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IMPLICIT SPATIAL POLICIES: THE CASE OF FISCAL SYSTEM IN SAO PAULO STATE

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Preface

This study is part of the Brazil National Spatial Policies project, a research effort of the World Bank's Urban and Regional Economics Division. The project as a whole addresses the concern in many LDC's over the concentration of population and economic activity in very large metropolitan areas. Using the State of Sao Paulo, Brazil, as a case study, the research is directed at identifying factors underlying the concentration of economic activity in the state's metropolitan region. It is hypothesized that one such factor may be a bias in favor of the metropolitan area implicit in the state's fiscal system. The investigation of that hypothesis is the subject of this paper.

Summary

The concentration of population and industry in cities of unprecedented size has caused concern in many developing countries. While economists are still attempting to determine whether such concentration is efficient, policy makers are searching for tools to divert growth elsewhere. Such tools are already in effect, though their impact goes unrecognized and may contradict official policy. When government expenditures, financed from nationally-imposed taxes, are concentrated in the metropolitan center, the effect is a 'fiscal incentive' to further concentration. When a national government adopts a spatially uniform tariff policy for public utilities, it may be subsidizing migration to metropolitan areas at the expense of customers in areas where the cost of providing the public utility is cheaper.

The identification of such implicit spatial policies is useful if decentralization policies are to be effective. Explicit subsidies for decentralization that are opposed by implicit spatial policies are likely to fail. The identification of implicit spatial policies is also useful in addressing the more fundamental question of the desirability of decentralization as a policy objective. The case for decentralization is often made on efficiency grounds. If public policies have implicitly subsidized concentration, the argument for decentralization is strengthened.

Implicit spatial policies are inherent in the Brazilian fiscal system. The state and federal governments dominate tax collections. The majority of taxes paid by the residents of a municipality are therefore subject to redistribution to other municipalities. Municipal governments depend heavily upon inter-governmental transfers, whose value is ultimately unrelated to the tax burden borne by their respective residents. The federal and state governments dominate the public utilities sector, and thus determine the location of investment in public utilities. The tariff policies they set intentionally ignore spatial variations in the cost of providing utility services.

On balance, the federal and state governments' exercise of their dominant position in the fiscal system appears to have unintentionally subsidized the growth of metropolitan Sao Paulo at the expense of the interior of the state. The limitations of data in Brazil -- common to both developing and developed countries -- illustrate the difficulty of measuring the net effect of implicit spatial policies with any degree of accuracy, however.

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1. Fiscal instruments are used in many market economies to influence the location of economic activity. Grants to local governments in depressed areas are a principal regional policy tool in the United States. Subsidized-interest loans, investment grants or tax concessions are available to firms locating in target regions of most western European countries and many LDCs.

2. Fiscal policies with no explicit spatial element may also have implicit spatial effects. When a national government subsidizes public services in the capital city from taxes collected from nation as a whole, the effect is a fiscal subsidy with the capital city as the "target" beneficiary. When a national public utility imposes spatially uniform tariffs, it implicitely subsidizes areas where the cost of providing the service is above average, at the expense of areas that are cheaper to serve. Such implicit spatial policies may, on net, have a greater impact on the location of population and economic activity than the explicit attempts of governments to use the fiscal system for spatial objectives.

3. Interest in the spatial biases implicit in fiscal systems arises, in the LDC context, from a general concern over the concentration of population and economic activity in very large metropolitan areas. Concern over this "polarization" has several sources. In part it reflects a worry over the manageability of metropolitan areas that threaten to reach unprecedented size; in part, it is a concern over "spatial equity": the view that all parts of the country should receive the benefits of national development regardless of how sparsely populated or economically unpromising. To a great extent, the concern over polarization is a concern over efficiency: the belief that the

agglomeration economies achieved by the concentration of population and firms in large cities no longer outweigh the consequent increased costs of congestion, pollution, and high unit-costs of public services in large cities. This view of urban concentration as a burden to the national economy, though widespread, is difficult to test empirically. As Richardson (1978) points out, the argument rests upon a comparison of externalities on both the cost and benefit side that are inherently difficult to measure, and where measurable, difficult to translate into monetary terms.

4. In theory, firms and households would locate in the economically optimal pattern provided price signals conveyed the marginal social costs and benefits of migration decisions. There are clearly inherent reasons why they do not. Reflecting what Henderson (1980) terms population externalities, the migrant imposes social costs and benefits upon his origin and destination cities which are not considered in his private decision calculus. The migrant's impact on the efficiency of workers in his destination through increasing agglomeration economies are not reflected in his private weighing of the benefits of migration, nor are the benefits of his contribution through taxes to the support of pure public goods in the destination city. The costs of increased congestion imposed on the residents of the destination city by a migration are also ignored. (By the same token, the loss of agglomerative economies, the shrinkage of the tax base, and the lessening of congestion in the origin

city are also excluded from the migrant's calculus). The explicit fiscal incentives used in many countries to encourage migration to target areas are, in some sense, a second-best compensation for these market failures.

5. But the fiscal system can also widen the divergence between the private and social costs of migration decisions. In a system in which taxes are collected in one region to pay for services provided in another or where utility prices ignore differences in the costs of providing services in different location, the fiscal system widens the gap between the social cost of a given location and the private cost faced by potential migrants. The potential extent of these divergences increases with the degree of centralization in the fiscal system. In LDC's, where central government dominance of tax revenues and public utilities are common, the likelihood of significant implicit fiscal transfers between cities is high. Through the unintended effects of spatial biases in the fiscal system, central governments may therefore be contributing to the inefficient spatial distribution of population and economic activity. If the implicit spatial policies favor the metropolitan area, they may explain the persistence of polarization, in spite of explicit efforts to stimulate decentralization, and support the view of polarization as a cost to the national economy.

6. This paper is a case study of the spatial policies implicit in the fiscal system of the State of Sao Paulo, Brazil. The state is the site of the Metropolitan Region of Sao Paulo, the largest urban agglomeration in South America. The fiscal system in the state reflects a series of institutional reforms following a revolution in 1964 that

increased the degree of federal and state involvement in the financing and performance of public services. The reforms have since become the prototype for similar efforts in other LDC's. The Sao Paulo case is therefore an opportunity to illustrate the spatial policies implicit in a highly centralized fiscal system; and one that highlights the implications of the trend toward centralization among LDC's.

7. Following a brief geographical introduction, Part 1 of this paper describes the fiscal system, documenting the degree to which control over tax revenues, expenditures, and the allocation of credit is concentrated at the state and federal level. Part 2 assesses, within the constraints imposed by the data, whether metropolitan Sao Paulo is a net beneficiary of the fiscal system's implicit spatial effects. Part 3 concludes with the study's policy implications.

8. Sao Paulo is the most populous and most industrialized of Brazil's 23 states. With a land area about the size of West Germany, the state has a population of 24 million, twenty percent of the national total. Eighty-five percent of the population is classified as urban; only thirteen percent of the labor force is engaged in agriculture. Manufacturing employs nearly thirty percent of the state's labor force.

9. Within Sao Paulo State, population and industrial production are geographically concentrated in the eastern part of the state, in a pattern of urban agglomerations radiating from the state capital, Sao Paulo. Lying 50 kilometers northwest of the Atlantic coast, the capital and the remaining 36 municipalities of the Metropolitan Region of Sao Paulo account for half the state's urban population, and seventy percent of its

manufacturing. (Table 1). Extending away from the legally-defined MRSP, chiefly along radial highways, are a series of de facto urban agglomerations. Labelled "eastern cities" in Table 1, they account for about seventeen percent of the state's urban population and manufacturing.

10. Beyond a radius of 150 km from the capital, urban development and manufacturing are relatively scarce. In the area outside the 150 km radius -- a region accounting for three-quarters of the state's land area -- even the largest cities are isolated agricultural marketing towns. Only nineteen municipalities in the interior had urban populations of over 30,000 in 1970. Labelled "western cities" in Table 1, they accounted for nine percent of the state's urban population. Reflecting their economic role as distribution rather than manufacturing centers, the western cities' share of state manufacturing activity is well below their share of urban population. The western cities' share of manufacturing value added is particularly low -- three percent -- reflecting the low average productivity of the manufacturing that does exist there.

