

**PERSPECTIVE ON GLOBAL ECONOMIC PROGRESS AND
HUMAN DEVELOPMENT**

**ECONOMIC PROGRESS: THE LAST HALF CENTURY IN
HISTORICAL PERSPECTIVE**

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The end of a millennium is a time for taking stock. My habit is to analyse economic progress in quantitative terms, following the example set by Colin Clark in 1940. Quantification clarifies issues which qualitative analysis leaves fuzzy. Without quantification one cannot separate stylised facts from the stylised fantasies which are sometimes perceived to be reality. Quantification is much more readily contestable and likely to be contested. It sharpens scholarly discussion, more readily sparks off rival hypotheses, and contributes more effectively to the dynamics of the research process.

Our measures of macroeconomic performance are imperfect, but several things are clear from Tables 1, 2 and 3*:

1. World per capita real income has risen twenty times as fast since 1820, than it did in the eight centuries from 1000 to 1820.
2. Economic progress within the capitalist epoch (1820 onwards) has not been steady. One can clearly distinguish breaks in the growth momentum, with phases of acceleration and deceleration, which have generally been synchronised across most parts of the world economy. Since 1820, there have been five phases of unequal length:
 - (i) 1820-70 with world per capita growth of 0.6 per cent a year (the slowest phase);
 - (ii) 1870-1913 (the second best phase) when growth was twice as fast;
 - (iii) 1913-50, when progress was interrupted by two world wars, a deep interwar depression and breakdown of world trade and capital markets. Per capita growth in this time of troubles was 0.9 per cent a year, and was manifestly below potential;
 - (iv) 1950-73, the 'golden' age, when growth rates exceeded all precedents in all parts of the world economy. In this period world per capita income rose by nearly 3 per cent a year, and clearly contained some once-for-all elements of recovery and catch-up;
 - (v) 1973 onwards when the pace of growth decelerated very sharply in all parts of the world economy, except in China and some other

Asian countries. The pace of per capita growth was about the same as in 1870-1913, ie, 1.3 per cent a year. In this period some slowdown was warranted, as most of the special once-for-all opportunities for catch-up within the advanced capitalist countries had been eroded, and there are very strong signs that the rate of technical progress has sharply decelerated in the USA – the economy operating closest to the technological frontier. However, there is also evidence that growth in the present phase is below potential in significant parts of the world economy.

3. Growth in per capita real income has been a generalised phenomenon since 1920, which has raised both living standards and life expectation (see Table 4) in all continents. But progress has been much faster in a small group of countries that I call (for mnemonic convenience) the 'West' than in the 'Rest'. The 'West' contains about 13 per cent of world population, its 17 countries have about half of world GDP, and their national per capita incomes are relatively homogeneous. The 'Rest' is a more heterogeneous group and their average per capita income is only 15 per cent of that in the 'West'. The 'West' consists of:
 - (i) 12 countries of Western Europe whose ascension has been under way for the whole of the past millennium;
 - (ii) 'Western Offshoots' (Australia, Canada, New Zealand and the USA) which inherited and adapted institutional and societal habits of the most economically advanced West European nation, had huge natural resources (see Table 5) and were distant from foreign wars. Per capita income growth in this group was more dynamic than in Western Europe from the eighteenth century to 1950, and their relative weight increased because of their much more rapid demographic expansion; and.
 - (iii) The third (honorary) member of the Western group is Japan which rejected its traditional socioeconomic order in 1868, grew faster than Western Europe from 1870 to 1950, and enjoyed supergrowth from 1950 to 1973. Having eroded its exceptional opportunities for catch-up, its growth is no longer exceptional.
4. The Western edge over the 'Rest' was about 2:1 in 1820, and has continued to grow since then. However, this process is not inexorable. The gap is now so large that one should expect countries within the 'Rest' to be able to grow faster than the West if they are able to adapt institutionally and follow an appropriate policy mix. There is clear evidence that some Asian countries have been able to

do this within the past half century. Other parts of the world seem less well equipped for catch-up, for reasons which are quite complex.

This rapid scrutiny of the quantitative evidence about the past leaves some important questions to be answered. When did growth accelerate so much in the West in the capitalist epoch? Why was growth slower in the rest of the world until 1950? Why has growth momentum changed so markedly within the different phases of capitalist development? Answers to these questions may be helpful in illuminating the outlook for the future.

At the technocratic level, it is not too difficult to explain why the growth process accelerated in the leading Western countries. For the UK, USA and Japan, we can measure changes in the quantity of labour input, changes in its quality in terms of education, increases in the physical capital stock, changes in economic structure and openness to international trade (see Tables 6, 7, 8 and 9). Exploiting the technique of growth accounting we can give weights to factor inputs, and derive measures of total factor productivity which permit a crude assessment of the pace of technical advance (in the two successive lead countries – the UK and USA – which operated closest to the technical frontier), or serve as an indicator of the pace of technological diffusion (the catch-up bonus) in a follower country (Japan).

