Public Enterprise Finance: Towards a Synthesis

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WP 1237-81 July 1981

Forthcoming in Jones, Mallon, Mason, Rosenstein-Rodan, and Vernon (eds.), Public Enterprise Finance in Less Developed Countries, Cambridge University Press.

I. Introduction

Public enterprise finance, broadly defined, encompasses mechanisms for raising funds, distributing profits, and absorbing losses. While these functions are shared with private finance, public enterprise finance typically differs in one important respect. When private firms raise capital on a commerical basis, they incur explicit obligations to repay specific amounts or shares of their profits in the future. These obligations reflect the opportunity cost of funds for claims of similar riskiness. Thus, in raising funds, they also specify the distribution of future profits and losses. In contrast, when public enterprises (PEs) raise funds, they often do so without incurring such explicit obligations. Even when PEs borrow from commerical sources, they often do so with governmental guarantees, implicit or otherwise. As a result, PEs incur explicit financing costs that do not reflect the private opportunity cost of funds employed in the enterprises, let alone their social opportunity costs.

In this paper we argue that the typical pattern of PE finance yields a distorted picture of the opportunity cost of funds employed and, hence, of the profitability and efficiency of public enterprises. While this should have no real effect in an idealized setting where all PE decisions are made in light of the full set of social costs and benefits - including the social opportunity cost of funds employed - we believe that in practice the way PEs are financed often contributes to inappropriate investment and operating decisions. In our view, the primary link between financing and a PE's strategic and operating decisions is the structure of management incentives. Although the social opportunity cost of funds employed in a PE depends on their use and not on how they are labeled, the explicit cost of these funds does depend on how the PE is financed. This explicit financial cost - reflecting the nature of the financial obligations incurred by the PE when it raises funds - is an important factor in its financial profitability and capacity to generate cash flows.

In many cases, PEs are judged at least in part on the basis of their financial profitability. Even when they are not, their ability to generate and control cash flows will be an important determinant of enterprise autonomy and, hence, of the power and prestige of the managers.

This paper is organized into five sections. In Section II, we consider the impact both of investment risk and the pattern of financing on the social opportunity cost of funds employed by PEs, and their implications for pricing of capital in PE decision-making. In Section III, we examine existing patterns of PE finance in order to infer how capital is explicitly or implicitly priced in practice. In Section IV, we discuss the likely impact of divergence between the social opportunity cost of funds and their apparent cost on decision-making in PEs, via effects on management incentives. Finally, in Section V, we provide suggestions for future research on PE financing.

II. The Social Opportunity Cost of PE Capital

From the perspective of mainstream social cost-benefit analysis, the way PEs are financed by the state should be irrelevant, since all advances from the state are viewed as coming from a single pool of social resources with a single opportunity cost, and all taxes, interest payments, dividends, and reinvested profits are considered to be returns to the state and, hence, economically indistinguishable. Although this view is correct in some tautological sense, it is potentially misleading for two reasons. First, it ignores the fact that public enterprises are decentralized social organizations whose managers have limited information and do not necessarily seek to optimize overall social goals, even in the rare cases where these are clearly articulated by the government. To the extent that funds provided to PEs are not "priced" at their social opportunity costs, PEs are likely to make inappropriate real decisions. Second, there is no single social opportunity cost of capital. Rather,

there is a schedule of opportunity costs of funds, depending on the social risk of the activities in which they are employed. While the social opportunity cost of funds utilized in a PE is independent of the way it is financed, unless foreign financed is employed, the fact that this cost varies across uses increases the likelihood that the explicit pricing of finance may not provide appropriate signals to PE managers regarding the use of social resources, and may therefore lead to particular biases in decision-making.

In this section, following a brief discussion of the concept of the social opportunity cost of capital (SOCK) we describe the implications of investment risk, financial structure, and foreign financing for this cost.

The Concept: The social opportunity cost of capital reflects the total rate of return foregone by society when funds are drawn from capital markets and applied to a particular project. In one widely used formulation of this concept introduced by Harberger (1976), this cost is, in a closed economy, equal to the required rate of return in the capital market plus a figure reflecting net foregone tax revenues from investments displaced and savings induced by the increase in this required return resulting from the additional demand for capital. In a partially open economy, a fraction of the additional funds raised are drawn from displaced investment, but to the extent that the country faced an upward sloping supply schedule of foreign capital because of the cost of investment and compliance associated with cross-border financing, the social opportunity cost becomes a weighted average of the domestic market rate adjusted for displaced taxes and the marginal cost of foreign borrowing.

An important implication of this definition of the discount rate is as follows: consider a project that has an after-tax private net present value (NPV) of zero and also pays average taxes per unit of capital employed, as well as making a contribution to the country's access to foreign financing. Such a project will have a

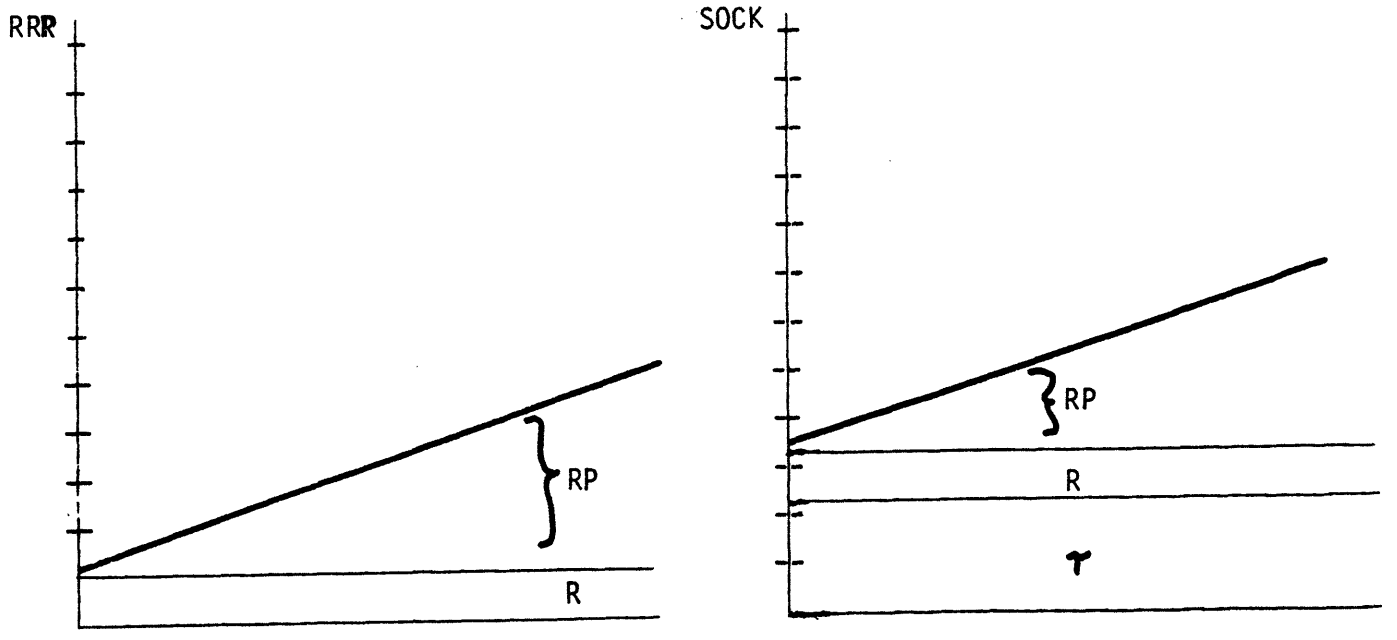
social NPV, including tax payments, of zero if it creates no other net externalities. Thus, it is appropriate only for a PE that pays normal taxes per unit of capital employed, to judge new ventures by discounting the net-of-tax cash flows at the appropriate private market rate or gross-of-tax flows at the appropriate social rate.