11. As shown in Table 1, the geographic concentration of population and manufacturing in the MRSP peaked in 1970. The metropolitan area's share of urban population declined slightly during the 1970's. The decline was compensated by rapid growth in the surrounding eastern agglomerations. Together with the metropolitan area, the eastern agglomerations of the state continued to account for 70 percent of the urban population and 85 to 90 percent of manufacturing activity through the first half of the 1970's. The western cities' share of population and manufacturing remained correspondingly stable.

Table 1

Trends in Regional Population and Economic Concentration
(percent of state total)

	Metro Sao Paulo	Eastern Cities	Western Cities	Rest of State	Total
Number of municipios	37	35	19	480	571
Urban population1/					
1960	49.2%	17.8%	11.1%	21.9%	8,149,500
1970	55.1	16.8	9.5	18.6	14,276,200
1978	54.6	18.1	8.9	18.4	20,317,500
Industrial value added2/					
1960	n.a.	14.2%	3.3%	n.a.	2,034.9
1970	74.5	15.4	3.2	6.9	3,105.9
1975	69.5	17.7	3.2	9.6	10,724.8
Industrial employment					
1960	70.4%	15.2%	4.4%	10.0%	831,300
1970	70.0	15.7	4.7	9.6	1,295,800
1975	68.2	16.9	5.3	9.6	1,815,100

n.a. = not available

1/ In Brazilian practice, urban includes the county seat of all municipios, regardless of size, accounting for the large urban population in "rest of state." Source: Fundacao IBGE - Censo Demografico, 1960, 1970, 1980.

2/ Totals are in millions of 1970 cruzeiros. Source of industrial value added a employment: Fundacao IBGE - Censo Industrial 1960, 1970, 1975.

Part 1: Centralization in the Fiscal System

A. Municipal Government

12. The Brazilian public sector has three levels of administration: federal, state, and municipal. The Brazilian municipio corresponding to a U.S. county, encompasses both rural and urban areas and is the only form of local government in the nation. Federal law largely determines responsibilities between levels of government, and designates the municipio as the weakest of the three.

13. In most cases, the weak position of the municipios is appropriate. Numbering about 4000, the majority of municipios are small (with populations under 20,000) and have limited administrative capacity. Forty percent of mayors have less than five years of formal education (IBAM, 1979). Brazil's rapid urbanization in the 1960's and 1970's produced a large number of municipios of substantial size. Thirty-one of Sao Paulo's municipios have populations of over 100,000. Though their budgets are not large in per capita terms, each controls a budget worth over US$6.5 million. The legislation governing the position of municipios in Brazil, however, makes no allowance for variations in circumstances. In effect all municipios are treated legislatively as equally incompetent.1/

1/ The federal government has required the creation of a state-level agency to plan and coordinate function of "metropolitan interest" in the 37 municipios comprising the legally defined metropolitan region of Sao Paulo. To date, the activities of the agency have been limited largely to industrial land use planning.

14. The federal constitution limits municipios to two tax bases: a tax on urban property and a tax on construction and personal and professional services. Neither tax base has proved very lucrative. As shown in Table 2, municipal taxes account for only six percent of the taxes collected in Sao Paulo State. The Brazilian literature suggests that the low yield of local tax bases is due more to low local tax effort than to the limitations of their revenue bases (Varsano, 1977; Rezende, 1973; Clark,1973). Mayors and city councilmen -- elected officials -- are reportedly reluctant to tax the local electorate, particularly in smaller towns.

15. The incentive for higher local tax effort is also reduced by the limited extent of municipal responsibilities, and the availability of intergovernmental transfers as a revenue source. As shown in Table 2, intergovernmental transfers are the largest single source of municipal revenues, accounting for about forty percent of the total.

16. Debt accounts for about 15 percent of municipal revenues. Municipal borrowing, like intergovernmental transfers, is governed by federal legislation. Federal law limits municipal borrowing according to a formula linking increases in debt to revenues in the preceeding year. The formula has the effect of exaggerating the benefits of a transfer: every cruzeiro of transfer lifts the municipal debt ceiling by Cr$0.7, provided other conditions of the formula are met. This effect is more theoretical than real, however. The federal government, according to central bank officials, does not systematically review municipal requests

Table 2

Public Sector Revenues: Collections in Sao Paulo State
(Millions of 1978 Cr$)

Revenue Source	Level of Government			Total
Taxes	**Federal**	**State**	**Municipal**	
Income and industrial products	90113.3			
Value added		81830.0		
Property and services			11704.2	
Other	36731.5	1260.7	2018.2	
Subtotal	126844.8	83090.7	13722.4	223657.9
Percent of total public sector	57%	37%	6%	100%
Other Sources				
Investments and industrial activities	53.9	1337.0	998.7	
Charges	6020.7	2174.0	1392.1	
Miscellaneous	7797.0	4885.0	2636.5	
Subtotal	13871.6	8396.0	5117.3	27384.9
Percent of total public sector	51%	31%	19%1/	100%
Debt	0.0	8847.0	6962.0	15809.0
Revenues Before Transfers	140716.4	100333.7	25801.7	266851.8
Percent of total public sector	53%2/	38%	10%	100%
Transfers paid	10602.1	16366.0	0.0	
Transfers received	0.0	8919.0	17821.7	
Revenues After Transfers	130114.3	92886.7	43623.4	266624.43/
Percent of total public sector	49%	35%	16%	100%

1/ Intergovernmental transfers earmarked for capital expenditures are classified under debt.
2/ Excludes transfers to municipios other than FPM.
3/ Discrepancy with pre-transfer total due exlcusion of non-FPM Federal transfers from municipal transfer receipts, and minor discrepancies between sources.

Sources: Federal - Ministerio da Fazenda, Anuario Economico Fiscal 1979
State - Secretaria da Fazenda, Balanco Geral 1978
Municipios - Fundacao SEADE, Anuario Estatistico 1979

for loans. The municipios, for their part, appear to accumulate much of their debt as accounts payable rather than as borrowing through official channels.

17. Other than the property and services taxes, income from charges and miscellaneous sources are the only other locally generated source of municipal revenues, accounting for about twenty percent of the total. Charges, in this case, represent building inspection fees, operating license fees, and charges for street cleaning and garbage collection. Miscellaneous receipts include revenues from fines, municipally run butcher shops, funeral services and similar operations.1/.

18. The functional responsibilities of the municipios is equally limited and controlled by the state and federal governments. Municipios have dominant responsibilities only for local land use control, local street paving, and the provision of parks and similar urban amenities. Some larger municipios operate bus companies and water/sewer utilities. The latter function, as discussed below, is often a state function, particularly in metropolitan Sao Paulo. The municipios perform a supporting role in the performance of a wide range of services for which the state or federal government have primary responsibility. Municipal governments are expected to contribute to the costs of education, water/sewer network construction, highways, health posts and police and fire stations, as well as covering the unemployment and health insurance

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1/ Major municipally owned enterprises such as water and sewer utilities and bus companies (in the few cases where they exist) report their financial operations separately from the source on which Table 2 is based. Only their net profits are reflected in Table 2.

obligations of their employees. Municipal contributions to all but the last of these functions varies from municipio to municipio, and from time to time. Formal agreements for the joint performance of services are almost non-existent (IBAM, 1974). The share of municipal budget allocated to shared functions is considerable, equal to two-thirds of municipal expenditures on predominantly local functions, excluding expenses on administration.

B. State and Federal Government

19. It is the state and federal government that dominate the fiscal system. Primarily through taxes on income and manufactured products, the federal government collects 57 percent of the taxes collected in the state. The state government, largely through a federally-mandated value added tax, collects another 37 percent. The federal governmnet transfers ten percent of its revenue to municipios; the state government, twenty percent. As shown in Table 2, even after subtracting the value of transfers from the federal and state revenues and adding them to the municipios, the state and federal government control 85 percent of the revenues collected in the state.

20. Table 3 compares the per capita expenditure of the three levels of government, excluding the expenditures of decentralized agencies financed primarily through user charges. The table demonstrates the state and federal governments' dominance of expenditures on public security, education, health, and welfare and pensions and transportation.

