporate income tax, and mine tax. The amount accruing to the city was computed as a percentage of the national tax collected in the Seoul urban area. The shares were 10 percent for the individual and corporate income taxes, and 20 percent for the business activities tax.

Historically, the revenues from central government assistance have remained at about 20 percent of total SSC revenues; however, there was a noticeable decline shortly after the system was changed from one of shared taxes to direct grants-in-aid (see Table 10). In 1972, total assistance equalled 13.5 percent of total expenditures in Seoul. Of this assistance 72.8 percent was education assistance, and 27.2 percent was not related to education. Seoul received 8.2 percent of total provincial assistance disbursements.

Equalizing Features of Intergovernmental Flows

Important factors in determining the allocation of intergovernmental flows should include the comparative tax effort and the per capita income of the jurisdiction eligible for the aid. More specifically a low tax effort and high per capita income in one jurisdiction compared to other jurisdictions should correspond to a comparatively lower level of per capita grant in aid, if the intent of the system is to "equalize" and to stimulate local revenue performance. A correlation analysis of per capita amounts of aid to education, local shared tax, and subsidies with per capita gross domestic product, per capita wealth, and measures of tax effort should give some indication, ex post, of the pattern of aid distribution.

Due to data limitations, only the distribution of aid among the provinces, Seoul, and Pusan is analysed (see Table 44). Since the system of aid in Korea is hierarchical, the provinces receive all the aid but then distribute it among the city and county governments. The year for which data were obtained was 1968. The correlation matrix is presented in Table 45 below.

The results indicate that there is a negative and significant relationship between per capita grants and per capita gross domestic product. (The correlation is significant if the coefficient is greater than .5220). Moreover each per capita grant, with exception of local shared taxes, is negatively and significantly related to per capita gross domestic product. The case for the negative relationship of grants to wealth is not as strong. Although the relationship of per capita grants to per capita wealth is negative with the exception of local shared taxes,

Table 44: GRANTS, PER CAPITA GROSS PRODUCT, AND PER CAPITA WEALTH FOR SEOUL, PUSAN, AND THE PROVINCES, 1968
(In won)

	Per Capita Gross Product	Per Capita Wealth	Per Capita Grants-in-Aid for Education	Per Capita Local Shared Taxes	Per Capita Subsidies	Per Capita Total Grants-in-Aid
Seoul	80,130	211,750	957	491	105	1,553
Pusan	88,635	193,790	1,222	716	60	1,998
Gyeonggi	45,012	106,450	1,290	852	181	2,323
Gangweon	40,131	174,520	1,588	1,805	430	3,823
Chungbug	44,602	71,230	1,495	1,068	270	2,833
Chungnam	43,457	62,580	1,318	731	302	2,351
Jeonbug	37,239	62,900	1,359	900	551	2,810
Jeonnam	31,996	64,200	1,418	842	1,058	3,318
Gyeonbug	40,101	73,180	1,287	802	290	2,379
Gyeonnam	43,539	91,590	1,406	1,000	507	2,913
Jeju	48,355	120,170	1,486	1,754	715	3,955
Nation	48,832	103,810	1,321	838	438	2,597

Source: Wan Soon Kim, "The Equalizing Effect of Financial Transfers: A Study of Intergovernmental Fiscal Relations in Korea," Working Paper 7402, Korean Development Institute, April 1974.

Table 45: CORRELATION MATRIX^{1/}

	Per Capita Local Share Tax	Per Capita Education Grant	Per Capita Subsidy	Per Capita Total Grants
Per Capita Gross Domestic Product	-.3661	-.6862	-.6425	-.6211
Per Capita Wealth	.0600	-.4255	-.4770	-.2620
Tax Effort (Income)	-.6364	-.9409	-.5765	-.8092
Tax Effort (Wealth)	-.8056	-.9059	-.6374	-.9252

^{1/} With 9 degrees of freedom the correlation coefficient is significantly different from zero at the .05 level of significance in a one tail test if the correlation coefficient is greater than .5220.

