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Infrastructure Finance

Issues, Institutions, and Policies

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The distinctive features of formal and informal financing of infrastructure and the principal issues policymakers must address in dealing with infrastructure finance.

Background paper for *World Development Report 1994*

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Summary findings

Chandavarkar analyzes the distinctive features of formal and informal financing of infrastructure and the principal issues policymakers must address in dealing with infrastructure finance: its adequacy in competitive financial systems, its budgetary vulnerability, the rationale for foreign finance, the role of user charges and taxes, the pros and cons of earmarking taxes, the institutional framework for infrastructure finance, the role of municipal finance, different approaches to the private financing of infrastructure (such as franchises, leases, management contracts, and consumer cooperatives), the critical role of contractor finance, and informal financing of infrastructure.

Chandavarkar concludes, among other things, that:

- Not only the amount of funds but the regularity of their flow is central to maintaining infrastructure. But infrastructure must compete on a level playing field with other sectors. Any essential (but not open-ended) subsidies for maintaining universal minimum standards of service are best carried on the government budget, subject to periodic review.
- Institutional reform is needed to rationalize the division of resources and responsibilities among all layers of government and to provide mechanisms for insulating infrastructure finance from budgetary and other pressures. Such mechanisms include earmarking, privatization, and objective criteria for sharing value-added tax and other national tax revenue.
- Most developing countries do not have a national infrastructure agency to fund and coordinate technical assistance for infrastructure projects. Chandavarkar makes a case for an apex financial entity in charge of municipal financial intermediaries for infrastructure, pointing to the instructive experience of intermediaries in Colombia and Jordan. One responsibility of such an agency would be to determine the necessary import content (for equipment, technical, and managerial expertise) of infrastructure finance, to prevent overborrowing.
- Privatization of infrastructure should be viewed as implicit earmarking, but official regulation of public utility prices should allow private utilities to generate retained earnings (to encourage self-financing) and should allow adjustments for inflation and exchange rate fluctuations.
- Infrastructure policy should allow for cost recovery through user charges as well as for tax revenues, especially through municipal taxes, since even the viability of loan finance depends on an efficient tax effort.
- While infrastructure finance is important, it is not always the decisive constraint, judging from the operating losses of even adequately funded infrastructure projects.

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Infrastructure Finance: Issues, Institutions and Policies

Anand Chandavarkar

Background Paper for the World Development Report 1994

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Infrastructure Finance: Issues, Institutions, and Policies—An Overview

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This paper discusses the key principal issues concerning the financing of economic infrastructure—transport, telecommunications, water, waste disposal, power, gas, electricity—in the developing countries and suggests an appropriate institutional and policy framework in light of the distinctive features of infrastructure finance and the available empirical evidence.

The paper identifies the distinctive characteristics of infrastructure finance and addresses the principal issues and challenges facing infrastructure finance, notably the budgetary vulnerability of infrastructure finance and the financing of new investment and adequate maintenance in increasingly competitive and liberalized financial systems. Given the heterogeneity of infrastructure finance, the analysis proceeds to disaggregate the different sources and techniques of infrastructure finance—formal and informal, public and private, domestic and foreign—and concludes with an agenda for policies and reforms.

Characteristics of Infrastructure Finance: A Portmanteau Concept

The question: "Why does finance matter?" has been extensively discussed in the literature which shows a growing consensus that it is a necessary even if not a sufficient condition for adequate levels of investment and growth (World Development Report: 1989, Chap 2). Nevertheless, this poses the related question: If finance is fungible, what in fact is the relevance and significance of sectoral finance, of which infrastructure finance is a major subset. This paper argues that infrastructure finance is sufficiently distinctive to merit special attention and analysis.

Infrastructure services differ substantially in their economic characteristics between and within sectors and technologies. Infrastructure output is generally non-exportable except in some

cases (e.g. natural gas, electricity). Infrastructure investment is invariably location-or-site specific and also jurisdiction specific (for example, national, provincial, regional, or municipal). The economic and technical features of infrastructure, coupled with the compulsions of traditional public finance, are reflected in infrastructure finance, which consequently marks it off from other types of institutional and corporate finance. The more distinctive aspects of infrastructure finance are as follows :

- Capital costs are large relative to maintenance and operating costs because of large, lumpy equipment and extensive delivery networks.
- There are substantial sunk costs because a high proportion of total costs has to be irrevocably committed up-front before a project becomes operational.
- The resultant high costs of entry and exit reduce the competitiveness and hence contestability of infrastructure services.
- The combination of high capital and sunk costs, long periods of gestation and pay-off, often with irregular revenue flows, leads to longer debt maturities and high average debt-equity ratios.

These features combine to make infrastructure investments potentially high-risk ventures, with the implication, not always justified, that such risks are most efficiently borne by the government, which can spread them over the entire population. But both technical and financial innovations are allowing investments to become less lumpy and are reducing the risk element through greater modularity in infrastructure construction and more efficient means of risk allocation and management through increasingly sophisticated capital and insurance markets.

For instance, leasing of plant and equipment offers entrepreneurs greater possibilities of exit if a project does not yield expected returns. But financial innovation, per se, is no assurance or index of whether it confers net benefits by generating externalities, reducing information and transaction costs, and enhancing the additionality of finance. Interestingly, while domestic infrastructure finance has been generally conventional, cross-border infrastructure finance has spawned a bewildering variety of instruments (nearly sixty types), which are variants and hybrids of bonds, commercial paper, warrants, preferred stock, and miscellaneous types (for example, asset-backed securities) as well as representing varied combinations of yields, maturities, and currencies (Peter Nevitt, 1989). The resultant complexity of arrangements suggests that foreign financing of infrastructure is tending to be increasingly project specific.

The empirical evidence shows that typically infrastructure firms (trucking, telephone, electric and gas utilities, airlines) have high leverage (debt-equity) ratios (Harris and Raviv 1991). Likewise, since public utilities operate under regulatory regimes there is little retention of earnings over and above their capital consumption allowances. Consequently, they tend to borrow funds for their expansion. This also suggests that the "pecking order of corporate finance," in which retained earnings are used in preference to debt issues and debt is used in preference to external new equity issues is not typical of infrastructure finance (Myers 1984). Generally, publicly traded equity is not well-suited for finance of individual risky projects because of difficulties of conveying information about the nature of risks to shareholders and about the progress in controlling the risks. An extreme example of this is the virtually exclusive role of debt finance in the Euro-tunnel project (£ 7 billion out of the total capital of £ 8 billion). In a rapidly expanding market, a firm will have investment opportunities that are likely to exceed

its capacity for generating internal funds, and, other things being equal, a firm with large capital assets and steady earnings will find it easier to raise funds externally. This explains why, for instance, electric utilities tend to be very highly geared (IFC 1991, p.11).

