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Economic Growth and Standards of Living in the Twentieth Century *

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I. The Characteristics of the 20 Country Sample

In this essay I have tried to provide a quantitative view of the dimensions of economic progress in the twentieth century. I present a sample of 20 countries where there is a statistical basis adequate for the survey. I have expressed real output (gross domestic product) in "international" dollars of 1990 for all the years in the comparison. The statistical offices of the European Community (EUROSTAT) and OECD conduct a periodic exercise to estimate the purchasing power (PPP) of currencies, and I used their 1990 PPP converters instead of exchange rates. For the other countries I derived these converters by updating earlier estimates of purchasing power conducted by the United Nations, and by the University of Pennsylvania experts, Robert Summers and Alan Heston. By linking the estimates of 1990 GDP levels with the best available estimates of the growth of real GDP over time (in constant national prices), one is able to make estimates of real GDP in comparable units for the whole period 1820-1992 (see Table 1).

My estimates cover 20 countries. They are representative in two senses, i.e. in 1990 they covered 64.6 per cent of world population and 74 per cent of world GDP, and they include countries from most areas of the world: a) 7 advanced capitalist countries; b) 4 from the European "periphery"; c) 3 Latin American countries with an institutional and political heritage derived from Iberia; d) 4 Asian countries; e) 2 African countries. The sample provides a "representative" spread geographically and in terms of political, policy, and institutional heritage.

The sample is biased to some extent towards richer countries. For 1990, the average per capita GDP (total GDP for the 20 countries divided by total population was $ 5,958, whereas the average for the 199 countries in my world total was $ 5,200 - about 13 per cent lower. There is also reason to

* This paper will appear in W. Fischer, ed., *Wirtschaftssystem und Lebensstandard*, Deutsche Genossenschaftsbank, Berlin, 1995.

Table 1
GDP per Capita in 1990 International Dollars in 20 Representative Countries

	1820	1900	1950	1973	1992	1900-92 coefficient of multiplication
Advanced Capitalist						
France	1,324	2,913	5,221	12,940	17,959	(6.2)
Germany	1,367	3,134	4,281	13,152	19,351	(6.2)
Japan	704	1,135	1,873	11,017	19,425	(17.1)
Netherlands	1,520	3,533	5,850	12,763	16,898	(4.8)
Sweden	1,198	2,561	6,738	13,494	16,927	(6.6)
UK	1,756	4,593	6,847	11,992	15,738	(3.4)
USA	1,287	4,096	9,573	16,607	21,608	(5.3)
European Periphery						
Portugal	n.a.	1,408	2,132	7,568	11,130	(7.9)
Spain	n.a.	2,040	2,397	8,739	12,500	(6.1)
Czechoslovakia	860	1,719	3,480	6,995	6,457	(3.8)
USSR	n.a.	1,252	2,834	6,058	4,733	(3.8)
Latin America						
Argentina	n.a.	2,756	4,987	7,970	7,616	(2.8)
Brazil	670	704	1,673	3,913	4,637	(6.6)
Mexico	760	1,157	2,085	4,189	5,112	(4.4)
Asia						
China	652	677	614	1,186	3,098	(4.6)
India	531	625	597	853	1,348	(2.2)
Indonesia	614	745	874	1,538	2,750	(3.7)
Korea	n.a.	850	876	2,840	10,010	(11.8)
Africa						
Ghana	(400)	462	1,193	1,260	1,007	(2.2)
South Africa	n.a.	(1,244)	2,251	3,844	3,451	(2.8)

Source: A. Maddison (1994b). South Africa 1900 was derived by extrapolation of the 1913-50 movement. The figures in this table are adjusted to exclude the impact of frontier changes and refer to countries within their 1990 territorial boundaries, i.e. Germany refers throughout to the territory of the Federal Republic before inclusion of the new Länder (former DDR), Korea refers only to South Korea etc. Table 10 provides an idea of the importance of territorial change, in terms of population.

Table 2
Per Capita Real GDP Growth
(annual average compound growth rate)

	1820-1900	1900-50	1950-73	1973-92	1900-92
Advanced Capitalist					
France	1.0	1.2	4.0	1.7	2.0
Germany	1.0	0.6	5.0	2.1	2.0
Japan	0.6	1.0	5.0	2.4	3.1
Netherlands	1.0	1.0	3.4	1.4	1.7
Sweden	1.0	2.0	3.1	1.2	2.1
UK	1.2	0.8	2.5	1.4	1.3
USA	1.5	1.8	2.4	1.4	1.8
European Periphery					
Portugal	n.a.	0.8	5.7	2.1	2.3
Spain	n.a.	0.3	5.8	1.9	2.0
Czechoslovakia	0.9	1.4	3.1	-0.4	1.4
USSR	n.a.	1.6	3.4	-1.3	1.5
Latin America					
Argentina	n.a.	1.2	2.1	-0.2	1.1
Brazil	0.1	1.7	3.8	0.9	2.1
Mexico	0.5	1.2	3.1	1.1	1.6
Asia					
China	0.1	-0.2	2.9	5.2	1.7
India	0.2	-0.1	1.6	2.4	0.8
Indonesia	0.2	0.3	2.5	3.1	1.4
Korea	n.a.	0.1	5.2	6.9	2.7
Africa					
Ghana	n.a.	1.9	0.2	-1.2	0.9
South Africa	n.a.	1.2[a]	3.2	0.1	1.1[b]
20 Country Average	0.7	1.0	3.4	1.6	1.7

a) 1913-50; b) 1913-92.

Source: A. Maddison (1994b). See note to Table 1.

believe that my sample is a bit biased in terms of the average growth rate over the period covered. However, some bias is inevitable a) because the best quality estimates of growth and levels are for the richest countries , b) within the scope of this paper, it would have been impossible to present estimates for 199 countries.

