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BASIC NEEDS AND GLOBAL MODELS: RESOURCES, TRADE AND DISTRIBUTION*

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This paper analyses both the basic assumptions and the results of the better known and widely used global models – specifically, the UN world model, the RIO (Reshaping the International Order) model and the Bariloche model – in relation to basic needs and to North-South interdependence. The rationale of the exercise is that these very assumptions underlie various development strategies and give legitimacy to competing claims on the

world's resources. Even if some of the findings of the analysis are critical of the suitability of a particular model for the study of the questions posed, they serve a useful purpose in that they suggest what strategies and structures built into the model do not work. The paper ends by summarizing the conclusions and indicating their implications for policy as well as for further modelling work.

I. The UN model : assumptions and results

This section will concentrate on the UN model, which was developed by Ann Carter, W. Leontief and P. Petri.¹

I shall first discuss the structure of the model and its suitability for the study of basic needs question; it will be seen that it has serious limitations in this sense.

Secondly, I shall analyse the results obtained with respect to the question of satisfaction of basic needs on the basis of a variant of the model

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¹W. Leontief, A Carter and P. Petri, *The Future of the World Economy* (New York: Oxford University Press, 1977).

(produced by J. Stern.²) Finally, I shall analyse the implications of the results for economic policy and for institutional goals within international organizations and, in particular, with respect to the main issues of the North-South debate.

The model consists of a 15-region input-output formalization of the world economy. A few scenarios have been explored by running the model with different parameter values. One is an 'old international economic order' scenario with unchanged ratio of gross aid flows to gross domestic product (GDP) in each creditor region and unchanged regional shares of total aid pool. A second scenario has a ratio of gross 'aid' flows to GDP increased for developed regions and increased share of most developing countries in the total pool. A third scenario called the New International Economic Order (NIEO) has (1) a faster change in relative prices of primary commodities and manufactured goods, (2) increased share of total production and exports of manufactured goods by developing countries, (3) larger aid flows, and (4) increased flows of private capital.

As reported, for instance, by Streeten and Burki,³ the major preoccupation of Leontief, *et al.*,⁴ is with the feasibility of growth-rates reducing the North-South aggregated income-gap within the present patterns of development. This, however, draws attention away from the questions of eradication of poverty, of reduction of internal inequalities, and of the option for different styles of development in different regions. For example, technologies and consumption patterns in the developed regions (as provided by existing US data) are, by assumption, transferred to the developing regions with a time-lag, thus ensuring that this most important aspect of the development pattern is always inherited in the model by the South from the North. There are other constraints that make this model less useful for the study of basic needs policies. For example, the input-output tables, which form the kernel of the structure of this work, are only a system of consistent accounting of input and output in the economy across sectors. Because of the orthodox nature of the choice of sectors and of aggregation of all income groups in this model, input-output tables cannot identify basic needs, or point out what structural national and international changes may be required to meet these needs. The model contains no critique of the current patterns of consumption and style of living in developed countries; more strikingly, the model actually *assumes* that they will become world-wide.

Since the major publication of the UN model⁵ does not deal directly with

² J. Stern, 'Growth, Redistribution and Resource Use', Development Discussion Paper, April 1976, Harvard Institute for International Development.

³ P. Streeten and S.J. Burki, 'Basic Needs: Some Issues', *World Development*, 1978.

⁴ See f.n. 1.

⁵ See f.n. 1.

the problems of basic needs, I will refer here to a further piece of work which modifies the model, so as to make it amenable to the study of basic needs question. This latter work was prepared for the Tripartite World Conference on Employment, Income Distribution and Social Progress of the International Labour Conference in Geneva, June 1976.⁶ The work was commissioned by the ILO in order to project conditions needed for the 15 regional blocs of the UN model to reach target income levels for the lowest quintile of the population in these regions; it is based on the criterion of 'satisfaction of basic needs' of the Bariloche model, using the UN model as an analytical base.

For each of the 15 regions, population figures and gross national product are exogenously projected (based on so-called 'optimistic UN projections') by running the UN initial income distributions within each region and estimating. Using the Bariloche model,⁷ an estimate is made of the cost of 'meeting basic needs' consumption baskets in money terms. This differs, of course, from the Bariloche approach, since Bariloche considers the satisfaction of basic needs based on *real* consumption targets, not monetary ones. This latter point is of some importance because basic needs policies based on redistribution of income will, in general, themselves affect prices and therefore may render the 'income target' goal for the consumption of the basic needs basket obsolete.

