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THE ECONOMICS OF DEVELOPMENT: A SURVEY*

Nicholas Stern

I. THE SUBJECT

Our definition of the subject will be the use of economic analysis to understand the economies of poor or developing countries. This includes, in particular, how standards of living in the population are determined, and how they change over time, and further how policy can or should be used in the influence of these processes. The definition contains, in principle, much or most of analytical methods in economics insofar as they can be put to use in the examination of the issues of interest. This is as it should be but it poses a problem for a survey in a journal. A comprehensive treatment is infeasible so we shall follow a different route. The survey will focus on what I take to be the major themes and approaches which characterise the productive aspects of the subject. There is, therefore, no pretence at being exhaustive. The purpose is rather to highlight some of the advances. Many of these have been of real substance.

There are a number of possible purposes for a survey and it is important to be clear at the outset for whom it is intended, what it is, and what it is not. This survey is addressed to economists and students of economics who know the tools of their trade but not necessarily how they have been applied to, and fashioned for, the analysis of the economics of developing countries. It is a description of the ways in which problems can be productively formulated and approached, in terms of examples chosen for their intrinsic importance and interest. The vastness of the subject means that we have to be highly selective. It does not seek to provide a summary evaluation of the current view of the ‘appropriate’ response to immediate policy questions. It is not a history of thought, nor a research manifesto nor an attempt to adjudicate or settle the major debates. Where they arise naturally from the major purpose some judgements on these subjects will be offered, but they do not themselves constitute the primary intent of this survey.

There are three lines of enquiry, or sets of questions, which have, I suggest, been distinctive of the most fruitful work in development economics. They will

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be used to organise this survey. The first set of questions (Section III) concerns what we may call the grand issues of the subject. These include: the objectives of economic policy, or what constitutes development; the role of the state and the merits of planning and of markets; the determinants of growth and distribution; policies towards industrialisation and international trade; and the effects of population growth. These questions have, of course, long been part of economics in general. But it is a distinguishing feature of development economics that they have always been central and many of the major economic contributions to their understanding have come from research on development. One can, of course, have too much of the grand issues, especially when their size is taken as an excuse for a lack of rigour, but it is to the credit of the subject that it has not lost sight of the big questions.

The second set (Section IV) concerns the development of techniques and tools for the analysis of problems of policy, principally planning models, cost-benefit analysis, and methods for the examination of tax and price reform. Such issues, if narrowly defined simply as problem-solving techniques, are in some respects less deep and exciting than the former class but, on the other hand, they allow for greater clarity of analysis and for results which are more explicit. Many of the most important contributions to these basic analytical methods in economics have come from development economics. From a broader perspective they may be seen as part of a central and difficult area of economics – the theory of policy in imperfect economies.

The third group of questions (Section V) is more heterogeneous but the common feature is the tightly focussed microeconomic study of a phenomenon, market or location where the details of institutions, geography, health or culture play a crucial role. The studies assembled under this heading do not together reflect a single theme but illustrate an approach to intellectual enquiry which has found some of its most notable examples in development economics. However, in order not to overdo the heterogeneity I have chosen the examples predominantly from an area where the approach has been particularly productively applied, the analysis of rural markets. Some of the studies included in this third group are theoretical but the majority are applied and nearly all of these involve the collection of primary data, an enterprise which is sadly rare in the rest of economics. Whilst it is often the grand issues which catch the economics headlines it is these tightly focused studies which usually involve the harder work, analysis and scholarship and which in many respects form the bedrock of the discipline.

Notwithstanding the length of the agenda already described the subject is so large that there are many important omissions. Many of the omissions could be, and have been, the subject of recent surveys and they will not be entirely neglected since the reader will be guided (Section VI.2) to some of these. A measure of the size of the subject is that a recent bibliography (Gemmell, 1987) of surveys in development economics from 1970–86 contained over 60 entries and this does not include around 1,700 pages and 33 surveys in the *Handbook of Development Economics* edited by Chenery and Srinivasan (vol. I, 1988 and vol. II, 1989). In the next section we describe briefly some aspects of the historical

experience of the growth of developing countries and some empirical studies of that experience. Concluding remarks are provided in Section VI.

Notwithstanding our division of the survey into the 'big picture', the 'problem-solving techniques', and the 'detailed picture' much of the richness and difficulty of the subject lies in the integration of all three. Thus, for example, when one studies the functioning of markets in a single village, the economic status of a particular group, or the development of certain businesses, one is also testing and developing the broad ideas of how poor economies function, or mis-function, and which policies are likely to be desirable and effective. It is this type of blend of analytical approaches that provides much of the challenge and distinctive flavour of the economics of development in the past and features in the research agenda included in Section VI.

In the recent past there has been a curious outbreak of assessments of development economics (Bhagwati, 1988*b*; Chakravarty, 1987; Hill, 1986; Hirschman, 1981; Lal, 1983; Lewis, 1984; Sen, 1983*b*; for example). Such a flurry might make one suspicious that all is not well and some (e.g. Hill, Hirschman and Lal) have been somewhat negative or even caustic. This survey will be optimistic in terms of what can be achieved by the serious application of analytical methods. This is not to deny that some or many influential contributions have been superficial or misguided. But attacks on the subject have usually been based on a very narrow view of what it entails, for example, that it is concerned largely with the propagation of the virtues, or necessity, of rigid and pervasive government control over the economy. Indeed Lal and Hirschman do make clear that they are attacking only a particular part of the subject which insists on a special kind of theory and which often supports 'dirigisme'. This part they have labelled 'development economics'. Whilst it may be noted that this is not the title of our survey, the use of a narrow definition of a subject to mount an attack, when the title 'development economics' gives the impression of a rather broad area, is a ploy which leaves me somewhat uneasy. We shall use, interchangeably, 'development economics', 'the economics of developing countries', 'the economics of less developed countries', 'the economics of development', and 'the economics of poor countries'.

II. SOME ASPECTS OF DEVELOPMENT EXPERIENCE

A distinctive feature of development economics from its early days has been the attempt to learn about the problems of development and the processes of growth by comparing the situations and growth experiences of different countries. We review in this section some of the main contributions to these comparative studies and at the same time present some basic background. In more recent years the main source of information for this type of work has been the data base assembled by the World Bank and published annually in the World Development Reports (WDR) since 1978 (see also the World Bank *World Tables* 1976, 1980, 1983, 1987). Cross-country statistical comparisons are fraught with problems since there will be different standards of data

availability, collection and care, different coverage and conventions, different activities and practices associated with geography, climate, political system and so on, in addition to all the usual problems of different prices in aggregating economic variables (Kravis *et al.* 1978, Usher, 1980). Nevertheless the UN statistical conventions for national accounts (usually termed SNA, see United Nations, 1968) have been helpful in bringing procedures closer together and used with caution these cross-country data sets are a valuable resource which can yield constructive lessons. The third and fourth editions of the *World Tables* (1983, 1987) are now available on magnetic tape (World Bank, 1984, 1988a).

Whilst the World Bank *World Tables* have been the major data source for large-scale cross-country studies their dominant position is likely to be eroded by the recent work of Summers and Heston (1988), the latest product of a long-standing programme known as the International Comparison Project (ICP), based at the University of Pennsylvania. They have published, and simultaneously made available on diskettes, a set of international comparisons of 121 market and 9 centrally planned economies (which they call the Penn World Table, Mark 4) extending their earlier work with Kravis, for example Kravis *et al.*, 1978. For the 121 market economies there are annual data, from as early as 1950, on 17 variables which include population and exchange rates, real product and price level estimates for four different national income concepts and for the major subaggregates, consumption, investment and government. Their main concern is with the production of comparable accounts which use similar sets of prices thus overcoming one of the substantial worries over comparisons using SNA methods and data. Whilst many other difficulties remain (e.g. the requirements for heating in Nigeria and Nepal are very different) the use of common prices or purchasing power parity yields important insights. In their words 'these new insights arise because purchasing power parities (PPPs) replace the exchange rate as the means of converting GDP and its components to a common currency.' (Kravis *et al.* 1978, p. 4). Their work, and their making the data readily available, constitutes a major public good and an important statistical event.

The differences in national incomes and rankings across countries when we change from the World Bank to the Summers–Heston data can be large, particularly at the bottom end. Generally speaking the estimates of income for the very poor countries are raised substantially whereas for the richer countries the alterations are minor. But within the very poor countries the effects of the change can be very different. For example, taking a comparable group of 114 countries (the two sets of countries do not coincide exactly) from both sources, Bangladesh shows a real 1985 GDP *per capita* in Summers and Heston (1988) of \$647 and is ranked 86 out of the 114, whereas in the World Bank *World Development Report*, (1987) it is, at \$150, less poor than only Ethiopia. Ethiopia moves up from \$110 (World Bank) to \$310 (Summers–Heston) although only one place, whereas Zaire drops six places (to bottom) since its estimate increases only from \$170 to \$210 (and thus has an income *per capita* 68% of the next poorest country in Summers–Heston, Ethiopia). Such changes are remarkable and indicate how cautious one has to be in making cross-country

comparisons. The changes reflect the different price levels ruling in the different countries. Thus prices of the main items of national income in Bangladesh, for example, must be particularly low relative to other countries. And notice that some commodity prices can be volatile. For a general discussion of some lessons from their data see Summers and Heston (1988).

We shall focus here on the more quantitative aspects of cross-country comparisons and on large samples of countries. We include demographic, educational, nutritional, and medical indicators as well as the usual economic variables. The unit of observation is the country. This unit may have only limited economic rationale. Thus it may be more interesting, for example, to compare Singapore and Hong Kong with Guangzhou (Canton) and Bombay rather than with China and India. Given the very wide disparities within countries we can learn little about the individual or household distribution of income at this level. Different units for comparison will appear at a number of points below.

In making comparisons across countries, whether more formal by using econometric models or less formal by using tables and examples, we face some basic problems of modelling and method. We usually wish to associate differences in outcomes with differences in policies or circumstances. In order to do this we have to assume broad similarity in the underlying processes so that the differences we isolate in outcomes may reasonably be associated with the causes indicated. This is a standard problem in cross-section econometrics where we have, for example, samples of households or firms. But one is perhaps less uncomfortable with the assumption that General Motors, Toyota and Renault share similar functions when we are trying to estimate a relationship between employment and output in the motor industry, than we would be with the corresponding assumption when we are trying to estimate the effect of the rate of growth of labour on the rate of growth of output using data from, *inter alia*, China, Brazil, Indonesia, India, Pakistan and Bangladesh. One can try to divide samples appropriately, to include the relevant measurable explanatory variables, and to avoid taking the models too literally, but nevertheless one has to treat the results from cross-country regressions with a great degree of circumspection. Whilst there are no doubt many common underlying processes, the idea that there are common parameters in a basic model and that Brazil and China are different drawings from a similar underlying (conditional) distribution is hard to swallow. It is better to treat these cross-country regressions as simple data descriptions, although as such they can be suggestive. From this perspective we should not, therefore, argue that the relationships derived from a cross-section are necessarily relevant for the progress of a single country over time. The state of a richer country now is not a description of where a poorer country will be in the future just as India now is not in the same position as, say, the United Kingdom, in previous centuries. Knowledge, the influence of other countries and a host of other factors will all play a role in invalidating the analogy.

There is a different kind of analysis of growth experience which can be particularly illuminating. This concerns the careful, analytical and detailed

Table 1
Basic Indicators

	Pop.	Pop. Growth	IMor.	GNP PC	LEB	CSPC	GDS	ODA	PEDU	RGDP
<i>Low-income economies</i>										
1 Ethiopia	43.5	2.4	155	120	46	1,704	3	11.5	36	310
2 Bhutan	1.3	2.0	139	150	45	2,477	—	19.3	25	—
3 Burkino Faso	8.1	2.5	140	150	47	2,003	-7	19.3	32	377
4 Nepal	17.0	2.6	130	150	47	1,997	9	11.7	79	526
5 Bangladesh	103.2	2.6	121	160	50	1,804	2	9.5	60	647
6 Malawi	7.4	3.2	153	160	45	2,415	7	17.5	62	387
7 Zaïre	31.7	3.1	100	160	52	2,151	13	8.0	98	210
8 Mali	7.6	2.3	144	180	47	1,810	4	22.7	23	355
9 Burma	38.0	2.0	64	200	59	2,508	12	5.1	102	557
10 Mozambique	14.2	2.7	120	210	48	1,617	-1	9.8	84	528
11 Madagascar	10.6	3.3	130	230	53	2,452	10	12.7	121	497
12 Uganda	15.2	3.1	105	230	48	2,483	11	5.7	—	347
13 Burundi	4.8	2.7	114	240	48	2,233	9	15.7	53	345
14 Tanzania	23.0	3.5	108	250	53	2,316	2	15.2	72	355
15 Togo	3.1	3.4	96	250	53	2,221	13	18.5	95	489
16 Niger	6.6	3.0	135	260	44	2,276	7	15.2	28	429
17 Benin	4.2	3.2	117	270	50	2,248	0	10.0	65	525
18 Somalia	5.5	2.9	134	280	47	2,074	-5	27.8	25	348
19 Central African Rep.	2.7	2.5	134	290	50	2,059	2	14.8	73	434
20 India	781.4	2.2	86	290	57	2,126	21	0.9	92	750
21 Rwanda	6.2	3.3	116	290	48	1,935	9	11.5	64	341
22 China	1,054.0	1.2	34	300	69	2,620	36	0.4	124	2,444
23 Kenya	21.2	4.1	74	300	57	2,214	26	6.9	94	598
24 Zambia	6.9	3.5	82	300	53	2,126	13	31.2	103	548
25 Sierra Leone	3.8	2.4	154	310	41	1,784	8	7.0	—	443
26 Sudan	22.6	2.8	108	320	49	2,168	4	12.8	49	540
27 Haiti	6.1	1.8	119	330	54	1,784	6	8.2	78	631
28 Pakistan	99.2	3.1	111	350	52	2,180	7	2.9	47	1,153
29 Lesotho	1.6	2.7	102	370	55	2,299	-78	16.1	115	771
30 Ghana	13.2	3.5	89	390	54	1,785	8	6.6	66	349
31 Sri Lanka	16.1	1.5	29	400	70	2,485	13	8.9	103	1539
32 Mauritania	1.8	2.6	127	420	47	2,071	15	23.9	—	550
33 Senegal	6.8	2.9	130	420	47	2,418	6	16.0	55	754

Table 1 (cont.)

	Pop.	Pop. Growth	IMor.	GNP PC	LEB	CSPC	GDS	ODA	PEDU	RGDP
73 Lebanon	—	—	—	—	—	3,046	—	—	—	—
<i>Upper middle-income economies</i>										
74 Brazil	138.4	2.2	65	1,810	65	2,657	24	0.1	104	3,282
75 Malaysia	16.1	2.7	27	1,830	69	2,601	32	0.8	99	3,415
76 South Africa	32.3	2.2	74	1,850	61	2,926	30	—	—	3,885
77 Mexico	80.2	2.2	48	1,860	68	3,126	27	0.2	115	3,985
78 Uruguay	3.0	0.4	28	1,900	71	2,791	13	0.4	110	3,462
79 Hungary	10.6	—0.1	19	2,020	71	3,544	25	—	98	5,765
80 Poland	37.5	0.9	18	2,070	72	3,224	30	—	101	4,913
81 Portugal	10.2	0.5	18	2,250	73	3,122	20	0.5	112	3,729
82 Yugoslavia	23.3	0.7	27	2,300	71	3,499	40	0.0	96	5,063
83 Panama	2.2	2.2	24	2,330	72	2,423	21	1.0	105	2,912
84 Argentina	31.0	1.6	33	2,350	70	3,216	11	0.1	108	3,486
85 Korea, Rep. of	41.5	1.4	25	2,370	69	2,806	35	0.0	96	3,056
86 Algeria	22.4	3.1	77	2,590	62	2,799	31	0.3	94	2,142
87 Venezuela	17.8	2.9	37	2,920	70	2,485	21	0.0	108	3,548
88 Gabon	1.0	4.4	105	3,080	52	2,448	19	2.7	123	3,103
89 Greece	10.0	0.5	12	3,680	76	3,637	14	0.0	106	4,464
90 Oman	1.3	4.7	103	4,980	54	—	—	1.3	89	7,792
91 Trinidad and Tobago	1.2	1.5	21	5,360	70	2,915	18	0.4	95	6,884
92 Israel	4.3	1.7	12	6,210	75	3,019	11	6.8	99	6,270
93 Hong Kong	5.4	1.2	8	6,910	76	2,692	27	0.0	105	9,093
94 Singapore	2.6	1.1	9	7,410	73	2,696	40	0.2	115	9,834
95 Iran, Islamic Rep.	45.6	2.8	109	—	59	3,115	—	—	112	3,922
96 Iraq	16.5	3.6	71	—	63	2,891	—	—	100	2,813
97 Romania	22.9	0.5	26	—	71	3,413	—	—	98	4,273
<i>High-income oil exporters</i>										
98 Saudi Arabia	12.0	4.1	64	6,950	63	3,057	18	0.0	69	5,971
99 Kuwait	1.8	4.4	19	13,890	73	3,102	—	0.0	101	14,868
100 United Arab Emirates	1.4	5.6	33	14,680	69	3,652	—	0.2	99	12,404
101 Libya	3.9	3.9	85	—	61	3,585	—	—	127	—

Industrial market economies

102 Spain	38.7	0.6	11	4,860	76	3,303	23	0.0	104	6,437
103 Ireland	3.6	0.8	9	5,070	74	3,736	23		100	5,205
104 New Zealand	3.3	0.9	11	7,460	74	3,393	24		106	8,000
105 Italy	57.2	0.3	10	8,550	77	3,493	23		98	7,425
106 United Kingdom	56.7	0.1	9	8,870	75	3,148	18		101	8,665
107 Belgium	99	0.0	10	9,230	75	3,679	20		95	9,717
108 Austria	7.6	0.0	10	9,990	74	3,140	25		99	8,929
109 Netherlands	14.6	0.5	8	10,020	77	3,348	25		95	9,092
110 France	55.4	0.5	8	10,720	77	3,358	20		114	9,918
111 Australia	16.0	1.4	10	11,920	78	3,302	21		106	8,850
112 Germany, Fed. Rep.	60.9	-0.2	9	12,080	75	3,519	24		96	10,708
113 Finland	4.9	0.5	6	12,160	75	2,961	24		104	9,232
114 Denmark	5.1	0.0	8	12,600	75	3,489	22		98	10,884
115 Japan	121.5	0.7	6	12,840	78	2,695	32		102	9,447
116 Sweden	8.4	0.1	6	13,160	77	3,007	21		98	9,904
117 Canada	25.6	1.1	8	14,120	76	3,443	22		105	12,196
118 Norway	4.2	0.3	9	15,400	77	3,171	26		97	12,623
119 United States	241.6	1.0	10	17,480	75	3,682	15		101	12,532
120 Switzerland	6.5	0.3	7	17,680	77	3,406	27		—	10,640

Key: Pop., Population (millions) mid-1986. Pop. growth, Average annual growth of population (percent) 1980-86. IMor., Infant mortality (per 1,000 live births before 1 year of age) 1986. GNP PC, GNP *per capita* (dollars) 1986. LEB, Life expectancy at birth (years) 1986. CSPC, Daily calorie supply *per capita* 1985, GDS, Gross domestic savings 1986 as a % of GDP. ODA, Net disbursements of Official Development Assistance: receipts as a percentage of GNP 1986. PEDU, Percentage of age group enrolled in education. Primary (total). *Note (i):* Some non-primary age enrolled in primary education. RGDP, Real GDP *per capita* (dollars) 1985, in 1980 international prices except for Centrally Planned Economies: Real GNP *per capita* in 1980 International Prices (underlined). *Source:* Summers and Heston (1988).

Note (ii): Low-income economies are countries with GNP *per capita* of less than 460 U.S. dollars in 1986. Lower middle-income economies are countries with GNP *per capita* of less than 1,810 U.S. dollars in 1986. Upper middle-income economies are countries with GNP *per capita* of less than 7,410 U.S. dollars in 1986, except for some high-income oil exporters and industrial market economies.

Note (iii): *Source:* World Bank Development Report (1988) except where specified. Figures underlined are for years other than specified (except RGDP) —, Signifies missing values.

study of the growth of a particular country or small group of countries. This approach is more time-consuming than cross-country regressions but can yield deeper insights – it forms a major part of the discipline of economic history. We cannot review economic history as well as the economics of development but shall simply draw attention to attempts to apply this kind of method by economists. Notable examples include Little *et al.* (1970), Bhagwati (1978), Bhagwati and Desai (1970), Krueger (1978), Bevan *et al.* (1988 and forthcoming), Harberger (1984). It should also be recorded that major practitioners of cross-country regression analysis have also been involved in this kind of work, see for example, Chenery *et al.* (1986). The two approaches have some complementarity.

Our discussion is divided into three subsections. We begin Section II. 1, by showing the great diversity in the circumstances, attainments and difficulties across the world's countries. This teaches us a number of lessons, in particular, that simple dichotomies such as North and South, developed and under-developed, and so on, can be extremely misleading. In Section II. 2 we present simple data on growth experience and link them to some of the ideas and issues to be discussed in Section III and in Section II. 3 we describe briefly some of the more formal econometric analyses of cross-country information.

II. 1. *Diversity of Current Position*

In Table 1 we present some basic socioeconomic and demographic indicators from the most recent, 1988, World Development Report (World Bank, 1981–8). The WDR uses six categories or sub-groups of countries: low-income, lower middle-income, upper middle-income, high-income oil exporters, industrial market economies and non-reporting non-members (not presented here). Within the categories countries are ranked by per capita income (see column 4 of Table 1). It is immediately clear that even in this one dimension there is enormous diversity and, further, that countries are spread fairly evenly over the spectrum. In terms of GNP/*capita* in 1986 dollars we have eight countries between \$100 and \$200, thirteen between \$200 and \$300, nine between \$300 and \$400, ... seven between \$800 and \$1,000, ..., nine between \$2,000 and \$3,000, and so on. There is no obvious clustering into groups in this dimension. Furthermore the 'upper middle-income' countries overlap in terms of GNP/*capita* with the industrial market economies – Trinidad and Tobago, for example, having a higher GNP/*capita* than Spain and Ireland, and Hong Kong and Singapore being close to New Zealand, Italy and the United Kingdom. A simple split into rich and poor or North and South is hopelessly invalid as a description of this distribution. And it should be noted that a similar conclusion applies if we use the Summers–Heston data (see Table 1, column 10).

GNP *per capita* is, of course, an aggregate and in addition to all its attendant problems of measurement conceals the distribution of income. Further, GNP *per capita* says nothing about quality of life, aspects of which are reflected to some extent in some of the other indicators in Table 1. Indeed it is interesting how the structure of the World Development Report's Basic Indicators (Table

1 in the WDRs) has changed since 1978 as a result, one presumes, of shifting emphasis in the profession. For example, energy consumption, highly topical in the 1970s, was included in the early tables but dropped in 1980 when adult literacy and life expectancy were added. The index of food availability *per capita* (as Sen, 1981, argued, a poor indicator of the probability of famine) was dropped in 1983. There are now 33 Tables of World Development Indicators (WDR, 1988) compared to 18 in 1978. This reflects the growing availability of data (which has expanded partly in response to the World Bank's own initiatives) but the statistical newcomers (which include data relating to income distribution and women in development) are themselves significant as indicators of changing concerns.

Most of the indicators also show considerable variation across countries with often only a weak relationship with GNP *per capita* (in parentheses in the following). Infant mortality rates in China (\$300) and Sri Lanka (\$400), for example, are less than a quarter of those in Yemen PDR (\$470) and Yemen Arab Republic (\$550), one-third of those in Gabon (\$3,080) and Oman (\$4,980), and half those of Jordan (\$1,540) and Brazil (\$1,810). Life expectancy follows a broadly similar pattern to infant mortality (although there are some important differences) and again is only weakly related to GNP *per capita*. Daily calorie supply *per capita* has a slightly stronger relationship with income but again the relationship is far from monotonic with those for Venezuela (\$2,920) and Gabon (\$3,080) being close to Malawi (\$160) and Bhutan (\$150). Calorie supply *per capita* is again an aggregate, of course, and has problems of measurement.