Table 6 shows that the US stock of machinery and equipment, per person actively engaged in the economy, rose 155-fold from 1820 to 1955. The level of education rose tenfold, business organisation improved, there was scope for exploiting economies of scale and specialisation through the expansion of domestic and even greater growth of export markets. The natural resource endowment was much more abundant in relation to population than in Europe or Asia. These proximate elements of causality go a long way to explaining why the USA was able to increase its per capita income nearly twentyfold from 1820 to 1997 and accommodate a 27-fold increase in population, even though there was a significant drop in working hours per head. Without technical progress this huge increase in economic inputs would not have occurred because there would have been sharply diminishing returns. Future economic growth in countries operating near the technical frontier will decelerate substantially if the pace of technical progress slackens. Unfortunately the macroeconomic evidence in Table 6 suggests that this may have happened.

An interesting feature one can discern in Table 6 is the sharp acceleration in technical progress in 1913-50. This is one amongst several pieces of evidence that the potential for economic growth was

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underexploited in that period, and suggests that the acceleration of growth in the golden age was due in a significant degree to exploitation of a backlog of technical opportunities.

For countries which lag behind in the hierarchy of per capita income, such as China or India, there are large holes in the data set we would need to carry out a growth accounting analysis before 1950. However, this is not a major problem. We know that their level of income and life expectation in 1950 were below those of Western Europe in 1820, and growth accounting would not help much in explaining why they stagnated for the first 130 years of capitalist development. To understand this we need to consider the indigenous institutional, social and political roots of their past stagnation, and the impact of Western colonialism. Exploration of these ultimate elements of causality is also important in understanding the foundations of Western growth.

It is often suggested that the origins of Western growth in the capitalist era reside in a spontaneous wave of innovations in the English textile industry in the late eighteenth century. This notion of an 'industrial revolution' was a metaphor introduced by Toynbee in the 1880s, has proved remarkably persistent, and was revamped by Schumpeterians like Rostow who like to chronicle what they consider to be major waves of innovation.

It seems to me that the origins of Western growth lie deeper in the past, in the three or four centuries of slow Western ascension, when there were major changes in institutions and intellectual life which had no counterpart in Asia, Africa or Latin America.

The most fundamental was recognition of the capacity to transform the forces of nature through rational investigation. Thanks to the Renaissance and the Enlightenment, Western elites gradually abandoned superstition, magic and submission to religious authority. The Western scientific tradition that underlies the modern approach to technical change and innovation had clearly emerged by the seventeenth century and had begun to impregnate the educational system. The spread of universities, scientific academies, and scientific journals reinforced this process. Needham, the sinophile and encyclopaedist of Chinese science, acknowledges the exceptionalism of this Western European development, which had no counterpart in China, India, Latin America or Africa. The invention of printing was much more effectively used to diffuse knowledge in the West than in China. The invention of eyeglasses, telescopes, microscopes and clocks facilitated research and measurement. There was a much clearer picture of what was on earth and in the heavens. Improvement in

cartography and navigation permitted the discovery of the Americas and new trade routes to Asia. Copernicus demonstrated that the earth rotated round the sun.

Institutional changes that removed constraints on markets and the free purchase and sale of property, progress in corporate organisation and accountancy and development of trustworthy financial institutions were all contributing factors in reducing risk, promoting entrepreneurship and improving resource allocation. The emergence of a European system of nation states in close propinquity gave an interactive character to European intellectual life that was virtually absent in other parts of the world. This stimulated trade, competition and the forces of innovation. The Western family system involved controls on fertility and limited obligations to more distant kin. This reinforced the possibilities for accumulation of wealth.

Western ascension was significantly dependent on access to resources in the New World and the colonial and quasi colonial mechanisms that fostered development of its trade with Asia. Its technical and military capacity permitted establishment of various kinds of hegemony and empire in the rest of the world.

Changes in Momentum in Different Phases of the Capitalist Epoch

We can now turn to the forces underlying the changes in the momentum of growth within the capitalist epoch, and in particular those which have been operative in the past half century.

Successive phases are not a manifestation of long waves in economic life as Kondratieff, Schumpeter, Mandel and their followers have asserted. They do not represent stages of growth as in Rostow's schema, ie, an inevitable sequence of economic development through which all countries must pass in their process of economic ascension.