In sum, infrastructure finance is clearly differentiated from non-infrastructure finance. On the other hand, it is not a homogenous entity. Consequently it has to be appropriately disaggregated by: origin (foreign and domestic); sectors (public, private and joint); by techniques and instruments of finance; and by type of finance, i.e. new investment, maintenance, and working capital. It is, therefore, best characterized as a portmanteau concept embodying different elements and characteristics.

Issues and Challenges of Infrastructure Finance

Infrastructure finance has to provide for both additions to the capital stock (net long-life investment) and the maintenance and qualitative improvement of the existing stock. The estimates for (a 1 percent increase in GNP is associated with 1 percent increase in infrastructure stock) for the WDR 1994 underscore the closeness of the relationship between infrastructure investment and economic growth. But the main issues of infrastructure finance relate not only to the adequacy of funding but even more to the timeliness and regularity of the flow of funds without which essential maintenance, so vital for sustainable development, is likely to be jeopardized. A critical part of infrastructure expenditure has an incremental and ongoing character because of the requirements of maintenance. The financing of maintenance is often limited (even externally financed projects have little provision for maintenance) and highly erratic being among the earliest items to be cut or dropped in the event of budgetary pressure.

In many sub-sectors of infrastructure depreciation does not occur on a linear trajectory which consequently necessitates adequate provision for contingency finance. There is also the difficult and complex issue of how much of the financing gap represents a genuine resource gap and how much of it is a reflection of inefficiency of existing infrastructure. To the extent that infrastructure prices are held below cost with the help of large subsidies, these add to the cost of local and national taxation and make it more difficult to achieve overall fiscal balance.

Paradoxically, despite their recognized importance, infrastructure outlays are the most vulnerable to cuts in government budgets during periods of adjustment and fiscal austerity in both developed and developing countries. A most noticeable trend during the 1980s when a number of developing countries were implementing adjustment programs was the sharp cut in capital expenditure (mostly infrastructure) as a percentage of both GDP and total expenditure (Sanjay Pradhan and Vinay Swaroop 1993, p 29). Likewise, the reduction in Britain's budget deficits in the 1980s was due largely to cuts in net investment. (The Economist, September 4, 1993, p. 52). There is systematic evidence for the U.S. that capital spending is, in fact, the most vulnerable budget item under fiscal pressure (George Peterson 1984, p. 122). Since infrastructure is the most substantial component of capital expenditure it bears a disproportionate and unwarranted burden of budgetary economies and impairs sustainable development because cuts in essential maintenance tend to stretch into indefinite neglect and become more expensive in the long run as in the case of roads in Africa (Mason and Thriscutt 1989, p.30). All this reflects the familiar political problem that governments and politicians find it so much easier to cut capital as against current expenditure. The deferment or cancellation of a capital-intensive infrastructure project is politically a softer option than the reduction of social sector outlays and

laying off of government employees, and even the populist pressures of log-rolling and pork barrels do not seem to avail against infrastructure retrenchment—a paradox not yet resolved by public choice economics.

Since public finance is still a major resource for infrastructure, the budgetary vulnerability of infrastructure finance poses critical issues for public policy. All these concerns have to be addressed in the light of the special characteristics of infrastructure finance, which will have to compete on equal terms with non-infrastructure finance on a level playing field in increasingly competitive and liberalized financial systems.

Sources and Techniques of Infrastructure Finance

Role and Prospects of Foreign Finance: Genuine or Excess Recourse?

What is the real role of external finance, whether grants, loans or equity, in financing domestic infrastructure? This question merits examination primarily because the ready availability of foreign funds until recently from donors and international agencies has obscured the real role of foreign exchange in the finance of infrastructure projects. Governments have relied in varying degrees on foreign financing for infrastructure and official development finance has increased steadily and in recent years has accounted on average for about \$24 billion a year, or 12 percent of total infrastructure finance (WDR, 1994, Chapter 5). But there are no systematic estimates of the relative distribution of the finance of infrastructure between domestic and foreign sources. The fragmentary evidence suggests a surprisingly high foreign exchange

component (about half) for maintenance of roads in Sub-Saharan Africa and external assistance would need to cover not only foreign costs but over 60 percent of local cost (Mason and Thricutt, 1989). Road maintenance is normally a labor-intensive activity which relies largely on local material and as such should not warrant such disproportionately large foreign exchange inputs. It reflects, among others, over-reliance on capital-intensive techniques whereas greater use of labor-intensive techniques could perhaps have been more economical of foreign exchange.¹ However, labor-intensive techniques may not always and necessarily represent the cost minimizing option in terms of economizing on foreign exchange. The choice of techniques thus depends on a combination of circumstances. For instance, the appropriate techniques is also very sensitive to topographic conditions.

Infrastructure usually has a fairly significant but varying import-content, which poses the critical issue: Does the foreign exchange component of infrastructure finance its essential import-content or does it also cover local currency costs which cannot be met because of undeveloped domestic capital markets. Or does it amount to "excess borrowing" defined as "imports of capital which arise otherwise than in connection with a need to finance such supplies of goods and services from abroad as are, in a given state of tastes, techniques and available resources and of a given amount and composition of output and growth, both indispensable and unrequitable (emphasis provided), (J. Knapp 1957, p. 432). For instance, it has been argued that the foreign borrowing of the United States in the nineteenth century was really a manifestation of excess borrowing in the sense that it was largely a reflection of the

¹ The experience of the Orangi Pilot Project in Karachi is most instructive. One result of informal local financing was to lower costs of manholes for underground sewerage lines to almost Rs500 compared to Rs2300 in a similar nearby UNICEF-financed project, cited in Bird, 1994, page 6.

underdeveloped state of her domestic capital market rather than her inability to match current domestic investment by current savings; it was "nothing much more than a costly process of satisfying her preference for liquidity" (Ibid, p.434). This amounts to a judgment that domestic savers preferred liquid assets (cash balances) to bond and equities. Other similar cases, are Burma, India, Indonesia, the Gold Coast (Ghana) and Nigeria (Hla. Myint 1953, p.138). The external borrowings for Indian railways in the nineteenth and early twentieth century also represented excess borrowing since they were not justified by the strict criteria of financing the essential import-content of investment that could not be supplied by domestic resources. Arguably, a good part of infrastructure investment in the post-World War II period may well have represented excess foreign exchange funding. In addition to the imperfections of the domestic capital market, recourse to external finance often reflects the macroeconomic constraints on public sector saving as in the Dominican Republic which is one of several countries with a high reliance on foreign funding (around 70-80 percent) for infrastructure investments in 1991 (WDR 1994, p.90).

