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Income Distribution, Basic Needs, and Trade-offs with Growth: The Case of Semi-industrialized Latin American Countries

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Summary. — This paper addresses income distribution issues and policy options to eliminate extreme poverty in a particular typology of middle-income semi-industrialized developing countries of Latin America. The countries included in the typology are characterized by a relatively high *per capita* income (above US\$700/yr in 1977), a relatively high degree of industrialization (industry representing over 30% of GNP), a rather large size both in population and area, and relatively well endowed resources in agriculture. A distinctive feature is a strong inequality in the distribution of income and wealth relative to other countries of similar levels of *per capita* income. The countries included are Brazil, Colombia, Ecuador, Mexico and Peru, representing two-thirds of the population of that region.

1. POVERTY AND INEQUALITY

This group of semi-industrialized developing countries has experienced an impressive growth during the last decades, GNP *per capita* reaching 3.8% per annum. Mean *per capita* income reached \$1168 in 1977 (Table 1), mean life expectancy reached 60 yr and mean calorie consumption has become equal to the *per capita* calorie requirements.

What is striking is the coexistence of these high means with an extremely unequal distribution of these welfare indicators across the population, i.e. the problem of inequality. In spite of high mean levels of *per capita* income, almost 28% of the population suffers from a caloric deficit. Because poorer families have more children, 36% of all children suffer these caloric deficits (Table 2).

The same can be found for welfare indicators other than income. In Brazil, differences in life expectancy of 21 yr are found between the poorest groups in the rural Northeast and the richest groups in urban areas. In Mexico, infant mortality per 1000 live births ranges between 39.2 for the richest states and 105.9 for the poorest. In Ecuador it ranges from 45.5 to 112.1.

Most surveys indicate that when households are classified by *per capita* household income, most of the poorest 20-40% of families live in rural areas. The share of rural households in

the poverty group ranges from 58% for Colombia to 82.7% for Peru. Brazil's figure falls between 64.3 and 72.9%, whereas the Mexico figure is approx. 75%. In several countries, rural poverty is associated with particular regions; in the case of Brazil half the families in the poverty group are located in the rural Northeast, and in the case of Peru, in the Mancha India.

These figures exaggerate the participation of rural households because the reported income figures must be corrected by different price levels, particularly those of food. In the

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Table 1. Per capita income and growth rates

Country	Population 1977 (millions)	Per capita income, 1977 (dollars)	Growth rates (1960-1977)		
			GNP (%)	Population (%)	GNP per capita (%)
Brazil	116.1	1360	7.8	2.9	4.9
Colombia	24.6	720	5.5	2.8	2.7
Ecuador	7.3	790	6.1	3.0	3.1
Mexico	63.3	1120	6.1	3.3	2.8
Peru	16.4	840	5.2	2.9	2.3
Average (weighted)		1168	6.8	3.0	3.8

Source: *World Development Report II* (IBRD, 1979).

Table 2. Percentage of individuals with caloric deficit, 1976

Country	Population	Children	Aggregate income gap (%)
Brazil	24.0	32.4	2.2
Mexico	24.0	32.4	2.3
Ecuador	40.0	48.8	8.9
Peru	35.0	42.7	4.1
Colombia	26.5	35.8	3.6
Average	27.75	36.0	3.0

Source: M. Selowsky, 'Balancing trickle down and basic needs strategies', World Bank Working Paper No. 335 (June 1979).

case of Peru, such adjustments lowered the percentage of rural households in the poverty group to 59%.¹ The use of differential poverty lines provided by ECLA for urban and rural areas show that approx. 60% of households in the poverty group are rural.²

How are these households linked to the urban and rural economies? What are their sources of income? These are important questions for identifying points of policy intervention. Ideally, one would like to classify rural households according to the relative importance of their share of income from ownership of land, sharecropping and the provision of wage labour to other farmers. Because the typical population census or household survey from which these poverty groups are constructed usually does not provide this data, sectoral (i.e. agricultural census or urban employment) surveys must be used to derive this information.

Scattered evidence tends to show that the mixture of sources of earnings for the rural poor varies considerably in the countries explored. In Peru, 80% of the rural poor are

subsistence farmers of distinct ethnic background. 'Subsistence farmers are mostly Indian, Quechua or Aymara speaking, and in 1961 about 70% were illiterate. Their principal source of livelihood was on the average about 0.9 ha of Sierra cropland, three heads of cattle, and some other livestock. Most earned some cash income by seasonal labor on larger farms or occasional sales of livestock products.'³ In Colombia, approximately half the rural households in poverty are small producers, the rest landless labour. Nevertheless, even small producers received at least two-thirds of their earnings as wage labour in larger farms.⁴

In contrast to Peru, where most rural poor are subsistence farmers, the evidence for Brazil shows that most of the poor are landless labour. According to the SUDENE-IBRD survey in Northeast Brazil, only 1.7 million of the 6 million rural labour force (heads of households plus working family members of landowners) own land. Of this 6 million, 'about three million have no access to land, and subsist on temporary employment or scrounge out a living on lands so poor or remote that

they were not captured by any of the censuses, cadastral survey or the SUDENE-IBRD survey. These three million and their families constitute the hard core of poverty in the Northeast. Most landowners (even if they own only two or three hectares of poor land), sharecroppers, renters and permanent workers, realize real incomes at or above the absolute poverty line, but the remaining persons presumably do not, and this situation is easily traceable to their lack of access to land.⁵

This evidence shows that rural poverty cannot be characterized by a single, simple occupational classification. Small farmers do not seem to represent the core of rural poverty, as is usually believed. Landless labour is at least equally represented in the poverty group, and wage earnings represent an important component of income, even in the case of subsistence farmers. This has important policy implications, as will be seen later.

Two patterns seem to emerge from the data on the urban poor: most poor are located in non-metropolitan areas, particularly in small towns; about half of them are associated with commerce and the service sector. Depending on the country, between half and two-thirds of heads of households in the poor families are salaried employees, the rest self-employed.

There is no single relationship between unemployment status and households in poverty. Open unemployment does not seem to characterize the households in the poverty group. A recent study at ECLA shows that most heads of households in the poverty group are employed, although a large percentage of them are underemployed, working fewer than 39 hr a week, and are willing to work additional hours.⁶

The evidence indicates that relative income inequality has, at best, remained constant over these long periods of sustained economic growth. Although the fraction of people in poverty has declined, the force of population growth has resulted in a constant *absolute* number of people in poverty. In Latin America, 100 million people live and will remain in absolute poverty during the next two decades. What is of interest is that despite a constant number of poor, the economic capability of solving the problem of poverty has increased substantially.

Let us define as the poverty line the *per capita* income at which families purchase an amount of food yielding the required amount of calories. Therefore, we can define as the aggregate income gap the fraction of GNP that, if transferred to households below that poverty line, would lift these families to that income

line. This income gap amounted to 8% in 1960, 4.5% in 1970 and 3.0% in 1976 (see Table 2).⁷

The above figures clearly show that in these countries poverty is, and will increasingly be, a purely distributive problem rather than the result of a lack of aggregate resources. Eliminating extreme poverty while maintaining a high growth rate should be feasible. It is the option explored in this paper.

2. AREAS OF POLICY INTERVENTION

Areas of intervention for poverty alleviation are grouped here into three categories. The first includes the elimination of distortions that are adverse to a stronger trickle-down effect of growth; its objective is to increase the employment content of growth. The second area refers to investment policies to increase the endowment of human and physical capital of the poor. Here we are only interested in high-yielding investments, namely, those that are good for the poor but also for the growth rate. Both sets of policies have two features. First, they increase the welfare of the poor by increasing their earning capacity. Second, they do not impose a trade-off between distribution and growth or efficiency. On the contrary, they can benefit both equity and growth.

The third area is 'basic needs'; poverty alleviation must also be measured by welfare indicators other than income. Increases in health status, life expectancy and civic participation depend on the consumption of goods and services like food, health, housing and minimum education. Analytically, it is convenient to separate this area from the second area of intervention: first, they might not represent a 'good' investment and, second, their consumption might not rapidly respond to the increase in the income of poor families; in other words, the first and second options do not automatically guarantee the 'basic-needs' objective of poverty alleviation.