The model is then run forward to analyse the implications of growth paths that are consistent with such specified minimum income levels for the lowest income-groups as are given by the basic needs consumption baskets. The growth of the gross national product (GNP) is projected in the basic runs on the basis of projections and guide-lines set forth by the UN Centre for Development Planning, Projections and Policies. These GNP projections are somewhat optimistic for more global equality; they assume that the greatest growth potential exists in those regions which have the lowest GNP/capita. Thus, the rate of 6 % per annum in GNP/capita is posited for regions with per capita income between \$2000 and \$3000 and so forth. As a consequence, these growth rates necessarily project a rapid diminution of the wealth gap between the developed and the less developed regions.⁸

⁶Stern (f.n. 2).

⁷A. Herrera, G. Chichilnisky, G. Gallopin, J. Hardoy, D. Mosovich, E. Oteiza, G. Romero Brest, H. Scolnik, C. Suarez, and L. Talavera, *Catastrophe or New Society* (Ottawa: International Development Research Center, 1976); and A. Herrera, G. Chichilnisky, G. Gallopin, J. Hardoy, D. Mosovich, E. Oteiza, G. Romero Brest, H. Scolnik, C. Suarez, and L. Talavera, *Un Monde Pour Tous* (Presses Universitaires de France, 1977).

⁸See Stern (f.n. 2), Table A-1 in Appendix.

The UN model represented originally an attempt to analyse at a relatively disaggregated level the natural resources and environmental implications of development goals reflected in some of the emerging ideas of the NIEO. But because it is restricted to an input-output framework of analysis, it is less adequate for studying employment questions, and it does not especially address questions of intra-regional (or national) distribution of income and consumption.

With respect to the modelling of the *international sector*, the trade sector of this model does not provide an adequate framework to study NIEO questions, such as terms of trade and shares of exports. In the model, each region has a fixed proportion of the world's exports equal to the present ones, while, at the same time, the levels of imports are assumed to depend on the regional GNP levels, reflecting present patterns. From these assumptions on inputs and exports, certain problems and results immediately emerge. For instance, because of the assumptions, if a poor region increases its growth by a large amount, this must necessarily increase imports relatively much more than exports, generating a large deficit in the balance of payments of the region. Furthermore, since the main economic parameters of the underdeveloped countries' future economies (uses of resources, imports, input-output coefficients) are assumed in the UN model to reproduce exactly, with a time-lag, the present patterns of more developed countries, the problem of development for developing countries is further compounded. Thus, because of the assumptions of the model, developing countries will necessarily run large balance-of-payment deficits if they attempt high growth levels.

The above set of characteristics of the model poses some questions about its adequacy for the study of several UN development goals. In particular, the assumption on the future reproduction by the underdeveloped regions of the present economic patterns of the developed regions is somewhat in contradiction with the UN policy of setting alternatives for world development. Moreover, as stated by Stern,⁹ the complexity of the model makes it difficult to change its primary focus to the study of such questions. However, Stern explores the uses of the existing structure to analyse the question of income distribution, keeping in mind the limitations of such an exercise due to the structure of the model.

The main conclusion of the input-output extrapolations of Stern's paper is the unfeasibility of the present trends of resource use and of income distribution for reaching the target of satisfaction of basic needs by the year 2000 in most of the 15 regions considered. Stern's scenarios, B-0 and B-2, set two targets (high and low) of satisfaction of basic needs by the year 2000 and try out alternative growth needed to reach them within the

⁹See f.n. 2.

present income distribution. It turns out that, for most of the 15 regions considered, reaching the targets of satisfaction of basic needs by 2000 (even with the rates of growth posited by the UN Centre for Development Planning, Projections and Policies, which are favourable to the underdeveloped world) appears unfeasible. Alternative runs in which the goals could be reached must posit unreasonably high average rates of growth (for instance, 11% for South Africa and 9.7% for Asia).¹⁰ They require international financial transfers that are disturbingly large and a dramatic departure from historical trends – both imperatives of the assumptions of the model. A great import dependency of the underdeveloped countries occurs, and increases in labour productivity much beyond those justifiable by historical trends are needed to overcome these problems. Moreover, very serious environmental stress appears unavoidable for the growth targets to be reached.

All these negative factors are shown to improve in the runs where the income distribution is improved so as to gradually achieve the level of the 'best' existent ones.¹¹ With less growth and less resource use but with more equal income distribution, it is shown that, within the UN input-output structure, the goals could be attainable. This agrees with the core of the findings of the Bariloche model. In the input-output context, the finding is not surprising, since a better share of a lower output can indeed be better than a lower share of a larger output, as far as the lowest quintile of the population goes. However, important points which are of concern to economists and policy-makers, such as the effects of income redistribution on growth through inflation and changes in the structure of the demand, cannot be studied within an input-output structure. In addition, the possible effects of technology changes and trade on growth and uses of resources (through production, investment, savings, consumption and shifts in composition of the product as well as in quantities) cannot be investigated, given that the (present and future) input-output coefficients representing technologies have been fixed in the UN model reflecting existing US patterns.