II. 2. *The Growth Experience*

Some aspects of the process of growth over the two decades 1965–86 are presented in Table 2. The growth rates also show a great diversity over this period with some countries achieving sustained and rapid growth of income *per capita* and other countries in decline. Growth of over 4% a year in income *per capita* over two decades was achieved for example, by China, Indonesia, Thailand, Botswana, Brazil, Malaysia and South Korea. Growth at 4% doubles income *per capita* in 18 years so that the increase in affluence in these countries has been remarkable. Sri Lanka, Pakistan, Egypt, Turkey, Colombia, Philippines, Mexico, Algeria, Hungary and Yugoslavia, for example, all showed growth rates in income *per capita* above 2.4%, notwithstanding population growth rates well above 2% per annum in a number of cases. Zaire, Madagascar, Uganda, Niger, Zambia, and Ghana, on the other hand, had rapid declines with growth rates of –1.7% or lower. Uganda's income *per capita*, for example, declined at a rate of 2.6% for the 21 years 1965–86 representing a fall of a factor of 1.7, or an income *per capita* in 1986 only 60% of the level in 1965. All the examples of rapid decline are in Africa, south of the Sahara, whereas rapid growth has been seen by several major countries in various different parts of Asia and Latin America, and also in Egypt.

The importance of savings and industrialisation in the growth process was emphasised by early writers (for example, Rosenstein-Rodan, 1943; Singer,

Table 2
Growth Rates 1965-1986

	GNP PC	GNP PCG	GDP 1965	GDP 1986	GDGP 65-80	GDGP 80-86	Dist. of GDP (%) 1965 and 1986							
							AGR	IND	MANU	SERV				
Low-income economies														
1 Ethiopia	120	0.0	1,180	4,960	2.7	0.8	58	48	14	15	7	10	28	36
2 Bhutan	150	—	—	210	—	—	—	—	—	—	—	—	—	—
3 Burkino Faso	150	1.3	260	920	3.5	2.5	53	45	20	22	—	—	27	33
4 Nepal	150	1.9	730	2,200	2.4	3.5	65	—	11	—	3	—	23	—
5 Bangladesh	160	0.4	4,380	15,460	2.4	3.7	53	47	11	14	5	8	36	39
6 Malawi	160	1.5	220	1,100	6.1	2.4	50	37	13	18	—	12	37	45
7 Zaïre	160	-2.2	3,140	6,020	1.4	1.0	21	29	26	36	16	—	53	35
8 Mali	180	1.1	—	1,650	4.1	0.4	—	50	—	13	—	7	—	37
9 Burma	200	2.3	1,600	8,180	3.9	4.9	35	48	13	13	9	10	52	39
10 Mozambique	210	—	—	4,300	—	—	—	35	—	12	—	—	—	53
11 Madagascar	230	-1.7	670	2,670	1.6	-0.1	31	43	16	16	11	—	53	41
12 Uganda	230	-2.6	1,100	3,310	0.8	0.7	52	76	13	6	8	5	35	18
13 Burundi	240	1.8	150	1,090	3.6	2.3	—	58	—	17	—	10	—	25
14 Tanzania	250	-0.3	790	4,020	3.7	0.9	46	59	14	10	8	6	40	31
15 Togo	250	0.2	190	980	4.5	-1.1	45	32	21	20	10	7	34	48
16 Niger	260	-2.2	670	2,080	0.3	-2.6	68	46	3	16	2	4	29	39
17 Benin	270	0.2	220	1,320	2.3	3.6	59	49	8	13	—	4	33	37
18 Somalia	280	-0.3	220	2,320	2.5	4.9	71	58	6	9	3	6	24	34
19 Central African Rep.	290	-0.6	140	900	2.6	1.1	46	41	16	12	4	4	38	47
20 India	290	1.8	46,260	203,790	3.7	4.9	47	32	22	29	15	19	31	39
21 Rwanda	290	1.5	150	1,850	5.0	1.8	75	40	7	23	2	16	18	37
22 China	300	5.1	65,590	271,880	6.4	10.5	39	31	38	46	30	34	23	23
23 Kenya	300	1.9	920	5,960	6.4	3.4	35	30	18	20	11	12	47	50
24 Zambia	300	-1.7	1,060	1,660	1.8	-0.1	14	11	54	48	6	20	32	41
25 Sierra Leone	310	0.2	320	1,180	2.6	0.4	34	45	28	22	6	4	38	33
26 Sudan	320	-0.2	1,330	7,470	3.8	0.3	54	35	9	15	4	7	37	50
27 Haiti	330	0.6	350	2,150	2.9	-0.7	—	—	—	—	—	—	—	—
28 Pakistan	350	2.4	5,450	30,080	5.1	6.7	40	24	20	28	14	17	40	47
29 Lesotho	370	5.6	50	230	6.6	0.9	65	21	5	27	1	13	30	52
30 Ghana	390	-1.7	2,050	5,720	1.4	0.7	44	45	19	17	10	12	38	39
31 Sri Lanka	400	2.9	1,770	5,880	4.0	4.9	28	26	21	27	17	15	51	47

32 Mauritania	420	-0.3	160	750	2.0	1.0	32	34	36	24	4	—	32	42
33 Senegal	420	-0.6	810	3,740	2.1	3.2	25	22	18	27	14	17	56	51
34 Afghanistan	—	—	600	—	2.9	—	—	—	—	—	—	—	—	—
35 Chad	—	—	290	—	0.1	—	42	—	15	—	12	—	43	—
36 Guinea	—	—	520	1,980	3.8	0.9	—	40	—	22	—	2	—	38
37 Kampuchea, Dem.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38 Lao PDR	—	—	—	—	—	—	—	—	—	—	—	—	—	—
39 Viet Nam	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Lower middle-income economies</i>														
40 Liberia	460	-1.4	270	990	3.3	-1.3	27	37	40	28	3	5	34	35
41 Yemen, PDR	470	—	—	930	—	1.7	—	—	—	—	—	—	—	—
42 Indonesia	490	4.6	3,830	75,230	7.9	3.4	56	26	13	32	8	14	31	42
43 Yemen, Arab Rep.	550	4.7	—	4,760	—	4.3	—	34	—	16	—	7	—	50
44 Philippines	560	1.9	6,010	30,540	5.9	-1.0	26	26	28	32	20	25	46	42
45 Morocco	590	1.9	2,950	14,760	5.4	3.3	23	21	28	30	16	17	49	49
46 Bolivia	600	-0.4	710	4,180	4.5	-3.0	23	24	31	23	15	13	46	52
47 Zimbabwe	620	1.2	960	4,940	4.4	2.6	18	11	35	46	20	30	47	43
48 Nigeria	640	1.9	4,190	49,110	8.0	-3.2	53	41	19	29	7	8	29	30
49 Dominican Republic	710	2.5	890	5,280	7.3	1.1	23	17	22	30	16	16	55	53
50 Papua New Guinea	720	0.5	340	2,530	4.1	1.8	42	34	18	26	—	9	41	40
51 Côte d'Ivoire	730	1.2	760	7,320	6.8	-0.3	47	36	19	24	11	16	33	40
52 Honduras	740	0.3	460	2,960	4.2	0.6	40	27	19	25	12	14	41	48
53 Egypt, Arab Rep.	760	3.1	4,550	40,850	6.7	4.7	29	20	27	29	—	—	45	51
54 Nicaragua	790	-2.2	570	2,900	2.6	0.2	25	23	24	33	18	27	51	44
55 Thailand	810	4.0	4,050	41,780	7.4	4.8	35	17	23	30	14	21	42	53
56 El Salvador	820	-0.3	800	3,980	4.3	-1.0	29	20	22	21	18	15	49	59
57 Botswana	840	8.8	50	1,150	14.3	11.9	34	4	19	58	12	6	47	38
58 Jamaica	840	-1.4	970	2,430	1.3	0.0	10	6	37	40	17	22	53	54
59 Cameroon	910	3.9	750	11,280	5.1	8.2	32	22	17	35	10	—	50	43
60 Guatemala	930	1.4	1,330	7,470	5.9	-1.2	—	—	—	—	—	—	—	—
61 Congo, People's Rep.	990	3.6	200	2,000	5.9	5.1	19	8	19	54	—	6	62	38
62 Paraguay	1,000	3.6	440	3,590	6.9	1.1	37	27	19	26	16	16	45	47
63 Peru	1,090	0.1	5,020	25,370	3.9	-0.4	18	11	30	36	17	20	53	51
64 Turkey	1,110	2.7	7,660	52,620	6.3	4.9	34	18	25	38	16	25	41	46
65 Tunisia	1,140	3.8	880	7,790	6.6	3.7	22	16	24	33	9	15	54	52
66 Ecuador	1,160	3.5	1,150	11,510	8.7	1.8	27	14	22	42	18	19	50	45
67 Mauritius	1,200	3.0	190	1,160	5.3	4.4	16	15	23	32	14	23	61	53
68 Colombia	1,230	2.8	5,570	29,660	5.7	2.4	30	20	25	25	18	18	46	56
69 Chile	1,320	-0.2	5,940	16,820	1.9	0.0	9	—	40	—	24	—	52	—
70 Costa Rica	1,480	1.6	590	4,260	6.2	1.3	24	21	23	29	—	—	53	50

Table 2 (cont.)

	GNP PC	GNP PCG	GDP 1965	GDP 1986	GDPG 65-80	GDPG 80-86	Dist. of GDP (%) 1965 + 1980							
							AGR	IND	MANU	SERV				
71 Jordan	1,540	5.5	—	4,000	—	5.1	—	8	—	28	—	14	—	63
72 Syrian Arab Rep.	1,570	3.7	1,470	17,400	8.7	1.5	29	22	22	21	—	—	—	58
73 Lebanon	—	—	1,150	—	-1.2	—	12	—	—	21	—	—	—	67
Upper middle-income economies														
74 Brazil	1,810	4.3	19,450	206,750	9.0	2.7	19	11	33	39	26	28	48	50
75 Malaysia	1,830	4.3	3,130	27,580	7.4	4.8	28	—	25	—	9	—	47	—
76 South Africa	1,850	0.4	10,540	56,370	4.0	0.8	10	6	42	46	23	22	48	49
77 Mexico	1,860	2.6	20,160	127,140	6.5	0.4	14	9	31	39	21	26	54	52
78 Uruguay	1,900	1.4	930	5,320	2.4	-2.6	15	12	32	33	—	—	53	56
79 Hungary	2,020	3.9	—	23,660	5.6	1.6	—	17	—	41	—	—	—	43
80 Poland	2,070	—	—	73,770	—	1.5	—	—	—	—	—	—	—	—
81 Portugal	2,250	3.2	—	27,480	5.5	1.4	—	10	—	40	—	—	—	51
82 Yugoslavia	2,300	3.9	11,190	61,640	6.0	1.2	23	12	42	42	—	—	35	46
83 Panama	2,330	2.4	660	5,120	5.5	2.6	18	9	19	18	12	8	63	73
84 Argentina	2,350	0.2	16,500	69,820	3.4	-0.8	17	13	42	44	33	31	42	44
85 Korea, Rep. of	2,370	6.7	3,000	98,150	9.5	8.2	38	12	25	42	18	30	37	45
86 Algeria	2,590	3.5	3,170	60,760	7.5	4.4	15	12	34	44	11	13	51	44
87 Venezuela	2,920	0.4	8,290	49,980	5.2	-0.9	7	9	41	37	—	23	52	54
88 Gabon	3,080	1.9	220	3,190	9.5	1.5	26	10	34	35	—	—	40	55
89 Greece	3,680	3.3	5,270	35,210	5.6	1.5	24	17	26	29	16	18	49	54
90 Oman	4,980	5.0	60	7,320	12.5	5.7	61	—	23	—	0	—	16	—
91 Trinidad and Tobago	5,360	1.6	690	4,830	5.1	-6.3	8	5	48	35	—	8	44	59
92 Israel	6,210	2.6	3,590	29,460	6.8	2.0	—	—	—	—	—	—	—	—
93 Hong Kong	6,910	6.2	2,150	32,250	8.5	6.0	2	0	40	29	24	21	58	71
94 Singapore	7,410	7.6	970	17,350	10.4	5.3	3	1	24	38	15	27	73	62
95 Iran, Islamic Rep.	—	—	6,170	—	6.2	—	26	—	36	—	12	—	38	—
96 Iraq	—	—	—	—	—	—	18	—	—	46	—	8	—	36
97 Romania	—	—	—	—	—	—	—	—	—	—	—	—	—	—

High-income oil exporters

98 Saudi Arabia	6,950	4.0	2,300	78,480	10.9	-3.4	8	4	60	50	9	9	31	46
99 Kuwait	13,800	-0.6	2,100	22,310	3.1	-0.9	0	—	73	—	3	—	27	—
100 United Arab Emirates	14,680	—	—	25,280	—	-3.8	—	—	—	—	—	—	—	—
101 Libya	—	—	1,500	—	4.2	—	5	—	63	—	3	—	33	—

Industrial market economies

102 Spain	4,860	2.9	23,320	229,100	5.2	1.8	15	6	36	37	—	27	49	56
103 Ireland	5,070	1.7	2,340	21,910	5.1	0.7	—	14	—	45	—	—	—	41
104 New Zealand	7,460	1.5	5,640	26,630	3.1	2.6	—	11	—	33	—	—	—	56
105 Italy	8,550	2.6	72,150	599,920	3.9	1.3	11	5	41	39	23	22	48	56
106 United Kingdom	8,870	1.7	88,520	468,290	2.2	2.3	3	2	46	43	34	26	51	55
107 Belgium	9,230	2.7	16,600	112,180	3.9	0.9	5	2	41	33	31	23	53	64
108 Austria	9,990	3.3	9,480	93,830	4.3	1.8	9	3	46	38	33	28	45	59
109 Netherlands	10,020	1.9	19,890	175,330	3.7	1.0	—	4	—	34	—	18	—	62
110 France	10,720	2.8	99,660	724,200	4.4	1.3	8	4	39	34	28	—	53	63
111 Australia	11,920	1.7	24,050	184,940	4.0	3.1	9	5	39	34	26	17	51	62
112 Germany, Fed. Rep.	12,080	2.5	114,790	891,990	3.3	1.5	4	2	53	40	40	32	43	58
113 Finland	12,160	3.2	7,540	62,370	4.1	2.7	16	8	37	37	23	25	47	55
114 Denmark	12,600	1.9	8,940	68,820	2.7	2.8	8	6	36	28	23	20	55	66
115 Japan	12,840	4.3	91,110	1,955,650	6.3	3.7	9	3	43	41	32	30	48	56
116 Sweden	13,160	1.6	19,610	114,470	2.8	2.0	6	3	40	35	28	24	53	62
117 Canada	14,120	2.6	45,940	323,790	4.4	2.9	6	3	40	36	27	—	53	61
118 Norway	15,400	3.4	7,080	69,780	4.4	3.5	8	4	33	41	21	14	59	56
119 United States	17,480	1.6	701,670	4,185,490	2.8	3.1	3	2	38	31	28	20	59	67
120 Switzerland	17,680	1.4	13,920	135,050	2.0	1.5	—	—	—	—	—	—	—	—

Key: GNP PC, GNP *per capita* (dollars 1986). GNP PCG, GNP *per capita* (average annual growth rate (%)) 1965-86). GDP 1965, GDP (mn dollars) 1965. GDP 1986, GDP (mn dollars) 1986. GDPG 65-80, GDP average annual growth rate (%)) 1965-80. GDPG 80-86, GDP average annual growth rate (%)) 1980-86. AGR 65, Distribution of GDP (%), Agriculture 1965. AGR 86, Distribution of GDP (%), Agriculture 1986. IND 65, Distribution of GDP (%), Industry 1965. IND 86, Distribution of GDP (%), Industry 1986. MANU 65, Distribution of GDP (%), Manufacturing 1965. MANU 86, Distribution of GDP (%), Manufacturing 1986. SERV 65, Distribution of GDP (%), Services, etc. 1965. SERV 86, Distribution of GDP (%), Services, etc. 1986.

Note (i): Figures underlined are for years other than specified. —, signifies missing values.

Note (ii): Low-income economies are countries with GNP *per capita* of less than 460 U.S. dollars in 1986. Lower middle-income economies are countries with GNP *per capita* of less than 1810 U.S. dollars in 1986. Upper middle-income economies are countries with GNP *per capita* of less than 7410 U.S. dollars in 1986, except for some high-income oil exporters and industrial market economies.

1952; Nurkse, 1953; Lewis, 1954, 1955). Sen (1983*a*) has argued that countries with more rapid growth in incomes have indeed been those with higher savings rates and more rapid industrialisation. He did this by inspecting data such as those displayed in Tables 1 and 2 and pointing to those countries which had grown most rapidly and those which had grown least rapidly. Prominent amongst the former for the low income countries were China and Sri Lanka with relatively high savings rates and for the latter a number of African countries with relatively low savings rates (and similarly for industrialisation). Arguing in this way Sen suggests that the emphasis of the early writers may not have been misplaced.

Unfortunately drawing conclusions about issues such as savings and growth is more difficult than might appear from these simple examples, and it is instructive to spend a moment seeing why. There are (at least) two major problems. First, a few examples may be misleading. A simple correlation of growth rates of GNP *per capita* (averaged over 1965–86) against savings rates (1986) for the 105 countries permitted by Tables 1 and 2 shows a significant correlation coefficient for all countries of +0.24. But the correlation coefficient for the 31 low-income countries is –0.26 and for the 32 lower-middle and middle-income countries is +0.11 both of which are insignificant at the 5% level. The high (and significant) positive correlations come from the upper-middle-income countries (20 observations) with a coefficient of +0.64 and the industrial market economies (19 observations) with +0.54. Hence savings ratios are positively correlated with growth rates for richer countries but not for poorer. Second, one cannot think in terms of a single direction of causation going from savings rates to growth rates. We know from life-cycle ideas of individual or household saving (see, e.g. Modigliani, 1970 and Farrell, 1970 for early discussions and Gersovitz, 1988 for recent references) that growth rates influence savings rates. How important this relationship actually is will depend on the country at hand (it may not have been relevant for China, for example) but it cannot be dismissed. Third, if on the other hand investment rates are used in place of savings rates we find significant positive correlations for all groups of countries. This last observation is broadly confirmed using the Summers–Heston data. In addition to the problems mentioned one must also recognise that savings are subject to substantial measurement error as well as being difficult to define (they require a concept of income and are generally measured as a residual with respect to that income). Our purpose here is not to provide a serious investigation into the relation between saving and growth but simply to show that such an investigation using cross-country data would be problematic and that a few apparently suggestive examples are not enough.

There are examples of rapid growth, as Sen (1983*b*) emphasises, amongst many different types of economy, including economies which have been tightly controlled with a large public sector (such as China) and those where public and private decisions have been closely integrated (such as South Korea). Thus the broad picture does not, by itself, allow one to proclaim either the success or failure of planning with any general degree of confidence or truth (and see Section III below for further discussion).

Shifts in the structure of industry in the growth process are also illustrated in Table 2. Generally we see a shift out of agriculture over time. Notice that the share of services is high in all countries and is generally rising over time reaching two-thirds of GDP in the richest countries. Excluding China and India the share of industry in GDP is higher for richer countries, but it is already strikingly high for both China and India. The investigation of the process of structural change was a central concern of the work to be described in the next sub-section and plays a key role in some of the models of growth discussed in Section III. 2.

II. 3. *Cross-Country Statistical Analyses*

The early contributors to cross-country statistical analysis were Clark (1940) and Kuznets (1961, 1971). Chenery and his collaborators (Chenery and Syrquin, 1975; Chenery, 1979; Chenery *et al.* 1986) and Adelman and Morris (1973, and Morris and Adelman, 1988) have been leading figures in this area in the 1970s and 1980s. Kuznets pointed to a number of characteristics of the growth process for developed nations. Prominent are high rates of growth of *per capita* output and high rates of increase in total factor productivity, especially labour productivity, as well as a rapid structural transformation of the economy. The work of Chenery and his colleagues constituted 'an attempt to interpret the interaction of the principal factors that cause the structural changes reflected in Kuznets' cross-country and time-series patterns' (Chenery *et al.*, 1986, p. 2).

Chenery's earlier work (Chenery and Syrquin, 1975, Chenery, 1979) was largely based on cross-section analysis which leaned heavily on cross-country regressions 'explaining' dependent variables such as exports and production of manufactures in terms of 'explanatory variables' such as *per capita* GNP, population and foreign resource inflow. Many of these cross-country regressions generate similar difficulties of interpretation to those indicated in the preceding sub-section.

The methods of analysis were considerably broadened in the work described in the 1986 Chenery *et al.* volume. There were (i) detailed studies (some in book form) of Colombia, Israel, Japan, Korea, Mexico, Norway, Taiwan, Turkey and Yugoslavia which together represent a broad spectrum of economies and strategies; (ii) sources of growth studies for 39 economies of the type developed by Solow (1957) (and described below in Section III. 2); (iii) disequilibrium cross-section models estimated on 34 economies; and (iv) a computable general equilibrium model based on Korea. They found (p. 358) 'that economies which pursued export-led growth – as opposed to a strategy of import substitution – grew faster, industrialised sooner, had higher rates of total factor productivity growth, and tended to achieve the input-output structure of an advanced economy faster'. But they add (p. 358) 'It appears that an economy must develop a certain industrial base and set of technical skills before it can pursue manufactured exports'. This may involve high capital flows to certain sectors with import substitution in the early stages and low total factor productivity growth; and it is clear from this statement that the development

of human capital would also be central. The early stages have often been accompanied by strong and non-uniform protection (see, for example, Wade, 1985, and Section III below for further discussion of such issues).

A longer-term cross-section study dealing with the period 1850–1980 and building on lines suggested by Kuznets (1971) and Lewis (1978) is provided in Reynolds (1983). He indicates a number of conclusions, notably the following. First, intensive growth ‘before 1940 was intermittent, invariably export led, with moderate population growth’ (p. 975) whereas since 1950 ‘population has grown considerably faster, *per capita* income in most countries has also grown faster, there are cases of non-export led growth...’. Second, the ‘“top tier” of third-world countries now have not only a much higher *per capita* income than in 1950 but also more effective economic institutions and a more diversified pattern of production’. Third, the faster growth of some countries is not easily explained. His hypothesis (p. 976) is that the single most important explanatory variable is ‘political organisation and the administrative competence of government’. Morris and Adelman (1988) also caution against the argument that the lessons of comparative growth experience point unambiguously to the superiority of certain strategies.

III. THE GRAND ISSUES

The grand issues have always been prominent in the economics of development and this, we have suggested, has constituted one of its main strengths. It can bring dangers too in that the magnitude of the issues tempts one into less than rigorous analysis, selective or inappropriate use of evidence and strident assertion in the place of argument. Nevertheless a number of the controversies have generated productive debate and we shall try to give some of the flavour of the more important. Given the divergence of the views, the difficulty of the problems and their intertwining with political persuasion, one cannot expect settled answers or a consensus.

We begin in Section III. 1 with what is, in many respects, the most basic of questions, the role of the state. In III. 2 we examine possible processes of growth and change using fairly aggregated models. Understanding these processes is central to the economics of development and whilst there are major limitations on the insights available from simple growth models, they have made a substantial contribution. Policies toward industrialisation and trade, discussed in Section III. 3 have been subject to continued controversy, with that surrounding trade being particularly fierce, and the balance of views has been radically shifted, in part by experience. The relations between richer and poorer countries, particularly concerning aid, trade and debt are examined in III. 4. Recently, we have seen ‘structural adjustment’ and ‘stabilisation’ as prominent problems (Section III. 5). The economic effects of population change, discussed in III. 6, have been a central issue for two hundred years or more (Malthus, 1798). We conclude this section by considering the possible objectives for development and strategies for achieving them. From one perspective one should start with objectives as a determining element in topic selection. In this case it is instructive to put objectives at the end, since having

seen the major debates we may ask whether their focus should be broadened or readjusted in the light of objectives.

III. 1. *Markets and Government*

There is one answer to the question of the appropriate role of government which asserts that the only role for the state should be to establish and preserve law and order and the defence of the realm. To go any or much further, it is claimed, would constitute an unacceptable interference with freedom and liberty. This version of the argument for the 'minimalist state' (e.g. Nozick, 1974) is often primarily based on views of individual rights and responsibilities and of justifiable, or unjustifiable, methods of transfer and in this sense is concerned with procedures and opportunities rather than consequences or end-states in terms of, for example, the production and allocation of goods.