II. Main Features of Long Term Growth Experience

Several important facts can be derived from Tables 1 and 2:

a) Economic growth has been a general phenomenon in the twentieth century. The rates of growth have varied considerably, from a 17 fold increase in real GDP per head in Japan to a doubling in Ghana. There are also countries where there were temporary setbacks, but the long run picture is positive in all 20 cases;

b) The intercountry spread in incomes has widened. In 1820, the spread was 4:1, in 1900 10:1, in 1950 16:1, in 1973 20:1, and in 1992 22:1. The global picture is certainly one of increasing divergence, but divergence is not characteristic for all countries. The proportionate gap between the twentieth century leader, the USA, and the "follower" countries in Western Europe and Asia was very significantly reduced after 1950;

c) The pace of growth has not been steady. In all of the countries except those in Africa, the years between 1950 and 1973 were a golden age in which real income grew a good deal faster than ever before. Since 1973 growth has slackened substantially in all countries, except in the lower income countries of Asia. Some economists, e.g. Schumpeter, have taken such shifts in growth momentum as evidence of a regular pattern of long waves in economic life. I am very sceptical of this notion, and prefer to think in terms of distinctly identifiable but irregular phases in which historical accidents or system shocks have caused the world economy to alter its growth orbit. In any case, whether one thinks like Schumpeter or like me, it is clear that these changes went far beyond the dimensions of a business cycle, and they clearly need some explanation;

d) Within the pattern of change one can discern some regional elements of homogeneity which suggest that there are groups of countries with common institutional or policy characteristics that distinguish them from other groups. The universality of the acceleration phenomenon in the golden age suggests on the other hand, that there are some ecumenical influences powerful enough to

have had a global effect. These forces generally seem to have originated in the first group and to have been diffused to the rest of the world;
e) The first group has provided "leadership" in productivity and technology for the past six centuries. Northern Italy and Flanders played this role from 1400 to 1600, the Netherlands in the seventeenth and eighteenth century. Since then, there have been two successive "leaders". The UK had the highest income and productivity levels for most of the nineteenth century, and the USA in the century since then. To a significant degree the technology of the nineteenth century originated in the UK and was transferred to the follower countries. This was even more true of the USA in the twentieth century. As US productivity performance has been more dynamic than that of the UK in the nineteenth century, this is probably the root cause of better performance of the world economy in the twentieth century.

III. Levels of Causal Analysis

When assessing the reasons for differences in performance over time and in space, one can operate at two levels: "ultimate" and "proximate" causality. An investigation of ultimate causality involves consideration of institutions, ideology, socioeconomic pressure groups, historical accidents and national economic policy. It also involves consideration of the international economic "order" (or disorder), "foreign" ideologies, or shocks from friendly and unfriendly neighbours. At the proximate level, one can derive significant insight from economic growth accounts which quantify the differences in natural resources, labour force participation, working hours, skills and education of the population, the size of the physical capital stock, the structure of the economy, the role of foreign trade, and the rate at which technology is progressing in the lead country. These two levels of causality interact, but in the really long run, the layer of interpretation which is the most significant is ultimate causality.

IV. Socioeconomic Basis for the Western Lead in Per Capita Income

The fact that the West established an early lead which reached such gigantic proportions by 1950 is due in part to distinctive socio-institutional changes which occurred gradually during the Renaissance and Enlightenment.

The most fundamental was the recognition of human capacity to transform the forces of nature through rational investigation and experiment. By the seventeenth century, Western elites had abandoned supersition, magic and submission to religious authority. The Western scientific tradition which underlies the modern approach to technical change and innovation had clearly emerged and impregnated the educational system. Circumscribed horizons were abandoned and the quest for change and improvement was unleashed.

The ending of feudal constraints on the free purchase and sale of property was followed by a whole series of developments which gave scope for successful entrepreneurship. A non-discretionary legal system protected property rights. The development of accountancy helped further in making contracts enforceable. State fiscal levies became more predictable and less arbritrary. The growth of trustworthy financial institutions and instruments gave access to credit and insurance which made it easier to assess risk and organise business rationally on a large scale over a wide area. Techniques of organisation, management, and labour discipline grew.

A third distinctive feature of Western Europe was the emergence of a system of nation states in close propinquity, which had significant trading relations and relatively easy intellectual interchange in spite of their linguistic and cultural differences. This stimulated competition and innovation. Migration to or refuge in a different culture and environment were options open to adventurous minds; printing presses and universities added to the ease of interchange.

The Western family system was different from that in other parts of the world. It involved voluntaristic controls over fertility and limited obligations to more distant kin, which reinforced the possibilities for accumulation.

Since 1820, the institutional arrangements of advanced capitalist countries have not stood still. The degree of democratic participation and the socio-economic role of government have changed in ways which have generally been positive for growth. In the post-war period, interrelations between these countries have involved articulate cooperation and some

Table 3
Rate of Population Growth
(annual average compound growth rate)

	1820-1900	1900-50	1950-73	1973-92	1900-92
Advanced Capitalist					
France	0.3	0.1	1.0	0.5	0.4
Germany	1.0	0.9	0.9	0.5	0.8
Japan	0.4	1.3	1.1	0.7	1.1
Netherlands	1.0	1.4	1.2	0.6	1.2
Sweden	0.9	0.6	0.6	0.3	0.6
UK	0.8	0.5	0.5	0.2	0.4
USA	2.6	1.4	1.4	1.0	1.3
European Periphery					
Portugal	0.6	0.9	0.1	0.7	0.6
Spain	0.5	0.8	1.0	0.6	0.8
Czechoslovakia	0.7	0.0	0.7	0.4	0.3
USSR	1.1	0.8	1.4	0.8	0.9
Latin America					
Argentina	2.8	2.6	1.7	1.4	2.1
Brazil	1.7	2.1	2.9	2.4	2.4
Mexico	0.9	1.4	3.2	2.5	2.1
Asia					
China	0.2	0.6	2.1	1.5	1.2
India	0.4	0.9	2.1	2.2	1.5
Indonesia	1.1	1.2	2.0	2.1	1.6
Korea	n.a.	1.7	2.2	1.3	1.8
Africa					
Ghana	n.a.	1.8	3.4	2.8	2.4
South Africa	n.a.	2.2	2.4	2.4	2.3

Source: Maddison (1994b). See note to Table 1.

rudiments of a managed international order. This too has been very favourable to economic growth.

The European "periphery" has an institutional heritage which is different from that of the advanced European countries. There are two quite separate kinds of periphery. In the east, Russian traditional institutions were as much Asian as European and were further differentiated from the Western model from 1917 onwards by a massive experiment to create a completely different socioeconomic order. East European countries had dirigiste central planning imposed upon them for more than 40 years. In the Czech case, the country was plucked from the advanced capitalist group into the communist camp. The two Iberian countries. Portugal and Spain were also institutionally different from the advanced capitalist group in their degree of religious bigotry, censorship, neglect of popular education, and fiscal irresponsibility. Their colonisation policy in Latin America reordered indigenous institutions very much in their own image.

Although Latin America became independent in the 1820s, it retained many of the Iberian institutional characteristics. The Latin American heritage of peonage and slavery led to extraordinarily wide disparities in income, wealth and economic opportunity compared to those prevailing in advanced Western countries. There was neglect of popular education, heavy handed regulation government, and fiscal irresponsibility. There was chronic inflation and default on foreign debt, which almost destroyed the credibility of economic policy and in the 1980s brought Latin America close to societal collapse.