Of course, one could question the concept of "excess borrowing" on the ground that it is quite normal for indeed all capital-importing countries to fill the saving-investment gap by external capital inflows, which if used productively, could service the debt out of growing income and maintain external balance by movement of resources into exportable goods. The real criterion then is whether the end-use of foreign finance has been sufficiently productive to yield a positive rate of return. Nevertheless, it is pertinent to ask whether foreign exchange is necessary to meet local currency costs of infrastructure, in addition to the essential import-content of infrastructure (for example, equipment, technology and expertise). For instance, if

the domestic supply of wage goods consumed by workers is inelastic, there may be a good case for financing these as well from foreign exchange if there is limited capacity to restrain domestic absorption and to mobilize additional domestic saving. In some other cases, "it may be necessary to raise the reward of domestic factors wherever investigation suggests that their contribution may have been undervalued previously" (Drake, 1972, p. 962).

Currently, there is a great variety of foreign financing techniques for infrastructure, most of which seem to involve an element of government guarantee. They are, however, exceedingly complex, and time-consuming sometimes beyond the negotiating capabilities of the host government (e.g. Build, Operate and Transfer (BOT) and Build, Operate and Own (BOO) projects). As there has been hardly any systematic testing of the additionality hypothesis, it is difficult to maintain categorically whether BOTs add to net external finance. Arguably, if countries can implement the same project in tried ways such as borrowings for a turnkey project that might be a more viable option (Marks Augenblick and B. Scott Custer Jr, 1990). Nevertheless, the fact remains that many projects considered essential could not be built without BOT financing schemes because governments do not have the budgetary resources or the borrowing capacity to build. A good example is the investment in power projects in The Philippines, where the government has also enacted comprehensive legislation to facilitate BOT infrastructure projects. The potential of BOT projects is, however, promising. For instance, the East Asia and Pacific Rim, which has 130 projects in the pipeline at an estimated \$114 billion, is expected to be ultimately the biggest user of BOT, with Malaysia possibly as the biggest user on a per capita basis. Other lower- and middle-income countries with a high per capita funding of BOT projects are Argentina, Belize, Hong Kong, and Panama.

But in all infrastructure projects, whether BOT or others, the host government or its agent (e.g. the Central Bank) must be able and willing to provide some mechanism to assure foreign investors that they will be authorized to convert local currency earnings into foreign currency as and when required and that the rate will not be unduly adverse. There are a variety of mechanisms to cover foreign exchange risk for the investors but they all involve official agencies for support, such as an exchange risk insurance scheme operated by a central bank with the premium being an additional cost of financing or escrow accounts as in the case of the HUB river project in Pakistan. Alternatively, governments can adjust user tariffs for exchange rate movements. In Turkey for the Gazi project, the government proposed that its power authority would make its periodic payments under the off-take contract in a basket of currencies designed to match the payment required to be made to foreign investors and lenders,. In Malaysia, the government has provided a 17-year external risk guarantee for the North-South expressway project to cover increased costs from adverse foreign exchange and interest rate movements on foreign loans for the project.

Any evaluation of the position and prospects of foreign capital flows into infrastructure has to be based on the overall trends in foreign investment in the developing countries which show an explosion in international flows of private capital to developing countries from \$35 billion (1990) to \$112 billion (1993 estimated) (World Bank 1993, pp.10, 21). Although separate figures for infrastructure investment are not available, infrastructure has been a significant beneficiary of such flows (WDR, 1994, Box 5.2).

Although the aggregate foreign financing of infrastructure privatization (1988-1992) represented a substantial portion of total financing this was largely accounted for by Latin

America and the Caribbean. Among the other regions, foreign financing has been negligible in East and South Asia and virtually non-existent in Sub-Saharan Africa. The only region where foreign financing of privatization has been predominant is Eastern Europe and Central Asia which is explained by the special strategic and other interests of the investor countries. But foreign financing of infrastructure privatization is a once-over source of finance and it is no index of recurring availability.

The prime incentive for foreign capital investment is a credible and stable macroeconomic and regulatory environment, coupled with strong commitments to growth, as exemplified by the experience of Argentina, Chile and Mexico. The World Bank issues guarantees for project finance under the Extended Co-financing Facility (ECO) to cover sovereign risk associated with the infrastructure projects, as in the case of the Hub River Project in Pakistan and a thermal power project in China. The services of the Multilateral Investment Guarantee Association (MIGA) (1988) in providing long-term investment insurance (guarantees) against non-commercial risks (e.g. currency transfer, expropriation, breach of contract, and war and civil disturbances) too are an added safeguard for foreign private direct investment in infrastructure. Several factors are mutually reinforcing in creating a congenial climate for foreign investment such as substantial returns (especially from telecommunications and electric utilities), rising market shares for infrastructure companies and growing investor confidence. A noteworthy feature is the fact that infrastructure equities have out performed other stocks by a huge margin since 1985 (International Finance Corporation, 1993).

But even given the optimal availability of foreign finance the bulk of financing for infrastructure finance will have to be from domestic sources. "Even if a country has an effective

macroeconomic adjustment program, and the macroeconomic variables are showing improvement, there are times when it cannot count on the international capital markets as sources of new funds." (John Shilling, 1992, p.106). The key question then is whether infrastructure in developing countries can access an adequate amount of foreign resources to finance its essential import-content of equipment, technology and expertise.

Domestic Finance of Infrastructure: Public Finance

Even though the share of privately financed infrastructure is rising, government will continue to be a significant source of financing, either singly or in partnership with private enterprise. There are, however, no a priori criteria for the optimal distribution of finance between the public and private sectors or between different techniques of finance within the two sectors. The principal issues in the domestic financing of infrastructure relate to: the distribution of finance between the public and private sectors as well as joint financings, the role of informal finance and the appropriate techniques of financing such as; taxes, loans, user fees, leases, management contracts, franchises, etc.

Infrastructure finance is, however, unique in being subject to different forms of product price regulation whose central concern is to regulate the unit price which consumers pay for infrastructure services such as electricity and telephone services. Regulation may also involve rate of return regulation with little or no pricing flexibility and/or price caps (as in the telecommunications industries) which stipulate that the prices charged must not exceed a pre-specified level. Such regulations affect the profitability and capacity for self-financing of

infrastructure enterprises. It is noteworthy that even a pristine *laissez faire* economy like Hong Kong has found it necessary to have recourse to rate of return regulations on public utilities.