Source: Calculated from Table 44.

none of the correlation coefficients is significantly different from zero at the .05 level of significance.

Tax effort, whether measured in terms of income or wealth, is also negatively and significantly related to a per capita grant. Thus less per capita aid is received, the higher is the tax effort. More specifically, the indices for per capita gross domestic product, tax effort and various grants between Seoul and Pusan can be compared in 1968 using Table 46. The comparison indicates that Seoul had less per capita gross domestic product, although slightly higher per capita wealth, higher tax effort by either measure but lower per capita grants in each category except subsidies.

VI. BORROWING

The SSC government is restricted in its borrowing practices in that foreign loans require Economic Planning Board (EPB) approval and Foreign Exchange Bank security against foreign exchange risk. If the approved loan is from a foreign government on concessional terms, it is relent by the Korean government to the SSC government at more nearly commercial terms, usually 5 percent interest and 20 years to repay. Such a loan is backed by the full faith and credit of the Korean government. International banks may lend directly to the SSC government, and the Korean government provides a repayment guarantee, though no asset security is pledged. Suppliers' credits on commercial terms have no central government guarantee, but still require approval. In the past, the EPB has been hesitant to approve such credits. Domestic borrowing requires the approval of the office of the Prime Minister.

Table 46: INDICATORS OF INCOME, WEALTH, TAX EFFORT AND GRANTS-IN-AID
FOR SEOUL, PUSAN, AND THE PROVINCES, 1968

	Index of Per Capita Gross Product	Index of Per Capita Wealth	<u>1/</u> Index of Tax Effort with Income as Denominator	<u>2/</u> Index of Tax Effort with Wealth Denominator	Index of Per Capita Local Shared Taxes	Index of Per Capita Education Grants	Index of Per Capita Subsidies	Index of Per Capita Total Grants
Seoul	164.1	204.0	191.7	154.8	58.6	72.4	24.0	59.8
Pusan	181.5	186.7	97.0	93.6	85.4	92.5	13.7	76.9
Gyeonggi	92.2	102.5	87.1	80.7	101.7	97.7	41.3	89.4
Gangweon	82.2	168.1	44.7	40.3	215.4	120.2	98.2	147.2
Chungbug	91.3	68.6	62.1	82.3	127.4	113.2	61.6	109.1
Chungnam	89.0	60.3	69.7	104.8	87.2	99.8	68.9	90.5
Jeonbug	76.3	60.6	70.5	88.7	107.4	102.9	125.8	108.2
Jeonnam	65.5	61.8	53.8	56.5	100.5	107.3	241.6	127.8
Gyeonbug	82.1	70.5	84.1	96.8	95.7	97.4	66.2	91.6
Gyennam	89.2	88.2	58.3	59.7	119.3	106.4	115.8	122.2
Jeju	99.0	115.8	50.0	41.9	209.3	112.5	163.2	152.3
Nation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Computed by dividing local tax collections by gross domestic product.

2/ Computed by dividing local tax collections by wealth.

Source: Calculated from Table 44.

Proceeds from borrowing appear in the special and general accounts of the SSC. In the latter case, the debt may be a tax anticipation note. Total borrowing over the period since 1966 is about 64 million won, of which about 85 percent is foreign borrowing. The distribution of borrowing by function is presented in Table 47.

Table 47: TOTAL DEBT INCURRED, 1967-72
(In thousands of won)

<u>Function</u>	<u>Amount</u>	<u>Percent of Total</u>	<u>Percent Foreign Borrowing</u>
Housing	271,682	1.4	0
Land Adjustment	4,036,864	21.3	0
Subway	4,675,867	24.7	78.6
Sewerage	400,000	2.1	0
Han River	1,400,000	7.4	0
Water	3,676,704	19.4	30.6
General Account	4,477,000	23.6	0
Total	18,938,117	100.0	25.3

Source: See Table 5.