Successive phases have not been initiated by policy decisions, plans, innovative ideas, or changes in ideology. Transitions from one phase to another have usually been caused by some kind of historical accident or system shock. These have interrupted the previous momentum of growth and destroyed old institutional or geopolitical forces. These shocks created a need to devise new policies appropriate for new situations, or to suit the interest of new political elites such as those in postcolonial Asia. Hence each phase has been characterised by new fashions in economic policy, and by new views in the policy establishment about the efficacy of different policy instruments. In some phases the policy-political-institutional mix has been good for growth, in others it has meant that growth has been below potential. Economic

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policy is based on analysis and dogma. Its practitioners rely on the conventional wisdom to provide rules of thumb.

The years 1950 to 1973 were a golden age in which growth accelerated very markedly in all parts of the world economy. North American performance accelerated, but was below the world average. Japan and West Europe did much better, and greatly reduced the gap between their income and productivity levels and those in the USA. In West Europe the acceleration reflected a catch-up process in which opportunities lost in the war and interwar years were recuperated. The Japanese catch-up process was more spectacular. For 80 years Japan had devoted a large part of its human and physical capital resources to military ends. Its complete demilitarisation meant that its skills, organisational capacity and investment were devoted almost entirely to economic growth in the golden age.

In the rest of the world the sharpest acceleration occurred in Asia. Most of these countries were breaking out of a long torpor where indigenous institutions and colonialism put a significant brake on progress. In 1950, their average income level (excluding Japan) was lower than in Africa. They therefore had a very large potential for rapid catch-up on the West. To implement these possibilities they needed a huge effort to raise their levels of skill and education, to save and invest, to absorb foreign technology and to improve incentives and resource allocation. A significant number of them succeeded in this.

The greater dynamism of the golden age was not simply due to recovery. A major underlying force was the acceleration of technical progress at the frontier of technology (ie, in the United States which had been the productivity leader since the 1890s). From 1913 to 1973, American total factor productivity grew at an unprecedented rate. The diffusion of US technology had been blocked in 1913-45 by international conflict and restrictions on international trade. But in the postwar years there was an unprecedented degree of international cooperation in the West, a liberalisation of international trade and reestablishment of international capital flows. The ending of colonialism brought new and more dynamic elites in Asia who were free to develop policies in their own national interest rather than those of the old imperial powers.

The slowdown since 1973 has been very sharp. This aggregate deceleration is the net result of very disparate movements in different parts of the world.

In the 'West', some deceleration was inevitable as Western Europe and Japan had exhausted most of their unusual postwar possibilities for

catch-up with the world productivity leader. The US deceleration was largely due to a sharp slowdown in total factor productivity growth, which has slipped back to a crawling pace not seen since the nineteenth century.

In Japan there was a huge speculative bubble in the prices of land, real estate and stock markets which peaked in 1989 and then collapsed. The ratio of financial assets to GDP dropped very sharply to levels more normal elsewhere in the West. This severely weakened the Japanese banking system. The government reaction was to cosmeticise rather than clear up the financial mess which has lasted a decade. This has further depressed expectations and reduced economic growth below potential.

West European countries were frightened by the surge of inflation and instability of exchange rates in the 1970s and abandoned the policy goals of the golden age. They gave top priority to price stability, liberalisation of capital movements, and the drive to monetary union. These new goals required unnecessarily deflationary policies that created massive unemployment. Their average unemployment rate is now close to 10 per cent compared with 2.4 per cent in the golden age. This was socially acceptable only because of the scale of government transfers, but the burden of such expenditure created fiscal problems that reinforced the preference for deflationary options. In Western Europe this type of policy has been the establishment consensus for the past fifteen years. It has had a deep influence on expectations and behaviour, and the mould will be difficult to break in West Europe just as in Japan.

The slowdown in US potential was substantially cushioned by policies very different from those in Europe, with major tax cuts, benign neglect of exchange rates, less obsessive concern with inflation, rises in labour force participation, reduced levels of unemployment and flexible labour markets. There have been efforts to suggest that US growth is substantially mismeasured (in the Boskin report or by those who entertain exaggerated views of the impact of information technology). Such arguments are not very convincing. The slowdown in US total factor productivity growth has now lasted for more than two decades, and one cannot reject the possibility that the pace of advance at the technological frontier will continue in future at something like the rate which prevailed in the nineteenth century. This slowdown has already been a depressing influence on the growth potential of West Europe and Japan, which operate close to the technical frontier.

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In Asia excluding Japan, aggregate economic performance was already much better in the 'golden age' than at any earlier period, but since 1973, growth rates have accelerated further.

If the 'West' and Asia (except Japan and the Middle East) had been the whole of the world economy, the pattern of development in 1973-97 could be interpreted as a fairly clear-cut demonstration of the possibilities for 'conditional convergence' suggested by neo-classic growth theory. In the 'conditional convergence' group average per capita income grew at 2.9 per cent a year in 1950-73 and 1.8 per cent in 1973-97.