(a) *Policies without trade-offs: eliminating distortions that are adverse to both employment and growth*

(i) This section reviews policies to eliminate those distortions that not only have, by definition, a negative effect on output, but also adversely affect employment. Of special concern is the employment generation effect of GNP growth, because it is the basic mechanism by which economic growth trickles down to the poverty groups.

Although some distortions are the result of historical forces unrelated to public policy, most have been policy-induced and, ironically, were initially conceived to improve income distribution and employment growth.⁸ *The central point here is that the distortions introduced were not the result of the objective per se but of the specific policy instruments selected to achieve it.* Thus, the trade-off between these objectives and economic efficiency was the outcome of choosing the wrong instruments rather than an inherent incompatibility between them.

Why were these instruments chosen in the first place? Why were they not replaced by instruments capable of achieving the desired redistributive effects without efficiency losses? The answer is fiscal expediency. The trade-off between employment and distributive objectives, on the one hand, and economic efficiency on the other, resulted from having used fiscally cheap instruments. The cheaper the instrument, the higher the inefficiency generated in the process of achieving a redistributive goal. The main thrust of this section is to show that, today, these countries *can afford 'expensive' policy instruments and, therefore, avoid such trade-offs.*

Two sets of distortions that have adversely affected the employment generation effect of growth are explored: first, those that have distorted the composition of output either by trade policies or by internal price policies; and second, those that have increased the relative cost of labour over and above the one corresponding to the relative abundance of labour in the economy.

(ii) Trade restrictions provide a different premium to the export sector (when they generate one dollar's worth of exports) than to the import-competing sector (when they substitute one dollar's worth of imports). The distortion is defined by the end result of the policy: the import-substituting sector expands relative to the export sector and ends up by using more resources per dollar substituted than those used by the export sector per dollar generated through exports. If import restrictions are concentrated in particular import-competing industries (those requiring higher protection) the import-competing sectors without (or with small) protection also tend to be discriminated against.

Agriculture, either through its exports or its import-competing activities without protection, received most of the negative effects of such policies. To the extent that its labour-intensity is greater than that of the highly protected industrial activities, the net effect on global

employment is negative.

On several occasions employment creation was the objective of tariff protection policies to the industrial sector. The question arises why government chose such policies. One explanation is that the positive and negative effects on employment resulting from industrial protection are not symmetric in terms of timing or visibility. New industrial activities emerge quickly when they are the result of tariff barriers; the barrier is simply the result of negotiations with domestic investors or multinational enterprises, i.e. the new investment has been 'latent'. The positive effects on employment are immediate, highly visible, and concentrated in urban areas. Urban labour usually has a stronger political militancy than rural labour. The negative effects of such policies usually occur over the long run and are less visible: the mechanism is the exchange rate, which tends to increase less than it would otherwise have, and the effect is spread across a large number of productive units and regions (it is less visible from a political point of view).

Trade restrictions adversely affecting the agricultural sector have also been undertaken to keep consumer food prices below world prices. When this is achieved by food import subsidies or prohibitions on food exports, prices to domestic producers go down below world prices. A policy that lowers consumer prices without discriminating against domestic producers involves a subsidy on total consumption, independent of the source of supply. Obviously, this entails a larger fiscal burden than that of alternative instruments.

Unless consumption subsidies are used, policies to keep the price of food down will discriminate against agriculture. The cheaper (fiscally) the instrument used, the less successful it is in reaching the objective without adversely affecting agricultural output and employment.

(iii) Most countries place ceilings on nominal interest rates that, under inflation, yield low or negative real rates and strong excess demands for credit. Thus, credit becomes allocated to pressure groups and to large enterprises where risk is minimal (interest rate differentials are not allowed legally so as to compensate for differential risks). Large enterprises in the industrial sector receiving that credit are perhaps the less labour-intensive activities in the economy.

Undervalued exchange rates and imports of capital goods without import duties are further sources of a cheap use of capital, as are tax credits and tax exemptions for investing in 'backward regions'

(iv) Minimum wage laws, social security legislation, and laws governing the stability of employment have been typical interventions to increase the real income of labour.⁹ Such policies have been enforced in particular sectors of the economy, in registered enterprises and particularly in the urban economy. For some labour skills, especially the lower ones, this legislation has become binding and thereby increased their real wages. To the extent that the demand for labour has some price elasticity, this increase has been achieved at the expense of a lower employment in these sectors.

From a political point of view, the room for manoeuvre in this field is limited. Of importance is to avoid adverse employment effects as governments extend wage legislation in the future to larger sectors of the economy, such as agriculture and the informal urban sector, particularly services. The issue is how to increase the coverage of these benefits without substantially increasing the cost of labour to these other sectors.

Present minimum wage legislation and social security contributions cover only a small fraction of the labour force, i.e. that in the modern urban sector. Because this sector uses more skilled labour and is subject to more labour union pressures, only a fraction of their employment is bound by the minimum wage law (most workers earn a higher wage); the basic effect of such legislation is to increase the cost of labour through social security legislation, which sets a percentage contribution as a fraction of the wage. Extending legislation to more traditional sectors, such as agriculture and the informal urban sector, implies reaching activities of higher labour-intensity, higher factor substitution, and employing labour of lower skills. Labour not covered by legislation has the lowest wages and incomes; only 8.5% of workers covered by the social security system belong to the poorest quintile of households in the case of Colombia.

Table 3. *Social security contributions as a per cent of the wage, 1970 (%)*

Country	Range
Brazil	20.7 - 21.1
Colombia	10.8 - 18.3
Ecuador	13.5 - 14.5
Mexico	15.2 - 20.8
Peru	9.5 - 13.0

Source: OAS, *Guidelines for Achieving Maximum Employment and Growth in Latin America* (1973).

The employment effects of extending labour legislation, *minimum wages coupled with legal social security contributions by employers*, can be significantly more important than the effects of that legislation in the present. Minimum wages will increasingly become binding and therefore cover a much larger fraction of the labour force; the joint effect of both minimum wage plus social security will involve a more important increase in the cost of labour than presently exists. If demand elasticities are higher in these new sectors, because of higher labour-intensity and higher factor substitution, the potential negative employment effects are reinforced.

Table 3 shows some orders of magnitude by which social security legislation increases the cost of labour. In some countries it reaches 20% of the wage. If the price elasticity of demand for the output as well as the elasticity of factor substitution is 1 and the share of labour is 0.5, an increase of 20% in the cost of labour will diminish employment in those activities also by 20%.

To avoid such increases in the cost of labour, minimum wage laws should be complemented by subsidies (or tax exemptions) on the use of labour, and social security financed by the central budget instead of by the employer. This is well known; the issue is selectivity so as to make this policy fiscally feasible.

One solution is to use these instruments at the margin and in sectors where labour demands are price-elastic. Subsidies could be given on the basis of additional employment, relative to a base year or relative to a fraction (i.e. 0.90) of the employment over, say, the last 2 yr. The same would apply to social security contributions; employers would be exempt only for additional employment, the contribution to be financed by the central budget. Sectors with high labour-intensity and high capital-labour substitution such as certain activities in agriculture, construction and commerce are likely candidates for these policies.

The notion of policies at the margin can also be applied to other types of legislation. Laws imposing high penalties on the dismissal of workers, for example, have become a typical feature of wage legislation, even more so than in developed countries. The result is that the hiring of labour has become a capital investment whose cost is governed by law. These laws could be replaced by unemployment insurance schemes financed by the public budget, providing unemployment payments that gradually decline over time and only last for a limited period.

(v) In most of these countries, wage levels are strongly associated with the degree of 'modernity' of the sector of employment and with the size of enterprises. Labour market segmentation, the extent to which labour of equal skills receive very different salaries, is also associated with these characteristics. The empirical evidence shows that such segmentation not only has not diminished, but has perhaps increased over time. These wage differentials are partly explained by the differential enforcement of labour legislation described earlier and partly the result of labour contracts in enterprises with strong labour unions or multinational firms paying higher wages than domestic firms.

The end result is that 'protected' or formal labour markets face an excess supply of applicants, those failing to obtain employment ending up in the 'informal' or free-entry sectors where the wage tends to clear the market, reflecting supply-demand conditions.

