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Planning Public Expenditure

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The welfare economist is at his happiest with a model economy where all goods can be produced at constant or rising cost for sale to individual consumers. He can then operate with the proposition that each consumer should have as much of any good as he is willing to pay for. This is a crude formulation of a principle which has been subjected to much mathematical refinement. At sophomore level we teach it in the form that marginal rates of substitution must equal marginal rates of product transformation. At higher levels we modify this to take account of indivisibilities, of the interdependence of consumer preferences, or of the interrelationship between demand and income distribution; and in so doing, deprive the proposition of most of its logical foundation. But having completed these theoretical exercises, economists usually return to this proposition in their advisory work because they have nothing better to offer.

The economic theory of public policy begins where production by private entrepreneurs in response to market demands would not, in the absence of public intervention, yield the right allocation of resources. There are many classes of case, but they fall into two major categories, one which is in line with the basic assumptions of economic theory and another which is not.

The basic assumptions of economic theory are that each consumer knows just what he wants, independently of other consumers, and that satisfying individual preferences is the object of production. Given these assumptions, the allocation problem could always be solved in theory if we had a machine for reading consumers' minds, even though the free market might not give the right answer. Public production is a substitute for the private market in many instances. We confine ourselves to two of these cases, both stemming from indivisibility. One is the indivisibility which gives rise to decreasing costs, and leads to the

theory of public utilities. The other indivisibility is the indivisibility of benefit, which has appeared in economic literature under different names ("collective consumption," "public good") but which is analytically a form of joint supply with fixed proportions. Indivisibility of benefit is illustrated by the problem of how much to spend on ridding an area of mosquitoes. The more one spends, at increasing cost, the smaller the chance for each citizen of being bitten by a mosquito. The benefit is indivisible since everybody gains from marginal expenditure. The problem cannot be solved by the market, since the market cannot force all who gain to contribute to the cost. But it could be solved by a public authority equipped to read the mind of each citizen, and discover what his preferences are for protection against mosquitoes as against consuming other goods or services.[1]

In allocation theory the treatment of indivisibilities is the same whether one is dealing with decreasing costs or with indivisible benefits. After the consumer has been charged separately with any costs which supplying him separately imposes on the system, the remaining "fixed cost" has to be allocated to all consumers in some fashion such that none pays more than his consumer's surplus. Whether the investment should be undertaken in the first place is decided by comparing the fixed cost with the sum of the consumers' surpluses of the group who will be benefited; at the margin, the last dollar of fixed cost must equal the sum of the consumers' surpluses on this marginal benefit.[2]

Thus in all cases where the consumer has definite preferences, and where the purpose of public action is to satisfy these preferences, the correct allocation of resources can be determined in theory, whether or not there exists in practice any means of discovering what these preferences are.

The other category of public action is concerned with cases where the consumer has no definite preferences, or where there are thought to be good reasons for acting contrary to his preferences. Here the government exercises the function of leadership. Since economic theory starts from consumer preferences, it cannot produce any guidance for

[1] See R. A. Musgrave, "The Voluntary Exchange Theory of Public Economy," *Quarterly Journal of Economics,* February 1939; and P. A. Samuelson, "Diagrammatic Exposition of a Theory of Public Expenditure," *Review of Economics and Statistics,* November 1955.

[2] To arrive at the consumers' surplus on one commodity, one must take all other prices as given. Hence, one is in increasing difficulty as the number of indivisibilities increases. However, as we noted in the first paragraph of this paper, any exploration of consumer preferences as a guide to policy formation leads into a morass. Economists use welfare economics because they have nothing better.

action in spheres where individual preferences do not exist or are not to be followed.

These cases can be classified into four types. In the first, the object is to encourage people to consume more (subsidized education, milk, housing, etc.) or less (narcotics, alcohol, obscenity) than they would prefer. Secondly, the individual citizen may have no preference because he does not know what is involved, and may consider that the government is the appropriate authority to decide (e.g., defense). Thirdly, the citizen's preference may merely be to do what others do, and he may wish to have the government set the pattern ("I am willing to pay my share to charity—to the incapacitated or to foreign aid—if somebody neutral tells me what my share is"). Finally, the government may deliberately violate Pareto optimality in order to make one group of citizens (class, race, creed, or region) better off at the expense of others; if this were done by transferring money, Pareto optimality would not be violated, but the government may prefer to supply goods for one of the other three reasons.

Thus some government activities may be in the category of finding out what the individual consumer would like and trying to satisfy him; for these a machine which could read individual consumers' minds would yield the answer. In the other category the government has to decide what to do in the light of other considerations, beyond anything that such a machine might reveal. This approach to the problem comes naturally to the economist, but most other social philosophers must find it strange. Economics is a by-product of individualist philosophy, which is a form of extremism. At this pole society is nothing but a collection of individuals, and special reasons have to be invented to justify collective action. At the opposite philosophical pole, individuals are only the particles of which society is built; like the family, the team, the church, or the university, it exists before, beyond, and after the individual; it has its own life and interests, to which he must subordinate himself, even in extreme cases unto death. Most sensible persons see validity in both these claims, recognizing areas where the individual's wants are paramount, and others where they are secondary.

When the government operates in spheres where it is trying to meet individual wants it is acting like a performer of music; when it is making up its own mind in other spheres, it is acting like a composer. The performer's job is to decipher what other men have written; he is allowed some individuality of expression, but the text is supposed to be sacred. The composer makes his own tunes; in order to please his public he has to stay within a certain framework of rules, but this frame-

work is wide enough to permit infinite choice. Economic theory has some guidance for the government acting as a performer, but is quite irrelevant to the government's actions as a composer. This is essentially why an "economic theory of public expenditure" is a contradiction in terms.

Following the Tune

In this section we assume that the individual's preferences are definite and independent, and that the government's sole object is to satisfy them. We also confine ourselves to market imperfections arising out of indivisibility, whether decreasing cost or indivisible benefit.

We do not examine the question whether the government should become a producer of all goods which the private market allocates incorrectly, or of any other goods. The respective merits of private and public enterprise cannot be established in terms of economic theory. We merely assume that the government is producing some goods involving indivisibilities, and ask what policy it should follow in allocating resources.

There are two problems: to find out what the individual wants, in the absence of a mind-reading machine, and to devise a levy based on consumer's surplus.

The first principle is to isolate the group which benefits from the particular expenditure, and put it on a self-financing basis. Thus, if the citizens of Princeton want to build themselves a service with heavy indivisible costs, they must be willing to meet these costs by one means or another from their own resources, or do without. Surprisingly, this proposition, which seems obvious to the man in the street, has not appealed to some welfare economists. Following Hotelling,[3] many have argued that indivisible costs should be paid by the central government. When asked why the citizens of Princeton should be favored in this way, they reply that if everybody is treated in this way the subsidies will cancel out; or if they do not the resulting distribution of income is not necessarily any worse than would have occurred if some different policy were followed.

