Four scenarios for the world economy until 2015

5.1 Introduction

As was already set out in the first chapter, the long term future remains largely unpredictable. That is why four alternative scenarios are presented in this chapter. The scenarios are based on the information gathered in the previous chapters and on the interaction between the driving forces, the comparative-strength analysis and the various trends.

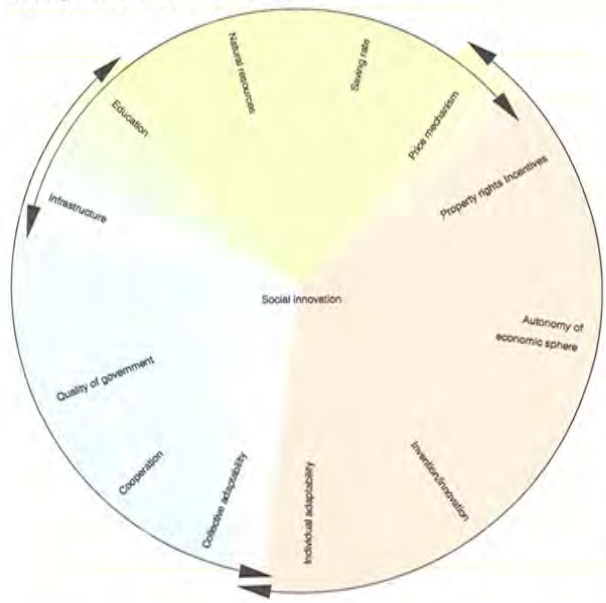
Figure 5.1.1 World scenarios: a multi-dimensional approach

Comparative-strenght analyses

Regions of world economy (some examples)

Driving forces	NAM	WEU	JAP
Natural resources	+	0	- -
Saving rate	- -	+	++
Price mechanism	++	0	+
Incentives	++	-	+
Autonomy	++	0/+	0
Inventions/innovations	++	0	+
Individual adaptability	++	- -	+
Collective adaptability	- -	+	++
Cooperation	- -	+	++
Quality of government	0	+	++
Infrastructure	–	+	0
Education	-/+	+	++

Driving forces of economic progress



Equilibrium

Coordination

Free-market

Scenarios

Challenges / trends for the world economy

1 Demography
2 Natural resources
3 Environmental problems
4 World food situation
5 Technology
6 Internationalization
7 Market structures
8 Political and social trends
9 International cooperation

No matter how logically, consistently and plausibly the scenarios have been formulated they are still four stories out of many, about how future developments might be. The primary goal of the scenarios is to motivate people to re-evaluate their (implicit) established ideas about the future and to help them imagine the various futures which may unfold.

In chapter 6 some remarks are made on the rationale and the plausibility of the scenarios as well as on the way the use of the scenarios may contribute to strategic decision making.

5.2 Global Shift

The scenario from a bird's-eye view

The dynamics of technological change are the pre-eminent driving force behind this scenario. In order to benefit from the dynamics, as well as sustain and reinforce them, vigorous entrepreneurship, incentives and market competition are essential preconditions. Economies which succeed in unleashing these forces will experience rapid transformation, profoundly influencing many industries. Entire new industries will spring up and in some cases even old ones will even be revived. The most significant characteristic of this *gale of creative destruction* is that vested interests and market positions are continuously threatened. In a number of cases they will, in fact, rapidly erode away. As a result, in many industries (within successful economies) market structures will be very competitive. This process is even further enhanced in regions where trade liberalization occurs. These developments explain to a large extent the predominance of the *Free-Market* perspective in the Global Shift scenario.

America's business sector, under pressure from Japan and the DAEs, will again demonstrate during the nineties that the Free-Market perspective is still a major source of strength for America. Its capacity for renewal initiates more investment, recovery of productivity growth and international competitiveness. When necessary, it also takes the initiative to tackle urgent growth-impeding factors itself. In so doing, it does not restrict itself to the weak spots in its own business attitudes, but it also applies itself to the improvement of, for example, basic education through sponsoring[1]. In this way, it reconfirms America's position as a 'world-class' economy. Even before 2000 there will be a substantial surplus on the current account, while real capital costs will remain at their present low level. The recovery in productivity also generates the financial means by which the government deficit can be reduced and human and

Box 5.2.1 Key characteristics of Global Shift

– Dominant Perspective	**– Free-Market**
– Regional Developments	
United States	**– strong recovery**
Western Europe	**– new Eurosclerosis**
	– breakthrough after 2000–2005
Japan and DAE	**– continual rise**
rest of Asia	**– start of Asian Era**
Latin America	**– sustained growth**
Africa	**– delinking**
NMEs	**– economic reconstruction fails**
	– backlash in CIS
– Trends	
Technology	**– strong dynamism**
Demography	**– rapidly declining fertility in Asia**
	– migration from East and South to Western Europe and US
Cooperation	**– only to free market forces**
	– leadership of US goes unchallenged
Environment/Energy	**– economic development top priority**
	– no global cooperation; no global feedbacks large local problems
	– shift to nuclear energy after 2000
World Food	**– Africa continent of hunger**
Internationalization and Market Structures	**– rapid globalization** **– very competitive**

physical infrastructural bottlenecks can be tackled on a large-scale basis. Consequently in this scenario, the improvement of weak points, such as education and infrastructure, largely follows in the wake of recovery, rather than preceding it.

A free-market-dominated recovery, however, is no tranquil, harmonious process of economic development. On the contrary, it inevitably entails that some people, firms and regions are losing badly, while others thrive. This is the 'boomtown-ghost town' phenomenon. In Global Shift this may manifest itself regionally in the further rise of the Pacific coast of the United States, while the relative decline of the East coast continues.

In Global Shift, Japan once again tackles various internal and external challenges with great enthusiasm and flexibility. For that purpose radical changes are being made to the Japanese system which imply a strong shift towards the Free-Market perspective. An important factor which precipitates this change is that Japan now stands at the technological frontier for a number of industrial sectors. This is why, in the future, Japan will have to make many more independent contributions towards expanding the technological frontier. This gradually leads to changes in the traditional patterns of organization, putting greater emphasis on individual initiative and creativity. Another most important change is that due to the rapid ageing of its population and the resulting labour shortage, protected or archaic sectors are exposed to competition. This forces rapid *catching up* in these sectors, and as a result of both developments, total convergence with American standards of living will be achieved by 2015.

The rise of the DAEs also continues. They benefit from the more open nature of the Japanese economy and the transfer of economic activities. These favourable developments at the regional level also generate the open atmosphere needed in order to reach a sweeping liberalization of trade and capital transactions in the Asian-Pacific region. ASEAN is expanding into an Asian Economic Community, while the 'Initiative for the Americas' evolves into a free-trade agreement comprising both American continents. This liberalization, in turn, provides fresh impetus to sustain the process of rapid economic growth. These impulses also affect regions such as China, India and Latin America in a positive manner, and give current internal reform processes enough momentum to promote sustained economic growth in these regions.

As a result, market forces move rapidly towards a high degree of internationalization and globalization within the entire Asian-Pacific region. Very competitive market structures also stimulate new research and accelerated diffusion of new technologies, including various types of 'cross-fertilization' between current key technologies.

This scenario's high degree of trust in man's technical ingenuity also creates new opportunities for nuclear energy, especially through the rapid development and installation of so-called inherently safe nuclear reactors. After 2000 this will lead to a rapid increase in the use of nuclear energy in this region, helping to keep real oil prices at bay, despite strong economic growth.

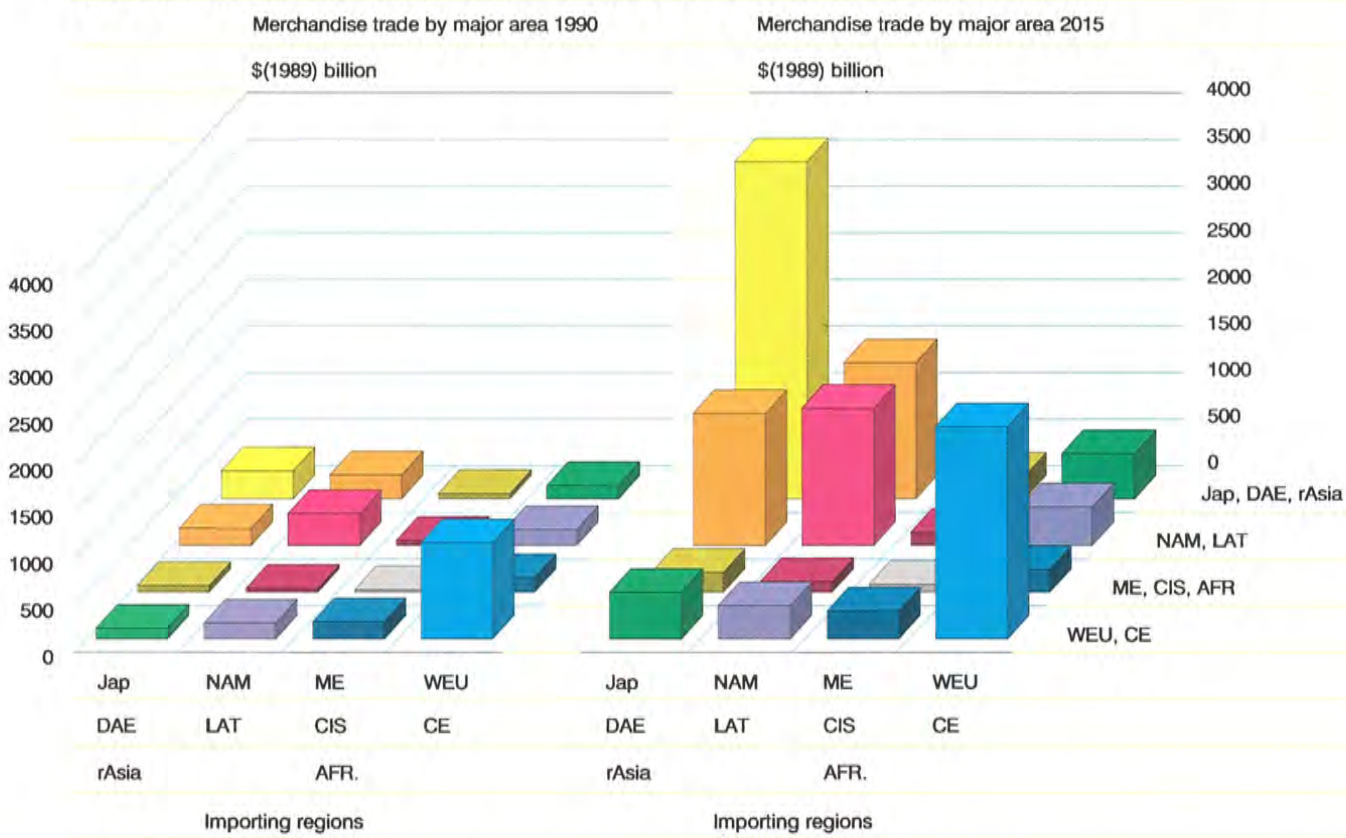
In summary, the old vision of a renewed blossoming and rise of the Asian-Pacific region, an *Asian Era*, comes true in Global Shift, defying the horrors of the Asian Drama, until recently envisioned by many as an inevitable doom.