The most seriously disturbing aspect of the experience since 1973 was the collapse of economic growth in five groups of countries. In the fifteen countries of the former Soviet Union, 1997 per capita income was about 36 per cent lower than in 1973. In the 12 former communist countries of Eastern Europe it was virtually the same as in 1973. For the 57 countries of Africa, average per capita income showed little advance on 1973. For the 16 countries of the Middle East, average per capita income growth in 1973-97 was less than a tenth of the pace achieved in 1950-73. In 42 of the 44 Latin American countries (Chile and Paraguay being the exception) growth performance was very much worse after 1973 than in 1950-73. If one aggregates the performance of the 144 countries in these 5 groups, their per capita growth was 3.4 per cent a year in 1950-73 and minus 0.6 per cent in 1973-97. In 1973 they produced 28 per cent of world GDP, in 1997 this had dropped to 21 per cent.

These economies suffered major shocks which crippled their growth momentum and left their economic policy in disarray. The biggest of these was the political and economic collapse that accompanied the disintegration of the USSR. It also led to the collapse of the command economies of Eastern Europe where the difficulties of transition to capitalism proved to be greater than was anticipated. In the Middle East, Latin America and Africa, growth in the golden age had not been due to any great virtues of domestic policy, but was significantly dependent on the diffusion effects of high growth momentum in the 'West'. The sharp slowdown in the capitalist core sparked off debt crises, inflation and fiscal and monetary problems in Latin America and Africa. In the Middle East falling oil prices and wars affecting Iran, Iraq and Lebanon were major disturbing forces.

The Outlook for the Next Two Decades

In assessing the prospects for the next twenty years or so, it seems likely that progress at the frontier of technology will continue to be slow, in line with the evidence of slow total factor productivity growth in the lead country (the USA) which has been evident for the past quarter of a century. It also seems likely that the other advanced capitalist countries will have little potential for significantly narrowing the now rather small real income/productivity gap between themselves and the United States. Deceleration in the dynamic Asian group seems likely as some of the countries have already arrived at levels of income where the pace of catch-up can be expected to wane, and several of them have serious problems of adjustment to the 1997-9 shocks (flight of foreign capital, collapse of stock markets and exchange rates, escalating inflation and IMF stabilisation programs) which are likely to have repercussions for a few years. In other countries of Asia, where incomes are lower, there is potential for growth acceleration of the type already seen in India.

China seems likely to be able to grow faster than most of the Asian countries because

- (i) its level of real income/productivity is quite low;
- (ii) it has sustained a high growth trajectory for two decades and has proved capable of maintaining high rates of investment in human and physical capital; and
- (iii) it has been less exposed to shocks which other dynamic Asian countries sustained in 1997-98.

However, future Chinese growth rates are likely to be more modest than in 1973-97 because it faces major problems in reforming state industry, fiscal and monetary policy and has eroded some of the once-for-all gains of its previous reforms (particularly in agriculture).

The big question mark is what will happen in the 144 economies where performance was so abysmal in 1973-97, and which now account for about one fifth of the world economy. It seems reasonable to hope for some reversal of the previous declines in per capita incomes in the countries of the former Soviet Union, the Middle East and Africa and there has been some success in policy reorientation in parts of Eastern Europe and Latin America. However many of these countries will still have to make major institutional change of the type which West Europe carried out in the protocapitalist period, and which Japan achieved by a cumulative process of reform in the Tokugawa shogunate, the Meiji restoration, and in the aftermath of its defeat in the second world war.

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These were slow historical processes which raise substantial doubt about the rapidity with which they can be replicated by the magic wand of globalisation. Thus the finale to the millennium is much more subdued than the golden age, but the prospect seems no worse than was achieved in 1820-1950, and much better than in the first eight centuries of our millennium.

* **Source for all Tables:** Unless otherwise noted, estimates are from Maddison, Angus (forthcoming), *Contours of the World Economy*.

Table 1

Levels of Population, GDP, and GDP per Capita The West and the Rest 1000-1997								
	1000	1500	1820	1870	1913	1950	1973	1997
Population (million)								
The West	31	66	157	243	391	516	661	767
The Rest	244	367	881	1019	1391	1999	3239	5061
The World	274	433	1037	1262	1782	2515	3900	5829
GDP (billion 1990 international dollars)								
The West	12	48	180	475	1503	3106	8971	16086
The Rest	104	196	514	640	1235	2265	7083	16402
The World	116	244	693	1115	2737	5371	16054	32488
Per Capita GDP (1990 international dollars)								
The West	407	717	1147	1956	3843	6016	13579	20962
The Rest	425	535	583	628	888	1122	2167	3232
The World	423	563	668	884	1536	2135	4117	5573