VII. CONCLUSIONS AND POLICY IMPLICATIONS

What this detailed analysis of the SSC fisc reveals is the importance of the local government sector, its innovative use of self-financing mechanisms, and its ability to effectively plan and guide the provision of public services. The budget of the SSC government, by comparison with other metropolitan city budgets, is one of the fastest growing in the world. On a per capita basis, SSC expenditures are greater and growing faster than central government expenditures, suggesting the major importance of the local government in urban public service delivery.

While the financial problems of the SSC are not so severe as in some other cities, there, nevertheless are serious problem areas. This analysis suggests the need for remedial local government fiscal policy in three areas: the reform of budgeting procedures and the institution of capital budgeting practices; the review of the relationship between expenditures made under "self-financing" schemes and those under general revenue financing with an eye toward adjusting public sector prices and tax rates, as well as review of cross subsidies between self-financed and general revenue financed expenditures; and structural reform of the property tax.

Budgeting Practices

The basic problem with existing budget practices is that under present conditions, the budget document itself is not and may not be effectively used as a planning tool. A first need is to revamp the classification of expenditures, which are not reported by function or by current/capital in the budget document. A budget classification of expenditures, perhaps along the line suggested by the International Monetary Fund,^{1/} would seem an appropriate model for consideration. Moreover, a conformity in the expenditure breakdowns should exist between the general and special accounts.

A second, related problem in the budgeting area is the absence of a capital budget, or a longer term fiscal plan for the city. Such a budget should be instituted in the office of the Mayor and should

^{1/} International Monetary Fund, A Manual on Government Finance Statistics, Draft, June 1974.

contain five year projections of current expenditures, current revenues, projected capital expenditures, and intended means of financing. Capital expenditure priorities are an essential element of the capital budget, and the entire five year fiscal plan should be reexamined annually.

Financing Special Account Expenditures

The whole process of evaluating and planning the financing of special account items needs review. First, it is not clear that the fiscal goals of the city government are best served by viewing the enterprise-type activities of the city as separate financial entities. For example, in the case of the provision of water supply, it appears that there is a high revenue-income elasticity of receipts (relative to other city taxes) and a constant average cost of providing water supply. In a case such as Seoul where per capita income is rising, a surplus can be generated on current account under these conditions. But at present, under the special account arrangement, any such surplus is reinvested in the expansion of the water supply system. Cross-subsidization between the special accounts with such surpluses has not been practiced. A more reasonable approach would be to view any surplus funds generated as an amount of resources available to finance other functions, in the same way that general tax revenues are viewed as resources available for general financing.

A second, and more general need, is for the SSC government to reach a decision about which functions will be financed through user charges (i.e., will be self-financed) and which will be subsidized either from general revenues or from surpluses generated by other enterprise-type schemes. Particularly important here are two enterprises:

the bus company, which has incurred a deficit on the current account, and the subway project, which has required a transfer from the general account. At least in the case of the bus company, it would appear that increases in bus fares could be used to reduce the overall deficit, and such an increase may have a pattern of burden distribution which is less regressive than that of the property tax.

Property Tax Reform

Property tax reform is needed in two areas -- its incentive structure with respect to land use intensity, and its elasticity. With respect to the former, the presently higher tax rate on improvements than on land discourages the optimal use of land as well as the redevelopment of urban land, in that it provides for a penalty on improvements. A more appropriate structure would have a differential higher property tax rate on land than on improvements. With respect to the relatively low income elasticity of the property tax, there would appear to be some possibility for widening the base (and possibly increasing the elasticity) by eliminating certain exemptions. Rates remain low, and a doubling or tripling of current rates is also a means by which revenues could be significantly increased.

APPENDIX A: ALLOCATION OF LAND ADJUSTMENT COSTS.

The land to be improved is classified into one of three categories, A, B or C, according to the ease with which it can be adjusted, class A land being the easiest to adjust and class C land being the most difficult.

