5. Twenty-worlds models: income distribution and a related optimum criterion

5.1 NEED FOR MORE DETAIL; INCOME DISTRIBUTION

The models so far discussed divide up the world population and other variables into the smallest number required to analyze our problems, those of development and of security co-operation. The models constitute the 'frontier macro-models': more macro would have meant the 'macroing away' of our problems. To become somewhat more realistic, therefore, requires the introduction of more detail. Since development co-operation in essence constitutes an income distribution policy we propose to concentrate on more detail of income distribution as a first step towards more detail. Thanks to research done by a number of economists, and in particular by Peter Wiles (1978), we are able to introduce deciles into W1 and W3, that is portions of one-tenth of the population of each world. Since W2 plays a subordinate role in development co-operation, this policy is mainly one of W1 and W3. There are data on the income distribution of W2' as well, and we will discuss them, mainly to compare them with the information on W1. Data on W4 (China) are not known to the author. The refinement obtained may contribute to the solution of some of the problems unsolved in the previous chapters. In fact, an alternative criterion of optimality of development assistance will be one of our results.

As in the previous chapters we are not aiming at completeness, but rather at an orientation and a general impression of income distribution in W1, W3 and, partly, of W2'.

5.2 INCOME DISTRIBUTION IN THREE WORLDS: SOME EXAMPLES

A first orientation is given in Table 5.21.

Table 5.21 Some figures on income distribution for W1, W2' and W3

Country	Year	P95/P05	P95/P50	P05/P50
Industrial non-communist countries (W1)				
USA	1950	20.1	3.16	0.24
USA	1974	12.1	2.90	0.16
Canada	1971	12.0	3.00	0.25
United Kingdom	1953/4	5.8	2.51	0.435
United Kingdom	1969	5.9	2.51	0.425
Germany, F.R.	1969	5.7	2.66	0.47
Sweden	1967	6.5	2.31	0.36
Sweden	1971	8.9	2.26	0.25
Italy	1969	11.2	3.31	0.295
Industrial communist countries (W2')				
Bulgaria	1965	3.65	1.745	0.48
Czechoslovakia	1965	4.50	1.90	0.42
Hungary	1967	4.0	2.01	0.50
Hungary	1972	4.3	2.065	0.48
Developing countries (W3)				
India, rural areas	1967/8	8.1	3.22	0.40
India, urban areas	1967/8	11.1	3.76	0.34
India (unw. average)	1967/8	8.7	3.35	0.385

Sources: Industrial countries: Peter Wiles (1978)
India: V. M. Dandekar and N. Rath (1971)
See also Appendix III for the base material.

Since the data shown in Table 5.21 are not available for the Soviet Union, Table 5.22 adds some information which fills this gap.

Both tables show ratios between percentiles, indicated by P*n*, which means the income of the person with the highest income of *n* per cent of the population, counting from the person with the lowest income upward. The figure in Table 5.21 shown for the USA in 1950 under P95/P05, 20.1,

Table 5.22 Some additional data on income distribution in order to compare the Soviet Union with other countries

Country	Year	P90/P10	P90/P50	P10/P50
USSR	1958	4.08	1.91	0.47
USSR	1967	3.11	1.79	0.58
Hungary	1967	2.99	1.715	0.57
Hungary	1972	3.04	1.73	0.57
United Kingdom	1969	3.93	2.04	0.52
Germany, F.R.	1969	3.83	2.09	0.545

Source: P. Wiles (1978); see also Appendix III.

means that in 1950 the richest person of 95 per cent of the American people had an income 20.1 times as high as the 'richest' person of 5 per cent with lowest income. Since the person P95 is the median of the 10 per cent richest people (with respect to income), we may consider him or her as representative of the upper 10 per cent or 'upper decile' of the population, arranged according to income. Table 5.21 says, briefly, that in 1950 the upper decile in the USA was twenty times as rich as the lowest decile (according to income). In 1974 it was twelve times as well-off. For the other western countries shown the ratio was lower, even in Italy, and, more amazingly, in India. The communist countries all show lower ratios than Britain and Germany.

Table 5.21 comes closer to reality than Table 5.22, where the ratios are those between the 90th and 10th percentiles, which may be considered as representative for the upper and lower fifths of each nation. The differences between the Soviet Union and the other communist countries are not large.