This attempt to distinguish between what the buyer should pay for divisible and what he should pay for indivisible assets is based on a

[3] Harold Hotelling, "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica,* July 1938. The argument of the next three paragraphs is elaborated in my *Overhead Costs,* especially Chapters 1 and 2.

logical fallacy. The theory of allocation tells us that divisible output should be carried to the point where marginal utility equals marginal cost, and indivisible investment to the point where the sum of the marginal utilities of the beneficiaries, measured in money, equals the marginal indivisible cost. Allocation theory cannot tell us what price to charge, since levying a price is an act not of allocation but of distribution; "price must equal marginal cost" means "we must take from the buyer enough income to cover marginal cost." Such a statement is not any easier or more difficult to derive from allocation theory than the statement "we must take from the buyers as a group enough income to cover indivisible cost." Neither statement can be derived logically from allocation theory. The man in the street believes that people should pay whatever cost they impose on society, divisible or indivisible, and this ethical proposition is the only foundation for statements about price policy.

Given that the group must meet all costs, a system of levies must be devised. If some of the costs can be attributed to the individual and some cannot, some kind of multipart charging is indicated—a part or parts based on the separable costs, and a residual part based on consumer's surplus. The residual part is normally levied proportionately to consumer's surplus or some index thereof ("charging what the traffic will bear"). Since there is no machine for reading the consumer's mind, some arbitrary index of benefit has to be taken such as (in transport) the value-weight ratio of the traffic or (in local authority services) the value of the house in which the consumer lives or (in central government services) the citizen's income.

The group may decide that collecting a separate levy from each consumer is not worth the cost. For example, where water is cheap, it does not pay to install a meter in each house and send men round to read meters every month. In such cases there is a single levy, not based on consumption; or the cost of the service is merely absorbed into the general budget. This is most appropriate where elasticity of demand is low and the cost of charging for consumption high. It is also appropriate if the government especially wishes to encourage consumption, but that case is outside the assumptions of this section. How much to raise by fixed charge and how much by a price per unit consumed raises many interesting problems which are normally discussed in the literature of two-part tariffs, and into which we need not enter here.

Since the main problem in planning investment is to guess how much of the service the public would be prepared to pay for out of consumers' surplus, the main policy rule is to take decision-making as close to the

consumers as possible, by decentralizing the service as much as is feasible, having regard to economies of scale. This leads to one of the most important principles of public administration, viz.: The federal government should not do anything which the state could do equally well; the state, anything which the county could do equally well; or the county, anything which the borough, township, or village authority could do equally well.

This principle runs into three kinds of opposition. Those who accept its spirit may nevertheless dispute in any given case whether it is done "equally well." The spirit is rejected by those who do not accept in some particular case that each community should decide for itself what it wants, but prefer to impose uniform standards determined at the center. And it is also rejected, in authoritarian states, by those who wish to centralize power, even though they might claim that they would use this power to give the consumer what he wants; these object to decentralization not because of its effects on the service, but because decentralization enables political rivals to acquire power in those parts of the country where they have a large following.

For one or other of these reasons, the current trend is away from decentralization. In most parts of the world the central government grows stronger at the expense of subordinate authorities.

In some of the new African states the situation is acute. Most expert visitors to the continent consider that the subordinate authorities are much too weak; too much is decided at the center (an inheritance from colonial days); and the building up of provincial and other local authorities would greatly improve administration. This is resisted for political reasons, from fear that decentralization gives scope to political enemies, and also prevents the adoption of uniform standards. Decisions about the allocation of investments are therefore made by men who live at a great distance from the places where the investments are to be made.

The problem is compounded by premature adoption of the principle that basic necessities should be supplied free of charge. In many parts of Africa the villager assumes that the central government will provide water, schools, hospital service, roads, and even electricity free. If decentralization were in vogue, the village could be told that it can have as much water or electricity, or as many roads as it is willing to pay for out of village taxes; and the principle of "free" supply would not then give rise to such unlimited demands. The clear connection between quantity of service and village taxes would be beneficial at both ends: keeping down demand, and increasing the willingness to pay

taxes. When the service is on the central budget, the connection between demand and taxes is tenuous; nobody wants to pay taxes to a distant central government, whose use of them is neither known nor approved; but the demand for immediate installation of services is unlimited. Governments are then saddled with insoluble problems. The public's demand for service grossly exceeds the willingness to pay taxes. Installing services in some places merely inflames the demand in others. And if there are 10,000 villages, but only enough money over the next five years to give water supplies to 1,000 villages, which 9,000 are to be excluded?

The problem is not strictly insoluble, since it could be solved by decentralizing all services which exist primarily to satisfy individual consumer needs. But this solution cannot be adopted until administration and politics begin to be separated from each other.

The Art of Composition

Even if the government desired only to give the citizen what he wants, it could not always discover what he wants, because the mind-reading machine has not yet been invented. Hence over a wide sphere of public action, philosophical demonstration that a Pareto optimum exists conceptually is of no value to the decision-maker. Action in this sphere imposes on the government the same obligation to decide what is desirable that falls upon it when dealing with its second category of cases, where the consumer has no definite independent preferences, or where these preferences are to be disregarded.

How governments decide what is desirable is studied not by economists but by political scientists. How governments ought to decide, taking everything into account (what is known or guessed about preferences, keeping the peace between hostile groups, ensuring orderly political succession, looking two or three steps ahead into the future, exercising leadership, etc., etc.) would be an essay in philosophy rather than in science, and gives scope for wide divergence of opinion. Every political leader has to balance the myriad forces as he sees best, and the citizens judge him only to a limited extent by his accordance with their preconceived ideas. Rather, a great political leader is judged like a great composer; one looks to see what he has created, and surrenders part of one's individuality in the process.

A theory of public expenditure, which would enable the right decisions to be derived out of an electronic computer, is no more feasible than a theory of composition which will get great works of art out of an electronic computer. And this is the basic reason why economists, recogniz-

ing the limitations of their science, have written almost nothing on this subject.

Actually, the politician's task in planning public expenditure is much less formidable than it sounds. To begin with, the scope for maneuver from one year to the next is very narrow. Redistribution of existing expenditures is nearly impossible, whether because of vested interests in jobs or because of pressure from those who value the services that would be cut. Adding without cutting is also difficult. However small public expenditure may be, in relation to national income, a large increase from one year to the next is ruled out by the impossibility of getting away with large changes in tax rates except during such crises as war. Over a five-year period one might with determination increase tax revenues by two points, say, from 15 to 17 per cent of gross domestic product; in the absence of windfalls, such as improved terms of trade or a big increase in mining, more than this is improbable.

