

Part III - Scenarios

This section develops four scenarios on the future of Europe. The scenarios are consistent, plausible descriptions of the future, which provide a background for policy makers to consider alternative strategic policy options under uncertainty. They are built along the two key uncertainties, discussed in parts I and II of this study. Part I concludes that it is uncertain whether countries will succeed in *international cooperation* in the future. This conclusion takes into account the difficulties to reform current international organisations such as the European Union and the WTO. Increasing size, expanding scope and problems with legitimacy render such reforms necessary, but make future cooperation particularly uncertain. Part II deals with the response by European governments to increasing pressure on the *public sectors*. Ageing, increasing divisions between skills of workers, the rising cost of taxation, and individualisation all point in same direction: governments will have more difficulty combining an equitable income distribution with economic efficiency. Together with the ambition of European governments to improve their performance with respect to productivity, labour market participation and social cohesion, it is clear that national governments cannot continue on the old footing. It is uncertain, however, how they will respond. Will they retreat? Or will they be able to reform successfully? The future of national institutions in Europe is thus uncertain.

The scenarios combine the two key uncertainties. **STRONG EUROPE** is a world with strong international organisations and important public institutions. **REGIONAL COMMUNITIES** combines a focus on public responsibility with a patchwork of regional associations. **TRANSATLANTIC MARKET** is a world with affinity for national sovereignty, with an emphasis on private initiatives, rather than public responsibility. **GLOBAL ECONOMY** is a scenario with flourishing international cooperation and a move towards more private responsibility.

15 Four scenarios on the future of Europe

This chapter develops four scenarios on the future of Europe. The scenarios differ with respect to two key uncertainties: international cooperation and the response of governments to the pressure on the public sector. The scenarios are dubbed STRONG EUROPE, REGIONAL COMMUNITIES, TRANSATLANTIC MARKET and GLOBAL ECONOMY.

15.1 Scenario analysis

Forecasting short-run economic developments is difficult; predicting the long-run is impossible. For the long-run, it is therefore more useful to develop scenarios. Scenarios are feasible and consistent views on the future. They do not aim to predict the future, but rather to sketch alternative futures. These future states of the world form the background against which strategic decisions can be explored.

Governments, non-governmental organisations and companies have to take strategic decisions under uncertainty. The uncertainty refers to the environment in which decision makers operate. The world can change rapidly, e.g. due to natural events, political changes, social developments, and technological trends. By considering alternative futures, one can better prepare for unforeseen circumstances and take early action to deal with a particular conjuncture.

Scenarios have gained popularity during the last decade. Companies that face strategic investment decisions, such as oil companies (developing new technologies) or financial conglomerates (entering new emerging markets), have developed scenarios to think through their decisions in different futures. CPB has developed scenarios since the 1980s. They have been used to analyse strategic, long-term decisions on infrastructure projects, environmental policies, spatial issues and so on (CPB 1985; 1992ab; 1997b). Today, research institutes all over Europe develop scenarios for different purposes, including questions regarding the future of European institutions, the consequences of EU enlargement and technological developments such as ICT or energy-saving technologies (for recent contributions, see e.g. Bertrand et al., 2000; Duff et al., 2001; RIVM, 2003). Recently, the Intergovernmental Panel of Climate Change (IPCC) developed scenarios to explore the need for climate change policies to cope with the problem of global warming (IPCC, 2000).

This study develops four new scenarios. They have some overlap with scenarios that have been developed before. Their value added compared to previous analyses lies in at least three components. First, since the previous CPB scenarios of 1992 (and their update in 1997), the world has changed in a number of respects. In Europe, the EMU has been completed, the European Union is about to enlarge with ten new member states, and fundamental discussions are going on about the future of decision making and competences in the European Union. Our scenarios focus on these new policy issues in the context of current knowledge about future

Characteristics of WorldScan

The quantitative characteristics of the different scenarios are based on simulations with WorldScan, an applied general-equilibrium model for the world economy. The model was developed with the aim to construct scenarios, but is also applied to study international economic integration – for example, EU enlargement, and climate change policies. For this scenario study WorldScan has been revised substantially; documentation of the model, replacing the current edition (CPB 1999), will appear in early 2004.

The dimensions of WorldScan are variable. The version that was used for the simulations in this study distinguishes 16 sectors and 16 regions, among which 11 European countries or regions. A different version with a strong focus on energy markets was also run to study the development of energy use, CO₂ emissions and the effect of climate change policies.

A strong feature of general-equilibrium models is that they take into account the interdependencies among the separate markets for different goods and productive factors. Typically, the markets are assumed to clear, so that each of the productive factors is fully employed. In addition, the primary factors can reallocate across sectors instantaneously. Below, we discuss specific, important features of the WorldScan model:

Supply

The availability of the primary factors determines for each region their production and growth potential. WorldScan distinguishes labour, capital and technology.

- The *labour* supply is exogenous and based on demographic projections.
- Capital mobility is imperfect, implying that available *capital* stock depends on the profitability of domestic investment opportunities as well as on the domestic savings.
- The pace of *technical change* is exogenous. The simulations take into account that less developed countries can learn from more advanced countries. This implies convergence in overall productivity, albeit at a low pace. Sectors, following historical patterns, see their productivity rise at a different rate. Potentially, the model could also allow for spillovers from R&D (see Lejour and Nahuis, 2004).

Demand

The patterns of demand for different goods change over time. Services become more important than either manufacturing or agriculture. This reflects different income elasticities for different goods as well as changes in relative price – partly as the result of sectoral growth differentials. National savings rates depend on the demographic structure of the population, based on empirical work.

International trade

Tensions between supply and demand on domestic markets are partly resolved through international trade. However, trade is not unrestricted. Goods from different origin are imperfect substitutes (the Armington assumption). International trade is subject to transport cost, tariffs and non-tariff barriers.

social, demographic and technological trends. These issues are vital for the future of the Europe and, therefore, for future Dutch policies.

The second contribution of our scenarios is due to quantification. That is, we first elaborate on story lines that shape four futures of the world, particularly of Europe. Then, we translate these developments into variables that appear in our computable general equilibrium (CGE) model for the world economy, called WorldScan (see the box *Characteristics of Worldscan* for more details).⁵⁸ By substituting alternative development of exogenous variables, such as demography, institutions, trade barriers, technology parameters, and so on, we can simulate alternative economic developments in a consistent macroeconomic framework. We thus provide a quantification of the economic situation in 2020 and 2040 on the basis of the assumptions that underlie each of the four scenarios. Although a quantitative assessment of scenarios is often missing in other scenario studies, it is attractive for at least two reasons. First, the CGE framework ensures that the scenarios are consistent, since economic variables conform to identities, constraints and the current knowledge about interactions in the economy. Second, the quantification gives a feel for the relative importance of various developments for the future.

The final contribution of our scenarios is that they focus on two specific policy issues: subsidiarity in the European Union and the response of European governments to the growing pressure on the public sector. By addressing these issues, we aim to contribute to policy discussions that will be crucial for the European Union in the coming decades. Parts I and II of this study already deal extensively with these issues. This part elaborates on them in a more positive way by making alternative assumptions regarding the choices that European governments take. In some scenarios, Europe goes beyond what is justified on the basis of subsidiarity, while in others it does not go far enough. Similarly, public sectors in some scenarios succeed in policy innovation, while in others they just retreat in other scenarios.

Developing scenarios

We follow four steps to develop our scenarios. First, we select the strategic policy questions that we want to explore in the context of the scenarios. CPB will use the scenarios in follow-up studies for an analysis on the Dutch economy and its physical surroundings, the consequences of ageing, international energy and climate policies, and the future of the welfare state. As a

⁵⁸ This procedure is explained in more detail in Lejour (2003).

result, the scenarios of this study should be sufficiently general to be applicable to a broad range of national policy issues.^{59,60}

The second step in developing scenarios is the selection of future uncertainties that are relevant in the context of the policy questions. These uncertainties are described in parts I and II of this study. The third step involves merging uncertainties that are correlated. The purpose of this step is to end up with only two key uncertainties, from which one should be able to derive general characterisations of the scenarios. In our study, the two key uncertainties refer to the policy responses to the challenges that Europe will face during the coming decades. The first challenge is whether countries will succeed in *international cooperation*, necessary to deal adequately with cross-border issues (see part I). In particular, this uncertainty derives from the difficulties in reforming current international organisations, such as the European Union and the WTO, and institutionalising new forms of cooperation to deal with global problems. International cooperation thus refers to cooperation both within the European Union and between the European Union and other regions. The second key uncertainty refers to developments in the *public sector* in European economies (see part II). It derives from developments that put the public sector under pressure, such as ageing, the divide between low-skilled and high-skilled, policy competition, individualisation and so on. It is clear that national governments cannot continue on the old footing. It is uncertain, however, how they will respond to the pressure on the public sector.

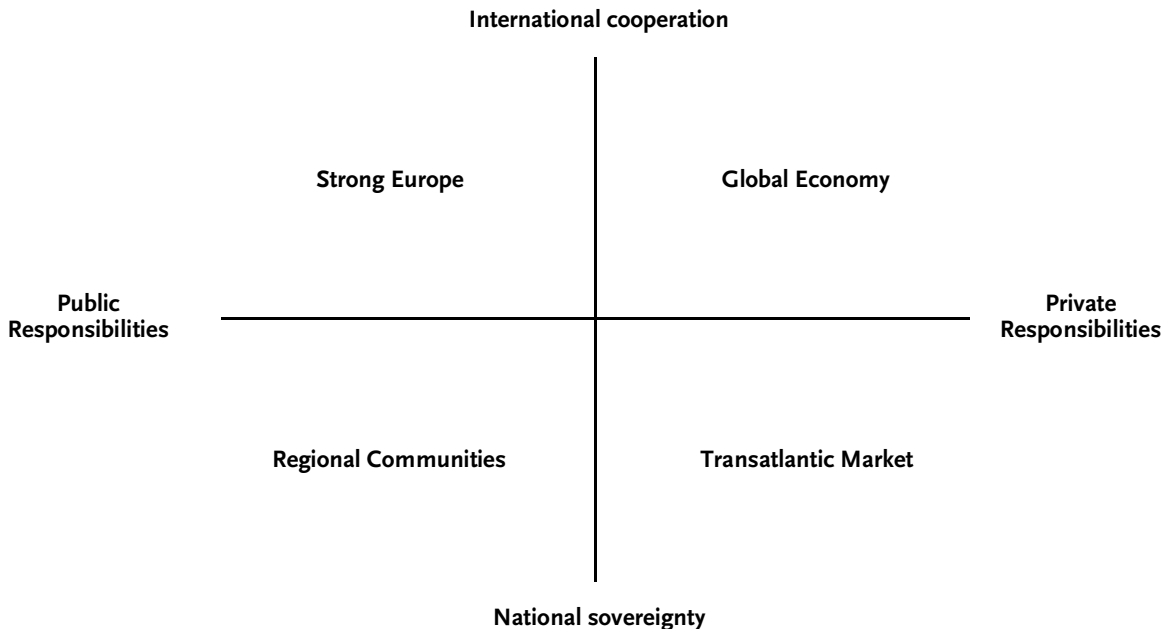
Full-blown scenarios are developed in the final step. We combine the two key uncertainties as illustrated in figure 15.1. The horizontal axis represents outcomes regarding the response in Europe to various challenges for the public sector. It runs from a focus on *public responsibility* on the left to a focus on *private responsibility* on the right. The vertical axis represents the outcomes with respect to international cooperation. It moves from a focus on *national issues* at the bottom to broad *international cooperation* at the top. Figure 15.1 thus yields four combinations in the two key uncertainties. The four quadrants each describe a possible future. In particular, the upper left quadrant represents STRONG EUROPE, a world with international cooperation and an important role for the public sector. The bottom left marks the scenario REGIONAL COMMUNITIES, combining public responsibility with little international cooperation. The lower right quadrant represents TRANSATLANTIC MARKET, a world with affinity for national sovereignty

⁵⁹ This implies that we do not develop extreme scenarios, which sometimes appear in studies that have a very long time frame. The emphasis in our study is on the period up to 2020 (with a more modest outlook to 2040, mainly to explore the implications of changing demographic trends).