Finally, we discuss the implications of the UN model and its consequences for the basic needs question in the context of the North-South debate. In the first place, the inadequacy of the model as a tool for studying the basic needs question discussed above, in the peculiar manner in which intellectual production affects reality, tends to cloud the study of such questions altogether and undermines the intellectual legitimacy of studying basic needs questions within the global context. Further, even when basic needs force themselves on the agenda, the UN model tends, by implication, to question the feasibility

¹⁰See Stern (f.n. 2), Table A-3 in Appendix.

¹¹According to the Gini coefficient, which is one possible measure of inequality of income, see Stern (f.n. 2), p. 31.

of the goal of satisfying those needs without dramatic departures from historical trends. Since the basic needs goals appear to be practically unattainable, why bother about the problem? Lastly, the use of the only policy tools that the UN model considers appropriate (given its particular structure) implies that the question of satisfaction of basic needs is wholly unrelated to international market relations, such as North-South terms of trade and patterns of international division of labour. The satisfaction of basic needs is seen in this model as a domestic issue, an issue in the treatment of which the South is called upon to put its house in order.

It is clear by now how this model fits into the spectrum of basic needs positions in the North-South debate: it tends to coincide with a Northern perspective¹². The main tool considered for equalizing North-South wealth is aid (transfers), and, as seen above, the structure of international trade represented in the model is such that increased growth of the South over and above that of the North can only deteriorate the South's balance of payments and increase its dependency. Any New International Economic Order element in it tends to favour those groups of the South that may benefit from the continuation of present world order trends, with the addition of two elements that may improve their position: transfers and financial or trade concession policies from the North; in general, policies that rely on a dependent growth of the South.¹³

II. Reshaping the International Order (RIO) report

The work on which the RIO report is based differs from those of the UN and Bariloche models in that it does not rely on quantitative modelling. Rather, it attempts a qualitative formulation of issues, problems and policy suggestions to reshape the international order. Some of the proposals are expressed, however, in quantitative goals. For instance, one aim proposed is that the North-South differential of wealth should decrease from its present 13:1 ratio to 6:1 by the year 2000.

I shall analyse this report in three parts. Firstly, I shall briefly describe its structure; secondly, I shall discuss its recommendations; and, finally, I shall analyse its position with respect to basic needs in the context of the North-South debate.

¹²See G. Chichilnisky, 'Basic Needs and Exhaustible Resources in the North-South Debate: Imperatives and Distortions', Working Paper, Columbia University, 1979.

¹³The institutions whose interests, if they could be identified, would be closer to this model's perspective are OECD, The World Bank and the more North-oriented elements within the UN structure.

The RIO report was prepared by a group of 21 specialists, and coordinated by Jan Tinbergen.¹⁴ Part I of the report is devoted to the discussion of problem areas in the international order, Part II is devoted to aims of the work, and Part III is proposals for action. The statements in the first three parts are based on the work of specialists, which is presented separately in the technical reports at the end of the volume. Part IV containing Position statements and even minor disagreements between the authors with respect to the body of the work are presented at the end of the volume by the authors.

The form of this report is adequate for the discussion of certain topics which are not easily formalizable in mathematical terms, such as historical patterns of development and distribution of power among regions and groups. However, this qualitative form of discourse lends itself to being stretched too far. In many parts of the report certain positions on the North-South debate are verbally endorsed, while certain more concrete suggestions for policy given in other parts of the report contradict these verbal pronouncements. In a sense, this is a natural pitfall of non-quantitative analysis of complex issues, which does not lend itself to checking for internal contradictions. On the other hand, it may be that in this case the contradictions between pronouncement of positions and specific policy proposals reflect an attempt on the part of the RIO group to avoid criticism by including strong supportive phrases (but just phrases) for the lowest income groups and for the South as a whole. A case in point is the matter of modes of development in the proposed New International Economic Order. Structural changes and self-reliant development are endorsed in the discussion in Part II, but in the more concrete proposals for policy in Part III great emphasis is given to trade and a somewhat conventional international division of labour,¹⁵ and to transfer of resources, concessional resources and aid from the North to the South, and within the South.¹⁶ While these issues are indeed of importance for the reshaped international order that this work sponsors, both the presentation and the emphasis given to them give this report an enlightened First World flavour. I shall discuss this next.

As I have explained elsewhere,¹⁷ the emphasis on aid and trade for Southern development tends to place the South in a dependent position with respect to the North. Furthermore, it tends to legitimize the North's claim for cheap resources from the South. Since the North can hardly help or serve as a good market for exports unless it has a healthy, growing economy, this

¹⁴J. Tinbergen (coordinator), A. Dolman, and J. van Ettinger (eds.), *RIO: Reshaping the International Order* (New York: E.P. Dutton, 1976).