Then, much of the expected increase in revenues is already doomed to be swallowed up by existing commitments. The teachers will make their annual demand for salary increases. The hospital built last year will now have to be staffed. Population will increase by, say, 12 per cent over the five years; so, merely to maintain existing standards of public service, the public service will have to be expanded in approximately the same ratio. Most prime ministers take up office with big ideas as to what they can achieve, and are sadly disillusioned within a few months, unless their accession to office happens to coincide with some economic windfall (usually either the expansion of mining output or a rise in the price of exports).

At the administrative level, the planner begins by estimating normal growth arising out of existing commitments. Rather, one should say "should begin," because, astonishingly, the great majority of development planners concentrate on the capital budget and never make an item-by-item forecast of the likely growth of recurrent expenditure on existing commitments. As a result, expenditure grows faster than was estimated when assessing how much money the government would have for capital expenditure, and the plan runs into a crisis within two or three years. Discussion of foreign aid has tended to focus attention on the importance of capital; but in the public sector the limitation tends to be recurrent expenditure rather than capital; over five years the recurrent expenditure on a school is more than twice the capital cost.

The next step is to assess the cost of new commitments. Some budget items are linked to items appearing in the part of the plan which re-

lates to the private sector. Others are independent public policy decisions.

The projected rate of growth of the private sector has implications for public expenditure in many fields, notably roads, ports, telecommunications, water supplies, electricity, research institutions, geological service, technical education, and secondary education. Working out what this involves is relatively easy; education will be used as an example in the next section.

However, in all these spheres, public policy goes much further than merely supplying the needs of industry. Most regimes take for granted that public services should be planned to meet whatever need may be forthcoming from industry. The practical problem is how far to go in meeting consumer demands. As we have seen already in the preceding section, this problem could be minimized by greater decentralization, which would leave it to each village to decide what it was willing to pay for. Given centralization, and the resulting gross excess of demand over possible supply, the central government has to make up its own mind what to include in the plan and what to postpone.

The rule which has been suggested as a way out is that in the poorer countries public expenditure should concentrate at this time on building up those services which contribute most to productive capacity. This seems sensible at first sight, but is not in practice very helpful. For almost any public service can be defended on the ground that it contributes to productive capacity. The main effect of this orientation is to send supporters of each service scurrying to find arguments and statistics which will prove that their service is not "consumption" but "investment."

Very little operations research has been done on the public services. Something will be said in the next section about the work of this kind on education and public health. The most successful work has been done on roads and irrigation projects, assessing how far the opening up of new lands or increased productivity of existing investments would pay the cost of new works. Naturally, much of this is guesswork, but the operation has been done so often that the practitioner at least knows what features to look out for. Another possible area is defense expenditure; a good deal has been done in this area in developed countries; so similar work in underdeveloped countries might be fruitful.

However, it is idle to expect operations research to decide how big the budget can be. No doubt it can contribute in the area of defense. It has also a marginal contribution to make in the sphere of general and economic administration. But the group which grows fastest in the

budgets of most underdeveloped countries, and now accounts for more than half the expenditure of many, is the social service group, including education, health, and welfare services. Here the proposition that expenditure be confined to what is demonstrated to increase productive capacity is a nonstarter with the citizen, however much it may appeal to the administrator. The citizen wants education and health and welfare services for their own sakes, and in most countries wants more than can be demonstrated to be profitable in terms of increasing future yields.

Another guide is to make international comparisons. This is done all the time, as a check on standards. Countries compare the number of policemen per 100,000 of population; the ratio of teachers to students; the ratio of agricultural extension agents to farm population; the ratio of army officers to other ranks; the infant mortality rate; and so on. The paper by this author and Miss Martin, comparing sources of revenue and objects of expenditure in seventeen countries in relation to gross domestic product, is alleged to have been found useful in some ministries of finance.[4] Such comparisons are obviously of limited value. They are relevant only in cases where most countries have the same proportion or where differences can be clearly related to some measurable index. Even then they are merely suggestive; if your country's proportion is very different from what the index suggests, you do not conclude that it is wrong, but merely start trying to discover what accounts for the difference.

The principal fact revealed by national income comparisons is that countries do not differ widely in the proportions of gross domestic product (GDP) which they spend on general and economic administration; the big differences are in social services, defense, and public debt charges. In the majority of countries the recurrent cost of general and economic administration lies between 5 and 7 per cent of GDP. The proportion spent by the less developed tends, if they are ambitious, to exceed the proportion spent by the more developed. The latter have better administrative services and relatively more people engaged in them. But in the less developed, because of the shortage of educated persons, the ratio of the salary of a civil servant to per capita national income is much higher. As countries grow richer, these two factors tend to offset each other, keeping the proportion spent on administration within narrow limits. Social services are much more flexible and therefore range more widely.

The various guides we have indicated—calculating the rising cost of

[4] W. A. Lewis and Alison M. Martin, "Patterns of Public Revenue and Expenditure," *Manchester School of Economic and Social Studies,* September 1956.

existing commitments, making provision for new commitments, operations research, and international comparisons—all help to indicate what the plan for public expenditure should be. But there always remains a residual area for judgment—and for political pressures and bargaining. The musicologist talks about all the various ingredients of the symphony, but in the last analysis the composer has to fall back on his own power of creation.

One should note, finally, that the welfare economist's search for an "optimum" which represents "equilibrium" is quite out of place. In politics one does not try to make progress on all fronts simultaneously. The government is engaged in an exercise of leadership, persuading the citizens to pay more taxes for various services. This has to be done by concentrating on one or a few things at a time. Perhaps the leader's present concern is defense; he has some support, but also much opposition. Getting this program through takes a lot of time and much organized effort; he may succeed, and yet be so exhausted or mauled by the process that his further usefulness is diminished. At another time the emphasis may be on education; at some other time on measures to increase agricultural productivity. To try to win on all fronts simultaneously would almost certainly invite defeat, since it would arouse the maximum of enmity. "Unbalanced growth" is the secret of political strategy. Hence the question is never "have we got the equilibrium distribution of public expenditure between all the various categories," but only "where is the need most urgent, and are we progressing toward meeting it?"

Suite for Small Ensembles [5]

In this section we assemble some random remarks about various objects of public expenditure. These are based to some extent on experience as a consultant, and are therefore mainly matters which have struck this author's attention. They relate exclusively to the problems of underdeveloped countries.