⁶⁰ For more specific policy issues addressed by CPB, it is usually necessary to add information regarding other uncertain developments that are not discussed here in detail. For instance, international energy scenarios require a more detailed analysis of developments in energy-supplying regions (CPB/RIVM, 2003). The scenarios in this study are thought to give enough guidance to consistently add this information, perhaps even for those developments that are not addressed by CPB.

and much room for private initiative. Finally, GLOBAL ECONOMY is given in the upper right quadrant, combining flourishing international cooperation and a move towards more private responsibility.

Figure 15.1 Four scenarios in a nutshell



The next four sections describe the scenarios in more detail. We start by discussing the story lines (i.e. descriptions of the future in qualitative terms). The broad characterisations in figure 15.1 form the guiding principle in determining the course of uncertain events in each scenario. The qualitative stories are then complemented by a quantitative sketch of the scenarios, simulated with WorldScan. Lejour (2003) provides more background information about the translation of assumptions into exogenous variables in the model.

In determining the choice of uncertain trends, it is not always possible to unequivocally select developments that are consistent with the characterisation in figure 15.1. Sometimes, more than one development is consistent; sometimes it appears too mechanical to just assume that each and every trend is dictated by the extreme assumption on one of the axes of figure 15.1. Therefore, we make discrete choices with respect to particular developments in each scenario. For instance, we do not assume that international cooperation flourishes in all respects, among all countries, and in all fields, in the scenarios of the upper quadrants. Instead, we take the freedom to assume less extreme positions, which render the scenarios less mechanical and more plausible.

Apart from their differences, the scenarios also have a number of trends in common. For instance, ageing and growing pressure on the public sector are apparent in all scenarios. The

differences among the scenarios primarily originate in the responses to these trends by national governments and international organisations.

15.2 Strong Europe

European countries maintain social cohesion through public institutions. Society accepts that a more equitable distribution of welfare limits the possibilities of improving economic efficiency. Yet, governments respond to the growing pressure on the public sector by undertaking selective reforms in the labour market, social security, and public production. Although this inevitably hurts some groups in society, solidarity with the most vulnerable groups is maintained. Combined with early measures to accommodate the effects of ageing, the economy grows at a stable rate.

Reforming the process of EU decision making lays the foundation for a strong European Union. The enlargement is a success and integration proceeds further, both geographically, economically and politically. A strong Europe is important for achieving broad international cooperation, not only in the area of trade but also in other areas such as climate change. The transfer of powers to a supranational body reduces national sovereignty.

International cooperation

An institutional crisis is looming after EU enlargement in 2004. In this scenario, European member states are willing to sacrifice their national sovereignty in order to obtain a solution to this crisis. Underlying the discussions about institutional reform is a feeling of common interest; in a globalized and interdependent world, countries believe that a single country does not have the ability to ‘make’ policy, but that a group of countries does. Initiated by a core group of frontrunners, European integration intensifies on the basis of reinforced cooperation (see chapter 4). Countries that initially remain outside the core group step in at a later date, so that a multi-speed Europe emerges. EU decision making is eventually reformed and acquires legitimacy through democracy, good governance and transparency.

EU enlargement is primarily driven by historical, political (safety and stability) and economic reasons. Driven by its success, the European Union opens its borders further eastwards. Turkey becomes a member of the European Union and, although Ukraine and Russia do not become full members, they become more integrated with Europe. The bilateral association agreements with the Mediterranean countries are a success, and integration proceeds. Through economic cooperation, the European Union also exports political stability to its Southern and Eastern borders. Even with faraway China, which grows rapidly during the next decades, economic relationships become increasingly important for the European Union.

A strong Europe becomes one of the superpowers in the global arena, next to the United States. Europe develops its own identity. Solidarity defines the European view on international cooperation. This refers to issues such as trade and poverty, environment and ethical questions

around new (bio)technologies. The European view differs from that of the United States, which is usually inclined to shy away from international cooperation when not clearly in its own interest. But in this scenario, the United States leans somewhat towards the European view, that emphasises solidarity. The next WTO round becomes a modest success, primarily regarding trade in agricultural products. International cooperation in non-trade issues also intensifies, driven by the leading role of the European Union. The United States is granted some concessions for their participation in this cooperation (e.g. in the Kyoto Protocol).

Driven by the desire to obtain a strong position in the international political arena, Europe centralises its policies in Foreign and Security Policy. National sovereignty thus diminishes. Decentralised responsibilities remain in other fields. Enlargement increases heterogeneity in the European Union which calls for diversity in institutions, e.g. in social security and taxation. The European Union develops a framework in which policy competition between member states can take place. For instance, countries agree upon a minimum rate of corporate taxation and countries develop indicators on social targets which effectively operate as a floor for policy competition. Member states learn from each others' experiences, which creates a process of convergence of institutions among Europe. Within a context of common rules and restrictions, policy competition operates as a successful road towards more efficient institutions in Europe.

Public responsibilities

European countries maintain social cohesion through various collective arrangements. These limit income disparities (e.g. between skilled and unskilled and between those inside and outside the labour force). Countries are to some extent able to accommodate trends that put the public sector under pressure. In particular, governments experiment with more differentiation in the supply of publicly provided private goods, such as education, health care and social security arrangements. This is done by using more information about individual characteristics (at the expense of privacy) and large-scale application of ICT. European governments also experiment with new incentive schemes for raising efficiency in the public sector, ranging from benchmarking and yardstick competition to outright privatisation of companies (network sectors). In terms of chapter 14, countries find a successful road towards policy innovation. It comes, however, at a cost in terms of less privacy, less equal treatment, and less public responsibility for those with high and middle incomes.

Solidarity between young and old generations is maintained primarily through increases in the participation of the elderly. Participation is encouraged by a gradual increase in the retirement age, which becomes linked to life expectancy. The financial incentives for early retirement are reduced and more flexibility is introduced for the elderly to work shorter hours. In some European countries, national savings are stimulated by redirecting pension systems towards more funding and/or by sustained surpluses on the government budget. Hence, the elderly partly pay the price for maintaining intragenerational redistribution.

Europe combines social cohesion with a fairly competitive and strong economy. It succeeds in deepening the internal market as it intended to do (e.g. in energy, financial services, postal services, government procurement, and passenger transport), which intensifies competition and stimulates productivity growth. Also labour mobility is encouraged by the removal of institutional barriers to migration. Accelerating economic growth is reinforced by the completion of a successful European innovation strategy, which includes a European patent and joint policies to stimulate R&D. The budget for the Common Agricultural Policy and Cohesion Policy are maintained, but these policies become less distortionary as was intended by Commissioner Fischler early in the 21st decade. These policies are reformed and become effective instruments to benefit peripheral and rural regions in the European Union – especially in the new member states.

Immigration policy is coordinated by the European Union. With a focus on international cooperation and solidarity with other regions, European immigration rules become less strict and immigration flows increase. The reformed, more flexible labour markets are able to integrate the majority of immigrants in European societies. Indeed, many regulations that protect the position of insiders (such as employment protection legislation) are relaxed, and legal barriers to labour mobility (e.g. in pensions, social security and recognition of qualifications) are removed. Policies that aim to maintain an equitable income distribution (such as minimum wages, progressive taxes, and social insurance) remain, although moral hazard in social insurance is countered by strict eligibility criteria and effective enforcement of public administrations on the basis of output indicators (see chapter 14).

A quantitative sketch of STRONG EUROPE

Table 15.1 shows the economic development of STRONG EUROPE in quantitative terms. The outward orientation of Europe, the deepening of the internal market, and rapid growth in Central and Eastern Europe contribute to productivity growth in the European Union. Labour productivity increases by about 1.5% per year, which equals the average figure during 1980-1999. Population growth does not change much during the coming decades. In light of ageing, however, employment growth falls, especially after 2020. Annual GDP growth, equal to the sum of productivity and employment growth, thus falls from 2.2% during last two decades to 1.8% between 2000 and 2020, and to 1.3% between 2020 and 2040.

Table 15.1 Quantitative characteristics of the EU economy in STRONG EUROPE

annual growth rates	1980-1999	2000-2020	2020-2040	
GDP	2.2	1.8	1.3	
labour productivity	1.5	1.6	1.4	
employment	0.7	0.3	-0.1	
population	0.3	0.4	0.2	
world exports	5.6	4.8	4.1	
ratios	1980	2000	2020	2040
participation rate	43.1	46.6	44.3	41.6
unemployment	7.0	8.5	7.1	5.8
savings rate		18.8	19.0	15.1
real interest rate		3.6	3.5	3.3
share intra-EU trade		53.5	51.6	47.3

source: Worldbank (2001) for historical numbers up to and including 2000 and WorldScan for simulation results from 2000 onwards.

The European Union represents the current 15 members.

Measures to stimulate the participation rate of older workers have an important effect, but cannot prevent that ageing reduces the overall participation rate in Europe. Among the working population, unemployment drops slightly to an equilibrium rate of 5.8% in 2040. The generous social insurance system prevents a further reduction in unemployment because it strengthens the position of workers in wage negotiations and reduces the incentives for unemployed people to search for work or to accept a job offer.

Savings decline, especially after 2020. This is because the growing retired population dissaves and policies to increase savings cannot fully compensate for this. Nevertheless, the real interest rate in Europe decreases. The reason is that the demand for capital falls as well, due to declining employment.

The integration of goods and services markets leads to large trade volumes and changing trade patterns. World exports increase by 4.8% per year until 2020, and by 4.1% thereafter. The larger growth in the period before 2020 is due to higher GDP growth and the trade-liberalisation policies during that period. The combination of lower trade barriers and high growth in Asia redirect export flows towards Asia, the Central and Eastern European countries and Turkey.

15.3 Regional Communities

European countries rely on collective arrangements to maintain an equitable distribution of welfare. At the same time, in this scenario governments are unsuccessful in modernising welfare-state arrangements. A strong lobby of vested interests blocks reforms in various areas. Together with an expanding public sector, this puts a severe strain on European economies.

The European Union cannot adequately cope with the Eastern enlargement and fails to reform her institutions. As an alternative, a core of rich European countries emerges. Cooperation in this sub-group of relatively homogeneous member states gets a more permanent character. The world is fragmented in a number of trade blocks, and multilateral cooperation is modest.

International cooperation

Enlargement with ten new member states in 2004 increases the heterogeneity of the European Union. This renders cooperation between all EU member states more difficult. Governments are willing to cooperate internationally, but only if their countries are sufficiently homogeneous. A new club of countries is born within the European Union. The club intensifies cooperation in various policy fields, including taxation and social policy. This is done through the community method on the basis of 'reinforced cooperation'. Although the intention was a two-speed Europe in which countries that lag behind would catch up with frontrunners after some time, reinforced cooperation ends up in a two-tier Europe that gets a more permanent character.

The new member states remain outside the core group because they are either unwilling or unable to join. While cooperation in the core group becomes more important, the European Union loses power. Further enlargement of the European Union receives little interest from the core: Turkey does not accede to the European Union and the Central and Eastern European countries remain outside the EMU. The disappointed Central and Eastern European countries shift their attention more and more eastwards by intensifying trade relations with Russia, Ukraine and China.

The world is too heterogeneous to deliver global coordination. The European Union and the United States have different views on global trade and non-trade issues. The world is fragmented in a number of different trade blocks. The United States agree upon a free trade area with the other Americas. Europe suffers from this, due to trade diversion.