Risk and the Social Opportunity Cost of Capital. In the social cost-benefit literature, the SOCK is typically characterized as a single rate for an entire economy. However, it is now generally accepted that the return in the private market is dependent on the risk of the activity being financed. There are compelling reasons for believing the same is true for the social rate. The rationale for a schedule of opportunity costs that depends on risk is that individuals (and society, as their collective agent) are risk averse and, consequently, demand a premium in the form of a higher expected return for bearing risk. However, since they can diversify their claims against risky ventures, in equilibrium only those risks which cannot be averaged out in the total market or social portfolio will command a premium. The resulting relationship between systematic risk and expected rate of return required by private investors is shown in figure Ia below.[1] As noted above, the social opportunity cost exceeds the private opportunity rate by an adjustment for financial externalities, and it is likely that this adjustment increases with the risk of the activity.[2] The resulting schedule of social opportunity costs of capital is depicted in Figure Ib. This schedule applies to specific projects undertaken by a PE rather than to the PE as a whole. In other words, a public enterprise has no cost of capital, only its individual undertakings have a cost of capital.

The view that the social opportunity cost of capital for a PE (or for a specific undertaking of a PE) may include risk premium deserves some comment, as it is contrary to much of received wis[3] If risks facing PE investment are fully

Figure 1

Schedule of Private and Social Discount Rates as Functions of Risk



Private Discount Rate

(a)

Social Discount Rate

(b)

Source: Baldwin, Lessard, and Mason [1981]

where RRR = private market required rate of return

RP = risk premium

R = interest rate on riskless debt

SOCK = social opportunity cost of capital

τ = tax adjustment reflecting proportion of funds drawn from domestic investment and tax proceeds from "normal" domestic investment

diversifiable within the economy, no risk premium should be charged. However, for many LDCs, PE investment involves significant nondiversifiable risk. That is, the impact of a particular PE investment on the variability of national income cannot be totally offset by counteracting risks of other activities in the country. If this is the case, capital market theory holds that on such investments a risk premium should be charged in addition to the basic interest rate.

This risk premium will be small only if, as in some LDCs, the sector of the economy facing the same risks as those facing the PE is small, and if the risks to which it is exposed are not common to significant sectors of the economy, a situation not common for LDCs. Where large-scale PEs dominate a sector such as manufacturing, mining, or agriculture, particularly when these are export-oriented, operate on a world scale and comprise a large proportion of domestic output, the risk is largely systematic,[4] and hence, a PE investment should be charged a risk premium if finance is to give correct signals.[5]

While there are no direct measures of the appropriate risk premia for PEs in developing countries, empirical evidence for the United States suggests that the risk premium for the typical industrial investment is on the order of 6 to 7% year, much larger than the 1 to 2% ex post real rate of interest, (Ibbotson and Sinquefield 1979). Risk premia for PEs in developing countries from the parent state's perspective are likely to be higher than for investment in the U.S., especially in strategic sectors, because of limited local diversification potential (Agmon and Lessard 1979). In the case of copper mining, for example, Lessard (1977) found that within the major producing countries' economies, a much smaller fraction of the risk associated with copper production was diversifiable than within the world economy.

Financial Structure and the Cost of Capital: As long as all financial claims against the PE are held by the state, the

opportunity cost of funds employed in the PE is independent of whether they are labeled as debt, equity, or subsidy capital (See Section III). Regardless of the division of future cash flows into interest, dividends, taxes, etc., the expected value and variance of the composite will be unaffected. This implies that if a risk-less component of the future uncertain return is valued as debt, the remaining component will be riskier than the whole and will command a proportionately higher risk premium.[6] However, if third parties, and, in particular, foreign lenders or investors, hold some claims and if these claims bear proportionately more or less risk than those of the state, the discount rate that the state as PE owner should use for evaluating its share will differ from that appropriate to the profit as a whole. For example, if foreign financing takes the form of credit -- a fixed payoff regardless of the enterprises' profits -- the state holds levered equity with enhanced risk and, hence, requires a larger risk premium. Conversely, if the state preempts a fixed return and grants a residual share to foreign investors, the risk premium applicable to the state's share will be less than that applicable to the project as a whole.

Foreign Financing and the Cost of Capital: In addition to its impact on the relative riskiness of the state's financial claims on a PE, foreign financing for a PE also raises the question of whether it displaces other foreign financial flows. One reason for this is that external perceptions of political risk might depend on the total outstanding financial claims against a country relative to some measure of national wealth i.e., so called "country-risk". (Harberger, 1976) As a result, the cost of foreign funds and hence the social opportunity cost of capital will be an increasing function of the ratio of foreign obligations to a nation's capacity to meet these obligations.

As long as s PE's foreign borrowing does not exceed its contribution to the country's "debt capacity"[7] it is appropriate to discount the country's share of net

foreign cash flows at a rate reflecting the riskiness of its share of the proceeds using the analysis outlined above. However, if the PE's foreign borrowing exceeds its contributions to the country's access to foreign funds, and thus increases the cost of foreign borrowing, additional adjustments must be made to reflect the returns (including taxes) foregone from projects displaced by the resulting higher social discount rates. Since it may be difficult to determine the project's impact on a country's access to external finances, it is generally preferable to value the project in terms of its total cash flows.

A further point of interest, beyond the scope of this paper, is that the risk premium appropriate to a given enterprise or venture may be lower for foreign investors than for the capital-importing country, even after country risk is taken into account. This will be true whenever the risks involved are more diversifiable in a broader capital market context than within the local economy.