THE ROLE OF SERVICES

The attitude to services has passed through a number of phases. When development planning began, at the end of the Second World War, the emphasis was on the public services. This was defended by asserting that infrastructure was the key to economic development. After a while

[5] Some of the material in this section will appear simultaneously in my new book, *Development Planning.*

the assertion began to be doubted. Governments were expanding their public service commitments faster than public revenue, without this necessarily resulting in greater output of other goods and services. They were therefore now advised to concentrate instead on measures designed directly to stimulate the output of commodities in general, and export commodities in particular. "Production" (meaning commodities) must come before "consumption" (meaning services). Development plans which concentrated mainly on public service programs were held inferior to those which were full of arithmetical targets for agriculture and manufacturing industry. Then came a counterattack in which services were taken out of the category of "consumption," and defended on the ground that they are "investment in human resources and just as productive as investment in physical resources." Ministers of finance find this disputation not a little confusing.

Let us begin with exports. In terms of value added, the income elasticity of demand for services is about 1.05, while that for commodities is about 0.95. The elasticity of supply of services is very high, while the elasticity of supply of commodities taken as a whole is rather low. If income is increased by producing more commodities, the demand for services will expand in a slightly greater proportion, and will be met by an expanded output of services (the elasticity of supply of labor to the market economy is very high). The situation is asymmetrical. If income is increased by producing more services, the demand for commodities will expand nearly in the same proportion, but the output of commodities will not. Hence there will be a deficit in the balance of payments and deflation in the home market. The expansion of services will not prove viable. From this it follows that the practical problem in planning is to expand commodity output; services will look after themselves; to concentrate on services instead of commodities must lead to trouble. But while this statement of the practical problem is good shorthand, a complete statement recognizes that the framework is one of balanced growth; services and commodities are equally important.

Actually, while this analysis applies to services in the private sector, it does not apply to public services financed by taxes. If private entrepreneurs open up hotels, hospitals, schools, and other services they or other service entrepreneurs will go bankrupt for the reasons indicated (unless there is an influx of tourists, i.e., the services are for export). But if the government expands services, and takes in as much again in taxes, imports of commodities remain unaffected. Personal income increases by the value of the additional services, but personal income net of taxes remains as before. Hence there is no balance-of-payments

limitation on the expansion of public services financed by taxes; these do not have to keep step with the growth of commodities in any balanced way. The only financial limitation on the expansion of services financed by taxes is the unwillingness of the public to pay more taxes.

If the balance of payments is an unreal bogey, what about investment? Must public services be curtailed unless they can prove themselves to be a form of productive investment?

This question has to be taken in two stages. First, if the level of investment is already decided, the competition is not between services and investment, but only between services and commodities for consumption. Here economists are on familiar ground, since this controversy was settled nearly a hundred years ago. Commodities and services have no advantage over each other; both yield utility. Men require both commodities and services; so the only question is whether the proportions in which they are supplied correspond to the proportions in which they are demanded. Since public services are paid for out of taxes, this question reduces to whether the public is being asked to pay more or less in taxes than it would spend on public services if these could be financed through sale in the market. We know that in most underdeveloped countries the demand for public services greatly exceeds the supply, but whether this situation would continue if the link between services and taxes were clearer is very doubtful. As we have seen, the only practical way to solve this problem is greater decentralization of the financing and administration of public services.

The second stage of the problem is to assume that the proportion between services and commodities offered for consumption is correct, and consider whether consumption as a whole is not too great; and therefore whether the supply of public services (as well as of consumable commodities) should not be restricted in the interest of greater saving.

This is the stage where defenders of public services rush to prove that they are not consumption but investment in human resources. The defense cannot be sustained (see below) because the demand for services, especially for education and health, exceeds considerably anything that might be defended on these grounds. But is this defense really necessary? Just as the previous attack implied that commodities are superior to services, now this attack implies that saving is superior to consumption.

What economic mathematics says about the optimum rate of saving does not take us far. By making arbitrary assumptions about a capital-output ratio, one can calculate what rate of saving would maximize consumption, say, in ten years from now, or the total of consumption over

the next ten years, or the present value of the total of consumption over the next ten years. For example, if the capital-output ratio is 3:1, consumption in year 10 would be maximized if the rate of saving were about 64 per cent of national income. This is obviously not feasible (even ignoring the unreasonableness of the capital-output assumption), since it requires an absolute fall in present consumption. If absolute consumption cannot fall, and saving is now 9 per cent of income, consumption would be maximized in year 10 by increasing the absolute amount saved at a rate of 13 per cent per year, bringing the savings ratio to 20 per cent in year 10. This high rate of growth is also not feasible; it assumes that the rate of growth of output depends only on the rate of growth of saving, and not on the rate of growth of consumption. Total consumption over ten years would be maximized by holding constant the absolute amount saved. This is a slower rate of growth than can be achieved, and the rate of saving which would maximize the present value of consumption over ten years would be still lower.

An alternative approach is to start from the link between the rate of growth of output and the rate of growth of consumption which is required to achieve it. Economic development cannot take place without an increase in consumption. Growth requires inducements; workers must move to higher-paid occupations; farmers must adopt more profitable methods; and as the incomes of some producers rise, incomes of other mobile or powerful groups will also rise, even though their per capita output is not increasing—especially in the rapidly growing service industries, where wages keep pace with industry but productivity lags. An increase in per capita output unaccompanied by a sizable increase in per capita consumption is therefore inconceivable, except perhaps in a police state.

It is not merely inconceivable, but also undesirable. Economic growth creates disturbing tensions in society, which can be resolved only if the increased output is used to secure more equitable distribution. Men migrate from villages where they have been sustained in time of want by the obligations of extended family systems. In the towns they take sick, or become unemployed, and it falls to the public authorities to look after their welfare. Other men are deprived of their living by technological changes which make them poor but others rich. Some are by-passed by opportunity, but are made envious by the good fortune of neighbors or relatives, and associate with others in unions or other societies to try for a share of the obvious increase in national riches. The early stages of economic development are always a time

of tension and unrest. Narrowly conceived economic interest may seem to point in the direction of holding down consumption as long as possible; but the interest of creating a healthy society with tensions and injustices moderated and limited requires that welfare be given equal priority with growth right from the beginning.

The growth of stark poverty through the explosion of towns, unemployment, and the breakdown of family relationships is one of the most terrible features of the early stages of economic development. It demands that the government go into the welfare business right from the start if society is not to be deeply scarred. To provide a framework of services for the unemployed, the aged, the orphaned, and the handicapped is just as important as saving to build factories to produce more radios or bicycles.

More saving and more growth are desirable, but not at the expense of social or welfare services. On the contrary, the universal experience is that as income per capita increases, both saving and the public services increase their relative shares of the national income at the expense of personal consumption. How rapidly to proceed is part of the art of politics. Those who have accepted the advice of impatient economists have found themselves with riots on their hands.