21. The state and federal government also dominate functional areas financed through user charges and compulsory insurance funds. The federal

Table 3

Public Sector Expenditures Per Capita
(Cr$ of 1978)

	Level of Government		
	Federal	State	Municipal
Administrative legislation and judicial system	606	1560	480
Agriculture	118	121	3
Communications	62	3	1
Public Security (defense, police and fire protection)	327	380	7
Regional development	377	15	0
Education and culture	309	1077	234
Energy	128	131	0
Housing and urban services	31	12	425
Industry and commerce	66	26	182
Health and sanitation	101	435	182
Labor	22	12	0
Welfare and pensions	409	477	144
Transport	562	565	411
Foreign relations	22	0	0
TOTAL	3141	4817	1897

Source: Federal - Ministerio da Fazenda: Anuario Economico Fiscal 1979
State - Secretaria da Fazenda: Balanco Geral 1978
Municipios - Anuario Estatistico do Estado de Sao Paulo, 1979

Note: Expenditures for federal and state government include transfers to lower levels of government variously classified under administration, region development, or other categories.

Expenditures of federal government are national totals, divided by national population.

government operates the national pension and health insurance systems(INPS and INAMPS, respectively) financed largely through wage taxes. Federal and state involvement in the financing and construction of housing and utilities has increased particularly since 1960. A national housing bank (BNH), established in 1964, is the principal source of credit for low and moderate income housing and water and sewer investments. The creation of BNH was followed by the creation of agencies in each state to implement its funding programs. Low cost housing agencies exist in all the Brazilian states (and are supplemented by municipally owned companies in some cases). State water and sewer utilities, created through the voluntary absorption of their municipally owned counterparts exist in all states, though the degree of absorption of municipal companies varies widely. Electrical utilities are generally owned by agencies of their respective state governments, and are financed in large part by the federal electrical-utility holding company. The federal government owns the national telecommunications system, which it operates through subsidiaries of the state level. The railroad network is generally federal owned, except in Sao Paulo State, where it is owned by an agency of the state government.

C. Explicit Spatial Policies

22. The state and federal government, despite a rhetorical committment to the "interiorization" of development do not use their dominant position of the fiscal system to explicitly promote that objective. Both state and federal tax rates are geographically uniform across the state (as are state and federal utility rates). It is only the

municipal level of government that explicitly uses fiscal incentives as a tool of spatial policy. Of the ninety-one municipios comprising metro Sao Paulo, the eastern agglomerations and the western cities (as defined in Table 1) more than half offer tax concession to new industrial firms. Twenty-four of the 91 municipios studied offer grants of land and forty offer industrial districts with some form of utilities in place. (Table 4). Municipal incentives are most common in the western cities where sixteen of the eighteen reporting municipios offer financial incentives and fifteen have industrial districts. The Brazilian literature suggests that municipal incentives have had little effect in encouraging the interiorization of industrial firms, however. Municipal taxes are too small a proportion of the industrial tax bill to represent a significant impact on production costs (Azzoni). Industrial districts, generally located on the municipal outskirts have promoted the suburbanization of firms within municipios, but have not attracted a significant number of interregional moves (CAR).

Part 2: Implicit Spatial Impacts of Fiscal Policies

23. The high degree of federal and state control makes some degree of geographical favoritism an inevitable part of the fiscal system in Sao Paulo State. With the federal and state government collecting 95 percent of all taxes, disparities between taxes paid and value of services received by the tax payers of any given municipio are unavoidable. The policy of charging equal tariffs within the service areas of state and federal utilities necessarily subsidize customers in some municipios at

Table 4

Municipal Incentives for Industry

	Metro Sao Paulo	Eastern Cities	Western Cities	Total
Municipios in universe	37	35	19	91
Municipios with financial incentives				
Building tax exemption	15	16	14	45
Land tax exemption	14	14	14	42
Grant of land	3	8	13	24
Total (any of above)	15	20	16	51
(number reporting)	(36)	(34)	(18)	(88)
Municipios with industrial districts	7	18	15	40
(number reporting)	(33)	(34)	(18)	(85)

Source: Fundacao SEADE - Pesquisa Municipal, unpublished mimeos.

the expense of others. Federal and state control over the allocation of infrastructure investment financing, given legal and political constraints, must similarly have some spatial bias.

24. It is difficult to determine whether these implicit spatial biases have, on net, favored metropolitan Sao Paulo, therefore justifying the argument that the metro area's dominance of the state is inefficient. As discussed earlier, the efficiency argument rests on the assertion that the households and firms in the metropolitan region pay less than the cost of the services they consume, while they are subsidized by their counterparts in the interior whose consumption of services is less than their expenses in taxes and service charges. The identification of the location of benefitting firms and households, under this criteria, faces a number of obstacles. In the area of tax-financed public services, there are data constraints on both the revenue and expenditure side: both the state and federal government rely heavily on indirect taxes, chiefly on manufacturing. While information exists on the value of revenues collected in different jurisdictions, the characteristics of the taxes suggest that their incidence is ultimately shifted forward on to consumers, in a geographical pattern that can only be surmised. The data constraint on the expenditure side is more intractable: no information on the spatial pattern of state or federal expenditures exists. For the state and federal utilities, the spatial pattern of charges is known, but spatial variations in costs are not. On the allocation of credit, some information on the spatial distribution of federal and state

infrastructure financing exists. An estimate of its spatial bias would require some indication of the pattern of credit that would result from a spatially neutral capital market, which is obviously not available.

25. The analysis which follows is therefore limited both in scope and analytical framework. It focuses on three policies instituted since the 1964 revolution which have centralized revenue and expediture decisions at the state and federal level: (1) the policy of channelling investment funds for utilities through federal and state agencies; (2) the spatial homogenization of utility rates; and (3) the substitution of state and federal transfers for local taxes as the primary source of local government revenues. In the case of transfers, and to a limited extent, in utility investments, it is possible to compare the value of revenues received per capita in different regions. This analytic benchmark does not, clearly, reveal whether the policies subsidize one region at the expense of another, though it does reveal the extent to which the state and federal government depart from equal per capita criteria in their distribution of transfer and investment expenditures. It is possible, in the case of the most important of the intergovernmental transfer, to estimate the net direction of implicit interregional transfers using simple incidence analysis. The results of that analysis are described at the end of this section.

A. Utility Investment Policies

26. The present dominance of state and federal agencies in electrical, and water and sewer utilities is the product of an institutional transformation of Brazilian utilities since the 1964

Revolution. Until the early 1960's, electrical distribution networks were private utilities, subject to public control only through tariff regulations. Water and sewer utilities, where they existed, were run as agencies of their respective municipal governments, except in the municipio of Sao Paulo where the service was provided by a state agency.

Investment in utilities failed to keep up with the rapid urban growth of the 1960's, in part due to a failure to adjust tariffs to hyperinflation. Federal tariff controls on energy brought system expansion to a near halt in the early 1960's, as the cost of serving new customers became financially unviable. (IBRD, 1971). Municipal water and sewer utilities also failed to raise tariffs sufficiently to finance system expansion. In the absence of a functioning capital market for municipal borrowing, expansion of water and sewer networks were financed ad hoc through capital grants from the state government. The burden of the collapse of the utilities sector fell most heavily on areas experiencing the most rapid population growth during the 1960's. Metropolitan Sao Paulo, whose urban population grew at an average annual rate of seven percent over the decade, had a significantly smaller percentage of population served by water, sewer, or electrical networks than either the eastern or western cities; whose growth rates had been correspondingly lower. The shortfall in utility coverage was particularly acute in the smaller municipios of metro Sao Paulo, where rapid population growth coincided with acute administrative incapacity. Lying in the path of urban expansion, these municipios grew at an average annual rate of fourteen percent over the decade. With a combined population of 1.2

million in 1970, less than a third of their combined population was served with a water connection; only 64% with an electrical connection. Infant mortality rates were twice those of the rest of the metro area or the interior cities.