A view of markets as processes has also been part of the Austrian School which has shown a revival in the last twenty years (see Kirzner, pp. 145–51, Austrian School of Economics, in *The New Palgrave*, 1987). The central idea is that decentralised markets with individual decision-making provide incentives for learning, discovery and innovation. Thus the argument goes beyond the ethical justification of markets as processes of exchange in that, ethical or not, they are crucial to economic advancement. This Austrian School shares some similarity of spirit with standard ideas of the combination of individual maximisation and markets leading to economic efficiency but its emphasis on the unknown is not easily captured by the standard extension of the competitive model to contingent goods and insurance markets.

Much of the discussion of markets and governments has been and continues to be dominated by the idea of 'market failure'. The progress of theory, as we shall argue briefly below, has given us much clearer insights into what constitutes market failure than was available to the early and influential writers (e.g. Nurkse, 1953; Rosenstein-Rodan, 1943; Scitovsky, 1954; Hirschman, 1958) who pointed to market failure as a reason for comprehensive planning. At the same time a much keener appreciation has developed, from experience and theory, of the problems of government intervention which are now set, as 'government failure', alongside market failure. Much of the theory of government failure is based on ideas of the way in which governments actually function and the incentives they create for individuals inside and outside the government.

The ideas involved clearly encompass a very large part of economics and we cannot hope to do them justice here. We shall summarise a number of the main issues in two tables which list problems of the market (Table 3) and problems of state intervention (Table 4) and discuss only briefly some of the theory and ideas. The list of problems of the market is based on the scrutiny of the assumptions of the two standard theorems that describe, first, the circumstances under which a competitive equilibrium is Pareto efficient (notably one assumes all markets exist and are competitive and there are no externalities) and, second, circumstances under which a given Pareto efficient allocation can be achieved as a market equilibrium (additionally one assumes convexity of

Table 3
Reasons for Market Failure

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- (i) Markets may be monopolised or oligopolistic.
 - (ii) There may be externalities.
 - (iii) There may be increasing returns to scale.
 - (iv) Some markets, particularly insurance and futures markets, cannot be perfect and, indeed, may not exist.
 - (v) Markets may adjust slowly or imprecisely because information may move slowly or marketing institutions may be inflexible.
 - (vi) Individuals or enterprises may adjust slowly.
 - (vii) Individuals or enterprises may be badly informed about products, prices, their production possibilities, and so on.
 - (viii) Individuals may not act so as to maximise anything, either implicitly or explicitly.
 - (ix) Government taxation is unavoidable and will not, or cannot, take a form which allows efficiency.
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Table 4
Some Problems of State Intervention

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- (i) Individuals may know more about their own preferences and circumstances than the government.
 - (ii) Government planning may increase risk by pointing everyone in the same direction – governments may make bigger mistakes than markets.
 - (iii) Government planning may be more rigid and inflexible than private decision-making since complex decision-making machinery may be involved in government.
 - (iv) Governments may be incapable of administering detailed plans.
 - (v) Government controls may prevent private sector individual initiative if there are many bureaucratic obstacles.
 - (vi) Organisations and individuals require incentives to work, innovate, control costs and allocate efficiently and the discipline and rewards of the market cannot easily be replicated within public enterprises and organisations.
 - (vii) Different levels and parts of government may be poorly co-ordinated in the absence of the equilibrating signals provided by the market, particularly where groups or regions with different interests are involved.
 - (viii) Markets place constraints on what can be achieved by government, for example, resale of commodities on black markets and activities in the informal sector can disrupt rationing or other non-linear pricing or taxation schemes. This is the general problem of ‘incentive compatibility’.
 - (ix) Controls create resource-using activities to influence those controls through lobbying and corruption – often called rent-seeking or directly unproductive activities in the literature.
 - (x) Planning may be manipulated by privileged and powerful groups which act in their own interests and further, planning creates groups with a vested interest in planning, for example bureaucrats or industrialists who obtain protected positions.
 - (xi) Governments may be dominated by narrow interest groups interested in their own welfare and sometimes actively hostile to large sections of the population. Planning may intensify their power.
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production and preferences, i.e. diminishing marginal rates of transformation and substitution, and the availability of lump-sum transfers to raise revenue and redistribute income). This is a view of the issues which is clearly based on outcomes as end-states in contrast to a view of ‘markets as processes’ embodied in Nozick (1974) or the Austrian perspective discussed above. Our emphasis on these tables is based in part on the greater facility with which the issues embodied in them can be analysed theoretically and empirically, as compared with, for example, the Austrian approach which is more difficult to formulate, make precise and test.

The issue of market versus government even within the narrow 'end-state' perspective should not, however, be seen as one of simply listing the problems, studying and thinking over Tables 3 and 4 or the like, and then voting one way or the other (legend has it that Winston Churchill used to take decisions by listing the arguments for and against and seeing which list was longer – the numerate reader will notice that Table 4 is longer than Table 3). All governments intervene and many of the reasons, such as raising revenue for law and order or defence, are virtually inescapable. How should it intervene? One question which arises immediately for those who wish to discuss or comment on policy is therefore that of the best, or optimal, way to intervene given certain objectives, concerned notably with efficiency and equity, and constraints on action. But this is not the whole or even necessarily the major part of the question. We have to be concerned with what will work administratively and with the political economy of any action and its environment. The term 'political economy' can be somewhat nebulous but here we mean how any suggested policy is likely to be received, manipulated, obstructed or supported by various different groups. The predictive, or positive, requirements of the analyses of optimality and of political economy, i.e. the consequences of actions for different sections of the population, are clearly very close. We return briefly to the question of policy design in Section IV.

We turn to a brief discussion of Table 3. Some of the points, for example (iii)–(viii) may pose problems for the establishment or maintenance of equilibrium and most of them can prevent efficiency of equilibrium if one is established. The points should be familiar or self-explanatory, except possibly (iv) and (ix). On (iv) we can point to the problems of moral hazard and adverse selection in insurance markets or to bankruptcy and the possibility of default in capital and future markets. Some evidence that the problems are real for developing countries is discussed in Section V. On (ix) we simply recognise that any tax which is not lump-sum generates inefficiency – desirable lump-sum taxes (e.g. those related to ability to pay) cease to be lump-sum when their basis is recognised. For example if income is the basis then taxation is not lump-sum as the tax payment is affected by work input with corresponding disincentives to work. Hence where redistribution is a concern taxation implies inefficiency and the standard efficiency theorems cannot provide justification for the unfettered competitive market.

A typical response to a market failure is the proposal of a tax or bargaining mechanism to deal with it. One must be wary, however, since if several failures occur simultaneously it can be misleading to analyse them one-by-one. A prominent and important example of a market failure concerns externalities. Standard solutions, in principle, include Pigovian taxes/subsidies, where, for example, a polluter is taxed according to the marginal damage caused, and the allocation of rights together with bargaining, à la Coase, where an individual provides compensation if he damages another. Such 'solutions' it can be argued operate rather badly in developing countries. Thus the reaction to market failure is often the suggestion of state intervention.

This leads us to consider the problems described in Table 4. Again this table

should be largely self-explanatory except possibly for items (viii) and (ix). The problem of incentive compatibility is important for both planning and the market and indeed can be regarded as the central question in linking the two. It underlies problem (ix) in Table 3 as well as (viii) in Table 4. A planning proposal or tax that is inconsistent or incompatible with opportunities and incentives open to individuals (in markets or otherwise) will be frustrated (see, for example, Dasgupta, 1980, for a simple introduction to these issues which have been prominent in formal economic theory for at least 20 years). Rent-seeking and directly unproductive activities ((ix) in Table 4) refer to the actions of individuals to lobby, bribe or threaten in favour of their receipt of state generated privileges. Such activities are difficult to quantify but they are of substantial importance.

In considering Tables 3 and 4 one has to look carefully at the economy and political system under consideration. Not all political systems are corrupt and not all governments are incompetent; competent governments may or may not be manipulated by special interest groups. Indeed as we saw at the end of Section II, Reynolds (1983) review of comparative growth concluded that differences amongst governments in these respects was a key element in explaining comparative growth rates. Similarly markets and entrepreneurship appear to function rather better in some environments, situations and cultures than others whether or not governments are prepared to let them flourish. Thus we should be wary of taking a universal view on the balance of considerations embodied in Tables 3 and 4.

We now comment briefly on the historical literature on markets and government in relation to these ideas. Writers on development have ranged dramatically in their views of market failures and correspondingly in their views on government policy. On traditional rural agriculture, for example, we have Schultz (1964) at one end of a spectrum who argued that traditional agriculture is efficient given the existing constraints on knowledge and assets and, at the other Myrdal (1968) who, referring to agriculture, argued (p. 912) 'Few people calculate in terms of costs and returns, and if they do, their economic behaviour is not primarily determined by such calculations.' He concluded that direct government actions were necessary and that attempts to operate through markets would not work. The evidence used by both Schultz and Myrdal is highly debatable (see Section IV) and much of Myrdal's logic is dubious as is evidenced both by the quote (the 'as if' interpretation of maximisation is overlooked) and the conclusion, which does not follow from the observation even if the former were acceptable.

The experience of the Second World War in the United Kingdom is emphasised by Little (1982) as being particularly influential in shaping the early debates on planning. There were shared goals and a clear requirement to act quickly and precisely. The changes needed in the allocation of resources, particularly labour, were enormous and great reductions in consumption were required. It was argued that these adjustments could not have been achieved quickly enough using the price and wage mechanisms. The problems identified appear to be (v), (vi) and (vii) of Table 3, (see Weitzman, 1977, for an

interesting theoretical discussion of the circumstances under which rationing might be preferred to the price mechanism). Little classifies the view that responses are too slow or too small to make the price system work well as *structuralist*. This view has been most closely associated with Latin American writers (see e.g. Olivera, 1964, and, amongst others, Balogh, 1961).

The early discussion was also much influenced by three theoretical arguments proposed by Rosenstein-Rodan, Scitovsky and Hirschman of which the most interesting in my judgement, was that of Rosenstein-Rodan. Rosenstein-Rodan's (1943) arguments for a 'big push' (he was thinking particularly of South and Southeast Europe) seem to be a combination of Keynesian notions of effective demand and Smithian ideas of the size of the market. He assumed unemployed labour and argued that a single shoe factory may not be profitable because at current incomes demand for its output would be insufficient. But if many investments for consumer goods took place simultaneously they could all be profitable, since the income increase could be sufficient to provide a large enough market for all the outputs. He appears, implicitly, to have assumed a closed economy in that if international trade is possible the argument has much less force since there is a very large world market for shoes. The theory was not very clearly articulated but its strong Keynesian element would point to problems (iv) and (v) in Table 3 and the emphasis on the size of the market would indicate increasing returns (problem (iii)). In this last respect Rosenstein-Rodan built on the work of Young (1928). Some further development of the approach was offered by Nurkse (1953), but successful formalisation of these ideas was limited for many years. However recently the work of Basu (1984) and an important pair of papers by Murphy *et al.* (1988*a*, *b*) has shown how they can be made rigorous and be developed. Murphy *et al.* (1988*a*) show in particular the importance of income distribution and the size of population in generating demand sufficiently large to make manufacturing viable. In (1988*b*) they show how a big push can move an imperfectly competitive economy with multiple equilibria from a 'bad' one to a 'better' one. Shared infrastructure, as well as the creation of demand, can also generate benefits which flow from one investing firm to another.

Scitovsky (1954) distinguished between technological externalities (this is the standard, and our use, of the term) and 'pecuniary' externalities. By the latter he meant, for example, that an investment by one firm could bring down the price of an input to another firm so making an investment profitable for the second firm (notice that international trade is again ignored) thus creating additional demand. The use of the term 'pecuniary externality' seems, however, to be a recipe for confusion since the major part of relationships between agents in market economies operate through prices. It would be better avoided. One can think of the problem as agents being unable to forecast future equilibrium prices (problems (iv)–(vii) could be involved here). Scitovsky took this as an argument for coordinated investment planning. Rosenstein-Rodan and Scitovsky were seen as proponents of *balanced growth*, i.e. investments taking place on many fronts simultaneously.

Hirschman's (1958) analysis was similar to Scitovsky's in his concern with

the inter-relation of investment decisions. He argued that the great shortage in developing countries was entrepreneurial decision-making. The government should attempt to stimulate decisions and the best way to do this was to make demands for inputs explicit by making an investment which required inputs which could be, but were not yet, locally made. He called this a *backward linkage*. Thus the government should deliberately create imbalances to stimulate investment. This strategy was called *unbalanced growth*. The argument is somewhat mysterious and seems to have defied effective formalisation or serious empirical analysis but seems nevertheless to have been influential or at least prominent. The arguments are close to Scitovsky's (again problems (iv)–(vii) appear to be involved) but the conclusions are very different.

One could continue the list much further. For example, Myint (1985) emphasised the lack of markets in backward sectors (problem (iv)). Chenery (1958) pointed to the combination of increasing returns, (iii), and the inability to forecast, (vii), as requiring the coordination of investment decisions. Griffin (1979) stressed monopolistic practices, (i), in credit markets and so on. Leibenstein (1978) developed the concept of X-inefficiency as being inside the production possibility frontier, i.e. essentially non-maximising behaviour (viii). For further references the reader may consult Arndt (1985, 1988) and the excellent discussion in Little (1982, ch. 3).

Many of the problems of state intervention have long been recognised. Distinguished members of my own institution, the London School of Economics, von Hayek (1967, 1986) and Bauer (1971, 1984), in particular, have been consistent, clear, and insistent in their emphasis on its vicissitudes (as listed, for example, in Table 4). The investigation of many of these problems is not amenable to the same kind of theorising as that of the problems of market failure. There has, however, been a literature on the 'political economy' of state intervention with von Hayek and Bauer as leading figures.

A productive development has been the attempt to model some of the processes described in the 'political economy' of government action. Buchanan has been a notable, early and consistent contributor (see Buchanan, 1986, for a review and references) using the idea of 'public choice' as being determined by the interaction of different interest groups. A related theme has been the notion of 'directly unproductive' or 'rent-seeking' activities (see Rowley *et al.* 1988). This has come to be seen as an important part of a literature on political economy which has a strong bent against government intervention. Given the subjects of the discussion 'solid' data for formal testing of hypotheses are not easily acquired, although telling examples can be offered. An area where systematic evidence of avoidance of state controls is becoming increasingly available concerns informal labour markets (see Mazumdar, 1987; Peattie, 1987; Cole and Sanders, 1985). Voluntary labour market movements were often assumed to be from the informal to the formal sectors. However Fields (1988) presents evidence of significant movements in the opposite direction.

The balance of opinion in the 1940s and 1950s appears to have been in favour of substantial state intervention, particularly in the investment process. The leading example for the discussion was India (China was little discussed as

information was very scarce and Western economists were not involved). Disenchantment with planning increased from the early 1960s through the 1970s and 1980s. This formed a central part of what Little (1982) describes as the 'neoclassical resurgence'. This shift of the balance of views was based on the apparently heavy hand of planning in countries such as India and the rapid advance of countries which, it was argued, followed more laissez-faire policies. The outstanding growth performance of the so-called 'four dragons', South Korea, Taiwan, Hong Kong and Singapore was particularly influential. It was argued that the achievements of countries which both encouraged response to prices and which made an effort to 'get prices right' belied the arguments of the structuralists who had emphasised the sluggishness of economic reactions and the ineffectiveness of a decentralised price system. The stultifying effect of large-scale planning was, it was suggested, exemplified by India. Particularly prominent in the early days of the neoclassical resurgence in the 1960s was the work of Little *et al.* (1970). Concern with the deficiencies of planning generally came with a criticism of the price distortions, associated particularly with protectionist and import substitution policies, which had usually accompanied planning. The literature on effective protection, domestic resource cost and shadow prices was important here, for example, Balassa (1971), Bruno (1972), Corden (1971), Dasgupta *et al.* (1972), Krueger (1972), Little and Mirrlees (1974).

The association between planning and protection was strong for India, for example, but protection-cum-import substitution on the one hand and planning on the other are distinct both in logic and often historical example, and one should not reject or approve of them both in the same breath. The two important examples of South Korea and Brazil illustrate the point. South Korea has grown quickly with an outward orientation but with substantial government intervention in the investment process (Jacobs, 1985; Wade, 1985; Bahl *et al.* 1986; Kim and Yun, 1988), and following a period of import substitution. Brazil has also grown quickly (whilst not showing the extraordinary rapidity of South Korea) with a strong emphasis on import substitution through protection but much less planning (Taylor, 1980; Leff, 1982). The hugely important case of China is not easy to place in these stories since it too has shown rapid growth through a number of different planning regimes. But it has never been an example of a free-trading country with minimalist government (see Riskin, 1987; Perkins, 1988).

The apparent swing in the profession from the whole-hearted espousal of extensive government intervention to its rubbishing seems to be an example of unbalanced intellectual growth, although perhaps development economics is no more subject to this kind of fluctuation than other parts of the subject. There are problems and virtues of both state intervention and the free market. The problem should not be viewed as one of a simple choice. There is no doubt, however, that whether one sees a very large or very small role for the market depends on how one judges the seriousness of the problems with markets and planning which we have been describing. In my judgement the problems of the market are particularly severe (relative to those of state intervention) in the

areas of health, infrastructure (roads, communications, power, water and so on), education, and social security. Those of planning appear most strongly when the government gets heavily involved in production activities outside the infrastructure. Even in those areas where one might argue the balance of the argument is clear, however, we still have crucial questions of pricing, regulation and taxation. Thus the problem is the design of workable and incentive-compatible policies which take account of the political processes of the country at hand. Unfortunately space forbids us from pursuing these basic and fascinating questions much further although we return briefly to some aspects in Section V.

III. 2. *The Process of Growth and Change*

The study of the process of economic growth is clearly central to the economics of development. This requires from theory an examination of simple economic dynamics and from empirical analysis a study of the economic history of single countries over time and the comparison of cross-sections of countries at different stages of development. We begin with the theory. We focus in this subsection on highly aggregated models. Some more disaggregated approaches will appear in Sections IV and V.

Simple growth theory still forms a part of many postgraduate options in the economics of development, although it is remarkable that this basic element of the grammar of economic dynamics has gone missing from the more central courses in economics. It was Harrod (1939) who made the first important contribution to aggregate growth theory and the Harrod–Domar equation is the natural point of departure. We take a closed economy. Equilibrium in the output market requires (planned) investment to be equal to (planned) saving so that we have

$$I = sY, \quad (1)$$

where I is investment, Y income and s the savings rate. I is equal to $\dot{K}$ (or dK/dt) where K is the capital stock, so that (1) gives us, on dividing by K , the Harrod–Domar equation

$$g = s/v, \quad (2)$$

where $g \equiv \dot{K}/K$, the growth rate of the capital stock and v is K/Y the capital–output ratio. *Ex post* one can treat (1) as an identity so that (2) will generally describe the growth of capital, although Harrod was particularly concerned with the *ex ante* or equilibrium analysis. If v is constant then output also grows at g . The Harrod–Domar analysis leads to a concentration on savings rates and capital–output ratios as determinants of the growth rate and these are still amongst the first aspects that are examined in any proposed or actual growth path (see, for example, the World Bank's 1985 report on China's development options, World Bank, 1985). The experience of a number of developing countries, particularly India, has been of a substantial increase in s but only a very small increase in g . It follows that v has risen and this can lead one to look for reasons as to how and why this increase in v may have occurred.

These aggregate growth models were extended by many authors in the 1950s and 1960s with Solow's articles of 1956 and 1957 playing a leading role in the

way in which economists have seen the questions of growth. The former used an aggregate production function and demonstrated that in this model the long-run growth rate, s/v , will come into equality with the natural growth rate of the labour force n by adjustment of the capital–output ratio v . Increasing the savings rate will increase the growth rate in the short run, but not in the long run, since v rises to bring it back to n . A higher s will lead to a higher long-run output per head (where we ignore problems of ‘over-saving’ connected with s being permanently above the ‘golden-rule’ level).

In these models long-run growth of output per head is possible only if there is technical progress which, if it is labour-augmenting (i.e. acts on output in an analogous manner to an expansion of labour input) at rate a , allows long-run growth with $s/v = a + n$ and output per head growing at rate a . Solow’s 1957 paper showed how technical progress could be decomposed into contributions from factors and from the growth of total factor productivity. Where for example $Y = F(K, L, t)$, we have, on differentiating with respect to t ,

$$\dot{Y}/Y = \alpha \dot{K}/K + \beta \dot{L}/L + F_t/Y, \quad (3)$$

where $\alpha = KF_K/Y$ and $\beta = LF_L/Y$, the competitive shares of capital and labour respectively (subscripts here denote partial derivatives). The first two terms give the ‘contribution’ to output growth of higher factor inputs and the last term, or residual, the growth in ‘total factor productivity’. This equation gave rise to a number of studies in growth accounting where technical progress and capital accumulation in different countries were compared (an early and major exponent was Denison, 1967). Such calculations should not be taken too literally since the model and the competitive factor pricing assumptions are generally unbelievable at this level of aggregation but, as we shall see below, they can be suggestive and are a useful method for the assembly of data.

These models have been elaborated in many ways and have provided a basic organising framework for thinking about growth processes. Many authors have, however, shared an unease about the description of accumulation and technical progress underlying the aggregate production function. Its immediate implications include that technical progress is divorced from capital accumulation, higher savings do not increase the long-run growth rate and there is no learning. Salter (1960, 1969) first proposed a partial response to the first of these issues by developing vintage models where the state of the art is embodied in capital equipment at the time of investment. This introduces the important ideas of economic obsolescence but still leaves the progress of the state of the art as exogenous.

Arrow (1962) provided a genuinely seminal piece where he showed the economic implications of learning by doing. In a vintage model with fixed coefficients the productivity of labour working on new machines is related to G the total of past investment as $G^{-\mu}$ (i.e. a 1 % increase in total past investment implies a μ % increase in labour productivity on new machines). His model can produce steady-state growth with no exogenous technical progress at the rate $n/(1 - \mu)$. This is rather similar to the rate of steady growth in an ordinary neoclassical model with increasing returns (consider $Y = AK^\alpha L^\beta$ with $\alpha + \beta > 1$

and $\dot{Y}/Y = \dot{K}/K = g$ and we find $g = \beta n / (1 - \alpha) > n$. A crucial difference, however, is that Arrow's model permits a competitive equilibrium (since the technical progress which acts like increasing returns arises as an externality) whereas the ordinary neoclassical model with increasing returns does not.

This particular feature, where the benefits of investment in terms of technical progress act like an externality has characterised the recent upsurge of interest in growth and technical progress associated with Romer (1986), Lucas (1988) and Scott (1989). Romer (1986) considers a model where investment by a firm is only in the stock of knowledge but where firms can gain some benefit from the knowledge acquired through the investment of others. There are increasing returns from the overall stock of knowledge via this externality but not from the point of view of an individual firm. This type of model has been assembled and contrasted with Solow-type models in Lucas (1988). Romer and Lucas share a curious predilection for viewing aggregate saving in the economy as arising from a single consumer (with an infinite horizon) optimising his or her intertemporal consumption plan. I must plead guilty, Stern (1972), to developing optimal growth models myself but this was in a planning context whereas Romer and Lucas in their use of cross-country evidence appear to suggest that it is a useful way to model actual aggregate savings. Given the disparate nature of the economies of developing countries (including strong differences between sectors and fragmented capital markets) this representation of savings being determined as if by a single maximiser is hard to take seriously (and it does not have the virtue of simplicity). Nevertheless the focus on endogenous growth in productivity is most valuable and the work constitutes an important advance. Further in subsequent papers (e.g. 1987, 1988) Romer has investigated models where firms do capture privately the benefits of technological advance and show increasing returns. Equilibrium can no longer be perfectly competitive. Scott (1989) in a very substantial piece of work provides a careful review of growth theory and evidence and proposes a model where undertaking investment itself creates and reveals further opportunities.

Some insights, such as externalities of knowledge and experience, generating a social rate of return higher than the private were available from earlier work (e.g. Arrow, 1962). And the models generally retain the competitive assumption in contrast to Schumpeter's emphasis on monopoly profit as the key to major innovatory advance. However, the increased emphasis on the process of learning and on human capital (see also Uzawa, 1965) and the rejection of the mysterious and exogenous 'residual' technical progress are to be wholly welcomed.