The following suggestion is made. Since growth requires inducements, the minimum allowable rate of growth of personal consumption is tied to the rate of growth of output. Thus one can devise a rule of thumb. Suppose that per capita consumption must grow at least 60 per cent as fast as per capita output, and that personal consumption is currently 75 per cent of output. Then if per capita output grows by 1.0 per cent, the ratio of consumption to output falls by 0.3 per cent of output (i.e., from 75 to 74.7 per cent). If per capita growth is 2.0 per cent, the ratio falls by 0.6 points. In practice, in the absence of windfalls from mining or the terms of trade, most underdeveloped countries cannot increase per capita output by more than 2 per cent per annum over a long period because of the backwardness of their agriculture, and should not plan on raising the share of taxes and saving combined by more than three percentage points over five years.

Economists have often debated whether there is a limit to taxable capacity. The question is unsettled, but is in any case irrelevant in underdeveloped countries, for their tax collections are far below any reasonable definition of taxable capacity. A much more important limit is the feasible rate of change. Many factors determine this; the present suggestion is offered as a contribution to understanding.

EDUCATION

Poor countries cannot afford to pay for as much education as richer countries. They have therefore to establish priorities in terms both of quality and quantity.

The cost of education is higher in poor countries, for two reasons. First, because of the higher birth rate, the school-age population is relatively larger. The proportion of the population aged 5 to 14 is only 15 per cent in Great Britain, but it is over 25 per cent in the typical underdeveloped country. Secondly, because of the relative scarcity of educated people the ratio of a teacher's salary to per capita national income is much higher in poor countries—two to three times as high. For these two reasons together, whereas universal primary education costs a rich country rather less than 1 per cent of national income, it would cost a poor country from 2 to 4 per cent of national income.

The cost of university education is particularly high in Africa, since more than two-thirds of the teachers have to be imported from Western Europe and America. Inducement allowances, plus the cost of transporting them and their families to and fro and on leave, makes the cost per student 50 to 100 per cent higher than the cost of maintaining universities in Western Europe. Since tuition fees in Europe are very low, an African government can send two or three students to Europe on scholarships for what it costs to maintain one student in a university at home, even without bringing the high capital cost of the universities into the account. Africa needs her own universities to do research into her own problems, but (except in parts of Francophone Africa where France pays the running cost of the university) it is good strategy to tailor the size of the local university to the size of staff required for local research, and send additional students overseas if they can be placed. Whatever may be the special advantages of going to college in one's own country (and these are grossly exaggerated), from the social point of view it is better to educate two men overseas instead of one at home at the same cost.

In rich countries the core of educational planning is to use census figures and vital statistics to estimate how many children will need places over the next twenty years. In poor countries such exercises are secondary, since one knows in advance that the number of children will exceed the number of places that can be afforded. The strategy is rather to begin by estimating the demand for skills, and to try to provide at least as many places as are required to meet the demand for persons with different levels of schooling.

The earliest manpower surveys were made by visiting employers and

asking them how many people they expected to employ in different kinds of jobs in five years' time. This is obviously unsatisfactory. Nowadays the starting point is to project several years ahead (say, ten) what the structure of the economy will be, and deduce the number of skilled persons from tables relating skills to industrial classification. If there is a good census, cross-classifying industry, occupation, and education, it will show existing numbers and their distribution; published cross-classifications are rare in underdeveloped countries, but the data

TABLE 1

Educational Requirements, Jamaica, 1964

(per cent)

	University	Secondary	Skilled	Other
Agriculture				
Large-scale	0.4	2.0	3.5	94.1
Small-scale		0.6	0.1	99.3
Mining	4.0	10.0	25.0	61.0
Manufacture				
Complex	4.0	10.0	25.0	61.0
Simple	2.0	5.0	15.0	78.0
Workshop	0.1	1.0	12.0	86.9
Construction	0.2	1.7	50.0	48.1
Communications	1.5	6.0	10.0	82.5
Commerce	1.5	11.0	1.0	86.5
Domestic service				100.0
Other services	4.5	35.0	2.0	58.5

can sometimes be run off from the census cards. However, there is constant upgrading of educational requirements for jobs; so in calculating recruitment one needs to know not only the educational level of the present holders of jobs, which the census may show, but also the educational level now expected of new recruits. The latter is discovered by on-the-spot investigation. For example, Table 1 shows for each Jamaican "industry" the proportion of jobs for which a college degree would now be required, the proportion requiring secondary education with or without further specialized training (excluding college), and the proportion requiring primary education plus at least one year of intensive training (including on-the-job training).[6]

[6] For details, see my article "Secondary Education and Economic Structure," *Social and Economic Studies,* June 1964.

For the Jamaican economy as a whole current requirements are: university, 0.9; secondary schooling, 6.0; and skilled, 7.0 per cent. These figures are based on aspirations rather than on achievement. Thus against the secondary and university requirement of 6.9 per cent, we must set the fact that the proportion of the population over 20 which had actually completed secondary or higher education was only 3.4 per cent. On the other hand, the proportion that had received some secondary schooling was 6.4 per cent, the dropout rate being very high.

Jamaica has a relatively advanced economy. Similar figures for West Africa in 1960 would have shown less than 1 per cent having received secondary education, and not more than 3 per cent of jobs requiring it, even with upgraded educational requirements. However, what matters for policy is not how high the figures are, but the gap between the proportion who now have secondary education and the proportion now required to have it. The gap in secondary education is the greatest drawback to African development because of the crucial roles in society of people with this kind of training. There is also a great shortage of university people, but the number required is small—only about one-eighth of the number with secondary schooling—so it is feasible to import university graduates from other countries. The number required with secondary schooling is so large, and the cost of importing them so high, that there is no feasible alternative to concentrating the educational effort at this stage on expanding secondary rather than university or primary education.

Calculating the demand for skill gives the answer so long as the demand substantially exceeds the number of skilled persons likely to be produced, but ceases to help when the number of places already exceeds the jobs. Such calculations are based on employers' current practices in hiring staff, but these practices are themselves partly derived from the current market situation. What qualifications employers expect when hiring will depend partly on what the market has to offer. If there is a shortage of secondary school graduates, they will hire primary school graduates to be stenographers. Expectations are also conditioned by relative prices. If the salaries of secondary school graduates were lower relative to those of primary school graduates, employers would prefer to hire secondary school graduates for jobs as salesclerks. Employers' expectations are therefore elastic.

