OPMERKINGEN EN AANTEKENINGEN – COMMUNICATIONS

THE OPTIMAL ECONOMIC ORDER: THE SIMPLEST MODEL

1 INTRODUCTORY REMARKS

In the last five years humanity has become faced with the problem of the optimal socio-economic order more clearly than ever. After the confrontation of capitalism and socialism, which was the core of the Marxist thesis, the fact transpired that capitalism was not the optimal order. It was eliminated in two different ways.

In Western economies capitalism was reformed stepwise by pulling its sharpest teeth, while maintaining the stimulating forces in the markets. As to communist economies – the Soviet Union changed capitalism via the 1917 October revolution and China followed. In 1986, Mikhail Gorbachev's view that the communist system did not work was accepted by the Soviet Union communist party congress. Now, in 1992, the world is discussing, more urgently than ever, what the best ('optimal') socio-economic order is; how much reintroduction of capitalism is necessary to attain the best order?

This essay discusses the simplest possible model that can contribute to the discussion. The advantage of building the simplest possible model is twofold. Firstly, such a model can state the *nature* or *essence* of an optimal order. Secondly, it can indicate the *order of magnitude* of the main characteristic of an optimal order. The main characteristic – the question that separated socialists from other politicians – is the *redistribution of income*. Within a single nation, redistribution is achieved by taxes and social security contributions. In the world economy, redistribution is accomplished by development assistance and trade policy. In this essay the language used is that of the industrial economy, in which the two groups considered are labour and capital. The model can be translated into another in which the two groups are the developed and underdeveloped countries. It may even be translated into a security model of two powers, in which redistribution is obtained by security assistance (see J. Tinbergen, *World Security and Equity*, Aldershot, 1990), or a colonial system. In the last version not the common welfare will be maximized, but the welfare of the colonial powers, which leads to negative redistribution (the exploitation of the colonies).

2 THE NORMAL OPTIMIZATION PROCEDURE AND A PARTIAL APPROACH

To find the solution to this optimality problem the following steps are made. Firstly, a list of all the variables occurring in the welfare function is drawn up. Then, welfare is expressed in terms of these variables. The third step is to draw up a list of the restrictions that are imposed by environment, technology and logic. The restrictions are presented in such a way that their mathematical expression must be zero. These expressions are multiplied by a so-called Lagrange multiplier and added to the welfare function. The sum is called the maximand. Since each restriction equals zero, the maximand remains equal to the welfare expression.

The conditions to be fulfilled to maximize welfare are reproduced by equations expressing that the first derivatives of the maximand with regard to each variable are equal to zero. We now have as unknowns the variables and the Lagrange multipliers. As equations we have the restrictions, equal in number to the Lagrange multipliers, and the conditions, which are equal in number to the variables. So there are as many equations as there are unknowns. This normally ensures that the problem can be solved.

3 SOLVING THE PARTIAL PROBLEM

The complete solution of our problem is rather complicated, especially because of the production function in it. But we can only use that part of the system of equations profitably in which the variables appear that concern us most. These variables are z_1, the per capita income transfer received by group 1, the underdeveloped countries or the workers, and z_2, the amount per capita paid by the developed countries or the capital owners. In our concrete illustration which features two types of countries, the actual per capita incomes y_1 and y_2 for 1988 are \$320 and \$17,080, respectively. The respective population sizes a_1 and a_2 were 2,884 and 787 million, respectively. Of the two equations we have chosen, one expresses the essence of the optimum, which is the situation in which per capita incomes are equal:

$$y_1 + z_1 = y_2 - z_2. \tag{1}$$

The other refers to the restrictions, namely

$$a_1 z_1 = a_2 z_2. \tag{2}$$

Since for 1988, a_1, a_2, y_1 and y_2 are given, we are able to calculate z_1 and z_2 as 3,582.3 and 13,177.8, respectively. From the figures, we can derive that in the static equilibrium representing the solution, that is, by the end of the development process, 77.15 per cent of the per capita income of today's group 2 will have to be transferred to group 1, that is to say, from the 'prosperous' to the 'poor' countries – or, from capital to labour.

   In section 4 we shall discuss the possible development towards those aims and the time it takes to attain them.

4 HOW TO ATTAIN THE AIMS; ACCELERATING DEVELOPMENT

In 1988 the ratio of incomes per capita of underdeveloped to developed countries was $320/17,080 = 0.0187$, less than 2 per cent. However, the per capita income of developing countries is rising faster than that of developed nations, for the 1965–1988 period a yearly average of 0.782 per cent more. Should growth continue the way it has, the aim of income equality would almost take five *centuries* to achieve. It is doubtful that Latin Americans, Asians and Africans would be that patient. So we should investigate how the development process can be accelerated. One way is to raise the development assistance of developed to underdeveloped nations. How to reduce five centuries of waiting to one can be computed from the formula

$$1.0078^{100}\left(y_1 + \frac{a_2}{a_1} z_2 \right) = y_2 - z_2. \tag{3}$$

From this formula we find $z_2/y_2 = 0.602$, or a development assistance of 60.2 per cent, almost 175 times the current 0.35 per cent. To stretch their patience to 400 years would still require 8.1 per cent assistance.

The new variable in our analysis is *the length of the period chosen or imposed to attain the optimal income redistribution.* A complete theory should explain the choice of the period; I have no such theory. Yet, some comparisons with observed values of redistribution will suggest directions for further research. That alone seems to make this study worth presenting even in its incomplete form. To complete the theoretical part, I will give a few remarks on the measurement of welfare as a verification of the results obtained.