The Water and Sewer Sector

27. The Revolution of 1964 was followed by reform in the system of financing water and sewer investments. A national housing bank, BNH, was organized in 1964, capitalized through a newly created worker's unemployment insurance fund. In addition to mobilizing resources for housing investment, BNH was charged with the lending for water and sewer investments by the national water and sewer financing plan, PLANASA. PLANASA, as it ultimately evolved, requires each state to organize a fund for water and sewer investment. The fund draws initially on equal shares of BNH loans and non- reimbursable grants from the treasury of its respective state. Lending from the fund is required to yield a positive net rate of return, permitting the fund to become eventually self-sufficient, financing new loans from the debt service of old ones.[1/]

28. In Sao Paulo State, the reformed financing system began operating in 1968, and lent the equivalent of $US800 million for water and sewer system construction over the following six years. Ninety-two percent of the loans were made to municipios within metropolitan Sao Paulo. Eighty percent of the total — worth roughly US$650 million -- was made to the

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1/ This requirement, which is incorporated into World Bank lending to the program, has never been achieved. The Sao Paulo State water and sewer fund has instead drawn continuously on "investments" from the state treasury.

municipio of Sao Paulo alone. The share of the metropolitan area, and of the capital, is disproportionate either to population or to the relative number of unserved households. The value of PLANASA investments per urban household was four times as high in metropolitan Sao Paulo as it was in the urban municipios outside the metropolitan area.[1/] Most of this was concentrated in the municipio of Sao Paulo, which received more than twice as much per capita as the remaining municipios of the metropolitan area, and six times as much per capita as the urban municipios outside metro Sao Paulo. Due to the relatively high proportion of unserved households in the capital and in metro Sao Paulo as a whole, the disparity in PLANASA lending per unserved household is narrower between regions, but is still substantial. Metropolitan Sao Paulo received roughly the equivalent of US$650 in water investments and US$175 in sewer investments per unserved household from 1968 to 1971.[2/] The urban municipios outside the metropolitan area received less than half as much: US$240 in water investment and US$75 in sewer investment per unserved households. The

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1/ Urban municipios are defined according to the criteria in Table 1. PLANASA lending to municipios other than the 91 defined as urban in ths paper accounted for less than one percent of the total.

2/ Data are from BNH, Relatorio sobre o Desenvolvimento do PLANASA. Investment values in the original source are reported in Constant Units of Capital (UPC), the inflation-corrected numeraire used by BNH. UPC's were corrected to US dollars at the 1978 UPC-cruzeiro and cruzeiro-dollar exchange rates. Unserved households are as reported in the 1970 Censo Demografico.

municipio of Sao Paulo's share was US$790 in water investment and US$240 in sewer investment per household lacking water and sewer connections, respectively.

29. In 1971, citing an absence of overall planning and coordination and excessive construction time, the federal government proposed a second reform of the water and sewer utility sector. The revised national water and sewer plan, PLANASA II, called for the creation of state water and sewer utilities, which would absorb the municipal agencies and undertake the planning and construction of water and sewer networks state wide, based on financing from ther water and sewer investment fund. SABESP, the utility for the state of Sao Paulo, was established in 1974, through the consolidation of the state agency serving the municipio of Sao Paulo, the water and sewer agencies of the Santos lowlands and adjacent Registro region, and the state bulk water and sewer agencies serving the metropolitan area. Over the following two years SABESP absorbed nineteen of the remaining 36 municipios of metro Sao Paulo. The further expansion of SABESP has been arrested by the reluctance of the larger municipal governments to turn their water and sewer agencies over to the state. From 1976 to 1980, only four of the remaining twenty non-metropolitan muncipios with populations over 100,000 joined SABESP. SABESP's expansion outside the metropolitan area has been confined to the absorption of less populous municipios. Of the 54 non-metropolitan urban municipios under study, sixteen had joined SABESP as of 1979. Roughly 200 of the 480 of the smaller municipios outside the metropolitan area were, however, absorbed by SABESP as of that year.

30. While municipios outside the SABESP system are legally eligible to borrow funds from the state water and sewer investment fund, in practice they do not. Data on the value, if any, of loans from the investment fund to municipios outside SABESP are not available. Officials of SABESP, the state budget office, and DAEE, the state investments in the water and sewer sector, concur that the value of such investments is insignificant.

31. Data on the spatial distribution of investments funded by PLANASA is also unavailable, except for 1979, (when roughly 80 percent of the Cr$12.9 billion of PLANASA investments were made in metro Sao Paulo.) Given the failure of SABESP to expand to major cities outside the metropolitan area, it is likely that the bulk of funding from the state water and sewer investment fund has continued to be invested disproportionately in metropolitan Sao Paulo. Investments under PLANASA, both before and after the creation of SABESP, appear to have been made disproportionately in metro Sao Paulo.

Electrical Sector

32. The reform of Brazil's electrical sector paralleled that of the water and sewer utilities; beginning with a reform of the system of financing that incorporated an increasing degree of federal control, followed by a unification of companies into a single state agencies.

33. Though the failure of private utilities to extend their distribution networks in the early 1960's was due primarily to tariff controls, the federal government first chose to stimulate new investment by channelling public capital into the sector. In 1962, the federal government

established ELETROBRAS, a federal electrical utility holding company, for the purpose of buying shares in the country's major private electrical utilities. The federal government provided two sources of financing for ELETROBRAS: a "compulsory loan" charged to high volume industrial users at 32.55% of their electrical bill; and the federal government's 40 percent share of the existing sales tax on electrical consumption. The latter tax, formerly charged in cruzeiros per KWHR had ceased to be an important revenue source in the hyperinflation of the early 1960's. With the creation of ELETROBRAS, the sales tax was redefined as a percentage of the customers' electrical bill, insolating it from the effects of inflation and increasing its value as a revenue source. ELETROBRAS later was also allocated the proceeds of a 3 percent reversion tax on electrical consumption.

34. Controls on tariffs were not revised until after the 1964 revolution. Before the reform, tariffs were restricted to a level of revenues sufficient to cover costs of operation, provisions for amortization or reversion, depreciation and a return on investment up to a maximum of ten percent, calculated on remunerable assets based on their historic costs. Hyperinflation had eroded the rate base, particularly of the older private utilities. In 1964, the federal government issued a decree which permitted power companies to revalue their assets in accordance with the official inflation index. In 1972, the new national power code (Lei 5655/1971) provided that electrical power tariffs should be set for each utility and should cover all its operating expenses,

including depreciation, a 10-12 percent on the remunerable investment (based on the revalued book value of assets) and a reversion charge equal to three percent of the remunerable investment.

35. The creation and funding of ELETROBRAS and the tariff reform substantially increased the funds available for new investment. According to ELETROBRAS' forcast of investment plans for the electrical sector 1971-75, (valued at US$7.3 billion) 72 percent of all forcast investment would be financed from resources generated within the electrical sector; with another 16% from foreign borrowing, 7 percent from state and federal grants, and five percent other external sources. Of the internally generated share, less than a quarter was to be financed from the internal cash generation of power companies. The majority of investment funds were to be financed through public sector electric agencies, principally ELETROBRAS. Through its monopoly of the compulsory loan and reversion taxes, its share of the sale tax, internal cash generation, and funds from the reimbursement of dividends due to federal government, ELETROBRAS accounted for three quarters of the public sector share of the 1971-75 investment plan. State governments, through their share of the sale tax and through grants from general revenues were expected to supply the remainder.

36. The allocation of public sector funds was (and is) partly determined by federal legislation. Federal law requires ELETROBRAS to invest 60% of the proceeds of the compulsory loan from each state according to origin, with 83% of the investment in state owned utilities in each respective state. The proceeds of the sale tax not allocated to

ELETROBRAS are distributed to the states and municipios for the purchase of stock in electrical utilities; according to a formula including population, land area, consumption, production, and area inundated by reservoirs.

37. Though data on the value of ELETROBRAS or other public sector investments in the electrical sector are not available, the pattern of nationalization of the states private utilities in the 1960's and 1970's nevertheless suggests that the interior of the state received a disproportionate share of public investment. Public ownership of electrical utilities in Sao Paulo State began in 1953, when the state government began investing in hydroelectric dams in the border areas of the state. Public ownership of electric distribution networks was largely limited to sparsely populated border areas, however, until the purchase of the AMFORP, the American and Foreign Power Company by ELETROBRAS in 1965. AMFORP's holdings included the Companhia Paulista de Forca e Luz, the principal electrical utility serving the western interior of the state. Investment by the state government in electrical distribution networks also appears to have been concentrated in the interior. In 1966, the state of government merged its five border area companies with six small regional utilities to form CESP, the Companhia Energetica de Sao Paulo. In 1975, CESP purchased CPFL from ELETROBRAS. As of 1978, CESP/CPFL provided electric service to 85 percent of the residential customers west of metropolitan Sao Paulo. LIGHT, a private investor-owned utility served metropolitan Sao Paulo and the coastal region and industrial Paraiba Valley until its purchase by ELETROBRAS in 1978.

Performance Indicators

38. The concentration of utility investment credit, in metro Sao Paulo in the case of water and sewer investment, and in the interior in the case of electric utilities, would be expected to show up in different rates of expansion in the networks of the different parts of the state. Such a pattern is apparent in the case of electric utilities; it is not in the case of water and sewer investment.