III. Patterns of Public Enterprise Finance

In this section, we briefly characterize existing patterns of PE finance. Our primary interest is in determining the "pricing" of capital implicit in the terms on which it is provided to the PE. Finance can be broken down into broad types depending on the type of repayment obligation involved:

(1) Credit, where the expected cost (return to the lender) is equal to the promised interest rate less the anticipated default losses,

(2) Risk capital, where the expected cost (return to the investor) is a specified share of future expected profits, and

(3) Subsidy capital, where no future financial obligation is incurred. To the extent that the expected cost of credit or risk capital is less than the market rate, the resulting finance is actually a combination of one of these forms of commercial financing and subsidy capital.

Although PEs vary substantially across countries, and even within countries, we believe that certain generalizations are possible. The generalizations reported below are drawn both from our experience in several countries (Bolivia, Brazil, Colombia, Ghana, Indonesia, Malaysia and Sri Lanka) and from secondary sources. While some of our observations may be disputed, they represent out best effort to summarize the scanty evidence on this topic. We hope they will be received in that same spirit.

The discussion is organized around three headings: (1) sources of finance, (2) rules for distributing surpluses and (3) rules for absorbing losses.

SOURCES OF FINANCE: Sources of public enterprise finance may be grouped into five major categoires, including (a) private foreign finance (external borrowing); (b) local private finance from banks; (c) direct government finance, in the form of equity, credit, or subsidy capital; (d) reinvested cash flows from operations; and (e) indirect transfers from the government, either via tax concessions, taxes earmarked for state-owned enterprises, or subsidization of prices of factor inputs.

External Borrowing: There is growing concern over the international indebtedness of developing country PEs. This concern is well placed. Flows of external commerical debt contracted by PEs from LDCs rose by nearly 350% in the period 1975-1978. Growth in PE external borrowing was particularly marked in the Eurocurrency market, where new loan commitments to LDC state-owned firms reached $12.2 billion in 1978. This amounted to nearly one-third of total LDC commerical borrowings for all purposes for that year, and fully 12% of international borrowing of all types by all debtors, including firms and governments from industrial countries.[8] The expanded flows of international debt capital to PEs has been one of the prime factors in the buildup of large, and potentially troublesome, stocks of external debt in such countries as Brazil, Peru, Zaire, and Zambia through 1979, and Indonesia

from 1972-1976.

The overwhelming majority of foreign loans to PEs carry explicit or implicit guarantees from PE owners: LDC governments. Because of these guarantees, PE debt tends to be treated as sovereign debt, backed by the full faith and credit of the issuing country. Consequently, the explicit cost of this finance reflects the risk to the nation as a whole, and not the risk to the enterprise.

Domestic Borrowing: Nonfinancial PEs often enjoy preferential access to domestic sources of credit as well, not only because of the presence of governmental guarantees normally unavailable (except in Korea) to private firms, but because in many countries a substantial share of institutions in the financial system are also state-owned (Indonesia, Mexico, Pakistan, Bolivia) and susceptible to governmental blandishments to extend credit to its own progeny. Because financial controls, primarily in the form of interest rate ceilings, are pervasive in most LDCs, preferential access to domestic credit is often tantamount to concessional credit.

Owing to both influences noted above, PEs are typically highly levered relative to comparable private firms. The degree of leverage often exceeds the commercial debt capacity of the enterprises. For private enterprises, the operational consequences of high leverage are well known. Except where lending institutions enjoy extraordinarily close relationships with borrowing enterprises, as in Japan and, to some extent, Korea (where debt-equity ratios of 5:1 and higher are not uncommon) high leverage materially increases a firm's vulnerability to fluctuations in business conditions, and therefore involves greater risk of bankruptcy. High leverage in PEs also matters, but given the reluctance of parent governments to allow PEs to go out of business, bankruptcy risks are not the reason. Rather, as we point out in Section IV, high leverage becomes a significant problem for PEs because of its implications both for incentives facing managers and for the disposition of enterprise surpluses.

Direct Government Finance: PEs commonly receive direct subventions from the public treasury. These subventions take a variety of forms, including injections of true risk capital (equity), direct loans from the budget, subventions labeled as equity participation (but which in actuality represent write-offs of direct loans or government assumption of enterprise debt with third parties), explicit or implicit operating subsidies, and other, less obvious methods of transfer.

In most LDCs with large PE sectors, governments have displayed considerable reluctance to furnish their progeny with true risk capital, where the expected repayment is sufficient to compensate for the risk involved of the type discussed earlier in this section. This reluctance is due to a variety of factors, but four in particular seem to stand out from experience across countries.

First, there is a pervasive tendency in LDCs, to equate finance with credit, and to assume that any project that is worthwhile can be financed with credit. Second, governments that must continually cope with fiscal "tightness" in the form of shortfalls of tax collections relative to expenditures (a category that includes most LDCs save major oil exporters) often find it easier, both politically and procedurally, to channel direct loans rather than equity finance to PEs, since equity injections are ordinarily classed as government expenditure, while direct loans often escape this label, wholly or partially. Third, government agencies seeking to maintain control over enterprise activities often prefer loans over equity transfers as a way of keeping firms more closely beholden to the granting agency, since loans carry explicit repayment obligations.

Finally, the nature of many multilateral foreign aid programs predisposes governments to emphasize direct loans over equity transfers to PEs. Since 1967, much of multilateral project aid (as from, for example, the World Bank) has been channeled to activities undertaken by PEs. This has been particularly true for Colombia, Indonesia, Bolivia, and Bangladesh (Gillis, 1981). Under such aid programs, the

donor extends the loans to the parent government, which then transfers the funds to PEs in the form of credit which bears specific terms as to interest rate and repayment period. In some cases, as in Indonesia and Bolivian railways, Indonesian agricultural estates and fertilizer enterprises, and Colombian development finance institutions, government loans of this type have in some periods accounted for the majority of PE debt obligations.

Preferences and pressures for loan finance notwithstanding, government equity participation in PEs has not been unimportant in all countries. Indeed, this method of finance has become increasingly more common in major oil exporting LDCs since 1973, when rapidly rising export earnings from crude oil began to ease fiscal tightness for this group of countries. Venezuela and Indonesia are perhaps the two best examples of this genre; in Indonesia government capital participation in PEs has averaged about 10% of total annual government non-recurrent ("development") expenditures since 1974. Even in Brazil, not an oil exporting country, direct participation by government accounted for about one-fifth of external financing of PEs in 1974-1975 (Trebat, 1980).

However, not all of what is recorded as government capital participation in PEs represents bona fide transfers of equity. Rather, much of what is labeled "equity" in PEs represents, in many countries, little more than government assumption of PE debt (whether direct loans from government or from domestic and foreign financial institutions) that the enterprises were either unwilling or unable to service,(or government assumption of other liabilities of enterprises) and does not carry with it an explicit rate of return or dividend target. Examples of the former include shipping enterprises in Indonesia, a number of manufacturing enterprises in Ghana, Turkey and Malaysia and state mineral enterprises in Bolivia. Examples of the latter include state-owned financial institutions in Indonesia, Bolivia and Colombia.