5 THE MEASUREMENT OF WELFARE

Economists do not agree on the possibility of measuring welfare, a concept also indicated by the words satisfaction, happiness, utility or ophelimity. For that reason I am discussing the subject in this last section of the theoretical part of this address. I belong to the group of economists who think welfare can be measured. In The Netherlands, Professor B.M.S. van Praag and his students have mesasured the welfare of various groups in Belgium, The Netherlands and elsewhere. They have also investigated which of the various mathematical functions give the best approximation of the figures obtained. The best fit is provided by the logarithm of the determinant of welfare. No alternative method has been proposed: this explains my choice. Since in this essay incomes are the determinants, the expression yielding welfare (1) in the initial situation is:

$$l_0 = a_{10} \ln y_{10} + a_{20} \ln y_{20} = 24{,}276.4.$$

For the optimum situation we obtain:

$$l_{opt} = (2884 + 784) \ln 3902.3 = 30{,}331.9.$$

To check whether this is really a maximum, we calculated l for two cases where a little less and a little more assistance is given, namely $z_2 = 0.75y_2$ and $z_2 = 0.80y_2$. We get:

$$l_{0.75} = 30{,}327.3, \quad l_{0.80} = 30{,}323.6$$

Both values are lower than the optimal value and situated between the initial and the optimal value. So 0.77 of y_2 is optimum.

6 SOME EMPIRICAL FIGURES ON INCOME REDISTRIBUTION

Two sets of figures about redistribution of incomes are available. One refers to income redistribution within nations and the other to redistribution among countries. The former figures were published in the World Labour Report 1984 (pp. 210–213) by the International Labour Office in Geneva. They refer to the redistribution through social security schemes and so represent a minimum: there may be additional private schemes. The latter are published annually by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD), of which I have chosen the 1987 Report.

According to the 1984 figures, redistribution within nations varies from 0.2 per cent (Rwanda) and 29.9 per cent (Sweden) of gross national product. For developed countries the percentages vary from 10 (Japan) to 29.9. Our interpretation is that 'impatient' countries want redistribution to be completed in seven to eight generations, whereas the governments of the least developed countries believe that their populations are prepared to wait until the 18th generation. This seems highly unlikely and my comment is that such cruelty must not be accepted. One requirement for development assistance, alongside some other human rights, should be a higher percentage of redistribution through social security schemes. Alternatively, the governments of poor countries should, by tax policies, see to it that high incomes are spent on investments to a sufficient degree. In other words, rich citizens of underdeveloped countries should contribute more to the development of their countries. (As will be shown later, greater contributions by the citizens of the developed countries are also, and in fact much more, needed.)

The development assistance provided by developed nations amounts to 0.35 per cent of their gross domestic product (GDP), which is half the well-known norm of 0.7 per cent mentioned by the 1969 Pearson Commission and confirmed by the Brandt Commission (1980, 1983). The 1987 DAC Report provided us with figures for all developed countries over the period 1970–1986. Only a few countries meet this well-known norm: the Scandinavian countries and The Netherlands.

But *the relevance of the norm is doubtful*. As said in section 4, a century of 'patience' would require annual contributions of development assistance of 60 per cent. A century of patience means that only for the third generation the equality of developed and underdeveloped countries would be reached. Does anybody believe that the citizens of poor countries will be that patient? At this moment they are already flooding into the developed countries, legally or illegally.

A figure of about 3 per cent development assistance was already proposed long ago by Dr S.L. Mansholt, at that time chairman of the European Commission; by the Swiss churches, and by the American economist J.A. Yunker.

If patience were to run out after 400 years (twelve generations), development assistance would have to be 8.1 per cent of GNP.

This figure illustrates convincingly that even in such advanced countries as Sweden, world-wide income redistribution is given a much lower priority than redistribution within the nation. Sweden spends almost 30 per cent on internal redistribution, but only 0.7 per cent on external redistribution. The same is true for all other countries, which is understandable. But global approaches have become necessary and aiming at equal redistribution internally and externally would therefore be wiser.

7 CONCLUSION

In an attempt to summarize this study on the optimal economic order the reader may be reminded that since the Soviet leaders discovered that the productivity of their economic system was too low, determining the optimal economic order has become one of the most important problems for humanity to solve. The most telling feature of any social order is the degree of redistribution of incomes: it is the core of both the 'social problem' within and the problem of development cooperation among nations.

Our attempt to solve it has produced the figure of 0.77 as the redistribution equilibrium to aim for. This goal can be attained by annual transfers of the rich to the

poor, transfers whose level depends on the time horizon chosen. Studies are needed to find out which time period is optimal. While in that respect the present study is incomplete and only a first step, some insight could be obtained from a comparison with empirical data about (i) redistribution within and (ii) redistribution among nations. Time periods may be expressed in generations (of 30 to 35 years), and prospects for attaining the long-term goal in three to twelve generations. The most advanced country, Sweden, appears to have chosen the time span of seven to eight generations for its internal redistribution. That requires about 30 per cent of GNP redistribution per annum. Japan appears to have opted for ten generations and the other developed countries show figures in between.

Transfers to underdeveloped countries (version (ii)) take centuries. With the present level of development assistance (0.35 per cent of GNP) five centuries are needed to obtain the optimum (income equality of developed and underdeveloped nations). If that goal had to be attained in three generations, annual development aid would have to be 60 per cent of GNP, if in twelve, 8.1 per cent.

Understandably, all nations show much greater internal redistribution than external. The question may be raised whether the pressure of immigration from underdeveloped countries will not force the developed countries to raise their contribution to much higher levels. For really forward-looking governments that is the conclusion of this study. And don't the French rightly state that *gouverner c'est prévoir*?

J. Tinbergen*