What are the implications of this segmentation in labour markets for income distribution and the returns to unskilled labour? Two studies undertaken for Colombia shed some light on this question. By eliminating wage differentials for labourers of equal education in urban Colombia, the real wage of the most unskilled category of labour was estimated to rise by 8%.¹⁰ This is a lower bound as only factor substitution takes place in this exercise.

When additional substitution and rural-urban migration is introduced (that is, long-run adjustments are allowed), the results can be substantially stronger. By introducing substitution in the final goods market, as well as the possibility of international trade, and by assuming that urban-rural wage differentials are maintained (which limits the degree of migration), the elimination of urban wage differentials was estimated to increase the real wage of unskilled labour, urban and rural, by 35%.¹¹

(vi) The literature shows a growing pessimism about the possibility of the manufacturing sector absorbing the high growth rate of labour supply in these countries. It is argued that manufacturing employment is still a small share of total employment (15-20%), and that its growth, therefore, cannot absorb important fractions of the total labour force. It is also argued that the rate of job creation in these sectors is low for a given output growth, that is, employment-output elasticities are lower than one - in other words, employment grows more slowly than output.

The second argument, however, overlooks the fact that job creation has taken place with quite substantial increases in real wages. Clearly, one cannot have both: given the high growth rates in real wages, the employment growth has been substantial, particularly relative to other historical experiences.

Table 4 shows that, on average, employment and real wages have been growing at 3.6 and 3.7%, respectively. The question is what the increase in employment would be if additional effort were made to translate these increases in labour demand into additional employment rather than into additional wage increases, and what policy instruments should be employed in such effort. The answers to these questions are relevant to the issue of increasing the trickle-down effect of an increase in labour demand.

If the increases in labour demand that led to the combination of increases in wages and employment observed in Table 4 are maintained in the future, the following trade-off between wage increases and employment increases will occur.¹² If wages were kept at a 2-3% growth

Growth in wages (%)	Growth in employment (%)
2	7
3	5
4	3

Table 4. Annual growth rates in employment and wages in the industrial sector, 1963-1972 (percentages)

Country	Employment	Real wages
Brazil	4.1	2.8
Colombia	4.2	2.7
Ecuador	5.8	2.5
Mexico	1.9	6.9
Peru	1.8	3.7
Unweighted average	3.6	3.7

Source: U.N. *Growth of World Industry*, reported in P. Meller, 'Enfoques sobre la demanda de trabajo: relevancia para America Latina', (CIEPLAN, June 1978).

rate, the employment growth rate in these sectors could reach 5–7%.

The figures in Table 4 are averages for workers of all skills. As mentioned previously, evidence indicates that real wages for educated workers have grown faster because of the short-run inelasticity of the supply of educated manpower. Expansion of the educational sector (discussed in the next section) will increase this elasticity and assure that additional labour demand results in a wider employment effect rather than higher rents of already employed workers. For lower skills, wage increases co-exist with elastic labour supplies stemming from the rest of the economy. The issue of labour market segmentation discussed previously is central to the explanation of this phenomenon.

(b) *Increasing the earning capacity of the poor by augmenting their endowment of assets: identifying the good investments*

(i) *Introduction*

One way of increasing the earning capacity of poor households is to augment their ownership of productive (human and physical) assets. This option is appealing because it automatically takes care of the long run: first, by increasing present ownership it increases the future flow of productive capacity; and second, it is perceived as less paternalistic than policies that directly subsidize the consumption of the poor.

A more explicit statement of the limitations and trade-offs of such an option is needed. For example, what are the limits of using this instrument for distributive purposes without a substantial trade-off with growth objectives? What are the criteria by which this trade-off can be judged? Can an optimal level of intervention in this area be identified, that is, a level of additional asset-creation among the poor that does not adversely affect growth?

Investments in the poor that do not adversely affect growth are, by definition, those whose rate of return (valued at shadow prices, *without* a distributive weight correction) is higher than the opportunity cost of capital to the economy. Therefore, the magnitude of the underinvestment in the poor can be defined as that amount of high-yielding asset formation which does not materialize because of the market imperfections facing the poor, particularly in capital markets.

Correcting such underinvestment does not introduce a trade-off between distribution and growth; on the contrary it has positive effects on both equity and growth.

Why have not governments taken care of this underinvestment if they indeed were interested in growth? Two reasons are possible: either few of these good investments remain, or the market imperfections facing the poor were a way of channelling credit and investment toward higher-income groups. In other words, credit rationings allowed income groups with access to credit to undertake investments with returns below the opportunity cost of capital to the economy.

The first task, therefore, is to exhaust the search for good investments in the poor. Only by first identifying and evaluating the contribution of these investments to their incomes can we then proceed to other interventions involving a higher degree of trade-off.

The availability of 'good investments' depends on the particular characteristics of the poor; the existence of such investments is highly country-specific, highly interdependent and highly dynamic; it depends on the age characteristics of the poor (there are fewer good investments to be made in the very old), their human capital potential (for example, the fraction of physically and mentally handicapped in the poverty group), and their initial ownership of physical capital (for example, the fraction of artisans and small farmers or sharecroppers among the poor). Some empirical evidence helpful in identifying these investments is discussed later.

(ii) *Investment in human capital*

These investments include all interventions that, by influencing the characteristics of individuals, affect their productivity as labour inputs. Investment in education and on-the-job training are interventions whose productivity effects have been well studied. Interventions at preschool age among poor children, infant nutrition, and other environmental variables such as health and psychological stimulation, have been analysed but not yet quantified for their economic impact.¹³

These investments are particularly important because half of the poor individuals are children below age 15, whose future productive potential is influenced by early interventions: raising the income of households in the present does not guarantee a sufficient investment in children on the part of their parents; in most societies the impossibility of borrowing against human-

Table 5. *Studies on the effect of malnutrition on learning*

Authors	Deficit in performance	Probable effect on consequent learning
Cravioto and De Licardie (Mexico)	Auditory-visual integration	Reading ability
Cravioto <i>et al.</i> (Mexico)	Visual-kinesthetic integration	Writing and drawing abilities
Champakam <i>et al.</i> (India)	Visual identification	Reading abilities
Cravioto <i>et al.</i> (Mexico, Guatemala); Guthrie, <i>et al.</i> (Philippines)	Kinesthetic-visual, kinesthetic-haptic, haptic-visual, and auditory-visual integration	General learning abilities

Source: J. Cravioto and E. de Licardie, 'The effect of malnutrition on the individual', in A. Berg *et al.* (eds.), *Nutrition, National Development and Planning*, (Cambridge, Mass.: MIT Press, 1973).

capital formation (there is no collateral) increases the possibility of underinvestment in education by poor families.

Growing empirical evidence shows that preschool children of poor families have a lower performance in most ability tests than matching controls from higher-income groups. Much of this difference can be attributed to the nutritional-health-psychological environment of preschool age children. If environmental deficits affect the future productivity of the individual as well as his future capability to benefit from schooling, the question arises whether countries are not indeed underinvesting in preschool age interventions for poor children. Table 5 presents a survey of studies whose specific aim was to evaluate the effect of infant malnutrition on specific types of abilities in young children that are crucial to basic learning. They show the mechanism by which early malnutrition can affect the effectiveness of later schooling.

Policies to change the out-of-home environment through widescale preschool compensatory programmes are difficult to undertake in the short run, unless such programmes are simply extensions of existing elementary schooling that can draw children into kindergarten programmes 1 or 2 yr earlier. Experience in the United States shows that because extensions of the 'kindergarten type' are either insufficient in themselves or improperly designed, they cannot compensate for the environmental deprivation suffered by low-income children. A more complex programme is required.