Table 2

Rates of Growth of Population and GDP, The West and The Rest 1000-1997 (annual average compound growth rates)								
	1000 – 1500	1500 – 1820	1820 – 1870	1870 - 1913	1913 - 1950	1950 - 1973	1973 - 1997	1820 – 1997
Population								
The West	0.16	0.27	0.88	1.11	0.75	1.08	0.62	0.90
The Rest	0.08	0.27	0.29	0.73	0.98	2.12	1.88	0.99
The World	0.09	0.27	0.39	0.81	0.94	1.92	1.69	0.98
GDP								
The West	0.27	0.42	1.96	2.72	1.98	4.72	2.46	2.57
The Rest	0.13	0.30	0.44	1.54	1.65	5.08	3.56	1.97
The World	0.15	0.32	0.96	2.11	1.84	4.88	2.98	2.20

Table 3a

Rates of Growth of World GDP per Capita, 20 Countries and Regional Totals, 1000-1997 (annual average compound growth rates)							
	1000 -1500	1500 -1820	1820 -1870	1870 -1913	1913 - 1950	1950 - 1973	1973 - 1997
Austria		0.17	0.85	1.45	0.18	4.94	2.12
Belgium		0.14	1.44	1.05	0.70	3.55	1.81
Denmark		0.17	0.91	1.57	1.56	3.08	1.85
Finland		0.17	0.76	1.44	1.91	4.25	1.91
France	0.11	0.18	0.85	1.45	1.12	4.05	1.51
Germany	0.11	0.14	1.09	1.63	0.23	4.86	1.67
Italy	0.20	0.00	0.59	1.26	0.85	4.95	2.07
Netherlands		0.22	0.77	0.99	1.07	3.45	1.70
Norway		0.17	0.52	1.30	2.13	3.19	3.07
Portugal	0.06	0.13	0.52	0.52	1.24	5.66	2.28
Spain	0.11	0.13	0.52	1.15	0.17	5.79	1.89
Sweden		0.17	0.66	1.46	2.12	3.07	1.22
Switzerland		0.17	1.09	1.55	2.06	3.06	0.60
UK		0.27	1.26	1.01	0.92	2.44	1.71
Other Western Europe	0.03	0.15	0.72	1.28	1.03	4.62	2.34
Total Western Europe	0.13	0.15	0.95	1.32	0.77	4.05	1.75
Eastern Europe	0.19	0.23	0.63	1.30	0.88	3.78	0.30
Former USSR	0.04	0.10	0.64	1.06	1.76	3.36	-1.82
USA		0.36	1.34	1.82	1.61	2.42	1.62
Other Western Offshoots		0.20	2.27	1.76	1.15	2.55	1.50
Total Western Offshoots		0.35	1.42	1.81	1.55	2.42	1.60
Mexico		0.21	0.00	1.70	0.95	3.08	1.24
Other Latin America		0.16	0.33	1.53	1.54	2.21	0.86
Total Latin America		0.18	0.21	1.56	1.44	2.36	0.94
Japan	0.05	0.07	0.10	1.53	0.89	8.05	2.50
China	0.06	0.00	-0.25	0.10	-0.62	2.87	5.41
India	0.05	-0.01	0.00	0.54	-0.22	1.40	2.86
Other Asia	0.05	0.002	0.43	0.69	0.03	3.35	2.71
Total Asia (excl. Japan)	0.05	0.00	-0.05	0.43	-0.09	2.84	3.68
Africa		0.00	0.25	0.70	1.01	2.16	0.05
World	0.06	0.05	0.56	1.30	0.90	2.88	1.27

Table 3b

Rates of Growth of GDP per capita, 57 Asian Countries, 1820-1998 (annual average compound growth rates)						
	1820 - 1870	1870 - 1913	1913 - 1950	1950 - 1973	1973 - 1997	1973 - 1998
Bangladesh				-0.62	1.85	1.91
Burma			-1.29	1.77	1.83	1.93
China	-0.25	0.10	-0.62	2.87	5.41	5.39
India (a)	0.00	0.54	-0.22	1.40	2.86	2.91
Indonesia	0.13	0.75	-0.20	2.57	3.72	2.90
Japan	0.10	1.53	0.89	8.05	2.50	2.28
Pakistan				1.81	2.35	2.36
Philippines			-0.25	1.82	0.84	0.70
South Korea (b)			-0.48	4.95	6.60	6.03
Taiwan			0.39	5.98	5.75	5.67
Thailand		0.38	0.03	3.20	5.41	4.79
11 Sample Countries	-0.10	0.50	-0.10	3.78	3.40	3.25
Afghanistan				0.64	0.83	-0.82
Cambodia				1.68	0.97	0.81
Hong Kong				5.19	4.80	4.27
Laos				1.82	3.03	2.96
Malaysia				2.08	4.26	3.70
Mongolia				3.68	0.99	1.04
Nepal				0.87	2.12	2.01
North Korea				4.95	-3.65	-3.49
Singapore				4.42	5.83	5.51
Sri Lanka				2.05	3.27	3.28
Vietnam				0.43	3.24	3.14
11 Non Sample Countries(d)				2.65	3.09	2.79
4 Small Countries				3.03	4.41	4.13
15 Pacific Countries				2.42	0.12	0.03
30 Non Sample Countries(d)				2.65	3.01	2.71
Bahrain				3.24	0.23	0.22
Iran				5.21	-1.19	-1.13
Iraq				4.50	-5.20	-4.69