At the same time as the aggregate models were being developed in the mid-1950s Lewis set out his classic model of dualistic development. This was perhaps the single most influential article in the history of the economics of development and raised a number of crucial issues in a clear and systematic way. Many of these have been central to subsequent discussion and they include (a) the determinants of saving and its influence on growth (b) the appropriate choice of capital intensity in investment (c) the inter-relationships between growth and income distribution in the process of change and (d) the

importance of labour allocation in economic development. He pioneered the view of development as a transformation from traditional forms of production and economic organisation to an advanced capitalist economy. He was concerned with the classical questions of the 18th- and 19th-century economists – the analytical description of the processes of distribution, accumulation and growth. He also made classical assumptions, particularly (i) an unlimited supply of labour at a fixed wage, (ii) accumulation of fixed capital only in the advanced sector, (iii) savings only out of profits.

In its simplest form with one good (or fixed prices) and no technical progress the factor proportions in the advanced sector are determined by the profit-maximising hiring of labour at a given wage – the advanced sector capital-output ratio is determined by this hiring choice. The given savings rate s_p out of profits leads to aggregate savings and investment at $s_p P$, where P is profits. Then output, capital and labour in the advanced sector all grow at a rate of $s_p P/K$, so that the rate of growth is $s_p r$ where r is the rate of profit. With no technical progress, profit maximisation and a constant returns production function of capital and labour in the advanced sector, a fixed w fixes r . The process of growth may be seen as simply an absorption of labour by the advanced sector at a constant proportional rate with the savings rate for the whole economy increasing over time, as the share of profits rises along with the increasing share of the advanced sector in total income (and constant profit share in the advanced sector). The story needs eventual modification as the labour pool from the traditional sector runs out.

In this way Lewis answered his question (1954, p. 155).

The central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 per cent of its national income or less, converts itself to an economy where voluntary saving is running at about 12 to 15 per cent of national income or more. This is the central problem because the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital). We cannot explain any 'industrial' revolution (as the economic historians pretend to do) until we can explain why saving increased relatively to national income.

The model provides simple basic prototypes for a number of important theories, including those of migration (see Section V) and choice of technique (Section IV), and carries important implications for economic inequality, on which we shall comment below. It was very fruitful and Lewis put it to use in his paper to comment on a number of questions. For example, the fixity of the wage as the given supply price of labour implies that workers (on e.g. sugar plantations) do not get any gain from technical progress whereas in a tighter labour market the price of labour would be bid up.

The model came under brief attack by Jorgensen (1961) who produced an alternative neoclassical model with profit maximisation in both sectors and a competitive labour market. However Marglin (1966) showed that some of the contrasting results which Jorgensen claimed for his model and which, he

argued, better fitted historical data for Japan were a consequence of his use of the Cobb–Douglas production function and Dixit (1973) showed that others were an artefact of the comparison between long-run results in the Jorgenson model with short-run results in the Lewis model. The Lewis model justifiably retains its influential place in the development literature.

As with all models, however, it is useful for some problems and issues but misleading or unhelpful for others. This applies particularly in this case to its treatment of the traditional sector. Lewis did not identify the traditional sector solely with agriculture (capitalist agriculture was included in the advanced sector) but peasant agriculture was obviously considered a dominant element in the traditional sector and backward. This was an assumption shared by a number of classical writers (for example, Marx) and many of the contemporary writers of the 1950s. Agriculture should not be seen as static and its change has been a major factor in the long-run processes of economic development – for interesting discussions which shift the focus back to agriculture see Mellor (1976) and Lipton (1977).

We comment briefly now on three empirical aspects of the process of growth. The first concerns agriculture, the second the measurement of technical progress and the third inequality. The late 1960s and early 1970s saw a particularly sharp change in agricultural conditions in some parts of the world with the so-called Green Revolution. As Lipton and Longhurst (1989) show the influence of the Green Revolution is highly regionalised, with some areas, particularly Africa, hardly touched. It is heavily concentrated on wheat and rice.

This ‘revolution’ involved an intensification of irrigation, increased use of chemical fertilisers and improved varieties of seed which showed greater responsiveness to water and fertilisers. Whilst agriculture is rarely static it is the Green Revolution which has been the agricultural change which has been most prominent in discussions of development economics. A valuable historical perspective on the process of agricultural change has, however, been provided by Boserup (1965) and (1981) who offers an interesting thesis of agricultural change as a response to population growth with, for example, population pressure bringing a switch from very land intensive techniques such as hunting and gathering to those of shifting cultivation and then of fixed cultivation. Viewed in this light we can see the intensification of irrigation, perhaps the most important element of the Green Revolution, as part of a longer-term trend in the intensification of agriculture. The Boserup story is supported by Lal’s (1988) account of Indian economic history.

The experience of the Green Revolution has been the subject of lively controversy and has provided many lessons both on the way in which rural economies may function and also on government policy. There is no doubt that the responses of individual farmers to the new opportunities was far from sluggish and that governments played a crucial role in assisting in the provision of these new opportunities. It is a clear example of the potential effectiveness of the joint operation of public policy and private response. The evidence suggests that, provided appropriate rural institutions exist (Prahladachar,

1983), neither tenure nor farm size has been an important source of differential rates of growth of agricultural productivity in the medium-term, see for example, Ruttan (1977) and Glaeser (1987), although, some have argued, in the early days of the Green Revolution it was the larger farmers who reacted first (see, for example, Griffin, 1979, or Pearse, 1980). The technical progress is land-augmenting (for example, increased irrigation may facilitate double cropping) and as land is often very unequally distributed one might therefore expect to see a worsening of the income distribution. There is some evidence that this may have occurred (again, see Ruttan, 1977 and Glaeser, 1987). Further as Lipton and Longhurst (1989) argue, the rural poor are mainly to be found amongst the landless and for them it is the price at which they can sell their labour which matters and on which the Green Revolution may have had only a small effect. The poorest may therefore be left behind in this form of agricultural growth.

The source of productivity change at the aggregate level has been the subject of detailed empirical analysis following the growth accounting techniques originated by Solow (1957) and described above. A useful summary of this and other empirical research on the process of development is provided in Chenery (1983). For the period 1960–73 most developed countries show more than half the growth rate as explained by growth in total factor productivity (TFP). However for middle-income developing countries the contribution of TFP was less than a quarter of the growth rate. The outliers in this study, with growth rates averaging over 10 %, were Japan, Israel, Spain, Hong Kong, Taiwan and South Korea with roughly half of the growth associated with increased TFP and half with greater factor inputs.

These studies have been extended (see Robinson, 1971 and Feder, 1982) to cross-country regressions of growth rates in output on growth rates of factor inputs where further explanatory variables are included intending to capture 'structural change' or 'disequilibrium' phenomena (a literal interpretation of the simple Solow calculations requires equilibrium in output and factor markets). When these changes are made fits are substantially improved and with the attribution of some growth to the sectoral reallocation of factors (20–30 % for developing countries) considerably less growth is attributed to capital accumulation (note that it is presumably the reallocation of labour out of agriculture that is playing a key role since it is not obvious that capital productivity is less high in agriculture than elsewhere). The structural variables contributed little to the explanation of growth in advanced countries.

Whilst these results can only be suggestive, for the reasons given, they do seem to indicate that in the process of growth of less advanced countries, structural change and capital accumulation are rather more important than for more advanced countries. In this sense the simple Lewis model may not be too misleading as a broad-brush initial picture.

Our last empirical example on the overall process of growth concerns its relationship with inequality. The debate was started by Kuznets (1955) who, measuring inequality by shares of various quintiles, and comparing India, Ceylon, Puerto Rico, United Kingdom and the United States found that

inequality was greater in the poorer countries. He confirmed the finding in a 1963 study with a larger sample of countries and postulated a relationship between inequality and development (as measured by *per capita* GDP) as an inverted U, i.e. inequality increases in the early stages of development but then later falls. The idea, again stimulated by dualistic notions, is that a poor society dominated by a traditional sector will be fairly equal as will a society dominated by a modern sector. In the transition however the between-group inequality will initially grow (as people become involved in the richer sector) and later decline. Superimposed on this between-group process, one could imagine increasing within-group inequality if the growing sector has more unequal distribution than the declining one.

Kuznets' inverted U hypothesis appeared to be given some support by Adelman and Morris (1973), who studied a sample of 43 countries in the late 1960s and early 1970s, Paukert (1973) with a sample of 56 countries and Chenery and Syrquin (1975), Ahluwalia (1974, 1976*a, b*) and Lydall (1979). Lecaillon *et al.* (1984) surveyed the existing literature and argued that the Kuznets' hypothesis is supported by the behaviour of the shares of the top 5 % (highest in middle-income countries) but not for other aspects of the distribution (the share of the bottom 20 % appears generally to be around 5–6 % for most income groups of countries). There are major problems however, if the argument rides on the share of the top 5 % since it is often here that the data are at their worst and it would not fit well with the dualistic theoretical tale, which is not predominantly about the richest 5 %.

The most recent substantial contribution is a careful study by Anand and Kanbur (1989*a, b*) who throw considerable doubt on the empirical status of the inverted U. They look closely at two issues. The first concerns the measure of inequality and its functional relationship with 'explanatory' variables and the second the choice of data set. They show that the results are very sensitive to these two aspects and that one can get U relationships, inverted U relationships or very little relationship at all by making different choices. The selection of data set is particularly important as many of the earlier studies mixed data sets some of which had income defined on an individual basis, some on a household basis, some for urban areas only, some based only on earnings, and so on. When data sets and variables were defined in a consistent manner the inverted U relationship for their sample disappeared. In common with a number of earlier writers (particularly Ahluwalia) they used the cross-country sample assembled by Jain (1975). Given the sensitivity exposed by the Anand–Kanbur study and that longitudinal studies, insofar as they have been possible, have not shown any general relationship between inequality and development, we must conclude that at this stage the evidence in favour of the inverted U hypothesis (or any other general relationship between inequality and development) is not convincing.

We have seen that a central role in the explanation of growth has been allocated in various models to accumulation, technical change, human capital and population. It is interesting that the most prominent economic models have not brought trade to the centre stage. Indeed some (e.g. Kravis, 1970)

have suggested directly that trade is the handmaiden (or accompaniment) to growth rather than the 'engine' which drives it.

III.3. *Trade and Industrialisation*

The theory of comparative advantage, described clearly by Ricardo in 1817, has been a fundamental underpinning of economists' arguments for the gains from trade for nearly 200 years. As a normative theory it argues that, in the absence of trade, there will be some goods whose opportunity costs on world markets will be lower than those from obtaining them at home, and that the country should therefore import such goods. Correspondingly it should export those goods in which it has a comparative advantage. This crucial idea underlies, and one could argue has dominated, much of the argument about the role of trade in development strategies. It is so simple, robust and basic that it has, and will, continue as one of the most important and enduring insights of economics.

Our discussion of trade policies will be divided between this sub-section and the next. Here we focus on the trade strategy for a particular country – its theoretical foundation, the validity of empirical assumptions and the historical experience. In the next sub-section we examine trade as one aspect of the relationship between richer and poorer countries. A major part of this section examines the arguments concerning whether a country should adopt inward or outward looking policies, following the debate from the 1950s to the present. We begin, however, by drawing attention to the substantial advances in the theory of international trade which have radically altered the standard story which essentially saw international trade as a particular example of the ordinary theory of competitive general equilibrium (see Dixit and Norman, 1980 for an elegant presentation).

The recent advances have concerned the increasing recognition of the role of intra-industry trade, increasing returns to scale and monopolistic competition (e.g. Helpman and Krugman, 1985; Krugman, 1986) on the one hand and uncertainty and insurance on the other (see below). The traditional arguments associated with the benefits of unfettered trade become less clear as issues of strategic behaviour (absent in competitive models) become central. Pro-trade arguments have now shifted towards trade as allowing the benefits of increasing returns. We find that calculations of the gains from trade can appear much larger (see, for example, Harris and Case, 1984), than they did from more traditional models.

Another line of theoretical argument which may appear to cloud the case for free trade concerns uncertainty. If one sector of the economy is subject to particular risk then involvement in that activity may be overly discouraged unless it is protected. Newbery and Stiglitz (1984) construct an example where autarky is Pareto superior to free trade and Eaton and Grossman (1985) provide numerical simulations in a more general model which suggest that some protection is usually optimal. Dixit in a series of papers (1987, 1989*a*, *b*) has complained that this particular comparison is unwarrantedly tilted in favour of government intervention and against the market by the exclusion of

insurance markets (on the grounds of the problems of adverse selection or moral hazard). If insurance markets are incorporated, but where explicit account is taken of the two problems, he shows that a free-trade market equilibrium is (informationally constrained) Pareto efficient.

The advance of theory has not overthrown the case for free trade but it has now become a matter of balanced judgement based on an understanding of the different types of theoretical arguments, historical experience and political circumstances rather than an overwhelming case founded on the clear message of comparative advantage. As Krugman (1987) puts it 'Its status has shifted from optimum to reasonable rule of thumb. There is still a case for free trade as a good policy, and as a useful target in the practical world of politics, but it can never again be asserted as the policy that economic theory tells us is always right.' For further discussion see Bliss (1985, 1987), Dixit (1983), Krugman (1986) and Srinivasan (1987*a*).

The 1950s saw a great emphasis on import substitution as a means to industrialisation and growth. This was strongly influenced by the thesis of Singer and Prebisch (Singer, 1950; United Nations, 1949) who argued that the terms of trade facing developing countries for their traditional exports were deteriorating (i.e. the world prices of their exports – primary commodities – were declining relative to those for their imports-manufactures) so that as time progressed they would have to export more and more primary products to buy a given quantity of manufactures. Thus, it was suggested it was necessary both to industrialise and to control the increasingly expensive imports. They claimed that an attempt to sell more primary products abroad by devaluing and lowering their price would be unsuccessful because foreign elasticities of demand were low. Foreign exchange for imports could not be easily controlled using prices, it was suggested, because domestic demands were inflexible. This, in brief, was their case for an import substitution policy with physical controls on imports. The controls would allow local industries to learn to establish themselves at a competitive scale (the infant industry argument) without foreign competition and would also conserve foreign exchange. The argument was particularly influential in Latin America where Prebisch was working in the Economic Commission for Latin America (ECLA) and is clearly of the type Little (1982) labels as 'structuralist' with its emphasis on weak price responses requiring direct controls of imports. The Singer–Prebisch ideas led to a literature on North–South modelling which variously includes the possibility of differences across countries in endowments, market structure (e.g. with a Lewis labour market in developing countries) and technology – see, for example, McIntosh (1986) for a discussion and some references.

Nurkse (1961) based his case for balanced growth in large part on his view that the trade engine of growth, which he saw as a 'basic inducement' to 19th-century growth, was not available to developing countries. He argued that the prospects for primary exports from developing countries were poor (low income elasticities of demand, increasing use of synthetics and protection of markets by developed countries) as well as those for the export of manufactures (problems of increasing returns, learning and again protection). Thus he

suggested a balanced programme of 'linked progress' in agriculture and manufacturing. Kravis (1970) looked carefully at the evidence for both the 19th century and for the 1950s and 1960s for developing countries and raised considerable doubts about the Nurkse story both concerning the role of trade in 19th-century growth and the development of exports from developing countries.

There are a number of questions one should ask directly about the recommendation for import substitution behind protective barriers.

(i) Is it true that the long-run trend of the terms of trade was against the developing countries? Spraos (1980) found that from 1900–70 there was no evidence of a trend. More recently it has been argued (see ODI, 1988; Sapsford, 1985) that the period 1870–1930 saw a long-period decline, followed by a sharp rise around the Second World War and then a substantial decline over the last 30 years (all this excludes oil). A detailed study has been provided by Grilli and Yang (1988) and we reproduce two graphs (see Fig. 1) from that study, one for the relative price of food and one for non-food agricultural commodities. It can be seen that much depends on the choice of period in both cases. Evidence of a long-term downward trend would appear to be stronger for the non-food agricultural commodities, particularly since the 1950s. The last 15 years have also seen a major decline in food prices.

(ii) Is it true that the responsiveness of imports and exports to relative price changes are weak? On the export side one should distinguish between a particular country and developing countries as a group. A recent study of aggregate demand (price and income) and supply elasticities has been provided by Bond (1987), who also provides a survey of other estimates. The conclusions are that 'income elasticities for developing countries commodity exports fall in the range of 0.3–3.5. A further conclusion is that the demand for agricultural products is income inelastic... A further broad conclusion is that the demand for commodity exports is not very sensitive to short-run price changes' (p. 221). Longer-run price elasticities were found to be higher. The basic tenets of the early writers (Prebisch *et al.*) do not receive clear-cut support but they are not completely without foundation. And it is striking that the rapid advances of the exports of many developing countries are more in manufactures than primary products (see next sub-section). For further evidence on price elasticities see Lipton (1987).

(iii) If it is true that local industries have to be encouraged before they can grow then are import controls the best way? Note that one can subsidise directly, and that import controls cannot help directly in the promotion of non-traded goods. Further they are generally inferior to tariffs because they do not provide direct revenue to the government. Tariffs themselves, since they raise prices for both producers and consumers, may be seen as a form of production subsidy on a good financed by a consumption tax on the same good. Is this an appropriate way to finance the production subsidy?

(iv) If an industry can survive only if it is subsidised or protected then is that industry worthwhile? The resources it uses may be employed more valuably elsewhere.

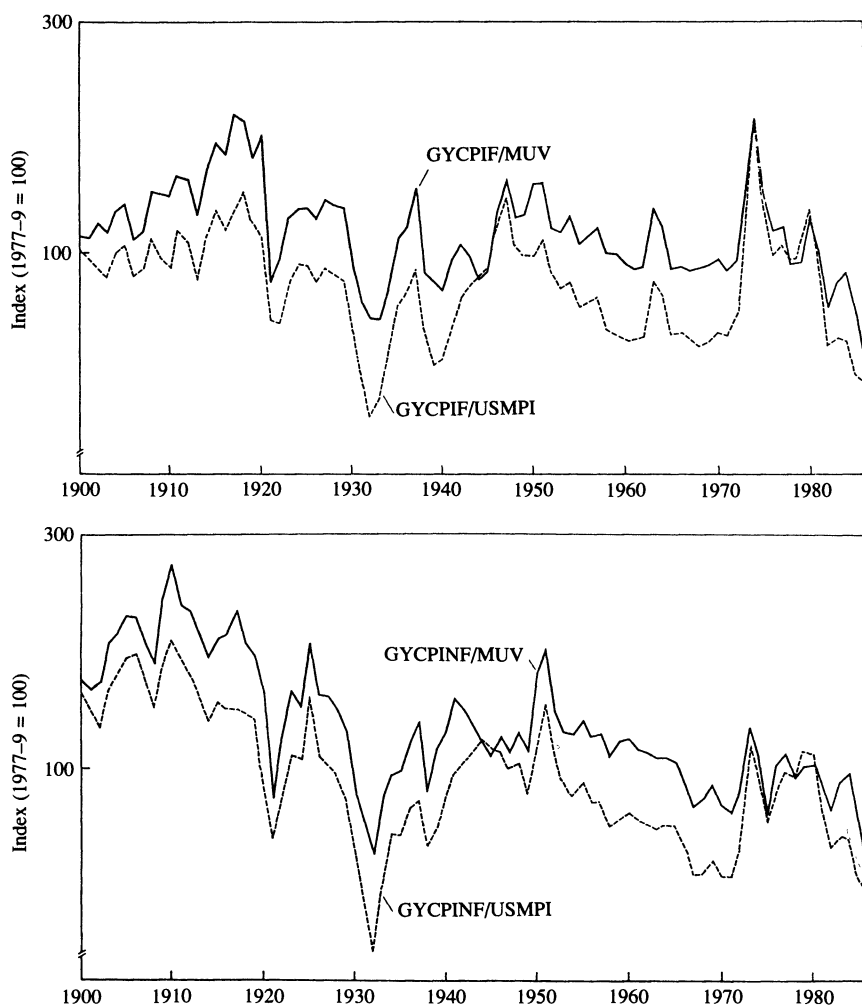


Fig. 1. Indexes of relative prices of (a) food commodities, 1900–86; (b) non-food agricultural commodities, 1900–86. Key: GYCPINF, Grilli–Yang Commodity Price Index for Food; MUV, Manufacturing Unit Values; USMPI, United States Manufacturing Price Index; GYCPINF, Grilli–Yang Commodity Price Index for Non-food. Source: Grilli and Yang (1988).

There were some economists putting these questions in the 1950s but they do not seem to have been taken very seriously – at least they do not seem to have dislodged the predominant view. As experience grew, however, the questions were put more forcefully and were investigated more carefully. In response to these investigations and to the experience of both the more planned and less trade oriented countries on the one hand, and the less planned and more trade oriented on the other, views started to change (although as remarked above in Section III.1 we must not equate more planning with less trade orientation).

The export pessimism of the 1950s was embodied in the so-called ‘two-gap’ model (see e.g. Chenery and Bruno, 1962). The two gaps are associated with demand and supply for foreign exchange (import demand may exceed exports plus net foreign transfers) and demand and supply for output (the excess of

planned investment over domestic savings may exceed net foreign transfers). It was argued that investment might be restrained not simply by the availability of savings plus foreign aid but additionally, and perhaps more severely by the availability of foreign exchange (necessary for crucial parts of the investment) since there was an upper limit on the foreign exchange available from exports.

The whole model and approach came under fire for its assumptions of fixed coefficients and fixed export potential and its ignoring of relative prices. If there is excess demand for foreign exchange, so the counter-argument can go, then the relative price of foreign exchange can change (and will if permitted to do so) and export potential and import demands will respond to prices. Similarly equilibrium in output and labour markets can be restored by the adjustment of the appropriate relative prices. The issue becomes an empirical one concerning the old questions of how well markets and individuals do adjust to price incentives and the experience of some of the fast-growing export-oriented countries was cited as counter evidence to the 'structuralist' assumptions of poor price responses. For techniques for measuring the price distortions with import substitution (and planning) policies see Section IV.

By the mid 1980s the suggested positive influence of export promotion (or absence of discrimination against exports) on growth had become a dominant theme of the World Bank. Much of the *World Development Report* of 1987 was devoted to supporting this view. In that report, 41 developing countries were classified into four groups according to their trade orientation (strongly outward-oriented, moderately outward-oriented, moderately inward-oriented and strongly inward-oriented) and it was suggested that there was a strong positive relationship between outward orientation and the growth rate (over the period 1963–85). Unfortunately enthusiasm for the viewpoint being espoused led to a somewhat unquestioning view of evidence (to put it charitably) and if the only three strongly outward-oriented countries, South Korea, Singapore and Hong Kong, are removed from the sample the evidence is much less clear-cut. According to various indicators such as growth of real GDP *per capita*, savings, and inflation, the moderately outward- and moderately inward-oriented countries showed comparable performance (see World Bank 1987, fig. 5.2). A somewhat more careful assembly of the arguments for the superiority of trade policies is contained in Lal and Rajapatirana (1987) and it does seem, that, on average, the performance of the strongly inward-oriented countries is weaker than the rest. Even then there are important exceptions within this group, such as Pakistan where growth has been relatively rapid (see Section II).

As we noted in Section II, two recent, extensive and careful studies of comparative growth experience (Chenery *et al.*, 1986; Morris and Adelman, 1988) have cautioned that there is no single formula or gospel which for trade (as with planning) necessarily leads to, or is required for, rapid growth. We do seem able to say, however, that cutting oneself off from or greatly restricting trading opportunities is generally associated with slower growth.

III.4. *Relations Between Rich and Poor Countries: Aid, Trade and Debt*

There are three related issues which have dominated discussion of relations between richer and poorer countries, aid, trade and debt. We consider them in turn. Flows from richer to poorer countries can take many forms and which of them should be described as aid is not clear-cut. Following the broad thrusts of three recent surveys Cassen (1986), Riddell (1987) and Mosley (1987), we shall concentrate on official development assistance, i.e. aid from governments and multilateral agencies and not military aid or aid from individuals and charities. In the 1960s aid occupied a central position in the economic literature and in political discussion, the Pearson (1969) report on aid was, for example, a major event at the time, but it appears to have moved to the wings of both stages. The quantity of aid has been small relative to the UN criterion of 0.7 % of GNP for official aid. In 1986 of 18 OECD countries only France (0.82 %), Netherlands (1.20 %), Denmark (1.30 %), Norway (1.43 %) and Sweden (1.06 %) (*World Development Report*, 1988) had proportions exceeding 0.6 %. The largest proportions were achieved by Saudi Arabia (4.29 %) and Kuwait (2.90 %) although the largest donors were United States (\$9,395m.), Japan (\$5,761m.) and France (\$4,876m.). During the period 1980–6 14 out of the 18 OECD countries (Table 21, *World Development Report*, 1988) have increased official development assistance as a percentage of GNP. In the longer period (1965–86) a similar pattern emerges with 14 out of 18 raising aid as a percentage of GNP. Note however that the percentages for the United States and for the United Kingdom have fallen over both periods.