¹⁵*ibid.*, p. 141

¹⁶*ibid.*, ch. 10, pp. 129 and 132-133.

¹⁷Chichilnisky (f.n. 12).

means (things being what they are at present) that in the short-term, and even medium-term, perspective, the North must continue to have a reliable, not-too-expensive supply of resources. In sum, the North's growth must be preserved with a reliable input of cheap resources.¹⁸ Since, as indicated also by RIO, the control over resources is one powerful tool of the South in the bargaining for more North-South equality, this, in effect, conflicts with previous statements in the report on the importance of aid and trade.

The choice of specialization or international division of labour to the South in the international trade section of the RIO report adds to this work's First World flavor. RIO affirms that both the North and the South will benefit from an intensification of the use of their comparative advantages and /or specializations,¹⁹ even though it is admitted that these comparative advantages or specializations are, in fact, changing.²⁰ Although the generation of an indigenous capacity for research and development in the South is proposed in RIO as an important requirement,²¹ the roles assigned to the North and the South in this report are clear, and they do not differ much from the present ones.

Again, the prescription for reduction of non-tariff barriers, which are seen as a major hindrance to intra-industry trade, goes together with a call for increased trade.²² It is earlier stated in the report that free market forces are not devoid of distributional effects and tend to reinforce advantages of the haves over the have-nots;²³ but the emphasis on lower tariffs and other non-tariff barriers for the products of the South contradicts this statement, since this emphasis is based on the idea that an expanded market will bring about more growth and improved distribution. This latter role of the international market corresponds more to Heckscher-Ohlin's 'gains from trade' and Stolper-Samuelson's 'factor price equalization through trade' than to a vision of an inequalizing international market proposed in Chapters 1 and 2 of the report.

In effect, as shown by the current world-trade negotiations in Geneva (April 1979), the South does not in any case obtain the lowerings of tariff and non-tariff restrictions for its exports that RIO proposes.²⁴ It could, therefore, be said that both RIO and the UN model suggest alternatives that

¹⁸*ibid.*

¹⁹Tinbergen, *et al.* (f.n. 14), p. 141.

²⁰*ibid.*, Ch. 14.

²¹*ibid.*, p. 153.

²²*ibid.*, p. 143.

²³*ibid.* Chs. 1 and 2.

²⁴In a first approximation this can be described by saying that the decrease of trade barriers in the North for the South's products has been agreed at Geneva to be only 50% of the same decrease for the North's products.

include a level of the North's good will that is not to be expected to occur under reasonable projections of historical trends. This is one other factor that adds to the First World flavour of these two works. By discussing unlikely alternatives, in which the North appears in a role of benefactor, the attention of the international community is drawn away from other alternatives, which are perhaps more conflicting but also more realistic. An example of this type is the emphasis that both the UN model and RIO give to aid and trade. The aid targets that were proposed in the UN (Sixth and Seventh Special Sessions) a few years ago (1974) have not, of course, been met.²⁶ Even more interesting is the fact that North's aid is still being discussed as a possible solution by North-oriented thinkers, when it is known that aid has decreased significantly during the last 15 years.²⁸

Not only does this emphasis on aid seem misplaced, or unrealistic; it does appear as a (perhaps deliberate) effort to emphasize the need for the growth of the North in order to obtain more growth for the South. It also appears as an effort to prevent a clear-headed appraisal of what realistic alternatives the South must confront in order to obtain a more equal treatment in the world economy and the method it must adopt to achieve the goal.

III. The Bariloche Model

I shall begin this section with a brief description of the structure of the Bariloche model.²⁷

A basic premise of the Bariloche model is that the results of the *Limits to Growth* would not necessarily carry over if there is any degree of rationality or adjustment of economic agents to their environment. Hence, instead of projecting the future as a magnified carbon copy of the present, the model is set to look for alternatives. The model sets for its target the per capita satisfaction of basic needs of the population in real terms. Feasible paths in this model are those that achieve per capita consumption of three goods –

²⁶For instance, point (b) of the recommendations of the UN Sixth and Seventh Special Sessions on transfer of real resources required that 'developed countries should reconfirm their commitment to reach annual transfers of concessional resources amounting to 0.7% of gross national product no later than 1980.'

²⁸In fact, as J. Grant and M. ul Haq mention, the actual 'performance in this sense has been most disappointing: official development assistance from 17 DAC countries has actually declined from 0.52% in 1960 to 0.3% in 1975.' See Tinbergen, *et al.* (f.n. 14), Annex 2.

²⁷Herrera, *et al.* (f.n. 7).

food, housing and education – to reach or exceed certain minimum levels.²⁸ These levels are essential for an individual to effectively participate in society. They are partly economic, partly physical and partly culturally determined, and certain approximate common denominators are given for each of the regions under consideration by the experts of the team.