There is a variety of instruments for infrastructure finance such as: user charges, taxes (general and earmarked), loans, franchises, concessions, leases management contracts, etc., but in the long run, there are only two choices as to who will finance infrastructure: the users or tax payers in general. A useful guideline is that wherever feasible user-cost pricing should be exploited to finance infrastructure investment as a primary source. Such pricing can match financing with effective demand, ensure a steady source of revenue for maintenance and improvements and recover costs from those who benefit from the use of infrastructure. User tariffs also lend themselves to 'fine-tuning' to reflect differential demand factors like peak and off-peak loads and congestion pricing.

There are several attractive and feasible variants of earmarked user-financed infrastructure such as the system of "valorization" in Colombia which is a levy of a betterment tax on property that has benefited from construction of local public works; the cost of the public works is allotted to affected properties in proportion to the estimated benefits. Valorization represents one of the purest forms of earmarking since it is based on linkage of desirable projects to raise financing from prospective beneficiaries, which also offers a mechanism to overcome resistance to taxes. In practice, as the Colombian experience shows, collection of the valorization tax has encountered problems such as defining the "zone of influence" of the projects and thus identifying beneficiaries. Generous exemptions too have eroded the tax base. The collection and administrative deficiencies also resulted in unstable revenues, largely negating the other prospective advantages of earmarking. In Korea, the "land readjustment" program

provides for up-front development of large parcels of land by the local government, parts of which are sold to the private sector at market prices.

Taxes and Infrastructure Finance

There is often a convincing case for financing infrastructure services through taxes when:

- a) the administrative costs of these revenues are lower than for direct user charges;
- b) the incidence of taxes falls on the beneficiaries of the infrastructure services as in the case of taxes on vehicles and fuel (a partial proxy for road user charges).

On the other hand, tax financing may not be desirable if it affects adversely the incentives for efficient allocation of resources, as, for instance, when all farmers are taxed on their output prices rather than made to pay economic prices for their inputs (e.g. irrigation water, electricity, fertilizers). In some cases, the removal of operating subsidies as in the canal irrigation systems of the Philippine National Irrigation Administration helped to reduce staffing levels and operating expenses while holding the fee-based irrigation income constant. (Svendsen, 1993, p.989). It is noteworthy too that in the Philippines concurrent changes in operating rules and procedures led to an increase in irrigated area and improved equity of water distribution. The observed improvement in the overall performance of the irrigation system is regarded as a consequence of the shift to complete financial autonomy.

Is earmarking of taxes and loans for infrastructure desirable?

A major issue in public finance is the desirability of earmarking for infrastructure finance in view of the budgetary vulnerability of infrastructure finance. "Earmarking" refers to the budgetary practice of assigning revenues, from specific taxes or groups of taxes to specific government expenditures which may also be supplemented by revenue from other sources. This practice is contrasted with general fund financing whereby expenditures are financed from a consolidated fund. While normally earmarking refers to the assignment of a single tax source to a single end-use (e.g. fuel taxes and motor vehicles fees for highway investments) within a multi-tax and multi-fiscal jurisdiction, the identical effects are replicated by the creation of special purpose fiscal units for infrastructure services such as; school, sanitation, or fire districts (as in the U.S.) each of which is granted independent but specific and restricted taxing power. Earmarking is an application of the benefit principle of taxation in so far as the beneficiaries of specific government expenditures or activities pay the necessary taxes or charges. But benefit taxation can exist independently of earmarking and vice versa. Thus benefit taxation may be added to the central consolidated resources or revenues may be assigned for expenditures or activities that do not yield identifiable benefits for the contributing taxpayers. But the same principles and considerations are applicable in regard to the earmarking of government or public sector loans for developmental and infrastructure purposes in contrast to general-purpose borrowing for ways and means or current expenditures. A commendable example of earmarked loans for infrastructure are the railway and state electricity bonds in India. The proceeds of government lotteries also lend themselves to utilization for specific social infrastructure items such as hospitals, sports stadia etc. The earmarking of taxes and loans is an established and

growing fiscal technique for finance of infrastructure projects and activities. An interesting extension of the earmarking principle to the sphere of public sector contractual saving is the creation of a 4 billion peso loan fund by the Philippines social security system targeted to Philippine power projects and administered by local banks. This fund is empowered to extend fifteen year loans of up to 200 million pesos to a bank, which then on-lends to the power project company. The banks handle appraisal and monitoring, and they can also leverage the funds by adding other resources. The social security system thus assumes only the bank risk. International insurance companies in the Philippines now can also make infrastructure loans of up to fifteen years with the approval of the Insurance Commissioner. In sum the scope and potential for further development of infrastructure finance merits serious consideration in light of its budgetary modalities and its micro-and macroeconomic implications.

Earmarking may be authorized either through specific constitutional provisions as in several Central American countries and Brazil, or by specific legislation. Constitutional provision for earmarking is usually for broad based social infrastructure items like education (as in Costa Rica) rather than for economic infrastructure like public utilities which is more appropriately handled through enactment of legislation by majority vote. Consequently, statutory provision offers much greater flexibility to cope with varying fiscal objectives relatively to constitutional provision which is necessarily more rigid and cumbersome and ill-suited for flexible budgetary management. Earmarking is particularly widespread in Latin America but is also used in several Asian countries (e.g. Japan, Korea, the Philippines and Thailand) in the form of special accounts, whereas it is rather limited in the Francophone countries and even less so in the British type of budgetary systems. Typically, earmarking is used in infrastructure

finance through highway funds and betterment levies to finance local expenditure as in the very extensive earmarking programs in Columbia and Turkey (McCleary, 1991).

The Case for and Against Earmarking of Government Revenue for Infrastructure Finance

That earmaking is widespread is no assurance of its economic merits which have therefore to be carefully evaluated. The arguments for and against earmarking have been the subject of exhaustive debate by economists (Adam Smith, Wickcell, Lindahl, Samuelson, Musgrave, James Buchanan) and more recently in a review of World Bank experience McCleary (1991). The case for earmarking has been extensively argued by Deran (1965), Bird (1982), and Teja (1988). Briefly, its advantages are as follows :

- (a) . It applies the benefit principle of taxation and provides a direct link between costs and benefits; and by linking taxation with spending it offers a mechanism to overcome resistance to taxes and facilitates generation of new sources of tax revenue. It carries the assurance to taxpayers that taxes will be spent in their locality or region, and thereby helps improve tax compliance.
- (b) It insulates infrastructure funds from legislative and political vagaries by obviating periodic haggling within the bureaucracy or between the executive and the legislature. It provides assurance of greater stability and continuity of funding and thereby of speedy execution of projects and of essential maintenance. For efficient

infrastructure services the size as well as the continuity of funding are equally important.