A partial solution, at least in the short run, might be a corrective policy geared to lower-income children who enter primary school at a

later age (1-3 yr later) than higher-income students. Educational programmes for young women concerning childrearing practices would provide another type of solution. Two kinds of educational programme are important. First, nutrition education, particularly that relevant to infant-feeding and breastfeeding practices. Growing evidence indicates that the decline in breastfeeding practices in low-income families of urban areas is a main determinant of infant malnutrition. The resource cost of substituting breast milk appears quite large; preliminary estimates suggest that if 20% of the mothers in the urban areas of developing countries do not breastfeed, the loss in breast milk is around \$365 million/yr; if half of the other 80% discontinue breastfeeding after the sixth month, the total loss reaches \$780 million.¹⁴

Second, education on childrearing practices with particular emphasis on early stimulation is another course of action. Implementing educational programmes of this type requires some preliminary research, which has not taken place on a wide scale in developing countries. Questions that arise are: How different are childrearing practices across families in developing countries? What are the factors determining these differences? Are they related to income or to particular ethnic groups of the population?

In spite of spectacular expansions in enrolments and in the supply of educated labour, the evidence suggests that basic education is still an effective and productive way of increasing the earnings of poor households. First, still today, poor households are characterized by extremely low levels of schooling among their working members, as well as low levels of school enrol-

ment among their children; data by income groups show that 30% of heads of household in the poorest quintile of families in Colombia have zero yr of schooling. Almost 60% have only 2 yr or less. In the same income group, only 54% of children age 6-11 attend school.¹⁵ Cross-section regional data for the other countries show that an important number of provinces still have enrolment rates under 60% for children below age 10.

Second, basic education has an important net impact on the earnings of labour, even if unemployment is taken into account and only possibilities of work in the informal sector are considered; arguments against, based on presumably high levels of unemployment among educated labour and on the notion that education is simply a screening device (to allocate 'scarce' jobs in the modern sector), do not seem to be confirmed by the existing evidence.

In the case of Colombia, adjusting the rates of return to education by the probability of unemployment lowered the rate of return from 33 to 28%.¹⁶ Although unemployment lowers the return it still remains substantially high. Controlling for other factors positively associated with schooling and having an independent effect on labour earnings, the effect of schooling is still important. Table 6 presents a summary of results of nine Latin American countries; even controlling for occupation and type of activity (employment variables), years of schooling explains between 7 and 25% of earnings inequality. This is a strong test for education: education also changes productivity by inducing cross-occupational and cross-sectorial mobility, an effect that is not captured by these estimates. These percentages are, therefore, a

lower bound for the capacity of education in explaining productivity differentials.¹⁷ Similar results are reported for several cities of Colombia. Controlling for occupation, economic sector and social stratum, primary education increases earnings by 40, 16.4 and 38.3% in the cities of Bogota, Barranquilla and Cali.¹⁸

Basic education is undoubtedly an important way of increasing the incomes of poor households. Whether it is also a good investment from the point of view of resource allocation depends on the economic costs of achieving increases in earnings capacities, the rate of return to investment in primary education. Several studies show that not only the rate of return on primary education is higher than any conceivable opportunity cost of capital (the mean rate of return is 25.1%) but it is substantially higher than the return on other levels in schooling.¹⁹ Clearly, these countries are underinvesting in basic education.

Why do not poor households increase their enrolment in basic education as a reaction to its high rate of return? Why do rich households still invest in higher education in spite of its low rate of return? Although public primary education is free, other costs of schooling — basically foregone earnings — are important costs for poor families. Their implicit discount rate is also high, even in comparison with the high rates of return to primary education. Higher education is highly subsidized in most countries, consequently the private rate of return faced by rich households is substantially higher than the social. In Colombia the social rate of return is 8% while the private is 25%; not only rich households are being subsidized but this subsidy encourages investment in a

Table 6. *Latin America — contribution of different characteristics to the explanation of earning inequality: ranges encompassing all country results* (%)*

Areas	Personal variables		Employment variables	
	Education (years of schooling)	Age	Occupation	Activity
Urban				
Employees	7-17	10-21	6-12	5-9
Self-employed	8-22	15-26	3-9	3-10
Rural				
Employees	9-13	10-18	3-6	3-7
Self-employed	13-25	12-20	0-8	1-4

Source: Oscar Altimir and Sebastian Piñera, 'Decomposition analysis of the inequality of earnings in Latin America' (ECLA-World Bank, August 1977).

* Countries included are: Argentina, Brazil, Colombia, Costa Rica, Chile, Mexico, Panama, Peru and Venezuela.

sector with an economic return barely matching the opportunity cost of capital relevant to most countries.

The policy implications of this are that the incentives for poor families to increase their enrolment rates must be increased. The constraint is not the capacity of schools but the demand for schooling by poor households. Additional incentives to compensate for foregone earnings (particularly in rural areas where employment opportunities for children are higher) and transportation costs are easy to implement; school breakfasts and lunches, free transportation by school buses are some examples. Such measures can be easily financed by a redistribution of subsidies within the education sector, specifically by eliminating subsidies to higher education. These measures will be analysed in detail in Section 2(c).

(iii) *Increasing the physical assets of the poor in the rural areas: identifying the good investments*

Policies to increase the ownership of physical assets by poor households are particularly relevant in rural areas. Their potential depends on the initial occupational distribution of rural households. Without considering transfers of existing land, its effectiveness depends on: the fraction of existing landowners in the poverty group, such as the ratio of subsistence farmers to landless labourers among the poor; the possibility of finding high-yielding investments among subsistence farmers; and the yield on the investment in extending cultivable land eventually to be transferred to poor households. When a redistribution of existing land is feasible, such investments can then be calibrated to take into account the complementarity between investment and transfers.

In the absence of redistributions of land the effectiveness of investment policies will depend on how important is the fraction of landowners or small farms in the poverty group. Unlike in Asia, most rural poor in Latin America are landless, accounting for two-thirds of the rural poor. The question arises, therefore, whether the present enthusiasm for a 'small-farmers strategy' to poverty alleviation can be justified in the context of Latin America. Without redistributions of land, that strategy reaches only a small fraction and the better off of the rural poor.

Credit, extension services and investment in roads and irrigation schemes are typical interventions that could increase the productive capacity of small farmers. The question is how many of these investments have a high rate of return and could easily be targeted to the poor.

Two features of these countries limit the effectiveness of such policies: location and country size, and the problem of targeting without substantial leakages to high-income groups.

Subsistence farmers are rarely concentrated so that regional policy packages could be designed. Because in most countries subsistence farmers coexist with large farms, only specific programmes can be targeted (credit, technical assistance); other programmes such as roads or irrigation would subsidize other farmers as well. Unless 'non-target farmers' are charged for the programme, the financial cost per 'subsistence farmer reached' becomes prohibitive.

Because of their crop pattern, irrigation is perhaps the main constraint to increase the productivity of the small farmers. Their location (basically the high plateaus), however, makes investment in irrigation a costly undertaking and economies of scale resulting from cooperative arrangements are prevented by distance and geographical dispersion. The conclusion is that with present patterns of ownership and spatial distribution of land, possibilities of increasing poor farmers' income by means of high-yielding investments are limited.

Countries that have undertaken land reform include Mexico (1940) and Bolivia (1955), where large 'haciendas' farmed with traditional technology were subdivided into small farms. Peru is still implementing the land reform begun in 1973. The general evidence as to long-term effects of such reforms indicate that small farmers have increased their previously low income, and farm output has increased overall.

Several specific lessons seem to emerge from those experiences: the minimum farm size required to sustain farmers' incomes and to take advantage of minimum economies of scale is still high, consistently ranging between 30 and 40 ha, of which at least two-thirds is cropland and pasture; given this required farm size, only 30-50% of the rural population benefits. Over time, high population growth erodes the relative initial effect of the reform by increasing the relative number of landless families, maintenance of productivity gains not only requires high initial levels of investment, but also high levels of technical assistance and credit over time. The positive effects are less clear when large commercial estates or modern livestock operations were subject to land reform. There is a difference between redistributing land from 'haciendas' with traditional crops and redistributing land from high-technology, highly mechanized estates.

What can we learn from these experiences so as to evaluate options available today? In

countries where some reforms have taken place and where unreformed land consists basically of large, commercial estates, for which economies of scale and technology are important (live-stock, sugar, cotton), or of large traditional haciendas with small cropland potential (large estates in Mexico and Peru have only 10% of the cropland but 35% of pasture land) agrarian reform options are less clear. Redistribution of highly commercialized estates can entail a high efficiency cost unless co-operatives are implemented to maintain the gains of economies of scale; but the latter involve changing difficult social and institutional constraints. Redistributing traditional haciendas of lower-quality land, basically suited for pasture, requires high additional investments to support smaller family units.