39. Table 5 shows the growth in the proportion of housing units with water, sewer and electrical connections between 1970 and 1978. The total expansion represented by the figures is impressive. In eight years, the number of water connections increased by 650,000; sewer connections by 440,000; and electrical connections by 1,260,000 in the 91 municipios under study. As the number of housing units increased by about 1,100,000 over the period, this expansion was insufficient to reduce the absolute number of housing units lacking water and sewer connections, though the number of units lacking electrical connections declined. The growth in water and sewer connections was sufficient to maintain the same proportion prevailing in 1970.

40. The performance of state/federal agencies is compared with that of private or municipal utilities in the center columns of Table 5. As shown, the state (and, through 1975, federal) electrical utilities outperformed the state's private utilities from 1970 to 1978, according to the criteria listed. The number of electrical connections of the publicly owned utilities increased by 73 percent, versus 62% for the private utilities; the percent of total demand met through increases in the number of connections showed an equivalent margin. Because population growth in

Table 5

Trends in Access to Utilities

	Total	Ownership		Region	
		State/Federal	Private/Municipal	Metro Sao Paulo	Other Cities
Electrical Connections					
% increase 1970-1978	65	73	62	65	64
% demand met 1/	63	73	61	60	70
% connected 1970	69	74	68	66	74
% connected 1978	82	86	80	80	85
Water Connections					
% increase 1970-1978	34	28	46	39	27
% demand met 1/	32	24	49	30	38
% connected 1970	67	64	74	59	83
% connected 1978	65	60	75	60	74
Sewer Connections					
% increase 1970-1978	38	29	50	38	41
% demand met 1/	16	10	31	12	27
% connected 1970	41	34	55	31	57
% connected 1978	40	32	57	32	57

1/ Calculated as: net increase in units connected, divided by sum of unconnected units in 1970 plus net increase in units 1970-1978.

Source: CESP: unpublished computer listings (for urban units with electrical connections in 1970-1978; plus estimated vacancy rates for both periods, by municipio).
BNH: Censo Nacional de Saneamento Basico, 1978.
IBGE: Censo Demografico 1970, 1980.

the private utilities' service area was slower than that of the public utilities', the change in the percent of households served was roughly equivalent between the two groups: the public utility service area, starting six percentage points ahead of the private utility also finished six percentage points ahead.

41. The concentration of federal and state investment funds in SABESP's service area is not reflected in the disproportionate growth of water and sewer connections there, however. The number of water connections in SABESP's service area increased only 28 percent, versus 46 percent for municipally owned utilities; the number of sewer connections increased 29 percent in SABESP's service area, versus 50 percent in the urban municipios not absorbed by the state agency. The share of net demand met through system expansion is twice as high in water connections, and three times as high in sewer connectins in the municipios served by municipal agencies, when compared to those served by SABESP. SABESP's service area started with a smaller proportion of households connected and remained in the same position.

42. There are several explanations for the failure of the concentration of federal investments to be reflected in the infrastructure growth. In 1978, SABESP had been in existence for four years, and had been operating in many of the municipios in its service area for even fewer years. (The municipio of Sao Paulo, however, accounts for 75 percent of SABESP's customers and had been the beneficiary of disproportionate shares of Federal investments since 1968.) The data may also be at fault. The sources of the 1970 and 1978 are from inconsistent

sources, though it is not clear that the bias works against SABESP . The 1970 data is drawn from the national demographic census, and represents the number of households reporting a connection to a water or sewer connection. The 1978 data is from a survey of water and sewer utilities, and represents their record of the number of housing units connected. The latter figure includes vacant housing units which account for a substantial part of the stock in some municipios, particularly those in SABESP's service area in the Santos region. The number of housing units was estimated from the 1970 and 1980 population censuses using vacancy estimates provided by the state electrical utility; though this methodology clearly leaves ample room for error. Finally, it is likely that federal financing is not the only means by which expansions of water and sewer networks may be financed. Interviews with municipal officials in interior cities suggest that municipal governments prefer to finance system expansion from operating revenues and general receipts of the municipal government.

B. Tariff Policies

43. The consolidation of electrical and water/sewer utilities into state and federal agencies after the 1964 revolution was accompanied by a policy of reducing regional disparities in tariff rates. This policy clearly imposes an interregional transfer from low cost regions to high cost regions. Among the 237 municipios in its service area,

SABESP's investment policies reflect dual objectives: under the terms of the national water and sewer plan, SABESP was charged with supplying 80 percent of its urban population with water connections, and supplying "adequate sewer service" to the population of the metropolitan area and the other "large cities" within its jurisdiction. At the same time, SABESP is required to maintain its financial viability, recovering a sufficient amount through tariffs to cover operating costs, debt service to the state water and sewer fund, and a return to capital.The problem of extending service to customers where low incomes or high-cost locations would jeopardize the system's financial viability has been met through a system of cross-subsidies. SABESP's tariffs are set to recover both capital and operating costs and vary by region, volume of use and type of user. The utility employs only three tariff zones, within which tariffs for a given type of user at a given volume of use are uniform. The degree of spatial variation in rates differs between classes of users. As shown in Table 6, the variation in tariffs charged to the low volume residential user varies only slightly, being about ten percent higher in metro Sao Paulo than in the Santos lowlands and interior tariff zones. The difference between zones is much greater for high volume residential customers and for industrial users: high volume residential users in metro Sao Paulo pay roughly twice the rate of their counterparts in the interior; metropolitan industrial users pay about 50% more per cubic meter water delivered or sewerage collectd. Within each rate zone, high volume users pay significantly more per cubic meter than low volume users. The minimum charge is about one-third of the maximum in metro Sao Paulo; in

Table 6

SABESP Water and Sewer Rate Structure
(Cr$ per Cubic Meter, August 1980)

Type and Volume of Use	Tariff Zone: Metro Sao Paulo	Tariff Zone: Santos Lowland	Tariff Zone: Interior
Residential			
20 m^3/month	(Cr$)	(Cr$)	(Cr$)
water	12.94	11.81	11.81
sewer	11.00	10.04	10.04
60 m^3/month			
water	21.39	15.37	11.81
sewer	20.75	14.91	10.04
Industrial			
60 m^3/month			
water	21.39	20.00	15.37
sewer	20.75	19.40	13.07

Note: Tariffs are illustrative. Low volume residential and industrial tariffs are not strictly comparable across zones, as they are based on flat fees in the Santos region and the interior and per meter in metro Sao Paulo.

Source: Calculated from Diario Oficial do Estado de Sao Paulo, 30 August, 1980.

the other tariff zones, the minimum charge is a flat fee that cannot be compared with the volume-based tariffs of higher volume users. Outside metro São Paulo, the tariff is also varied by class of user, with industrial customers paying roughly 50 percent more per cubic meter than residential customers. None of these variations reflect differences in the costs of providing services. Industrial rates are inflated to generate surpluses to subsidize residential customers. High volume residential rates are inflated to permit subsidies to low volume residential users (water use is assumed to be correlated with household income.) The variations in tariffs between tariff zones reflect "historical practice", rather than systematic variation in the costs of service.

45. Spatially, the tariff structure clearly subsidizes customers in high cost areas with surplusus from low cost areas, within each tariff zone. Presumably, this implicit transfer also occurs between tariff zones. Studies of spatial variations in the cost of water and sewer infrastructure both internationally (Linn) and within Sao Paulo state (Rizzieri) have emphasized the determining role of population density, particularly as a determining factor in capital costs, but have also emphasized the importance of idiosyn factors, such as topography, distance from supplie , etc. Both have rejected any simple correlation between costs of water and sewer service and city size per se. There is, therefore, no basis either in the general literature or in the data specific to Sao Paulo for assuming that the transfers implicit in SABESP's tariff policies favor the metropolitan area.

46. For electrical utilities, the tariff reforms of 1964 and 1972 established federal limits on tariffs for each utility. While tariffs

were uniform for a given use type and volume of consumption class within each utility's service area, they varied considerably between utilities. At the rates in effect at the end of 1971, charges for residential and low voltage industrial users were about twenty percent higher in CESP and CPFL's interior concession zones than in LIGHT's metropolitan service area.1/ The charge for high voltage industrial users in CESP's cencession area was nearly double that of LIGHT's; high voltage industrial customers in CPFL's concession area paid 33% more for power than their counterparts in LIGHT's concession area. In 1973, the federal government inaugurated a policy of equalizing tariffs within each of Brazil's multi-state regions. In order to maintain the financial viability of utilities facing higher than average costs, a "global guarantee fund" was established. Funded from a charge of up to two percent on assets in operation of all electric utilities, the fund is distributed by the national electrical regulatory agency (DNAEE) to high-cost utilities allowing them to obtain a return on remunerable assets of up to 10%. By 1978, the tariff structure of all utilities in Sao Paulo State was identical.