Historically the performance of Asian and African countries has been hampered by two types of constraint. Indigenous institutions were less favourable to growth than those in the West, and most of them became colonies. By Western standards all of these countries except Japan were relatively stagnant until 1950.

In China bureaucratic control and excessive respect for tradition impeded the emergence of modern scientific approach and held back a civilisation that had earlier shown greater promise than Europe. The essentially defensive and static character of Indian social institutions also exerted a depressive influence on growth potential. Within Asia, Japan was unique in its early mimicry of Western institutions in the Meiji reforms of 1867 and its family structure and fertility habits were closer to the Western than to other Asian countries. Its growth performance has been the most striking in our 20 country array. Its per capita income level is now near the top of the range for the advanced capitalist countries.

V. Policy and Circumstances Underlying Postwar Growth

The postwar boom in Western Europe was not due to an acceleration of technical change, but was to a large extent a catch up phenomenon. Over several decades, European productivity had fallen behind that in the USA which was the country closest to the frontiers of technology. However, there was no automaticity or inevitability about the catch-up. It did not happen after the first world war. Its importance after the second depended strongly on policy improvements. With the stimulus of Marshall aid and new forms of international cooperation, liberal policies were reapplied to international trade, and international capital markets were reopened. High levels of domestic demand promoted full employment, better internal resource allocation, and led to an investment boom on an unparalleled scale. This European boom, together with enlightened international economic policy in the USA, the abandonment of colonialism and its replacement by aid programmes was basically responsible for the worldwide diffusion of the postwar golden age.

The long postwar boom in Europe was due, in large part, to exploitation of once-for-all opportunities which had been missed because of two world wars and the protectionist, dirigiste and otherwise defensive policies of the interwar years. It was biggest in countries which had suffered most from these policies. By the end of the boom, the productivity gap between the advanced European countries and the USA had been considerably reduced. There was a convergence in levels of per capita income and productivity which was normal between countries which had close cooperation, similar institutions, similar human capital, and convergent economic policies. If there had indeed been a postwar acceleration of technical progress then one would have expected the postwar supergrowth in the advanced European countries to continue. However, the fact that there was little postwar acceleration in productivity growth in the USA - the frontier country - meant that eventually the advanced European countries reached a stage where the pay-off on such high levels of investment began to falter.

The slowdown after 1973 was quite general and quite sharp. It did not simply reflect a gradual erosion of supergrowth possibilities. Its sharpness was due to three closely clustered and interactive developments which forced major changes in policy. These were the acceleration of inflationary momentum which accompanied the prolonged boom, the collapse of the postwar monetary order - the dollar-based fixed exchange rate system established at Bretton Woods - and the OPEC shocks. On any reasonable accounting, the most sophisticated governments could have been expected to lose output in dealing with these shocks in such very open economies, because they involved new risks and transition problems in devising and learning to use new policy weapons, such as floating exchange rates. This was equally true of entrepreneurial and trade union decision-makers whose reactions significantly affect macroeconomic outcomes.

Another influence which reinforced the sharpness of the slowdown was the basic change in the "establishment view" of economic policy objectives. The new consensus emerged as a response to events, but it also helped to mould them. The shock of inflation, the new wave of payments problems and speculative movements brought a profound switch away from Keynesian type attitudes to demand management and full employment. In most countries, overriding priority was given to combatting inflation and safeguarding the balance of payments. Unemployment was allowed to rise to prewar levels. Even when oil prices collapsed, and the momentum of world inflation was broken in the early 1980s, the new orthodoxy continued to stress the dangers of expansionary policy in spite of widespread unemployment and strong payments positions. It looked to a self-starting recovery rather than one induced by policy. A further reason for the cautiousness of policy compared to the golden age was the increased vulnerability to speculative capital movements in a world without exchange controls, and a dichotomous monetary order - the precariously frozen parities and tentative steps to monetary union in Europe on the one hand, and the floaters (US and Japan) on the other.

The postwar growth acceleration in the Iberian countries had much the same causes as in Northern Europe, but the results were better because the starting point was lower, and the degree of institutional modernisation was bigger. These economies benefitted greatly by their proximity to the European core which provided them with booming export markets, and very large earnings from tourism and emigrant remittances. More recently they have received large grant aid from the European community. The sharp slowdown after 1973 was due to some of the same reasons as in the core. The present close integration of the European economies meant that they felt the full retarding influence of the slowdown in the core.

The performance of the communist economies is less well documented than that of OECD countries. Their own yardsticks for measuring growth and levels of performance have hitherto differed from those in the West. We have had to rely on the skill of Kremlinologists for measures of performance comparable in kind with those we use for OECD countries, and the CIA growth estimates (which I use here) have now come under challenge for exaggerating growth and levels of performance. The communist countries did not benefit from Marshall Aid and were relatively isolated from the new liberalism in the world economy. The acceleration in their growth involved a government effort to mobilise very high rates of investment. Poorer results were due to less efficient resource allocation, greater diversion of resources to military spending, and the deleterious effect of censorship and thought control on processes of innovation.

After 1973, the performance of these economies deteriorated sharply. Their slowdown was influenced to some extent by that of the capitalist countries, but it also reflected increasing problems of running a command economy efficiently at increasingly sophisticated levels of demand. After 1989 they fell into a condition of deep crisis. There are some similarities to the Latin American situation (hyperinflation, fiscal crisis, foreign indebtedness), but their situation is much worse because of the unprecedented problems of switching from a command to a market economy, dismantling the old apparatus of power (party, secret police, armed forces, and administration), and privatising economies where virtually all assets belonged to the state. Furthermore, there are enormous problems which arise from the disintegration of the former Soviet Union into 15 separate states and the breakup of Czechoslovakia. The latter split is remniscent of the problems which arose in Central Europe when the Austro-Hungarian empire collapsed, but, in the former Soviet Union, the problem is bigger because of the extraordinarily centralised nature of the old economy, and the close interdependence of suppliers and producers in what are now separate countries.

In the period 1913-50 Latin American countries performed rather well compared with most of the rest of the world. They did not suffer significantly from the two world wars, and they offset the effects of the 1930s depression by successful import substitution and industrialisation. In the early postwar years they had advantageous terms of trade.

As they had no wartime backlogs to make good, were fairly content with the dirigiste and corporative policies of the 1930s and 40s, and were not influenced by the liberalism that went with Marshall Aid, Latin American economies were rather isolated from the world economy for a considerable period after the war. They did better in 1950-73 in per capita terms than before 1950, but the improvement was modest by European and Asian standards.