EU policies are only modestly reformed: the Common Agricultural Policy maintains distortionary components, especially with respect to outside countries, or is replaced by distortionary national support measures. Cohesion policy remains ineffective as it is. In fact, poor member states from the Central and Eastern European countries are unable to absorb funds because they cannot comply with the complex and demanding administrative procedures set by the European Union. Moreover, a large part of the cohesion budget is transferred to richer member states that are unwilling to give up their share.

Public responsibilities

In the core of Europe, vested interests block reforms in social security systems, pensions, labour market institutions and product market regulations. Proposals to make collective arrangements more efficient or to introduce more differentiation in the public provision of private services fail. They either meet opposition because people are unwilling to sacrifice privacy or they create excessively complex regulations that fail to be effective. Governments largely maintain the welfare state in its original form, which suffers from moral hazard, a lack of incentives and uniformity in supply. Policy innovation thus largely fails.

Many mature European industries are protected from outside competition through trade barriers. This holds in particular for agriculture, which is protected by the Common Agricultural Policy, but also for network industries. Trade unions in the core of Europe actively cooperate and minimise wage dispersion. They form a powerful lobby group in the European Union and its member states to hold up reforms in welfare state arrangements.

Governments in Europe minimise the scope for policy competition through the harmonisation of social policies, such as employment protection legislation, minimum standards for social assistance, and disability insurance. The European core introduces a central unemployment insurance scheme with the aim to absorb asymmetric economic developments. The corporate tax system is harmonised, with a common base and a common rate. By limiting outside pressure from policy competition, domestic policy making becomes more vulnerable to government failures and lobby groups. In fact, policy coordination goes beyond what is justified on the basis of subsidiarity (see chapter 7). This contributes to the inefficiency of policies.

Increasing expenditure on old-age benefits and publicly provided health care pushes European public sectors to their boundaries. Inefficient and large public sectors render sustainable public finances problematic. This puts pressure on the Stability and Growth Pact and challenges the independence of the European Central Bank. The fear for inflation raises the risk premium on interest rates and hampers investments. Capital demand is also depressed by the lacklustre performance of the European economies. The return on investment is low, which exacerbates the ageing problem in countries that rely on funded systems (such as the Netherlands).

Migration is restricted within the European Union. Only a limited number of immigrants from the Central and Eastern European countries move towards the core of Europe. The small number of immigrants reduces the need to reform institutions.

In an effort to diversify their energy imports and to contain local environmental problems (e.g. air quality), countries opt for clean energy sources. The local environment thus fares rather well.

A quantitative sketch of REGIONAL COMMUNITIES

Table 15.2 shows REGIONAL COMMUNITIES in figures. In light of the barriers to international trade and the lack of competitive forces, labour productivity grows only mildly at a rate of 1.1% per year. In combination with the ageing of the population, which reduces the employment rate, this implies that GDP hardly grows after 2020: the growth rate of 0.2% is substantially smaller than the 2.2% that we experienced in the recent past.

The participation rate falls from 46.7% of the population in 2000 to 40.2% in 2040. Apart from ageing, this is the result of the adverse incentive effects of fairly generous social security systems and labour-market regulations. The unemployment rate among workers stays above 8%. Also the participation rate among older workers remains low.

Aggregate savings fall substantially in light of ageing. Economic policies do little to offset this, so that the saving rate decreases by about 6% points between 2000 and 2040. Slow economic growth and low employment also imply weak investment demand. As a result, the real interest rate decreases to below 3%.

annual growth rates	1980-2000	2000-2020	2020-2040	
GDP	2.2	1.1	0.2	
labour productivity	1.5	1.2	1.0	
employment	0.7	-0.2	-0.8	
population	0.3	0.0	-0.3	
world exports	5.6	2.9	1.8	
ratios	1980	2000	2020	2040
participation rate	43.1	46.7	44.7	40.2
unemployment	7.0	8.5	8.4	8.3
savings rate		18.8	16.7	12.7
real interest rate		3.6	3.0	2.6
share intra-EU trade		53.5	53.3	52.8

source: Worldbank (2001) for historical numbers up to and including 2000 and WorldScan for simulation results from 2000 onwards.
The European Union represents the current 15 members.

15.4 Global Economy

European countries find a new balance between private and public responsibility. Institutions are increasingly based on private initiatives and market-based solutions. European governments concentrate on their core tasks, such as the provision of pure public goods and the protection of property rights. They engage less in income redistribution and public insurance, so that income inequality grows.

Political integration and cooperation in non-trade areas is not feasible, as governments assign a high value to their national sovereignty in many areas. The problem of climate change intensifies, while European taxes on capital gradually decline under tax competition. Economic integration becomes broader, however, as countries find it in their mutual interest. The European Union finds it relatively easy to enlarge further eastwards. The negotiations in the WTO lead to a successful liberalisation of global trade.

International cooperation

European institutional reform is successful after the enlargement. Further integration is, however, primarily focussed on a proper functioning of the internal market. Political integration is not an issue. Cooperation in foreign policy is intergovernmental and fragmented. As a successful economic and (partly) monetary union, the European Union finds it easy to enlarge further eastwards. Turkey, Ukraine and some smaller countries of the former Commonwealth of Independent States become members of the European Union. Despite the abolishment of European Cohesion policy, the Eastern member states converge gradually to the EU average. This is because rapid institutional reform in these countries and a catching up of technology take place. Indeed, a surge of foreign direct investment flows into the Eastern regions of Europe.

International cooperation is limited to economic issues. The WTO focusses solely on free trade, and manages to find an agreement among all participants. Free trade in agriculture and services is fostered. This calls for substantial industrial restructuring in Europe. For instance, agricultural sectors with little value added contract, while the same holds true for textiles in a number of countries. Although this entails substantial changes, European economies have become sufficiently flexible to cope with these changes.

Whereas economic cooperation between the European Union and other continents is successful, cooperation in non-trade issues fails. For instance, political cooperation via the United Nations is cumbersome. More generally, the failure of international political cooperation increases the risk of conflicts. Regarding global environmental issues, the European Union is unable to convince the United States to participate in the Kyoto Protocol, since raising energy prices is a political non-starter in the United States. International markets for energy being efficient and reliable, countries do not diversify their imports of energy; energy consumption is not only (relatively) high, but also fossil-fuel intensive.

Public responsibilities

European governments take steps to limit their role in facilitating an efficient and productive economy. Societies have a strong preference for flexibility and diversity, which is best provided by the market. This applies in particular to private goods that are currently publicly provided, such as health care, higher education and so on. Moreover, government regulations to ensure uniformity in supply (e.g. in pensions, housing and so on), are relaxed so as to meet more diversity in life styles. Governments remain responsible for the production of pure public goods (basic education, defence, police, justice), but also use their regulatory powers to ensure effective competition on markets. For example, the markets for insuring health care costs and disability require governments to tackle the problem of adverse selection and to ensure transparency. In terms of chapter 14, a combination of policy innovation and retreat of the state is conducted.

Labour mobility increases, especially of high-skilled workers. Governments engage in competition to attract these skilled workers as well as mobile firms. Intense policy competition in a large Europe contributes to an efficient government, but also reinforces the trend towards downsizing the scope for income redistribution. Reforms in the labour market, income taxation and social security encourage participation. This applies particularly to elderly workers. Their incentives to participate increase because of reforms in early retirement provisions, tougher eligibility criteria in social security and an increase in the retirement age. Savings also increase, partly through early reduction of government debt and partly via early reforms in pensions towards individualised defined-contribution schemes. This is the response to a deteriorating public pension.

The European Union follows a selective immigration policy by allowing each year a fixed number of immigrants. This system is based on experiences in the United States, Canada and Australia. The immigrants that legally enter Europe are typically young, well-educated and have a high probability of finding jobs. Immigration is facilitated by the reformed, flexible European labour markets, which can easily absorb new workers.

The open markets and institutional reforms contribute to productivity growth, while immigration and rising participation increase labour supply. The flip side of the coin, however, is that economic growth is accompanied by increasing income inequality.

A quantitative sketch of GLOBAL ECONOMY

The trends in GLOBAL ECONOMY are illustrated numerically in table 15.3. International integration and market-oriented domestic policies stimulate labour productivity which grows by 2.1% per year up to 2020 and by 2.0% thereafter. Despite the ageing of the population, GDP grows rapidly due to significant employment growth. This is because participation among the elderly generations increases due to various reforms. Immigration reinforces the positive effect on labour supply. A selective immigration policy ensures that immigrants are high-skilled and that they easily enter the European labour market.

Savings fall after 2020 by around 4%-points. This is less than in the other scenarios, however, because governments increase national savings by prudent government budgetary policies and pension reforms towards defined-contribution schemes. High economic growth stimulates investment, which implies an increase in the real interest rate until 2020. After 2020, a lower pace of economic growth leads to a slight decrease in the real interest rate.

Successful trade liberalisation boosts international trade. Until 2020, world trade shows an increase of about 6% per year. After 2020, growth falls somewhat since GDP growth levels off. In 2040, 60% of all European exports have a destination outside Europe, compared with less than 50% in 2000.

Table 15.3 Quantitative characteristics of the EU economy in GLOBAL ECONOMY

annual growth rates	1980-2000	2000-2020	2020-2040	
GDP	2.2	2.7	2.3	
labour productivity	1.5	2.1	2.0	
employment	0.7	0.5	0.2	
population	0.3	0.4	0.2	
world exports	5.6	5.8	5.4	
ratios	1980	2000	2020	2040
participation rate	43.1	46.6	46.5	45.8
unemployment	7.0	8.5	6.2	3.9
savings rate		18.8	19.5	15.6
real interest rate		3.6	4.2	3.8
share intra-EU trade		53.5	46.4	39.4

source: Worldbank (2001) for historical numbers up to and including 2000 and WorldScan for simulation results from 2000 onwards.
The European Union represents the current 15 members.

15.5 Transatlantic Market

European countries limit the role of the state and rely more on market exchange. This boosts technology-driven growth and at the same time increases inequality. The heritage of a large public sector in EU countries is not easily dissolved. New markets – e.g. for education and social insurance – lack transparency and competition, which brings new social and economic problems. The elderly dominate political markets. This makes it difficult to dismantle the pay-as-you-go systems in continental Europe.

EU member states primarily focus on national interests and assign a high value to their national sovereignty. Reforms of EU decision-making fail which makes further integration in the European Union difficult. The European Union redirects her attention to the United States and agrees upon transatlantic economic integration. This intensifies trade in services and yields welfare gains on both sides of the Atlantic. The prosperity in the club of rich countries contrasts sharply with the situation in Eastern Europe and in developing countries.

International cooperation

After enlargement to 25 member states in this scenario, EU governance is not reformed into decisive and legitimate institutions. Many countries do not regard this failure of reform in the European Union as problematic. The bureaucracy in Brussels is widely mistrusted and is seen as unnecessarily interfering, undemocratic and intransparent. Countries thus want to play down the power of supranational decision making. Integration comes to a halt – it reverses de facto in some areas. The European Union is primarily seen as an economic union with a focus on the internal market. Policy competition prevails with respect to most institutions. Increasing mobility of capital intensifies policy competition.

Multilateral cooperation via international institutions is not a primary concern for the European Union and the United States: both are unwilling to sacrifice sovereignty to multilateral institutions. However, economic integration between the two continents is feasible at low coordination costs. Hence, whereas a global trade agreement fails, the European Union, the United States and Latin America agree upon a ‘backdoor free trade’ agreement. The transatlantic economic integration actually goes beyond a free trade agreement: it leads de facto to a single market in which a large number of formal and informal barriers to trade are removed through mutual recognition. This holds in particular for the service sectors. This fosters growth in the ICT sector in Europe.