While governments may prefer debt to equity finance for PEs, the opposite is normally true for PE managers, who tend to view equity as having no cost to the firm. This perception is reinforced by the failure of governments to "price" equity, either in the form of shadow prices communicated to PE managers, or in the form of specific dividend obligations (see below).

Reinvested Cash Flows from Operations: This source of finance has at times been significant in several countries, including Korea from 1961-1972 (Jones, 1975); Brazil in 1966-1975 (Trebat, 1980); Uruguay in 1975-1976, India in 1970-1972, Taiwan from 1960-1974, and Sri Lanka (Gillis, 1981). In all of these countries, the PE sector generated more than 10% of total national savings in the periods cited. Reliance on reinvested cash flows has perhaps been most striking in Brazil. Over the period 1966-1975, a group of 40-odd of the largest PEs surveyed by Trebat were able to internally finance from 40 to 60 percent of their gross investment, a share of internal finance that just about matches that for private Brazilian firms (Trebat, 1980). The share of internal finance in Korean PEs, while relatively high when compared with most LDCs, was apparently much lower than in Brazil. Jones reports that over the period 1961-1972, the PE sector generated slightly more than 10% of national savings, while absorbing something like 30% of investment. (Jones, 1975).

The experience of Brazil and, to a lesser extent, Korea, contrasts sharply with that of PE sectors elsewhere. In some instances, public enterprises have not only been unable to internally generate funds for self-finance, but have persistently run deficits that had to be financed from the national treasury. At times one or two enterprises alone have accumulated losses and external debt obligations of such a size as to severely hamstring developmental efforts in general, as, for example, the state-owned minerals enterprise in Bolivia (COMIBOL) from 1957-1972; the state oil enterprise in Indonesia (PERTAMINA) from 1972-1976, and state mining enterprises

in both Zaire and Zambia from 1974 through 1978. In many countries, such as Argentina, Egypt, Guyana, and Panama, the net savings of the consolidated public enterprise sector from 1970-1973 was typically negative. In several others, enterprise self-finance has been minimal, and state enterprises as a group have contributed only marginally to national savings efforts. In the early seventies, these countries included Bangladesh, Thailand, Bolivia, Chile, and Uruguay, (all with large PE sectors) and Somalia, Jamaica, and Colombia (all with relatively small PE sectors). In all of these nations, the savings of PEs accounted for less than 5% of total investment finance over the period 1970-1973 (Gillis, 1981).

Indirect Transfers from Governments: These sources of PE finance assume a variety of forms ranging from tax concessions through assignment of earmarked taxes to PEs, and loan guarantees.

Tax concessions to PEs clearly are a form of concessional transfer of public resources, and are of two basic types: full or partial exemption of PEs from generally applicable taxes, as in Algeria, Iran, Bolivia and El Salvador (Floyd, 1978) or governmental cancellation or "forgiving" of delinquent taxes due from taxable enterprises, as in Bolivian minerals enterprises[9] (Gillis et al., 1978) and the Indonesian state petroleum enterprise in 1975-1976.

Channeling of earmarked government taxes to PEs is fairly common, and has been particularly important in Colombia, Ghana, and Brazil. In the latter country, earmarked taxes accounted for fully 12% of PE investment finance in 1974-1975 (Trebat, 1980).

RULES FOR EXTRACTING AND DISTRIBUTING PROFITS: In developed countries, managers of widely-held private sector firms face conflicting incentives both for under-reporting and for full reporting of pre-tax profits. The presence of income taxes provides the incentive to under-report or conceal profits; the need to tap capital in equity

markets provides an incentive to show substantial profits, or prospects for same. Capital markets are considerably less well developed in LDCs; many large private firms are closely held. Thus, while private firms still face the same incentive to conceal profits as in developed countries (income taxes) the incentive for full disclosure is far weaker.

PEs may understate profits as well, not only to minimize income tax obligations (where PEs are in fact taxable) but because of managerial efforts to insure enterprise growth and independence. This can be done by disguising profits as expenses incurred for enterprise performance of social or "equity" functions prescribed by government (or, as is sometimes the case, chosen unilaterally by the enterprise), thereby retaining more funds within the enterprise and enhancing enterprise autonomy. That is to say, quite apart from any tendency of PEs to generate low (or negative) profits, owing either to poor cost control or to imposition by parent governments of multiple social objectives or requirements to sell output at less than full costs, public enterprises may also understate actual profits to much the same degree as their counterparts in the private sector.

Given a certain amount of reported profits per period, two legitimate instruments are available for extracting profits from the PE and distributing them to claimants. The first is much less commonly employed than the second.

Dividend Pay-Out: Dividend payments from PEs to the parent government are uncommon in LDCs. This is partly due to an absence, in many countries, of any well-defined policy on this score. A few countries, notably Indonesia, Pakistan and, since 1977, Sri Lanka have adopted formal policies toward the obligations of PEs to transfer a portion of after-tax income to the shareholder in the form of dividends. In both of the first two countries, dividend payments by PEs have for some enterprises in some years rivaled in size income tax payments by the firms. But in general,

government policies toward dividends from PEs are vague and informal, where they exist at all, and determination of government's share of after-tax surpluses typically involves delicate and protracted negotiations between the parent and the PE, on an ad hoc basis that shifts from year to year.

Many governments have viewed dividend policy toward PEs as immaterial in any case, since recorded profits of large portions of their PE sectors have been insignificant in any case. In some cases, PEs are so highly levered that large cash outflows are required to repay principal of their loans, so that sufficient cash to pay dividends is less likely to be available in PEs than in their private sector counterparts.

Taxation: Many LDCs, unlike the United States, do (nominally at least) subject PEs to much the same taxes (especially income taxes) as applicable to private firms. Examples include Colombia (since 1974), India, Pakistan, Indonesia, Tanzania, Philippines, and Syria. But a larger group of countries exempt, fully or partially, PEs from virtually all taxes, especially income taxes.[10] Among countries where PEs are wholly or largely exempt from income taxes are Brazil, Bolivia, El Salvador, Iran, and Colombia before 1974 (Floyd, 1978).

Thus, practice on taxation of PEs varies substantially. In general, however, public enterprises in LDCs pay considerably lower taxes than do comparable private firms. While in a few cases (as noted above) this is due to explicit tax exemptions for PEs as a group, in many other cases PEs are nominally subject to all taxes, but are de facto exempt, owing to accommodations between PE managers and tax administrators. For example, even though Colombian PEs have been nominally subject to income taxes since 1974, virtually no income taxes had been paid by such firms through 1980. Even when taxed, PEs often face lower effective tax rates than private firms because of the high proportion of thier investment financed by debt, since interest payments are almost everywhere allowed as a tax deduction.