If educational requirements and relative prices were a simple function of the level of economic development, one would get a good correlation between economic structure and education. This relationship has been tested by comparing countries in respect of the proportion of the male

population aged 25 and over which has received four years of secondary education, and the proportion of the occupied population engaged in agriculture.[7] The result was

$$x = 26.1 - 0.37a$$

where x = percentage of males aged 25 and over who left secondary school after reaching age 15

a = percentage of the occupied population engaged in agriculture

This formula was subject to the restriction that x should not be less than 3.0. The formula relates to the stock of educated people in existence.

TABLE 2

Required School Enrollments for Given Levels of Agricultural Employment

(per cent)

Occupied in Agriculture	Completing Secondary School	Completing Higher Education
70	6	0.8
60	9	1.1
50	13	1.6
40	18	2.3
30	21	2.6

Annual enrollment is a function both of wastage and of changes in the desirable level of the stock resulting from changes in the proportion of the occupied population engaged in agriculture. A series of further assumptions (detailed in the same article) suggested the enrollment percentages shown in Table 2, for each level of economic development, taking boys and girls together.

These suggestions are highly tentative. The original statistics are rather shaky, and do not fall into a neat pattern. Several countries had many more (apart from the United States and Canada) and several had many

[7] *Ibid.* In that article the population aged 15 and over is used instead of the occupied population. Conversion is made here by multiplying by 0.55.

fewer persons with secondary education than such a formula would require. Departures from the formula were not obviously associated with productivity. What emerged was that commerce serves as a reservoir for the products of secondary schools. If a liberal educational policy is pursued, the proportion of salesclerks who have had secondary education is high, while the proportion is low where opportunities for secondary education are restricted. There is no obvious correlation between productivity and the extent to which salesclerks have received a secondary education.

The main conclusion of attempts to link education with economic structure is that a country can absorb almost any number of educated persons by varying the qualifications for jobs and adjusting relative earnings. The demand for various skills serves as a target for the educational planner while he is still in the stage where demand exceeds places; but as soon as the number of places catches up, he has to look behind employers' demands to more fundamental factors.

Recently American economists have tried to measure the productivity of education on an economywide basis for the U.S. economy by correlating income statistics with educational attainments.[8] Such exercises can hardly be translated to underdeveloped countries, for three main reasons. First, the assumption that the pattern of earnings reflects differences in productivity seems rather doubtful; in Jamaica an unskilled laborer earns three times as much in the bauxite industry as in the sugar industry; such "anomalies" are too numerous in underdeveloped countries for earnings to be accepted as a guide to productivity. Secondly, even if earnings reflect productivity, education is so highly correlated with other causes of high productivity (especially intelligence, patience, persistence, and ability to persuade) that one would have to be able to distinguish these other factors before reaching conclusions; attempts have been made to do so, but they are not convincing. Having regard to the irrelevance of what is taught in schools (even at the college level, not more than 30 per cent are trained in scientific or technological skills) employers probably pay more for educated men not because of what they have learned in school, but because ability to survive the tests imposed by schooling is as good a test as any of the kind of personal qualities which employers are seeking. Thirdly, this kind of correlation would not be useful in underdeveloped countries because of the big difference between average and marginal earnings. In most of Asia, where there is acute unemployment of educated persons, a correlation

[8] For a summary see a paper by a leading pioneer, T. W. Schultz, "Investment in Human Capital," *American Economic Review,* March 1961.

between education and marginal income might well lead to the conclusion that the marginal productivity of higher education is negative.

Less ambitious exercises take one occupation at a time and study how changes in education would affect efficiency. This is being done all the time, especially by those who have the responsibility for determining professional qualifications, but also by educational planners and by employers or their associations. The most important unanswered question in underdeveloped countries is how much difference universal primary education would make to agricultural productivity, when compared with spending more money on establishing a better system of agricultural extension and adult education focused on practical needs. Universal primary education is much more expensive. It is also rather disturbing, since graduates of primary schools do not at present want to return to the farms, but tend to congregate in towns, where there is not enough work of the kind they seek, and where their high unemployment rate creates social and political problems. If it could be shown that adult education is nearly as productive in the countryside as primary education, there would be a strong case for expanding primary education more slowly (e.g., planning to get from 20 to 90 per cent of children in school in thirty years instead of ten).

The practical problem can therefore be summed up as follows. It is fairly easy to estimate what the demand for the educated will be at current prices. It is also fairly easy, using the census and birth and death statistics, to estimate how many children there will be at different ages, and using one's knowledge of trends, to estimate how many of these will be demanding education. If the demand by employers exceeds the supply, priority should be given to expanding educational facilities. However (except for secondary and higher education in Africa), most developing countries have passed or are passing into the stage where the number demanding education exceeds the number of foreseeable jobs, and their problem is how far to go in satisfying this surplus demand.

This question the economist cannot answer. We can point out that a surplus of educated can only be a temporary phenomenon. Any economy can absorb any number of educated: The premium for education falls, and the qualifications for jobs are upgraded, and so everybody finds work. Being ourselves educated and teachers, we incline to the view that education of any kind must have some productivity; but we cannot demonstrate that the marginal product of investment in education is bound to exceed the marginal product of investment in other resources. We further point out that education does not have to be productive to justify itself; even as pure consumption it has value, and giving young

people more education is not inferior to giving them bicycles or radio sets. When we have said all this we have said very little. There is no reason why the public should not have as much education as it is willing to pay for; the real problem is to make people see the connection between cost and taxes, so that if they really want more education they will bear more taxes cheerfully. This is part of the art of politics.

Most African politicians have come to power with education as the number one priority. All now have second thoughts, first because of the unexpectedly heavy burden of education on their budgets, and secondly because of the tensions created by young people pouring out of primary schools looking for jobs which do not exist. Like any other composer, each must do the best he can, having regard to his own inner compulsions and the public which he serves.

HEALTH

Expenditure on health is productive in three ways: First, it increases the number of man-hours of work; secondly, it improves the quality of work; and thirdly, it makes possible the use of natural resources which would not otherwise be usable.

Much statistical work has been done on the cost of sickness.[9] Correlating expenditures on health with man-hours saved by better health, or by an increase in the population, is very difficult. Much of the expenditure on health is ineffective in that the patient would have improved or got worse equally rapidly without medical attention. Also, the cost of treating different diseases varies enormously. To make progress one would have to cross-classify different diseases in terms of the amount of debility each causes if not treated, how much difference treatment may make to the progress of the disease, and how much the treatment costs. Some treatments would prove to be highly productive on this count; but when one remembers how much is spent on colds and mental troubles, one may hazard the guess that in the most advanced countries more than half of medical expenditure costs more than it yields in extra man-hours.