Latin American growth did not deteriorate sharply in 1973 like that of the capitalist core, because government policy did not react with the same caution to the OPEC shocks. Governments felt they could accommodate to high rates of inflation, and they were able to borrow on a large scale to cover payments deficits incurred as a result of expansionary policies. The crunch came in the 1980s, after the Mexican debt moratorium, when their supply of new foreign funds dried up and service costs of existing debt soared because of rising interest rates. Since 1982 most of Latin America has had negative real income growth. The dramatic Latin American slowdown was not due to a sudden drying up of supply potential or to any unfairness in the operation of the international economy. It was clearly the result of misguided domestic policies. These economies suffered from four basic problems: a) excessive foreign indebtedness led to a stoppage of amortisation payments, but interest payments remained a very heavy burden for the balance of payments and governmental budgets. The bleak outlook here led to major capital flight, which undermined the domestic and international creditworthiness of governments; b) fiscal crisis was general. Governments found it very difficult to maintain tax revenues, and to sell their own bonds. They turned increasingly to printing money; c) both Argentina and Brazil entered a zone of hyper-inflation and exhausted of a whole menu of heterodox methods of dealing with it; d) distortions in resource allocation, due initially to excessive government intervention and protectionism, were further complicated by hyper-inflation. Argentina and Mexico made some progress in dealing with these problems by the 1990s, but Brazil is still struggling with them.

The great postwar acceleration in Asian growth was possible because their starting level was so low in terms of productivity and income levels. They had a potential for rapid growth if sensible policies were adopted. The situation was favourable to growth for several reasons:
a) the end of colonialism and the advent to power of new national elites created new opportunities for an indigenous capitalist class willing to keep their savings at home and free to pursue their own interests; b) virtually all the Asian countries mounted a big push in investment rates and an even bigger acceleration in growth of capital stock; c) they made a major effort to improve human capital. In 1950 their educational stock was a quarter of that in Europe, but it has grown prodigiously, and in some of the supergrowth countries is now close to European levels; d) the colonial drain was replaced by a net inflow of foreign capital and aid; e) the postwar period was one of buoyant world trade, thanks to the faster growth in the capitalist core, and the reduction of trade barriers. A good many Asian countries, and in particular those with supergrowth, took advantage of those new trade outlets by remaining competitive and agressively seeking out new markets. The opening up of their economies improved their efficiency and facilitated their growth; f) In many of the Asian countries there have been very high labour inputs, with a working year much higher than in other parts of the world; g) inflation was better controlled in Asia than in Latin America. Most countries had relatively flexible wage and price structures. Their fiscal and monetary policies were generally prudent, and most of them generally maintained their export competitiveness. h) their foreign borrowing was more judicious. On a per capita basis it averaged only a third of that of Latin America, so Asian governments remained creditworthy, and did not face the crunch which hit Latin America in the 1980s.

It was the combination of these macropolicy virtues with continuing catch-up possibilities which was the basis of Asian success. It should also be remembered that the Asian countries generally do not have such extreme inequalities in income and wealth as Latin America. This fact probably gave them greater socio-political coherence, and meant that they were less subject to short term vagaries in policy of a populist kind.

In terms of proximate growth accounting there is nothing mysterious or miraculous in postwar Asian experience. Asian growth has required fast growth of labour and capital inputs. Except for Japan, total factor productivity even in the supergrowth countries was not out of line with that of some of the European countries in the golden age. This has also been true since 1973.

In the postwar golden age, economic growth in Africa was much slower than in any other major world area. In Ghana income per capita was lower in 1992 than in 1950. African countries were the last to emerge from colonialism, and their education, health and infrastructure are very poor. Population is growing much faster than in the rest of the world. Another major problem is the newness of nation states whose rulers have tried to forge national unity by creating one-party regimes. This reinforced a tendency for dirigisme, led to big market distortions, artificial exchange rates, and policies harmful to agriculture. It was also a major barrier to corrective changes in policy. There has already been a great deal of foreign aid to sub-Saharan Africa and it is likely that this will continue, but a real turn-around in growth prospects will depend heavily on changes in domestic policy.

VI. The Social Impact of Twentieth Century Economic Growth

In the twentieth century, the average per capita real income of our 20 countries rose between five and sixfold, and the impact on standards and styles of living has been dramatic.

A. Structure of Employment

Table 4 shows how the structure of employment has changed. In all countries the proportions have fallen in agriculture and risen in services. In

Table 4
Structure of Employment in 1900 and 1992 (% of Total Employment)

	Agriculture 1900	Industry 1900	Services 1900	Agriculture 1992	Industry 1992	Services 1992
France	42.4	29.6	28.0	5.1	28.2	66.7
Germany	38.6	39.8	21.6	3.1	38.1	58.8
Japan	70.0	13.8	16.2	6.4	34.6	59.0
Netherlands	30.6	31.7	37.7	4.5[h]	25.9[h]	69.6[h]
Sweden	53.5	19.9	26.6	3.2	26.6	70.2
UK	13.2	43.9	42.9	2.2	26.2	71.6
USA	37.6	30.3	32.1	3.0	25.9	71.1
Portugal	65.1	22.4	12.5	11.2	32.8	56.0
Spain	68.1	13.6	18.3	9.9	31.7	58.4
Czechoslovakia	40.3[a]	36.8[a]	22.9[a]	11.9	45.6	42.5
USSR	58.6[b]	16.1[b]	25.3[b]	19.3[h]	34.6[h]	46.1[h]
Argentina	16.8[c]	26.6[c]	56.6[c]	16.1[h]	31.3[h]	52.6[h]
Brazil	n.a.	n.a.	n.a.	24.2[h]	23.3[h]	52.1[h]
Mexico	63.8	15.9	20.3	22.5[h]	24.1[h]	53.3[h]
China	n.a.	n.a.	n.a.	73.0[i]	14.0[i]	13.0[i]
India	67.1[d]	10.1[d]	22.8[d]	62.0[i]	11.0[i]	27.0[i]
Indonesia	73.1[e]	4.8[e]	22.1[e]	53.1[h]	14.7[h]	32.2[h]
Korea	79.6[f]	8.0[f]	12.4[f]	18.3[h]	35.1[h]	46.6[h]
Ghana	n.a.	n.a.	n.a.	59.0[i]	11.0[i]	30.0[i]
South Africa	58.8[g]	15.5[g]	25.7[g]	n.a.	n.a.	n.a.
Average	51.6	22.3	26.1	21.5	27.1	51.4

a) 1921; b) 1897; c) 1919; d) 1901; e) 1905; f) 1930; g) 1911; h) 1990; i) 1989/91.