The rich transatlantic economic block contrasts sharply with the poorer parts of the world. Less developed countries even suffer from trade diversion as a result of the free-trade agreement. There is little interest in Europe and the United States to actively fight poverty in developing countries.

EU enlargement is not a success in this scenario: cohesion support is ineffective and the new member states have difficulty in adjusting to the increasingly competitive market. Poverty in

rural areas in the Central and Eastern European countries is increasing, and there is slow convergence to the EU average. The new member states do not enter the EMU. Turkey does not accede to the European Union, but instead shifts her attention more eastwards. China and Russia become more isolated, both politically and economically. Because of poor border controls in the East, EU member states suffer from an inflow of illegal immigrants. Enlargement receives a low priority from the Western EU countries, as they fear the import of even more instability and more immigrants.

Public responsibilities

Pressure on public sectors and strong preferences for individualised arrangements, rather than collective ones, leads to downsizing of European welfare states. Insurance against labour market risks is reduced and partly shifted to the market and social partners. Publicly provided welfare provisions are limited to social assistance. At the same time, the labour market becomes more flexible as employment protection legislation is relaxed, the power of trade unions deteriorates, minimum wages are reduced, and tax systems become less progressive. These reforms stimulate participation in the formal labour market and induce people to work longer hours.

The transition from collective state arrangements to market-based solutions is sometimes disorderly, as new markets meet new problems such as disproportionate market power, insufficient transparency, and restricted access. In the absence of appropriate regulation, this limits the efficiency of market-based solutions. The ‘political market’ becomes more and more dominated by the older generations. Hence, countries that have not switched early enough towards a funded system find it difficult to downsize the pay-as-you-go system. The high costs of public pensions, in combination with high expenditures on health care, crowd out the possibilities for intra-generational redistribution. Indeed, it more or less urges governments to downsize public redistribution schemes among the young. Thus, we arrive at a less equitable income distribution between people inside and outside the labour market.

Income inequality increases also because of a rapidly rising skill premium. In particular, ICT-driven technical change raises the demand for skilled workers relative to unskilled workers. At the same time, the supply of skills does not increase at the same pace, especially since part of the population cannot afford higher education. As a result, income disparities between skilled and unskilled workers rise considerably. Trade unions, which used to dampen wage dispersion, lose power and can no longer offset the increasing skill premium.

Competition in the European economy intensifies. More flexibility comes at the expense of commitment in economic relations. Accordingly, investment in general skills becomes increasingly important, but investment in firm-specific skills becomes less important. A process of creative destruction by young and dynamic firms creates rapid technological change and substantial productivity gains. Corporate governance structures in Europe move towards the American-style shareholder model, away from the European style stakeholder model.

Increasing income disparities between rich and poor countries raise the potential immigration to the European Union. Europe, however, keeps its borders closed for immigrants. Illegal immigrants and asylum seekers who do enter the European Union can be absorbed by the flexible labour market, but tend to increase the skill premium even further.

A quantitative sketch of TRANSATLANTIC MARKET

Table 15.4 shows quantitative characteristics of TRANSATLANTIC MARKET. The broad dissemination of ICT boosts labour productivity growth to 1.8% per year. Growth is concentrated in ICT-producing sectors, and in ICT-using service sectors such as the financial sector, business services and the public sector. GDP growth falls over time, however, as the result of declining employment due to ageing.

Participation rates do not fall substantially, since lower social benefits and limited eligibility reduce unemployment and stimulate labour supply. This positive effect on employment compensates for the negative effect of an ageing population on labour supply.

The real interest rate rises somewhat as, on the one hand, the elderly dissave while, on the other hand, high GDP growth stimulates investments.

Persistent trade barriers and relatively low economic growth outside the club of rich countries hamper world trade. World exports grow moderately. A large share of the European exports is intra-EU trade. The United States is an important destination for the exports to other regions because of the European-American internal market.

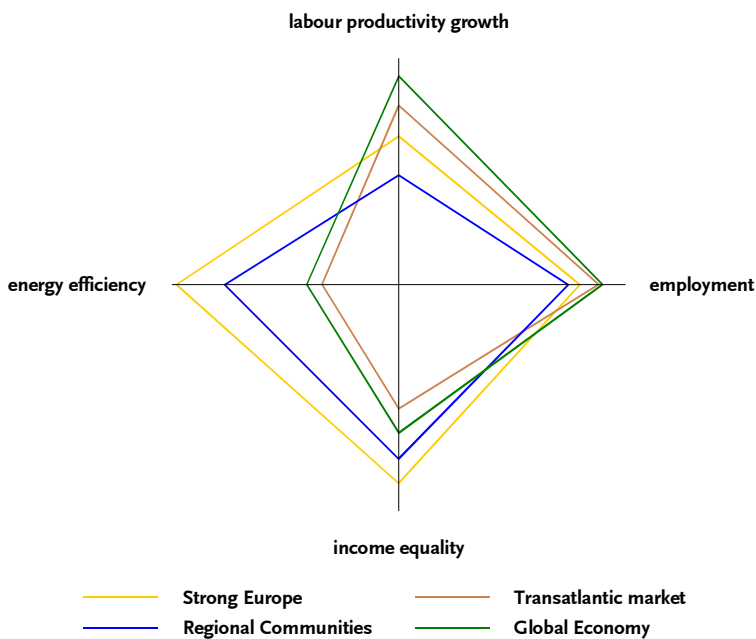
annual growth rates	1980-2000	2000-2020	2020-2040	
GDP	2.2	2.3	1.6	
labour productivity	1.5	1.9	1.8	
employment	0.7	0.4	-0.2	
population	0.3	0.2	-0.1	
world exports	5.6	4.1	3.3	
ratios	1980	2000	2020	2040
participation rate	43.1	46.7	47.0	45.2
unemployment	7.0	8.5	6.2	3.9
savings rate		18.8	17.1	13.0
interest rate		3.6	4.2	4.3
share intra-EU trade		53.5	50.5	49.3

source: Worldbank (2001) for historical numbers up to and including 2000 and WorldScan for simulation results from 2000 onwards.
The European Union represents the current 15 members.

15.6 Comparing the four scenarios

Figure 15.2 illustrates the scores of the scenarios on four dimensions that, together, comprise the Lisbon targets of the European Union: productivity, employment, income equality and environmental quality. Scenarios where the public sector retreats, such as TRANSATLANTIC MARKET and GLOBAL ECONOMY, show strong economic performance. Labour productivity improves at a brisk pace, while labour market participation is high. In STRONG EUROPE and REGIONAL COMMUNITIES, the public sector retains its central role in income redistribution through an elaborate system of taxes and transfers. A lower income per capita is the price they pay for more equity. In STRONG EUROPE and REGIONAL COMMUNITIES, the burden on environment is lower than in GLOBAL ECONOMY and TRANSATLANTIC MARKET (due to differences in environmental policies and economic growth).

Figure 15.2 Comparing four dimensions of the scenarios
relative deviation from the average



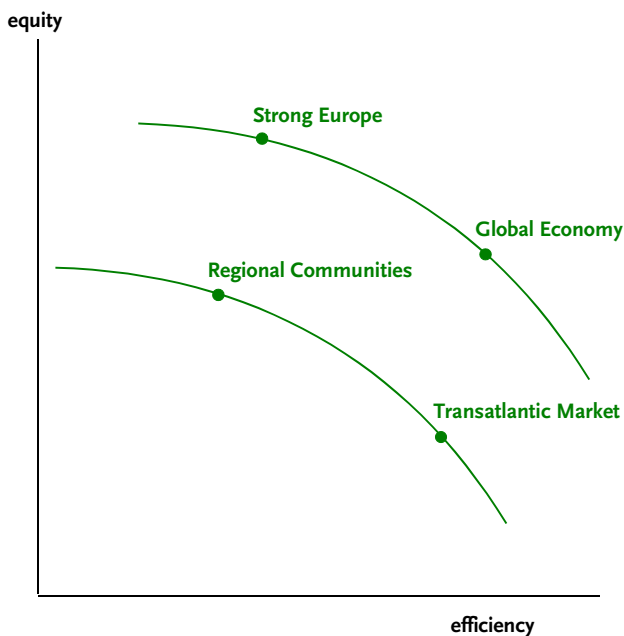
The employment rate is determined by the participation rate and the unemployment rate; the energy efficiency improvement is the relative difference in the growth rates between GDP and energy use; the measure for income equality is a ranking of the four scenarios.

Figure 15.2 also illustrates an important difference between STRONG EUROPE and GLOBAL ECONOMY, on the one hand, and REGIONAL COMMUNITIES and TRANSATLANTIC MARKET, on the other. STRONG EUROPE scores better on each of the four dimensions than REGIONAL COMMUNITIES, while GLOBAL ECONOMY scores better in each dimension than TRANSATLANTIC

MARKET. To explain this, return to the trade-off between equity and efficiency (see figure 15.3). For illustrative purposes, STRONG EUROPE and GLOBAL ECONOMY are positioned on a same equity-efficiency curve. The main difference between these two scenarios is the social preference for one over the other. REGIONAL COMMUNITIES and TRANSATLANTIC MARKET lie on a same curve as well, but the position of this curve differs from the GM/SE curve. In particular, the GLOBAL ECONOMY/STRONG EUROPE curve is positioned further away from the origin. This corresponds to better combination of equity and efficiency, irrespective of social preferences. The REGIONAL COMMUNITIES/TRANSATLANTIC MARKET curve lies closer to the origin, indicating worse combinations of equity and efficiency.

Society would achieve a higher level of welfare if it were able to develop institutions that push the equity-efficiency curve to the right. Whether governments succeed in this is uncertain. This is the motivation for the differentiation between the scenarios. For instance, governments in REGIONAL COMMUNITIES fail to respond adequately to the growing pressure on the public sector – partly because a strong lobby of vested interests prevents this. This implies that achieving the goal of an equitable income distribution comes at a greater cost in terms of efficiency than in STRONG EUROPE. In TRANSATLANTIC MARKET, governments do not find ways to adequately deal with market failures, while European countries have inherited pay-as-you-go systems that are difficult to reform. As a result, efficiency improves less than in GLOBAL ECONOMY.

Figure 15.3 Equity and efficiency in the four scenarios



The distinction between scenarios on each of the two equity-efficiency curves can be explained in two ways. First, governments do not find the right balance between private and public responsibility in REGIONAL COMMUNITIES and TRANSATLANTIC MARKET. In REGIONAL COMMUNITIES, the public sector maintains too many responsibilities. Hence, the scenario is positioned too much to the left in figure 15.1. In TRANSATLANTIC MARKET, the public sector retreats and fails to adequately deal with market failures. Accordingly, the scenario is positioned too much to the right in figure 15.1. The other two scenarios feature less extreme positions somewhat closer to the origin, and better combine public and private responsibility. The only difference between them is the preference for equity versus efficiency.

A second possible explanation for the different positions of the curves in figure 15.3 is that the two axes are not entirely independent. In particular, STRONG EUROPE and GLOBAL ECONOMY are not only positioned at the upper frontier in figure 15.3, but also on the upper part of vertical axis in figure 15.1 (i.e. where international cooperation is flourishing). This match between the position of the efficiency-equity curve and international cooperation is plausible for two reasons. First, an international orientation of governments in STRONG EUROPE and GLOBAL ECONOMY improves the performance of European governments and works as a disciplinary device on policy makers to develop efficient institutions.⁶¹ Second, economic integration allows countries to specialise, exploit economies of scale and apply new techniques; it provides an experimental setting for governments to learn about best practices.