Despite steps taken in the direction of an internal market, Europe appears generally ill-prepared in light of the innovative and competitive capabilities emanating from the Asian-Pacific region. *Eurosclerosis* does not seem to have been conquered. Economic reforms intended to promote or restore market competition are not realized or are implemented half-heartedly, due to effective resistance by pressure groups. This applies particularly to the labour market, which malfunctions as a result of many regulations and disincentives. The European bias towards security, stability, and risk-aversive behaviour prevails once again. As a result, economic growth recedes, unemployment again rises to

double-digit figures, and important industrial sectors, such as cars, computers, consumer electronics, office equipment and semiconductors, are quickly losing ground. A number of countries, France for example, will not, however, allow their main industrial sectors to be wiped out just like that. They will make the shift towards protectionism, by awarding subsidies to vital industries and introducing non-tariff barriers, for example. Other countries oppose this, however. The conflict inflames the crucial ongoing dispute about what kind of politico-economic model should be pursued for the European Community: Put simply, it is a choice between the *free-market*-oriented model or the *coordination*-oriented model. The Community is once again split, causing the process of integration to bog down while protectionism forges on. *Fortress Europe* is in the making. Europhoria degenerates into Europhobia.

The relative decline in Western Europe also has significant negative repercussions for economic development in Africa and Central Europe, reinforced by the fact that Western Europe is unable to provide financial support while at the same time, the West European markets are not opened up. Africa suffers the most; as a result of the unrelenting

Figure 5.2.1 Merchandise trade by major area in the Global Shift scenario in 1990 and 2015



How to read this figure: The figure shows the increase in international trade in and among four 'regions' between 1990 (left) and 2015 (right). The exporting regions are plotted along the right-hand axis; the importing regions along the bottom axis. Thus, the green area in the lower-left corner of the figure indicates trade with origins WEU + CE, and destinations JAP + DAE + rAsia. The figure makes it clear that in Global Shift, the centre of activity of the global economy shifts to the Pacific Rim.

population explosion, famine and extreme poverty intensify even further. Social and political unrest, coups and civil wars will continue to be a recurring theme. We may actually speak of a *delinking* from the rest of the world economy. Delinking also applies, in a certain sense, to the newly established Commonwealth of Independent States. There the chaos created by the devolution, together with the social unrest aroused as a result of declining standards of living, ends in political *backlashes* in various republics, to be followed by 'harsh' authoritarianism.

The political and economic hopelessness of the situation in Africa and Eastern Europe is causing large migratory movements. Due to the geographical proximity and old (colonial) bonds, Western Europe is an obvious first choice destination. As a result, social and political tensions which have already risen sharply in economic stagnation, are further inflamed. The establishment of an underclass which is socially completely disintegrated, causing widespread unrest, in many cases with clear racial overtones, is a threatening prospect for large urban conglomerates, in particular. After a number of years Western Europe reaches the bottom of the *vicious spiral*. Somewhere in the midst of the next decade a new consensus permits the spiral to be broken by means of unavoidably harsh measures, sweeping away rigidities of all kinds. Subsequently the West European economies gradually recover and the process of European integration regains momentum.

As far as the environment is concerned, Global Shift paints a less than optimistic picture. The delinking of Africa and the former Soviet Union implies a continuation of the current negative trends. In Western Europe and the Pacific region, *local* problems are the primary focus of attention. In Western Europe this stems from impotence, through stagnation of the process of integration. In the Pacific region, it is because the free-market nature of economic development does not expect any good to come from complex international talks on global environmental problems. Instead, the Pacific region relies on the efficiency of market forces as well as the stimulating effects they may have on the development of energy-saving technology and low-carbon energy sources.

In this way substantial increases in energy efficiency are achieved, as well as an increase in the use of zero-carbon nuclear energy. In Global Shift, however, market forces alone appear absolutely incapable of severely limiting the increase in emissions of greenhouse gases. In this way total CO_2 emissions by 2015 *increase*, for example, by about 60 per cent, and energy-related emissions by as much as approximately 75 per cent, whereas the agreements made in Toronto in 1988 are aimed at a *decrease* of 20 per cent by *2005*.

Furthermore, especially in Asia, the desire for fast economic growth is so strong that environmental concerns are pushed aside for some time to come. In the environmental domain this implies that local problems are only tackled whenever critical limits are reached. In a number of fields, especially local problems such as air, water and soil pollution, this attitude leads to large lapses. A quick-fix attitude provides short-term, temporary solutions.

Only near the end of the scenario period is any noticeable change in thinking expected, due to the enormous increase in prosperity and accompanying pollution. This new attitude will increasingly focus attention on *quality-of-life* issues. Although global feedbacks did not emerge during the scenario period, the danger still looms that the legacy of environmental neglect, as exemplified in the unhampered accumulation of greenhouse gases, will discharge itself sometime in the future.

In summary, this scenario leads to a large shift in economic activities from, roughly speaking, the Atlantic to the Pacific basin, which is why it is called *Global Shift*. This shift is most clearly illustrated in Figure 5.2.1. Some other key results of this scenario are summarized in Table 5.2.1.

Table 5.2.1 Key results of Global Shift, 1990–2015

	NAM[a]	WEU	JAP	NME	DAE	rASIA	ME	AFR	LAT	WLD
	annual percentage changes									
Population[b]	0.8	0.4	0.2	0.5	1.0	1.5	2.4	3.1	1.7	1.5
GDP	3.4	1.9	4.3	0.2	7.3	6.5	3.6	2.9	4.3	3.4
Labour supply[b]	1.0	0.6	0.2	0.5	1.6	1.6	3.2	3.4	2.0	1.6
Primary energy demand[c]	1.8	0.5	2.4	−0.5	→		4.3	←		2.4
Exports[d]	6.5	3.4	7.5	1.7	9.7	8.7	4.8	3.0	6.4	5.9
	levels 2015 (and 1990)									
Share of world population[b] (%)	5 (6)	7 (9)	2 (2)	6 (7)	6 (7)	46 (46)	6 (5)	13 (9)	9 (8)	100
Share of world production (%)	29 (29)	20 (29)	16 (13)	5 (11)	8 (3)	12 (6)	4 (4)	1 (1)	6 (5)	100
Share of world trade[d] (%)	21 (18)	23 (44)	13 (9)	5 (7)	24 (10)	6 (3)	3 (4)	0 (1)	5 (4)	100
Share of world energy consumption[c] (%)	24 (27)	10 (16)	5 (5)	9 (19)	→		52 (32)	←		100
Income per capita (PPP)[e] (index USA 1990 = 100)	195 (99)	99 (65)	201 (75)	30 (32)	64 (14)	22 (7)	24 (18)	4 (4)	40 (21)	35 (22)
Labour productivity (PPP)[e] (index USA 1990 = 100)	188 (99)	110 (72)	156 (58)	34 (30)	51 (13)	24 (7)	19 (17)	4 (4)	35 (20)	35 (22)
CO_2 emissions[c, f] (index 1990 = 100)	144	108	156	88	→		216	←		163
Energy intensity (index 1990 = 100)	68	72	64	84	→		76	←		79

[a] NAM = North America; WEU = Western Europe; JAP = Japan; DAE = Dynamic Asian Economies; NME = New Market Economies (Central Europe and the CIS); rASIA = rest of Asia; ME = MiddleEastand North Africa; AFR = Sub-Saharan Africa; LAT = Latin America; WLD = World. See appendix 4 for defenition of regions.
[b] See appendix 1 for further details.
[c] See appendix 2 for further details.
[d] Except for CIS, including intra-regional trade.
[e] Income per capita for NAM and WEU restricted to the United States and Canada, and the European Community, respectively.
[f] Including de/re-forestation; disregarding de/re-forestation would change the LDCs and global CO_2-emission index to 302 and 174, respectively.

A few regions considered further

Japan

In this scenario the bottlenecks emerging in Japan create an important mutual 'trigger' mechanism for solving each other. For instance, the labour shortages caused by demographic developments help expose well-protected and/or archaic (domestic) sectors to competition. This forces them to catch up or, in industrial sectors, either to import or transfer labour-intensive parts of production to DAEs. Both help ease the pressure on the labour market. Another contributing factor in this scenario is a better application of the potential of Japanese women, most of whom are well educated.

Finally, Japan will further improve its inventive potential for the technology race in the technologically advanced sectors. Reforms in the educational system stimulate individual initiative and creativity, in particular. With this development comes a gradual further weakening of MITI's steering role.

Despite these radical changes, traditional value patterns will persist to a large extent. Convergence with Western notions of lifestyle will only develop slowly and not really impinge upon the economic development of Japan.

Developments in China, India and Latin America

Due to catalytic internal and favourable external circumstances, sufficient momentum is created to bring about a policy reversal which can eliminate the most important factors blocking sustained economic growth in these regions. In this way these three regions, where approximately 50 per cent of the world population will be living around 2015, will increasingly participate in the highly dynamic economic development enjoyed by the entire Asian-Pacific region.