The agrarian reform option becomes more important for countries that have not experienced redistributions of land and where the increase in output from reformed land could be achieved at good rates of return on the additional investment required. Brazil, Colombia, and to a lesser degree, Ecuador, are countries

where this is more probable.

What is the possibility, in some of these countries, of redistributions of land that either maintain their production level without additional investment resources or, if additional investment resources are required to raise the incomes of the beneficiaries, they do it with a high rate of return.

Several simulation exercises have been made assuming that the high productivity per hectare, usually observed in smaller farms, will be replicated when land is redistributed. Obviously, this always yields an increase in output. The problem is that the associated investment cost to maintain this replication – i.e. roads, irrigation, water, extension – is not brought explicitly into the picture so as to allow the computation of the net return to the reform.

The IBRD-SUDENE study on Northeast Brazil provides such an information. This study develops a model simulating the effects of land redistribution where 790,000 new farm modules of 34.8 ha each are created.²⁰ The initial conditions and the results of the land reform are summarized in Table 7. Workers without access

Table 7. *Rural Northeast Brazil**

1. The rural poor in the present: a functional breakdown

<u>Poverty level</u>	<u>Classification</u>	<u>Number of agents</u>	<u>Dependent population (million)</u>
Less than US\$50 <i>per capita</i>	Temporary workers	2.7 million or less	3.5
Not substantially above US\$50 <i>per capita</i>	Sharecroppers	240,000	1.2
	Permanent workers	895,000	4.5
	Smallest farmers	67,000	0.335
Above US\$50 <i>per capita</i> but less than \$130	Medium farmers	384,000	1.92
Totals		4.3 million	10-12 million

2. Potential for land redistribution

Number of existing large farms	37,038
Average size (ha)	742
Module size	34.8
Potential number of modules	790,000

3. Effects of the land redistribution

Net money income per module	US\$781 (\$130 <i>per capita</i>)
Net increase in value added*	US\$219.2 million
Required additional investment per module (US\$3500 per module)	US\$2765 million
Rate of return of the investment cum redistribution	8%

Source: Kutcher and Scandizzo, *The Agricultural Economy Northeast Brazil* (forthcoming).

* Net of accruals to all factors other than land and over and above the opportunity of labour.

to land currently represent two-thirds of the rural labour force and the main core of Brazilian poverty. The establishment of such 'module farms' gives land access to 20% of the landless labour in the poverty group (temporary and permanent workers and sharecroppers), increasing their *per capita* family income from 50 to 130 dollars/yr. The net increase in value added of the region, net of accruals to all factors other than land and over and above the opportunity cost of labour, is 219 million dollars. The required additional investment per module is \$3500, a total of \$2.7 billion. The implied rate of return to this redistribution cum investment is 8%.

The effects of this rather radical agrarian reform on the regional distribution of income are as follows. The percentage of households below a poverty line of \$78 *per capita* declined from 86.6 to 77.8%, a substantial change in absolute numbers, but clearly not the solution for the problem of poverty in the rural Northeast. Although the absolute number of beneficiaries is high — around three-quarters of a million households — the absolute base of people in poverty is equally large: 4 million members of the rural labour force still remain in absolute poverty.

(c) *The direct provision of services: the 'basic-needs approach'*

(i) *Introduction: toward a children-oriented basic-needs approach*

Measuring poverty alleviation in terms of welfare indicators other than income opens a new set of policy considerations. Not only *per capita* income is unequally distributed, but calorie consumption, life expectancy and infant mortality. They reflect inequality in the consumption of particular services, such as sewerage, water, education and health. Policies to increase their consumption above levels resulting from private demand and supply of these services define what has become known as a 'basic-needs' strategy. It implies interfering with resource allocation to reach these critical consumption levels at early stages of development, despite strategies to accelerate the growth in income of the poor. This strategy becomes more important the smaller the trickle-down effect of high growth rate policies on the income of the poor, the fewer the possibilities of increasing the earning capacity of the poor by high-yielding investments in their assets, the smaller the marginal propensity of the poor to spend on basic needs, and the lesser the possibility of the private sector

supplying them, particularly when the supply of these services is characterized by strong complementarities and economies of scale.

Two sets of issues are central in evaluating these policies. First, at the macrolevel, they involve some trade-off with growth to the extent that these services may have a more limited effect on the productivity of the poor. What becomes important is to calibrate this trade-off at the present (high) level of *per capita* income in these countries; this trade-off appears different today at *per capita* incomes of \$1000 than it did 25 yr ago when these countries had only half this income level. The second set of issues is microeconomic: (a) how can these services be delivered without major leakages to other income groups, (b) without inducing an effect simply equivalent to an income transfer, and (c) how can children be reached when intra-family leakages also occur?

Nutrition and child care, consumption of health services, shelter with water and sewerage, and basic education are typical services that determine 'quality of life'. The specific policy choice and mix are clearly country and regional specific, and involve a high degree of value judgment. Even objective judgments from the medical field, such as 'optimal calorie requirement', are still highly controversial.

The choice of a specific basic-needs strategy depends on the initial deficit, the age composition of the poor, the effect of rural-urban migration in redefining basic needs over time, and the income elasticity of the poor for different basic needs, namely, the rate at which the deficit will be closed by income growth in the poverty group.

Several factors point toward a children-oriented approach to basic needs. First, basic-needs deficits are associated with the distribution of income, and poor families have more children; the incidence of children with basic-needs deficits is larger than adults. Second, life expectancy at birth — basically determined by infant mortality — is perhaps the prime basic need. Infant nutrition, lowering of infectious diseases due to better shelter, and childcare are crucial inputs in this process. Third, evidence shows that the marginal propensity to spend on children (by defining a broad concept of such spending such as mothers' time, quality of parent-child interaction) is low. Additional rural-urban migration, a distinctive feature of the future, will compound the problem. All these propensities are lower in urban areas. In sum, normal income growth will not solve the basic-needs deficits of children.

Table 8. *Cost of the calorie deficit as a fraction of GNP (%)*

GNP per capita	Mean calorie availability over mean calorie requirement		
	0.9	1.0	1.1
600	1.95	0.70	0.0034
800	1.46	0.52	0.0025
1000	1.17	0.42	0.0020
1100	1.06	0.38	0.0018

(ii) *The calorie deficit*

Countrywide survey data on the present distribution of calories in the population is extremely scanty. An alternative is to allocate known aggregate (or country mean) consumption across income groups by using available income distribution data and assumptions about the relationship between consumption and income.²¹

Consumption by income groups was derived for alternative values of mean country *per capita* consumption: 0.9, 1.0 and 1.1 times the mean calorie requirement. The resulting calorie deficit was priced using the 'cost per calorie' implicit in the cost of the food basket used by ECLA in defining poverty lines. Table 8 shows the aggregate cost of the calorie deficit as a percentage of GNP. The results are shown for countries of different GNP *per capita* and different mean calorie availability over mean requirement. Under the worst of circumstances, this cost is between 1.5 and 2% of GNP for countries of US\$600--800 *per capita* income and about 1% for countries above US\$1000.

(iii) *Options in the health sector: the change of present biases*

Present public health systems are characterized by an expensive urban-curative orientation. Social security systems have become increasingly important in providing health services, but because their beneficiaries are mainly middle-income urban employees, belonging either to the public sector or to the modern private sector, they fail to reach non-affiliated urban workers and individuals in rural areas.

In Colombia households in the poorest quintile living in large cities receive a subsidy from the public health sector 5 times larger than those in rural areas. In Brazil the percentage of public health expenditures devoted to preventive medicine declined from 87.1 to 29.7 from 1949 to 1975. The effect is that, in spite of an increase in total public expenditures in health as a percentage of GNP from 1.0 to 2.5, the

amount spent on preventive medicine as a percentage of GNP has remained constant.