Table 3b (continued)

Rates of Growth of GDP per capita, 57 Asian Countries, 1820-1998 (annual average compound growth rates)						
	1820 - 1870	1870 - 1913	1913 - 1950	1950 - 1973	1973 - 1997	1973 - 1998
Israel				5.65	1.86	1.78
Jordan				4.83	2.37	2.19
Kuwait				-0.34	-3.44	-3.39
Lebanon				1.15	0.31	0.32
Oman				7.49	3.31	3.18
Qatar				4.42	-7.46	-6.92
Saudi Arabia				7.20	-1.18	1.22
Syria				1.57	1.88	1.84
Turkey				3.14	2.76	2.69
UAE				2.03	-2.37	-2.57
Yemen				2.59	1.15	1.08
Gaza-West Bank				0.00	0.00	0.03
18 Middle East (d)				4.36	0.50	0.49
46 Non Sample Countries(d)	0.60	0.60	0.79	3.88	1.48	1.36
57 Asian Countries	-0.04	0.53	0.06	3.84	3.09	2.94

- a) 1820-1913 refers to undivided India, 1950 onwards to India after partition.
b) 1820-1913 refers to undivided Korea, 1950 onwards to South Korea.
c) 1820-1913 excluding North Korea.
d) Totals assume that aggregate movement in countries for which data were available was representative for countries for which data were unavailable.

Table 4

Vital Statistics, 1820-1999							
	Births per 100 Population			Expectation of Life at Birth (years): Average for both sexes			
	1820	1900	1999	1820	1900	1950	1999
France	3.10	2.19	1.2	37	47	65	78
Germany	3.99	3.60	1.0	41	47	67	77
Italy	3.90	3.30	0.9	36	45	66	78
Sweden	3.40	2.69	1.0	39	56	70	80
UK	4.02a	2.93	1.2	40a	50	69	77
USA	5.52	3.23	1.5	39	47	68	77
Mexico			2.7			50	72
Russia	4.13	4.80	0.9	28b	32	na	67
China	3.09	na	1.6	29	na	38	71
India	na	4.60	2.8	na	24	36	61
Japan	2.07	3.17	1.0	35	44	68	81
Africa			3.9				53
World			2.3	(30)			66

a) 1821 b) 1880 c) 1850

Sources:

USA, 1820 and 1900: *Historical Statistics of the United States* (1975), 1: 49, 56; UK: Wrigley, EA et al (1997), *English Population History from Family Reconstruction, 1580-1837*, Cambridge: CUP; All countries, 1900: Maddison, Angus (1995), *Monitoring the World Economy*, OECD: Paris. All countries, life expectancy 1950: OECD (1979), *Demographic Trends*. All countries, 1999: *Population et Societes*, INED, Paris, July/August 1999.

Table 5

Total Area of Land per Capita and Arable Proportion			
	1820	1995	1993
	<i>Hectares per person</i>		Percent Arable
Belgium	0.97	0.31	24.0
Denmark	3.93	0.82	59.0
Finland	28.92	6.62	0.8
France	1.77	0.95	35.2
Germany	1.43	0.44	33.9
Italy	1.59	0.53	39.4
Netherlands	1.59	0.24	25.0
Norway	33.39	7.43	2.7
Sweden	17.41	5.09	6.2
UK	1.48	0.42	25.0
12 West European Countries	4.0	0.84	21.5
Former USSR a	29.46	7.70	10.4
USA	46.39	3.73	19.1
Canada	1222.57	33.70	4.6
Australia	2316.32	42.72	6.0
Brazil	187.63	5.15	5.8
China	3.15	0.80	10.0
India	2.02	0.36	51.6
Japan	1.31	0.30	11.8

a) For the Russian Federation the 1995 figure is 11.53 hectares per person and the per cent arable in 1993 was 7.8 per cent.