Comparing quantitative sketches

Table 15.5 brings the tables of previous subsections together and provides an overview of the numerical results for the different scenarios. It underlines the fact that STRONG EUROPE and REGIONAL COMMUNITIES feature lower productivity growth, lower participation rates, and higher unemployment than TRANSATLANTIC MARKET and GLOBAL ECONOMY. Measures for income equality and environmental quality are not available, but performance in these respects is exactly opposite from the performance in the economic domain. Growth and investment go hand in hand, leading to rising real interest rates in TRANSATLANTIC MARKET and GLOBAL ECONOMY, and to falling real interest rates in STRONG EUROPE and REGIONAL COMMUNITIES. The fact that in GLOBAL ECONOMY the increase in real interest rate is only small, is the result of policies that stimulate national savings.

⁶¹ Empirical evidence suggests that more open economies have bigger governments, suggesting that the public has more confidence in their government if it is exposed to more competition, see e.g. Rodrik (1998).

Table 15.5 Characterisation of the EU economy in the four scenarios

	Past	2000-2040			
	1980-2000	Strong Europe	Transatlantic Market	Regional Communities	Global Economy
annual growth rates					
GDP	2.2	1.6	1.9	0.6	2.5
labour productivity	1.5	1.5	1.8	1.1	2.1
employment	0.7	0.1	0.1	-0.5	0.4
population	0.3	0.3	0.0	-0.2	0.3
world exports	5.6	4.5	3.7	2.4	5.6
ratios	2000	Strong Europe	Transatlantic Market	Regional Communities	Global Economy
participation rate	46.6	41.6	45.2	40.2	45.8
unemployment	8.5	5.8	3.9	8.3	3.9
savings rate	18.8	15.1	13.0	12.7	15.6
interest rate	3.6	3.3	4.3	2.6	3.8
share intra-EU trade	53.5	47.3	49.3	52.8	39.4
GDP per capita (index)	100.0	162.9	210.4	134.6	234.5

source: Worldbank (2001) for historical numbers up to and including 2000 and WorldScan for simulation results from 2000 onwards.
The European Union represents the current 15 members.

Trade liberalisation and economic integration boost trade in GLOBAL ECONOMY and STRONG EUROPE. World exports increase by 5½% and 4½%, respectively. In three of the four scenarios, the growth of world trade is lower than in the past. Ageing populations in OECD countries and lower population growth in developing countries can partly be held responsible. Also, the shift from agriculture and manufacturing towards services, especially in Asia, tends to moderate the growth in trade volume, because services are less tradable than commodities and manufactured goods.

Since Asia is invariably projected to grow further, European trade flows turn towards that continent leading to a decreasing share of intra-EU trade. This effect is especially strong in the scenario with strong international cooperation, STRONG EUROPE and GLOBAL ECONOMY.

16 Special topics: growth, trade and ageing

The quantitative sketch of the four scenarios in the previous chapter provides an indication of the margins with respect to various macroeconomic variables in the long term. Behind these aggregate figures are disaggregated developments that are important for particular policies. For (the distribution of) welfare, it matters whether economic growth is pollution intensive, which regions grow fast, and which sectors benefit most from growth. For industries, it is important how comparative advantages of countries will change. And effectiveness of a policy response to ageing depends on developments in world capital markets.

This chapter focuses on the quantitative scenarios in a more disaggregated manner. First, we take a closer look at the patterns of economic growth. In particular, we pay attention to three issues: the factors that contribute to growth, the sectoral decomposition of production growth and regional patterns of growth. Second, we explore trade patterns of the European Union, such as the direction of trade and the revealed comparative advantages in the four scenarios. Finally, we elaborate on the implications of ageing in the alternative scenarios, for both labour markets and capital markets. Lejour (2003) provides more detailed information about the quantitative results of the scenarios.

16.1 Economic growth

Engines of growth: technical change is of critical importance

To see the driving forces behind economic growth in the four scenarios, we decompose GDP growth into three components: employment growth, capital accumulation, and total factor productivity growth (TFP). The development in each of these components is presented in table 16.1 for the four scenarios.

	Strong Europe	Transatlantic Market	Regional Communities	Global Economy
Labour	0.0	0.0	-0.2	0.2
Capital	0.7	0.6	0.4	0.9
TFP	0.8	1.3	0.5	1.3
GDP	1.5	1.9	0.6	2.4
Population	0.3	0.0	-0.2	0.3
GDP per capita	1.2	1.9	0.8	2.1

source: WorldScan

Table 16.1 shows that GDP growth in REGIONAL COMMUNITIES is less than a quarter of that in GLOBAL ECONOMY: 0.6% versus 2.4%. In STRONG EUROPE and TRANSATLANTIC MARKET, GDP

growth is almost similar at rates of 1.5% and 1.9%, respectively. The decomposition of growth in table 16.1 shows two important points. First, labour contributes little to GDP growth in all scenarios. In fact, only in GLOBAL ECONOMY does employment have a positive effect on GDP growth. In this scenario incentives to supply labour are relatively strong and immigration into the European Union takes place at a relatively large scale. In contrast to this, in REGIONAL COMMUNITIES the population contracts and participation rates decline. As a result, employment exerts a negative effect on the growth of GDP.

A second observation from table 16.1 is that TFP growth is the most important driving force behind GDP growth. This underlines the critical importance of technology and, more generally, knowledge for level and growth of productivity. But TFP growth is more than technical change; for example, it also reflects changes in economic efficiency, that more or less public intervention may bring about, and changes in energy use. Again, GLOBAL ECONOMY and REGIONAL COMMUNITIES are at the far ends. High TFP growth in GLOBAL ECONOMY reflects an efficient functioning of markets, both nationally and internationally, which brings static efficiency gains but also dynamic technology gains. In REGIONAL COMMUNITIES lack of international competition in combination with extensive public intervention hurts economic efficiency and hinders development and diffusion of new technologies.

More than in any other scenario is GDP growth in TRANSATLANTIC MARKET driven by technical change. Productivity increases are concentrated in ICT-producing and ICT-using sectors. This is the result of intenser trade relations with the United States. Market failures and regionalism are the reasons that TFP growth in TRANSATLANTIC MARKET is still lower than in GLOBAL ECONOMY. In contrast, public efforts to encourage R&D and ICT as part of the Lisbon strategy and ongoing internationalisation contribute to TFP growth in STRONG EUROPE.

Capital accumulation follows to some extent from TFP growth. Higher productivity and income imply higher savings and investments. However, the macroeconomic propensity to save is also different across scenarios. In STRONG EUROPE and GLOBAL ECONOMY, early policy responses to the prospect of ageing populations are successful in stimulating national savings.

Developments in the population lead to smaller differences in per capita growth rates (at most 1 percentage point) than in overall growth rates (at most 1.9 percentage points). STRONG EUROPE and GLOBAL ECONOMY feature the highest population growth, partly as a result of immigration. Accordingly, the growth rate differential between STRONG EUROPE and TRANSATLANTIC MARKET becomes larger: GDP per capita grows by 1.2% in the first scenario and by 1.9% in the second.

Sectoral growth differentials: towards a service-based economy

The GDP growth rates hide some important differences across sectors. Some of them will experience faster growth than others in each scenario, while the relative performance of sectors is substantially different across scenarios.

Table 16.2 presents the value-added shares of four (aggregated) sectors in the years 2000 and 2040. In each of the four scenarios, the service sector grows relative to other sectors. In particular, the share of services increases from about 73% in 2000, to between 81% (in REGIONAL COMMUNITIES) and 85% (in GLOBAL ECONOMY) in 2040. The difference across scenarios is related to per capita GDP growth. Higher income per capita, combined with income elasticities for consumer services that exceed one, leads to a larger share of services in household consumption.⁶²

	2000	Strong Europe 2040	Transatlantic Market 2040	Regional Communities 2040	Global Economy 2040
Agriculture and Food	6.5	4.2	3.6	4.7	3.2
Energy and Raw Materials	1.8	0.9	1.4	1.5	2.1
Manufacturing	18.6	13.3	12.2	12.4	10.2
Services	73.2	81.7	83.1	81.3	84.7

source: WorldScan. Value added in producer prices

The complement of a rising share of services in value added are falling shares of agriculture, energy and raw materials, and manufacturing. The decline in the production of energy and raw materials is especially pronounced in STRONG EUROPE, where global climate change policies are introduced. With rapid economic growth in combination with lax environmental policies, GLOBAL ECONOMY is, however, a pollution-intensive scenario.

Regional growth disparities: the gap between rich and poor closes sometimes slowly

The Lisbon agenda of the European Union includes the objective to raise productivity. Does Europe succeed in becoming the most dynamic economy of the world in terms of productivity? And what happens to other, relatively poor regions?

Table 16.3 shows GDP growth in five different regions in the world: the EU-15, an aggregate of countries east from the European Union (Central and Eastern Europe, Turkey and Russia),

⁶² In TRANSATLANTIC MARKET, the diffusion of ICT leads to relatively strong productivity growth in services, which neutralises Baumol's law. Indeed, the share of services in this scenario is much lower than in GLOBAL ECONOMY. Nevertheless, it does not reverse the trend of a rising share of services in the economy.

the United States, the rest of the OECD (comprising Japan, Canada, Oceania, and the EFTA countries), and non-OECD countries (including Asia). As a rule, GDP growth is highest in GLOBAL ECONOMY and lowest in REGIONAL COMMUNITIES. One important difference between these two scenarios is the degree of economic integration, which is reflected in growth. In TRANSATLANTIC MARKET, the growth performance of non-OECD countries is relatively weak. This is because the two economic superpowers, Europe and the United States, work closely together, while poor countries are excluded from this cooperation.

Table 16.3 shows that most regions grow faster than the EU-15, irrespective of the scenario. One important reason is that population growth in the EU-15 is rather slow. For instance, the population growth rate in the United States exceeds that in the EU-15 by about 0.7% per year, while in non-OECD countries it is at least 1% per year higher.

Table 16.3 GDP growth, 2000-2040

	Strong Europe		Transatlantic Market		Regional Communities		Global Economy	
	00-20	20-40	00-20	20-40	00-20	20-40	00-20	20-40
EU-15	1.8	1.3	2.3	1.6	1.1	0.2	2.7	2.3
Eastern Europe	4.1	3.2	3.4	2.3	2.6	1.5	4.4	3.3
United States	2.3	1.5	3.0	2.2	2.0	0.9	3.0	2.2
rest of the OECD	1.2	0.6	1.4	0.9	1.0	0.2	1.8	1.6
non-OECD	5.0	4.3	3.6	2.8	4.1	3.2	5.5	4.6

source: WorldScan

Another reason for the growth differentials between the European Union and some other regions is the process of catching-up: poor, economically backward countries can learn from and grow faster than rich, economically advanced countries.⁶³

Table 16.4 Catching up in labour productivity among regions, 2000 - 2040

	2000	Strong Europe	Transatlantic Market	Regional Communities	Global Economy
Eastern Europe to EU-15	13.8	32.4	20.0	20.8	25.7
Turkey to EU-15	14.1	37.1	18.2	22.3	27.1
EU-15 to US	80.5	83.8	75.9	78.1	76.2
Non-OECD to OECD	8.4	17.3	7.9	13.0	15.9

Labour productivity is defined as the ratio of GDP to employment. This does not take into account price differences. Typically the prices of non-tradeables are much lower in low-productive countries than in high-productive countries. As a result, the differences in purchasing power are smaller than reported differences in labour productivity.

⁶³ The scenarios do not distinguish between rapidly growing or declining regions outside Europe. Indeed, the scenarios differ primarily with respect to the developments within Europe.

Table 16.4 shows developments in the relative performance of regions with respect to labour productivity. Hence, population growth does not play a role for these developments. It reveals that Central and Eastern Europe and Turkey catch up with the EU-15 in all scenarios. In STRONG EUROPE, convergence occurs at the most rapid pace, and the productivity ratio with the EU-15 more than doubles. In the other scenarios, convergence is significantly slower. In TRANSATLANTIC MARKET, for example, productivity in Turkey hardly catches up with the EU average because the Turkish economy is directed towards the poorer Eastern neighbours, rather than to the richer European Union. Similarly, globalization is on average conducive to convergence between poor, non-OECD countries and rich, OECD countries. Only in TRANSATLANTIC MARKET do productivity levels fail to converge and gap between rich and poor even grows.