The withdrawal of the current old political establishment in China will provide the necessary catalyst to set in motion a transition from a centrally planned economy to a market economy. The erosion of the power base of the current system will then be exposed. As a result, the transition to a market economy and a democratic system is realized within a short time. In Global Shift China's transition to a market economy, in contrast with that of Central Europe, can rapidly generate a high-level path of economic growth. The more modest legacy of the centrally planned system in China may explain why the negative effects of a transition in China are less profound than in Central Europe. China is, first of all, still largely an agricultural country; this implies that reconstructing the manufacturing sector will have a more restrained impact on the economy. Secondly, approximately 35–40 per cent of the Chinese economy (as opposed to 5–10 per cent in Central Europe and the former Soviet Union) is already in private hands. The increase in growth, from 6.5 per cent to 10 per cent during the 1978–1989 period with limited liberalization, may serve as evidence that a rapid transformation in China is possible.

In this scenario this is also the case for *India*. In fact, the present balance-of-payments problems have already set in motion a reform programme, aimed at liberalizing external trade. Enhanced by the dynamism radiating from the entire Asian-Pacific region, this reform process will gradually spread to the entire economy. Based on the favourable effects generated by the very cautious liberalization during the eighties, this will imply the final take-off of the Indian economy towards a path of sustained economic development[2].

In *Latin America*, the problem is not so much policy reversal which has already happened, as turning the policy of stabilization and structural adjustment into a *success*. The problem here is that even if a tight stabilization and reform policy could be fully implemented, there is *no* guarantee of economic recovery. In fact, the danger exists that, due to the stabilization policy, Latin American economies will get caught in a so-called *debt overhang trap*, with low growth and high debt service[3].

Unlike China and India, this means Latin America can only break out of its vicious circle if internal reform policies are powerfully supported by favourable external circumstances. In the distinctly market-oriented Global Shift scenario, these circumstances are created by favourable developments in the world economy such as low real interest rates, very strong economic growth in the Asian-Pacific region and the attainment of a free-trade agreement with North America. This enables Latin America to climb out of the debt overhang trap.

Stabilization generates the beginning of a recovery in confidence, promoting political stability. Then entrepreneurs will again start focusing on the long term and be less shy of taking risks. Foreign investment will also be encouraged. Thus the favourable effects of the reform programme, aimed at liberalization, privatization and trimming of the government apparatus, are reinforced. Increased economic growth subsequently results in freeing up the financial means for tackling other serious growth-impeding bottlenecks especially in education, infrastructure and health care, reinforcing the *virtuous circle* even further. In the long term this leads to a sustained economic growth of about 4.5 per cent. Consequently, real per capita income doubles between now and 2015.

Commonwealth of Independent States

In Global Shift the euphoria inflamed by the collapse of the coup in August 1991 and the dissolution of the Soviet Empire, does not find any justification in the real economy. Following the initial attempts to transform the economy, resistance against the loss of the old privileged positions escalates rapidly, while at the same time, the patience and hope of ordinary people turn into frustration when it appears that hardship must be suffered longer than just one winter. The opposition against the new capitalist institutions becomes too strong. In the Global Shift scenario this results in the rise of populist dictatorships within the most important republics.

What starts as enlightened despotism, gradually ossifies however, into an authoritarian regime suppressing omnipresent nationalistic tensions. On the economic level, the large industrial monopolies are not dismantled. There is no autonomy of the economic sphere. The insufficient organization of property rights prevents the emergence of an entrepreneurial class. Authoritarian leadership, corruption and bureaucracy are the main incentives in the economy. In every respect, the developments in the Commonwealth are the antipode of the Free-Market perspective, inevitably implying its continued delinking from the world economy. Nevertheless, the new leaders manage to stabilize the economy in a relatively short period of time. This is mostly of statistical and cosmetic importance, however. Unemployment is hidden, inflation repressed, and the quality of industrial output remains very low. The underlying contradictions even gain importance, actually leading in the longer run to a new breakdown and consequent cycle of reform.

Central Europe

In Central Europe the transformation into a market economy is irreversible, resulting in the elimination of industrial monopolies. This in turn, implies a huge destruction of capital, as well as mass unemployment. A great many of the unemployed appear to have surprising entrepreneurial qualities. Especially in the labour-intensive service sector, many new (small) firms are started. However, just before the economies of Central Europe achieve a real breakthrough on the basis of this small-scale dynamism, fuelled by foreign direct investments, the relative decline of Western Europe drags them down into a long and brutal recession.

5.3 European Renaissance

The scenario from a bird's-eye view

In European Renaissance, as in Global Shift, technological change plays an important role. Its characteristics, as well as its rate of change, however, differ significantly. Accelerated technological dynamics characterize Global Shift, especially in the Asian-Pacific region. New opportunities for innovation are constantly emerging, incessantly challenging and eroding vested interests and market power. In this process a vital role is played by new, relatively small entrepreneurial firms. Far-reaching trade liberalization is also a contributing factor.

In contrast, in European Renaissance the dynamic interplay of these factors: entrepreneurship, openness of markets and characteristics of technological change itself, proceeds in another direction, making technological change, generally speaking, less dynamic and fickle and more stable and smooth. In European Renaissance new entrepreneurship encounters more barriers than in Global Shift. Huge funds are needed for research and development, involving large risks and uncertainties. Increasing returns to scale in finance, production, marketing and R & D, continue to be very important. As a result, global competition increasingly leads to the emergence of world-wide oligopolies and strategic alliances. These 'conglomerates' seek support from governments in order to reduce the degree of uncertainty. At the same time governments compete with each other in order to attract TNCs. Consequently, strategic technology, together with industrial and trade policies become more important. This also implies a less unequivocal commitment to free trade than that exhibited by the Asian-Pacific region in Global Shift.

Judged from the prosperity circle, in European Renaissance, the emphasis therefore falls on the *Coordination perspective*, while in Global Shift the emphasis is on the Free-Market perspective. In other words, we could also say that the Global Shift vision on technology leans towards the early-Schumpeterian ideas, while European Renaissance leans towards the later Schumpeter of *Capitalism, Socialism and Democracy*. The differences between the scenarios should not be made absolute however, instead, they should be interpreted as shades of difference. As reflected in the comparative-strength analysis, the world of European Renaissance seems to concur best with the European and Japanese traditions.

America's current inability to cooperate is once again demonstrated in the failure by American politics to break the stalemate of the budget deficit and in the inability of business to change the success formulas of the past. Trends from the eighties persist relentlessly. The most important of these are the sluggish growth in labour productivity, the recurrence of a large deficit on the current account and the continued deterioration of the physical and human infrastructure, apparent in the most harrowing way within the inner cities of America's urban conglomerates. The trade deficit is especially important because it further inflames the protectionist mood. *Fortress America* is in the making. Protectionism stretches out farther, affecting even technological know-how. The problems are gradually coming to a head.

The economic development of the strong Asian economies, Japan and the DAEs, is marred by the problems of the United States. The growth of DAEs is particularly handicapped due to technological protectionism; since their further development becomes increasingly dependent on access to know-how[4]. As a result, the economic development of the entire Asian continent is much less dynamic than in Global Shift.

Although Japan and the DAEs were forced into a defensive position during the post-Cold War era, they are less inclined to bow to this pressure. These countries react by realigning their strong export orientation toward the United States to other regions, especially Europe, the Commonwealth of Independent States and most of all, to each other. The Japanese system, with a great deal of informal coordination between government and business, does, however, remain largely intact.

Despite increasingly strained relations with the United States, Western Europe develops very favourably in the European Renaissance scenario. The high expectations of Europe '92 are fulfilled and the EMU is launched. The European process of integration is an important stimulus toward strengthening incentive structures on the West European product and labour markets. As an extension of this, a far-reaching process of reform of the West European welfare state is set in motion, especially in northwestern (continental) Europe. In this, attempts are made to combine the European tradition of social equity, apparent from the socio-economic aims of low unemployment and fair income distribution, with an increased sensitivity to economic incentives. In addition, education and labour are increasingly interpreted and appreciated as two of the few *social integration* mechanisms still remaining.

In European Renaissance stronger incentive structures are created by introducing tighter checks and enforcement factors within the social security system, so-called non-price incentives, while the relatively high West European standards for social benefits become modestly and selectively more sober. The reform also leads to the introduction of a compulsory *workfare* programme, which includes retraining, continued education and acceptance of less desirable jobs. In this way the emergence of an 'underclass' threatening some European countries is averted.

Box 5.3.1 Key characteristics of European Renaissance

- Dominant Perspective	**- Coordination**
- Regional Developments	
United States	**- economic decline until 2000–2005**
	- Fortress America
	- loss of leadership
Latin America	**- another decade of crisis**
Western Europe	**- favourable development**
	- policy-led integration process
	- EC expands to include EFTA and Central Europe
Commonwealth of Independent States	**- breakthrough at end of nineties**
Africa	**- benefits from European development**
Asia	**- rise restrained**
- Trends	
Technology	**- economies of scale dominant**
Cooperation	**- multipolar world**
	- strong regional cooperation
	- strained relations with US
Environment/Energy	**- no global approach, no global feedback**
	- mounting local problems
	- exception: Europe including Central Europe and European republics of CIS
	- European Energy Community: shift to gas
World Food	**- 'pockets' of hunger**
Internationalization and Market Structures	**- trade blocs**
	- strategic-trade/industrial policies
	- market structures evolve in less competitive direction

The prosperous economic development leads to a relatively open economic bloc. The European Community is open to further expansion. By 2000 the European Free Trade Association (EFTA) countries will already be full members of the Community, while a

special status will have been granted to the Central European countries. By 2015 the European Community encompasses all of Europe, with the exception of the European republics of the Commonwealth of Independent States. Based on the European Energy Charter, the European Community also quickly initiates a Pan-European Energy Community. This subsequently becomes the focal point of close cooperation with regard to environmental and energy issues, including the introduction of a limited CO_2 tax.