Source: 1995 surface area from FAO, *Production Yearbook*. For China, India, UK, USA and USSR the 1820 area was taken from national sources. The Chinese area in 1820 was 1200 million square kilometres and 960 million in 1995; India 423 million in 1820, 329 million in 1995; for the UK 31.4 million in 1820, 24.4 in 1995; for the USA 463 million in 1820, 981 million in 1995; for Russia 1820, 1485 million in 1820, 1708 million in 1995, and for the countries of the former USSR 2240 million in 1995.

Table 6

Indicators of Performance and Measurable Elements of Causality: Two Lead Countries, and the Most Successful Follower Country, 1820-1995						
	UK	USA	Japan	UK	USA	Japan
	Level of GDP per Head (1990 international dollars)			Expectation of Life at Birth (years)		
1820	1705	1264	675	40	39	35
1950	6847	9616	1935	69	68	68
1995	17033	23377	19720	77	76	80
	Size of Domestic Market (GDP as Multiple of 1820 Level)			Size of Export Market (Exports as Multiple of 1820 Level)		
1820	1	1	1	1	1	1
1950	10	116	8	35	172	69
1995	28	487	118	279	2437	6076
	Labour Input (Hours per Head of Population)			Educational Level of Population over 15 (Years weighted by Level)		
1820	1153	968	1598	2.0	1.8	1.0
1950	871	756	925	10.6	11.3	9.1
1995	656	768	929	14.5	18.7	15.4
	Stock of Machinery and Equipment Per Person Engaged (1990 international dollars)			Stock of Non-Residential Structures Per Person Engaged (1990 international dollars)		
1820	238	281	na	2973	3503	na
1890	1114	4115	194	7014	23270	1171
1950	4699	15150	3234	7556	42673	4518
1995	20427	43694	39403	35986	72657	99068
	Ratio of Non-Residential Capital Stock to GDP					
1820	.68	.95	na			
1890	.83	3.05	.71			
1950	.81	2.45	1.77			
1995	1.48	2.39	3.61			
	Rate of Growth of Total Factor Productivity					
1829 -70	0.15	-0.15	na			
1870 - 1913	0.31	0.33	-0.33			
1913 -50	0.81	1.60	0.36			
1950 -73	1.48	1.72	5.08			
1973 -95	0.99	0.20	0.49			

Table 7

Proportion of Employment by Major Economic Sector, Seven Countries, 1820-1998 (percent of total employment)							
	France	Germany	UK	Former USSR	USA	China	Japan
Agriculture, Forestry and Fishing							
1820	na	na	37.6	na	70.0	na	na
1913	41.1	34.6	11.6	77.0	27.5	na	60.1
1950	28.3	22.2	5.1	44.0	12.9	82.5c	48.3
1998	4.3	2.9a	1.7	14.9b	2.6	51.7d	5.3
Mining, Manufacturing, Construction and Utilities							
1820	na	na	32.9	na	15.0	na	na
1913	32.3	41.1	44.1	na	29.7	na	17.5
1950	34.9	43.0	44.9	29.0	33.6	7.0c	22.6
1998	24.7	34.6a	26.5	37.9b	23.4	22.4d	32.1
Services							
1820	na	na	29.5	na	15.0	na	na
1913	26.6	24.3	44.2	na	42.8	na	22.4
1950	36.8	34.8	50.0	27.0	53.5	10.5c	29.1
1998	71.0	62.5a	71.8	47.2b	74.0	25.9d	62.6

a) refers to reunified Germany; b) 1994, refers to Russian Republic; c) 1952; d) 1997.

Sources: 1820-1950 from Maddison, Angus (1995), *Monitoring the World Economy*, OECD: Paris and Bairoch, P and Associates (1968), *The Growth of Population and its Structure*, Universite Libre de Bruxelles. 1998 for OECD countries: from *Quarterly Labour Force Statistics*, 2 (1999), OECD, Paris. China 1952 from Maddison, Angus (1998), *Chinese Economic Performance in the Long Run*, OECD: Paris; 1997 from *China Statistical Yearbook* (1998): 132-3. USSR 1950 from Maddison 'Measuring the Performance of a Communist Command Economy', *Review of Income and Wealth*, September 1998; 1994 from World Bank, *Statistical Handbook for States and the Former USSR*, Washington DC.