Insofar as the yield of health expenditure is man-hours, its value depends on the marginal productivity of man-hours. Here the viewpoint of the individual and of society diverge. Most underdeveloped countries have a good deal of underemployment. The farms experience full employment for a few weeks during the planting and reaping seasons; extra man-hours outside those seasons yield no product. The towns never have full employment because they have a large population living by

[9] For a survey see S. J. Mushkin, "Health as an Investment," *Journal of Political Economy*, Supplement, October 1962.

casual employment, working on the average perhaps two or three days a week (dock workers, construction workers, transport workers, jobbing gardeners) and also have a good deal of disguised unemployment among the self-employed (petty traders, dressmakers, taxi drivers, etc.). If one man falls ill, the amount of work done does not diminish; someone else takes his place. From the individual's point of view the yield of medicine is extra income earned, but from the social point of view the yield is zero.

Reducing the death rate increases the population. The individual is interested in the income he gets, but society's calculation is based on the marginal productivity of labor. The situation varies widely. In much of Africa and Latin America the land could carry more people without a fall in average productivity, whereas in most of Asia an increase in the population reduces the average level of living.

One cannot rest the case for medical expenditures in underdeveloped countries primarily on extra man-hours. More promising is the effect in enabling people to use existing resources more productively by reducing lethargy and inattentiveness. Here one has in mind those diseases which remain in the body, not preventing work, but diminishing effort; most notably, malaria, sleeping sickness, and bilharzia. Finally one must add diseases which make land uninhabitable. To get rid of these adds physical resources, as well as man-hours and attentiveness; so this type of health expenditure is the most productive of all.

There is a vast difference between the productivity of public health measures and the productivity of curative medicine. The spectacular fall in the death rate over the past hundred years owes very little to curative medicine. The great killers have been wiped out at relatively small cost, using the services of only a handful of doctors, either by improvements in the water supply—cholera, typhoid, dysentery—or by environmental sanitation—malaria, yellow fever, tuberculosis—or by vaccination—smallpox, diphtheria, poliomyelitis. One can see this by comparing developed and underdeveloped countries. The death rate is now about the same in Jamaica as in the United States. But the United States has four times as many doctors per thousand as Jamaica. What do the other three do? They see fewer patients per head; Jamaican patients spend hours queuing in doctors' offices. American doctors know their patients more intimately, and give them more spiritual comfort. There are more specialists, and a number of complicated conditions are handled more skillfully. But as far as concerns general practitioners, the marginal productivity of doctors in the United States, in terms of healthy man-hours, must be close to zero.

In underdeveloped countries how much to spend on public health is

not the problem at issue. Most governments realize the productivity of this type of expenditure, and this is why death rates are falling so rapidly toward the levels of advanced countries. The real problem is how much to spend on curative medicine, especially on hospitals and on clinics. This is the part of the medical service with which the public comes most into contact; this is what the public wants most; it costs most, and achieves least, in terms of productivity.

Productivity is not a helpful approach—the modern tendency to defend services only in terms of productivity must be rejected. Men value health for its own sake, as they value consumer goods. They value it above most other goods or services, being willing often to mortgage all they possess in search of health. They value medical attention even when it does not bring health, and so spend much money on the chronically ill, including those who will never again be able to work. If a government is trying to give people what they want, it seems right to conclude that they want health more than they want anything else.

The practical problem is the cost of loading on to the budget the cost of the general practitioners' service. The budget can bear the cost of public health measures quite easily. Hospitals are more of a strain, but their use can be controlled, and if finance is decentralized to municipalities and provinces, the clear link between cost and taxes will keep the demand for hospital facilities in check. The demand for general practitioners, however, is virtually unlimited. Countries which now have 1 general practitioner to 20,000 of population could easily use twenty times as many as they have if there were uncontrolled access at zero price.

At present, most countries have compromised. A skeleton general practitioner service is available on terms which make it attractive only to the poorest people. There are relatively few offices; so the patient must travel far, wait long, and receive very rapid and often superficial attention. This allows private practitioners to cater profitably to those who can afford to pay substantial fees. Medical insurance is beginning, but is not popular, because the trend of these countries is so markedly toward loading services on the budget instead of encouraging individual payment. The atmosphere of the second half of the twentieth century is not favorable to the economist's theory of prices.

HOUSING

The trouble with houses is their expense. Nobody has discovered how to build a small but acceptable urban working class family house or apartment out of wood, brick, or cement to cost less than $1,200 with-

out land. The annual cost of such a house is about $120. If a worker paid 10 per cent of his income in rent, he would need an income of $1,200 a year. Even if he paid 20 per cent he would need $600 a year. And the percentage of workers who earn $600 a year in Asia or Africa is small.

Rural houses cost much less because lower standards are accepted. The density of rural houses per acre is low, even in villages, and houses built of local clays at low density are accepted. Densities are much higher in towns; suitable clays are not so easily available; and even if available, are more likely to be regarded as an eyesore by those who make public opinion. Housing is therefore urgently a problem of towns rather than of villages; and this is a blessing, since dealing with the towns is hard enough without taking on the villages as well.

Since labor is half the cost of a cheap house, self-help building schemes appeal to the administrator. Here a team of, say, six men collaborate in building six houses under supervision. When the houses are built they draw lots, and over twenty years each repays his share of the cost of materials and supervision. Some schemes are doing well, but they are tiresome to organize, and not so appealing to ministers who want to build publicly owned working class houses.

Housing policies are almost always wrong. The number of houses the government can afford to build is a drop in the bucket. Hence the problem can be solved only by encouraging other people to build houses, whether for owner occupation or for rent, and whether by subsidizing development of sites, or subsidizing interest rates, or supporting building and loan associations by guaranteeing mortgages. Typically one finds, on the contrary, measures which discourage private building, such as rent controls without interest subsidies; or enough subsidized housing is built to make private building unattractive, but not nearly enough to meet the demand. Meanwhile, nearly everywhere the slums are multiplying.

The housing problem is probably insoluble because it arises from governments wanting people to live in more expensive houses than they can afford, while not having the money to subsidize the difference. This being so, it would be better to think less about the houses themselves and more about their environment—developing attractive sites, controlling density, looking after streets, water supplies, garbage disposal, and lighting—since what makes slums is not that houses are built of clay, but that the environment is overcrowded and ill-provided. A town of well-spaced clay houses, washed in different colors and properly serviced with utilities, is well worth having, and is inexpensive. Con-

trol of building is much more important for the government than building itself. Also important are measures to prevent the explosion of towns, by making it more attractive for people to remain in the countryside—but this goes far beyond our terms of reference.