Source: 1900 and neighbouring years derived from Bairoch (1968), except for UK (Feinstein 1972), Mexico (Maddison 1992) and Korea (Suh 1978); 1992 and neighbouring years from OECD (1993) for first 9 countries, Czechoslovakia from EC (1992), p. 32, USSR from Goskomstat (1991), pp. 97-101, Argentina and Brazil supplied by A. Hofman, Mexico from CIMIEX (1993), China, India and Ghana from UNDP (1993), pp. 168-9, Indonesia from Van der Eng (1993), Korea from Pilat (1993), p. 321. Agriculture includes forestry and fishing, industry includes mining, manufacturing, construction and utilities.

Table 5
Major Categories of Expenditure as a Share of GDP at Current Market Prices 1913 and 1992

	1913 Private Consumption	1913 Government Consumption	1913 Gross Investment	1913 Total Demand	1992 Private Consumption	1992 Government Consumption	1992 Gross Investment	1992 Total Demand
France	81.1	4.8	14.7	100.6	60.5	18.6	19.7	98.8
Germany	67.2	9.0	22.1	98.3	54.0	17.9	21.1	93.0
Japan	78.2	6.8	17.2	102.2	57.0	9.4	31.1	97.5
Netherlands	84.8[a]	8.4[a]	18.1[a]	111.3[a]	60.3	14.5	20.8	95.6
Sweden	82.0	6.1	14.2	102.3	53.9	27.8	16.6	98.3
UK	82.2	8.1	8.1	98.4	64.1	22.3	15.3	101.7
USA	75.2	6.4	18.0	99.6	67.4	17.8	15.5	100.7
Portugal	n.a.	n.a.	n.a.	n.a.	62.9	18.3	28.6	109.8
Spain	75.5	8.0	11.9	95.4	63.2	16.8	22.9	102.9
Czechoslovakia	n.a.	n.a.	n.a.	n.a.	51.1[c]	20.8[c]	30.1[c]	102.0[c]
USSR	78.3	10.7	11.9	95.4	55.1[d]	13.3[d]	31.2[d]	99.6[d]
Argentina	89.9	5.1	21.5	116.5	80.5[e]	4.1[e]	12.2[e]	96.8[e]
Brazil	n.a.	n.a.	n.a.	n.a.	60.9[c]	15.6[c]	21.7[c]	98.2[c]
Mexico	n.a.	n.a.	n.a.	n.a.	72.1[e]	7.8[e]	22.9[e]	102.8[e]
China	n.a.	n.a.	n.a.	n.a.	52.4	8.8	35.8	97.0
India	n.a.	n.a.	5.8	n.a.	64.9[e]	11.8[e]	24.1[e]	100.8[e]
Indonesia	n.a.	n.a.	n.a.	n.a.	55.1[e]	9.2[e]	35.1[e]	99.4[e]
Korea	98.5	3.9	4.6	107.0	52.7	10.8	39.1	102.6
Ghana	66.8[b]	2.8[b]	14.8[b]	84.4[b]	82.8[e]	9.1[e]	16.5[e]	108.4[e]
South Africa	n.a.	n.a.	n.a.	n.a.	57.7[e]	20.9[e]	16.3[e]	94.9[e]

a) 1921; b) 1911; c) 1990; d) 1989; e) 1991.

Sources: 1913 France from Levy-Leboyer and Bourguignon (1985), p. 332; Germany from Hoffmann and Associates (1965), p. 826; Japan from Ohkawa and Shinohara (1979), p. 252; Netherlands from van Bochove and Huitker (1987) adjusted by 8.4 per cent to a GDP basis, p. 16; Sweden from Krantz and Nilsson (1975), p. 150 and 157; UK from Feinstein (1972), pp. T8 and T10; USA from Kendrick (1961), p. 297; Spain from Carreras (1989), p. 570; USSR from Gregory (1982), adjusted to a GDP basis, p. 59; Argentina (at 1960 prices) from IIERAL (1986); India from Maddison (1992); Korea from Mizoguchi and Umemura (1988), p. 236; Ghana from Szereszewski (1965), p. 145. 1990 and neighbouring years, first 9 countries from OECD (1994), Czechoslovakia and USSR from Marer and Associates (1992), other countries from World Bank, World Tables (1993).

industry, the general pattern has been for a rising proportion up to a certain level of per capita income, but since the 1960s the proportion has fallen in the advanced capitalist countries. Generally speaking, the agricultural proportion is lowest in the rich countries and highest in the lowest income countries. Similarly services tend to be relatively most important in rich countries and least important in poorest countries, though the pattern is affected by differences in natural resource endowment and in the level of international trade. The proportions are also affected by statistical practice. Around 1900 there was considerable variance in methods of assessing female activity in agriculture. In Germany the present definition of employment in industry includes significant repair activities treated as services elsewhere.

The changing pattern of employment reflects the influence of changes in demand as income has risen. The most notable effects here have been the falling proportion of food in total expenditure, the rising share of transport and communication as society has become more urbanised and sophisticated, the rising share of health expenditure as the average age of the population has risen, the rising share of expenditure on education as the changing structure of employment opportunity led to a rising demand for "human" capital. The differential impact of technical change is another powerful influence, because the pace of productivity change has generally been much more rapid in material production than in services.

B. Changing Patterns of Expenditure

Table 5 shows changes in the pattern of expenditure between 1913 and 1992. In all countries except Ghana, there has been a substantial decline in the share of GDP going to personal consumption, so growth of real per capita consumption has been correspondingly smaller than the rise in per capita product we saw in Table 1. In all cases there has been a very large increase in the share of real resources absorbed by government. To some extent this happened because productivity grew slowly in the services provided by government, so their relative price rose. But goverment's administrative role in the economy has also risen because of the expansion of the welfare state. The bulk of expenditure on education and health is now undertaken by government, and the volume of such services has risen substantially in real terms. One cannot therefore conclude from Table

5 that the increased government share merely represents a heavier bureaucratic burden, with no contribution to welfare. One has to take into account the rise in health and education standards to which government has contributed.

The other striking feature of Table 5 is that investment ratios have increased (though Germany and Argentina are exceptions). In the period after the second world war many European and Asian capitalist countries greatly increased their investment ratios in order to exploit opportunities of catch-up, and this has continued in Asia where there have been spectacular changes since the beginning of the twentieth century. Thus India has raised its investment ratio from 5.8 to 24.1 per cent of GDP, Korea from 4.6 to 39.1 per cent. The communist countries also had a strategy of high investment to promote growth.