For the low income countries as a group, aid receipts were 2.4 % of GNP in 1986 (see Table 22, *World Development Report* 1988). For China and India they were only 0.6 % whereas, on average, for other low-income countries they were 9 %. For individual countries aid can be very important, over 20 % of GNP for Mali, Somalia, Zambia and Mauritania, and above 10 % for most African countries. For larger countries the percentage tends to be much smaller and amongst these only Bangladesh at 9.5 % approaches 10 % (China 0.4 %, India 0.9 %, Pakistan 2.9 %). A figure of 10 % or more of GNP is, however, of great importance to a developing country – compare for example with investment, government expenditure or imports each of which may typically be 20 % or so of GNP.

The case for aid depends on both establishing or agreeing its moral basis on the assumption that it is beneficial, and also on showing that it is, or can be, beneficial according to appropriate criteria (see Stern, 1974). Riddell (1987) has provided a helpful review of the moral basis of aid. After discussing the contributions of modern theorists of ethics, notably Nozick (1974) and Rawls (1973), he (Riddell, p. 42) follows Miller (1979) in pointing to three strands of justice ‘to each according to his rights, to each according to his deserts and to each according to his needs’. We are not forced to regard any of these three strands as universally dominant and, indeed, an attempt to found a theory of justice on one of them alone, he suggests, will fail. Riddell (1987, p. 42) concludes ‘The moral obligation to provide aid is based on the obligation to help or the obligation to correct previous injustices’.

In the 1960s and 1970s there was much discussion of whether aid should be bilateral or multilateral, tied or untied to purchases from donor countries, what conditionalities in terms of policies or projects should be attached and so on (Bhagwati, 1970, Clifford, 1966, Singer, 1965, Seers and Streeten, 1972). Recently such discussion of tying has been less vigorous. Tied aid remains common, although the proportion which is untied appears to have risen – the development assistance committee (DAC) of the OECD records the average of total (OECD) overseas development assistance (ODA) classified as *untied* for 1973 being 34 %, while for 1982–3 it was 56 % (see Cassen, 1986, p. 286). However conditionalities on policies to be pursued by recipients are increasingly popular amongst both multilateral and national agencies. Governments such as the United Kingdom's appear to be linking their own aid to the conditionalities applied by the World Bank in their packages which often involve tight control of public expenditure and liberalisation of trade policies.

As we have argued a crucial and central question is whether aid is effective or beneficial. This raises considerable empirical difficulties since we must decide on criteria of effectiveness which can be implemented and be able to characterise the consequences of aid. When the effects of aid may permeate the whole economy this last step is very problematic. From the right, Bauer (1971, 1984) for example, attacked aid as often being wasted on unproductive prestige projects. He went further and argued that it encouraged governments to spend time, resources and energy chasing aid, thus promoting a supplicant and unentrepreneurial mentality and sapping financial discipline. It was also criticised from less right-wing positions, by for example, Griffin and Enos (1970) who argued that it lowered savings rates, and by Hayter (1971), who suggested it played an imperialistic role. Unfortunately all these attacks were weak on empirical analysis, either offering only a few examples (e.g. Bauer and Hayter) or employing flawed analytical techniques (e.g. Griffin and Enos, 1970; see commentaries by Papanek, 1972, 1973; Mosley, 1980; Stewart, 1971).

Recently, Mosley *et al.* (1987) have made another attempt to isolate the effects of aid on growth using cross-country data. They recognise the problems of simultaneous causation (aid may go to those countries with the weakest growth performance) and attempt to employ standard simultaneous equation techniques of econometrics (two and three stage least squares). However, the procedures for excluding and including variables in their three equations (for growth, aid and mortality) leave one a little uneasy as to whether identification is securely based. And they do not allow for the endogeneity of savings (see Section II above). Thus their inability to identify an effect of aid on growth probably says more about the problems of doing cross-country regression analysis than it does on the effectiveness of aid.

Cassen (1986), Riddell (1987) and Mosley (1987), for example have looked at historical evidence of particular experiences in attempts to examine the effects of aid more directly and have concluded that aid can be and often is, beneficial. That, of course, leaves us with the question of how the probability that it is beneficial can be increased. Each of the authors cited offer some advice with management and monitoring playing a prominent role. It is clear both

that guarantees of productive performance are unlikely to be available and that the moral case for aid does not require the probability of beneficial use to be 100 %.

The flow of aid from charities and non-governmental bodies is much smaller than that from official bodies but such aid can often be extremely productive. Agencies such as Oxfam would appear to have a very good record in pioneering innovative projects which involve initiative and training and, particularly, helping weaker groups in direct action to help themselves. Their *Field Directors' Handbook* (1985), an assimilation of project experience of over 40 years or so, contains a wealth of practical and productive commonsense concerning the selection, guidance and monitoring of projects.

Whilst the most flexible aid from the point of view of the recipient country is untied foreign exchange, aid is frequently in kind. Amongst aid-in-kind, food aid has come under particular scrutiny and often criticism. It is sometimes held that food aid can be damaging in that it depresses food prices and dampens incentives for agricultural activity (see e.g. Lappé and Collins, 1980; Eade and Jackson, 1982). It is plausible that disincentive effects do exist and that these may reduce the social value of food aid. But it would be absurd to conclude that food aid should be eliminated altogether. Indeed, if it were really true that a little extra and costless food caused harm then it would also be true that destruction of a little food by the developing country would be beneficial. Put this way round the argument is highly implausible and the evidence in favour of the proposition that extra food is damaging is very weak (for a discussion of the issues see, for example, Maxwell and Singer, 1979 and Jennings *et al.* 1987). Nevertheless one would generally presume that untied cash aid is superior to food aid.

Our second aspect of relations between developed and developing countries concerns trade. In the preceding section we commented on trade policies of developing countries. We focus here on the policies of developed countries and of multilateral agencies. To set the background we give a (very) brief review of trade and trade policies in relation to growth. The 1950s and 1960s saw rapid growth in output for both developing and developed countries and trade grew even more rapidly. In the 1970s growth in both output and trade was much slower although that for trade remained faster than for output. From 1953–63, 1963–73 and 1973–83 the growth rates for world output and trade were (Bhagwati, 1988*a*, pp. 3–4): 4.3 and 6.1 %; 5.1 and 8.9 % and 2.5 and 2.8 % in the respective decades. This corresponded to substantial reductions (Bhagwati, 1988*a*, p. 4) in tariff levels through the various GATT rounds from Geneva (1947) to Tokyo (1973–9) (the Uruguay round is now in session). Total world exports are dominated by industrialised countries, with 71 % in 1960, but by 1980 this had dropped to 66 % (Bhagwati, 1988*a*, p. 4) indicating that the growth for other countries was even more rapid. Developing countries have participated in both the growth in income and in trade over the last 40 years.

From the mid-1960s to 1980 the performance of the middle-income countries was superior in both output and export growth to the low-income countries but this changed in the 1980s (see Table 5). This change was very heavily

Table 5
Growth Rates of Income and Exports for Developing Countries

	1963-73	1973-80	1980-86
Real GDP	6.5	5.4	3.6
Low-income countries	5.5	4.6	7.4
Middle-income countries	7.0	5.7	2.0
Exports	4.9	4.7	4.4
Low-income countries	2.0	4.7	5.4
Middle-income countries	5.3	4.8	4.2
Exports of manufactures	11.6	13.8	8.4
Low-income countries	2.4	8.2	8.4
Middle-income countries	14.9	14.8	8.4

Source: World Development Report, 1988.

influenced by the acceleration in the growth of the Chinese economy following the reforms which began in 1979. Notice that exports of manufactured goods by developing countries have grown much more rapidly than their exports as a whole and whilst this was primarily, in the 1960s and early 1970s, from the middle-income countries, the low income countries have been participating much more strongly in recent years.

The liberalisations in trade of the 1950s and 1960s were jolted by oil crises and recessions in the 1970s and there was a considerable rise in non-tariff barriers such as Voluntary Export Restraints (VER) in industries such as steel, automobiles, footwear, motorcycles, machine tools, and consumer electronics. VERs had their impact most strongly amongst industrialised countries but given the increased role of manufactured exports developing countries are vulnerable here too.

It has been estimated (Tumlrir, 1985) that 30-50% of total world trade moves under quantitative restraint. The VERs are attractive to those lobbying for protection since they may circumvent GATT rules and can be very specific in terms of products or industries. A disadvantage from the point of view of the importing countries is that some element of the rent created by the quantitative restriction is transferred overseas. Krishna (1988) for example, has shown how the predicted effects of VERs on prices and on profits of both domestic and foreign producers depend critically on both the structure of the model of the equilibrium in the game and on whether the imported goods are complementary inputs into domestic production or substitutes for domestically produced goods (the profit-raising effects for both foreign and domestic producer being higher in the latter case). The sharp dependence of consequences on the particularity of the assumptions, and similarly also the calculations of optimal policy, in these oligopolistic models has been emphasised by a number of authors. Bhagwati (1988*a*), for example, suggests that these newer models may therefore be weak vehicles for supporting policies of trade intervention.

Bangladesh has been trying to expand its textile and clothing industry and between 1978 and 1985 the number of operational companies grew from 12 to

450. It would appear that textiles and clothing as a labour intensive industry is one where Bangladesh, with a low price of labour, has a real comparative advantage. Bangladesh is one of the poorest countries in the world. Here is an industry in which Bangladesh has shown her ability to produce and compete and one might think that the many developed countries who are aid givers might also have encouraged her textile trade. Yet in mid-1987 Bangladesh had reached the ceiling on MFA quotas in a number of important categories. A major and promising initiative in a poor country has been substantially curtailed (see *World Development Report*, 1987, for further discussion).

A quantitative analysis of the effects of the MFA on developing countries has been provided by Trela and Whalley (1988) using a computable general equilibrium framework. As ever (see Section IV) a vast number of functional relationships and parameters have to be specified and the results are no doubt sensitive to the specifications. In this case when the issue concerns gains and losses to several different countries some variety of assumptions of the kind they make are unavoidable if quantitative results are to be obtained. Using 1986 data they find global losses from the MFA (comparing the world with it and without it) are \$17 billion with the gain to developing countries from its removal being \$11 billion. They find that the small countries with advantageous positions in existing quotas (Hong Kong, South Korea, Taiwan) would also benefit since they would expand their share of the market (and the share of developed countries producers would decline). The developed countries gain too since consumers get cheaper clothing – Trela and Whalley put this figure for overall gains to developed countries at \$6 billion of which \$3 billion is for the United States.

As a very poor country Bangladesh has only small imports and little in the way of retaliatory threats. It is only the largest developing countries such as Brazil, China and Indonesia that have such power. Where it exists, however, this power can be used effectively. For example China successfully resisted harsh quotas in recent MFA negotiations by threatening to reduce grain imports from the United States and thus mobilising the United States farm lobby to its assistance (see Bhagwati, 1988*a*). The examples point both to the vulnerability of small developing countries and the negotiating potential of larger countries or groups.

Where aid played a prominent role in the discussion of relations between rich and poor countries in the 1960s this was displaced from centre stage in the 1980s by debt, and this is the third aspect in our discussion of relations between developed and developing countries. The past 15 years have seen a very big increase in debt for some countries (see the annual *World Debt Tables* from 1975 and the *World Development Reports* from 1978). Amongst the low-income countries the big debtors in terms of debt to GNP ratios are in Africa, for example, Mauritania 210.0%, Zambia 240.5% (figures are for 1986 from WDR 1988, Table 8). However, many of the middle-income Latin American countries are in similar circumstances (Nicaragua 198.2%, Chile 120.1%). In absolute terms the biggest debtors are Brazil and Mexico with debts of \$97,164m. and \$91,062m., although the debt to GNP ratios are only 37.6% and 76.1% respectively.

Whilst the size of debt and its rate of growth might cause concern it is not immediately obvious that a large debt is a problem since if a country has assets against its liabilities and income to service the debt it may nevertheless be in a strong position. More worrying therefore is that debt-service ratios (defined as debt-service payments as a proportion of exports) are now very high in a number of countries. Amongst the low-income countries, for Somalia (62.1 %), Burma (55.4 %) and Pakistan (27.2 %) (WDR, 1988, Table 18) the ratios are particularly high. However many middle-income and upper middle-income countries are also in difficult positions – Indonesia (33.1 %), Costa Rica (28.9 %), while in the upper middle-income, Argentina (64.1 %), Algeria (54.8 %) and Mexico (51.5 %) stand out.

The above figures are associated with considerable doubt as to countries' ability or willingness to amortise their debts, the so-called debt crisis. Given that the debt crisis threatens the international financial system and welfare in both developed and developing countries there has, in recent years, been a debate on what measures constitute an appropriate response. To understand this debate and the nature of the measures proposed it is necessary to examine the evolution of the relationship between creditor and debtor nations. Prior to 1982 lending to developing countries was generally based on *laissez-faire* principles with repayment expected in full, the huge amounts lent during the 1970s indicating the willingness of banks in developed countries to lend to developing economies. A combination of high interest rates, a large budget deficit, rising imports and capital flight in Mexico in 1982 changed all this (Dornbusch, 1986; Krugman, 1988).

The problem debtors were identified by their inability to borrow on a voluntary basis in the international capital markets. However, rather than accepting default, creditors were expected to engage both in rescheduling debt as well as in concerted involuntary lending (Krugman, 1988). Growing awareness that many problem debtors were unlikely to honour their debts and that the debt was artificially overvalued led to proposals for debt reduction and debt forgiveness. One such approach recommends the voluntary implementation by creditors of a variety of market-based schemes – debt buy-backs, securitisation, debt-equity swaps. The most radical proposal concerns the possibility of debt forgiveness whereby creditors offer a once-for-all reduction in the future obligations of countries. Such schemes could be given a more equitable cast if they involved more favourable treatment of poorer countries – notice that the largest debtors are, on balance, those who were more profligate and those who were able to borrow rather than the poorest (Buiter and Srinivasan, 1987). There are also efficiency arguments in favour of partial debt forgiveness (as opposed to short-term inaction) since this may raise developed countries' welfare by leading to a larger expected value of payments (Krugman, 1988, forthcoming; Sachs, 1988*a*; Fischer, 1987). It is important to remember that historically defaults have been real possibilities, for example Latin America in the 1930s (see, e.g. Dornbusch, 1986). For a general review see Cardoso and Dornbusch (1989).

Recently a theoretical literature motivated by the debt crisis has emerged which focusses on bargaining. Given the confrontational nature of the

situation, the central question is whether and by what mechanism, debt contracts can be enforced. Eaton and Gersovitz (1981) and Eaton *et al.* (1986) created models where the creditors have no legal rights whatsoever and borrowing is thus entirely dependent on a country's 'reputation for repayment'. In this situation the ability of the creditor to threaten cut-off from world capital markets and other penalties can be invoked whenever countries do not pay. Bulow and Rogoff (1989*a*) point out that in the case of sovereign debt, the fact that creditors' legal rights to debtors' assets are limited and voluntary lending is not forthcoming implies that reputation may be of little importance. They (1989*b*) use a Rubinstein (1982) bargaining model to show that, when the cut-off is based on lenders' rights, borrowers can bargain with their creditor and costly penalties are not invoked because a deal can always be made to share the benefits of forbearance (see also Fernandez and Rosenthal, 1988).

III.5. *Structural Adjustment and Stabilisation*

Stabilisation programmes refer to attempts to correct balance of payments deficits and excess demand by changing the real exchange rate, liberalising trade and tightening fiscal policy. They are usually precipitated by excess demand and are particularly associated with the International Monetary Fund in its task of helping to resolve short-run balance of payments problems. The World Bank with its longer-term perspective has been increasingly involved in structural adjustment programmes which share the concern for internal and external balance but go further in seeking to liberalise internal markets and to reduce the role of the state, with the intention of making the economies function more effectively and, *inter alia*, reducing the occurrence of crises in the future. The short- and long-term perspectives of the IMF and World Bank are now much less clearly demarcated with their joint concern (and occasionally joint involvement) with these programmes and we shall discuss structural adjustment and stabilisation programmes together.

Crises which precipitate stabilisation programmes have occurred, particularly in Latin America, fairly frequently since the Second World War (Dornbusch, 1986; Taylor, 1988). Whilst excess demand has been a common thread, precipitating factors have included rapid changes in external conditions such as adverse movements in terms-of-trade and rising world interest rates with high levels of debt. 'Orthodox' packages of expenditure cutting, tax raising, and devaluation were tried for example in Argentina in 1951, 1967, 1977–81, and 1985. The austerity measures often result in great political difficulties, and in many cases they are abandoned early on (for example, Mexico 1971, 1977, and usually in Argentina) – see Ahamed (1986), WDR (1988), Buiter (1988), Taylor (1988), Edwards (1988) and Cornia and Stewart (1987). The frequency of occurrence of these crises and programmes and the repeated failure of attempts at a solution have turned something which is, from one point of view, ordinary macroeconomic management into a major issue in development economics.

Failure to execute the programmes is obviously an occupational hazard

when one attempts to administer austerity to a fragile and conflictual political system. A government representative of particular groups may attempt to place the burden of austerity on others. Their strong reaction may lead to the abandonment of the programme. Some have suggested that the secrecy of the discussions and the involvement only of the executive and not the legislative or democratic processes (Sachs, 1988*b*) have exacerbated the problems (see also Avramovic, 1988). There is no doubt that precipitate adjustment can cause real problems of unemployment, and for government programmes concerning, for example, health and nutrition (see Edwards, 1988; Cornia *et al.*, 1987).

The failure of many 'orthodox' programmes both in narrow macroeconomic terms (Edwards, 1988; Sachs, 1988*b*), together with their implications for living standards (Cornia *et al.*, 1987), have led to various fresh approaches. Most of these consist of adding measures to the orthodox adjustment process. In the *World Bank Annual Report* 1988 the endorsement of 'hybrid' loans, comprising a package of sectoral reforms as well as one or more investment components, recognises the need for specific measures to encourage sustained growth as opposed to isolated macroeconomic engineering which tends to produce unsustainable changes. Some authors argue that for countries where investment for growth is unlikely to be consistent with the meeting of liabilities and maintaining adequate consumption (e.g. parts of sub-Saharan Africa), debt forgiveness may represent the most efficient way of restoring macroeconomic equilibrium (Sachs, 1988*b*; Edwards, 1988) and, further that this practice may in fact increase future compliance with conditionality (Sachs, 1988*a*). Avramovic (1988) points to the need for target countries to submit their own adjustment programmes and to engage in open and regular debate with the agencies on the progress of adjustment. He also suggests that the decision to lend and the conditions attached should be based on assessment of the debt servicing capacity and financial management of the debtors as opposed to a willingness to accept conditionality. Cornia, Jolly and Stewart (1987) have argued for gradualism with more expansionary macroeconomic policy accompanied by policies intended to preserve employment, improve social sector efficiency and protect entitlements of vulnerable groups. This plethora of new propositions contains some with a 'sensible' and 'reasonable' feel to them. However, only time will tell whether they can counteract the existing severe constraints on the effectiveness and sustainability of stabilisation and adjustment programmes.

As well as generating suggestions for different strategies recent research has also produced interesting collections of theoretical and empirical studies. For examples see the volumes edited by Neary and van Wijnbergen (1986), Edwards and Ahamed (1986) and Sachs (1988*b*). There is a real modelling problem here for (at least) two reasons. First, the constraints on what will work are to a large extent political and not easily captured formally. Second, and relatedly, the acceptability of any programme will depend not only on who bears the burden of austerity but on how it is structured over the short and medium term. Our models are not well formulated to capture these intertemporal problems. The macro models are primarily short run and in the

medium-term models (usually CGEs) the process of adjustment is usually absent.

III.6. *Population Change and Economic Development*

Discussions of population in development economics have focussed mainly on the economic consequences of population growth (see, for example, Birdsall, 1988; Kelley, 1988; World Bank Development Report, 1984). The topic has been seen as a major issue at least since 1798 with the publication of *An Essay on the Principle of Population* by Malthus where it was asserted (1798, p. 14) that 'Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio.' Hence, he argued, eventually food production will not keep pace with population growth and the resultant falling *per capita* products would lead to widespread starvation and misery, which would act to check the population growth.

Though this trend failed to appear in Europe, with which Malthus was concerned, the concept was pursued with reference to rapid population growth in less developed countries. And one need not invoke the finiteness of resources or the Malthus geometric–arithmetic argument to indicate potential problems. In the long-run steady state of a one-sector growth model (with $s/v = n$) a rise in the rate of population growth, n , will with constant s lead to a lower capital–output ratio, v , and thus lower output per head (the so-called capital shallowing effect). Further a higher population growth might lead to greater dependency ratios and thus a lower savings rate and diversion of investment resources towards health and education. These savings–investment–growth considerations were emphasised in the influential work by Coale and Hoover (1958). The climate of opinion in the early 1970s was distinctly alarmist with McNamara (1973) the President of the World Bank, comparing the threat of population growth with that of nuclear war and the spreading of 'rampant population growth' as 'the greatest single obstacle'. The view was shared by many, see, for example, the 1971 (US) National Academy of Sciences report (and Forrester, 1971; Club of Rome, 1972). Population control programmes were seen as having high priority.

The balance of views on population has become less pessimistic during the 1980s, with correspondingly less strident claims as to the primacy for policy of population control programmes. The new National Academy of Sciences (1986) report recognises that some population effects can be positive, although it judges them on balance to constitute a hindrance to raising living standards. It further notes that problems sometimes associated with population growth may be in fact be due mainly to other causes, and that a consequence of population growth has often been the exacerbation of other fundamental problems. Adverse effects appear to have been most prominent in environments where arable land and water are particularly scarce or difficult to acquire and where property rights to land and natural resources are poorly defined (see Kelley, 1988).

The positive effects of population growth have been particularly strongly emphasised by Simon – his book *The Ultimate Resource* published in 1981 being

an important event in the debate. There are indeed many adjustments which can be made in response to, or which are generated by population growth, which may appear like increasing returns or technical progress. High population densities may act to decrease per unit costs and increase the efficiency of transportation, irrigation, extension services, markets and communications (Boserup, 1981; Pingali and Binswanger, 1987; Hayami and Ruttan, 1987; Glover and Simon, 1975). Boserup (1965, 1981), as we indicated earlier (Section III.2) has argued, over the long term, that increasing population densities induce a shift to more productive labour and land intensive farming technologies. Farmer generated technologies may then be supplemented by the adoption of exogenous science-based technologies (e.g. fertilisers, new seed varieties, and so on). There is substantial empirical justification for these types of response (Hayami and Ruttan, 1987; Pingali and Binswanger, 1987). Whether these all add up to increasing returns to population alone, however, is a moot point.

What is clear is that population, via its size and composition, is likely to have a major influence on many problems – resource depletion (Slade, 1987; MacKellar and Vining, 1987), education (Schultz, 1987), employment (Bloom and Freeman, 1987; Montgomery, 1987), food (Srinivasan, 1987*b*), economic inequality (Lam, 1987), urbanisation (Henderson, 1987) and social security (King, 1987). But given that population is only one element in many of the problems associated with economic development attempting to control population growth without confronting the other causes of such problems may lead to disappointing results. For reviews of the effects of population growth see Birdsall (1988), Johnson and Lee (1987), Keyfitz (1982) and the WDR (1984), as well as Kelley (1988) and the National Academy of Sciences (1986).

An assessment of the effects of population growth is distinct from the design of effective policies to reduce population growth. It is generally argued that if preferences of individuals or families and opportunities open to them are such that they are not ready and willing to reduce the number of births then the availability of family planning programmes is unlikely to be successful. Urban China since 1979 seems the strongest example to the contrary, but there were powers of coercion in China which other countries may not be willing or able to use. Mothers' schooling and employment and access to child schooling and health facilities appear to be important factors in reducing the desired number of births (see Birdsall, 1988; Boulier, 1985; Mauldin and Lapham, 1985).