A separate economic analysis of each of the five regions of the world is carried out. Each is studied with a high degree of independence in order to establish whether each can attain the specified goals, using, in the main, its own resources, and whether it is the development of the underdeveloped world or the continuation of the present trends of growth and consumption in the North that may be considered more responsible for possible environmental disruption and depletion. In the Bariloche work, therefore, the growth of the South is seen to be largely independent of that of the North. This is one main difference with the other two works; and it was therefore to be expected that the implications for basic needs and use of resources in this model would differ from those of the UN and RIO.

The model had an 'adjustment of data' period in which the parameters of the model were calibrated, from 1960 to 1970, and then a 'future, development path' period starting in 1980. From 1980 to 2060, alternative paths of development are simulated.

Predictably, given the initial considerations, basic needs are satisfied in the developed countries in the first years of the run. If the proposed policies are implemented, the general evolution of Latin America would make it possible to fulfil the basic needs of the population around 1990. Regarding food, little extra land needs to be developed but, by and large, land has to be made available without rental cost to the food producers.

Under the proposed policies, Africa satisfies its basic needs but in a longer period of time than Latin America, the target being reached in 2008, in approximately 30 years. The results of the run for Asia are very different from the results for other regions. Because of the initial conditions, basic needs are not satisfied at the desired levels; hence, there may be, in principle, no feasible paths of development for this region under the assumptions of the standard run. The failure to attain satisfaction of basic needs to desired levels is due to a combination of circumstances: the rate of population growth (five-fold increases in 80 years), which is reduced very slowly. Life expectancy at birth improves, but is always below the level of other regions.

²⁸The level of food and education required for satisfaction of basic needs were 3000 calories and 100 grams of protein per person per day and 12 years of basic education between the ages of 7 and 18. Slightly higher levels were fixed for developed countries. For housing, the basic standard unit required was about 20 square meters per person for developed countries, besides transportation and sanitary services.

By 2010, all available land is being cultivated. The rapid increase in the cost of food production, due to the need to develop new land, takes resources away from the rest of the economy, hindering the satisfaction of the other basic needs. In summary, the delay in reaching adequate levels of well-being leads to a sustained high population growth rate, and a vicious cycle develops; increased population and increased cost of food make it more and more difficult to satisfy basic needs.

An alternative run was performed, assuming that Asia imports food or else that it manages to raise agricultural yields to six tons per hectare instead of four as taken in the previous run. Basic needs could then be satisfied.

International solidarity, or aid, was tested in an alternative run, where the developed countries were not restricted in their growth and they allocated up to 2% of their GNP to economic aid without imposing repayment conditions on the more needy regions of Asia and Africa. The distribution of this aid was made proportional to the population and inversely proportional to life expectancy at birth, starting in 1980 with 0.2% of GNP and increasing until it reached 2% in 1990. The results of this run suggest that demographic and socio-economic variables would not be greatly affected in most regions and life expectancy and infant mortality would be only minimally changed in Africa. The greater effects are felt during the first decade of the next century. In Asia, too, demographic indicators are not greatly affected. By 2060, the population in this run is, however, 15% less than in the standard run. Satisfaction of basic needs is attained about 15 years before that in the standard run. Therefore, as opposed to the UN model and the RIO report, the Bariloche work does not view aid as a major contributor to more equality between the North and the South. It also does not view aid as an important solution to the problem of satisfaction of basic needs.

Yet another run studied the relations of satisfaction of basic needs with income distribution. In the underdeveloped countries, the GNP per capita needed to satisfy basic needs in egalitarian conditions is somewhere between three and five times less than that required if current income structures are maintained. Even in capitalist countries, this factor varies between 2.6 for Japan and 4.3 for the most advanced Western European countries. In socialist states, where income distribution is more egalitarian, the factor is lower than two. These conclusions agree with those of the work of Stern on the UN model.²⁹

The results of the Bariloche model can be summarized as follows: The obstacles that currently stand in the way of the underdeveloped countries are not physical or economic in the strict sense, but essentially socio-political.

²⁹Stern (f.n. 2).

In effect, the growth rates by which the desired objectives are achieved are, as was seen in the previous section, those considered normal in the current economic situation. The goals are therefore achieved, not by a very high rate of economic growth, but by a reduction in non-essential consumption, increase in investment on the production of basic goods, elimination of socio-economic barriers (which hinder the optimal use of land, both for food production and for urban planning), and implementation of an active policy to better distribute goods and services and to eliminate deficits in international trade.

The growth rates necessary to achieve these objectives, which can easily be attained without imposing intolerable social sacrifice, contrast with those required to satisfy, in approximately the same period of time, the basic needs within the current income structure, or the same socio-economic organization. In the latter scenario developing countries would be required to attain virtually impossible growth rates of 10-12%.