RULES FOR ABSORBING LOSSES: High leverage in PEs increases the prospect that cash flows of the firm will fall short of meeting operating and investment requirements. As a result, the sponsoring government often must intervene in the form of providing additional funds either through direct subsidies, rolling-over of debt, guaranteeing additional external debt, or related methods. Such bail-outs are typically ad hoc in nature, with governments assuming PE bank debt, or conversion of these claim to PE "equity". In many cases, this recapitalization of PEs does not result in an exchange of future financial obligations for the current ones, but merely "wipes the slate clean".

In summary, we can caricature the above financial linkages, rules for the distribution of profits, and rules for covering losses as follows: public enterprises have access to many sources of finance for which explicit costs are artificially low relative to their social costs. After the fact, if operations result in substantial surpluses the public enterprise is often able to retain control over virtually all of these flows. In contrast, if the "profits" of the public enterprise are insufficient to meet the formal commitments associated with the initial financing terms, the government, in one fashion or another, will typically assume its liabilities. Of course, in this latter case, the government may intervene in the enterprise and penalize its managers, possibly even by dismissing them, as in several cases in Indonesian oil and banking PEs. However, even this link may be broken if the PE can gain access to additional financing by arguing that the losses were due to factors beyond its control, and that it has met its mission in supplying or in meeting the multiple social objectives thrust upon it.

IV. IMPACT OF FINANCING PATTERNS OF PE DECISIONS

Behavioral Assumptions.

There is no generally accepted theory of how PE managers react to changes in the variables which can be altered by the financial structure of

the organization. However, the pattern and outcomes of the financial linkages described above suggest that they both influence and are influenced by managerial motives within PEs. This possibility has seldom been recognized in the economic literature dealing with the evaluation of public sector projects.

When differences between the information and objective sets of managers and the state are taken into account, the role of finance in PE decisionmaking becomes much more like the role of finance in private enterprises. In the case of private enterprises, financial structure matters primarily because it affects enterprise vulnerability to bankruptcy and because it alters the distribution of profits going to shareholders (and other private financial claimants) and to the government through taxes. In the case of PEs, financial structure, and the return required by the state on different types of financing that it extends to the PE will alter the distribution between the surpluses returned directly to the state and those controlled by the PE and hence relevant to the PE manager.

Two views of PE managers which are examined here might be characterized as a) the broadly rational maximizer of net social benefits and b) the narrowly rational seeker of autonomy and stability.

The Maximizer of Net Social Benefits: Implicit in most economic literature on social cost-benefit analysis (CBA) as applied to PEs are two assumptions. First, that PE managers have perfect information and secondly, that they are motivated solely by a desire to maximize some clearly defined measure of social welfare. If PE managers were really omniscient social maximizers, then as asserted earlier, the way PEs are financed and the way their performance is evaluated would have little impact on their decisions regarding resource allocation, output and pricing, and reinvestment or distribution of operating profits. Rules for investment and operating decisions derived in a neoclassical framework involving future, uncertain

costs or benefits would apply, assuming, of course, that social costs and benefits were properly valued and included in the relevant cash flows. These rules, however, would be invariant with respect to the nature of the state's financial claims against the PE. It would not matter whether these claims were in the form of debt, equity, value-added taxes, or income taxes -- since the broadly rational manager will take all these returns into account.

There are many reasons for believing that managers, whether public or private, operate with much less than full information, and pursue objectives that do not correspond precisely to those of the state. The "behavioral theory of the firm" as developed by Simon (1957), Cyert and March (1963), March (1978), and others suggests that the organizational decisionmaking is "narrowly rational", as characterized by localized and incomplete search, bounded rationality, a reliance on long-term memory, strong influence of tastes, imitation, acceptance of ambiguity, and "satisficing" with respect to organizational objectives. If this is true for private managers, it may be even more applicable for PE managers since, as noted by Aharoni (1979) and others, the state's objectives are usually less well articulated than is the case in private undertakings. The state's objectives as communicated to PE management tend to be a complex, confusing, changing set of often contradictory goals representing the view of various interested parties, including the PE managers themselves, as well as their suppliers, buyers, employees and other constituencies.

The Seeker of Autonomy and Stability: Some analysts, Aharoni (1979, 1980), Maniatis (1968) have outlined an alternative rival objective function, one in which a major goal of the PE manager is that of maintaining independence vis-a-vis the government in order to assure continuity and stability of both employment and public service programs (cf. Bolivia, Colombia, Indonesia, Ghana, most of Europe, Sri Lanka). That is, managers seek to avoid the need to appeal to the government for handouts

or for new equity to cover losses or new investments, as this invites unwanted and often troublesome scrutiny or intervention. The impact of alternative financing arrangements on enterprise autonomy, independence, and stability will therefore be of central concern to PE managers.

In financial terms, this desire for autonomy implies that managers will strongly seek to maintain positive cash flows. It may also lead such managers to accept more risks than the broadly rational maximizer of social benefits, as acceptance of more risks may increase the likelihood of sustained organization growth and autonomy. This notion stands in sharp contrast to a view of public enterprise finance that might arise from purely economic considerations assuming idealized information and coordination within the public sector.

We note various implications of assuming that PE managers are narrowly rational below.

Implications for PE Management.

Capital Intensity: To the extent that the explicit cost of funds is understated relative to their social opportunity costs or treated as zero, narrowly rational PE managers will tend to overinvest in capital in order to reduce recurring expenditures that will have to be covered by future operating revenues or government appropriations (Jenkins 1980). This effect will be exaggerated when PE's access to credit is conditional on the purchase of (foreign-sourced) capital goods, as in tied foreign aid or suppliers credits. It also will be exaggerated if PEs are exempted from import restrictions and customs duties (as in Mexico, Colombia before 1974 and in state oil firms in Indonesia and Bolviia), especially if these measures support an overvalued exchange rate. While it is difficult to measure the relative cost of capital goods, even in the face of a substantial labor surplus, a variety of studies have found that PEs tend to adopt far more capital intensi processes than their private sector counterparts, quite apart m the

fact that PEs tend in any case to be concentrated in capital intensive sectors. Many of these studies of pre-1978 vintage are summarized in Gillis (1981). Other, more recent, evidence adds further weight to the evidence. For Indonesia, one 1979 study for IBRD indicates that PEs in the industrial sector had very low rates of labor use compared with both agricultural activities and private sector industry. Trebat (1980) finds that partly as a result of their privileged access to capital, capital intensity increased markedly in major Brazilian PEs, over the period 1966-1975, as the average capital output ratio for these firms rose from about 2.8 to 5.0, versus a gross capital output ratio for the economy as a whole of less than 1.5 in 1968-1973 (Gillis, Perkins, Roemer and Snodgrass, forthcoming 1981).