III.7. *Objectives and Strategies*

We have so far been reviewing the debates on theory, experience and strategies largely from the point of view of growth in aggregate income *per capita*. Income may be seen as an indicator of status or power and as such may have some significance in its own right but it has its greatest interest as a summary indicator of standard of living. This last concept is inherently individualistic and given any community we may enquire as to the standards of living enjoyed by its individual members. The distribution of income is thus a central concern and has always been a major topic in development economics as has the closely

related issue of the incidence and severity of poverty. Standard of living is a concept (discussed below) which requires careful consideration and is not easily defined but it should be clear that more is involved than income. Poverty would then be defined in terms of an indicator or indicators of standard of living falling below a given level or levels, although how such levels should be defined in turn raises difficult questions (see, for example Sen, 1983*a*). A growing explicit focus on other objectives, and on indicators of these objectives, has been a significant feature of development economics over the last two decades or so. There are also additional objectives which cannot easily be subsumed under 'standard of living'. The greater emphasis on objectives other than growth has brought an active debate on the relation between strategies for growth in aggregate income and strategies to achieve these wider objectives (see Drèze and Sen, forthcoming).

The interest in individual or household income is largely as a means to ends. Commentators may differ over relevant ends but most would include health and education, in addition to any ends associated with consumption. Certain positive and negative freedoms – say freedom to vote for the former and from discrimination for the latter – would also be included (being a healthy, well-educated slave may be unattractive), but we shall not concentrate on these here. Sen (see, for example 1987, 1988) has linked some of these objectives to standard of living in arguing that the concept should concern primarily 'capabilities'. 'Capabilities' refer to what a person can do or be or, more precisely, to the set of 'functionings' which a person has the freedom to achieve. But whether or not one argues via capabilities numerical indicators of interest might be life expectancy, infant mortality, nutrition, morbidity and literacy and we would be interested in how these differ across countries and for particular sub-groups, and eventually, in principle, for individuals and households in the population.

Whilst the question of measurement of rights, freedom and discrimination has been less prominent in the economic literature than that of standard of living, there has been considerable concern with gender issues including, for example, differential life expectancy and literacy for males and females and intra-household discrimination (see, for example, Folbre, 1986; Sen, 1984 and Section VI.2).

The recognition that the scope of objectives is wider than aggregate income raises the question of whether the strategies for raising aggregate income would be consistent with the achievement of other objectives. It would be unjust to the earlier writers on development to assert that their emphasis on income was associated with blind ignorance of, or lack of concern for, poverty, inequality, health and education. As Bhagwati (1988*b*) has recently stressed, their focus on income was based in part on the idea that greater income would bring with it less poverty and superior health and education. This indirect route is contrasted with the direct route of targetted transfers and provisions (Drèze and Sen, forthcoming). A growing realisation of the negative distributional and other consequences of some growth experiences led to the greater advocacy of the more direct routes, and in particular the so-called 'basic needs' approach

which became popular from the mid-1970s (Streeten, 1984; Stewart, 1985). It was suggested that government strategies should be organised around and assessed by the provision of needs held to be basic. These included nutrition, education, health, shelter, and water and sanitation at minimum levels. Whether or not one counsels a 'direct route' however, the basic needs ideas have real problems. What needs are basic and more worryingly what levels are held to be essential minima? What if these levels are infeasible, how should we measure and trade-off different levels of attainment? Who decides which needs are basic and the appropriate level? In what sense are they basic if people who can afford to attain them do not choose to do so? How should these choices influence our evaluation of policies? Is the targetting and attempted delivery of basic needs a productive way of organising limited government resources, administrative and otherwise? How are basic needs related to standard of living? A number of these questions have indeed been raised by some of those who favour this approach (see, for example, Streeten, 1984), but they are not easy to answer in a satisfactory way and one is left with a certain scepticism about the approach (see also Lipton, 1988). These problems are shared with any attempt to stipulate 'minimum' levels be they in terms of 'adequate' housing, food, capabilities and so on, or in terms of poverty lines.

Direct policies can, it seems, be effective if properly designed and research has provided considerable guidance on the value of different methods of intervention. Caldwell (1986), for example, notes that poor countries that had achieved low mortality with low *per capita* GNP shared certain characteristics. These included a strong and sustained commitment to public programmes in health, education and nutrition. Even in countries that have achieved rapid growth, the attainment of rapidly improving indicators of standard of living (other than *per capita* income) seems to have been dependent in large part on public intervention (Drèze and Sen, forthcoming; Bhagwati, 1988*b*). Lipton (1988) in a review based on a series of his World Bank working papers on poverty has emphasised however, the real difficulties, or at least the lack of success in reaching the poorest of the poor or the group he calls the ultra poor. He argues that extreme poverty alters behaviour in fundamental ways and that programmes have to take this into account if the ultra poor are to be reached.

IV. TECHNIQUES FOR THE ANALYSIS AND REFORM OF POLICY

Governments of developing countries have been concerned to influence the allocation of resources, the pattern of growth and the distribution of income. Most developing countries have a Ministry of Finance, a Ministry of Industry and/or Commerce and a Ministry or Commission for Planning whose roles involve in overlapping ways tax, quantity and pricing policies. Correspondingly a major concern in development economics has been the analysis, creation and enhancement of techniques which can be used to guide the government in its policy process. Much of the focus of planning commissions has been on the allocation of investment, a major topic in the development literature and the main issue in the early work on planning. The early plans were, and mostly still

are, based on linear models and input–output information and are discussed in Section IV.1. More recently policy analyses (although to a lesser extent planning models) have used nonlinear general equilibrium techniques (IV.2). The analysis of social opportunity costs, or shadow prices, in the allocation of investment has been an important topic for economies where price distortions are thought to be serious and this provides the subject matter for Section IV.3. The approach to policy problems based on the idea of social opportunity cost, i.e. cost–benefit analysis, was originally developed for the appraisal of investments but the concept is obviously basic and has a much broader application. Some are considered in Section IV.4 where the reform and design of tax and price policies are discussed briefly. These issues are becoming increasingly important as many countries attempt to increase the role of market allocation and decentralisation of decisions. They find themselves facing difficult microeconomic problems concerning what it means to ‘get prices right’ and how to do it, as well as the difficulties with raising sufficient revenue for macroeconomic balance. In the issues and models of the last three subsections the problems of integrating the market and planning are absolutely central.

IV.1. *Linear Models*

Early planning models were initially concerned with feasibility or consistency of different sectoral targets and were based on the input–output methods developed by Leontief (1941), Stone (1970), Stone and Stone (1977) and Chenery (1956). They were soon extended in a number of directions. Early examples of the use of input–output and linear programming techniques in the analysis of choice in development planning are Chenery and Clark (1959), Chenery and Bruno (1962), Chenery and Strout (1966), Sandee (1960) (see also Chenery, 1965, for reviews). Capital requirements and growth were introduced at an early stage and dynamic input–output models are now employed in many planning commissions. Clark (1975) surveys the applications of such models in various countries, both developing and developed. A valuable recent example was produced for the Indian 6th Five Year Plan, 1980–5, which also provided a most welcome advance in the publication of the input–output tables (including those for domestic and foreign flows) and models used (see Government of India, 1981; Gupta, 1988).

The problems of assuming linearity in investment planning models were recognised early, and interestingly it was the introduction of economies of scale that was first regarded as of special importance, in marked contrast to the constant or diminishing returns embodied in the later CGE models. In the 1960s in India the appropriate timing and size of lumpy investments in a growing economy were studied by Manne and Weisskopf (1970). Chenery (1956), emphasised the need for explicit coordination, within and across sectors, of investments which show economies of scale, and the inadequacies of the market in this respect.

Social Accounting Matrices, or SAMs, extend the analysis of intersectoral flows in the production accounts to government, financial and personal sectors.

Thus they, for example, trace the flows of income to different sorts of factors in each industry, track the flow of funds between personal, business and government sectors, and so on. The detail of particular flows provided will depend on the problem at hand. They are useful, for example, in forcing consistency in different parts of the national accounts, linking them to household survey data, and understanding the structure of the economy in relation to income distribution and savings. The SAMs generally also provide the basic starting point against which the nonlinear CGEs (see below) are calibrated or validated. An introduction to SAMs is provided in Pyatt and Round (1985), particularly the chapter by King.

IV.2. *Computable General Equilibrium Models*

Concern with some of the problems of linear optimisation models coincided with the availability in the early 1970s (Scarf and Hansen, 1973) of the computational techniques and computer power to solve detailed numerical general equilibrium models. The advantages of these models lie in the endogeneity of prices and incomes and in the incorporation of substitutability in consumption and production. Agents are assumed to optimise and their supplies and demands are balanced through the market. In addition to the fixed-point algorithms proposed by Scarf, general equilibrium solutions (supply equal to demand in each market) can be computed by standard techniques for solving simultaneous equations systems.

The problems of the approach do not now lie in the computation of solutions but in information and interpretation. The number of parameters involved in specifying the behaviour of agents can become enormous. A Slutsky matrix for a consumer involves $n(n-1)/2$ entries or, say, with 20 goods, 190 parameters. We need one such matrix for each consumer. Production functions involve a similar number of parameters and we require at least one for each industry. One quickly becomes involved in models with tens of thousands of parameters which we are supposed to specify before we can begin to compute solutions. More fundamentally we know that the functional forms used may exert a strong influence on the results (see Atkinson, 1977; Atkinson and Stiglitz, 1976; Deaton, 1979, 1981; Deaton and Stern, 1986) irrespective of which parameters are chosen; understandably but worryingly, the functional forms generally utilised are very restrictive. It is clear that we cannot know the functional forms and parameters with any degree of confidence and in practice much guesswork and inventing of numbers is involved. The complications of the models also strain our ability to interpret since it is often hard to understand what has driven the answers in models of such detail. One reaction to this is to build much smaller models which we can understand in order to guide intuition for the more complicated.

The complexity of the individual models is associated with the rather narrow class of models which are estimated. They are generally perfectly competitive models with constant elasticity of substitution demand functions (or close relations such as the Linear Expenditure System) and similarly CES production functions. A second class of CGEs has been studied by grafting onto this basic

framework certain 'structuralist' features such as restrictions on factor mobility or rigid prices and simple forms of rationing, e.g. Chenery *et al.* (1986). de Janvry and Sadoulet (1987) provide a helpful evaluation of agriculturally focused CGEs and on SAM-based CGE models see the recent special issue of the *Journal of Policy Modelling* (for example, de Melo, 1988; Pyatt, 1988). Taylor (1979, 1983) and others have been concerned to develop 'macro-structuralist' models which blend the essentially Walrasian CGEs with Keynesian concerns for aggregates such as saving, investment, imports and exports and government expenditure and revenue. It is hard to believe, however, that the very special structures assumed for the sectoral markets in these models really add reliably to the basic macro picture.

The strength of CGEs, in general, lies in their ability to examine directly changes which are likely to have ramifications throughout the economy. Effects on demands for and prices of different factors as a result of a tax reform might be a case in point. Their weakness lies in the vast number of specific numerical assumptions required. This can lead to them, in practice, falling between two stools. They do not allow the detail of linear input-output analysis (say with a 110×110 table) – it may be partly for this reason that dynamic input-output seems more popular within Planning Commissions than CGEs. And they do not allow the flexibility of assumptions and clarity of results of two- or three-sector models that one might use, for example, to study the possible effects of devaluations. As with many approaches in economics, provided they are used where one can exploit their strengths they may constitute a helpful tool. If they are used as an incomprehensible black box constructed from narrowly stereotyped or weak components and casually invented parameters they can be worse than useless.

IV.3. *Cost-Benefit Analysis*

As we saw in Section III.1 the 1960s saw a disenchantment with comprehensive planning and import substitution. It was argued that these had led to unsatisfactory investment programmes in both public and private sectors. The large distortions in relative prices had the result that many of the activities which were profitable at domestic market prices showed a poor return at world prices (see, for example, Little *et al.* 1970). World prices, it was suggested, gave the relative social opportunity costs for traded goods. These arguments both generated a number of attempts to measure the distortions involved in domestic prices (based in part on their difference from world prices) and led to propositions for shadow price systems which would correctly measure social opportunity costs. Attempts in this direction included effective rates of protection (see, for example, Corden 1971), domestic resource cost (see, for example Bruno, 1967) and systems of accounting prices (see, for example Little and Mirrlees, 1974; Dasgupta *et al.* 1972).

The *effective rate of protection* (ERP) for an industry is defined as the difference between the value added calculated at domestic prices and the value added at world prices, this difference being expressed as a percentage of the value added at world prices. It is intended to indicate the extent to which

protective measures have raised the returns to factors working in that industry (taking into account effects on input as well as output prices) and thus to act as a measure of resource pull into that industry. As such it is clearly a positive rather than a normative measure and one can ask how far it does successfully measure resource pull. There are some theoretical problems as a positive measure since it is possible that raising effective protection lowers factor use in that industry. This cannot happen if we have fixed coefficients for intermediate inputs (see Dixit and Norman, 1980, ch. 5), and this result provides some justification for the use of ERP as a positive directional indicator of resource pull from protection.

Many have been tempted to see the ERP as providing strong normative lessons as well as being a positive measure. For example it is often argued that tariffs on industries with a higher ERP should be reduced. This is poor theory, as Ramaswami and Srinivasan (1968) pointed out. We have to ask why tariffs are there in the first place. If there is no good reason for them then they should simply be abolished. Where there are good reasons then these arguments should be incorporated into the analysis – but these reasons or arguments play no part in the ERP. It should be emphasised here that one cannot correctly appeal to the various theorems which attempt to show that moves towards uniform proportional rates for tariffs are welfare improving (Bruno, 1972; Hatta, 1986; Corden, 1974, 1984). These theorems apply only under the strong and implausible assumptions which imply that uniform tariffs are optimal. For the simple case of indirect taxes on final goods we can show that uniform proportionate taxes are optimal only where we make very special assumptions on preferences. For the one consumer economy (generally assumed by the authors quoted) we must have all compensated cross-price elasticities with leisure equal (Deaton, 1979; Stern, 1987) or with many consumers we generally need to assume *inter alia*, parallel linear Engel curves plus a uniform lump-sum transfer. Where tariffs impinge also on production and thus disturb production efficiency the establishment of a result that movement towards uniformity is an improvement would involve conditions which are even more stringent.

The notion of the ERP has, however, been important in the empirical discussion and has served a number of useful purposes. It reminds us that the nominal tariff may be an unsatisfactory indicator of protection when input prices are also affected. It provides an (apparently) simple statistic which policy makers may be able to understand and which may indicate to them what the consequences of their policies might be (it is hard without such summary statistics to understand a complex tariff system). And it focuses the question of which sectors and projects we should be supporting, and which should be shut down, in a rather sharp way.

The *domestic resource cost* (DRC) is similar in spirit to the ERP but is in a number of respects more satisfactory. It has been used in Israel since the late 1950s and is also known as the Bruno method after Michael Bruno who described it in Bruno (1967). For each sector we calculate (as described below) the net domestic resource cost per unit of net foreign exchange earning or

saving. One then selects for expansion those sectors which earn a dollar at lowest cost of domestic resources. Notice that this concept applies to both exportables and importables. The DRC is clearly superior to the ERP as a normative indicator in that it takes careful account of the role of non-traded inputs whereas the typical ERP calculation ignores the effects of protection on non-traded good prices. In doing this we assume in calculating the DRC that extra quantities of non-tradeables will actually be produced if more are required (as opposed to being diverted from other uses).

The DRC is close in spirit and in method to the techniques of cost-benefit analysis we shall be describing. It has, however, a number of defects as a cost-benefit rule in that (i) it is not properly intertemporal, (ii) it ignores factor market distortions and (iii) it does not produce a decision criterion for non-traded goods. Once these defects are corrected it becomes virtually identical to the standard cost-benefit techniques now in use. For further discussion of the relationships between ERP, DRC and cost-benefit analysis see, for example, Bruno (1972), Krueger (1972) or Little and Mirrlees (1974, pp. 362–6).

Systematic methods of cost-benefit analysis were developed in the late 1960s and early 1970s to provide techniques for project evaluation which could be used across the economy. These would allow the selection of investment programmes to take place at the project level, utilising all the appropriate information on production possibilities and problems at that level rather than in a centralised planning commission where information would be both scanty and aggregated and where planners might have little or no knowledge of the local conditions. To put it this way makes cost-benefit analysis and centralised planning appear to be competitive options as planning tools. But as we shall see they are best seen as complements (see, for example, Little, 1982, p. 130). The techniques suggested by various development agencies, see, for example, Little and Mirrlees (1969) and (1974) for the OECD, Dasgupta *et al.* (1972) for UNIDO, Squire and van der Tak (1975) for the World Bank and the UK Government ODA (1988) are all similar in spirit and for specificity we concentrate on the best known of these, Little and Mirrlees (1974), the first version of which appeared as Little and Mirrlees (1969).

There are three central ingredients.

- (i) Relative world prices should be equal to relative shadow prices for traded goods.
- (ii) For non-traded goods the shadow price is the marginal cost of production evaluated at shadow prices.
- (iii) We should take careful account of how the project changes incomes (including those for future generations) and weight the increments in incomes which accrue to different groups in different ways.

We examine the arguments in favour of these three elements and how they can be put into practice. The arguments for using world prices take a number of forms but are essentially similar. The idea is that the world prices represent the net benefits on the margin associated with an adjustment of production or consumption of a traded good. If, for example, a good is traded at fixed prices then the net effect of an expansion in production is not to change prices and

welfare of households directly but simply to save on imports or to increase exports. All that matters therefore is the foreign-exchange earnings or savings. These foreign exchange earnings may have a different value from that given by the official exchange rate but the *relative* values of traded goods are given by the relative world prices.

The first of the ingredients tells us that many of the prices to be used in cost-benefit analysis may be found *without* working out the consequences of a project in a detailed model. This is a very valuable result since it tells us that these shadow prices will be appropriate for many different models and in this respect we save difficult and dubious modelling work. Examination of the underlying theory in detail (see, for example, Drèze and Stern, 1987) shows us that the result is indeed robust. There are, however, problems. First, we must decide which goods will be or should be traded and whether they will be imported or exported, if traded. Second, the level of trade may affect world prices (particularly for a big country like China). Third, world prices for some goods may be volatile and difficult to forecast. Fourth, there may be some varieties of a good which are traded and some which are not. This makes classification and the calculation of prices difficult.

The first of these problems with the argument for using world prices is the most basic from the conceptual point of view. It reminds us forcefully that the shadow prices which should be used depend on the policies which are chosen by the government. For example, if the government places a quota on the imports of certain goods it means that extra supplies must come domestically and the goods should be classified as non-traded. On the other hand the policy analysts working on project appraisal and on trade policy may discuss the appropriate trade policy, and after seeing the effect on project selection of the quota it is possible that the quota may be removed. Hence the appropriate classification will depend on the influence of the policy analysts (see, for example, Sen, 1972). Further, classifications may change over time. For example, for a country with a small but growing domestic industry, the good could be an importable in the first few years, then a non-tradeable, then an exportable. The importance of the classifications is underlined in the often large difference between import (c.i.f.) and export (f.o.b.) prices.

It is this first ingredient above, concerning world prices for traded goods, which has received the most attention and which is often held to be the central message. But a system of cost-benefit analysis must also deal carefully with non-traded goods and with factors and it is important not to forget about the other two ingredients. The second rule is much less robust in that it involves the assumption either that more of a non-traded good actually is produced (rather than diverted from elsewhere) or that there is some optimality in that the social opportunity cost from producing an extra unit is the same as the cost associated with diversion from other uses. Where the economy is large there are likely to be many non-traded goods and much of the practical simplicity of these cost-benefit methods is lost.

The last criteria bring in explicitly value judgements concerning the distribution of income. Government interest (and that of international

institutions) in looking beyond aggregate income is embodied in explicit concerns for the alleviation of poverty. It is reasonable to infer that such values should be taken into account in the appraisal of projects which will in general directly or indirectly raise or lower incomes of a number of different households in the economy. A natural way to bring these considerations into the analysis is to use welfare weights to attach higher value to increments in income to those who are worse off. These procedures come in most directly through the shadow wage and the evaluation of profit and other incomes generated by a project (for further discussion, see Little and Mirrlees, 1974, ch. 14). These weights, and their value relative to government income in particular, should, in principle, also take into account problems of profitability. If there are great difficulties in raising public revenue then one can employ a high weight on public revenue which would then, via, for example a higher shadow wage, militate against acceptance of projects which would make losses and in favour of projects likely to run surpluses. See, for example, the discussion of Chenery (1965) and Sen (1968), which emphasised that a higher premium on investible surplus would lead to more capital intensive techniques being chosen.

Given that the notion of social opportunity cost is basic to economic analysis and that shadow prices are its embodiment it is natural to ask why shadow prices are used relatively little. One possible reason is that their calculation and application can involve a great deal of work and involve methods which some might find difficult to understand. A second is that decision-makers or funding bodies may be suspicious that underneath the results which are presented to them may be buried assumptions that they cannot trace, but which deliberately bias the decision in favour of the result desired by some interest group. Whilst they might like their 'bias' out in the open it is not obvious that avoiding cost-benefit analysis allows them to do this, since without an analysis of social opportunity costs and benefits it is hard to tell what is biased and what is not. Third, some might argue that departing from market prices raises problems of accountability and profitability. The former may be a serious issue but the latter, as we have seen, should in principle form part of the analysis insofar as revenue raising is a problem. In my judgement it is the first problem of the amount of work and the last of accountability which are the most serious. It may not be necessary, however, to do very detailed calculations of social opportunity cost to weed out bad projects and great social savings from the use of cost-benefit analysis may be available from a fairly speedy analytical assessment. Generally it is much better to have the economic analysis of economic and social choices conducted by those who understand the notion of opportunity cost than those who do not.

IV.4. Taxes and Prices

Governments, however benevolent, could not be sufficiently well informed to calculate what every agent should optimally do and could not successfully command every agent to do what they calculate. They should not try. This means that many decisions should and will be taken by individuals acting in markets. Thus the government will have to decide what activities to undertake

itself and how to raise revenue for those activities, to examine what influence it should exert on incentives and to consider the distribution of welfare. The basic problems of public finance – expenditure, revenue, incentives, distribution – are therefore central to any economy with markets. We cannot appeal to the basic theorems of welfare economics for a direct answer to these problems – as we saw in Section III. ¹ the desirable lump-sum taxes are not incentive-compatible (when people recognise their basis they cease to be lump-sum). We must therefore ask which of the many possible distorting systems of pricing and taxation should be chosen. The design of such systems must take account of their administrative feasibility, problems of manipulation and evasion, and political acceptability, together with an assessment of how far any proposal squares with the basic considerations of revenue, incentives and distribution.

The pressures of these problems are felt by governments throughout the world. Over the last 10 years, for example, China has been grappling with the problems of introducing a price and tax system into an economy where previously market incentives and taxation played a minor role. Providing incentives to firms via the profit motive simultaneously loses public revenue and control over expenditure – these problems appear to have figured centrally in her current difficulties with inflation. Designing and implementing taxes raise real conceptual and practical difficulties. Many countries have, however, built up tax systems and revenue over time by gradual, and often *ad hoc*, modifications to existing systems. Further pressures for revenue, together with the unwieldy system resulting from the accretion of measures, has led many to consider substantial reform, see, for example, Ahmad and Stern (forthcoming and 1989), Gillis (1985), Goode (1984).

There are a number of ways of approaching the problem of integrating theoretical desirability (the revenue, incentive, distribution questions) with considerations of administration and of politics but they cannot proceed without an understanding of the theory of tax design or of what is theoretically desirable. Some of this theory has recently been reviewed in Newbery and Stern (1987) and Ahmad and Stern (1989) where the balance between direct and indirect taxation and the conditions under which indirect taxes should be uniform are examined (some were described briefly in Section IV. 3). Uniformity has administrative advantages and leaves less scope for special pleading for favourable tax treatment on behalf of lobbyists. Generally the greater the power of the income tax the less force is there in the redistributive arguments for indirect taxes. Clearly in many developing countries the personal income tax is very weak so that redistributional considerations for indirect taxes cannot be ignored. Some compromise between what is desirable from the point of view of equity and efficiency on the one hand and administrative feasibility on the other will therefore be involved and such a compromise cannot be intelligently struck without a serious study of both aspects. It is interesting that questions of political acceptability might point to some differentiation on income distribution grounds whereas problems of political manipulation might point the other way if one is concerned about special pleading by interest groups.