International transfers of resources or aid from the industrialized countries to the poor countries, even if a much greater level of international aid than that proposed by the United Nations (more than twice) is attained, may help raise the level of well-being at the time of the transfer, but in no way decisively. In the conditions currently prevailing in most developing countries, the effect of aid, unless different policies are implemented, is merely increased spending by privileged sectors, with little effect on the living conditions of the majority of the population. However, the Bariloche work proposes that the rich countries contribute to relieving the long-run pressure on available resources by curtailing their own consumption.

Because of the nature of the Bariloche model, i.e., planning for an alternative world, an element which is not explored in the model is the characteristic of the markets for different goods and services which depend, in turn, on productivity, employment, wages, profits and associated income distributions.

The model concentrates on the physical feasibility of attaining satisfaction of basic needs. Certain policy implications are derived in the model, distributions on the time horizons to attain the goal, or the effect of land distribution on the satisfaction of food and housing needs. However, the goal is attained by simulating planning in the use of resources; the possible market effects on the distribution as well as the composition of the output are not analysed.

In fact, the model concentrates on countries which at present have mixed - partly market, partly planned - economies. A planning approach is adequate for a feasibility study that gives broad guide-lines of development; but for these mixed economies a further study of the present system of production and distribution would shed more light on questions of

socio-economic feasibility of a basic needs strategy. We shall discuss these issues in some detail in the next section.

IV. Conclusion

The recommendations of RIO on specialization of the North and the South in their comparative advantages, and the emphasis of RIO and the UN models on aid and increased trade as a way of bringing about more equalization between North's and South's wealth³⁰ contradict Bariloche's results, which point to aid and trade as not being too helpful in bringing about rapid satisfaction of basic needs. One is therefore led to question the extent to which, and the conditions under which, more equal development of the South is favoured by those policy recommendations, or if it is at all consistent with them. Furthermore, one may question to what extent those recommendations are consistent even within themselves. For example, let us concentrate on the relationship between aid (or transfers) and trade. Significant aid transfers from the North to the South as proposed by the UN model and, to a lesser extent, by RIO are not only historically unrealistic (especially so now in view of the problems facing the economies of the North); they may, even if feasible, not be consistent, in their total effect, with other New International Economic Order goals accepted by both RIO and UN models. I shall discuss this next.

If North-South transfers are of the proportions that they have been so far, their impact is, at best, not significant.³¹ But if their proportions were conceivably increased as dramatically as proposed – for instance, by the UN model – so as to have a significant impact, could we expect that they would have, in general, a positive effect on the South's terms of trade? The answer to this question is: *in general, no*. I am not referring simply to the usual complaints that aid is used by the giver to undermine national resolve, to transfer irrelevant (or worse, dependence-causing) technologies,

³⁰It should be noted, however, that RIO's goals for equality stop at *only narrowing, preferably halving, of the relative income disparity between the developed and underdeveloped countries by the year 2000* (f.n. 15, Appendix 2:3, p. 216). The ratio of wealth is now 13:1; what is envisioned, then, is a 6:1 ratio at best.

³¹See the discussion in Tinbergen, *et al.* (f.n. 14), Appendix, 2, pp. 214–215. The present target (0.7% by 1980 and later 1% of GNP) is yet to be accepted by rich nations. Official development assistance of 17 DAC countries discourages that possibility: it actually declined from 0.52% in 1960 to 0.3% in 1975. In addition, the *terms* of international assistance have helped the Third World to accumulate a financial debt of \$150 billion by 1976, so that annual debt servicing is already taking about one-half of the new 'assistance' they receive.

and to promote the interest of a privileged minority in the recipient country. I am also not referring to the fact that aid is largely wasted, or that it goes to support repressive governments, or that much of it is diverted into bilateral armament deals, though these criticisms of aid may be valid in some or many cases. I am referring, rather, to the economics of market functioning. For instance, aid that results in a significant real transfer of luxury or investment goods (or armaments) from the the high income groups in the North to the South may, under certain conditions, turn the terms of trade against the exportables of the South and in favour of the exportables of the North for which increased demand occurs after the 'aid' has been received. This deterioration of the South's terms of trade may be sufficiently high, so that after the transfer takes place the North is actually better off. Because what it transfers is very highly priced in market terms, the North acquires more real wealth with less resources, and the South is strictly worse off in terms of real wealth.³² Negative effects of the terms of trade (in market functioning) when very large transfers among unequal regions take place have been shown to occur in a UNITAR project currently under

³²Interestingly, this effect of trade, in which the donor is strictly better off and the receiver worse off after the transfer, was first studied in a geometric example by Leontief. It has a long history in the economic literature and is referred to as the 'transfer problem'. The issue of terms of trade in transfers was being discussed then because of post-war reparations. The 'orthodox transfer problem' studied, for instance, by Samuelson questioned whether the donor had or had not a so-called 'secondary burden' added to the loss of its initial endowments in the form of deterioration of its terms of trade. This question is meaningful in cases where the economies considered are 'equals', i.e., at similar levels of development. Because, with added initial resources, the receiving economy would be able to out-compete the donor – for instance, by demanding more of the goods of which the donor's demand is mostly composed and thus raising the prices, thereby decreasing the purchasing power and real wealth of the donor. Whether the transfer problem did or did not disclose a 'secondary burden' for the donor might have been important at the time to give less or more legitimacy to the moral imperative of post-war reparations. One can only conjecture as to where Leontief's sympathies were at the time.