Public Enterprise Financing and Risk-Taking: PEs are often created explicitly to take on risky ventures for which the private sector has neither the appetite nor the capacity. Nevertheless, many observers of PEs note that PE managers are more risk-averse than their private counterparts. However, it is difficult to generalize on this point since there are also cases in which PE managers appear to be relatively risk prone (Pertamina in Indonesia prior to 1976, Malaysian International Shipping prior to 1978, Petro Canada). In fact, any general statement regarding the risk aversion of PE decisionmakers is likely to be misleading. A more appropriate statement is that, because of the pattern of PE finance and control, PE managers' responses to risk differ from those of private managers facing similar objective circumstances. As has also been pointed out by Adar and Aharoni (1980), public and private enterprise managers may have identical attitudes toward risk as individuals, but they are likely to respond differently to the same type of risky situation because the structure of incentives they face.

In PEs subject to close bureaucratic control where losses or errors regardless of size are given great weight and where little or no direct credit or organizational autonomy is obtained by economic success, PE managers will tend to avoid risks

at virtually any cost. For example, public enterprise managers of COMIBOL in Bolivia and many of Sri Lanka's nationalized sectors appear to have been placed in this type of operating environment. Also, most of the Canadian public electric utilities would also fall within this category.

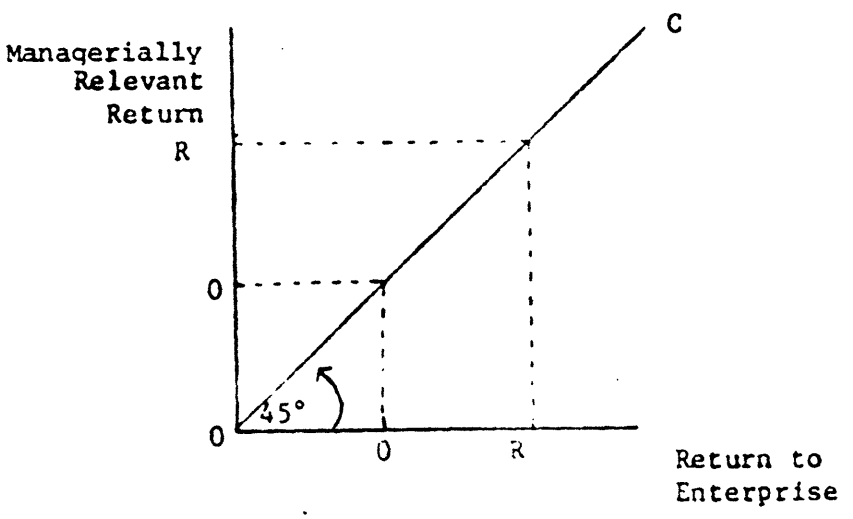
In contrast, in more entrepreneurial PEs, managers may perceive relatively few penalties for economic losses as long as they continue to satisfy politically important constituencies by providing desired services and, perhaps more importantly, these penalties may not increase proportionately with the magnitude of the loss. These same managers may perceive substantial benefits from economic success, since it will increase organizational autonomy, enhance the changes of satisfying politically relevant constituencies, as well as provide the psychological and material rewards of a growing empire. The near catastrophic recent history of Pertamina in Indonesia, the state economic development corporations in Malaysia, and the present development of Petrocan in Canada illustrate this type of behavior.

For any business organization there is some explicit or implicit mechanism whereby the returns to the enterprise are transformed into returns which are relevant for determining managerial rewards or punishments. In Figure 2 we illustrate the case of an owner managed enterprise activity where the relevant return for the management's success or failure rating is identical to that of the firm. Therefore, given a return of R for the firm, the managerially relevant return (not necessarily

his own personal income) is also R. In this case the entire set of returns to the enterprise, when transformed into the returns relevant for managers, falls along the 45 degree line OC.

Figure 2

Private (Owner-Managed) Enterprise

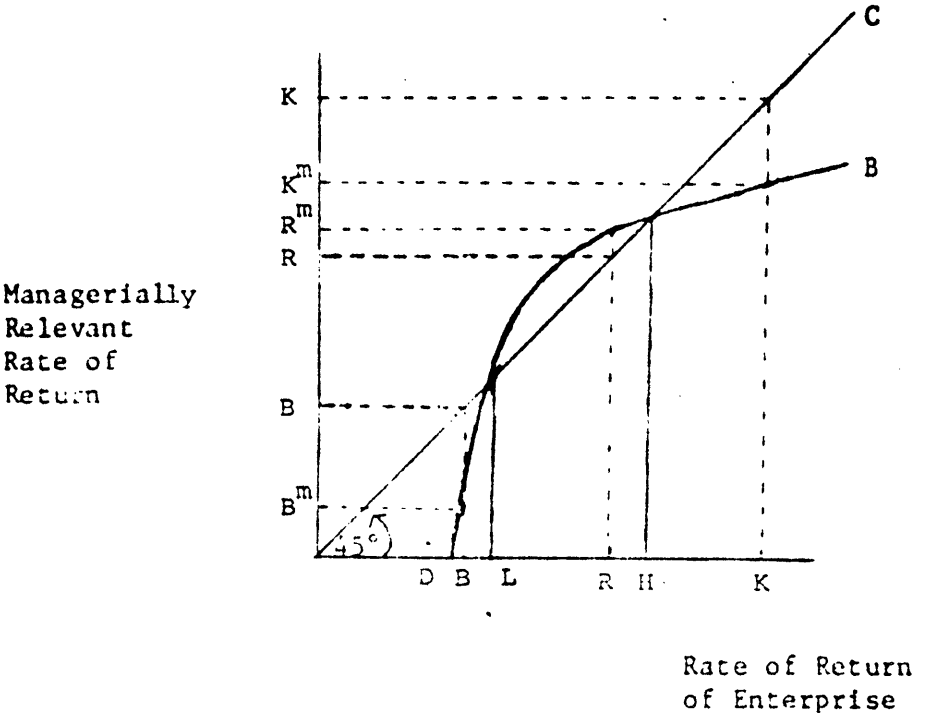


An alternative is shown in Figure 3, which we submit is illustrative of some PE situations. Here managers suffer relatively high costs when the enterprise generates a low return (below L), receives an above normal return when the enterprise's returns are normal (L to H), and only has his return increased modestly when the enterprise's returns are high (above H). This mapping of the enterprise returns into managerially relevant returns is shown by the curve DB. These managerially relevant returns need not comprise only the manager's salary or other personal financial returns. They will include all the returns which the managers

view as yielding positive benefits to them. These include financial gains, working environment, status, future job security, and power. However, these managerial relevant returns are likely to be a complex function of the resources which remain in the command of the enterprise.