- (c) At the macroeconomic level, earmarking helps to insulate infrastructure investment in the event of macroeconomic adjustment programs, which usually tend to impinge disproportionately on infrastructure expenditure with minimal reduction of current expenditure on public sector employment and wages. An earmarking clause helps strengthen the authorities hand in reducing non-priority public expenditure.

As against these arguments, several objections are advanced against earmarking. The one objection is that earmarking undermines the principle of a unified budget designed to allocate revenues without a one-to-one correspondence of taxes and benefits. It might conceivably lead to a misallocation of resources into earmarked uses at the expense of non-marked uses and hamper effective budgetary control and generally infringe the discretion of executive. Earmarked funds are also said to promote an "enclave mentality" in the managers of such funds and could conceivably lead to overinvestment in specific sectors, as in the case of gasoline taxes for highways in New Zealand which resulted in a consequential reduction in non-marked funds (Premchand 1989, p. 160). On the other hand, in countries like Colombia, it can be argued that the expansion of earmarked taxes should be viewed as a reaction to the exceedingly cumbersome and inefficient budgetary and expenditure systems (Bird, 1982).

But these objections, while legitimate, do not undermine the basic rationale for earmarking. First, these objections assume that earmarked revenues are a disproportionate segment of public revenues which is not in fact the case. Secondly, the arguments against earmarking assume that general fund financing would necessarily eliminate the drawbacks of earmarking. This is questionable in as much as general fund financing is done incrementally from given levels rather than on a zero-base budgeting procedure that evaluates each tax and expenditure item afresh year to year. Moreover, there are ways and means to reduce budgetary rigidity through periodic adjustments to the base or rate of earmarked funds. Likewise, there could be provision for joint financing of infrastructure items through earmarked and general revenues, with the latter providing the necessary latitude for discretionary changes at the margin.

Earmarking, like any other fiscal technique has its uses and abuses but these can be controlled through periodic review and efficiency audits. With due safeguards, it can serve as an appropriate instrument of infrastructure finance. Ideally, earmarking should aim at covering maintenance expenditure while capital should compete with other investment priorities in the budgetary process. The rationale for this distinction is that maintenance has to cover sunk costs and provide for minimum standards of service; undermaintenance creates serious bottlenecks and adds disproportionately to total costs in the long run. Earmarking for maintenance makes it easier to fit in with incremental budgeting whereas capital items merit a zero-base approach.

The successful experience of the Road Fund in Ghana typifies the net advantages of earmarking. Due to a long history of neglect, only 30 percent of Ghana's road network was considered in good condition in the mid-1980s. Much of the network had almost broken down, disrupting critical flows of traffic. As part of a program to double annual road maintenance

expenditures from \$20 million to \$40 million, a road fund was set up in 1985. Besides being low in relation to the needs, maintenance funds were subject to budgetary delays in approval and release, which disrupted planning and execution. The Fund sources include: (a) a special road fund levy, which is a part of the fuel tax and contributes about 90 percent of the resources; (b) vehicle examination and driver licensing fees; and (c) tolls on fourteen bridges, four ferries, and the Accra-Tema Road. The fund itself was expected to contribute only about 30 percent of the total cost of maintenance, with another 15 percent coming from regular budgetary sources, and the remaining 55 percent from the IDA and international donors which was to decline later. In practice, however, regular budgetary funds have not always materialized, despite being in the "super-core" budget. The Road Fund, which is functionally a road maintenance fund is dedicated to road maintenance done by contractors' (with a minor exception) which ensures that it is not used for other purposes. Despite initial difficulties, the fund is regarded as highly successful by government agencies, maintenance contractors, and the general public who see the benefits from road maintenance. The budgetary uncertainties have been greatly reduced. Greater certainty, in turn, has enabled effective competitive bidding for maintenance contracts, lowering unit costs as well as boosting the construction industry in Ghana. In addition, reliable domestic funding has attracted international matching funds (Thomas Pankaj, World Bank).

Institutional Framework of Infrastructure Finance

On the institutional side, the key issue is the assignment of infrastructure provision responsibilities among different jurisdictions (Central, State, Municipal) which must be appropriately matched by the assignment of revenues since tax revenues, such as property,

vehicle and fuel taxes are most efficiently collected at the local or provincial levels, while road user charges are often most efficiently collected at the provincial or central level (e.g. national highways). It is necessary and desirable to have efficient and equitable revenue-sharing arrangements concurrently with optimal mobilization of local tax potential, in order to ensure that fiscal decentralization does not affect the equity or the criteria of maintenance of equal minimum levels of infrastructure services in the country. A major issue is in the allocation of inter-governmental loan funds and grants and the reconciliation of the "needs" of each jurisdiction with 'performance' criteria (e.g. ability to collect taxes and local funds).

The Role of Municipal Finance

Since a substantial segment of infrastructure like roads, waterworks, sewerage, waste disposal, urban development, and public transit, is within the jurisdiction of local and civic authorities, the role of municipal finance (taxes and borrowings) in construction and maintenance of infrastructure is critical. The principal and most elastic sources of municipal tax revenues are the urban property and automotive taxation.

Urban property taxes. The recurrent tax on real property (land, improvements, buildings) is a widely used source of municipal revenue in developing countries, whose contribution to tax revenues varies between 8 to 90 percent in major metropolitan cities (Dillinger, 1988, p. 3). It is cost effective because its base is geographically wide; and faces no direct competition with the tax bases of higher levels of government; and the benefits of the services it finances remains within the taxing jurisdiction. Given the trend toward urbanization, it offers an elastic source of revenue. But despite its merits on ground of economy, efficiency

and equity, its full potential has not been exploited, and real revenues have fallen, especially in some of the high-inflation economies, reflecting political and administrative difficulties, such as the scarcity of technical expertise in assessment and collection. Some countries like Brazil and Malaysia have set up a central valuation agency which has been found effective. More fundamental reforms have also been implemented in Brazil to maintain revenues which include periodic reviews of valuation based on readily observable property characteristics and the extension of tax liability to any person in beneficial occupation of property thereby relieving municipalities of any legal obligation to find legal ownership before imposing the tax.