However, the position is reversed when 'unequal' economies are considered. The issue then is whether the *receiver* may not suffer an injury to *its* terms of trade. Since now the sympathies of an enlightened Northerner would presumably be with the efforts of the North to give legitimacy to its aid policies, it is not altogether surprising that Leontief does not recall his own findings in the context of the *FWE* (f.n. 1) and the NIEO. Here, however, a related result is found (perhaps revealing my own sympathies) through my study of the terms of trade in transfers in the case of two regions at different levels of development. See G. Chichilnisky, 'Terms of Trade and Domestic Distribution: Export Led Growth with Abundant Labor', *Journal of Development Economics* (forthcoming). The transfer problem I examine in my 'Basic Goods, Commodity Transfers and the NIEO', *Journal of Development Economics* (forthcoming) is not the orthodox one of a 'secondary burden' to the donor, but rather, that of a 'primary burden' for the receiver; income distribution domestically is shown to be an important factor in the results.

way.³³ Furthermore, it is shown in the UNITAR work that there is in these cases a trade-off: in order to decrease North-South wealth differentials distribution of wealth within the North would have to worsen.

Therefore, the goal of decreasing overall inequalities may not necessarily be, in general, consistent with aid in the form of real transfers of either basic or non-basic goods which are significant enough to have any effect in North-South wealth differentials. The question then becomes: are there conditions under which aid would be helpful to decrease overall inequalities? Or is it more likely that either the existing conditions preclude the effective use of aid as an overall equalizer, or existing political forces may always be able to manipulate the relevant parameters so as to bring about conditions that would turn aid to the advantage of the giver? Obviously, these issues require case-by-case studies. Such studies must be undertaken before endorsing aid policies. My two works,³⁴ however, give little support to the advocates of aid as a North-South equalizer within the total North-South context. This is consistent with the findings in the Bariloche study (which did not, however, consider market behavior at all).³⁵

³³ The UNITAR North-South model is a 2-region, 3-good, 3-factor and 3-income-group model. To simplify the results, I aggregate the model into a 2-region (North and South) world economy with two types of goods: basic consumption goods and luxury or investment goods. As opposed to the UN model (an input-output framework), I consider endogenously explained prices and volume of exchange determined by market behaviour. G. Chichilnisky, 'Terms of Trade' (f.n. 32). In addition, the economy of the North is disaggregated into two income groups: the rich and the poor. In one case I study a transfer of real resources, consisting of luxury or investment goods (or armaments) from the high-income group in the North to the South. This would be an 'ideal' equality-prompting transfer of such goods, since it is the rich, and not the poor, in the North who are assumed to give from their initial resources. Nevertheless, if initially the low-income group in the North and the South as a whole have very little endowments of the goods transferred, the terms of trade are seen to run against the South through the market mechanism so that (1) exports from the South increase and prices for those exports decrease, (2) real consumption in the South decreases, and (3) real consumption in the North increases as a whole. It may be of interest to note that this result was obtained by constructing a general equilibrium exchange model of the world economy, in which both international and domestic markets could be consistent with neoclassical assumptions. A second aid policy of the 'basic needs variety' is then simulated. The high-income group in the North transfers basic consumption goods to the South from its initial endowments. Under the conditions studied, the outcome, through the market adjustments that follow the transfer, is that either the real wealth of the South increases after the transfer of basic goods but the real wealth of the poor in the North decreases, or else the welfare of the South decreases after the transfer of basic goods and North-South welfare differentials increase.

³⁴ See f.n. 32.

³⁵ Herrera, *et al.* (f.n. 7).

There is another point to emphasize with respect to aid or transfer policies. They direct attention away from more realistic policies and give a false importance to money in the fight against injustice, inequality and mass poverty.³⁶ Such quick-fix schemes tend to be Northern concepts that disregard the sterility of Western-like solutions and turn attention away from indigenous resources within the South.³⁷ Instead of money, people's freedom to work, to use resources such as land and tools for themselves and to satisfy their own needs should be emphasized. One can draw on a body of evidence to show that the approach is feasible (largely but not only from the example of the People's Republic of China).³⁸ The very concept of aid and transfers may dissociate the problem from the possibility of its solution.