The rise of Fortress America and the tendency towards strategic trade and industrial policies contribute significantly to the formation of trade blocs. Multilateral free trade of increasingly more goods and services becomes endangered while managed trade lurks in the shadows. As a result, market structures in global markets become less competitive, contributing towards the fact that this scenario is technologically less dynamic than the Global Shift scenario.

At a certain moment, between 1995 and 2000, a fundamental crisis in confidence emerges with respect to the American economy, for example, during a stock market crash. Foreign capital is withdrawn, the dollar depreciates substantially. Large increases in interest rates help to halt the rapid fall of the dollar. The economy falls into a serious recession. Unemployment and poverty increase rapidly. The 'hard landing' precipitates a rapid reduction of the American government deficit, only making the recession worse[5].

The negative after-effects of this recession on the Pacific region are far-reaching. Besides Canada, the most affected region is Latin America with its strong interrelations with the United States. The increase in real interest rates implies a recurrence of the debt crisis for this part of the world. The results are economic stagnation, political instability and continuing deterioration of the environment, specifically the deforestation of the Amazon region. Japan and the DAEs are also affected. However, the reduction of their export orientation to the United States during the 1990s, helps these countries mitigate the effects. The negative impact on Western Europe is more limited than in the Asian-Pacific region. This is primarily due to a weaker interdependency on the American economy and to two compensatory forces: the progressive integration of Western Europe, as well as the substantial improvement of economic development in Eastern Europe around 2000.

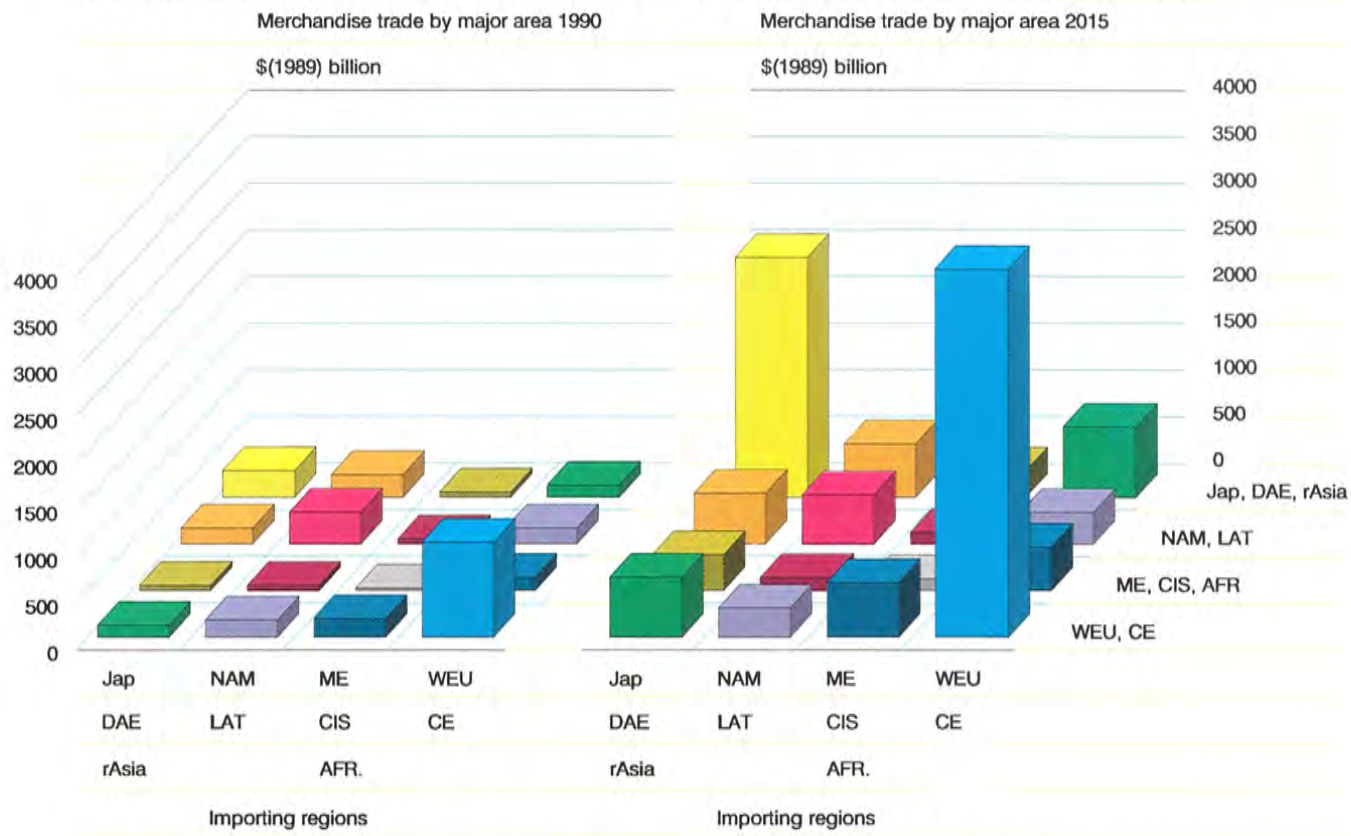
Due to the extensive 'legacy' from the past, the shock therapy which has been set in motion within the Commonwealth of Independent States, results in a deep depression with high unemployment and a sharp drop in the standard of living of about 30 per cent. While some republics endure a rather long period of stagnation, other parts, especially those neighbouring Europe, recover surprisingly fast and find some alliance with Europe, especially within the European Energy Community. In the European part of the Commonwealth, the process of transition proceeds so successfully that the economy already begins to show significant growth before 2000.

The Central European economies also thrive after the rapid, but painful transition period to a market economy. An external factor contributing towards this favourable development is the raltionship these countries have with the European Community. This eliminates all barriers for trade and capital transactions, clearing the way for large-scale foreign investment. Sizeable European Community support programmes are also important for physical infrastructure, energy and the environment, in particular.

In summary, the very favourable economic development of Europe and the Commonwealth of Independent States, after the gloomy views of the last decade, explain why we have called this scenario *European Renaissance*.

Finally, after a difficult adjustment period in the United States, a strong recovery begins somewhere during the 2000–2005 period. This also gives a boost to the world economy as a whole. Willingness to cooperate increases, resulting in the world-wide recovery of an open system of trade. This also improves opportunities for international talks on other

Figure 5.3.1 Merchandise trade by major area in the European Renaissance scenario in 1990 and 2015



How to read this figure: The figure shows the increase in international trade in and among four 'regions' between 1990 (left) and 2015 (right). The exporting regions are plotted along the right-hand axis; the importing regions along the bottom axis. Thus, the green area in the lower-left hand corner of the figure indicates trade with origins WEU + CE, and destinations JAP + DAE + rAsia. The figure shows that in European Renaissance, growth in Western Europe not only occurs together with an increase in intra-trade, but also with healthy growth in trade among other regions. The figure also shows that the development of trade in and with North and South America lags far behind developments in South-East Asia and Europe.

issues, such as the environment, where until 2005, apart from Europe, hardly any progress has been made. Up to 2015 the impact of these improved relationships on the global environment is, however, hardly noticeable. A few key results of the European Renaissance scenario are summarized in Table 5.3.1.

Table 5.3.1 Key results of European Renaissance, 1990–2015

	NAM[a]	WEU	JAP	NME	DAE	rASIA	ME	AFR	LAT	WLD
	annual percentage changes									
Population[b]	0.8	0.3	0.2	0.5	1.2	1.5	2.5	3.1	1.7	1.5
GDP	1.8	2.8	3.7	2.3	6.2	4.9	3.5	4.0	2.8	2.9
Labour supply[b]	0.8	0.6	0.1	0.6	1.7	1.5	3.2	3.4	2.0	1.6
Primary energy demand[c]	0.5	0.8	1.8	−0.4	→		3.6	←		1.8
Exports[d]	3.1	5.1	6.5	5.1	8.3	6.6	4.6	5.5	3.1	5.4
	levels 2015 (and 1990)									
Share of world population[b] (%)	5 (6)	6 (9)	2 (2)	6 (7)	7 (7)	45 (46)	6 (5)	13 (9)	9 (8)	100
Share of world production (%)	22 (29)	28 (29)	16 (13)	9 (11)	6 (3)	9 (6)	5 (4)	1 (1)	4 (5)	100
Share of world trade[d] (%)	10 (18)	38 (44)	11 (9)	13 (7)	19 (10)	4 (3)	3 (4)	1 (1)	2 (4)	100
Share of world energy consumption[c] (%)	20 (27)	13 (16)	5 (5)	11 (19)	→		50 (32)	←		100
Income per capita (PPP)[e] (index USA 1990 = 100)	132 (99)	126 (65)	176 (75)	48 (32)	47 (14)	15 (7)	23 (18)	5 (4)	28 (21)	31 (22)
Labour productivity (PPP)[e] (index USA 1990 = 100)	133 (99)	126 (72)	140 (58)	49 (30)	38 (13)	17 (7)	18 (17)	5 (4)	24 (20)	31 (22)
CO_2 emissions[c, f] (index 1990 = 100)	116	103	138	81	→		189	←		143
Energy intensity (index 1990 = 100)	74	62	63	52	→		82	←		75

[a] For abbreviations, see Table 5.2.1.
[b] Labour supply in persons. See appendix 1 for further details.
[c] See appendix 2 for further details.
[d] Except for CIS, including intra-regional trade. See appendix 3 for further details.
[e] Income per capita for NAM and WEU restricted to the United States and Canada, and the European Community, respectively.
[f] Including de/re-forestation; disregarding de/re-forestation would change the LDCs and global CO_2-emission index to 250 and 147, respectively.

Western Europe

The tensions and challenges which emerge in the European Renaissance scenario also influence the nature of the integration processes of the European Community. Especially, the strained relationship with the United States, as a result of its setback, and the *European* character of many of the challenges, drive home the message to many member states that during the post-Cold War era, Europe must stand on its own two feet. This includes, for example, the process of transition in Central Europe and the Commonwealth of Independent States; environmental challenges; potentially massive waves of migration from Africa and Eastern Europe; the 'embedding' of Germany in Europe and the technology race, especially with Japan and the DAEs.