As an alternative measure of income inequality two other measures are shown, the ratio of the upper decile to the median income (P50) and the ratio of the lowest decile to P50 in Table 5.21 and the ratio of the upper and lowest 20 per cent to the median income in Table 5.22. In each case they inform us about the upper and the lower half of the income distribution. High values of P95/P50 or P90/P50 indicate high inequality, whereas low values of P05/P50 or P10/P50 indicate high inequality. Roughly speaking this additional information tells the same story as the first column in both tables: higher inequality in North America and in Italy than in the UK,

Germany and Sweden, and lower inequality in the communist countries. There are deviations in detail from the first column: Italy shows more inequality in the upper half and less inequality in the lower half of the income distribution than the USA; and Czechoslovakia shows more inequality in the lower half than Germany, etc. Moreover, we should not forget, as Peter Wiles reminds his readers in the title of his paper: the data base is shaky. Even so, the figures give us an impression and do not deviate from the intuitive picture we have. Finally, income distribution is an important feature of a society, but not the only one. Unemployment or freedom of speech are other components of a society's welfare, alcohol or drug consumption are others; so is criminality and the way it is dealt with by a country's police.

Data on income distribution in the Third World are few. Those on India are not data on just one country: they are data on an Asian country, and of the three underdeveloped continents Asia's level of income is lower than Latin America's and higher than Africa's. Of all non-communist developing countries India is by far the largest and, finally, in the world of statistics India excels. In 1982 India's population was 28.5 per cent of all developing countries (excluding China). Thus, Indian figures are more significant than any other figures on one country only. But this still constitutes a somewhat 'shaky data base'.

5.3 INCOME DISTRIBUTION AS ANOTHER CRITERION OF OPTIMALITY

Income distribution is a phenomenon that played a very important role in the world's main controversies, the North–South and the East–West controversy. Whereas the North–South issue is in essence the issue that underdeveloped countries have such low incomes in comparison to developed countries, the East-West issue indirectly originated from the low incomes of workers in comparison to capital owners. Socialism in its various forms – from revolutionary communism to democratic socialism – has been a reaction to the fact of welfare inequality. And the figures given illustrate that, in fact, countries in which socialist parties have some power show less inequality in income than countries where socialist parties are almost non-existent (USA) or where feudalism still has not disappeared (India). Socialist forces may also be too strong, as in the communist world, and there we observe, in recent years, some forms of return to 'capitalist' patterns: giving more power to managers.

Table 5.31 Income distribution in all market economies (W1 + W3) and in W1

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of persons (millions)			Income per 74.105m.	Income per 167.83m.	Total inc. of each line $bn (1975)	Decile income (1975)	Percent of Total	Decile Income of W1, percent of Total	Transfer in percent
167.8	167.8		12.0	27.2	27.2				
167.8	74.1	241.9	17.4	39.5	17.4	44.6	1.3	2.6	+1.3
	93.7		17.4	39.5	22.1				
167.8	148.2	241.9	21.3	48.3	42.7	64.8	1.9	4.0	+2.1
	19.6		21.3	48.3	5.6				
167.8	167.8	241.9	25.0	56.7	56.7	83.6	2.5	5.4	+2.9
167.8	54.5		28.9	65.5	21.3				
	113.3		28.9	65.5	44.2				
167.8	128.6	241.9	33.3	75.7	58.0	102.2	3.1	6.5	+3.4
	39.2		33.3	75.7	17.7				
167.8	167.8	241.9	38.4	87.1	87.1	126.3	3.8	7.6	+3.8
167.8	34.9		45.6	103.4	21.5				
	132.9		45.6	103.4	81.9				
167.8	109.0	241.9	58.1	131.9	85.7	167.6	5.0	9.1	+4.1
	58.8		58.1	131.9	46.2				
74.1	74.1		65	147	65				
74.1	74.1	241.9	100	226	100	260.4	7.8	10.8	+3.0
167.8	34.9		104.3	236.7	49.2				
	132.9		104.3	236.7	187.5				
74.1	74.1	241.9	134	303	134	396.9	11.9	12.4	+0.5
74.1	34.9		160	362	75.4				
	39.2		160	362	84.6				
74.1	74.1		189	128	189				
74.1	74.1	241.9	225	510	225	694.2	20.8	18.0	–2.8
74.1	54.3		266	602	195.6				
	19.6		266	602	70.4				
74.1	74.1		307	695	307				
74.1	74.1	241.9	445	1008	455	1403.4	42.0	23.5	–18.5
74.1	74.1		581	1316	581				
Total 2419.0	2419.0				3344	3344	100.0	100.0	0.0