A final feature of Table 5 which is worth noting is that total demand does not add up to GDP. Thus in Germany in 1992 we find a gap of 7 per cent of GDP which represents transfers abroad and to the new Länder in the former DDR, whereas Portugal spends nearly 10 per cent more than GDP because of the extremely generous subsidies and aid it receives from the European Union.

C. Standards of Living

The traditional measure of living standards has been the movement of "real wages". Official statistics on wages started to be collected in the nineteenth century, and when deflated by cost of living indexes they have been used to measure changes in standards of living (e.g. by Arthur Bowley in the UK and Paul Douglas in the USA) and for collective bargaining over wage contracts. Between 1908 and 1912, the British Board of Trade collected data on wages, prices and working class budgets in a number of European countries with a view to comparing real wage levels, and in the interwar period, the International Labour Office of the League of Nations broadened such inquiries. Jürgen Kuczinski was one of the most active users of such statistics for purposes of international comparison in the past and Jeffrey Williamson of Harvard University has recently exploited the existing stock of such information rather extensively for both intertemporal and intercountry comparison.

In my view, this older approach has now been superceded by progress in constructing historical national accounts such as those underlying Tables 1, 2 and

Table 6
Real Per Capita Expenditure Levels in 1980
Germany (FR) = 100

	France	Japan	Netherlands	UK	USA	Portugal	Spain	Argentina	Brazil	India	Indonesia
Food	112.6	64.5	100.3	81.8	99.9	98.0	128.3	85.8	86.8	17.0	28.2
Alcoholic Beverages	100.0	27.7	109.4	44.8	71.3	56.4	49.2	62.7	3.7	0.4	0.1
Tobacco	69.4	75.5	168.4	123.5	99.0	6.1	62.3	50.1	50.7	6.9	16.3
Clothing & Footwear	63.2	58.2	84.8	71.6	100.2	41.8	76.4	32.7	27.7	3.9	7.4
Housing	109.1	100.0	84.4	117.6	134.2	72.9	63.5	16.6	31.8	2.6	5.4
Fuel and Power	79.0	28.5	89.9	66.5	214.6	23.4	29.0	26.8	27.9	11.2	36.9
Medical Care	125.0	107.8	108.1	78.4	96.3	42.8	62.1	11.4	23.0	3.6	2.0
Transport & Communications	80.8	50.2	63.8	56.7	154.8	20.9	50.0	37.5	16.7	3.9	6.5
Recreational Services	97.1	111.3	84.0	111.3	84.0	35.9	84.0	27.2	51.0	2.9	12.3
Education	150.6	206.9	163.0	181.1	190.8	73.3	67.2	70.2	51.1	30.3	19.5
Restaurants, Cafés and Hotels	146.3	58.9	54.6	193.3	131.6	52.5	112.5	57.8	47.4	0.5	3.6
Total Consumption	97.6	77.2	94.1	84.5	118.2	46.2	69.6	40.2	39.1	6.0	10.9
Capital Formation	80.6	97.5	73.4	45.2	81.3	5.6	45.0	30.7	22.2	3.1	8.0
Government	150.4	66.3	151.0	185.5	136.6	82.4	56.7	28.0	14.3	10.2	14.9
GDP	95.8	82.5	91.4	80.9	112.2	37.6	62.3	37.7	32.9	5.6	10.8

Source: UN (1987).

and 5. The first obvious advantage of the national accounts is that they are comprehensive in coverage, and there has been a major effort to ensure (at least for non-communist countries) that they are constructed on a standardised basis. This is not true of Williamson's wage series which cover only a minority of those engaged in economic activity, with incomparabilites between countries and over time in their representativity. In some cases, they are for unskilled workers only, or represent only certain sectors of the economy. The cost of living measures are also of varying quality and generally inferior to GDP deflators.

In the postwar period, the effort to get internationally comparable estimates of levels of gross domestic product and expenditure has also been substantial. The statistical office of the European Community and OECD cooperate in producing such estimates every five years which cover 9 of our 20 country sample. The United Nations Statistical Office cooperates in the same project and has wider country coverage but unfortunately its last publication refers to 1980. Table 6 is derived from this source, and, in my view, provides the best detailed evidence of relatively recent living standards. It covers 12 of our countries and includes almost the full range of income in the twenty country sample. The range in per capita GDP is 20.1; the USA being the richest country and India the poorest. I have taken Germany as the benchmark country, so for each of the 15 categories of expenditure, the German level is taken to be 100.

In table 6 all education and health expenditures are classified as private consumption, so, unlike Table 5, the "government" item refers solely to administrative, security and defence functions.

In terms of per capita consumption and per capita GDP, Germany was second only to the USA in 1980; in terms of capital formation it had the first position. Its bureaucratic-military burden was below that of France, the Netherlands, the UK and the USA.

1980 German food consumption levels were exceeded only by France and Spain, and were similar to Dutch levels. They were higher than all the other countries, and nearly six times as high as in India.

Table 7
Indicators of Health, Education, and Work Activity

	Life Expectation at Birth (both sexes)		Education Level: Years per Person (weighted by level)		Per Cent of Population Employed		Hours Worked per Annum per Person Employed	
	1900	1991	1913	1987	1913	1990	1913	1990
France	47	77	6.99	14.31	46.5	39.9	2,588	1,539
Germany	47	76	8.37	11.97	42.4	45.0	2,584	1,566
Japan	44	79	5.36	14.04	34.1	50.6	2,588	1,956
Netherlands	52	77	6.42	12.37	37.8	42.5	2,605	1,347
Sweden	56	78	n.a.	13.14	46.3	52.7	2,588	1,494
UK	51	75	8.12	13.47	45.5	46.9	2,624	1,537
USA	47	76	7.86	16.89	39.8	47.8	2,605	1,594
Portugal	n.a.	74	n.a.	8.15	n.a.	45.8	n.a.	1,700
Spain	35	77	n.a.	9.69	n.a.	33.1	n.a.	1,941
Czechoslovakia	40	72	n.a.	n.a.	n.a.	50.3[c]	n.a.	1,875
USSR	32	69	n.a.	11.50	n.a.	52.1[c]	n.a.	1,791
Argentina	n.a.	71	n.a.	10.01	n.a.	34.1[c]	n.a.	(1,900)
Brazil	37[a]	66	n.a.	6.22	n.a.	39.7[c]	n.a.	(1,900)
Mexico	33[b]	70	n.a.	7.82	n.a.	29.1[c]	n.a.	(1,900)
China	n.a.	69	n.a.	6.28	n.a.	48.0[c]	n.a.	n.a.
India	24	60	n.a.	4.38	n.a.	39.7[c]	n.a.	n.a.
Indonesia	n.a.	60	n.a.	n.a.	n.a.	37.4[c]	n.a.	n.a.
Korea	n.a.	70	n.a.	13.22	n.a.	42.1	n.a.	2,527
Ghana	n.a.	55	n.a.	n.a.	n.a.	38.5[c]	n.a.	n.a.
South Africa	n.a.	63	n.a.	n.a.	n.a.	34.7[c]	n.a.	n.a.

a) 1920; b) 1930; c) 1987.