Let the area of the land to be adjusted be Z , and let $Z = Z_A + Z_B + Z_C$, where Z_A , Z_B , and Z_C are the land areas (in pyongs)^{1/} in classes A, B, and C, respectively. Now let the total estimated cost of improving the land per pyong be C , and $C = \frac{Z_A C_A + Z_B C_B + Z_C C_C}{Z}$ where C_A , C_B ,

and C_C are the costs per pyong of adjusting land classes A, B, and C, respectively. Note that since "C" designates land that is the most difficult to adjust and "A" the land easiest to adjust then $C_C > C_B > C_A$.

These cost estimates are based on past experience, and are obtained by detailing the cost of all improvements, e.g. fill, lands, sewerage, and drainage. Let the estimated selling price of the land per pyong after adjustment be P_A , P_B , and P_C , respectively, where

$P_A > C_A$, $P_B > C_B$, and $P_C > C_C$. The estimation of the selling price is also based on past experience. Finally let the area of the land which, if sold, is enough to recoup the cost of land adjustment be X , and $X = X_A + X_B + X_C$, where X_A , X_B , X_C is the area of class A, B, and C land, respectively. Since

$$(C_A) (Z_A) = (X_A) (P_A) \quad (1a)$$

$$(C_B) (Z_B) = (X_B) (P_B) \quad (2a)$$

$$(C_C) (Z_C) = (X_C) (P_C) \quad (3a)$$

then the "cost-equivalent" amount of land in each land class (X_A , X_B , and X_C)

^{1/} 1 pyong = 3.3 meters²

can be represented as follows:

$$X_A = Z_A \frac{(C_A)}{(P_A)} \quad (4a)$$

$$X_B = Z_B \frac{(C_B)}{(P_B)} \quad (5a)$$

$$X_C = Z_C \frac{(C_C)}{(P_C)} \quad (6a)$$

The land adjuster sells X amount of land to the private or public demanders and recovers the total cost of improving the land.

In addition to the cost equivalent amount of land, some common rate of land is surrendered by all land-owners to allow land for public parks, public squares, open spaces, and other public uses such as markets and schools. A proportion of 25-35 percent was mentioned as being commonly required for institutional use.

Finally there is an additional amount of land which must be surrendered for roads. As shown in the following chart, the amount of land surrendered differs according to whether the road is in the front or beside the property.

Width of road (meters)	30	25	20	15	12	10	8	6	4
Width of land surrendered for front roads (meters)	10.0	8.7	7.4	6.0	5.0	4.5	4.0	3.0	2.0
Width of land surrendered for side roads (meters)	5.0	4.0	3.0	2.5	2.0	1.5	1.3	1.0	-

Note that, for front roads 10 or more meters wide and side roads of any width, the amount of land surrendered on either side of the road does not add to the total width of the road. The remainder is contributed by all owners on an equal rate basis.

If there is a discrepancy between the actual cost of the adjustment project and the revenue from sales of cost equivalent land, then the difference will either be returned to the land-owner or invested in further improvement of the area. It is, however, rare that the price of the land after improvement is overestimated.

APPENDIX B:Personal Income Data for Seoul, Korea

Personal income for Seoul, Korea, is available for the years 1964 through 1969 in the Seoul Statistical Yearbook. Personal income is for all households and includes compensation of employees, income from incorporated enterprises, personal rent enterprises, personal interest, personal dividends, and transfer receipts. The problem arises because personal income for the years 1970 and 1971 is not available from the same published source. In order to estimate personal income for 1970 and 1971, the Annual Report on the Family Income and Expenditure Survey, 1971,^{1/} was used. Table 3 of the Annual Report contains "Monthly Income per Household in Seoul for Salary and Wage-Earning Households" for the years 1963 to 1971. The average monthly income figure includes earnings, interest and dividends, rent received, income from subsidiary jobs, and estimated rent from owner-occupied dwellings. The definitions of income from the two sources are similar; however, they do not coincide. Moreover, the figures differ in that the personal income figures reported in the Seoul Statistical Yearbook are for all residents of Seoul and those reported in the Annual Report on the Family Income and Expenditure Survey, 1971 are for salary and wage-earning households.