Motor vehicle taxation. The ownership and use of motor vehicles "represents an excellent but much neglected tax base for urban governments in developing countries" (Bahl and Linn, p.191) in as much as the number of vehicles typically grows faster than the population in urban areas and the incidence of the tax is likely to fall on person with higher incomes. However, it should be treated as complementary to any higher-level government taxation of vehicles to recover approximately (through fuel, sales, and license taxes) the maintenance costs and some of the capital costs of roads and arguably to tax luxury cars at a higher rate as a technique of income redistribution. It can be supplemented by parking fees both as a source of revenue and as an instrument of congestion pricing.

Municipal borrowing. Few municipal authorities have the credit to issue bonds either domestic or foreign, and only exceptional municipal authorities (Jurong Town Corporation in Singapore and the greater Ankara Municipality in Turkey) have issued international bonds.

In practice, the requirements of municipal finance stretch beyond their tax and borrowing potential and have to be met by transfers from central and state authorities and recourse to

municipal funds and intermediaries. Specific purpose transfers from the central to the state and local authorities usually lack any objective criteria and transfers of grants are distributed in an ad hoc manner purely at the discretion of the Central Government like the "convenios" (negotiated transfers) in Brazil (Anwar Shah, 1991, p.71 and Table 2.3).

Municipal Funds, Intermediaries and Infrastructure Banks

An important source of infrastructure finance is Municipal Development Funds (MDFs) and Municipal Development Intermediaries (MDIs) (Kenneth Davey, 1988). Although there are several variants of MDF, MDI, and infrastructure banks, they are based on some common models and traditions as follows:

- (1) Revolving loan funds for local authorities, which are responsible to ministries of local government, are typical of Anglophone countries such as Kenya, Sri Lanka, Tanzania, Uganda, Zambia, and Zimbabwe. The funds operate at a layer of authority above that of the individual municipality for investment in urban infrastructure, through municipal subsidiaries.
- (2) "Windows" for grants and loans to municipal infrastructure ("Fonds d'Equipment Communal") operated by national "Caisse de Prets" managing state controlled pension, insurance, and savings funds. These are common in the Francophone states of North and West Africa.
- (3) Autonomous institutions (for example, banks, secretariats, and associations) for municipal finance (Instuto de Fomento Municipal or Instuto para Desarrollo Municipal) developed, often with USAID assistance, in several Latin American

countries—Bolivia, Colombia, Costa Rica, Guatemala, Paraguay, and Venezuela for example. These bodies are designed to supply technical assistance and training as well as loan finance. It has been common for them to design and build municipal water supply and sewerage systems directly, handing them over to municipal enterprises for operation and debt service. This may also be viewed as an interesting variant of the BOT technique at the local level.

- (4) Specialized infrastructure finance institutions which include development banks dedicated to infrastructure finance, such as BANOBRAS in Mexico. Although traditional development banks also combine infrastructure finance with their main industrial finance business BANOBRAS provides short term loans for public works against contractors' receivables as well as providing up to 25 percent of the full cost of a project finance start-up costs.
- (5) New types of infrastructure funds have also emerged as catalytic or transitional financing like the Private Sector Energy Development Fund in Pakistan and the Private Sector Energy Fund in Jamaica, and the Regional Development Account (RDA) in Indonesia, which is designed to shift financing of infrastructure projects from government grants to debt instruments. RDA lends at near-market rates for three to five years to demonstrate adequate financial capability to enable clients to borrow directly from the capital market or financial institutions. In India the new and innovative Infrastructure Leasing and Financial Services and the more traditional Housing and Urban Development Corporation aim to sell their loans

to other private financial institutions once project cost histories have been established.

Historically, few of these institutions and funds have shown a capacity for sustained investment on the scale needed because of under capitalization, poor financial discipline and substantial arrears. While they have added to the stock of urban infrastructure, they have done little to promote the capacity or commitment of municipalities to operate or expand it effectively or to recover costs. A noteworthy exception is Colombia's successful municipal credit institution, the *Financiera de Desarrollo Territorial (FINDETER)*, an autonomous agency under the Finance Ministry, which has been relatively insulated from political pressures. It is financed by market bonds, recycling of its credits, and foreign finance, bilateral and multilateral. It rediscounts commercial bank loans to municipal infrastructure projects. Between 1975 and 1990, more than 1300 projects with a value of more than \$1 billion, assisting 600 municipalities. Its success is attributable to the quality of its staff and that of the intermediaries through which it lends.

Another notably successful autonomous municipal finance agency is the *Jordan Cities and Villages Development Bank (CVDB)* established in 1979 which provides investment finance to municipal and village councils for infrastructure (excluding the greater Amman Municipality) on the basis of its financial and technical appraisal. The bank has played a key role in financing the spread of physical and social infrastructure in virtually all settlements as well as in maintaining and improving the quality of infrastructure investment through its appraisal and monitoring (WDR 1988, p. 164).

The judgement about what is an optimal distribution of municipal finance between taxes, loans and grants and between different types of infrastructure taxation, depends in the final analysis, on a combination of criteria including economic and administrative efficiency and equity, both horizontal (including regional balance) and vertical (between income and property groups) and the policy objectives of different layers of government. A suggestive model for efficient assignment of municipal revenue authority by type of infrastructure is set out in Chart 1.

Private Financing of Infrastructure

The conventional wisdom that only the public sector can supply and finance public services in developing countries is refuted by the not insignificant segments of private provision of public services in these countries, many of whom have a natural or spontaneous private sector in infrastructure which exists independently of the subsequent policy-induced privatized public sector (Gabriel Roth, 1987). Private financing needs to be fostered to reduce the burden on government finances as well as to encourage better risk sharing, accountability, monitoring and management in infrastructure provision. It has the same, or even more potent, effect as earmarking in insulating infrastructure from political or budgetary vicissitudes, an aspect often overlooked by even proponents of privatization.

The private provision and the concomitant financing of public services takes a variety of forms of which the basic prototypes are as follows:

Chart 1: Efficient Assignment of Municipal Revenue Authority By Type Of Infrastructure

Infrastructure Services	Local Taxes and Fees	User Charges	Transfers ¹	Borrowings
<i>Public Utilities</i>				
Water Supply	S	P		A
Sewerage	S	P		A
Drainage	P	P		A
Electricity		P		A
Telephones		P		A
Land Development		P		A
<i>Transportation</i>				
Highways and Streets	P	P		A
Public Transit	S	P		(A)
<i>General Urban Services</i>				
Refuse Collection	P			
Waste Disposal		P		

P = Primary Source

S = Secondary Source

A = borrowing is appropriate for major capital expenditures

(A) = borrowing is appropriate for capital spending, but likely to account for small share of total spending.