Many of these problems call for European *cooperation* and *coordination*. In European Renaissance this will cause member states to become more deeply involved in a relatively centralized process of integration, despite many doubts and often against deeply felt instincts. The dynamics of the process are therefore guided with a relatively firm hand by the European Council and the European Commission. For example, new initiatives are launched by Brussels concerning foreign affairs, development aid (especially for Africa), defence, environmental protection and energy policy, technology, industrial policy, social security (social minimum standards) and infrastructure.

Through the *linkage* of issues, this process of integration dispatched from above also has the tendency to reinforce itself. As a result, there is a continual, all but creeping transfer of sovereignty to Brussels. In an increasingly emphatic manner, this directs attention to the *democratic deficit* of the Community, which in turn leads to more powers for the European Parliament and a stronger position and larger responsibility for the European Commissioners.

One important initiative which may serve as an example of this linkage process is the European Energy Charter, which as indicated, develops into a European Energy Community. In this organization a number of major issues of Community policy are intertwined with one another: aid for Eastern Europe, energy, the environment, technology policy and Community finances. Within the context of the European Energy Community, a modest CO_2 tax is introduced. In addition, there are regulations aimed at promoting energy conservation. There is a European Research and Development programme for the environmental and energy fields, similar to ESPRIT. The European Energy Community organizes transfers of know-how and technology in the environmental and energy fields to Central and Eastern Europe. The European Energy Community also implements a major plan for infrastructure, in which gas from western Siberia is transported to Western Europe. In exchange for gas, the Commonwealth of Independent States can import modern capital goods to modernize, for example, its very inefficient and polluting energy and transport systems. As a result, growth of primary energy demand in Western Europe is modest, while CO_2 emissions are stabilized at their 1990 level. This stabilization is achieved, in particular, by means of an increase in the share of natural gas in total energy use. For Central and Eastern Europe the results are even more favourable; despite a cumulative 75 per cent growth of production, CO_2 emissions fall by 20 per cent.

Central Europe

Within the time horizon of the scenario, we see Central Europe completely integrated in the European Community. During the first phase of the transition process to a market economy, the sizeable European Community support programmes are of special importance, especially for infrastructure and energy. On the one hand, it shows the political commitment of Western Europe to the process of reform and, on the other hand helps Western businesses overcome their doubts about investing in Central Europe. In this way political and economic cooperation mutually strengthen each other. After the

difficult transition period has been endured, it is the business sector, in particular, which maintains the momentum in the process of development. By the mid-nineties, Central European economies will be in a position to leave behind the recession caused by the process of reform. From that moment on, they manage to sustain an annual growth of about 6 per cent on average. In spite of this, though, the real per capita income in Central Europe in 2015 is still more than 50 per cent lower than in Western Europe.

Central Europe is especially attractive to investment because of low labour costs. Together with the population's high level of education, geographic proximity and the successful developments in Western Europe, this explains the great interest shown by West European companies in direct investment. The low wage costs are reflected in the sectoral structure and trade patterns. Although there is a good deal of intra-industry and intra-firm trade, the general picture is still that of import of capital goods and export of labour-intensive products.

The Commonwealth of Independent States

The Commonwealth accomplishes the take-off much more on its own strength than does Central Europe. This happens through implementation of radical political and economic changes, coupled with scaling down in all areas. After an initial phase of tension, the independent republics manage to create a large economic space, according to the model provided by the European Community. Agriculture is privatized and large industrial monopolies are broken up. The forces of market competition bring about company closures on a large scale and lead to sharply increasing unemployment. Major social tensions will arise, because the means for a social safety net are lacking. These tensions do not, however, come to a head since the recovered autonomy and reborn small-scale dynamics give sufficient hope and strength to the population, thereby enabling them to endure. During the first five to ten years, the dynamics become especially apparent in agriculture, the trade sector and small-scale services, while substantial productivity growth is achieved in mining and quarrying. Although for a period of three generations, the self-employed practically disappeared from the stage, new entrepreneurship does quickly emerge, living off experiences gleaned from the system of barter in the informal sector[6]. After a sharp relapse in production, this dynamic causes the entire economy to resurrect, growing perceptible after a few years. Nevertheless unemployment will not drop back below double figures until well into the next century.

Although the financial aid which the Commonwealth receives from the West is only a drop in the ocean and, although large-scale foreign investment is holding back until the next century, an increasingly closer cooperation with Western Europe still emerges. This occurs, among others, within the context of free-trade agreements and the European Energy Community, which also provides a substantial flow of hard currency. In addition, by means of joint ventures, the enormous environmental problems start being tackled. Agriculture also profits to a significant degree from the transfer of technology.

Not until the next century will large-scale companies experience a rapid development. Surprisingly, not only traditional sectors such as steel and textile industries, but also high-value-added sectors appear rapidly, based on know-how from advanced space and weapons technology. Consequently the entire economy grows by more than 5 per cent for a long period of time.

5.4 Global Crisis

The scenario from a bird's-eye view

In the beginning the crisis nature of this scenario is difficult to imagine. Even though the euphoria of *annus mirabilis* 1989 has passed, the sensation is still one of standing on the brink of a new era which offers many new opportunities for cooperation and growth of prosperity. Regardless of this optimistic beginning, in the United States, the nineties do not really seem to break away from the trends of the eighties[7], while in Western Europe high expectations about Europe '92 are not met. Although no dramatic setbacks take place, the process of economic decay is slowly but surely, settling in to stay.

For the United States this implies continuing weak productivity growth along with a worsening physical and human infrastructure. The 'twin deficits' only drop at an exasperatingly slow rate. In Western Europe it gradually becomes clear that Eurosclerosis has not really been conquered and that discord within the European Community permits only weak compromises. As a result the integration process loses momentum and the moderate growth once again causes rising unemployment.

For Japan too, the trends of the 1980s continue. Emerging bottlenecks such as the ageing population are taken care of with relative ease, for example by increasing the labour participation of women and vigorously introducing labour-saving technology. Rapid growth continues and large current account surpluses persist. This means that although Japan once again displays great flexibility in the *economic* sphere, from a *socio-political* viewpoint it remains essentially unaltered. As far as the outside world is concerned, it remains 'a closed Japan Inc.' that competes in an 'unfair' manner.

The further rise of the Far East on the one hand, and the economic impotence of Europe and America on the other hand, ensure a continuous deepening of tensions on trade issues during the nineties, especially in the strategic sectors. The discussions become more grim because America and Western Europe feel increasingly more threatened, while *Japan bashing* irritates the increasingly self-confident and powerful Japanese; as a result, a negative spiral of distrust is set in motion.

The optimism expressed at the beginning of the 1990s has, by the end of the

Box 5.4.1 Key Characteristics of Global Crisis

– Dominant Perspective	**– lack of balance**
– Regional Developments	
United States and	**– outdated policies prevail**
Western Europe	**– slow growth**
Japan and DAEs	**– continual rise**
Africa and Latin America	**– lost decade**
NMEs	**– muddling through**
	– nationalism and populism prevail
– Trends	
Technology	**– missed opportunities**
Demography	**– demographic trap closes**
	– AIDS crisis in Africa
	– widespread migration
Cooperation	**– antagonisms prevail,**
	– no leadership
World Food and	**– ecoshock as result of agricultural crisis**
Environment	**– widespread starvation**
Internationalization and	**– hampered by protectionism and rigidities**
Market Structures	

decade, completely faded away. The major regions of the world gradually degenerate into *antagonistic* protectionist blocs, in which the DAEs increasingly depend on Japan. As a result, market structures are again becoming less competitive. The diffusion of new technology is consequently delayed. Both factors contribute towards further slackening of global economic growth. Moreover, economic antagonism between the three large blocs also mars international talks concerning environmental problems. Apart from fine statements of intention, no real progress is made on these issues during the nineties. As a result, energy consumption, greenhouse gas emissions and other environmental problems continue unchecked.

In this context of antagonism, moderate growth of production and, even more so, of world trade, and continuing low prices for commodities, it is impossible for regions like Africa, Latin America and parts of Asia to attain a path of self-sustained and sustainable economic growth. Consequently, during the nineties economic performance in these regions still remains very fragile. As a result, the *demographic trap* closes: fertility rates barely decline and economic growth will only slightly exceed the high rate of population growth. Only the rapid proliferation of the AIDS disease provides a sinister check to the population explosion, killing in Africa alone between 50–75 million people in the next quarter century[8].

The few signs of change currently visible in some parts of these regions will be crushed. Poverty-stricken and confronted with a vast increase in population, the hectic and careless search for water, food and energy continues relentlessly, inevitably wearing nature out at a rapid rate. As a result, the world will be startled to an ever-increasing degree by reports about the consequences: famine, deforestation disease and floods. Ultimately for these regions, the nineties do not look as though they can be considered anything different than the eighties: *a lost decade.*

The same applies to Central Europe and the Commonwealth of Independent States. In Central Europe the economies are hard hit by the moderate growth of the world economy and especially that of Western Europe. Much needed foreign investment fails to arrive, trade barriers are not lifted, and industrial restructuring has bogged down. Consequently confidence reaches a low ebb. Populist leaders will emerge, offering quick solutions and feeding nationalistic feelings and tensions; this will in turn, further impede economic development.