47. Does the spatially uniform electric tariff policy implicitly favor metro Sao Paulo? The available evidence suggests that it does not. The electrical network in Sao Paulo state is fully integrated: utilities throughout the state have had access to the same sources of bulk electricity for over a decade. Spatial variation in the cost of bulk energy should reflect only spatial variations in the cost of transmission. The fact that metro area tariffs were lower than those in the interior before the imposition of tariff equalization suggests that the net costs of supplying energy are

1/ Based on 60 percent load factor for users.

lower in the metro area. On this basis, the tariff equalization policy appears to imply a transfer from metro Sao Paulo to the interior. As in the case of water and sewer tariffs, the available information only serves to illustrate the existence of implicit spatial transfers. A firm conclusion on the direction of the transfers is beyond the scope of this study.

C. Intergovernmental Transfers

48. The one type of state or federal expenditure item that is reported in a spatially disaggregated form is the program intergovernmental transfers. Accounting for ten percent of the federal government's budget, and twenty percent of the state's, intergovernmental transfers are an important component of the system of financing local services, and one that continues to preoccupy the discussion of intergovernmental relations in Brazil. A reform of the transfer system was one of the first acts following the 1964 revolution. This section describes the spatial impact of the 1965 transfer reform, and estimates the inter-regional transfer of taxes implicit in the present system of intergovernmental transfers.

49. Intergovernmental transfers first appeared as a feature of Brazil's fiscal system in the federal constitution of 1934. The 1934 constitution, represented the first of many federal efforts to strengthen the financial position of the municipios, which together accounted to nine percent of public sector revenues in the year before the reforms took effect (Mahar). The new constitution required the states to share half the revenues of their tax on industries and professions with their respective local governments. The 1934 constitution also began the practice of allocating tax bases to each level of government, designating the urban property tax as the exclusive domain of the municipios. The

transfer system was expanded under the constitution of 1937, with the partition of the new tax on gasoline between the federal, state and municipal governments. The constitution of 1946, in a further effort to strengthen the municipios, granted them the state's remaining share of the industry and professions tax, and the federal stamp tax. The 1946 constitution expanded the transfer system, allocating ten percent of federal income tax receipts and twelve percent of federal taxes on fuels, electric energy, and minerals to the municipios. It also required states to share 30 percent of any budget surpluses with their local governments.

50. The 1946 reforms failed to substantially improve the fiscal position of the municipios however. The failure of municipios to adquately reassess their property tax bases during the hyperinflation of the 1950's and early 1960's resulted in a decline in revenues from this principal revenue source. In Sao Paulo State, total property tax revenues were lower in real terms in 1964, than they had been in 1955.

51. The federal income tax transfer also failed to serve as an adequate source of finance for the rapid urbanization of the period. The transfer formula allocated an equal share of the fund to each municipio, regardless of population. As a result, the amounts received by the populous municipios confronting the bulk of urban growth were insignificant.1/ The state's obligations to transfer 30 percent of their budget excess to local governments was rarely fulfilled. When states did transfer their excess to municipios, the transfer was sufficiently delayed to have been largely consumed by inflation by the time it was received (Mahar).

1/ The formula also encouraged the proliferation of municipios, whose number doubled over the period, contributing to the present problems of administratively inadequate "micromunicipios" and difficulties of inter-municipal coordination in metropolitan areas.

52. The real growth in municipal reveneues from 1955 to 1964 averaged 3.6% per year, scarcely higher than the growth in total population in Sao Paulo State and well behind the growth of the urban population over the period. State and federal revenues, after enjoying real annual increases of over ten percent during the 1950's also began to decline with the increasing inflation and administrative paralysis of the public sector in the early 1960's. A further series of reforms aimed at strengthening the municipios were approved in 1961, but were never implemented (Araujo).

53. Following the revolution of 1964, the reforms governing the present fiscal system were instituted. The fiscal reforms of 1965-67 abolished all municipal taxes except the tax on urban property, substituting the power to impose a tax (ISS) on construction, personal and professional services, and entertainment at rates limited by the federal government. More importantly, the reforms revised the system of transfers, substituting transfers for taxes as the most important source of municipal revenues.

54. The principal source of this transformation was a law requiring the states to transfer 20% of the revenues from the newly established ICM tax to the municipios. The ICM, a tax on value added collected largely from manufacturing establishments, replaced the state turnover tax that was in effect up to the time of the reform. The municipios' share of ICM collections in 1970 was equal to 55 percent of their total receipts in

that year.1/ Under the transfer's implementing legislation, the municipios' share of the ICM tax was to be distributed on the basis of origin -- i.e. according to the share of collections from each muncipio. As discussed below, the effect of the transfer formula was to concentrate a large part of the ICM receipts in municipios with concentrations of manufacturing.

55. The federal income tax transfers were also replaced by a federal revenue sharing system, funded from shares of the federal income and industrial products taxes. Under its original terms, (Emenda Constitucional No. 18/1965) the law allocated ten percent of the yield of the two taxes to be distributed to municipios according to population. In 1967, ten percent of the municipios' share was set aside, to be allocated separately to the municipal governments of the state capitals, based on population and the inverse of income per capita of each capital municipio's respective state. For both capital and non-capital municipios, the population criteria was -- and is -- weighted to confer higher per capita revenues on less populous municipios. The total amount received by a municipio does not increase once the municipio is larger than 133,000. Municipios of 10,000 population receive five times as much per capita as municipios of 133,000. (Decreto No.69.680/1971).

56. Changes were also made in the distribution formulas of other federal taxes. As of 1978, municipios received transfers from a total of

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1/ Data on municipal transfer receipts before 1975 are not available. This figure is calculated as twenty percent of state ICM tax collections in 1970 and may be an overestimate.

eight earmarked tax funds. Their distribution formulas are shown in Table 7. The table lists the value of each transfer as reported by 82 of the 91 urbanized municipios under study. While significant in aggregate terms, none of the detailed transfers is comparable in value to the ICM or federal revenue transfer.

57. The effect of the reform is shown in the comparison of per capita revenues at each level of government in Table 8. The real growth in per capita revenues at all levels is striking: both federal and state revenues approximately doubled, municipal revenues more than tripled. The growth of state and federal revenues is largely a reflection of the growth of their revenues from taxes. At the municipal level, the increase in tax revenues was relatively small over the period. Property tax revenues increased 50 percent in per capita terms, but revenues from the new ISS tax barely made up for the taxes it replaced (a problem Araujo attributes to unfamiliarity with the tax). The growth in municipal revenues is accounted for, rather, by a 470% increase in the real value of per capita external receipts, the bulk of them from formula transfers.

58. Since 1970, revenues at all three levels have continued to increase more rapidly than population, though not at the spectacular rates of the 1960's. Total revenues per capita at all three levels increased two to three percent annually from 1970 to 1978. Municipal tax revenues have grown most dramatically -- an average annual rate of seven percent -- based on the parallel growth in receipts from both the property and services tax. Receipts from transfers, after their initial jump in the 1960's, have increased more slowly, reflecting the slower growth rates of

Table 7

Intergovernmental Transfer Programs

Program	Value[1/]	Source	Distribution Formula
Value added (ICM)	$787,288	state value added tax	20% distributed to municipios by origin
Participation fund (FPM)	31,979	federal income and industrial products taxes	0.9% distributed to state capitals, according to population and inverse of state per capita income; 8.1% distributed to all other municipios accroding to population, weighted to favor small municipios
Municipal employees' witholding (IRF)	19,772	municipal employees' federal income tax obligations	100% retained by municipal government
Fuels and lubricants	17,569	federal tax on fuel and lubricants	8% distributed to municipios, according to population, land area, and consumption
Highway fee (TRU)	7,538	motor vehicle registration	information not available
Mineral tax (IUM)	2,367	federal mineral tax	20% distributed to municipios by origin
Rural property (ITRU)	2,301	federal tax on rural property	80% distributed to municipios by origin
Electric energy (IUEE)	1,200	federal tax on electric use	10% distributed to municipios based on land area, population, production, consumption, and land inundated by reservoirs

Source: Nalin, Irineu "Financas Municipais, Analise e Sugestoes para Debate" unpublished mimeo, 1981
Martins Dias, Jose "As Relacoes Intergovernamentais no Federalismo Brasileiro" in Modernizacao Administrativa, IPEA, Brasilia, 1980
SEF, "Sintese de Orcamento e Balancos" selected municipios, unpublished mimeos

1/ Total receipts of 82 urbanized Sao Paulo municipios, as defined in text; in thousands of US dollars.