From these arguments an alternative criterion of what constitutes an optimal level of development assistance may be derived. That criterion may be the level of transfers from high-income to low-income groups within the non-communist world, that is, in our symbols W1 + W3. We shall illustrate the estimation of these transfers with the aid of a table for 1970 constructed by Kravis and his collaborators (Kravis *et al.*, 1978). The year 1970 is close to the years to which most of the income distribution data apply and it is the year in which the recommendation was formulated that 0.7 per cent of GNP of the donor countries be made available for 'official development assistance' (ODA). Table 6 of the article quoted informs us about the geographical distribution of population and real incomes over seven parts of the world; this will be the basis of our Chapter 6. There are, however, some printing errors in the column we shall use in the present section. The population of all developed market economies must be 740.45 millions and that of the 'other' market economies (than North America and Europe) 145.43.

The population of the developing market economies is 1678.3 millions and so the deciles contain 167.83 millions each, whereas the deciles of the developed market economies contain 74.105 millions. So we have twenty worlds indeed, but the ten developing deciles have more than twice the size of the ten developed market economies deciles. Incomes *per capita* of the deciles are shown in Appendix III, Tables 1 and 2 and multiplied by a factor so as to let them add up to the total real income 2472 'billion' US dollars with 1975 buying power; and, similarly, to 872 'billion' for the developed and, respectively, the developing countries.

Table 5.3 shows the computation, from the data just described, of the income distribution of W1 and W3 combined (all market economies). Column (1) indicates the twenty deciles' population in the order of their average incomes, shown in columns (4) and (5). In column (4) incomes are given per 74.105 million persons; in column (5) per 167.83 million persons. Consequently the figures in column (5) are 167.83/74.105 = 2.2666 times those of column (4). In column (2) the total population of W1 + W3, 2419.0 millions, is divided into deciles of 241.9 millions, with total incomes shown in column (7). Each decile of W1 + W3 is built up from 2 or more lines, up to 4. The decile incomes in column (7) are obtained by adding up the incomes for the lines, given in column (6). The latter can be obtained in two ways: from column (4) or from column (5), taking into account the line's population size as shown in column (2). Since the upper line has a population of 167.83, its income equals the figure in column (5). Similarly, the last line, having a population of 74.105, has an income equal

to that in column (4). Incomes of lines with populations not equal to 167.83 or 74.105 must be obtained by proportional reduction of either the column (4) or the column (5) figure.

Whereas column (7) indicates the absolute amount of income of each decile of W1 + W3, column (8) expresses that income as a percentage of total income 3344 'billion' 1975 USA dollars. Column (9) gives the incomes of each decile if total income 3344 were distributed as in W1. Finally, column (10) shows the differences between columns (9) and (8), and hence the transfers needed to make income distribution in W1 + W3 as unequal as that in W1, that is, less unequal. The transfers needed should be paid by the two highest deciles and amount to 18.5 per cent of total W1 + W3 income for the upper decile and 2.8 per cent for the 9th decile. The total amount of transfers, according to this criterion, should be 21.3 per cent of 3344 'billion' 1975 USA dollars or $712 bn, constituting 28.8 per cent of W1 income in 1975. Though considerably less than the percentages found as the optimum development assistance in the preceding chapters, it still remains an enormous amount. The explanations given also apply here. The optimum as calculated with the aid of a static model indicates a long-term aim. If a development co-operation policy is followed that, at least, reduces the inequality between W1 and W3, the result of the computations of this chapter will also be a lower amount of optimal assistance. But a precondition remains that indeed inequality will be reduced.

It will be clear that the transfers discussed in this chapter cannot be organized, since the individuals composing each decile are spread over the globe. A practical approach requires that the twenty worlds we consider are organized units. These will be introduced in the next chapter.

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