So why the insistence on aid? Especially, why is it that the representatives of the enlightend North, as presented in RIO and the UN model, insist on the crucial importance of Western aid?³⁹ This question has in part been answered in my 'Basic Needs...'⁴⁰ The issue here is not only the moral superiority of the North, but also the need to keep present patterns of Northern growth based on inexpensive resources.

The discussion above referred to the possible contradictions between trade and aid policies in the framework of a more equal international economic order. What about trade policies and basic needs development? Can the examples of South Korea and Taiwan be generalized to prescribe export-led development consistent with basic needs policies? Or are the Mexico and Brazil examples of export-led growth with increased inequalities more relevant to the South as a whole? We shall discuss this briefly, using as a basis the results obtained in the UNITAR study.⁴¹ Using data of Brazil

³⁶ RIO proposes 10-12 billion \$/year in 1974 prices over the next decade for investment in anti-poverty programmes (f.n. 14, p. 190).

³⁷ The recent events in Iran, for instance, fall under this category of Western mistake.

³⁸ See P. Streeten, 'Bariloche, RIO and Future of the World Economy Reports: Book Review', *Journal of Development Economics*, 1978.

³⁹ While certain representatives of the South (Bariloche) claim that such help is (at best) not very helpful.

⁴⁰ See f.n. 12.

⁴¹ G. Chichilnisky and S. Cole, 'Growth of the North and Growth of the South with Export Led Policies', Columbia University, 1978 (mimeo); G. Chichilnisky, 'Development Patterns and the International Order', *Journal of International Affairs*, March 1978; also Herrera, *et al.* *Un Monde Pour Tous* (f.n. 7). A macro model is constructed in my 'Terms of Trade...' (f.n. 32) to explore possible effects of export-led growth on the terms of trade and domestic distribution of a developing region. Certain assumptions are made about this region—the South: labor supply is very abundant due, for instance, to high rural-urban migration, or high population growth (these two factors could also be traced to mass poverty and lack of satisfaction of basic needs). The South trades with another region—the North—which has different technologies and elasticities of supply of factors,

and the UK, it is shown in Chichilnisky and Cole⁴² that under conditions of dualism in the production of goods and of very abundant labour supply in the economy of the South, changes in the terms of trade within sectors of the South and of the North, due to increased exports from the South, may bring about a sustained deterioration of the South's terms of trade with the North. This is accompanied by a sustained loss of purchasing power of wages within the South. More growth of the North may increase total volume of exports from the South but reduce total revenues. Therefore, more growth of the North may deteriorate further, rather than improve, the terms of trade for the South, as well as reinforce inequalities within the South, if such an export-led policy is followed. The results of the UNITAR model are related to, but different from, those largely verbal viewpoints on development and North-South relations discussed in dependencia theory.⁴³

The results discussed above raise some serious doubts about the reliance on export-led growth to help bring about equal development in the South, especially when, as proposed in RIO, relative advantages are emphasized. Furthermore, even under conventional thinking it is hard to foresee a fast enough recovery of the Northern economies to make them into good export markets and turn around the tide of protectionism in the North. The recent world trade negotiations in Geneva (April 1979) lend support to this view. The results point to the need for a careful appraisal, through case-by-case studies, of the advantages of increased trade. If the general conditions in which the results of Chichilnisky⁴⁴ and Chichilnisky and Cole⁴⁵ are obtained are satisfied, then increased trade is not, in general, favourable to a more equal international economic order. However, with better distribution within the South (which implies stronger domestic markets), and with such distribution accompanied by lower rates of population growth (for instance, through social security measures, or, in general, more satisfaction of basic needs), the deterioration in terms of trade will not occur. This is, in a sense, the main point: the need for protection, not only of local production (i.e., import substitution, infant industry), but also of local markets within the South, in order to prevent deterioration of its international terms of trade.

In each region two income groups are studied. They are identified by the initial endowments and patterns of consumption of three types of goods: basic consumption goods, luxury goods and investment goods.

⁴²Chichilnisky and Cole (f.n. 41).

⁴³ See, for instance, F.H. Cardoso, 'The Consumption of Dependency Theory in the United States', *Latin American Review*, 1977; and G. Palma, 'Dependency: A Formal Theory of Underdevelopment or a Methodology for the Analysis of Concrete Situations of Underdevelopment', *World Development*, July/August 1978.

⁴⁴See G. Chichilnisky, 'Terms of Trade' (f.n. 32).

⁴⁵See f.n. 41

model as well); technologies that exhibit significant dualism because of the exposure of a more traditional production system to that of industrial economies and to their markets; the monopolistic-competitive behaviour that has existed in several markets dominated by industrial countries and that now naturally arises in some markets for raw materials, and, finally, the important and very timely variables in the supply, exchange and recycling of energy resources in the North-South context.