In examining what is administratively feasible one may look for 'tax handles' – see Tanzi (1987), Musgrave (1987), Goode (1984). Tariffs and corporation tax provide sources of revenue which for many countries are easier to tap than some alternatives (Tanzi, 1987). Theory tells us that in indirect taxation we should move away from tariffs and towards taxation of final goods (Dixit and Norman, 1980; Newbery and Stern, 1987) but in the short run many countries will have to rely on tariffs for revenue. This reliance may pose fundamental problems for a country in 'structural adjustment' where the desire to liberalise its trade policy may run counter to its need for revenue. The temptation to insist that *only* certain tax handles are available or to place excessive reliance on just one or two is sometimes overwhelming. Marketing boards, particularly in West Africa, have levied very high (implicit) tax rates, and tariffs have often been pushed to the point where one suspects that revenue is lost in addition to the distortions generated, see Bauer (1963). Increasingly, however, the potential for broad-based internal indirect taxation is being recognised with the spread of the value added tax (Tanzi, 1987; Tait, 1988).

The problem of tax analysis may be approached using the technique of tax reform as well as tax design. An analysis of tax reform compares a proposed system with the existing system and looks at the costs and benefits of the change. One looks at revenue changes, who gains and loses and what happens to the structure of production. The techniques for analysis of marginal reform have been developed by Guesnerie (1977), Ahmad and Stern (1984, 1987) and in Newbery and Stern (1987). The use of household survey data for examining gainers and losers from non-marginal reform is now standard, see, for example, King (1983) and Atkinson *et al.* (1980). Informational requirements for the analysis of both design and reform can be substantial and one must take care since, as we have noted, assumptions on functional forms can have a major influence on outcomes (Atkinson, 1977; Deaton, 1979, 1981; Deaton and Stern, 1986). The analysis of tax reform in a distorted economy requires us, in principle, to integrate social opportunity costs (shadow prices) into the analysis. These problems are examined in Drèze and Stern (1987).

The methods for the analysis of marginal reform which invoke shadow prices are based on the simple idea that the increase in a policy instrument (e.g. tax, price or income transfer) is beneficial if the social value of the direct impact on households exceeds the cost at shadow prices of the extra demands generated. For example, an increase in transfers to widows provides a direct benefit to them from which the shadow cost of the extra demands must be subtracted to arrive at the net benefit. The shadow prices incorporate the full costs of the general equilibrium repercussions. Alternatively one can calculate the marginal (general equilibrium) impact on different income groups and on revenue directly (without invoking shadow prices). One then seeks to identify those reforms which raise revenue at minimum social cost – see Braverman *et al.* (1987), Newbery and Stern (1987), Drèze and Stern (1987 and 1988) and Ahmad and Stern (forthcoming) for examples and discussion.

Our focus for this discussion has been on taxation but the discussion includes

public-sector pricing also – one can regard differences between price and marginal cost in a public-sector firm as a form of taxation. Here the same considerations of revenue, distribution and incentives apply. As problems of revenue raising have become increasingly severe it is now more widely appreciated that the public-sector pricing rule of price equal to marginal cost (see, for example, Newbery and Stern, 1987; Katz, 1987; Jimenez, 1987) is not tenable in a revenue constrained economy (and which economy is not?).

V. MARKETS, VILLAGES AND HOUSEHOLDS

The studies described in this section are heterogenous but have common threads in their approach. They are essentially microeconomic, tightly focused on particular questions, take careful account of the major institutions associated with the issues under study and generally involve the collection of primary data. Such features can, of course, be found amongst micro studies for developed countries. The number and quality of such works for developing countries, however, constitute a major corpus of knowledge which lies at the heart of the subject of development economics. Such micro studies are not generally concerned with narrow or minor issues but with understanding how particular processes operate at a micro level and thus with developing our insights into theories of how the economy works and how policies might be effective. We shall present just a few examples at a little length, rather than a broader selection more briefly, in order to bring out the kind of attention to detail that is necessary. The examples are chosen for their inherent interest, their importance as topics, for their quality as pieces of analysis and as vehicles to introduce some wider areas of research. They are intended as demonstrations of what can be done rather than a survey of what has been done on the issues covered.

The studies will mostly be applied but we shall begin with a group of theoretical studies described below. The focus of the empirical studies discussed here includes (i) the close examination of the economy of a particular locality, principally a village, (ii) the investigation of a particular issue such as nutrition or price stabilisation, (iii) the exploitation of a data resource such as household income and budget surveys. They have been positive rather than normative in the first instance, the initial task being to understand how a particular microeconomy works, but have often been motivated by and led to important policy questions.

V.1. *Theory*

The four theoretical examples we shall present here concern attempts to understand particular phenomena. The first of these is the very rapid growth of urban populations in developing countries. Notwithstanding apparently high rates of urban unemployment, in many countries migrants have been moving to towns in large numbers to seek jobs. The second concerns a related issue, namely the possibility that employers may choose not to lower wages even though they observe excess supply of labour, because lower wages via

lower consumption and poorer nutrition might lower the productivity of labour. Third, theorists have been concerned to understand the prevalence of sharecropping as a form of land and labour contract when other forms of contract such as fixed land rents or wage rates may be available and, *prima facie*, more attractive in some important respects. The fourth concerns the allocation of risk in markets, particularly policy concerning the stabilisation of prices. Each of the investigations has led to ideas which contributed (respectively) to theoretical developments in the related areas of labour market search, wage rigidity, corporate structure and the allocation of risks in markets for developed countries.

V.1.1. *Migration*

The study of migration has for long been an important area of research in development economics (see Williamson, 1988). We focus here on one model of particular influence, that of Todaro (1969) (and developed by Harris and Todaro, 1970). Suppose that the urban wage is c and the rural wage is m . Let the total employment in urban areas be E and the number in the urban areas seeking jobs be S . The number of urban unemployed is therefore $U = S - E$. Work in the rural areas at wage m is guaranteed for those who want it. The central hypothesis in the model is that a worker will leave the rural area to seek work in the town if the expected wage in the town, pc , exceeds the wage in the country, m , where p is the perceived probability of finding employment. The theory yields an equilibrium level of unemployment which is given by

$$\left. \begin{aligned} pc &= m \\ p &= \frac{E}{E+U} \end{aligned} \right\} \text{ so that } U = \left(\frac{c}{m} - 1 \right) E, \quad (4)$$

since it is assumed that the perceived probability of finding employment is given by the number of jobs divided by the total number of job seekers S .

If we assume c and m are fixed and examine the effect on the equilibrium of a change in E we find

$$\frac{dU}{dE} = \left(\frac{c}{m} - 1 \right); \quad \frac{dS}{dE} = \frac{c}{m}. \quad (5)$$

Hence in this model an increase in urban employment *increases* urban unemployment. The model itself is rather unsatisfactory in important respects but the explicit treatment of the probability of finding a job was an important advance and has led to fruitful theoretical and empirical research. From the empirical point of view the model generates unemployment rates which are implausibly high – if c/m is 2 the unemployment rate is 50%. From the theoretical point of view the model leaves its driving force, the disparity of c and m and the fixity of c , unexplained. Squire (1981) has argued that minimum wage legislation does not generally provide adequate grounds for assuming c is fixed. Stiglitz (1974) considers labour turnover costs as a possible reason for maintaining wages above the supply price of labour and Calvo (1978) examines monopolistic behaviour by unions. One can also consider the

efficiency wage ideas described in the next subsection as a possible explanation of wage rigidity.

The model (with or without fixed wages) can be modified in a number of ways to introduce risk aversion, intertemporal aspects (you may have to wait for a job), priority hiring (so that some applicants have a better chance of finding a job than others), more than one urban sector (for example, a traditional urban sector which allows some further job seeking, see for example, Fields, 1975), different support schemes (e.g. from relatives) whilst a job is being sought, travel costs, and so on (Fields, 1988). Many of these modifications will reduce the level of unemployment as predicted by the model.

The model led to many applied studies most of which confirmed that the relative wages and the perceived probability of finding a job were indeed important determinants of a decision to move (see Sabot, 1982, Yap, 1977, or Todaro, 1976, for surveys). Some of the findings are not so easily understood in the Todaro framework. For example Connell (1975) finds that villages with more inequality tend to produce more migrants. The urban unemployed are often educated and migrants of long-standing (e.g. Bertrand and Squire, 1980). And Stark and his collaborators have developed rather interesting theories based on migration as a portfolio decision of households, i.e. it is seen as part of the collection of risks, agricultural and otherwise, carried by the household (see, for example, Stark, 1988, and others in the Discussion Paper Series, Harvard University, Migration and Development Program).

It must be remembered that the Todaro model is simply an example of research in an area that has been going on for several decades. Whilst work on Todaro-like models is now less active there is no doubt that it has exerted an important and productive influence on research on the operation of labour markets in developing countries. That topic is itself an area of substantial research of which migration is just a part. This wider research contains many further examples of the interesting application of theoretical ideas. These concern, for example, the organisation of family enterprise (Chayanov, 1966; Barnum and Squire, 1979; Sen, 1975; Singh *et al.* 1986) and risk and information (Binswanger and Rosenzweig, 1986) as well as the theories of efficiency wages and share tenancy discussed below. See Rosenzweig (1988) for a useful survey.

V.1.2. *The Relation between Consumption and Productivity*

The idea that there is a link between consumption and job performance and that this link may influence wages and the allocation of labour goes back to Leibenstein (1957). It was set out rigorously by Mirrlees (1976) and Stiglitz (1976) and developed by Bliss and Stern (1978*a, b*), who also examined empirical evidence on the assumptions and predictions of the theory (Dasgupta and Ray, 1987, have recently returned to some of these ideas). We present the simplest version here. Suppose that there is a relation $h(\cdot)$ between productivity, tasks performed per day, and consumption of the form illustrated in Fig. 2. Suppose also that the wage (w) is the only source of consumption.

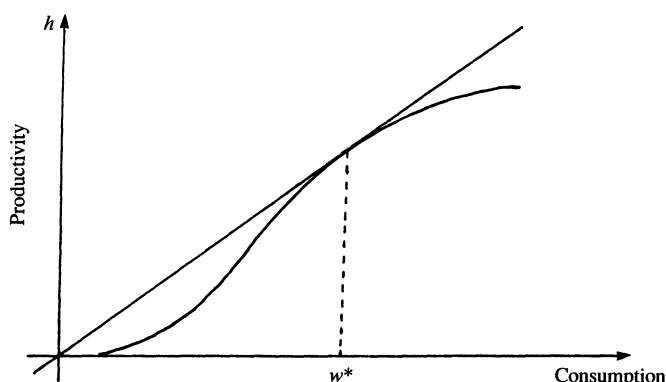


Fig. 2. Relationship between productivity and consumption.

The employer minimises labour cost wl , where l is days hired, subject to $lh(w) > \bar{H}$ and $w > \bar{w}$, where $\bar{w}$ is the minimum daily wage at which labour is available and $\bar{H}$ is the required number of tasks. This involves minimising w/h or maximising h/w (tasks per rupee) and leads to the choice of w^* (which we suppose is bigger than $\bar{w}$). We call w^* the 'efficiency wage'. Hence employers will voluntarily pay a wage higher than the minimum at which labour is available because the extra productivity offsets the higher cost of the wage. Thus we can have unemployment with no tendency for the wage to fall and we have one explanation of downward wage rigidity. This type of effect has subsequently been adapted to explain wage rigidity in some macroeconomic models for developed countries (see, for example, Weiss, 1980; Shapiro and Stiglitz, 1984). Where workers differ in endowments it is clear that in a general equilibrium framework the wage, level of employment and who gets employed will depend on the distribution of endowments (those with greater endowments are potentially cheaper to employ, see Bliss and Stern, 1978a).

The theoretical results are interesting and there is little doubt that many members of the workforce in poor countries have a level of nutrition which may seriously detract from their productivity. The evidence in favour of the view that the theory provides an important explanation of wages is, however, somewhat limited. The most important aspect of this is the prevalence of short-period contracts, often daily, for physical labour in many developing countries. This short period implies that the producer would be unable to reap the benefits of building up the nutritional status of employees. Where labour contracts are longer term such as plantations, the armed forces, or slavery, there is some evidence that employers may try to use their labour force efficiently from the nutritional point of view (see, for example Bliss and Stern, 1978b). Strauss (1986) also reviews the empirical evidence and reaches similar conclusions, that the rigorous evidence in support of the theory as an explanation of wages is limited. He also attempts to identify the contribution of consumption to productivity using household survey data for Sierra Leone. He tries to take into account in his econometric analysis the simultaneous

influence of output/income on calories, as well as the central relation in question. Bliss and Stern (1978*b*) expressed scepticism that separate identification of the two relationships would be believable. One can always include or exclude 'exogenous' variables to get apparent identification in the two basic equations but the 'identifying' restrictions and labelling of equations remains somewhat dubious. Whilst the theory may not be powerful as an explanation of wages, this should not divert us from the task of analysing the causes and consequences of poor nutrition (see below V.2.2.) and their relationships with productivity – issues of considerable importance.

V.1.3. *Sharecropping*

Sharecropping is an arrangement whereby the tenant taking on land pays to the landlord a fraction r of output (r is often $\frac{1}{2}$). If output depends on labour l and land h , through $F(l, h)$, then if the opportunity cost of labour is w the tenant, if he is free to choose l , will set the level so that $(1-r) \partial F / \partial l = w$. This Marshall indicated in his *Principles of Economics* (8th edition, 1920) was inefficient as efficiency would require $\partial F / \partial l = w$. He also pointed out that the landlord will try to insist that the tenant work harder to increase the rent (rF) that the landlord receives (Chapter X, 8th edition).

This point was taken up again by Cheung (1969) who formulated a model of a landlord offering contracts to tenants involving a particular amount of land, a particular level of labour input and a rental share. For the tenant to accept the contract it must offer him at least as good a return to his labour as could be achieved by selling it at w . If the landlord has total land M and offers M/n to each tenant then the landlord's problem may be written:

$$\text{Maximise } nrF\left(l, \frac{M}{n}\right) \quad \text{subject to} \quad (1-r)F \geq wl.$$

r, n, l

It is easy to see that the solution involves $\partial F / \partial l = w$ and that the rent per tenant (rF) will be $(M/n) \partial F / \partial h$, so that payments to land are also equal to the marginal product. This is the standard efficient allocation of land and labour. This outcome is unsurprising as a solution given the formulation of the model – the tenant essentially works as a labourer for the landlord at wage w – Marshall saw this point clearly and explained it carefully. Cheung argued that the description of share tenancy involving detailed responsibilities was supported by data from China in the early 20th century.

The puzzle as to why sharecropping should exist if it is inefficient was replaced by the problem of explaining which amongst different forms of equally efficient contracts – sharecropping, land rent, or wage labour – for farming the land might be selected. Theorists then argued that sharecropping may be adopted in preference to other forms of land contract because it allows the sharing of risk. Here we think of inputs being incurred in advance of output, which is uncertain. Notice that if the landowner hires the labourer at a fixed wage then the landowner bears the risk and if the tenant pays a fixed rent he bears the risk. But the risk-sharing achieved by sharecropping could, in principle, also be replicated by competitive markets with fixed wages for labour

and rent for land, provided we have constant returns to scale and indifference by agents as to whether they work as labourers, share tenants or fixed-rent tenants. A 50–50 sharecropping contract can be replicated for a share tenant by taking on half the land under fixed-rent tenancy and applying half his labour (thus incurring the risk for this part of his activity), and, in addition, working for wage labour for a non-stochastic wage for the other half of his time. The assumptions, however, for this replication are rather strong (including the certainty of being able to find work at the given wage) and it is reasonable to suppose that the risk-sharing features of sharecropping play an important role in its popularity as a form of contract.

It also provides some economy of supervision as a labour contract, relative to hiring at a fixed wage. Where labour is paid a fixed wage, there is no further incentive to work in a way which increases output and the employer may have to supervise carefully. With sharecropping the worker does take 50% (say) of the output and thus has an incentive to increase it. Note the link between supervision and uncertainty problems since if there were no uncertainty the input could be inferred directly from the output so that shirking on a labour contract could be easily monitored. Payment by commission is, indeed, a common form of incentive in developed countries too.

Important contributions in this area have come from (Stiglitz, 1974, Newbery, 1977, Hallagan, 1978, Braverman and Stiglitz, 1982) and for an interesting bargaining theoretic approach see Bell and Zusman (1976). Empirical work on hypotheses arising here has also been extensive, see particularly Bell (1977), Bliss and Stern (1982 and discussion in Section V.2.1 below), Shaban (1987). Bell (1977) and Shaban (1987) found some evidence of lower output on tenanted land in cases where the tenant both farms some land of his own and leases in, although Bliss and Stern (1982) did not. For a discussion of inter-linking between land, labour and credit markets see Bell (1988).

V.1.4. *Price Stabilisation*

The equilibrium analysis of risk in markets where consumers or producers act to maximise expected utility or profits and where markets allow for some speculation or insurance has seen important application in development economics to the problems of price stabilisation. Most studies of commodity-price stabilisation focus on producers or exporting countries and examine schemes involving buffer stocks, for example, for smoothing prices or incomes – see, for example, Newbery and Stiglitz (1981). Pure stabilisation schemes are distinguished from those in which producing nations act collusively in order to raise average price. They analyse in some detail the general equilibrium allocation of risks and the effect of policy and suggest that the ‘optimal buffer stock is very small; indeed sufficiently small that it is not obvious that the amount of stabilisation presently being provided [through the market] is significantly below the optimal level’ (p. 444). Two markets which would be potentially useful in reducing the costs of risks would be the futures and credit markets. It is argued that futures markets may actually be superior to price

stabilisation via buffer stocks. The authors appear more optimistic with respect to this market (as opposed to the credit market) given the problems of imperfect information, adverse selection, and moral hazard which present major obstacles to credit market improvement.

Food prices, however, affect consumers as well and fluctuations can involve questions of survival. Here the possibilities of holding stocks, borrowing or lending, and the correlation between food prices and income become crucial. We can ask how markets allocate the risks in these contexts and whether the role of speculation is stabilising or destabilising. One should ask whether storage is best carried out publicly or privately and if the latter whether it should be subsidised. For contributions see Newbery (1988), Berck and Cechetti (1985), Ravallion (1988), Bigman (1982, 1985), Turnovsky *et al.* (1980). Newbery (1988), for example, concludes that ration shops and food entitlements may be more cost-effective in protecting consumers than price stabilisation policies.

Ravallion (1987) has applied some of the theoretical ideas of the literature on price uncertainty in his investigation of markets and famines in Bangladesh. He concludes (p. 19) that 'Over-reaction to new information on future scarcity during the famine de-stabilised rice markets. Thus it can be argued that excess mortality in Bangladesh during 1984 was, in no small measure, the effect of a speculative crisis.' The government did attempt to stabilise prices but its response lacked credibility. The markets, he suggests, were informationally inefficient and were not well integrated spatially. We seem to have in this case an example of the failure of both the market and of attempted government intervention.

V.2. *Applied Studies*

We provide three groups of examples of the type of closely focused applied micro study which illustrates development economics at its most productive. Whilst they are micro studies the motivations and theories underlying them concern major issues of policy and of understanding of the functioning of the economy.

We begin with a collection of village studies oriented to understanding the processes of allocation, income distribution, and response to change in poor rural economies. Nutrition, its determinants and policy responses, is examined in V.2.2. We present work on the use of survey data for the estimation of price and income responses, which are crucial ingredients for price and tax analysis and for the analysis of income inequality, in Section V.2.3.

V.2.1. *Village Studies*

There has been strong disagreement amongst development economists over the efficiency of the functioning of village economies. At one extreme some, as we saw in III.1, such as Schultz (1964), have asserted that competitive markets and maximising behaviour imply efficient use of assets, whereas others, such as Myrdal (1968) have claimed that rural behaviour is not determined implicitly or explicitly by costs and returns.

The theories and descriptions of the processes of growth which we discussed in III. 2 were based on notions of the operation of the rural or traditional sector and how it might respond to change. Different views of that operation will lead to different policies. The perception of the way the village economy functions and how it adapts thus will be crucial in designing and judging policy to improve allocation and assist change. There have been many studies of village economies and peasant behaviour throughout the developing world and it is not possible to do justice to the richness and variety here. We shall instead point to a few studies spread over different decades from different parts of India, a country which has provided some of the most prominent examples.

Our purpose here is not to survey village studies in general or what they have to say on a particular subject. The Village Studies Programme at Sussex University has generated a number of such, e.g. Connell (1975) on labour utilisation and Schofield (1975) on nutrition. And Lipton's (1983*a-d*) series of papers on poverty makes valuable use both of extensive village studies data and of other household surveys. Rather we attempt to demonstrate by example what is involved in a village study and what can be achieved. No village is typical and it is not the purpose of a village study to find and scrutinise such a village. It should be seen as a method of seeing how well theories explain particular phenomena, 'on the ground' and of finding and generating further phenomena and hypotheses.

In the early and middle 1950s fascinating village research was under way in several parts of India. Bailey was from 1952 to 1954 working in the village of Bisipara in Orissa in Western India (see Bailey, 1957), Epstein in 1955 and 1956 was studying two villages Wangala and Dalena in Karnataka in South India (see Epstein, 1962), and Hopper (1965) used data from 1954 on the village of Senapur in Uttar Pradesh in North India. We discuss their contributions briefly to try to give a flavour of the range and interest of the different questions that can arise. A key feature of all four of them is the strong response (although subject to various institutional constraints, such as caste) to market opportunities and of three of them is the way in which the economy of the village has adapted to changing circumstances including the growth of the economy outside the village.

Bailey described the transition of Bisipara from a purely self-sufficient village economy concentrating solely on the cultivation of paddy to one with links to the modern world, involved in trade and several non-agricultural pursuits. He identified two major trends: first, the decline of the joint family, where siblings cultivate an estate together, and its replacement by the division of land and household wealth between sons on the death of their father; and second, the expansion of employment and earning opportunities outside paddy farming. The first implies a reduction in the size of average land-holdings per household and if risk is not spread through the joint family there is a reduced ability to meet what Bailey calls 'contingent expenditure', unforeseen expenses through illness, death of an ox, etc. This may lead to land sales (after all other sources of wealth in the household have been exhausted) and further vulnerability. The second trend describes the gradual reduction in dependence on agriculture.

Households which took advantage of other earning opportunities could invest their surplus income in land, offsetting the effects of division. Some especially lucrative alternatives were reserved for lower caste households because of pollution boundaries (particularly distilling), and the reservation of government jobs for certain castes. There were still further differences across the two groups which were involved in distilling with one group (Ganjans) being rather more entrepreneurial, more closely connected with the outside world, having a bigger trading network and being less involved in village politics and questions of status.

In the course of the discussion Bailey described the working of various markets in Bisipara. The casual labour market was active as paddy cultivation has periods of high labour demand at various points in the season. It was impossible for most cultivating households to provide the labour themselves. The wage rate, however, was set by the village council (which seemed fairly powerful) and did not move to mitigate excess demand or supply at different points of the year. The market for land sales was fairly active but, whilst sharecropping did occur it was not prevalent. The availability and cost of credit depended on the circumstances of the households. Overall we have a fascinating combination of institutions and the market described with real economic insight by a social anthropologist long before the development of the more formal economic theories that we would now use to describe some aspects of what he found.

Epstein (1962) studied Wangala and Dalena in Karnataka in South India in 1955/6. She returned for a later study Epstein (1973) but the former is more detailed and is our focus here. The two villages were almost identical in all aspects of their economic and social life until the 1930s when a large-scale irrigation project brought Wangala into a canal network while Dalena remained with only unirrigated land. Wangala was able to preserve its way of life, its institutions and its economic organisation virtually intact, despite the fact that the irrigation made available by the canal allowed the villagers to intensify their traditional cultivation, to move into paddy and to grow sugar, a lucrative cash crop. Dalena village, on the other hand, did not benefit from the increased availability of irrigation in the surrounding region due to its somewhat more elevated location. Its villagers were compelled to alter their way of life dramatically in order to obtain economic benefits from the irrigation project. The villagers actively sought to purchase land outside their village, they obtained positions in the Public Works Department, they were involved in the transportation of sugarcane to the mill in Mandya, and they acquired jobs in the mill and other places in that town. They recognised the opportunities offered by establishing themselves as a service centre in the region and on the whole they quickly integrated themselves into a much wider economic sphere than did the villagers of Wangala.

In both villages the land market was relatively inactive after an initial spate of purchases and sales following the completion of the irrigation project. Like Bailey's village, a decline in the incidence of joint families was observed.