Table 8

Trends in Federal, State and Municipal Revenues
(Collections in Sao Paulo State, Constant 1970 Cr$)

	1960	1970	1978
Federal			
Total revenues	280	604	750
Taxes	262	594	674
State			
Total revenues	262	496*	582
Taxes	218	446*	443
Municipios			
Total revenues	57	191	233
Taxes	26	35	62
- property	14	21	37
- other taxes	12	14	25
Non-local revenues**	25	144	151

Note: Federal and state revenues include taxes subsequently transferred to local governments.

*Data for 1971.

**Includes, in addition to transfers, receipts from borrowing and grants. Non-local revenues plus taxes do not add to local, due to exclusion of local charges and fees revenues from the table.

Sources: Fundacao SEADE - Anuario Estatistico 1960, 1970, 1979.
SEF: Financas do Brasil Vol. XXI.
Secretaria da Fazenda (Estado de Sao Paulo) Balanco Geral, 1978.
Ministerio da Fazenda (R.F. do Brasil) Anuario Economico Fiscal, 1979.
Fundacao IBGE: Censo Demografico 1960, 1970, 1980.

services tax. Receipts from transfers, after their initial jump in the 1960's, have increased more slowly, reflecting the slower growth rates of the federal and state revenues from which they are derived.

59. From the muncipios perspective, the impact of the 1965 fiscal reform was a dramatic increase in revenues, brought about largely through an increase in intergovernmental transfers. As shown in Table 9, the benefits of the reform were highly skewed toward metropolitan Sao Paulo. From 1960 to 1970, the total per capita revenues of the municipal governments of the metropolitan region of Sao Paulo increased by roughly Cr$200 in real terms; the revenues of eastern cities by Cr$84 and the revenues of the western cities by only Cr$46. The difference in the growth of revenues is due almost entirely to differences in the growth of non-tax revenues. The principal source of variation was the formula used to distribute the ICM transfer. As the transfer was distributed according to the value of collections in each municipio, its distribution paralleled the spatial distribution of industrial value added. In per capita terms, municipios with relatively large manufacturing sectors in relation to population received dsproportionate shares. Municipios with highly productive manufacturing sectors received more per capita than municipios with less productive manufacturing. Metro Sao Paulo, with an average industrial value added per resident 3.5 times that of the rest of the state was eligible for the lion's share of the transfer.

Table 9

Impact of 1965 Fiscal Reform: Regional Pattern
(Per capita, constant 1970 Cr$)

	Metro Sao Paulo	Eastern Cities	Western Cities	State
Municipal Revenues, total				
1960	99	86	58	57
1970	291	170	104	191
1978	228	178	114	171
Municipal Non-Tax Revenues				
1960	53	70	46	31
1970	230	144	91	156
1978	228	178	114	171
Industrial value added	2863	1695	630	1747

Source: Fundacao SEADE - Anuario Estatistico 1960, 1970, 1979.
Fundacao IBGE - Censo Demografico 1960, 1970, 1980;
Censo Industrial 1970.

60. The distribution on the ICM also varied widely among municipios within metropolitan Sao Paulo and within the urban agglomerations of the eastern part of the state. The expansion of urban growth beyond the boundaries of individual municipios had resulted in the jurisdictional segregation of industry from residences. The ICM transfers enriched the industrial enclaves with little benefit to bedroom suburbs. Table 10 lists the components of municipal receipts by regional grouping in 1978. In order to reduce the variance in the metropolitan and eastern municipios, the seven municipios with industrial value added were grouped separately as industrial suburbs. As shown, the industrial suburbs received an average of Cr$2130 (US$118) per capita from the ICM transfer; metro Sao Paulo, Cr$813 (US$45); the eastern cities Cr$343 (US$19). With the exception of the high local tax collections of the metro area, variations on this scale do not exist in any of the other major municipal revenue components. Variations in ICM revenues explain most of the variation in total per capita municipal revenues.

61. The ICM transfer is a major source of divergence between the costs paid for urban services and the value of urban services performed in a given municipio. Due to dominance of the ICM transfer in municipal receipts, local expenditures on public services are largely unrelated to the value revenues from local sources. Thus, in the same way that uniform tariffs send the "wrong" price signals to potential migrants, subsidizing migration to areas that are relatively expensive to serve, the

Table 10

Regional Variation in Sources of Municipal Revenues [1/]

Source	Industrial Suburbs [2/]	Metro Sao Paulo	Eastern Cities	Western Cities
Number of municipios	7	31	27	17
Population (group total, 000)	1,361	10,391	3,389	1,894
ICM (value added)	Cr$2130	Cr$813	Cr$652	Cr$343
(std. deviation)	(484.6)	(57.3)	(67.6)	(28.1)
Other formula transfers	121	100	132	167
(std. deviation)	(21.7)	(16.5)	(34.0)	(20.0)
Local taxes	484	812	354	282
(std. deviation)	(87.7)	(31.5)	(49.1)	(22.0)
Other local receipts	371	391	265	247
(std. deviation)	(75.8)	(18.5)	(25.5)	(20.1)
Debt	261	395	204	126
(std. deviation)	(72.0)	(31.6)	(36.9)	(37.9)
Total	3367	2512	1608	1167
(std. deviation)	(605.9)	(105.5)	(108.3)	(57.9)

1/ Values are in population-weighted means for each group of municipios. Standard deviations are calculated from unweighted values for each group of municipios.

2/ Defined as municipios in which industrial value added per resident exceeded Cr$20,000 in 1975.

Source: Calculated from SEF Sintese de Orcamento e Balancos unpublished mimeos.

ICM transfer divorces the value of urban services from local taxes and charges, subsidizing migration to areas where the value of urban services exceeds the taxes and charges paid locally by the widest margin.

62. The inter-municipal transfer implicit in the ICM transfer is not immediately apparent. The ICM transfer is funded from a value added tax and the value of the transfer is directly proportional to the value of the tax collected in each municipio. From the standpoint of the collection and payment of the ICM transfers and tax, there are no inter-municipal transfers. The characteristics of the tax suggest, however, that its incidence is not at the point of collection, but rather is shifted forward on to consumers. If so, the ICM tax and transfer system implies a significant degree of inter-municipal transfers.

63. According to generally accepted public finance theory (Taylor), the extent to which the incidence of a tax can be shifted forward on to consumers depends on the responsiveness of consumers to changes in the price of the taxed good -- the elasticity of demand with respect to price. If adding the full amount of the tax to the price of the good would eliminate all sales, the tax would be fully born by firms at the point of collection (leading eventually to the elimination of some firms, and a decline in the output of the industry of which the firm is a part). If, in contrast, the volume of sales is entirely unresponsive to increases in price, the incidence of the tax can be shifted entirely on to consumers. The degree to which quantity demanded is responsive to changes in price is a function of the availability of substitutes for the taxed good. If the good is available -- untaxed -- in a neighboring jurisdiction, firms are forced to absorb the tax or forego sales. If a

functional substitute for the products exists, firms are again required to absorb the tax. In the case of the ICM tax, neither of these sources of substitutes is available. The tax is geographically broad based. It applies at equal rates not only to all the municipios of Sao Paulo State, but -- with minor rate variations -- to all the states of Brazil. It also allows few functional substitutes. The tax exempts only exports, inputs to agriculture, milk, and a number of narrowly defined manufactured goods. In the absence of untaxed substitutes, demand for ICM taxed goods is inelastic with respect to price. The incidence of the ICM tax is therefore largely shifted forward on to consumers.

64. Given the specification of the ICM transfer formula, this shifting of tax incidence from firms to households has important spatial implications: households pay the ICM tax, in the form of higher prices, to firms. Firms pay the ICM tax to the state government. The state government returns a share of the ICM revenues to municipal governments, based on the locations of the firms delivering the tax, not the location of the households ultimately paying it. Governments in municipios with a large number of firms and few consumers receive more in ICM transfers than their residents pay. Their counterparts, in populous municipios with few firms, receive less in transfers than their residents pay.