Sources: Life expectation 1900 from Mueller (1965), p. 22, for OECD countries and UN (1951), p. 526-39 for others, 1991 from World Bank (1993). Education levels from Maddison (1994a), p. 45, years of primary education were given a weight of 1, secondary 1.4, and higher 2. Employment ratios for OECD countries from Maddison (1995), Czechoslovakia from EC (1992), Korea from Pilat (1993) and other countries from Maddison (1994a). Hours worked for OECD countries from Maddison (1991), Korea from Pilat (1993), otherwise from Maddison (1994).

German consumption of alcoholic beverages was exceeded only by the Netherlands; it was 250 times as high as in India and a thousand times as high as in Indonesia. German tobacco consumption was exceeded only by the Netherlands and the UK, but was 14 times as high as in India.

German consumption of clothing and footwear was equal to that of the USA, but well above that of all the other countries and nearly 26 times that of India.

In domestic consumption of fuel and power, the German level was less than half that of the USA, but well above that of the other countries. In transport and communication, the situation was similar - well behind the USA, but clearly ahead of all the other countries.

In medical care, Germany was in fourth place, with France most clearly in the lead. In education, German was in sixth place well behind France, Japan, the Netherlands, the UK and the USA. Education is the sector where Indian standards were the highest in comparative terms, being about 30 per cent of those in Germany.

Patterns of expenditure are determined to a significant extent by levels of real income, and, for the advanced capitalist countries, are well above subsistence needs. High levels of expenditure on housing, health and education are indicators of high income and welfare, but this is not true for alcohol and tobacco.

In the advanced capitalist countries, levels of health expenditure are very high compared with poor countries. This expenditure does help lengthen life expectation and reduces the incidence of poor health, but expenditure is strongly influenced by government policy. Hence, expensive treatment for terminally ill patients and provision of pharmaceuticals is much more generous in France than the UK. Despite relatively low health expenditures, life expectation in India has increased spectacularly in the twentieth century, due to the effectiveness of cheap modern drugs and public health measures to reduce epidemic disease.

The estimates in Table 7 are corrected for differences in the purchasing power of currency and hence for fiscal differences which might otherwise distort measurement of real consumption levels. However, the actual price level does affect the pattern of resource use. Thus energy taxes are much lower in the USA than in Europe, which is a major reason for higher US consumption of these products.

Table 8
Inequality of Before-Tax Income of Households, Various Years

	Gini Coefficient	Top decile per capita income as a multiple of that in bottom two deciles
France (1970)	0.416	14.4
Germany (1973)	0.396	10.5
Japan (1969)	0.335	7.5
Netherlands (1967)	0.385	5.3
Sweden (1972)	0.346	4.1
UK (1973)	0.344	9.1
USA (1972)	0.404	13.5
Argentina (1961)	0.425	11.2
Brazil (1970)	0.550	20.0
Mexico (1964)	0.567	25.5
India (1964-5)	0.428	12.4
Korea (1970)	0.351	7.6
South Africa (1965)	0.573	20.7

Source: Maddison and Associates (1992), p. 11 and Sawyer (1976), pp. 14 and 16, and Lecaillon and Associates (1984), pp. 26-7. Figures for South Africa refer to individual and not household income.

D. Inequality and the Welfare State

An important aspect of economic welfare is the degree of inequality. In the advanced capitalist countries, social segregation has been reduced by democratic pressures, and by universal access to primary and good part of secondary education. Thus by the 1970s, in most high income European countries there was no longer a domestic underclass condemned to a lifetime of poverty, though this situation has changed in the last two decades because of immigration from poor countries, and the sharp rise in long term unemployment.

Table 9a

Total Government Expenditure as a Percentage of GDP at Current Prices, 1913 and 1990

	1913	1990		1913	1990
France	8.9	50.2[b]	Netherlands	8.2[a]	55.7[b]
Germany	17.7	46.2	UK	13.3	42.9[c]
Japan	14.2	32.0[c]	USA	8.0	38.6[c]

a) 1978; b) 1989; c) 1991.

Source: Maddison (1991), p. 77 updated.

Table 9b

Structure of Government Expenditure as a Percentage of GDP 1981

	France	Germany	Japan	Netherlands	UK[a]	USA
Total	46.8	44.9	33.2	54.9	41.0	32.2
Traditional Commitments						
Military	3.8	2.9	0.9	3.3	5.0	4.7
Civil	3.7	3.9	3.3	6.1	3.6	3.7
Debt Interest	2.2	2.2	3.6	5.4	5.0	2.7
Total	9.7	9.0	7.8	14.8	13.6	11.1
Modern Commitments						
Economic Services	3.9	4.9	6.0	3.8[a]	4.3	3.2
Education	5.9	5.2	4.9	7.0	5.4	5.7
Health	6.4	6.8	4.7	6.6	5.0	3.7
Housing	3.7	2.3	2.9	5.0	2.2	0.8
Pensions	11.9	12.6	4.7	12.9	7.4	6.7
Other Transfers	5.3	4.1	2.2	4.8	3.1	1.0
Total	37.1	35.9	25.4	40.1	27.4	21.1

a) 1978.
Source: Maddison (1991), p. 79.

In the advanced countries, there is a very substantial process of income redistribution through taxes and social transfer. Table 9 shows the growth in the role of state expenditure over the past 8 decades in the richer OECD countries. This table includes both the government expenditure on goods and services shown in Table 5 as well as transfer expenditures.

Since the 1970s there have been some major changes in policy objectives. In the UK, the Thatcher government aimed to stimulate enterprise and privatised industries which then paid their executives higher salaries. There was a general rise in the relative level of executive compensation which was combined with a sharp reduction in income tax for the higher income groups and a boom in property values. Hence, there was a sharp increase in equality of income and wealth. In the USA, the Reagan administration also encouraged an enterprise culture and lowered tax levels. In Sweden there was a major shift in policy in the 1990s. In other advanced capitalist countries in our sample, policy attitudes have not changed so drastically but the emphasis on egalitarian goals has faltered.