Development charges (e.g. special assessments, valorization charges, betterment levies) are appropriate for drainage, highways, and streets, especially when their benefits are geographically well defined within a jurisdiction. Upfront capital contributions from developers are also a subset.

¹ (from central government, shares of national taxes, like VAT and donors)

Source: This chart is a modified version of Table 3-2 in Bahl and Linn (1992, p.71).

1) Contracts from public agencies

Where one government agency is responsible for an entire sector, some activities are contracted out to private firms, e.g. road maintenance (Brazil, Costa Rica, India, Zaire) or laying of telephone lines (Lima, Peru).

2) Monopoly Franchises

Where a private company can be appointed by a public authority to provide services on a monopoly basis at specified standards and long-term tariffs (20-30 years) because of the longevity of the equipment (e.g. water supply in many West African countries). The franchised company also undertakes the necessary investment. Franchises are not too common but can be found in bus transport (Hong Kong, Nairobi); electricity (Barbados, Cayman Islands), Guayaquil (Ecuador), Manila; telecommunications (Dominican Republic). Franchising, however, is not necessarily monopolistic (e.g. competing taxi companies may be franchised in the same area).

3) Management Contracts

In this arrangement, the agency owns and retains responsibility for the service but arranges for private management (e.g. the Botswana telephone service managed by Cable and Wireless PLC).

4) Consumer Cooperatives

These are autonomous, voluntary organizations which distribute surpluses in proportion to the member's purchases and are well designed to function in monopoly situations (e.g. supply of village electricity) wherein consumers cannot benefit from competition among suppliers. Electrical cooperatives are widespread

in the Philippines but are also operative in several other countries such as Brazil, Chile, Costa Rica, Nicaragua, India, Indochina, and Bangladesh.

The experience of the Yemen Arab Republic shows that the private sector can supply the bulk of electricity (about two-thirds) even in one of the poorest countries with a difficult terrain. The progressive increase in private financing of electricity was largely due to village level initiatives financed by migrants' remittances from abroad, supplemented by assistance from the government and the Confederation of Yemeni Development Associations. Private infrastructure finance is proportionately greater in Latin America than in other regions and larger in telecommunications and electric power generation. But even with the rising share of private infrastructure finance, governments will continue to be an important source of infrastructure finance (WDR, 1994, Box 5.7).

The choice between the different modes of private financing would depend, given the political will, on the development of specialized infrastructure finance, growth of private entrepreneurship, strength of non-governmental organizations and, notably, the availability of contractor finance.

Contractor Finance: Its Critical Importance for Private Infrastructure Finance

The efficiency of management and similar contracts is an important determinant of the viability of private financing of the infrastructure especially in the construction sector for infrastructure (water supply, transport, irrigation, power, etc.) which accounts for between 3-8 percent of a developing country's GDP. The improvement of domestic construction capacity and

capability is crucial for the maintenance of basic infrastructure "and it is generally expensive, if not impossible, to bring foreign contractors back again for this type of work" which involves continuing new investment in scattered small works "usually unsuited for execution by foreign firms" (World Bank, 1984, p.3). Contractor's finance raises some special problems which reflecting the low capital base of firms, the uncertainty of cash flows, absence of bankable collateral, fluctuations in demand which together restrict access to commercial banks. Even the furnishing of bank performance bonds and guarantees by contractors is difficult because these further reduce the same collateral which the contractors use for funding. Typically, banks do not discount more than 60 percent of the value of payment certificates by government departments. The frequent delays in payments by public authorities which can be as high up to eight months (in Colombia prior to 1980) compound the inherently difficult financial position of contractors, who therefore are obliged to resort to high interest rate informal finance. The financing requirements of the construction industry can be partially met through local Development Finance Companies (DFC) who lend funds to contractors for highways and similar civil works (e.g. Ethiopia, Ghana and Pakistan). But the bulk of the basic finance will necessarily have to be provided through domestic sources such as special institutions for construction finance like the BANOBRAS of Mexico which, since its inception in 1933, has helped the Mexican industry "become one of the more developed in the world" (World Bank, 1984, p.77) by providing short-term loans to public works against contractors receivables from the government agency sponsoring the project. It also operates as part of its trust activities a special fund that can provide up to 25 percent of the full value of a project, which is used to finance the start-up costs of construction. But a special institution is justified only if the value

of business warrants it and if the concomitant technical and managerial capability is available as is proved by the experience of a similar institution in an African country set up to finance indigenous contractors which has failed to produce positive results due to inadequate funding, lack of entrepreneurial vocation and management ability. In such conditions, a more practical alternative would be to develop and improve existing commercial and a development banking channels rather than the creation of a new financial institution. In addition, government authorities can take remedial measures to ease the cash flow problems of contractors through more frequent advance and progress payments with specific provision for accruing interest at commercial rates for the overdue period. The latter provision can be justified only if it is generalized to cover all overdue payments from government to the private sector.

Joint Financing: Privatizing Management

The policy choices are not restricted to either public or private financing. If outright sales of infrastructure are not financially or politically feasible, significant gains can be realized by allowing state-owned enterprises to operate like a private firm by recourse to management contracts, leases or concessions.

In management contracts, the government pays a private company a fee for managing the enterprise. Such contracts are more common in hotels, airlines and agriculture, but are less frequent in the industrial and infrastructure sectors. Management contracts are flat fee for service arrangements, payable regardless of profits and consequently do not provide incentive for improving efficiency. The operating losses are borne by the owner (the state). The drawbacks of management contracts can be largely overcome by leases under which the private

party, which pays the government a fee to use the assets, assumes the commercial risk of operation and maintenance and thus offers greater incentives to reduce costs. Fees are usually linked to performance and profits. Management arrangements have been widely used in Africa for infrastructure e.g. water supply in Guinea and Côte d'Ivoire; electricity (Côte d'Ivoire); road transport (Niger), port management (Nigeria). In each case, the contracting firm was a joint foreign-local venture with the foreign partner bringing in essential expertise.

Under concessions, the builder is responsible for capital expenditures (unlike a lessee). Such concessions have been successfully employed in the privatization of railways and telecommunications in Argentina.

In the absence of any systematic analyses of the experience of private management contracts it is difficult to draw any definitive conclusions about the utility of such contracts. They usually do not bring about the increased investment that is a major accomplishment of changes in ownership and are, therefore, best regarded as a halfway house towards full privatization.