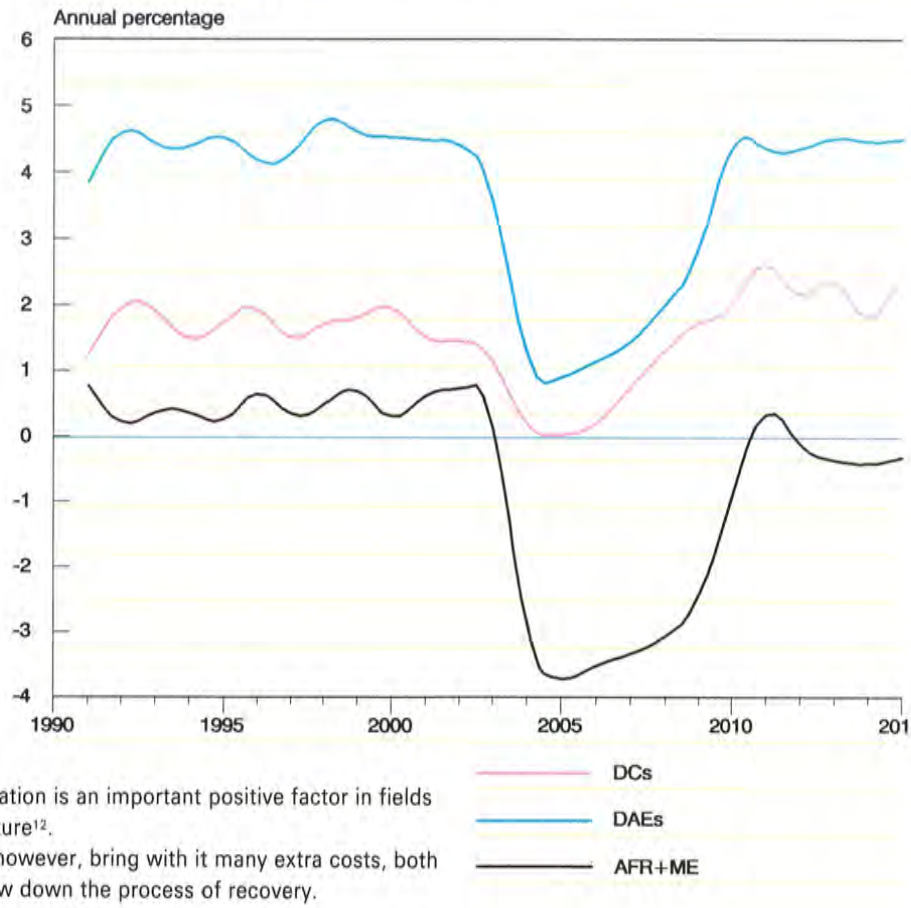
This is even more true for the former Soviet Union. Here too, the fire of nationalistic, and in this case also, religious sentiment burns brightly. In the Asiatic republics for example, Islamic fundamentalists come to power. As a result, just like its predecessor, the Commonwealth of Independent States suffers the fate of disintegration.

So everywhere tensions are mounting. Most regional economies and the entire world system become more fragile, while the formation of blocs obstructs any effective approach to the problems. The world seems to become more and more trapped in a *vicious circle.* At some stage then, a disruption takes place which, in view of the fragility of the system, assumes the nature of a system shock. Theoretically, such a shock could occur in many areas[9]. For the Global Crisis scenario, we have assumed a serious world-wide crisis in the area of world food supply, due to occur around 2000-2005[10]. Because of *simultaneous* extreme drought in the United States, the disintegrated Commonwealth of Independent States and China, food prices skyrocket in a short time by much more than 100 per cent. In Africa and Southern Asia in particular, the impact is horrifying, causing widespread death and migration. The agricultural crisis will be interpreted by many as decisive evidence of lasting deterioration of agricultural land and for this reason, be considered an *ecoshock.* Others associate it with the greenhouse effect. Coincidental events, such as the rapid increase in the incidence of skin cancer will also be connected to the ecoshock and compound the shock and fear. As a result, a deep economic recession is set in motion: *Global Crisis.*

No matter how serious the food crisis might be, the crisis itself does not explain the depth of the economic recession, no more than the oil crises of 1973 and 1979 can fully explain the weak economic performance of the 1973–1983 period[11]. The economic recession of the Global Crisis scenario during the period following 2005–2010 can *only* be understood when viewed in combination with the precarious situation into which the world economy has drifted, characterized by rigidities and a complete loss of confidence.

For some time global economic growth has been dropping from about 2.5 per cent in the 1990s to about 1 per cent per year in the first decade of the twenty-first century, implying for the poorest regions a severe fall in per capita real income; see Figure 5.4.1. The crisis actually delinks the poorest regions of the world economy and causes the emergence of a *global underclass*.

Figure 5.4.1 Stylized growth of regional GDP per capita in the Global Crisis scenario, 1990–2015



A few years after the acute crisis the world economy begins to show signs of recovery. The fresh memory of the crisis also creates new windows of opportunity. Consequently a period of recovery is ushered in during which international cooperation is an important positive factor in fields such as the environment, energy and agriculture[12]. The *late response* to many challenges does, however, bring with it many extra costs, both globally as well as regionally, all of which slow down the process of recovery.

In retrospect, the nineties will widely be interpreted as a period of muddling through, as a decade of missed opportunities, culminating in a Global Crisis. Seen from an historical perspective, Global Crisis can only be characterized as a scenario of very slow economic progress. A few key figures for Global Crisis are summarized in Table 5.4.1.

Table 5.4.1 Key results of Global Crisis, 1990–2015

	NAM[a]	WEU	JAP	NME	DAE	rASIA	ME	AFR	LAT	WLD
annual percentage changes										
Population[b]	0.8	0.4	0.2	0.5	1.2	1.7	2.8	2.8	1.9	1.6
GDP 1990–2003	2.0	2.0	3.5	−1.6	6.0	4.5	3.8	3.1	3.5	2.4
2003–2009	0.5	1.0	1.8	−0.6	2.5	2.7	−1.0	0.0	1.0	1.0
2009–2015	2.3	2.3	3.0	2.5	5.5	5.0	1.8	3.0	4.0	2.9
1990–2015	1.7	1.8	3.0	−0.4	5.0	4.2	2.1	2.3	3.0	2.2
Labour supply[b]	0.9	0.6	0.0	0.5	1.7	1.7	3.3	3.0	2.1	1.6
Primary energy demand[c]	0.7	0.9	1.9	−0.5	→		3.5	←		1.7
Exports[d]	2.8	3.1	5.0	0.4	6.3	4.3	2.4	2.5	3.5	3.7
	levels 2015 (and 1990)									
Share of world population[b] (%)	5 (6)	6 (9)	2 (2)	6 (7)	7 (7)	47 (46)	7 (5)	12 (9)	9 (8)	100
Share of world production (%)	26 (29)	27 (29)	16 (13)	6 (11)	6 (3)	9 (6)	4 (4)	1 (1)	6 (5)	100
Share of world trade[d] (%)	14 (18)	36 (44)	11 (9)	5 (7)	18 (10)	4 (3)	3 (4)	1 (1)	4 (4)	100
Share of world energy consumption[d] (%)	22 (27)	13 (16)	5 (5)	11 (19)	→		49 (32)	←		100
Income per capita (PPP)[e] (Index USA 1990 = 100)	129 (99)	98 (65)	146 (75)	26 (32)	36 (14)	12 (7)	15 (18)	4 (4)	28 (21)	25 (22)
Labour productivity (PPP)[e] (index USA 1990 = 100)	125 (99)	(72)	119 (58)	27 (30)	29 (13)	14 (7)	13 (17)	3 (4)	25 (20)	(22)
CO_2 emissions[c, f] (index 1990 = 100)	122	117	139	87	→		199	←		151
Energy intensity (index 1990 = 100)	79	79	77	97	→		97	←		90

[a] For abbreviations, see table 5.2.1
[b] Labour supply in persons. See appendix 1 for further details.
[c] See appendix 2 for further details.
[d] Except for CIS, including intra-regional trade. See appendix 3 for further details.
[e] Income per capita for NAM and WEU restricted to the United States and Canada, and the European Community, respectively.
[f] Including de/re-forestation; disregarding de/re-forestation would change the LDCs and global CO_2-emission index to 239 and 149, respectively.

5.5 Balanced Growth

The scenario from a bird's-eye view

The revived and ever-stronger striving toward sustainable economic development, combined with continuously strong technological dynamics, constitute the dominant forces of the Balanced Growth scenario. This calls for a new balance between the economic perspectives, which gradually manifests itself world-wide in a new *Zeitgeist*. The environmental challenge will evoke a shift to the Coordination perspective. This shift will mitigate the strong free-market emphasis of the 1980s without, however, destroying its positive impact. As a result, a new paradigm emerges which in a subtle way, tries to balance the strong elements of the Free-Market and Coordination perspectives. This paradigm can be identified with the rational world of the Equilibrium perspective.

During the next years the weak points of the major industrial countries will be corrected from this new paradigm. The United States government reduces the budget deficit and improves education and infrastructure, while American business changes its attitudes and practices. Western Europe strengthens incentive structures and Japan opens up to the world economy. At the same time, reform processes continue or gain new strength in regions like Latin America, the former Soviet Union, India and China. In the case of the Commonwealth of Independent States and China, this leads to a complete transition to a market economy. As a result, during the second half of the nineties, world-wide economic growth picks up strongly.

These positive developments on a regional level also stimulate an open and cooperative attitude on the international level. A breakthrough is achieved in the GATT talks: trade of agricultural products is extensively liberalized and a wide variety of non-tariff barriers are drastically reduced. Through more competitive market structures, trade liberalization confers a strong growth impulse on the world economy, reinforcing in turn, the favourable developments on a regional level.

Consequently, there is more growth primarily due to specialization and dynamic economies of scale; more growth also because more competitive market structures stimulate innovation. This leads to a rapid diffusion of the rich technological potential which already exists. In Balanced Growth, the incentives to innovate do, however, remain quite strong. The fact is, the technological dynamics generated are so powerful that there is little chance of maintaining any long-lasting market positions by means of major market power. Small, technologically very dynamic companies play an important catalytic role in the process.

The *virtuous circle* created by all these developments in Balanced Growth also has a geographical dimension. It helps to crack the strong, internal, growth-impeding factors in regions like Africa. In addition, the virtuous circle lends powerful support to the 'market economies in the making' in Central Europe and the former Soviet Union. Economic development spreads out over the globe and assumes what we may call a strong *multipolar* nature. In turn, the resulting rapid industrialization of the LDCs and NMEs on the world market is another powerful factor reinforcing competitive market structures. In the LDCs themselves the economic breakthrough propels a rapid decline in fertility rates, slowing down population growth. The *golden age* of the 1950–1973 period seems ready to repeat itself.