In Latin America, the heritage of peonage and slavery and continuing ethnic discrimination in education, jobs and access to property have led to much wider spreads in pre-tax and transfer income as can be seen in Table 8.

In Asia, inequality appears to be within the European range in the two countries for which we have information (India and Korea).

In South Africa where apartheid was for long an official policy, the Gini measure of inequality is greater than in all the other countries (see Table 8), but in terms of decile ratios, inequality is worse in Mexico and about the same in Brazil.

E. Working Time, Leisure and Unemployment

Standards of living are not simply a matter of goods and services consumed. The amount of leisure and job security are also important. Over the long term, it is clear that average working hours of those with jobs has dropped dramatically. In Germany, the working year was about 1000 hours less in 1990 than it was in 1913 (see Table 7) and in the Netherlands the fall has been even bigger. The fall reflects a drop in the normal working day, the fact that people generally no longer work on Saturday, that they get substantial vacations with full pay, and greater facilities for time off when they are sick. The fall also reflects the growth in part-time employment as more women have entered the labour force.

In Southern and Eastern Europe hours are longer than in the advanced capitalist group, and they are even longer in other parts of the world.

In Japan working hours are about 400 more per year than in Germany, as Saturday working is common, and one-week vacations are the norm. In Korea, working hours are as long as they were in Europe at the beginning of the nineteenth century.

Though increased leisure is an important aspect of increased welfare in advanced capitalist countries, it should also be remembered that unemployment is an involuntary and unwelcome form of leisure which was an unpleasant and politically dangerous aspect of capitalist performance in the interwar years. Unfortunately in the 1980s and 1990s it has reappeared on a large scale in Western Europe and is a major blight on Western society. The cause which is most often cited by politicians is that the huge growth in welfare state benefits has raised the cost of labour and made labour markets inflexible. However, there have also been changes in policy objectives with greater priority being given to monetary stability and monetary union than to the goal of full employment.

Summary and Conclusions

This paper provides a sketch of world economic performance and changes in the standard of living in the twentieth century. These changes are illustrated by quantitative evidence for 20 "representative" countries which accounted for nearly two thirds of world population and threequarters of world output in 1990. There are countries in the sample from each continent, and countries with a very wide range of institutional and policy experience.

All countries experienced economic growth in the twentieth century, but the spread in incomes widened a good deal because of variations in per capita growth. At one extreme Japanese per capita income grew 17 fold, whereas in Ghana and India it did little more than double. The pace of growth was uneven. For virtually all countries 1950-73 was a golden age in which real output progressed and living standards improved at a pace without historical precedent. Since 1973, growth performance has decelerated markedly, particularly in Eastern Europe and Africa. However, Asia was a major exception, where economic performance improved after 1973 (except in Japan - the most mature of the Asian economies).

In attempting to explain the variations in performance, I have not attempted any detailed growth accounting, but have given greater stress to more basic influences of institutions, policy and the nature of the world economic order.

The most striking changes in structure have not been "industrialisation" as is so often alleged, but a sharp decline in agriculture, and a large rise in the share of service employment. A greater share of resources has gone to investment and to government expenditures, and the share of private consumption has declined significantly in virtually all countries where measures are available. However, public expenditure on "social" consumption items such as health and education has expanded and this is a major reason for the very large and general increase in life expectation and in levels of education which can be seen in Table 7. For the higher income countries, there is strong evidence of a general decrease in working hours per person. One can infer that labour productivity in these countries increased faster than per capita product and that some of their increased output potential was taken out in increased leisure.

Reliable and comparable evidence on income spreads within countries is lacking for the early twentieth century and it is difficult to discern a clear cut trend. However, Table 8 shows clearly that there are important differences between countries in the degree of inequality.

Table 10

Population (adjusted to eliminate the impact of changing frontiers)

(000s at midyear)

	1820	1900	1950	1973	1992
Advanced Capitalist					
France	31,250	40,731	41,836	52,118	57,372
Germany (F.R.)	14,747	31,666	49,983	61,976	64,846
Japan	31,000	44,103	83,563	108,660	124,336
Netherlands	2,355	5,142	10,114	13,439	15,178
Sweden	2,585	5,117	7,015	8,137	8,678
UK	19,832	38,426	50,363	56,210	57,848
USA	9,656	76,391	152,271	211,909	255,020
European Periphery					
Portugal	3,297	5,450	8,512	8,630	9,820
Spain	12,203	18,566	27,868	34,810	39,085
Czechoslovakia	7,190	12,120	12,389	14,560	15,726
USSR	50,392	122,995	180,050	249,747	289,200
Latin America					
Argentina	534	4,693	17,150	25,183	33,003
Brazil	4,507	17,984	51,941	99,836	156,012
Mexico	6,587	13,607	27,376	56,481	89,520
Asia					
China	350,000	400,000	546,815	881,940	1,167,000
India	173,083	234,248	359,000	580,000	881,200
Indonesia	17,927	42,746	79,043	124,271	185,900
Korea	n.a.	8,772	20,557	33,935	43,600
Africa					
Ghana	n.a.	1,784	4,368	9,388	15,800
South Africa	n.a.	4,768	13,863	24,147	37,600
World	1,073,976	1,561,726	2,512,211	3,896,578	5,257,176
Population within borders of year cited					
France	30,698	38,940	41,836	52,118	57,372
Germany	24,905	56,046	49,983	61,976	80,576
UK	21,240	41,155	50,363	56,210	57,848
India	209,000	284,500	359,000	580,000	881,200
Korea	n.a.	13,218	20,557	33,935	43,600

Source: Maddison (1994).

Table 11
Size of Our 20 Country Sample in Relation to World Population and GDP in 1990

	Population 000s	GDP million 1990 international $
France	56,735	1,008,601
Germany(FR)	63,254	1,181,871
Japan	123,540	2,291,456
Netherlands	14,951	247,730
Sweden	8,559	151,451
UK	57,411	935,922
USA	249,924	5,464,795
Portugal	9,908	105,864
Spain	38,959	474,125
Czechoslovakia	15,662	132,560
USSR	288,734	1,987,995
Argentina	32,293	212,518
Brazil	150,368	723,510
Mexico	32,345	159,042
China	1,133,680	3,061,000
India	848,000	1,115,999
Indonesia	179,322	452,807
Korea	42,793	384,174
Ghana	14,870	14,362
South Africa	35,919	133,583
Total 20 Sample Countries	3,397,227	20,239,365
World	5,257,176	27,336,256

Source: Maddison (1994b).

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