The expansion in the supply of rural, preventive-oriented health care will not, *per se*, guarantee increases in the consumption of these services. Interventions increasing the utilization of health institutions and in those factors affecting the demand for health services must also be identified. It was found in urban Colombia that, controlling for the income of the household, the level of family education had an important impact on the number of visits to doctors. In fact, doubling the level of schooling of the household head increased *per capita* visits by 18%. Thus, any determinant of 'health conscientiousness', schooling probably being one of them, becomes a point of intervention.

How expensive is a preventive-care-oriented health system aimed at a full coverage of the population? Preliminary estimates for Brazil show that such a system could be financed by maintaining the present 2.5% share of health expenditures in GNP.²²

These estimates are based on a strategy that would change the present 'urban-based-individual-curative system' trend. The alternative is a stronger emphasis on primary and collective health care in rural areas and poor regions based on the PIASS plan (Program for Grass Roots Health and Sanitation Actions in the Northeast). The principle behind PIASS is that 'a large variety of health problems may be successfully prevented and/or treated at the community level, without recourse to expensive hospitalization in urban areas, and that preventive and simple curative services should be integrated with more complex curative services through well-defined institutional channels'.²³

This system is based on three levels of medical facilities of increasing complexity: first, rural health posts in communities of 500--2000 inhabitants staffed by local auxiliaries, whose function is to prevent infectious diseases and detect more complex diseases. Second, health centres servicing three health posts and staffed by a nurse, a sanitation auxiliary, and a day-per-week visit by a doctor based in a larger health centre. This larger health centre is attached to a regional hospital, which represents the third level of health facilities and also serves the urban population.

By costing out the expansion of such institutions (operating and capital costs) and by projecting population growth, two alternative projections are made and shown in Table 9. The first aims at full coverage by the year 2000 and assumes a 7% GDP growth rate in the

Table 9. Brazil: coverage and costs of expanding a restructured health system

	Percentage coverage				Cost per cent of GDP	
	Urban		Rural Northeast*		Projection 1	Projection 2
	Projection 1	Projection 2	Projection 1	Projection 2		
1975	79.0	79.0	0(50)	0(50)		
1980	100.0	92.8	30(60)	15(60)	2.3	2.2
1985	100.0	96.4	65(80)	30(65)	2.4	2.4
1990	100.0	100.0	95(100)	45(70)	2.3	2.5
2000	100.0	100.0	100(100)	70(80)	2.0	2.5

* This coverage reflects the expansion of the first level of health posts. Values in parentheses refer to the capacity of the second and third levels, which are highly influenced by the present structure of the system.

period 1980–2000. The second involves a more moderate increase in coverage and assumes a GDP growth of 4%. In both cases the total health expenditure as a fraction of GDP remains in the 2–2.5% range.

This exercise shows that 2.5% of GDP can finance a proper health system in a \$1000 *per capita* income country with reasonably good growth, if the system is restructured to a less expensive primary-care-oriented system. Most of the other countries discussed here spend between 1 and 1.5% of GNP on health; therefore, it is likely that an additional percentage point of spending, plus a restructuring of their systems along the lines described previously, could have considerable impact on the health coverage of the population.

(iv) *Issues in delivering educational services*

The first priorities in expanding educational services are to expand rural enrolment rates by increasing incentives to attend school, and to increase the quality of teachers and teaching materials in rural areas. Neither goal can automatically be attained by simply expanding the physical supply of schools or school places.

Expansion of rural enrolment implies drawing an increasing number of children from families of lower socio-economic status and less densely populated areas. Their low enrolment is the result of factors affecting the demand for schooling as well as of the availability of school places. Low educational levels of parents and the cost of schooling – foregone earnings and transportation costs – are crucial factors in influencing the demand for additional schooling.

An illustrative case is Brazil. In 1974, enrolment rates of children aged 7–14 were 72.5, 55.3 and 44.4% for the total country, total rural areas, and the rural Northeast, respectively.²⁴ The constraint is not the lack of school places but rather an insufficient incentive to

remain in school. Subsidies to school attendance, such as school breakfasts and lunches, free provision of textbooks and clothing, and transportation, are relevant policy options. In the state of Goiás, for example, experiments with school meal programmes increased effective school attendance from 67–80 to 84–95%.²⁵

Another constraint is that teachers in rural primary schools, particularly in the more backward regions, have extremely low levels of pedagogical training. Ninety per cent of the teachers in Northeast Brazil lack pedagogical training altogether and most have little primary schooling. In 1972, 31% of the Northeast teaching force had not completed primary education, and in 1974, 77% of these teachers were reported to have had only primary schooling.

The inability to attract better teachers results from the low salaries paid by the rural municipalities in Northeast Brazil. Teachers with complete primary education received between US\$10 and \$51/month, compared with the legal minimum salary of US\$57. They usually work without contracts, and their salaries fluctuate according to the budget of the rural municipio.²⁶

From the previous data it is clear that a larger fraction of a country's primary education budget must be used, first, to increase incentives to attend rural schools, basically school meals (this is quite related to the nutrition objectives discussed earlier), and second, to improve the working conditions and increase the salaries of teachers in rural areas.

Preliminary estimates show that, for Latin America, providing 6yr of schooling to the overall population would increase the educational budget by 6–17%.²⁷ Because the share of expenditures in education in GNP is approx. 3–4%, this increase amounts to 1/5–2/3 of one per cent of GNP. This is the cost of expanding the supply of primary school places; an ad-

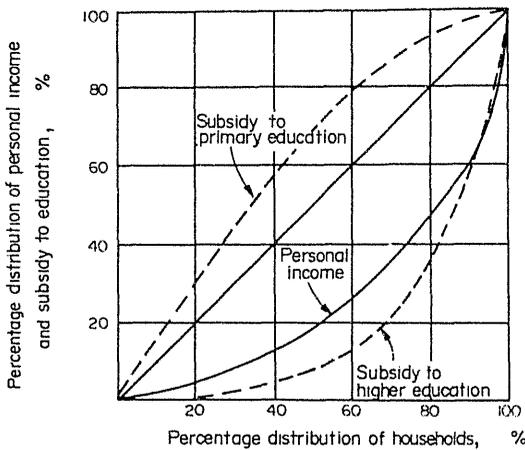


Figure 1. *Distribution of the subsidy to education and of personal income.*

ditional fiscal effort is required if better teacher salaries and school meals in rural primary schools become also part of this package. What additional sources of finance can be conceived *within* the educational sector?

The most obvious is to gradually eliminate the subsidy to higher education and to transfer these funds to primary rural education. This is an important source of financing because in most countries the subsidy to higher education is half the subsidy to primary education. Subsidies to higher education are perhaps one of the most regressive transfers in the economy.

Figure 1, for Colombia, shows a Lorenz curve for the distribution of personal income and the distribution of the subsidy to primary and higher education; it is clear that the subsidy to higher education is substantially more unequally distributed than personal income.

Equity and efficiency within the educational system point to a clear solution: the replacement of free higher education by a system where tuition covers the true cost of education and where students are given loans – to finance tuition plus foregone earnings – to be repaid after graduation.

(v) *Housing and associated services in urban areas: a cost simulation exercise*

Location and typical dwelling standards limit the access of the poor to new housing and a lack of capital markets compounds the problem. Table 10 shows that in Bogota and Mexico City the cheapest housing unit currently available cannot be afforded by 47 and 55% of the inhabitants of these cities, respectively. Alternative housing standards and locations are identified to analyse the sensitivity of costs and the subsidy required to finance the difference between mortgage payments and household expenditures for rents. Practically all households in Mexico City could afford multi-family dwellings with basic services located on the periphery of the city. In Bogota, only 15% of households would be unable to finance these types of housing; to afford these dwellings, a

Table 10. *Cost of housing units of various standards and locations, percentage of households unable to afford them and required subsidy on their rents** (in 1976 US\$)

Location	Bogota			Mexico City		
	Cost	Households (%)	Subsidy (%)	Cost	Households (%)	Subsidy (%)
Periphery						
Single family, individual services	1256	17	21.7	2063	14	9.2
Multi-family, individual services	1809	36	21.9	1960	12	3.4
Multi-family, basic services	1134	15	12.9	1274	4	-
Intermediate zones						
Single family, individual services	4787	73	71.1	31,184	95+	92.6
Multi-family, individual services	2509	50	44.1	7777	72	70.1
Multi-family, basic services	1837	36	23.5	7096	69	67.1
Present cheapest housing unit	2477	47		4988	55	
<i>Per capita</i> income country		US\$635			US\$1090	

Source: Orville Grimes, *Housing for Low-Income Urban Families* (John Hopkins University Press, 1976).