CODA

The quantity and quality of government activity which underdeveloped countries now demand for themselves cannot be provided (taking central and local authorities together) for less than 20 per cent of gross domestic product, even when defense and debt charges are excluded. Recurrent expenditure on general and economic administration takes 6 per cent; education, 3 per cent; health, 2 per cent; and welfare services, 2 per cent. Capital expenditure is also heavy; public works (including roads, schools, and hospitals) take 3 per cent, and at least 4 per cent is required for government enterprises (water, transport, ports, housing) or for lending to private enterprise through the government's financial agencies (industrial banks, agricultural credit, housing mortgages). Some of the government's capital needs can be met by borrowing at home or abroad; but private saving is so low that the government itself has to be a large saver. Taxes and other revenues must come to at least 17 per cent of GDP if it is to do what is expected of it.

Quite a few underdeveloped countries have passed this level, through having rich mines to tax or windfalls in the terms of trade. Most are still far away, and embarrassed by the gulf between what their people expect and the taxes they pay. Bridging this gulf by teaching the people to pay more taxes is their chief fiscal headache.

We have already suggested that decentralization is one of the best ways of persuading people to pay more, since it enables them to see clearly the connection between what they pay and what they get. The purpose of this coda is to make another, less orthodox, suggestion with the same objective.

Several governments seeking financial support for new services have adopted the strategy of imposing a new tax whose proceeds are tied to the new service. This ought to appeal to economists because the link between tax and service increases the likelihood that the quantity of the service will be in line with the preferences of the public. The system, on the contrary, is condemned by Anglo-American fiscal experts because it reduces fiscal "flexibility." They are not always consistent, since the same man will recommend a tax on wages tied to financing social security, but oppose a tax on beer tied to financing education. Inconsistency apart, the condemnation seems out of place. At this time the

principal problem is not greater flexibility but making it easier for people newly emerging to sovereignty to learn the connection between taxes and services and, therefore, to learn to pay more taxes. By the time this major objective has been achieved it will not be difficult to explain why flexibility requires that the practice be discontinued. Reconsideration of the experts' inconsistent and inflexible position is invited.

COMMENT

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Professor Lewis's essay on planning public expenditure in underdeveloped countries is rich in penetration, wisdom, and good sense. It is to be hoped that it will be read—not merely tasted but also chewed and digested—by planners, advisers, officials, and finance ministers in underdeveloped countries. The theoretical introduction is cogent and provocative, but it is the subsequent distillation of "practical" insights, drawn largely from the author's experience as adviser or administrator in Africa and in Jamaica, which gives the paper its distinctive value. Although some of the observations and recommendations reflect the special circumstances and problems of the countries in which he has served, most are of quite general applicability.

According to Professor Lewis, the gap between the appetite for increased public services and the willingness to bear increased taxes is particularly wide in the underdeveloped countries, and his paper is addressed to the problem of dealing, or coping, with this gap. He emphasizes the constraints within which the budget maker must proceed in his efforts to bridge the gap, and avoids the economist's temptation to recommend unrealistic and extreme measures. On the side of revenue, the scope for tax increases is limited by the necessity of reserving a major share of the increments of national product—he suggests 60 per cent as a rule of thumb—for increased private consumption. On the expenditure side, extreme austerity in public services is both impracticable and undesirable. Although heavily discounting the currently fashionable "investment in human capital" justification for large expenditures on education or health services, Professor Lewis nevertheless maintains that, even if viewed chiefly as consumption, public services should be accorded high social priority. I agree both with this formulation of the budgetary problem of underdeveloped countries and with most of Professor Lewis's specific recommendations.

A strong case is made for fiscal decentralization, partly on general

theoretical grounds but more specifically because of the special need in underdeveloped countries to establish popular awareness of the link between increased taxes and expanded governmental services. This is undoubtedly good doctrine, but it is important to recognize that in most countries increased local financing of government services can, at best, proceed only slowly. Fiscal decentralization implies administrative decentralization, and the necessary local administrative apparatus is usually nonexistent. The central governments usually are not well fitted to administer education and health services, but, for better or worse, theirs is the only administrative apparatus which exists. Progress in building up local revenues and local administration is likely to be least difficult in major cities and the advanced sector, although in rural areas emphasis on fiscal decentralization might provide a means of reviving land taxes, which in real terms have declined almost to the vanishing point in many countries. It must be recognized that the transfer to local financing of such services as education and health implies marked inequalities between city and country and between advancing and backward regions in the scope and quality of services, and that a substantial contribution from central revenues to the cost of these services is essential if these inequalities are not to become unacceptably large. Since popular pressures for reducing regional disparities are very strong, the role of central government financing must remain considerable.

Professor Lewis's proposal for earmarking of particular taxes to specific services deserves serious attention. Although this device is already much employed today, its use could undoubtedly be further extended. Whether, in fact, such earmarking brings the quantity of the service more into line with public preferences is debatable, but its adverse effects are far less great than those of the tying which results from separation of revenue and capital budgets. The present practice of building schools without teachers and hospitals without doctors or nurses might not cease if the distinction between revenue and capital budgets were abolished, but this practice might become somewhat less common. Improvidence in public construction combined with neglect of the recurrent costs of maintenance and operation is one of the worst features of public expenditure planning in underdeveloped countries. The separate capital budget, under which borrowed funds are used only for capital outlays, does little or nothing to limit and much to distort outlays.

With respect to specific types of expenditure, Professor Lewis's recommendation that it is more efficient to send students abroad for university education than to provide higher education at home is more

clearly valid for small African and Caribbean countries than for underdeveloped countries as a whole. Education abroad undoubtedly contributes to the serious "brain drain" from underdeveloped countries, and this must be reckoned as one of its costs. On the general question of costs of education and health services, there is need for greater information on the extent to which these services are subject to economies of agglomeration. Is it not much cheaper to provide education and health services of given quality in cities and towns than in rural areas?

In his analysis of major expenditure categories, Professor Lewis did not comment upon the typically large outlays for the military establishment and other expenditures for ostentation and prestige—new national capitals, pretentious public buildings, international airlines, overextended diplomatic establishments, and so forth. In these fields of expenditure, the wants which are gratified are frequently those of the political leaders, civil servants, and military officers themselves. The government, in its role as composer, often plays tunes for its own enjoyment, and the opportunity for economies in military and ostentation expenditures is particularly great.

Perhaps of greatest interest to builders of programing models is Professor Lewis's proposed rule of thumb that the marginal tax plus saving ratio should not exceed 40 per cent, partly for incentive reasons and partly because growth of output goes hand in hand with an upgrading of labor from lower-income to higher-income activities. Large earnings from mining, favorable movements in the terms of trade, or a succession of favorable harvests would raise this ratio, but it is probably true, as this rule of thumb implies, that an initial decision regarding the feasible marginal ratio of taxes plus saving to output is the best starting point in framing a development plan. For many countries, a marginal ratio of 40 per cent is still unattainably high.