In three of the four scenarios, labour productivity growth in the United States is higher than in Europe, especially in TRANSATLANTIC MARKET, where the European integration is not a success. The European Union outperforms the United States only in STRONG EUROPE. Here, productivity levels catch up with those in the United States, fulfilling the implicit aim of the Lisbon agenda. The success is, however, relative since productivity growth is higher in the scenarios with strong emphasis on private responsibilities.

16.2 Trade

In a world where markets integrate and become global, trade patterns will change. In particular, European exports will be redirected to other regions, while competing imports may increase competition on home markets and lead to a restructuring of industries. This section elaborates on the various trade liberalisation policies in the different scenarios and the consequences thereof for export specialisation patterns.

European and global trade liberalisation

In all scenarios the countries from Central and Eastern Europe will become EU members. They will join the internal market, which implies a removal of all formal and informal barriers to trade. In REGIONAL COMMUNITIES, however, transitional periods for various aspects of the internal market take on a more permanent character. The EU accession thus effectively boils down to a customs union, e.g. in agriculture and food, in which informal trade barriers remain. In STRONG EUROPE and GLOBAL ECONOMY, the candidate countries integrate beyond the internal market as they enter the EMU. Moreover, the European Union enlarges with Turkey and concludes association agreements with the former Soviet Union.

In STRONG EUROPE and GLOBAL ECONOMY, global trade liberalisation is successfully pursued and leads to a reduction in tariffs and non-tariff barriers in 2005 and 2015. Global trade liberalisation fails in the other two scenarios. TRANSATLANTIC MARKET is characterised instead by

more intense cooperation between the United States, the European Union and Latin America. REGIONAL COMMUNITIES assumes regional trade liberalisation between the Americas from 2015 onwards.

Redirected trade flows: intra-EU trade becomes relatively less important

In 2000, almost 54% of all exports by EU countries have destinations within the European Union. Slightly more than 18% is shipped to non-OECD countries (mainly to Asia) while the remaining 28% flows more or less equally to the United States, the rest of the OECD, and the Eastern part of Europe (the Central and Eastern European countries, Russia and Turkey).

The direction of trade changes drastically in most scenarios, as shown in table 16.5. Asia will become a much more important trading partner for Europe during the coming decades. The four scenarios do not foresee a growth slowdown in Asia; growth in Asia partly explains increasing export shares to that part of the world. A related but somewhat different explanation is that possibilities for further integration of European markets have become smaller than in the past.

In STRONG EUROPE and GLOBAL ECONOMY, solid growth in Asia, together with the multilateral eradication of trade barriers, leads to a substantial fall in the share of intra-EU trade. STRONG EUROPE, which also features lower trade barriers within the EU internal market, features a less pronounced trade shift towards Asia than GLOBAL ECONOMY.

In TRANSATLANTIC MARKET the trade intensity between the European Union and the United States increases, thereby boosting the export share from 10% to almost 14%. Intenser transatlantic relations also lead to trade diversion, which shows up in a lower share of intra-EU trade (falling to 49%) and a more moderate increase in the share of trade with non-OECD countries (rising to 20%).

The smallest changes in trade patterns take place in REGIONAL COMMUNITIES where overall GDP growth is low and trade barriers remain largely intact. Still, the share of exports to non-OECD regions increases from 18% in 2000 to nearly 23% in 2040. This comes at the expense of trade with the rest of the OECD. The share of intra-EU trade remains stable because of the elimination of non-tariff barriers between the EU-15 countries.

Table 16.5 Destination of EU-15 export flows, in 2000 and 2040

		Strong Europe	Transatlantic Market	Regional Communities	Global Economy
	2000	2040	2040	2040	2040
EU-15	53.5	47.3	49.3	52.8	39.4
Eastern Europe	8.2	9.6	8.9	8.3	9.5
United States	10.1	6.7	13.9	9.4	9.3
rest of the OECD	9.9	7.0	7.8	6.6	8.0
non-OECD	18.3	29.4	20.1	22.9	33.9
EU-15 exports ¹	100	428	411	208	704

source: WorldScan, regional; all aggregates include intraregional trade

¹ level of total EU-15 exports is indexed at 100 in 2000.

The comparative advantages of the European Union

Table 16.5 shows the so-called revealed comparative advantages for various sectors. For each sector, this measure is equal to the share of exports in total production relative to the average shares for other countries in the world (and multiplied by 100). If it is higher than 100, a region is said to specialise in that sector (i.e. it has a comparative advantage in that sector). Table 16.6 shows that the European Union today has a relatively strong position in the exports of agriculture and food, chemicals and minerals, and business services.

In all scenarios, the European Union maintains its comparative advantage in chemicals and minerals and business services. The comparative advantage in agriculture and food is somewhat artificial due to the CAP and disappears in three of the four scenarios. Only in REGIONAL COMMUNITIES is the direct and indirect support to farmers enough to maintain their position on world markets. In contrast, the export pattern of the European Union becomes more specialised in trade and transport in all scenarios, again with exception of REGIONAL COMMUNITIES.⁶⁴

⁶⁴ Note that the development in the comparative advantage of business services and other services is different in TRANSATLANTIC MARKET as compared to the other scenarios. The reason is that the United States has a comparative advantage in these sectors and will in this scenario displace European exports.

Table 16.6 Revealed comparative advantages in the EU-15, in 2000 and 2040

	2000	Strong Europe 2040	Transatlantic Market 2040	Regional Communities 2040	Global Economy 2040
Agriculture and food	110	76	77	131	79
Energy and raw materials	36	44	55	59	78
Chemicals and minerals	134	147	135	152	159
Capital goods	102	93	102	90	85
Other manufacturing goods	100	86	88	99	79
Trade and transport	87	122	127	85	131
Business services	109	138	96	116	128
Other services	97	120	77	108	120

source: WorldScan.

The numbers include intra-EU trade. Revealed comparative advantage is measured as the share of exports in total production relative to the average shares for other countries in the world.

16.3 Ageing and capital markets

Ageing threatens to increase the tax burden on young, working generations, thereby exacerbating existing tax distortions and creating an inter-generational conflict. Chapter 9 discusses several ways to mitigate the impact of ageing: raise participation among the young, increase the retirement age, reduce government debt, or move from a pay-as-you-go towards a funded pension system. The success of each of these approaches hinges upon developments in the rate of return on savings. In particular, a low interest rate makes it less attractive to invest in financial capital (pension reform, a fiscal surplus) and more attractive to invest in human capital (increasing participation, education). In contrast, a high interest rate makes it relatively attractive to finance pensions through funded systems and to reduce public debt. This section discusses how the interest rate develops in different scenarios. In a simple model, the interest rate is determined by the demand for and supply of capital and the international mobility of capital. Below, we discuss each of these components of the interest rate.

Savings

Ageing tends to reduce the supply of capital. This follows from the life-cycle pattern of savings: people borrow when young, save when mature, and dissave when old.⁶⁵ As a result, the average savings rate declines when the old-age dependency ratio increases during the coming decades. To get a grip on the relationship between capital supply and the expected demographic changes, WorldScan adopts an equation where savings depend on the growth of GDP per capita and the

⁶⁵ Retirees may not save from a macroeconomic perspective if pensions are based on a pay-as-you-go system.

demographic structure of the population. The equation is estimated using panel data for a group of countries.

Saving rates, as they also depend on policies, differ across the scenarios. For instance, pension reform or fiscal consolidation may offset the initial decline in national savings. For this reason, savings rates in STRONG EUROPE and GLOBAL ECONOMY are higher than in TRANSATLANTIC MARKET and REGIONAL COMMUNITIES. Yet, this is not sufficient to prevent a decline in savings. Table 16.7 shows that savings rates are below the level in 2000 in all scenarios. The average savings rate in the second period 2020-2040 is lower than in the first period 2000-2020, reflecting differences in the degree of ageing.

Table 16.7 Demand for and supply of capital, and real interest rates, in 2000 and 2040

	2000	Strong Europe		Transatlantic Market		Regional Communities		Global Economy	
		2020	2040	2020	2040	2020	2040	2020	2040
Savings (% of GDP)	18.8	19.0	15.1	17.1	13.0	16.7	12.7	19.5	15.6
Net foreign assets (% of GDP)	-0.8	-13.9	-35.3	-17.2	-29.3	-5.5	-9.9	-25.5	-72.4
Demand for capital (annual growth, %)		2.3	2.0	2.3	1.9	1.7	0.8	2.8	3.1
Interest rate	3.6	3.5	3.3	4.2	4.3	3.0	2.6	4.2	3.8

source: WorldScan

Investment

The demand for capital depends on the cost of capital and the marginal productivity of capital in production. For this latter development, the labour market is important. Ageing reduces the growth of employment. By increasing the capital-labour ratio, this depresses the marginal productivity of capital and reduces investment.⁶⁶ The demand for capital therefore largely follows from the development in employment.

The developments in employment are presented in table 16.8, which reveals that employment grows by 0.4% annually in GLOBAL ECONOMY, while it declines by 0.5% in REGIONAL COMMUNITIES. In STRONG EUROPE and TRANSATLANTIC MARKET, the growth rate takes an intermediate value of 0.1%. Table 16.8 decomposes employment growth into three parts: population growth, participation (of the population), and involuntary unemployment (among participants on the labour market). In REGIONAL COMMUNITIES, the population shrinks. In GLOBAL ECONOMY and STRONG EUROPE, immigration, higher fertility, and lower mortality rates

⁶⁶ Similarly, tough environmental policies reduce the input of energy and raw materials in production, thereby reducing the marginal productivity of capital and thus the demand for capital.

offset the decline in the population. Hence, the population keeps growing. Ageing reduces the overall participation rate, however. In GLOBAL ECONOMY, this development is offset by a higher participation of younger generations, and a rising effective retirement age. Also in TRANSATLANTIC MARKET and STRONG EUROPE, this mitigates the downward trend in the participation rate – although to a smaller degree than in GLOBAL ECONOMY. A lower unemployment rate hardly contributes to employment growth. In STRONG EUROPE, TRANSATLANTIC MARKET and GLOBAL ECONOMY does the unemployment rate fall, but this adds only negligibly to the growth of employment.

Table 16.8 **Decomposition of employment growth for the EU-15, 2000-2040**
Average annual growth rate

	Strong Europe	Transatlantic Market	Regional Communities	Global Economy
Employment	0.1	0.1	-0.5	0.4
Population	0.3	0.0	-0.2	0.3
Participation (of population)	-0.3	-0.1	-0.4	0.0
Unemployment (among participants)	0.1	0.1	0.0	0.1

source: WorldScan and for population Eurostat .

A decrease in the unemployment rate contributes positively to employment growth. A '+' sign in the row for unemployment implies a lower unemployment rate.

International capital mobility

International mobility of capital increases the opportunities to invest capital abroad and thus reduces the impact of national saving and investment on the interest rate. Note, however, that capital mobility between developed and developing countries will play a minor role in solving the ageing problem as the box: *Why investing in developing countries will not solve the ageing problem* reveals.

The degree of capital mobility differs across scenarios. In STRONG EUROPE and GLOBAL ECONOMY, capital is relatively mobile internationally as capital markets become better integrated. Accordingly, the European Union finds it easier to attract foreign capital. In STRONG EUROPE and GLOBAL ECONOMY, this causes a net inflow of foreign assets – especially after 2020 when savings decline. At the end of the scenario period, net foreign debt increases to almost 36% and 73% of GDP, respectively, in STRONG EUROPE and GLOBAL ECONOMY respectively. Most foreign assets originate from Asia, where saving rates are higher than elsewhere. The opportunity to import capital from abroad implies that the impact of savings and investment on the interest rate is smaller.