In addition to the *Free-Market* element, the *Coordination* element is also a factor of great importance in Balanced Growth. This is most apparent from international treaties

Box 5.5.1 Key characteristics of Balanced Growth

– Dominant Perspective	**– Equilibrium**
– Regional Developments	
World	**– transition to sustainable growth**
	– growth also multipolar, including Africa
Japan	**– socio-cultural catching up to the West**
Western Europe	**– integration based on market forces**
– Trends	
Technology	**– strong dynamism**
Demography	**– rapidly declining fertility**
Cooperation	**– to free market forces;**
	– to respond to global challenges
Environment/Energy	**– leadership role of DCs**
	– global cooperation
	– introduction of global CO_2 tax
	– LDCs compensated through aid
	– 50 per cent reduction in energy intensity
	– start transition to renewable energy
World Food	**– breaking paradox of hunger amidst plenty**
Internationalization	**– unhampered**
and Market Structures	**– very competitive**
	– breakthrough in GATT

on security and environment. A primary result of the transition of the Commonwealth of Independent States to a market economy is the possible further reduction of armament and defence spending in the world, on the order of half the magnitude of the current level (around $ 500 billion). This will make possible a sizeable reallocation of production factors, especially in the former Soviet Union, greatly stimulating the economic development of the new republics in the long term. Formalizing this arrangement in an international treaty also implies a *de facto* development towards a global security system.

Perhaps even more spectacular is the realization of an international treaty aimed at reducing greenhouse gas emissions. On the initiative of the DCs, the world community decides to set up a CO_2 tax as a sort of insurance against the risks of greenhouse gases. The developing countries, especially countries with rich coal and oil deposits such as China and India, are, however, prepared to participate only on the condition that they will be compensated for the adverse results of this *eco-tax*. The DCs agree to this for the most part on the conditions that the aid is specifically used to generate sustainable development and only applies to the low- and medium-income LDCs[13]. This means the treaty assumes a strong *no-regrets* nature, implying that even if global warming does not happen, the world economy will still reap many benefits from this policy.

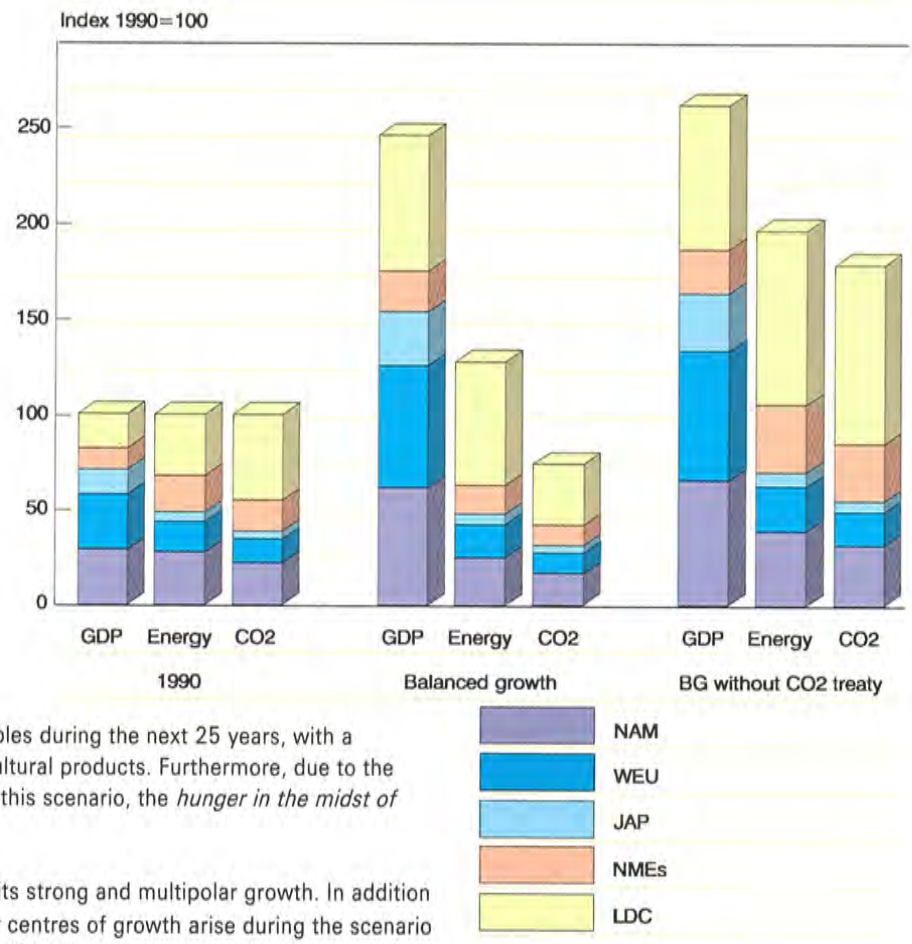
Important aspects of the treaty are:

- from 1998 onwards a gradual introduction of a global CO_2 tax on coal, oil and gas, amounting to, on average, about $190 per ton carbon (1990 prices), which is equivalent to $20 per barrel of oil, during the 2000–2015 period; this tax, which in 2015 could amount to about 3.5 per cent of world income (1990 prices), is levied at the border and counterbalanced in most countries by a reduction in other taxes;
- aid for terminating the deforestation of tropical rain forests, especially in Brazil, and where possible, for starting reforestation; this can also help to abate erosion of agricultural land;
- compensation for the LDCs for the adverse effects of the CO_2 tax by means of an increase in development aid; especially a transfer of know-how and technology in such areas as energy, agriculture, infrastructure and water; furthermore, aid aimed at education and in a number of cases, especially for African and Latin American countries, at debt relief;
- non-cooperating countries are threatened with reduction of development aid and the introduction of trade tariffs;
- full implementation of phase-out of CFCs.

The interplay of the global CO_2 tax, technological dynamics and competitive market structures provides powerful incentives to save energy, to substitute low-carbon fossil fuels and to develop and introduce alternative sources of renewable energy. As a result[14], energy intensity is halved in Balanced Growth with limited sacrifices in terms of *global* production (approximately 0.25 per cent annually)[15]. Actually, in the developed countries almost complete *decoupling* of economic growth and energy use will have been achieved. In addition, the share of low-, or zero-carbon fossil fuels in global energy use will have increased from 39 per cent to more than 50 per cent. The combined impact of this coordinated policy is that by 2015, world-wide energy-related CO_2 emissions will have increased by about 7.5 per cent, with a (cumulative) global economic growth of 145 per cent. The *total* emissions, including reductions in deforestation, *decrease* by as much as 25 per cent compared with the 1990 level. With this a significant contribution is also made towards the abatement of various other environmental problems such as acid rain. Despite these large efforts, it is expected that due to the various delays, continuous global warming by about 0.1–0.2 degrees Celsius per decade can no longer be prevented (compared with about 0.3–0.4 degrees Celsius with an unchanged policy). Only through continued efforts after 2015 can global warming be definitely halted. Through the introduction of the sizeable CO_2 tax in Balanced Growth and the incentives this generates for the development and introduction of renewable energy sources, this scenario provides an important foundation for such a development to take place.

When viewed in this light, the Balanced Growth scenario can be considered as a kind of transition phase between the present, in which energy use predominantly involves non-renewable fossil fuels, and some point in time during the twenty-first century when energy will be produced primarily from renewable energy sources. *Only* with the emergence of a backstop technology elicited by the CO_2 tax, such as a technique eliminating carbon dioxide from fossil fuels, could this scenario still become outdated. In such circumstances, the existing vast reserves of coal would again play a major role in the world-wide provision of energy.

Figure 5.5.1 Index of GDP, energy consumption and CO_2 emissions in the Balanced Growth scenario in 2015



As mentioned, within the context of the CO_2 treaty, there is also aid earmarked for tackling urgent problems in the field of agricultural production. This concerns further intensification of the transfer of know-how and technology aimed at preventing deterioration of agricultural land, the application of sustainable irrigation techniques and aid for more intensive fertilization. As a result, in Balanced Growth, world food production doubles during the next 25 years, with a relatively modest real price increase for agricultural products. Furthermore, due to the multipolarity of the economic development in this scenario, the *hunger in the midst of plenty* paradox gradually loses significance.

In summary, Balanced Growth is set apart by its strong and multipolar growth. In addition to the already existing centres of growth, new centres of growth arise during the scenario period; even Africa catches up, albeit slowly. With this, Balanced Growth marks the

Table 5.5.1 Key results of Balanced Growth, 1990–2015

	NAM[a]	WEU	JAP	NME	DAE	rASIA	ME	AFR	LAT	WLD
annual percentage changes										
Population[b]	0.8	0.3	0.2	0.5	1.0	1.2	2.0	2.7	1.4	1.2
GDP	3.0	3.2	3.1	2.7	7.0	6.1	3.2	4.9	5.6	3.6
Labour supply[b]	0.9	0.7	0.0	0.6	1.5	1.4	3.0	3.3	1.8	1.5
Primary energy demand[c]	−0.4	0.3	0.5	−1.0		→	2.8	←		1.0
Exports[d]	6.1	6.4	6.0	5.4	9.8	8.5	3.1	6.6	8.1	6.8
	levels 2015 (and 1990)									
Share of world population[b] (%)	6 (6)	7 (9)	2 (2)	6 (7)	7 (7)	45 (46)	6 (5)	13 (9)	9 (8)	100
Share of world production (%)	25 (29)	26 (29)	11 (13)	9 (11)	7 (3)	10 (6)	4 (4)	1 (1)	7 (5)	100
Share of world trade[d] (%)	15 (18)	38 (44)	7 (9)	8 (7)	20 (10)	5 (3)	2 (4)	1 (1)	6 (4)	100
Share of world energy consumption[c] (%)	20 (27)	14 (16)	4 (5)	12 (19)		→	50 (32)	←		100
Income per capita (PPP)[e] (index USA 1990 = 100)	181 (99)	141 (65)	152 (75)	53 (32)	61 (14)	22 (7)	24 (18)	7 (4)	59 (21)	39 (22)
Labour productivity[e] (PPP) (index USA 1990 = 100)	173 (99)	142 (72)	129 (58)	53 (30)	48 (13)	23 (7)	17 (17)	6 (4)	50 (20)	38 (22)
CO_2 emissions[c, f] (index 1990 = 100)	77	84	93	66		→	71	←		74
Energy intensity (index 1990 = 100)	43	49	53	40		→	51	←		52

[a] For abbreviations, see table 5.2.1
[b] Labour supply in persons. See appendix 1 for further details.
[c] See Appendix 2 for further details.
[d] Except for CIS, including intra-regional trade. See appendix 3 for further details.
[e] Income per capita for NAM and WEU restricted to the United States and Canada, and the European Community, respectively.
[f] Including de/re-forestation; disregarding de/re-forestation would change the LDCs and global CO_2-emission index to 183 and 108, respectively.

decisive point of take-off for the LDCs. Balanced Growth also shows that rapid economic growth based on a combination of free market and coordination, is compatible with sustainable economic development. More precisely, although the world economy in 2015 may not yet quite have reached such a state, with regard to some crucial issues, especially the greenhouse effect and world food supply, it can certainly have made substantial progress in that direction. Some key results of this scenario are summarized in Table 5.5.1.