Hopper (1965) used data for 1954 on Senapur in Uttar Pradesh in a very

particular way. He fitted Cobb–Douglas production functions for four different crops where the inputs were land, bullock time, labour time and amount of irrigation water. For each crop, he compared the value of the marginal product of a given input (at geometric means) and found that they were close. He also compared the value marginal product of an input with its price and again found similarity. Thus, he concluded, traditional agriculture was efficient and ‘the problem of agricultural development is the problem of introducing new resources, skills and techniques in agriculture. Little progress can be expected from efforts which merely tinker with the traditional production functions, or seek to reallocate traditional resources’ (p. 624). There are some methodological difficulties with his work concerning both the measurement of output (see Bliss and Stern, 1982, pp. 81–2) and the estimation techniques (see Nowshirvani, 1967). Further, the conclusion that poor peasants show no risk aversion (in that they maximise expected profit) is hard to believe – see Lipton (1968). The study was very influential both in generating further such work and in its influence on Schultz (1964) and others who leaned heavily on the example as support for the notion that efficient markets and maximising behaviour well-portrayed peasant agriculture.

Later examples from the 1970s included the work of Bliss and Stern (1982) who studied the Uttar Pradesh village of Palanpur in 1974–5 and Binswanger and others who worked on data collected since May 1975 from villages in South India by ICRISAT (International Crops Research Institute for the Semi-Arid Tropics). Bliss and Stern returned to a village which had been studied in the late 1950s and early 1960s. They were concerned particularly with the functioning of markets including share tenancy, farmers’ input decisions and the adaptation to the agricultural change associated with the ‘Green Revolution’ which affected Northern India in the late 1960s and early 1970s. Their broad findings were:

(i) Markets in Palanpur were generally active with prices and farmers responding to market pressures. An exception was the absence of a market for the services of bullocks.

(ii) The land market operated largely in the form of share tenancy, which seemed to function quite well in Palanpur. Output per acre was not lower on share tenanted land. Tenancy appeared important in bringing land to factors where the latter (e.g. bullocks and some people) could not easily be hired.

(iii) Productivity per acre seemed independent of farm size whereas in other studies, see e.g. Sen (1975) for references, it appears to have decreased with farm size.

(iv) Uncertainty seemed very important in understanding farmers’ decisions – marginal productivities of factors appeared to be 2 or 3 times their cost and the ratio seemed fairly similar for different inputs. Note the contrast with the Hopper results.

(v) Substantial agricultural change has taken place in Palanpur – a rapid expansion of irrigation, a use of high-yielding varieties of seed, use of fertiliser and so on. Techniques varied greatly across farmers with some farmers applying high levels of fertilisers and water and others following the newer

methods in a rather desultory way. The changes in agricultural practice were not confined to the larger farmers.

ICRISAT data have been and continue to be collected from a randomly selected panel of 240 households at intervals of 20–40 days since May 1975. They represent one of the best and most comprehensive LDC household data sets. The data have been used to study the functioning of informal and formal credit markets in rural South India (Bhende, 1983; Binswanger *et al.* 1985; Binswanger and Rosenzweig, 1986) as well as other matters (e.g. Shaban, 1987, on sharecropping). The authors have linked the data and close knowledge of the local conditions to modern theories of credit, including information costs, collateral, risk, moral hazard and so on (see, e.g. Stiglitz and Weiss, 1981; Braverman and Guasch, 1986).

In some of the ICRISAT villages informal credit markets are dominant and local information is used intensively. Larger farmers can obtain substantial loans on reasonably good terms whereas those with poorer credit ‘ratings’ can borrow only amounts which are closely tied with outputs. The landless could borrow only small sums unless bound into a long-term labour contract. In other villages where institutional credit had largely displaced informal markets, it was found that difficulties in enforcing repayment in the former system resulted in a ‘culture of non-payment’ which contrasted strongly with low rates of default in the informal system. Institutional credit was provided mainly for loans for production and this practice meant that the poor and assetless were excluded. They consequently became the main recipients of credit in the informal market. Binswanger *et al.* (1985) showed that this shift in the composition of borrowers had significant effects on the nature of the informal market. Loans were smaller, for shorter periods and at higher interest rates reflecting greater risk and a shift towards consumption loans. Credit rationing was an important reality for landless farmers under both systems. Whilst the modern theories of credit with their emphasis on credit rating, risk assessment, information and so on give quite powerful explanations of what is found in the data, these have to be augmented by an understanding of the, often political and corrupt, processes of institutional credit.

These studies are different in their location and focus but they share a number of important features. The first is the careful collection of micro data together with close observation of the way in which the societies and economies, particularly their markets, function. Second, they examine the central ideas and theories of economic development in terms of their ability to explain what happens in a particular locality. Third, and turning to results, they all show the importance of markets in allocating resources. But these do not always follow the simple model of perfect competition under certainty. Uncertainty and problems of information, for example, play crucial roles in the markets for land (sharecropping), input decisions, and in credit markets. Fourth, agents and institutions in the peasant economy can and do respond quickly and radically to changing economic and agricultural conditions and opportunities. Fifth, although they can be flexible, the local structures and customs exert an important influence on economic activity (village councils, caste, the operation

of formal and informal credit institutions and so on). Generally economic analysis can take us a very long way in understanding peasant societies, although it cannot proceed without looking very closely at the society and institutions of which the economy forms part.

V.2.2. *Nutrition*

‘Malnutrition is largely a reflection of poverty: people do not have enough income for food ... The most efficient policies are those that raise the income of the poor’ (World Development Report, 1981, p. 59). According to this prominent viewpoint income growth is seen as the major mechanism for improving nutrition. Of course, growth in aggregate income may not reach vulnerable groups and there is abundant empirical evidence to suggest that this is often a real problem (see Fields, 1980; Lipton, 1988). Even if income growth does reach the household there are reasons why this may not result in substantial improvements in nutritional status. First, increases in income may have only weak effects on purchases of nutritive food characteristics. Behrman and Deolalikar (1987), for example, have argued that the income elasticity of demand for calories in an ICRISAT sample was close to zero. They suggested that extra income led to a move towards more attractive expensive foods with a higher price per nutrient. Others, however, for example Strauss (1982) and Pitt (1983) have found much larger income elasticities for Sierra Leone and Bangladesh respectively. Second, there may be environmental or educational constraints to the achievement of nutritional capability. To conclude from these studies that income is irrelevant would, however, be misleading. Historical, regional and cross-country studies (e.g. Caldwell, 1986; Drèze and Sen, forthcoming) suggest a positive correlation between income and nutritional status, for a wide range of nutritional indicators ranging from calorie intake to anthropometric measures.

The recognition of the role of income cautions us against the mistake of seeing the availability of food in a country or region as the key issue in the study of malnutrition. Sen (1981) has demonstrated clearly, in his analysis of famine, that aggregate availability of food does not ensure that individuals are in a position to exercise command over food (Sen introduces the notion of ‘entitlement failure’). The victims of famine are generally those whose incomes (or other ways of acquisition) are insufficient to buy food.

An appreciation of the limitations of both the income and availability approaches has led to interesting recent research on the multiple origins of malnutrition. Thomas *et al.* (1988) surveyed a wide range of empirical studies which generally suggested that parental education has a positive effect on the height of children. Behrman and Deolalikar (1988) present evidence which indicates that households in which women have more schooling tend to be substantially better nourished. There is growing awareness that poor sanitation and water supply can act as limiting constraints on the achievement of nutritional goals. Austin and Zeitlin (1981) survey some of the literature and come to the conclusion that direct nutrition interventions require, for their effectiveness, the simultaneous provision of facilities for the removal of faeces

and for the supply of clean water (see also Osmani, 1987). Castaneda (1984) and Mata and Rosero (1988) provide evidence supporting this view for Chile and Costa Rica respectively. Note that the influence of these different factors can imply a positive effect of income on nutrition even if it does not lead to the purchase of extra nutrients since extra income may be used to buy better education or environment.

The multiple origins of malnutrition raise important questions for policy intervention. Raising the income of vulnerable groups will be part of the story and this is likely to be linked to the growth of the economy as a whole. But the growth of the economy as a whole on a scale likely to provide significant alleviation of malnutrition can take a very long time. Public intervention can be effective in protecting the incomes of vulnerable groups and this is a key element in the prevention of malnutrition. Several recent studies (e.g. Drèze and Sen, forthcoming, Pinstrip-Andersen, forthcoming) suggest that nutritional well-being may also be enhanced by the provision of sanitation, water supply, education and health services. For reasons of externalities, public goods, quality information and increasing returns, the market may not be an especially good vehicle for providing such services and they may be more efficiently and equitably supplied through the public sector.

V.2.3. *The Use of National Household Survey Data*

Sample survey data from households has been collected in developing countries for many years with the National Sample Survey in India, for example, going back to the 1940s. They have been used in the compilation of national income accounts, generating price indices, forecasting demands for planning, examining the incidence of poverty, generally measuring living standards and so on. These uses have indeed been valuable but our description here will focus on just two examples (i) the analysis of income distribution, and (ii) their use in pricing and taxation policy and particularly in the estimation of the price elasticities and distributional effects required for the evaluation of these policies. Whilst each of these areas has seen some activity by those working on developed countries there are important respects in which those working on data for developing countries have been leading the way. Within the two topics we have indicated we shall give a few examples to illustrate the kind of research ideas and methods that have been applied.

On income distribution we consider briefly work on household survey data by Anand (1983) and Anand and Harris (1986). In the former Anand provides a careful analysis of the sources of inequality in Malaysia paying particularly close attention to the definition of income and the treatment of household composition. He shows that racial disparities measured in terms of relative mean incomes of the major racial groups in Malaysia are sensitive to the income unit used (household or individual). He argues further that in Malaysia the objective of reducing racial disparities is more effectively advanced by a policy of poverty relief as opposed to a special policy of 'correcting racial imbalances'.

Anand and Harris (1986) were interested in identifying good indicators of

the standard of living within a given household data set (for Sri Lanka). Large fluctuations in the income of a household within a year, or from year to year, may make measured household income in a survey a poor indicator of its standard of living. However they show that if households are ranked by their food expenditure then many of the anomalies associated with ranking by income disappear. They attribute the relative stability (and hence usefulness) of this welfare measure to the following: (a) food is given high priority and is not substantially changed in response to short-run income fluctuations; (b) food expenditure is monotonically related to long-term income; and (c) food expenditure is subject to less measurement error than other items in the household budget.

The increase in the use of survey data in the analysis of tax policy has arisen for a number of reasons including, the development of the theory of price and tax reform (see e.g. Newbery and Stern, 1987), increased data availability (for example through the World Bank Living Standards Measurement Study), developments in econometric methodology, and advances in computing. We cannot provide an extended treatment but illustrate briefly with some recent examples from the work of Deaton. Deaton (see his 1989 paper for a summary) focuses on two important questions in the analysis of price reform. The first is the relation between income and the consumption (or production) of a good whose price is under consideration and the second is the measurement of price elasticities. For the first of these the standard method is to simply estimate an Engel curve with a given functional form. However Atkinson (1977), Deaton (1981) and Atkinson *et al.* (1980) and others have argued that the functional form in tax analysis can itself exert an important influence on the results. Instead Deaton (1989) shows how, using non-parametric methods, the estimated relation between production/consumption and income can be as flexible as we please.

Deaton's second problem concerns the estimation of price elasticities from survey data. Generally it has been suggested that it is only possible to do this by imposing special functional forms which allow the calculation of price elasticities from income elasticities. The difficulty with most developed country surveys is that whilst we can estimate income elasticities directly from the survey since we have income variation in the data, we do not have the price variation which would allow the estimation of price elasticities. In developing countries however, regional price variation does exist and provided care is taken to distinguish price from quality variation then direct estimation of price elasticities can be carried out. Deaton provides ingenious methods for doing this (see Deaton, 1988).

VI. CONCLUSIONS

The study of development economics has come a long way since the 1940s. We have had more than 40 years of experience which has been much more carefully documented and analysed than the periods prior to the Second World War. That experience has shown great diversity of policy and circumstance both across country and over time which has presented opportunities for, and

difficulties in, deriving lessons from it. There have also been many conceptual and technical advances in economic theory and econometrics which have been productively applied to the increasing quantity and quality of data which have become available. Much has been learned, many early views have been modified, and a great deal more remains to be understood. We begin our concluding comments with a brief assessment (Section VI. 1) of what has been done, comment on some omissions (Section VI. 2), and then turn to a research agenda (Section VI. 3).

VI. 1. *An Assessment*

We have presented the achievements of development economics in terms of first, the concern for the grand issues of development strategy and the process of growth, second, the formulation and analysis of policy techniques and third, the specially focussed micro study. These formed the subject matter of Sections III, IV and V of this survey. For all of these, but particularly Section III, we require a background knowledge of the recent evolution of developing countries and work on the assembly and scrutiny of this experience was reviewed briefly in Section II.

The grand issues which we presented were (i) the role of the state (ii) the process of growth and change (iii) the influence of industrialisation and trade (iv) the relations between developed and developing countries (v) structural adjustment and stabilisation (vi) population and the economy (vii) the objectives of development and strategies for achieving them. Each of the issues involved a voluminous literature and a summary assessment must inevitably be somewhat cavalier.

The ability of governments to plan comprehensively and effectively is now viewed with much greater scepticism than in the years following the Second World War. Thus many would now place equal or greater emphasis on government failure relative to market failure in the balance of the argument than was previously the case with the earlier writers, who concentrated heavily on market failure. The scepticism is born of experience but one must be careful not to be too sweeping. We have learned much about what governments can do effectively as well as where they are likely to perform badly. Whereas it is possible that they may be damaging to efficiency and growth if they try to exert detailed and universal control of production decisions, governments can be effective with direct action to raise standards of education, health and life expectancy, and in improving infrastructure such as water supply, roads, power. There is much to be learned about how to organise such action but we already know enough to realise that really substantial achievements are possible and to be able to begin to indicate the kinds of policies which will work and those which will not. Further we should not assume that all government involvement in the production process is doomed to fail. The South Korean example suggests that the careful integration of state intervention with private-sector initiative can produce most impressive results.

The study of growth and change suggests that many of the early ideas of development theorists such as Lewis have been fruitful in the sense that

attention was focused on crucial issues such as industrialisation and saving. Industrialisation has been a major characteristic of growth, and savings rates have risen substantially, indeed far beyond the levels envisaged by the early writers. However the early emphasis on industrialisation did not necessarily lead to sensible policies concerning, for example, trade and agriculture. And the increase in savings has not been fully understood either in terms of causation or effects.

The simple models beg many important questions. Some countries with high savings and investment rates have not experienced the short- and medium-term rise in growth rates that might have been expected. Thus we still have much to understand not only about the determinants of savings and investment but also why investment is so much more productive in some countries than in others. Whilst we can, of course, offer a number of ideas it is an area where further theoretical and empirical investigation should be concentrated. To put it another way we are re-emphasising that the understanding of why some countries grow more quickly than others is central to economic development. A second area where the early models were perhaps pessimistic, or at best left out major issues, concerns agriculture. The importance of agriculture to most developing countries remains, and will remain, large and we have seen that it can be dynamic as well as pose severe problems. Government policies have not always been helpful towards agriculture including, for example, over-valued exchange rates shifting relative prices against agriculture, heavy government taxation through marketing boards, neglect of rural infrastructure such as water, power and roads, and so on.

On industrialisation and trade we have seen that industrialisation does indeed play an important and major part in development although one should never lose sight of the substantial and growing role of services in all countries. We have also seen that countries which try to isolate themselves from world trade may damage their growth prospects and that in some circumstances rapid growth is associated with expanding involvement in trade. Nevertheless one must recognise that some countries have grown quickly under quite protectionist regimes and further that export expansions have sometimes followed protection or selective promotion of the exporting industries whilst these became established.

The relations between developed and less-developed countries in the long term are likely to turn on trade. Aid has been limited, with most developed countries giving rather little, at least in relation to UN targets in terms of proportions of GNP, and the prospects for sudden upsurges in generosity seem remote. It is of major importance as a source of funds to only a few, generally smaller, developing countries. In the case of debt, whilst some of the short-term problems are severe, in the longer term the problems may be managed more effectively once countries and banks digest the lessons from their mistakes of the 1970s. Trade restrictions, on the other hand, are likely to occupy centre-stage in the international economy indefinitely. The progress in dismantling tariff barriers since the Second World War may have played a major role in the rapid growth of the international economy but new and often sophisticated restraints

on trade have emerged. The threat of protectionism is always present and will be a continuing problem to the expansion of developing countries.

Stabilisation and structural adjustment programmes have been precipitated by balance of payments crises with depressing frequency and have often been associated with the IMF and World Bank. The programmes generally have major austerity elements and the political and economic difficulties of who bears the costs and how they are spread over time have often appeared insurmountable, with the effect that programmes are often abandoned. Research and policy design are increasingly concentrated on how programmes can be formulated so that damage to longer-term growth programmes in the process of shorter-term adjustment is limited and so that the more vulnerable elements in the community can be protected.

The research on population reviewed here concentrated on the economic effects of an expanding population with changing composition. The Malthusian alarm of the late 1960s and early 1970s which was associated with the view that population control was the first priority has, to some extent, dissipated and a less pessimistic view prevails. However, expanding population can and has exacerbated existing problems. For example, pressure on land has greatly increased and longer life expectancy, in itself a major success, will make support for the old more difficult. Family planning programmes can themselves have only limited success until circumstances are such that families desire fewer births.

The debate on the objectives of development has seen refreshing advance over the last two or three decades. This is not simply in terms of concern with income distribution – this aspect of development was central from the beginning. We now see a much greater concentration on issues such as health and life expectancy, education and gender, and the study of policies to further these objectives.

The study of methods for planning, for cost–benefit analysis and for pricing and taxation provides an important example of areas where development economics has led the way in theoretical and technical understanding in economics. The early planning models and their development towards, for example, social accounting matrices, have provided valuable tools for assembling information and understanding how an economy works. Computable general equilibrium models have been developed largely in the context of policy analysis for developing countries and can provide useful insights provided they are used sensibly. The theory and practice of cost–benefit analysis has shown how the crucial idea of social opportunity cost can be developed systematically for distorted economies and applied constructively. Applications of this approach are not confined simply to the evaluation of investment projects but can be used over a wide range of policy questions including tax and price reform. Experience and methods for analysing this last issue, where taxation faces many difficulties and constraints, have progressed strongly in recent years.

Finally, we have the detailed micro studies which we have suggested provide in many ways the foundation of the subject. The study of economic

development has seen many fine examples of the combination of close and detailed study of particular phenomena with the best practice in theory and statistical technique. The examples of contributions included here were village studies, nutrition, inequality, and household behaviour, but there are many more. These do not usually provide dramatic advances which upend the subject but their gradual accumulation provides much of the real substance of development economics.

VI.2. *Omissions*

Given the very wide scope of the subject, which we defined as economic analysis applied to poor and developing countries, we have had to be very selective and inevitably there are major omissions. The main reasons for omissions have been the strategy followed here of choosing examples of important contributions, rather than attempting a comprehensive survey, together with my own lack of acquaintance with a number of the subjects or in the detail required for a coherent treatment. In this brief sub-section we offer one or two references of the survey type, recent where possible, designed to help the reader into the literature.

On natural resources and the environment one might begin with Kneese and Sweeney (1988) and Tisdell (1988). Gender appeared briefly in our discussion of nutrition in Section V and there is a large literature – see, for example, Harriss (1986) and Boserup (1970). Marxist analysis of development constitutes a perspective which has been essentially untouched here, see Baran (1957), Bowles (1985), Roemer (1982), Bardhan (1988) for an introduction. Transnational corporations and their effects on developing countries have been a substantial area of research – see Helleiner (1988) for a survey. Finally, whilst we have discussed population and nutrition to some extent, human capital in the form of education, skill formation and acquisition, and health more generally have been major omissions – see Schultz (1988) for a survey of education, and Behrman and Deolalikar (1988) for a survey of health and nutrition.

VI.3. *A Research Agenda*

A research agenda is, and should be, a personal view. It would be very worrying and dangerous if everyone were pursuing the same issues. The following topics therefore represent an individual judgement of priorities and possibilities rather than an attempt to provide a balanced programme for the subject. Many of the topics follow in a direct way from our assessment of what has been achieved.

We begin with some questions arising from the discussion of the grand issues. We still have a great deal to understand about why some countries grow faster than others. Savings rates have been raised in many countries but the productivity of investment shows enormous variation. We would like to know much more about the role of infrastructure, human capital, technical progress, effective management and constructive government in this variation. How can the productivity of investment be raised and what determines investment?

The theoretical and empirical analysis of the process of reform of government policies is a challenging issue. Many governments have decided to, or have been under pressure to, use markets more effectively, or generally reduce the role of the state in production activities. China has been an example of outstanding importance here. The consequences of changing policies and the relations between different policies in that change are often, however, only hazily understood and many are not considered at all. For example, if social security and public service functions are organised through the commune or firm then dismantling the commune or allowing some firms to decline in response to market forces can have wide-ranging implications outside those of simply raising productivity. Public finance, both in terms of raising revenue and controlling expenditure, becomes more important when resources are not commanded and investment is left for firms to decide. Generally then, the understanding and structuring of the process of policy change, particularly in respect to the greater use of markets, is a high priority.

Trade policy has become an increasingly important area for study with, on the one hand, the generation of theories which include oligopolistic competition, increasing returns and intra-industry trade and on the other the ever-growing importance of developing countries in international trade and the exhortation by many international institutions and economists to continue the process. Protectionism by richer countries is likely to be a continuing threat to further advancement so that the careful study of the consequences of different trade policies by developed and developing countries will be an ever-present issue.

In the study of both growth and trade we should like to know more about how the government and private sector can work together more effectively. There is a great deal of experience and the careful assembly of that empirical knowledge can be very productive. There are two approaches to this and other aspects of policy which should form important strands in this research. The first is what one might call the detailed historical analysis of the economics of growth, i.e. a historical perspective but with an emphasis on the identification and economic analysis of the central reasons for the economic outcomes, good or bad. The second is the positive analysis of governments in order to find out why they chose the economic policies they did. In this way we may illuminate the constraints and pressures on government and might, for example, be able to point to simple and robust policies which might combine appropriately economic desirability and administrative feasibility with political stability and resistance to manipulation.

The surge of interest in objectives other than consumption or income is likely to continue and this is a promising development. We know enough to say that governments can exert a positive influence in areas such as health, education, nutrition, and social security but we have much to learn about how that influence can be productively operated. We want to know about what will, and what will not, work in different circumstances and why. The interrelation between policies for growth, distribution of income and the protection and raising of living standards in the broadest sense represents a challenging research agenda. It has always been a major theme but is becoming very active.

In this the analysis of policies for income support for the most vulnerable groups will be central.

The newer approaches to industrial economics which stress strategic relations between firms, and between firms and government, could provide a valuable impetus to a comparatively neglected area in the economics of development. Many advances in economic theory and econometrics in recent years have made their mark on work on developing countries including those concerning risk, information, bargaining, taxation, consumer behaviour, survey analysis, labour economics and so on. The effect of the new industrial organisation theories, however, appears to be less substantial other than in issues involving international trade. But markets in developing countries are no less subject to strategic behaviour, oligopoly and so on than those in developed countries and there would appear to be an important area for further research. As we have indicated the efficiency of use of capital equipment is a central issue and it is one, for example, on which the newer theories might throw light.

All this discussion of what governments can and cannot, or should or should not, do is predicated on judgements about government revenues or resource mobilisation. Those who suggest that governments should do less or little often have as part of their argument the difficulties and costs of raising resources. Those who argue that governments should do a great deal more have an obligation to show how the resources can be raised without excessive damage. Thus the study of tax reform and the pricing of goods and services in the public sector must remain a priority. Techniques of analysis have advanced considerably but further empirical study should remain high on the agenda, particularly concerning the combination of administrative feasibility and economic advantage.

Finally the detailed microstudies should continue to add to the fund of experience on which our judgement of the working of poor economies is based. This will in part be driven by some of the large questions which we have been describing. For example, the more precise identification of the weak in individual communities will provide us with guidance on which schemes of support might reach them. And the detailed study of support schemes which have been attempted in practice can tell us how policies might go wrong and how they might be improved. In industry the close study of firms and their relation with government could guide us on how different policy initiatives can stimulate the private sector. These studies should not however necessarily be led by immediate policy concerns. It is the curiosity of the individual researcher who is intrigued to test a theory on the ground or to find out how a particular market or economy functions which has provided us with many of our most valuable insights in the past.

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There has been no attempt to be exhaustive. We have tried to give references that will take the reader into a literature which has been treated only summarily in the text rather than identify all the important contributions.

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