* Subsidy is defined as the percentage by which monthly income available for housing falls short of required monthly payment. Based on repayment period of 25 yr, 10% interest rate and a share of income devoted to rent equal to 15%.

subsidy of only 12.9% on the required mortgage would be required. The issue is how to implement these new standards of housing.

Because these examples are quite specific to a particular metropolis (for example, the results are very sensitive to location in the case of Mexico City), a sensitivity analysis for a typical country of US\$800 was undertaken with the objective of computing the subsidy that would allow urban households in the poorest 40% (of total households) to afford: (a) a dwelling equal to twice the *per capita* GNP, \$1600, (b) a dwelling 5 times the *per capita* GNP, \$4000.

If urban households in the poorest 40% devote 15% of their income to rent, the required fiscal subsidy on housing would have to be 0.21% of GNP for the first type of dwelling and 1.28% for the second type. The coverage would be all urban households in the bottom 40% of households, accounting for 30% of all urban households.

3. BALANCING THE OPTIONS: TRADE-OFFS BETWEEN BASIC NEEDS AND GROWTH

(a) *Financing the basic-needs package*

Based on the previous considerations, our recommendation is to increase public subsidies to basic-needs-oriented sectors, from their present level of 5–7% of GNP to a new level of 10% of GNP (Table 11). This must be accompanied by changing the nature of delivery systems in each sector and transferring regres-

sive segments of subsidies within each sector. Without this qualitative change, those additional resources will lose a large part of their poverty-oriented objective. The share of GNP spent on higher education must be kept constant or decline as a consequence of a policy of self-financing. In health, the share of urban-based curative medicine must be kept constant, and all increments devoted to primary–preventive rural health care.

For countries like Brazil, which have already reached 2.5% public spending in health, additional funds amount to only 3% of GNP. For other countries the increment reaches 5%, a doubling of public spending in these sectors.

Table 12 presents some options for financing such a programme. In the oil-producing countries – Colombia, Mexico and Ecuador – domestic oil prices are kept substantially below world prices. It is estimated that lifting them to world price levels would increase government revenues by 3, 2.5 and 4% of GNP in these countries, respectively. Half of this increase could be devoted to finance the basic-needs package, the other half to finance investment in the oil sector. In the case of Mexico, additional oil production will increase government saving, even by maintaining low domestic prices, by an additional 4.3% of GNP (from 2.2 to 6.5%) by the year 1982.²⁸ Half of this increase, 2.15% of GNP, is another source of finance.

If lifting the price of oil (row 1 in Table 12) is considered politically unfeasible or having a regressive impact (which we doubt, an important issue to be researched), additional taxation would be the alternative option.

Not a single report fails to emphasize that there is still room for additional fiscal revenues

Table 11. *Resource requirements*

Sectors	Resources per sector (as % of GNP)		Reallocations within sectors
	Actual	Target	
Education	3–4	5	Toward self-financing of higher education: food programmes and teacher's quality in rural areas
Health	1–2.5	2.5	Pro collective–preventive rural health care systems
Nutrition	<1	1.0	Target-oriented instead of general food subsidies
Housing	<1	1.5	Eliminating subsidies to middle-class housing. New standards for lower-income groups
Total	5–7	10.0	

Table 12. *Sources of finance* (percentages of GNP)

	Brazil	Peru	Colombia	Mexico	Ecuador
<i>Half</i> the increase in net revenues out of increasing the price of domestically sold (and produced) oil to world prices*			1.5	1.25	2
<i>Half</i> the additional savings out of increased oil production (at present domestic prices)				2.15	
Additional taxation (in parentheses, taxation from eliminating exemption on imputed rent on owner-occupied dwelling)	3 (1.2)	4 (1.2)	1.2 (1.2)	2 (1.2)	4.8 (1.2)
Eliminating the subsidy to the electricity sector			1		
Additional government royalties from coal and uranium exploitation			1		
Total	3	4	4.7	5.4	6.8

* The additional oil revenues obtained by charging domestic consumers the world price is, as a fraction of GNP, 3, 2.5 and 4% for Colombia, Mexico and Ecuador, respectively. If only 0.5% of GNP can be raised by manipulating this option, the difference will have to be obtained by additional taxation.

by increasing (effective) direct taxation at the top of the income distribution and also by increasing the tax base. In several oil-producing countries, additional oil revenues have been accompanied by declines in the tax ratio (taxes over GNP) in the rest of the economy. In the case of Ecuador, this ratio declined from 0.186 to 0.138 between 1972 and 1977.²⁹ Maintaining the 1972 figure yields the additional share of 0.048 used in Table 12.

It is estimated that eliminating tax exemptions on imputed rent on owner-occupied dwellings — one of the most regressive subsidies — could yield a tax equal to 1.2% of GNP. If the upper 10% of the population receives a share of GNP equal to 0.4 and their imputed rent is 0.2 of their income, their tax base will increase by 0.08 of GNP. If their income tax is 15% it yields an additional 1.2% of GNP. In several countries, particularly Mexico and Brazil, either inflation or high levels of deductions erode the tax base. In Brazil tax deductions exempt families with gross incomes up to 4 or 5 times the *per capita* GNP. In Colombia, adjusting property prices at commercial values could yield an additional 1% of GNP, and tax reforms now being contemplated in Peru could yield additional taxation equal to 4% of GNP.

Sources of finance from reallocating subsidies presently given to other sectors have not

been contemplated here, except for Colombia, where 1% of GNP could be made available by eliminating the subsidy to the electricity sector. Defense represents at least one-fourth of the fiscal budget in several countries. In Peru, several of the present subsidies to electricity and consumer goods — benefitting consumers of all income groups — are not considered here a source of finance because their elimination is part of their present anti-inflationary programme. In the case of Brazil, the investment budget of the government is held constant in this exercise.

(b) *Trade-offs with growth: keeping uncertainty down*

What is the maximum loss to the long-term growth rate induced by this additional 5% of GNP devoted to basic needs? Let us assume the worst scenario:

(a) This additional basic-needs package has zero productive or asset creation effect on the poor. We conceive of it as a pure consumption transfer (though this would not be the case, particularly in the case of education).

(b) Oil revenues are not feasible sources of financing; therefore, the 5% is financed

Table 13. *Declines in the country's investment rate*

Closed-economy case				Open-economy case	
Interest elasticity of savings	Marginal propensity effect	Interest rate effect	Total effect	Interest elasticity of demand for investment	Total effect
$\epsilon = 0.5$	--0.1	--0.007	--0.017	$\eta = 0.5$	--0.0078
$\epsilon = 1.0$	--0.01	--0.014	--0.024	$\eta = 1.0$	--0.0156
				$\eta = 1.5$	--0.0234

entirely by an additional 12.5% income tax, levied on the income of the richest 10% of the population accounting for 0.4 of GNP. In terms of investment incentives, this tax, which affects the income of new investment, is clearly worse than the tax options discussed previously, such as the elimination of deductions and exemptions on imputed rent and increases in property taxes (which tend to tax a larger share of inframarginal income).

What is the maximum effect of this tax on the investment behaviour of the richest 10% and its impact on the overall country investment rate? Two capital market scenarios are presented to estimate this effect. Within each, extreme parameter values and assumptions are used to derive an upper bound for the decline in investment.³⁰

One scenario is a closed-economy capital market, that is, no capital flight takes place. The decline in investment results from both a smaller supply of savings (a function of the marginal propensity to save by this income group) and a decline in the net yield of new investment opportunities. The decline is largest by assuming a perfectly elastic demand for investment, that is, the new equilibrium net yield goes down by the amount of the additional tax.

In the open-economy case we assume that domestic investors can invest abroad and that the return abroad is not affected by the new tax. This assumes that either the proceeds of this investment can only be consumed abroad or the proceeds can be brought back into the country in a way such that the new tax can be evaded.