In estimating personal income for 1970 and 1971, a stable relationship between per-capita personal income reported in the Seoul Statistical

1/ Annual Report on the Family Income and Expenditure Survey, 1971, Table 3: Monthly Income and Expenditure per Household, Seoul (Seoul: Bureau of Statistics, Economic Planning Board), pp.54-61.

Yearbook and per-capita income reported in the Annual Report for the years 1964-1969 is postulated. In order to calculate per capita income, the average monthly income per household in the Annual Report was first multiplied by 12, and then by the number of households in Seoul; the result was then divided by the population of Seoul. Per capita figures were calculated for the years 1964 through 1969 from both sources. In all cases the per-capita personal income was substantially underestimated when the monthly income data for salary and wage-earning households was used. The ratio of per-capita income calculated from salary and wage-earning households to per-capita income calculated from personal income of all households for the years 1964-1969 is listed below:

Year:	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Ratio:	.75264	.73591	.90906	.92403	.78401	.73952

It is necessary to adjust the per-capita income calculated for 1970 and 1971 using the figures in the Annual Report, by dividing the appropriate value of the ratio. The ratios for 1966 and 1967 are unusually high, so the "appropriate value" of the ratio was approximated by averaging the ratios for the years 1964, 1965, 1968, and 1969; the average is .75302. Thus, estimates of personal income for Seoul were derived by dividing the per-capita income figures for Seoul calculated from the average monthly income per household by .75302. The total personal income figures for Seoul for 1964-1971 used throughout this report are listed on the next page in millions of won, where 1970 and 1971 were estimated according to the method described in this section.

ESTIMATED PERSONAL INCOME IN SEOUL, 1964-1971

<u>Year</u>	<u>Personal Income, Seoul</u> <u>(in millions of won)</u>
1964	90,624
1965	119,621
1966	162,005
1967	240,277
1968	347,363
1969	506,184
1970	678,300
1971	817,726

APPENDIX C:Tax Burden of the Property and Entertainment and Restaurant Taxes
in SeoulProperty Tax Burden

The property tax burden in Seoul is computed on the basis of two a priori assumptions: it is assumed, first, that there is full forward shifting of the property tax and, second, that the value of buildings equal 25 percent of the total market value of property.

Data availability problems necessitate other assumptions. Itemized consumption expenditures by income class are available for "all cities"; they are not available, however, by income class for the city of Seoul alone. Average housing consumption expenditures for Seoul are available, and on the basis of those figures, it was found that, on the average, a resident of Seoul uses 2.6 percent more of his income for housing than does a resident of "all other cities". This relationship is assumed to hold for all income classes in Seoul. Thus, in computing the property tax burden in Seoul, housing expense, or rent, is raised by 2.6 percent of the income in that income class over the "all city" percent. The imputed monthly estimated rent for owner-occupied dwellings "for all cities" is available by income class. It is multiplied by 12 to calculate the annual rent. The annual rent is then used as the return on the housing investment. The life of the house is assumed to be 30 years, and the return (annual rent) is assumed to be the same in all years. The opportunity cost of the capital is assumed to be 7 percent. Using these assumptions, the present market value of the house (PMV) is calculated

from

$$PMV = \sum_{i=1}^{30} \frac{A_i}{(1+R)^i}, \quad (1c)$$

where A_i is the annual rent;

R is the opportunity cost of capital;

i is an index of years.

The total property tax consists of three levies: the general property tax, the fire tax, and the planning tax. The general property tax is levied at a rate of 0.1 percent of the value of the land and 0.3 percent of the value of the building. The fire tax is levied only on the property tax of the building; it is progressive according to the value of the building. The planning tax is levied at a rate of 0.1 percent of the market value of the land and the building. Based on the foregoing tax rates and the above assumptions, Table C-1 shows the general property tax, combined with the fire tax and planning tax, to be somewhat regressive in that the tax as a percent of income is highest for the lowest income class. If full forward shifting is not assumed, the outcome may be quite different; but data limitations do not permit useful alternative estimates.