Why investing in developing countries will not solve the ageing problem

For at least as long as capital is mobile between rich and poor countries, interest rates will depend on the economic conditions in not only developed countries, but also developing countries. Indeed, a popular idea is that the developed countries in the North will finance their future pensions by investing their funds in developing countries in the South. Without this possibility, higher savings in developed countries would sooner depress the rate of return on investment. With capital mobility, in contrast, higher savings in the North would not reduce the interest rate as they can be invested in the South at relatively high rates of return.

This idea should be qualified for several reasons. First, the return to investment in poor countries is not necessarily higher than in rich countries. This was the reply when Lucas asked more than 10 years ago: “Why Doesn’t Capital Flow from Rich to Poor Countries?”. The return seems conditional on several institutional factors. Second, many developing countries, especially in Asia, feature high saving rates themselves. This implies that these countries do not need to import capital from the North. Third, ageing is not confined to developed countries: it is a world-wide phenomenon that also applies to developing countries. Therefore, the demand for capital in developing countries may fall as well. Finally, many impediments hamper cross-border capital flows. Developing countries would need to liberalise their financial markets so as to remove these impediments. But even if financial capital were fully mobile, the return on investment might fall quickly if the pace of investment is high. The reason is that countries that expand and grow rapidly see their terms-of-trade deteriorate. This leads to a lower return on investment and limits the incentive to invest in faster-growing countries.

Projections for the interest rate

The last row in table 16.8 shows that the interest rate decreases in STRONG EUROPE and REGIONAL COMMUNITIES and increases in TRANSATLANTIC MARKET and GLOBAL ECONOMY. The spread between the real interest rates is 1.7 points in 2040 (2.6% in REGIONAL COMMUNITIES and 4.3% in TRANSATLANTIC MARKET). The simulation results thus indicate that the impact of ageing on the interest rate is ambiguous: neither the effect of lower investment, nor the effect of lower savings dominates. To understand the different patterns of the interest rate, compare STRONG EUROPE and TRANSATLANTIC MARKET. GDP grows at a similar rate, while there are only small differences in the demand for capital. In STRONG EUROPE, however, savings and capital mobility are higher than in TRANSATLANTIC MARKET. This leads to a declining interest rate in the first scenario, and a rising interest rate in the second. Comparing GLOBAL ECONOMY and STRONG EUROPE, we see that the main difference is the demand for capital. In GLOBAL ECONOMY, the European economy grows at a faster pace than in STRONG EUROPE, which raises investment. As a result of higher demand, the interest rate in the first scenario is higher than in the second.

17 What next? What if ...

Scenarios are useful for analysing policies with long-term, uncertain implications. This chapter indicates what type of analysis may benefit from scenarios and how scenarios should be used.

Two key uncertainties mark the future of Europe. First, uncertainty with respect to global and regional cooperation determines the pace of economic and political integration, both across continents and within the European Union. This has important implications for welfare. Second, uncertainty with respect to national institutional developments determines how European countries cope with a number of social and economic challenges, such as ageing, technological change, increased heterogeneity and increased costs of taxation. This determines both the level and the distribution of welfare. Combining the two key uncertainties yields four possible futures of Europe. Figure 17.1 presents these four scenarios.

Figure 17.1 The four scenarios



Follow-up studies at CPB will use scenarios as a tool to address particular, strategic questions for the Netherlands. Examples are policies in the area of the environment, infrastructure, spatial demand, ageing and the welfare state. To illustrate, what policy measures are necessary in each scenario to achieve a given set of environmental targets? What policies are required to meet competing spatial demands? Clearly, the required policies differ among scenarios. To address

such questions, the four scenarios for Europe in this study will be extended with more specific information for the Dutch economy.

Others may use the scenarios as well. Thereby, the scenarios may serve two purposes. First, the scenarios provide a structure for discussing future uncertainties and their mutual interdependencies in a comprehensive framework. The scenarios give a feeling for the range of possible outcomes in the future, and perhaps an early warning to policy makers about particular bottlenecks. The scenarios also offer a tool for thinking about future international policy issues, such as international cooperation. In a sense, the positive approach of the scenarios forms the mirror image of chapter 7, where we discussed international cooperation from the perspective of the subsidiarity principle.

The use and misuse of scenarios

Scenarios are ...

... possible futures of the world
 ... exogenously given for the user
 ... all plausible
 ... consistent
 ... explorations of “what if ...”

Scenarios are not / cannot ...

... predictions of the future
 ... be influenced by the user
 ... to be selected by the user
 ... “visions”
 ... explorations of “what happens ...”

Second, the scenarios can be used to explore strategic policies in the Netherlands. Thereby, it is important to note that there is always a risk that scenarios are used inappropriately as the Box “*The use and misuse of scenarios*” reveals. In particular, the scenarios should form the exogenous backgrounds that are outside the influence of the policy maker. Indeed, Dutch policy makers have only a limited impact on policies in other countries or on international agreements. Therefore, where scenarios are used, questions should start with: “What if ...”. What should governments do today if they do not accept an increase in the future tax burden under alternative scenarios? With thriving world trade, investments in transport and distribution are perhaps profitable, but what if the process of integration falters (as in TRANSATLANTIC MARKET and REGIONAL COMMUNITIES): will such investments still be profitable? In this way, the scenarios offer a range of distinct worlds in which long-term policies can be explored.

How do policies work out in alternative worlds? What are no-regret options? Which policies have a high option value of waiting as they are attractive only in one scenario? The aim of our scenarios is to provide a toolkit for these type of analyses. With this study, we present a challenging toolkit to policy makers and researchers who must consider policies with long-term implications.

References

- Acemoglu, D., 1998, Why do new technologies complement skills? Directed technical change and wage inequality, *Quarterly Journal of Economics* 113, 1055-1090.
- Adam, K. T. Jappelli, A. Menichini, M. Padula, M. Pagano, 2001, Analyse, compare, and apply alternative indicators and monitoring methodologies to measure the evolution of capital market integration in the European Union, Centre for Studies in Economics and Finance (CSEF), Department of Economics and Statistics, University of Salerno.
- Aghion, P., E. Caroli and C. García-Peñalosa, 1999, Inequality and economic growth: the perspective of the new growth theories, *Journal of Economic Literature* 37, 1615-1660.
- Alesina, A., I. Angeloni and L. Schuknecht, 2001a, What does the European Union do?, NBER Working Paper, no. 8647.
- Alesina, A., O. Blanchard, J. Galí, F. Giavazzi, and H. Uhlig, 2001b, Defining a macroeconomic framework for the Euro-area; Monitoring the European Central Bank 3, CEPR.
- Alesina, A., E. Glaeser, and B. Sacerdote, 2001c, Why doesn't the US have a European-style welfare state, mimeo
- Altshuler, R., H. Grubert and T.S. Newlon, 2001, Has US investment abroad become more sensitive to tax rates?, in J. Hines Jr. (ed.), *International Taxation and Multinational Activity*, University of Chicago Press.
- Altshuler, R. en T.J. Goodspeed, 2002, Follow the leader? Evidence on European and US tax competition, mimeo Hunter College.
- Anderson, K., 1999, Agriculture, developing countries and the WTO millennium round, CIES Discussion Paper no. 99/28, Adelaide Australia.
- Ark B. Van, and R. H. McGuckin III, 2003, Performance 2002: productivity, employment, and income in the world's economies, The Conference Board, Report R-1328-03-RR.
- Arranz, M.R., 2001, Wage information and information technology, mimeo.

- Autor, D., L. Katz and A. Krueger, 1998, Computing inequality: have computers changed the labor market?, *Quarterly Journal of Economics* 113, 1169-1213.
- Balassa, B., 1961, *The theory of economic integration*, Irwin, Homewood, Illinois.
- Baldwin, R.E., J.F. Francois, and R. Portes, 1997, Costs and benefits of eastern enlargement: the impact on the EU and Central Europe, *Economic Policy* 24, 127-176.
- Baldwin, R., 2000, Regulatory protection, Developing nations and a two-tier world trade system, CEPR Discussion Paper, 2574, London.
- Baldwin, R., E. Berglöf, F. Giavazzi, and M. Widgreen, 2001, Nice Try: Should the treaty of Nice be ratified? *Monitoring European Integration* 11, CEPR.
- Baldwin, R. and M. Widgreen, 2003, How the draft constitutional treaty affects powers in the EU, web essay on <http://heiwwww.unige.ch/~baldwin/policy.htm>.
- Barnes, J., 2000, *Something to declare*, Picador, London.
- Bartel, A.P. and F. Lichtenberg, 1987, The comparative advantage of educated workers in implementing new technology, *Review of Economics and Statistics*, 49, 1-11.
- Bartel, A.P. and N. Sicherman, 1999, Technological change and wages: an interindustry analysis, *Journal of Political Economy* 107, 285-325.
- Bauer, T. and K. Zimmermann, 1999, Assessment of possible migration pressure and its labour market impact following EU enlargement to CEE, Research Report 139, Department for Education and Employment, UK.
- Baumol, W., and W.G. Bowen, 1966, *Performing arts: the economic dilemma*, Twentieth Century Fund, New York.
- Baumol, W., 1967, Macroeconomics of unbalanced growth; the anatomy of urban crisis, *American Economic Review*, 57, 415-426
- Becker, G.S., 2002, The continent gets it, *Business Week*, April.

- Beetsma, R. en C. Oudshoorn, 1999, Tools for regional stabilisation, AEP Research Memorandum 9903, Ministerie van Economische Zaken, The Hague.
- Beetsma, R., and H. Uhlig, 1999, An analysis of the stability and growth pact, *Economic Journal*, 109, 546-571.
- Bentivogli, C. and P. Pagano, 1999, Regional disparities and labour mobility: The European Union versus the USA, *Labour*, 13, 737-760.
- Berman, E., J. Bound and Z. Griliches, 1994, Changes in the demand for skilled labor within U. S. Manufacturing industries: Evidence from the annual survey of manufactures, *Quarterly Journal of Economics*, 109, 367-365.
- Bertrand, G., A. Michalski and L.R. Pench, 2000, *European futures; five possible scenarios for 2010*, Cheltenham : Edward Elgar Publishing.
- Boeri, T., and H. Brucker (Main authors of the European Integration Consortium), 2000, The impact of Eastern enlargement on employment and labour markets in the EU Member States, Report for the European Commission, Berlin.
- Bonaglia, F., J. Braga de Macedo and M. Bussolo, 2001, How globalization improves governance, CEPR Discussion Paper, 2992
- Bordo, M.D., B. Eichengreen, and D.A Irwin, 1999, Is globalization today really different than globalization a hundred years ago?, NBER Working paper 7195
- Bovenberg, A.L., and C.N. Teulings, 1996, Doelmatigheid, rechtvaardigheid, rechtsgelijkheid en privacy, *Economisch-Statistische Berichten*, 81, 1008-1011.
- Bovenberg, A.L., and P.B. Sorensen, 2003, Improving the equity-efficiency trade-off: mandatory savings accounts for social insurance, paper presented at the 59th Annual Congress of the International Institute of Public Finance in Prague, August 25-28, 2003.
- Bradley, D., E. Huber, S. Moller, F. Nielsen and J. Stephens (2001), Distribution and redistribution in post-industrial democracies, Luxembourg Income Study Working Paper No. 265.

Braunerhjelm, P., R. Faini, V. Norman, F. Ruane, and P. Seabright, 2000, *Integration and the regions of Europe: how the right policies can prevent polarization*, Monitoring European Integration 10, London: CEPR.

Breuss, F., 2001, Macroeconomic effects of EU enlargement for old and new members, WIFO working paper no. 143/2001, WIFO, Vienna.