To derive maximum values we assume that

initially: (a) this income group investment accounts for 10% of GNP, a rather high figure; (b) this group pays a 20% (t_1) income tax; the additional 12.5% tax (t_2) is equivalent, therefore, to a decline of 15.6% in the yield of new investment ($t_2/1 - t_1$). In the closed-economy case, the results are a function of the marginal propensity to save and the interest elasticity of the supply of savings, ϵ . We assume a rather high figure of 0.2 for the propensity and 0.5 and 1.0 for the elasticity. In the open-economy case only the interest elasticity of the demand for investment, η , is relevant; a range between 0.5 and 1.5 is used in the analysis.

Table 13 shows the results. In the worst of circumstances, the decline in the country's investment rate is 2.5 percentage points; that is, if the rate was initially 20%, the new rate will be 17.5%. If the social return to capital in the economy is 0.2 (gross of taxes, depreciation and excess market wage over the opportunity cost of labour), the decline in the growth rate will be at most one-half of 1% (0.2×0.025). If a country's historical growth rate was 6%/yr, the maximum effect will be to reduce that rate to 5.5%: *at the most 'the trade-off ratio' between redistribution and growth is 10:1; in other words, a 5% transfer of GNP toward 'consumption' results in a half a per cent lower GNP growth.*

Crucial in the implementation of such a policy is to keep uncertainty down. Investment behaviour is much more sensitive to uncertainty than to net yields; if the tax reform takes place in a milieu where other 'rules of the game' - concerning other property incomes or property rights - are being questioned, the negative effects on investment could be substantially larger.

NOTES

1. Vinod Thomas, 'The measurement of spatial differences in poverty: the case of Peru', World Bank Staff Working Paper No. 273 (January 1978).

2. Sebastian Piñera, 'Definición, medición y análisis

de la pobreza: aspectos conceptuales y metodológicos', mimeo (Proyecto Interinstitucional de Pobreza Crítica en América Latina, ECLA, May 1978).

3. Richard C. Webb, *Government Policy and the*

Distribution of Income in Peru, 1963-1973 (Cambridge, MA: Harvard University Press, 1977), p. 13.

4. Urrutia and Berry, *Income Distribution in Colombia* (New Haven, CT: Yale University Press, 1967).

5. G. Kutcher and P. Scandizzo, *The Agricultural Economy of Northeast Brazil*, forthcoming.

6. S. Piñera, 'Cuantificación, Análisis y Descripción de la Pobreza en Algunos Países Latinoamericanos' (Proyecto Interinstitucional de Pobreza Crítica, ECLA, 1978).

7. S. Piñera, 'Se Benefician Los Pobres del Crecimiento Económico?', mimeo (ECLA, 1978).

8. For a general taxonomy of policy and non-policy-induced distortions, see J. N. Bhagwati, 'The generalized theory of distortions and welfare', in J. N. Bhagwati *et al.*, *Trade, Balance of Payments and Growth* (Oxford: North Holland, 1971).

9. This is less true for social security contributions; to the extent that workers perceive as benefits only a fraction of these contributions, this legislation becomes partly a tax on the use of labour.

10. C. Dougherty and M. Selowsky, 'Measuring the effects of misallocation of labor', *Review of Economics and Statistics* (August 1973).

11. J. de Melo, 'Distortions in the factor market: some general equilibrium estimates', *Review of Economics and Statistics* (November 1977).

12. Assume a Cobb-Douglas function $X = L^\alpha e^{\lambda t}$ where λ is the growth rate of all other complementary factors of production, capital and technical progress. Differentiating logarithmically the first-order conditions yields:

$$d \log w = (\alpha - 1) d \log L + \lambda,$$

where w is the wage rate. Assuming $\alpha = 0.5$, the value of λ consistent with Table 4 is 0.055. Given λ , we can derive the trade-off between $d \log w$ and $d \log L$.

13. Simulation exercises, based on human capital models with complementarities between preschool abilities and education, yielded a figure of 1% of GNP as the amount to be invested in preschool programmes for children in the poorest quintile of the population. See Marcelo Selowsky, 'Nutrition, health and education: the economic significance of complementarities at early ages', Presented at *Human Resources, Employment and Development*, 6th World Congress of the International Economic Association, Mexico City, 4-9 August 1980.

14. A. Berg, *The Nutrition Factor: Its Role in National Development* (Washington, D.C.: The Brookings Institution, 1973).

15. Marcelo Selowsky, *Who Benefits from Government Expenditures: A Case Study in Colombia* (London: Oxford University Press, 1980).

16. Marcelo Selowsky, 'El efecto del desempleo y el crecimiento sobre la rentabilidad de la inversión educacional', *Revista de Planeación y Desarrollo* (Bogotá, Colombia), No. 2 (July 1969).

17. If any change in a worker's occupation (associated with additional schooling) is the result of education acting as a rationing device in highly paid sectors or occupations, the previous results would be the relevant ones.

18. Phillip Musgrove, *Consumer Behavior in Latin America: An ECIEL Study* (Washington, D.C.: The Brookings Institution, 1978).

19. The mean rates of return for Brazil, Colombia and Chile are:

primary education	25.1%
secondary education	17.0%
higher education	10.9%

From M. Selowsky, 'Balancing trickle down and basic needs strategies', *op. cit.*

20. G. Kutcher and P. Scandizzo, *op. cit.*

21. This follows a technique used in S. Reutlinger and M. Selowsky, 'Malnutrition and poverty', World Bank Occasional Paper No. 24 (1976). A semi-log calorie income relationship is specified with an elasticity equal to 0.15 at a level of consumption equal to requirements.

22. Peter Knight and Dennis Mahar, 'Brazil human resources special report, annex III: health and nutrition', World Bank, mimeo (25 October 1978).

23. Knight and Mahar, *op. cit.*

24. Yves Tencalla, World Bank, Brazil Education Sector Memorandum, mimeo.

25. Federal University of Goiás-INEP-SIC-CNAE Project (1976).

26. Tencalla, *op. cit.*

27. Sebastian Piñera, 'Preliminary estimates from the Critical Poverty in Latin America Project' (ECLA).

28. World Bank economic mission estimate.

29. World Bank economic mission estimate.

30. See Appendix for details.

APPENDIX

Let us denote:

- r = gross rate of return to investment,
- t_1 = initial income tax paid by the richest 10% of the population = 0.2,
- t_2 = additional income tax = 0.125,
- m = marginal propensity to save by the richest 10% = 0.2,
- ϵ = supply elasticity of savings with respect to the interest rate by the richest 10%.

- η = elasticity of investment demand with respect to the interest rate,
- I_0 = initial investment of the richest 10% over GNP = 0.1,
- ΔI = change in the investment of the richest 10% as a fraction of GNP,
- $\Delta I = \Delta_1 + \Delta_2$; Δ_1 = propensity to save effect, Δ_2 = lower interest rate effect.

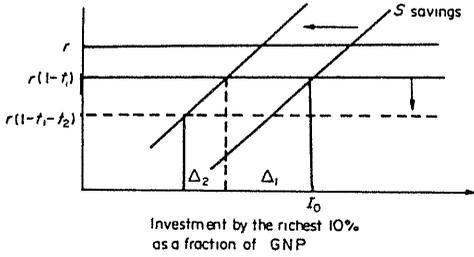


Figure A1. Closed-economy case: no capital flight (maximum effect: $\eta = \infty$)

$$\Delta I = \Delta_1 + \Delta_2 = -[0.4t_2m] - (I - \Delta_1) \left(\frac{t_2}{1-t_1} \right) \epsilon$$

$$= -[0.4t_2m] - (I - 0.4t_2m) \left(\frac{t_2}{1-t_1} \right) \epsilon.$$

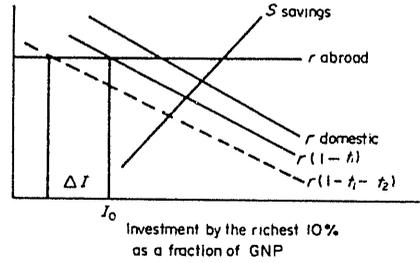


Figure A2. Open-economy capital market (maximum effect: returns abroad not affected by taxation)

$$\Delta I = \eta \left(\frac{t_2}{1-t_1} \right) I_0.$$

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