Table 8

Characteristics Affecting Quality of Labour Input, 1820-1992 (years of education per person aged 15-64, average for both sexes)										
	France	Germany	Nether-lands	UK	Spain	USA	Mexico	China	India	Japan
1820	na	na	na	2.00	na	1.75	na	na	na	1.50
1913	6.99	8.37	6.42	8.82	na	7.86	na	na	na	5.36
1950	9.58	10.40	8.12	10.60	5.13	11.27	2.60	1.60	1.35	9.11
1973	11.69	11.55	10.27	11.66	6.29	14.58	5.22	4.09	2.60	12.09
1992	15.96	12.17	13.34	14.09	11.51	18.04	8.22	8.50	5.55	14.87

Table 9a

Merchandise Exports as Percent of GDP in 1990 Prices 1870-1998							
	1870	1913	1929	1950	1973	1998	
France	4.9	8.2	8.6	7.7	15.4	29.8	
Germany	9.5	15.6	12.8	6.2	23.8	38.2	
Netherlands	17.5	17.8	17.2	12.5	41.7	63.7	
UK	12.0	17.7	13.3	11.4	14.0	25.6	
Spain	3.8	8.1	5.0	3.0	5.0	23.6	
USA	2.5	3.7	3.6	3.0	5.0	10.8	
Mexico	3.1	9.1	12.5	3.0	1.9	10.5	
China	0.5	1.2	1.8	1.0	1.6	4.9	
India	2.5	4.7	3.7	2.6	2.0	2.2	
Japan	0.2	2.4	3.5	2.2	7.7	13.6	
World	5.0	8.6	9.0	6.8	11.1	17.2	

Table 9b

Rate of Growth in Volume of Merchandise Exports 1890-1998 <i>(annual average compound growth rates)</i>				
	1870-1913	1913-50	1950-73	1973-98
France	2.8	1.1	8.2	4.6
Germany	4.1	-2.8	12.4	4.4
Netherlands	2.3	1.5	10.4	4.1
UK	2.8	0.0	3.9	4.4
Spain	3.5	-1.6	9.2	9.0
USA	4.9	2.2	6.3	6.0
Mexico	5.4	-0.5	4.3	10.9
China	2.6	1.1	2.7	11.8
India	2.4	-1.5	2.5	5.6
Japan	8.5	2.0	15.4	5.3
World	3.4	1.3	7.0	4.7

Table 10

Economic Characteristics of the Top Twenty Countries at the End of the Twentieth Century (1997)					
	GDP in billion 1990 international dollars	Per Capita GDP in 1990 international dollars	Population (000s)	Percent of World GDP	Percent of World Population
USA	6629.5	24849	266792	20.5	4.6
China	3657.2	2973	1230075	11.3	21.1
Japan	2613.1	20712	126166	8.1	2.2
India	1609.4	1678	959000	5.0	16.4
Germany	1443.4	17591	82053	4.5	1.4
France	1103.7	18833	58604	3.4	1.0
UK	1055.8	18156	59009	3.3	1.0
Italy	922.4	17253	57520	3.1	1.0
Brazil	892.9	5442	164086	2.7	2.8
Indonesia	742.8	3716	199870	2.3	3.4
Russia	690.4	4691	147200	2.1	2.5
South Korea	604.6	13145	45991	1.9	0.8
Canada	592.9	19576	30287	1.8	0.5
Spain	537.7	13705	39232	1.7	0.7
Mexico	524.0	5559	94275	1.6	1.6
Turkey	503.9	12391	63745	1.6	1.1
Thailand	405.1	6685	60600	1.3	1.0
Australia	350.8	18930	18532	1.1	0.3
Argentina	318.7	8933	35672	1.0	0.6
Taiwan	312.0	14459	21580	1.0	0.4
Top Twenty Total	26045.3	6926	3760289	80.2	64.5
World	32487.5	5573	5829292	100.0	100.0

Table 11

Confrontation of 1973-98 Per Capita Growth Performance with that of 1950-73 (golden age) and 1870-1913 (second best phase)					
	Average annual compound growth rate of per capita GDP			Percentage Share of 1997:	
	1950-1973	1973-1998	1870-1913	World GDP	World Pop
Western Europe (12)	3.89	1.75	1.34	17.9	5.5
Western Offshoots (4)	2.42	1.66	1.81	23.4	5.5
Japan	8.05	2.28	1.53	8.0	2.2
Western Europe Periphery (17)	5.48	2.12	1.07	2.7	1.1
China	2.87	5.40	0.10	11.2	21.1
India	1.40	2.91	0.54	4.9	16.5
Other Dynamic Asia (7)	3.57	4.41	0.60	7.8	6.2
Sluggish Asia (31)	1.68	1.47	0.60	2.6	9.8
Latin America (44)	2.36	0.93	1.56	8.8	8.5
Middle East (16)	4.36	0.49	na	4.0	3.8
Eastern Europe (12)	3.78	0.34	1.30	2.0	2.1
Africa (57)	2.16	0.04	0.70	3.3	12.7
Former USSR (15)	3.36	-1.84	1.06	3.5	5.0
World Total (218)	2.88	1.25	1.30	100.0	100.0