The United States

In Balanced Growth, the 'weak' points of the United States will be corrected during the nineties, implying a major break with the policies of the 1980s. An important domestic factor in the reorientation process preceding this policy change are the negative consequences of the 1980s' policies which are only now becoming more visible. The public 'squalor' includes the deterioration of education and physical infrastructure and the decay of America's inner cities. The crude *government get off my back* attitude diminishes as a result. The challenge of Europe '92 and the end of the Gulf War form external factors which can also contribute towards getting one's own house in order. After the policy reversal, it becomes apparent just how great the American capacity for 'collective action' and adjustment still is[16].

In practical terms, this reorientation really means a sizeable plan for improvement, especially with regard to the quality of American education and the physical infrastructure. Substantial extra amounts are allocated toward this end. At the same time, however, the American government's budget deficit should be reduced. In addition to cutbacks in defence, an increase in taxes is unavoidable and accepted; this is implemented through the introduction of the CO_2 tax.

Consequently, there is a sharp rise in national savings. A further increase is pursued by means of tax breaks in order to promote private savings. In this scenario, however, as long as the private savings ratio has not yet recovered, the American government creates a substantial surplus in the government budget. The lasting drop in real capital costs which results, subsequently sets an investment boom into motion.

The change in *Zeitgeist* also leads to a renewal of the 'American System of Manufacturing'. In the factories a shift is made from the exaggerated free market (individualism, temporary labour relations, Taylor model) to the Coordination perspective (cooperation, more permanent labour relations, flatter organizations), leading to a better balance between the two, while the time horizon which is taken into account with investment decisions gets longer.

In this way the United States' competitiveness, as well as productivity growth, undergo a sharp improvement. There is a shift across the board towards knowledge and high-value-added sectors. Around 2000 this will result in a sizeable structural surplus on the current account while protectionist pressure will drop significantly.

Western Europe

Balanced Growth is set apart by rapid internationalization, strong technological dynamics and very competitive market structures. In Western Europe such circumstances call for a reinforcement of the current, relatively weak incentive structures and a removal of rigidities. This also forms an important stimulus for an increase in labour market participation, especially by younger women and people aged 55 and over. In northwestern, especially continental Europe, this means cutting back on the current relatively generous welfare-state systems. Basic social security arrangements will be introduced with lower levels of benefits, in addition to which supplementary insurance can be decided upon on an industrial, company or individual basis. A wide variety of paternalistic subsidies on consumption are cut. In contrast to this austerity, a number of primary tasks of the government, such as education and infrastructure, are intensified. On balance the total tax burden will diminish while the structure of taxes shifts from income to eco-taxes.

The Balanced Growth world also affects the *nature* of the West European process of integration. In the Balanced Growth scenario, the process of integration is driven by market forces and policy competition. The internal market and the EMU constitute the institutional context in which market forces are free to operate. This is why the transfer of national sovereignty to 'Brussels', remains modest in this scenario. In view of the technologically very dynamic nature of the scenario, such a transfer might even prove to

be counterproductive. No binding rules for tax and spending policies will be imposed by the European Commission, nor will they regulate, for example, social policies of member states[17]. Exceptions concern issues which create strong external effects, for example trade and the environment. For these issues a policy on the Community level will be developed. The European Commission will also represent the Community on an international level concerning these policies.

The process of policy and market competition will determine to which extent differences between member states can be maintained with respect to for example, welfare-state arrangements. For countries with strong economic performances, this will not pose any problems; countries with poor performances, however, may be forced to adapt. For these countries *the sovereignty to act* is still quite extensive in principle, *the capacity to act* has, however, significantly decreased.

In this decentralized view of the integration process, it is also fitting that the EFTA countries and Central European countries become members of the European Community fairly quickly. At the same time the perspective of rapid entry is also an important psychological factor strengthening the resolve of the Central European countries in implementing difficult parts of their transition programmes, especially the privatization of state industries. In Balanced Growth, striving toward *political* unification is relegated to the background. Many countries consider it to be an unnecessary strait-jacket which stifles the countries' individual national and cultural identities. So in this scenario the European integration process ultimately evolves in an avowedly *intergovernmental* direction, leaving only a limited role for the European Commission.

Japan

During the last 40 years economic values have, to a large extent, been the measure of all things in Japan. In the last few years there have already been signals that this is due to change. Young, well-educated Japanese in particular, no longer want to be workaholics; instead they want to enjoy life. They assign a much higher value than older generations to the *quality of life*. This extends itself to housing, recreational opportunities, foreign travel, leisure and the state of the environment. They are also more outspoken and critical. An indication of these changes is the public outrage expressed at recent political scandals; another one is the drop in the savings ratio. In Balanced Growth, these trends become even stronger and gain new impetus from the global trend towards sustainable growth. More and more people feel attracted to this new set of social and cultural values. These developments may also be interpreted as meaning that following the *economic* catching up, Japan now enters a phase of *socio-cultural* catching up with other developed countries[18].

The ageing of Japan will reduce its savings rate even further and lead to an enormous shortage of labour, giving the younger generations an especially strong position from which to win compliance with their demands (shorter working days, opportunities for working part-time). The worsening of the Japanese competitive position which results, in combination with major inefficiencies in the sheltered sectors, will subsequently force Japan to become more open in order to salvage its competitive position in the most vital sectors of the Japanese economy, those with the most productive jobs. From a political viewpoint, the attention given to 'quality of life' will lead to more spending on environmental problems, public housing and infrastructure.

As a result, Japan's exceptional economic performance, compared with other industrial countries, gradually fades without Japan degenerating into a second-rate economy. This means the process of catching up with the United States, measured in terms of labour productivity per hour, continues.

Notes

[1] Compare Fortune, 'How Business Helps the Schools', pp. 95–114 (21 October 1991).

[2] On the reform policies set in motion after the elections of May 1991 see, for example, Business Week, 'Is India Open for Business', p. 18 (23 September 1991); for India's economic potential, compare The Economist, 'A Survey of India' (4 May 1991).

[3] Anne Krueger describes this mechanism as follows: 'Because capital inflows have diminished while debt service obligations have increased, domestic savings available to finance new investments are low despite high rates of return on activities newly profitable after policy reform. Simultaneously, because of high debt service ratios and slow growth, foreign financing for these newly profitable activities is not forthcoming. In these circumstances, exports cannot grow for lack of capacity expansion, debt service ratios will remain high, and countries may therefore remain uncreditworthy; Anne Krueger, 'Debt, Capital Flows and LDC Growth', American Economic Review (May 1987).

[4] Compare Dieter Ernst and David O'Connor, 'Technology and Global Competition', OECD Development Centre, Paris (1989).

[5] This 'hard-landing' scenario has already been described many times; the original reference is Stephen Marris, 'Deficits and the Dollar', Institute for International Economics, Washington, D.C. (1985).

[6] Compare Robert J. Shiller, Maxim Boycko and Vladimir Korobov, 'Popular Attitudes Toward Free Markets: The Soviet Union and the United States Compared', American Economic Review, pp. 385–400 (June 1991).

[7] The first phase of this scenario may be compared with the Drift scenario Paul Krugman has outlined in his 'The Age of Diminished Expectations', chapter 16, The MIT Press, Cambridge, Mass. (1990).

[8] See also section 4.2 and appendix 1 on the population projections used in this study.

[9] See also World Bank, 'Global Economic Prospects and the Developing Countries', Box 4.2, p. 44 (May 1991).

[10] A similar view is propounded by Lester Brown in lectures for Dutch businessmen on 21 February 1991 in Wassenaar, The Netherlands; compare also 'State of the World 1989', chapter 1, Norton, London (1989).

[11] Compare Maurice F. Scott, 'A New View of Economic Growth', pp. 522–523, Clarendon Press, Oxford (1989); and R.C.O. Matthews (ed), 'Slower Growth in the Western World', pp. 14–15, Heinemann, London (1982).

[12] Comparable with measures in the Balanced Growth scenario.

[13] This implies that the rich oil-producing countries of OPEC will not be compensated; it goes without saying that oil- and coal-rich DCs will not be compensated either.

[14] For a more detailed discussion of these results, refer to appendix 2, which summarizes the energy scenarios; with respect to CO_2 emissions this result more or less concurs with the accelerated policies-higher growth scenario of the IPCC/Response Strategies Working Group; see 'Draft Report of the Expert Group on Emissions Scenarios' (February 1990).

[15] For references see section 4.4.4.

[16] Compare for example, Herbert Stein, 'The Triumph of the Adaptive Society', The American Economist, pp. 5–21 (Spring 1990); and Samuel P. Huntington, 'The U.S. – Decline or Renewal?', Foreign Affairs, pp. 76–96 (1989).

[17] Compare Taco van Hoek and Jan Groot, 'Economic and Monetary Union in Europe: implications for economic policies', CPB Research Memorandum, no. 85, The Hague (1991).

[18] Compare for a similar scenario Bill Emmott, 'The Sun also Sets. Why Japan will not be number one', Simon & Schuster, London (1989); see also the first scenario in Davis B. Bobrow and Robert T. Kudrle, 'The Success Trap. Japan's policy alternatives at home and abroad', Futures, pp. 586–606 (July/August 1990).