65. The shifting of the ICM tax and the formula by which it is subsequently distributed appears, regionally, to favor metropolitan Sao Paulo and the other eastern cities, at the expense of the municipios of the west. Assuming that household consumption is equal, per capita, in all municipios, households in western Sao Paulo pay more into the transfer

fund than their governments receive.1/ The extent of this shift will vary, obviously, according to variations in actual household consumption. Data are not available to test any alternatives to the assumption of equal per capita consumption used here.

66. The implicit transfer of ICM funds to metropolitan Sao Paulo supports the argument that the metropolitan area is "too large" from an efficiency standpoint. The benefits of the ICM subsidy would be expected to be capitalized into wages: labor would be expected to accept lower nominal wages in the metropolitan area -- compensated by the value of subsidized sources -- allowing firms to expand employment beyond the level that would occur in a spatially neutral fiscal system.

67. Due to the concentration of ICM benefits in industrial suburbs within the metropolitan area, some of the spatial impact of the ICM transfer may be lost. To the extent that industrial suburbs are capable of excluding would-be in-migrants, the value of ICM subsidies would be capitalized into land costs rather than wages. The value of land would rise, at the imposition of the transfer scheme, to reflect the present value of the stream of expected future subsidies. A one-time benefit would be bestowed on owners of property in the benefitting municipios; in the absence of in-migration, the benefits of the ICM subsidy would not be reflected in population movement.

1/ The shifting of the ICM also implies transfers from "bedroom suburbs" to industrial suburbs within metropolitan areas. Due to Sao Paulo's disproportionate share of national manufacturing, it further implies a transfer from the rest of the nation to Sao Paulo State.

68. The impact of the implicit ICM subsidy may also be reduced if its subsidy is used in ways that have no influence on location decisions.

69. Local governments can respond to transfers by lowering their local tax effort or increasing expenditures on public services, or some combination of the two. Table 11 lists the results of a series of OLS regressions, measuring the effects of transfers on locally-derived revenue and municipal expenditures, by function. To control for variations in population among municipios both dependent and independent variables are expressed in per capita terms.

70. Data constraints prohibit an exact measure of the impact of transfers on local tax effort. The relationship between the assessed value of municipal tax bases and their market value varies widely between municipios (as well as within them) (Clark). Variations in nominal tax rates between municipios are therefore an extremely unreliable indicator of variations in the effective tax rates of the municipios under study. Tentative conclusions can be drawn from the analysis of the impact of transfers on local tax collections. The first line in Table 11 shows the relationship between transfer receipts per capita and local tax revenues per capita. The slope coefficient is positive and statistically significant. The coefficient of the slope, at .0999, indicates that local tax revenues per capita rise by Cr$99 for every Cr$1000 increase in per capita transfers.1/ If local tax bases are equal in all municipios, the

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1/ It should be emphasized that the results are based on cross sectional data, representing a comparison of the behavior of different municipios at a single point in time. The results therefore do not necessarily apply to the prediction of the behavior of individual municipios over time.

Table 11

Impact of Transfers on Municipal Expenditures

Budget Item	Transfer Per Capita				Other Revenues Per Capita		
	Mean	Intercept	Slope	F	Slope	F	R^2
Local taxes	272	194.	.099	12.9*			.14
All non-transfers rect's	712	570.	.183	10.1*			.10
Administration	426.7	- 28.	.365	281.5*	.240	36.2*	.84
Public employees pensions	55.4	- 30.	.063	87.5*	.050	16.4*	.64
Debt service	92.9	12.	.057	20.2*	.051	4.7	.29
Police and fire	7.4	00.	.004	6.9*	.004	1.8	.12
Primary education	84.1	15.	.031	10.5*	.636	12.9*	.29
Other education	79.3	20.	.063	44.9*	.013	0.5	.39
Urban amenities	201.3	- 60.	.123	30.7*	.232	32.2*	.53
Industry-tourism	9.2	- 10.	-.009	6.3*	.037	31.6*	.27
Water-sewer	73.7	- 29.	.099	46.8*	.035	1.7	.42
Hospitals	65.5	14.	.044	56.5*	.023	4.7	.05
Social assistance	60.5	40.	.020	8.1*	.006	0.2	.09
Transportation	278.3	138.	-.043	1.7	.244	16.4*	.15
Natural resources	9.4	- 3.	-.003	0.2	.021	2.7	.09
Surplus	43.6	- 82.	.183	121.3*	-.023	0.6	.61
Other	0.8	1.	-.000	0.7	.000	0.0	.00

* Reject null hypothesis with .99 confidence

Coefficients estimated on the equation: Per capita expenditures on function X= A + B (transfers per capita) + B (other revenue per capita).

N = 82

positive relationship between tax collections and transfers suggests that local governments raise their tax rates in response to increased transfers. If, on the other hand, there is an underlying correlation between transfer receipts per capita and the strength of the local tax base, the relationship between transfers and tax revenues shown in Table 11 need not reflect any variation in tax rates, and could, in fact, conceal lower tax rates in municipios with very strong tax bases. The determination of the impact of transfers on municipal tax effort would require an analysis of specific municipios, a job beyond the scope of this study.

71. The fact that local tax receipts (and all other transfer receipts) are positively related to transfer receipts does permit one conclusion: the municipal governments receiving high per capita transfers have not responded with a corresponding drop in revenues from local sources. Variations in the value of transfers received by the municipios under study are fully reflected in variations in their total expenditures.

72. The remaining lines of Table 11 show the distribution of that increase in expenditures, by function (controlling for variations in population and non-transfer revenues.) The impact of transfers on expenditures is positive and statistically significant in eleven of the fifteen expenditure categories. The slope coefficients, representing the increase in expenditures on each function (in fractions of cruzeiros) per one-cruzeiro increase in transfers suggest that Cr$43 out of every Cr$100 increase in transfers is spent on administration and public employee pensions, and another Cr$18 is allocated to budget surplus. For every Cr$100 increase in transfers, municipal expenditures on urban amenities

increase only Cr$12; on subsidies to water and sewer systems, Cr$10; on education, Cr$9, and on hospitals and clinics, Cr$4. Municipal expenditures on transportation, though a large share of total municipal expenditures on average, do not vary significantly with the value of transfers.

73. This analysis, while clearly no basis for assessing the effectiveness of the transfer system as a means of funding public services, does serve to illustrate the potentially weak link between the spatial distribution of transfer benefits and their ultimate effect on the location decisions of firms and households.

74. The ICM tax and its subsequent transfer is thus a flow of income from consumers to municipal governments. Spatially, the consumers in western cities appear to pay more in taxes than their municipal governments receive; the municipal governments in eastern cities and in metro Sao Paulo receive more in transfers than their residents pay. Whether its consequences for industrial or household location are dissipated through the pattern of expenditures of municipal governments; or counteracted through implicit spatial biases in the reverse direction through other state and federal programs is a question requiring further research.

Part 4: Conclusion

75. As the Sao Paulo case illustrates, a highly centralized fiscal system divorces the costs of services in a given location from the price paid for them. In Sao Paulo, few of the public services provided in a municipality are paid for from local taxes. The system of homogenous pricing for electricity and water and sewer service deliberately divorces

variations in the cost of performing these services from their price. There is little connection between the taxes and charges paid by the households and firms of Sao Paulo and the costs of the public services they receive.

76. Should the fiscal system be decentralized to strengthen the link between the price and cost of local services? The case for devolving responsibilities and revenue-raising authority to the municipios of Sao Paulo is not persuasive.

77. To begin with, decentralization would not necessarily create a match between the price and cost of public services within municipios. In order to subsidize the services of households, it is likely that municipal governments would tax firms in excess of the services they consume (parallelling the present practice of the federal and state government in Brazil and the majority of local governments in the U.S.). Firms would then attempt to export the tax burden across municipal borders, to the extent permitted by market conditions. The continued problem of inter-municipal tax shifting would be particularly severe in metropolitan areas.

78. In addition, the present degree of centralization of the fiscal system does not appear to be inappropriate to the administrative capacity of the majority of the state's local governments. As is true of Brazil as a whole, most of Sao Paulo's municipios are small and have little administrative capacity. While the administrative weakness of municipios may be as much as product as a cause of their inferior position in the fiscal system, an across the board decentralization does not seem

appropriate. Many countries, having achieved the level of urbanization Sao Paulo now enjoys, have several forms of local government, with levels of autonomy varying according to the demands and administrative capacities of different jurisdictions. Such a system bears investigation in Brazil.

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