Figure 3

Bureaucratic Public Enterprise



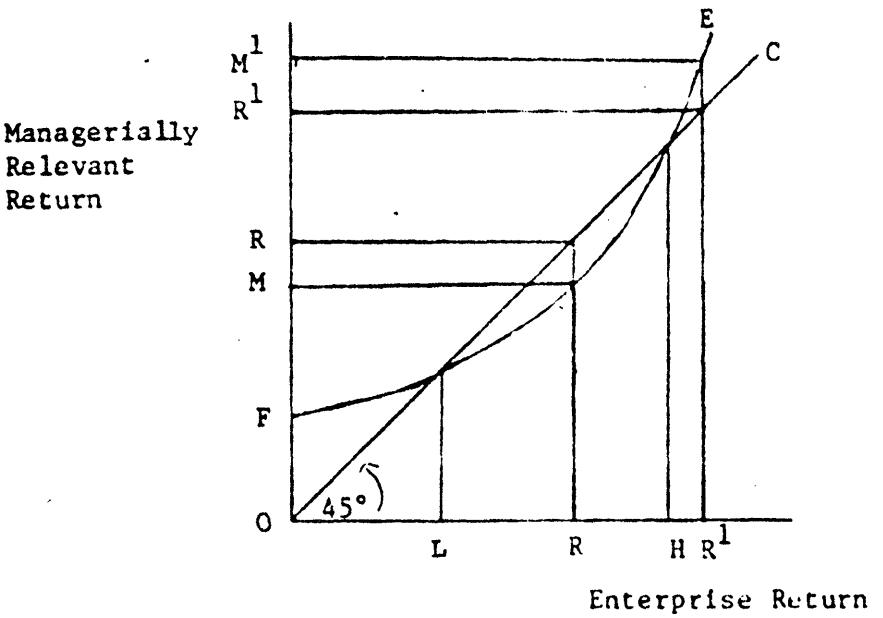
Suppose a return of R to the enterprise falls in the normal range. In this case this would be translated into a R^m return as far as the manager is concerned, where $R^m > R$. However, for an enterprise rate of return below L or above H (e.g., B and K, respectively), the relevant managerial rates of return (B^m and K^m) are less than the enterprise returns. Hence, the managers would strive to obtain a return within the normal range (L to H) where their relative "rewards" would be greatest.

Conversely, they would avoid risky projects with the prospect of yielding high and low enterprise returns which would in turn lead to managerially lower rates of return relative to those of the enterprise.

This mapping of enterprise returns does not mean that the public enterprise manager is any more or less risk averse as an individual than are private sector managers. The transformation between these two returns depends on the financial environment in which they work. The financial environment in turn will be an important component of the incentive system facing the management. A key determinant of this environment is the financial structure of the enterprise and the financial commitments undertaken in order to obtain this financing. In contrast, Figure 4 illustrates the case of the entrepreneurial public enterprise where the manager is not penalized as much for abnormally low rates of return as the private enterprise (below L) but rewarded more than normal for high rates of return (above H). In this case the financing arrangements and the institutional control of the enterprise are such as to make the prospect of rates of return within the normal range of L to H less attractive to the managers of the public enterprise than to their private sector counterparts. Hence, an incentive is created which will cause managers of PEs to want to undertake more risky projects. It is important to note that it is not the basic attitude of the PE manager toward risk which is different. Rather it is the financial structure and ultimately the incentive structure which is different in these two cases.

Figure 4

Entrepreneurial Public Enterprise



In the existing literature on private and public sector managerial behavior the emphasis has often been on the presence or absence of risk aversion for these groups without making a clear distinction between the determinants of the "managerially relevant" payoffs as illustrated by Figures 2 to 4 and the risk tolerance of the individuals. It is likely that the differences in perceived payoffs will swamp differences in managerial risk tolerance. The particular financing arrangements provided the public enterprise will in turn play a major role in determining the managerially relevant returns for the various returns generated by the enterprise.

Finance ... ligations: It is typically assumed that PE managers would prefer to keep their social obligations, or responsibilities,

to a minimum. But it is entirely possible that managers of successful public enterprises may tend to seek to expand the social scope of their operations, possibly even by expanding the set of multiple public (social) objectives. The reason for this is to justify their control of the existing flow of funds and to maintain financial independence from the central government. Otherwise, if they appear to generate substantial surpluses, the funds are likely to be recaptured by the central treasury. In contrast, when public enterprises are thrust into ventures whose market structures, cost situations, or service requirements lead them to be unprofitable, they will try to reduce their public service load (social obligation) in order to obtain that level of profitability which allows them stability and independence.

IV. ISSUES FOR FURTHER RESEARCH

Development of an operational framework to analyze the role which financing plays in public enterprise activities requires an understanding of the way in which particular financial arrangements for public enterprises alter the incentives faced by managers and controllers.

Coupled with a more explicit methodology for measuring the opportunity costs of funds committed to PEs, this should suggest ways for incorporating these costs into the decision-making process of PEs. In turn, this may mean that non-conventional financial instruments will be needed to be designed so that both PE managers and governments will have an incentive to minimize the distortions created by financial illusion.

Given the patterns of incentives created by alternative financial environments, it would be useful to develop theoretical models to help explain the behavior of PEs under various existing financial environments as well as indicate what changes in operating patterns are likely to arise when changes are made in the rules governing PE finance.

An important aspect requiring further study is the impact of foreign financing of PEs on their operation and the economic welfare of the country. Evaluation of the economic cost of such financing will require both an assessment of the opportunity cost of employing these funds by the PEs instead of in other uses and a determination of the distribution of the undiversifiable risk associated with such foreign financed activities. Hence, issues concerning the comparative level of taxation and changes in the tax revenues of governments due to the foreign financing of public enterprises need also to be examined.

FOOTNOTES

The first two authors are Institute Fellows at the Harvard Institute for International Development and Lecturers on Economics at Harvard University. Lessard is Associate Professor, Sloan School of Management, Massachusetts Institute of Technology. Financial assistance from the International Division of the Ford Foundation for the completion of this study has been greatly appreciated. This study has benefited from the very helpful comments of Ralph Beals, Leroy Jones, Richard Mallon, Charles McLure, John Sheahan, Raymond Vernon, Donald Warwick, and other participants of the Boston Area Public Enterprise Group seminars. All errors which remain are the responsibility of the authors.