Lease Finance for Infrastructure

Another useful vehicle for partial private financing for infrastructure is lease finance. Leasing through specialized companies is fairly widespread in the developing countries and most of these companies have performed well (particularly in Korea and Malaysia) and in some countries (Thailand, Sri Lanka, Korea, Portugal, Pakistan, Brazil, Peru) IFC has effected partial or total divestitures which have generally yielded high rates of return. Most companies have

maintained balanced portfolios with transportation, construction, services and manufacturing sectors all well represented (IFC, 1988, p.17)

As leasing is closely linked to capital formation it has high potential in infrastructure finance. Commercial leasing of heavy equipment is very expensive and leasing is therefore an attractive option. Financial leasing is a useful channel for the acquisition of equipment, particularly for civil works contractors, in as much as large down payments are not required; monthly installments are tax deductible, and there is usually an option to purchase the equipment upon completion of the loan period (usually 3 to 4 years). Straight hire is usually applied for equipment which the contractor requires only for a short period. Hiring contracts can also take the form of a subcontract under which the supplier rents the equipment with the operator and provides fuel, lubricants and services. Even large foreign contractors use subcontracting to get started on large projects. Another channel for making equipment available to contractors is for the government department concerned to provide it on hire. A good example of this is in the State of Bihar (India) where the contractors pay the operators directly for all operating expenses and to carry out repairs through commercial firms (if the government fails to carry them out), while deducting the cost of repairs from the rentals due to the government. This system is particularly suitable in cases where large government equipment lies idle while, at the same time, contractors lack the capital needed to acquire equipment (World Bank, 1984).

The Informal Financing of Infrastructure

The foregoing analysis pertains to the provision of voluntary private finance of infrastructure through channels and institutions of formal finance, but there is also a not

inconsiderable actual and potential role for informal financing of infrastructure in the developing countries.

The so-called informal and semi-formal financial sector in developing countries has attracted considerable attention in recent years in the context of its role in financing the noncorporate private sector (Chandavarkar, 1987; World Bank, 1989, pp. 112-117) but its actual and potential role in the financing of infrastructure has been much less discussed partly because of a belief that the informal sector does not lend itself easily to finance public-spirited and collective activities. But, there is now growing evidence that informal local community associations in low-income countries have been able to successfully finance projects such as roads and sewerage and even schools and health care facilities with no support from any government agency by using systems of informal taxation (including taxation in kind in the form of labor contributions) as in the Orangi district of Karachi (Pakistan) and in Lima (Peru) (Bird, 1994, pp. 6-7). Such projects exemplify the potential for mobilizing local savings through "extra legal laws" (de Soto, 1989) to satisfy local demand for small-scale infrastructure projects that are not met by formal government institutions. In Lima (Peru) it is reported that informal suppliers provide 93 percent of urban mass transit facilities (Jenkins, 1988, p.20). But the full effectiveness of such projects, nevertheless, depends ultimately on the cooperation of the formal civic authorities as is well exemplified by the experience of the otherwise successful Orangi Project in Karachi whose "main problem has been the failure of the formal city government adequately to maintain the central sewerage system" (Bird, 1994, p.6). This, in fact, underscores the lesson that the efficacy of informal infrastructure finance and operations is conditional upon the appropriate support of the formal infrastructure. There is, therefore, a

strong complementarity between the informal and formal infrastructure sectors, and public policy should aim at strengthening the linkages between the two sectors. The informal sector cannot survive as an enclave. Moreover, user-financed infrastructure can operate successfully only in the formal sector. Insofar as development occurs primarily in the informal sector, as in squatter settlements, less formal mechanisms must be used to operate any beneficiary-related finance.

Conclusions: Toward a Polycentric and Pluralist Agenda

Any viable and realistic agenda for bridging the financing gap of needed infrastructure investment has to take due account of the fact that the bulk of infrastructure finance will have to be from domestic sources, public and private. But it is not merely the size of available funds but the regularity of their flows that is central to the maintenance of infrastructure. Infrastructure finance, however, will have to compete in a level playing field with other sectors. Any essential, but not open-ended, subsidies for maintaining universal minimum standards of service are best carried on the government budget subject to periodic review.

A viable program of financing need infrastructure investment has to be predicated on appropriate institutional reform to provide for an optimal division of resources and responsibilities between all layers of government, Central and State, and the local authorities and on specific mechanisms of insulating infrastructure finance from budgetary and other pressures through earmarking, privatization, and objective criteria for sharing of national taxes like VAT. A conspicuous lacuna in most developing countries is the absence of a national infrastructure agency, e.g. on the lines of Mexico's BANOBRAS. to fund and coordinate with appropriate technical assistance for infrastructure projects. Such a national agency would also function as

an apex institution for municipal finance intermediaries, whose creation and improvement should be accorded due priority by national authorities. The replicable experience of such intermediaries in Colombia and Jordan is particularly instructive. If the creation of a specialized agency is not regarded as feasible or desirable, the creation of special windows for infrastructure finance in national development banks should be considered as a viable option. Even such an agency will need to operate in the context of a National Indicative—but not dirigist—Plan for Infrastructure that can map out the prospective sources and uses of infrastructure finance by sector as in Japan. One of its prime responsibilities would be to determine the indispensable import-content (equipment, technical and managerial expertise) of infrastructure finance in order to avoid "excess borrowing".

Privatization of infrastructure too should also be viewed as an implicit earmarking mechanism for infrastructure finance but, equally, official regulation of public utility prices and rates of return has to afford adequate scope for generating retained earnings and thereby promote self-financing of infrastructure and to adjust for inflationary pressures as well as exchange rate movements.

A positive policy stance for infrastructure finance should comprehend maximization of (a) cost recovery through user charges and (b) tax potential, particularly at the municipal level since even the viability of loan finance depends in the final analysis on the efficiency of the tax effort. Thus, a pluralist agenda for infrastructure finance should comprehend institutional reforms as well as an optimal combination of user charges, taxes and loans at market rates of interest.

It would not be inappropriate to conclude that while infrastructure finance is important, it is not always the decisive constraint. Judging by the operating losses of even adequately funded infrastructure projects. It has been rightly said: "By and large, it seems to be the case that where enterprise leads finance follows" (Joan Robinson).

Note: Anand Chandavarkar was a consultant for the World Development Report 1994 and prepared a background paper on Infrastructure Finance: Issues, Institutions, and Policies, of which this paper is a revised and abridged version.

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