Table G-1: PROPERTY TAX BURDEN IN SEOUL, KOREA, 1971
(In won)

Monthly Income Class:	<u>20,000-27,999</u>	<u>28,000-35,999</u>	<u>Average</u>	<u>44,000-51,999</u>
Annual Housing Expenditure	39,891	57,620	59,959	89,631
Value of Property	599,613	714,910	743,939	1,112,082
Value of Land	449,718	536,182	557,946	834,062
Value of Building	149,906	178,727	185,982	278,020
Tax ^{1/}	1,590	1,894	1,972	2,947
Average Annual Income (wages and salaries)	282,240	378,840	400,000	591,840
Tax as Percent of Income	0.56%	0.50%	0.49%	0.50%

^{1/} Tax payable when the general property tax, fire tax, and planning tax are applied to the market value of a representative house and land in each income class.

Source: Annual Report on the Family Income and Expenditure Survey 1971,
Bureau of Statistics, Economic Planning Board.

Entertainment and Restaurant Tax Burden

To compute the tax burden of the entertainment and restaurant tax on each income class in Seoul, the family expenditure on meals and alcohol consumed away from home is multiplied by 5 percent. The consumption expenditure per household by income class is available for all cities in aggregate. Consumption expenditure by income class is not disaggregated by city, but average consumption expenditure by city is available. The averages indicate that residents of Seoul consume, on the average, 50.0 percent more on meals away from home than do residents of

all cities. Thus, to estimate the amount that families in Seoul spend on meals away from home, by income class, it is assumed that the relative expenditure on food consumed away from home is the same across income classes in Seoul as the relative expenditures on food consumed away from home in all cities across income classes, but that the level of the scale is 50.0 percent higher.

Consumption expenditure data for alcohol consumption are not disaggregated into "alcohol consumed away from home" and "consumed at home." Therefore, in order to estimate how much alcohol is consumed away from home, it was assumed that it is equal to meals consumed away from home as a percent of the total food budget, multiplied by the amount spent on alcoholic drinks. More specifically, it is assumed that the same proportion of the alcohol budget is spent on drinks consumed away from home as for meals consumed away from home to total food budget. Again, because of the unavailability of consumption expenditure data by income class for Seoul, the consumption expenditure per family for alcohol, for all cities, by income class is used. Since, on the average, a resident of Seoul spends 21.7 percent more on alcohol than the average for families of all cities, the expenditures for alcohol in Seoul by income class are computed by multiplying the alcohol expenditures for all cities in each income class by 1.217.

The tax rate of 5 percent was applied to the total expenditures on food and alcohol consumed away from home, and the results given in Table C-2 indicate that this tax is slightly progressive in Seoul. However, it is likely that the entertainment and restaurant tax is even

more progressive than the computations in Table C-2 indicate. The 5 percent entertainment and restaurant tax rate applies to Class III or lower class Korean restaurants. Higher class restaurants have higher entertainment and restaurant tax rates. The rates for Class II and Class I restaurants are 10 and 20 percent, respectively. If the relatively wealthy residents of Seoul dine at Class II or Class I restaurants, they will pay a higher entertainment and restaurant tax. It follows, therefore, that the entertainment and restaurant tax is almost certainly more progressive than the mild progressivity indicated in this analysis.

Table C-2: ENTERTAINMENT AND RESTAURANT TAX BURDEN,
SEOUL, KOREA, 1971
(In won)

Monthly Income Class:	<u>20,000-27,999</u>	<u>28,000-35,999</u>	<u>Average</u>	<u>44,000-51,999</u>
Expenditures on food consumed away from home annually	2,880	4,860	5,040	8,460
Expenditure on alcohol consumed away from home annually	45	84	99	163
Total tax on food and alcohol consumed away from home annually	146	247	257	431
Average annual income	282,240	378,840	400,080	591,840
Recreation and entertainment tax as a percent of income	0.05	0.07	0.06	0.07

Source: See Table 5.