1. The simplest model yielding these results is the Capital Asset Pricing Model (CAPM) of Sharpe (1964), Lintner (1965 a and b), and Mossin (1966). The most important assumptions are that individuals (or the state) are risk averse but agree on outcomes, and that return distributions can be characterized by mean and variance. The capital asset pricing model states that the required rate of return on an asset is a linear function of its systematic or nondiversifiable risk

$$\hat{R}_j = r + B_j (\hat{R}_m - r)$$

where $\hat{R}_j$ is the required return on asset j, r is the interest rate on a riskless security, B_j is asset j's coefficient of systematic risk defined as covariance j_m / variance$_m$, and $\hat{R}_m$ is the required return on the market or social portfolio of risky assets.

Please note throughout that we use the terms "opportunity cost of capital," "cost of capital," and "required rate of return" interchangeably.

2. See Baldwin, Lessard, and Mason (1981) for a fuller statement of the relationship between the two variables.

3. For opposing views on this point see Arrow and Lind (1970) and Bailey and Jensen (1972).

4. Systematic risk (as opposed to total risk or enterprise specific risk) is related to general levels of economic activity and general financial development, e.g., changes in fiscal or monetary policy; a fall in world prices of tin, rubber, etc.

5. See Lintner (1979) for a discussion of the applicability of the CAPM to PEs.

6. These statements parallel Modigliani and Miller's (1958) Proposition I and II, that the value of all claims against an enterprise is unaffected by the way in which those claims are partitioned and, consequently, that if claims are partitioned into riskless debt and equity, the risk premium in the cost of equity must increase to reflect its greater proportionate risk. In general, these propositions depend on arbitrage in financial markets, but are tautologically true if one investor (the state) holds all claims.

7. A more precise statement is that if the combination of the PE's foreign borrowing (movement along the supply schedule of foreign funds) and its contribution to the country's access to foreign finance (shift of the supply schedule) do not result in increased costs of foreign borrowing, the partial analysis is appropriate.

8. Figures on borrowing by LDC-based PEs are computed on the basis of data presented in The World Bank, Financial Studies Division, Borrowing in International Capital Markets (Washington: The World Bank, December 1978).

9. For example, in the mid-1970s, the Bolivian government state-owned minerals enterprises, COMIBOL, reported a debt/equity ratio of almost 1:1. However, virtually all the "equity" in the enterprise was little more than the combined result of past government cancellations of overdue taxes due from the enterprise and government assumption of past enterprise debts.

10. In many countries, PEs are also exempt from customs duties on their imports. These include Indonesian and Bolivian oil enterprises, and all PEs in Mexico. Countries where imports of PEs are generally taxable include Colombia and all non-oil enterprises in Indonesia and Bolivia.

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There is an IBM book about the "vertical society" called Chi'e Nahane. It compares Japanese and Chinese family systems which are really quite different. He gave us a copy of it. He also gave us a copy of another book, both of which were in Japanese. The reverse opinion of Japanese society saying that others are very similar to Japan, how Japan incorporated. It virtually disputes everything that everyone always accepts about Japan. He says that lifetime employment is not true. In this book it says that it began around 1950 so it is only 30 years old and he thinks it hasn't been tested adequately yet. Corporations obviously are going to find it increasingly expensive because if you look at a graph of employment, there is a big bulge in the 35 to 40 age range. When they come to retirement age, the companies aren't going to be able to afford the services and pension plans to them that they are talking about. The book says all of that is "an illusion." There will be a ceiling hit. He gave the example of the second oil shock in 1974-75 when Hitoshi, for example, laid people off, supposedly an unheard of thing. Some of the people were brought back but they did in fact lose seniority for the time they missed. We asked him if he found this opposition point of view in a book to be convincing and he said, "not quite."

end of interview

Interview with Kakuichiro Fujiyama, Chairman of the Dai-Nippon Sugar Manufacturing Co., 8 July 1981

Appears to be between 55 and 60 years old. Masters degree from Sloan School in 1958. His original training was as a chemical engineer. He used to work for Union Carbide in a joint venture with them. Left there in 1965 and came back to the sugar company which had been established in southern Japan by his grandfather. His father established a chemical fertilizer company during the war and then had a joint venture 50-50 with Union Carbide. Then he came back to the sugar company in 1965.

medical doctors and also landowners who had devices to hide their income.

He felt that military expenditures in Japan were somewhat higher than were reported because many of the construction projects of the Department of Construction were really motivated for military purposes such as a security highway and communication system. However, the LDP is committed to keeping the military budget low so that the only way in which they can increase it substantially is through hiding it in this way.

There are three national medical insurance systems, one is a government system for seniors and unemployed people. It is always in the red. The second is the private corporations. He feels they are very wealthy and have to invest their surplus funds so they hide their assets in land purchases, thus raising the cost of land again. And finally there is a cooperative system consisting of groups from small companies.

He does feel that the changing age profile of the population will impact on the savings rate. Now the high level of savings is required by the absence of adequate social security.

Are there pressures to change the savings rate? Apparently the average savings here is about 20%. No, not really, because social security is decreasing in a percentage of expenses that it will cover so individuals are going to have to take care of themselves and apparently they know that. At this point, over the age of 70 medical services are free; as the average age of the population increases they don't know whether they will be able to maintain that. The common practice here is for savings to take place in the post office which apparently was the case in the United States a number of years ago. That continues to be the case. Their post office, just as a side point, is becoming fully automated. They have all kinds of exotic systems now that we don't use yet and is extremely efficient post office system. For example, just for your interest, it only took six days for your letter to get here.

Tape 2 side one, continuation of the interview with Konijo

You made reference to a man by the name of Jiro Sakamoto who addressed his group recently to speculate on changes within the next ten years. In essence he saw a big change coming in as much as a number of indicators are "crossing." For example he pointed out that the number of middle management positions occupied by people born after World War II was beginning to increase fairly rapidly. These people do not know the war. Also, he felt there was less difference between males and females, that is the males were becoming more like females and becoming less aggressive which would have a general impact on organizations making them less aggressive. The organizations are likely to become more female in their behavior, that is less aggressive. Up until very recently Japan has been importing raw materials, adding value via manufacture and then exporting. This is now changing inasmuch as most of these manufactured goods are produced in the newly industrializing countries. Hence Japan is loosing the manufacturing capacity and Japan is beginning to export design, technical skills and intelligent machines. The implication of this is that Japan will develop what he called cultured industries and he made special reference to the fashion business and personal skills. ("Kenzo") Japan is now paying roughly 50% of its income for "miscellaneous," that is, services. The number of houses is now greater than the number of families but they tend to be of low quality and small.

Japan essentially now has two classes of people, those who own land and those who do not. The former group is in a position to get credit from banks and to profit from inflationary situations: the others are not. He agreed that wealth and income distribution was relatively even in Japan in that salary differentials tended to be relatively small. However he felt that the total income distribution was less equal than would be indicated by salary differentials and that there is a high rate of unreported income by certain groups, specifically