Brewer, T., P.A. Brenton and G. Boyd, 2002, *Globalizing Europe: Deepening integration, alliance capitalism and structural statecraft*, New Horizons in International Business, Cheltenham, UK and Northampton,

Brown, D., A.V. Deardorff, S. Djankov and R.M. Stern, 1997, An economic assessment of the integration of Czechoslovakia, Hungary and Poland into the European Union, in: S.W. Black (ed.), *Europe's Economy looks East: Implications for Germany and the European Union*, Cambridge University Press.

CEPR, 2002, *Making sense of globalization*, CEPR Policy Paper 8.

Chen, Y-F., en M. Funke, 2003, Labour demand in Germany: an assessment of non-wage labour costs, CESifo Working Paper no. 952.

Coe D.T, and E. Helpman, 1995, International R&D spillovers, *European Economic Review*, 39, 859-87.

Coppel, J., J.C. Dumont and I. Visco, 2001, Trends in immigration and economic consequences, OECD Economics Department Working Papers no. 284.

CPB, 1985, *The Dutch economy in the long run: three scenarios for 1985-2010*. 1985 (in Dutch), Working Paper no. 1.

CPB, 1992a, *Scanning the future; a long-term scenario study of the world economy 1990-2015*, SDU Publishers.

CPB, 1992b, *The Netherlands in triple; scenario's for the Netherlands 1990-2015* (in Dutch), SDU Publishers.

- CPB, 1997a, *Challenging neighbours; rethinking German and Dutch economic institutions*, Berlin, Springer Verlag.
- CPB, 1997b, *Economics and its physical surroundings: policy challenges and options 1995-2020*, SDU Publishers.
- CPB, 1999, *WorldScan: the core version*, The Hague.
- CPB, 2003a, *Centraal Economisch Plan*, 157-167, CPB, The Hague.
- CPB, 2003b, *Macro Economische Verkenning*, 137-148, The Hague.
- CPB/SCP, 2003, *Social Europe*, Sdu Publishers.
- CPB/RIVM, 2003, *European energy and climate scenarios*, forthcoming
- Davies, H., and J. Heather, 1992, *Sex, sharing and the distribution of income*, Birkbeck College Discussion Papers in Economics 9/92.
- Davis, S.J. (1992), *Cross-country patterns of change in relative wages*, *NBER Macroeconomic Annual*.
- Decressin J. and A. Fatas, 1995, *Regional labour market dynamics in Europe*, *European Economic Review*, 39.
- Deiningen, K., and L. Squire (1996), *A new data set measuring income inequality*, *World Bank Economic Review*, 10(3), 565-591
- Devereux, M.P., B. Lockwood, and M. Redoano, 2002, *Do countries compete over corporate tax rates?*, CEPR Discussion Paper, no. 3400.
- Devereux, M., R. Griffith en A. Klemm, 2002, *Corporate income tax reforms and tax competition*, *Economic Policy*, 451-495.
- Duff, A. and S. Williams, 2001, *European futures: alternative scenarios for 2020*, London : Federal Trust for Education and Research.

Ederveen, S., J. Gorter, R.A. de Mooij and R. Nahuis, 2002, *Funds and Games: the economics of European cohesion policy*, Sdu publishers, The Hague.

Ederveen S. and N. Bardsley, 2002, The influence of wage and unemployment differentials on labour mobility in the EU: A meta-analysis, mimeo, CPB.

Eichengreen, B., and C. Wyplosz, 1998, Stability Pact; More than a minor nuisance?, *Economic Policy*, April.

Eichengreen, B., 1993, Labour markets and European monetary unification, in: Masson, R.P. and Taylor, M.P. (eds.) *Policy Issues in the Operation of Currency Unions*, Cambridge: Cambridge University Press, 130-162.

Eichholz, P.M.A., C.G. Koedijk and R. Otten, 2002, Aandelen blijven beste beleggingen, *Economisch-Statistische Berichten*, 4345, 90-91.

European Commission, 1996, *The single market review*, Kogan Page, London.

European Commission, 1998, Conclusions of the ECOFIN Council meeting on 1 December 1997 concerning taxation policy, *Official Journal of the European Communities*, C2, 6/1/98, 1-6.

European Commission, 2001a, The economic impact of enlargement, Enlargement paper no. 4, DG for Economic and Financial Affairs, Brussels.

European Commission, 2001b, Company taxation in the internal market, COM(2001)582.

Eurostat, 2002, Statistics in focus: population social conditions, theme 3 - 9/2002.

Esping-Andersen, G., 1999, *Social foundations of post-industrial economics*, Oxford: Oxford University Press.

Feldstein M. and C. Horioka, 1980, Domestic saving and international capital flows, *Economic Journal*, 90, 314-29.

Flinn, C., 2002, Labour market structure and inequality: a comparison of Italy and the US, *Review of Economic Studies*, 69, 611-45.

- Frankel J. and A. Rose, 1999, The endogeneity of the optimum currency area criteria, *Swedish Economic Policy Review* 4, 487- 512.
- Frankel, J, and A. Rose, 2002, An estimate of the effect of common currencies on trade and income, *Quarterly Journal of Economics*, 437-466.
- Fujita M., P. Krugman and A.J. Venables, 1999, *The spatial economy*, MIT Press.
- Gelauff, G.M.M. and J.J. Graafland, 1994, *Modelling welfare state reform*, Contributions to Economic Analysis, North Holland.
- Giannetti, M., L. Guiso, T. Jappelli, M. Padula and M. Pagano, 2002, Financial market integration, corporate financing and economic growth, final report, European Economy, Economic Papers no. 179.
- Gordon, R.H., and H.R. Varian, 1989, Taxation of asset income in the presence of a world securities market, *Journal of International Economics* 26, 205-26.
- Gordon, R.H., and A.L. Bovenberg, 1996, Why Is capital so immobile internationally? Possible Explanations and Implications for Capital Income Taxation, *American Economic Review*, 86, 1057-75
- Gorter, J., 2002, The economic geography of Europe, *CPB Report*, 2002/4.
- Gorter, J. and R.A. de Mooij, 2001, *Capital income taxation in the European Union: trends and trade-offs*, Sdu Publishers, The Hague.
- Goulder, L.H., I.W.H. Parry and D. Burtraw, 1997, Revenue-raising vs. other approaches to environmental protection: the critical significance of preexisting tax distortions, *Rand Journal of Economics*, 28, 08-731.
- Grauwe, P. de, en M. Polan, 2003, Globalization and social spending, CESifo Working Paper no. 885.
- Groot, H.L.F. de, R. Nahuis and P.J.G. Tang, 2003, Is the American model miss world? Choosing between the Anglo-Saxon model and a European-style alternative, CPB Document, forthcoming.

Harrison, G., T.F. Rutherford D.G. Tarr, Trade liberalization, poverty and efficient equity, 2003, *Journal of Development Economics*, 71, 97-128.

Heston, A., R. Summers and B. Aten, 2002, Penn World Table Version 6.1, Centre for International Comparisons at the University of Pennsylvania (CICUP).

Hoekman, B., and C.P. Braga, 1997, Protection and trade in services: a survey, Policy Research Paper 1747, World Bank, Washington.

Hufbauer, G. and F. Neuman, 2002, Trade and investment: an American perspective, paper for conference on 'Transatlantic Perspectives on US-EU Economic Relations'.

Hummels D., 1999, Towards a Geography of trade costs, University of Chicago, mimeo.

IPCC, 2000, *Emission scenarios*, Cambridge University Press.

Italianer, A., 1999, The euro and internal economic policy coordination, *Empirica* 26, 201-216.

Jacobs, B. ,2004, The lost race between schooling and technology, *De Economist*, forthcoming

Keller, W., 2001, The geography and channels of diffusion at the world's technology frontier, NBER Working Paper, 8150.

Koning, P. and A. Deelen, 2003, Prikkels voor UWV, CPB Document, The Hague.

Krueger, A., 1993, How computers have changed the wage structure: evidence from micro data, 1984-1989, *Quarterly Journal of Economics* 110, 33-60.

Krusell, P., L. Ohanian, V. Ríos-Rull and G. Violante, 2000, Capital-skill complementarity and inequality: A macroeconomic analysis, *Econometrica*, 68, 1029-53.

Lawrence, R.Z., A. Bressand and T. Ito, 1996, *A vision for the world economy: openness, diversity and cohesion*, The Brookings Institution, Washington D.C.

Leibfritz W., P. O'Brien and J.C. Dumont, 2002, Effects of immigration on labour markets and government budgets: an overview, paper presented at the CPB-ENEPRI conference 'Policy competition and the welfare state', 30 November 2002, The Hague.

- Lejour, A.M., 2003, Four long-term scenarios for Europe: a quantitative assessment, CPB Document, forthcoming.
- Lejour, A.M., R.A. de Mooij and R. Nahuis, 2003, EU enlargement: Economic implications for countries and industries, in: H. Berger, T. Moutos and H-W. Sinn (eds), *Managing EU enlargement*, forthcoming in MIT Press .
- Leuvenstein, M. van, and J. van Ommeren, 2003, New evidence of the effect of transaction costs on residential mobility, CPB Discussion Paper no. 18, The Hague.
- Lundberg, M., and L. Squire, 2003, The simultaneous evolution of growth and inequality, *Economic Journal*, 113, 326-344.
- Machin, S. and J. Van Reenen, 1998, Technology and changes in skill structure: Evidence from seven OECD countries, *Quarterly Journal of Economics*, 113, 1215-44.
- Maddison, A., 2001, *The world economy in millennial perspective*, Paris: OECD
- McCallum, J., 1995, National borders matter: Canada-U.S. regional trade patterns, *American Economic Review* 85, 615-623.
- Mirrlees, J.A., 1971, An Exploration in the theory of optimum income taxation, *Review of Economic Studies* 38, 175-208.
- Mooij, R.A. de, and S. Ederveen, 2003, Taxation and foreign direct investment: a synthesis of empirical research, *International Tax and Public Finance*, forthcoming.
- Mooij, R.A. de, en R. Nahuis, 2003, Kansen en bedreigingen van de EU-uitbreiding, *Tijdschrift voor Politieke Economie*, 24, 3-29.
- Nahuis, R., and H.L.F. de Groot, 2003, *Rising Skill Premia: you ain't seen nothing yet?*, CPB Discussion Paper 20.
- Nahuis, Richard and Sjak Smulders, 2002, The skill premium, technological change and appropriability, *Journal of Economic Growth*, 7, 137-156
- Nahuis, R., en H. van der Wiel, 2003, The 'new economy': where do we stand and where do we go?: The ICT policy agenda, Lisbon or back to Cardiff?, CPB Discussion Paper, forthcoming

Nickell, S.J., 1997, Unemployment and labor market rigidities, *Journal of Economic Perspectives*, 11, 55-7.

Nickell, S.J. and R. Layard, 1999, Labor market institutions and economic performance, in: Ashenfelter, O. and D. Card (eds), *Handbook of labor economics*, vol. 3c, Amsterdam: Elsevier.

Nicoletti, G. And S. Scarpetta, 2003, Regulation, productivity and growth: OECD evidence, *Economic Policy*, 36, 9-69.

Obstfeld M. and K. Rogoff, 2000, The six major puzzles in international macroeconomics: is there a common cause?, NBER Working Paper 7777.

OECD, 1999, *Assessing performance and policy; implementing the OECD job strategy*, Paris

OECD, 2001a, *Agricultural Policies in OECD Countries: monitoring and evaluation*, Paris

OECD 2001b, Fiscal implications of ageing: projections of age-related spending, Economics Department Working Paper, no. 35

OECD, 2001c, *Employment Outlook 2001*, Paris

OECD, 2002, *Employment Outlook 2002*, Paris

OECD, 2003a, *Transforming disability into ability; policies to promote work and income security for disabled people*, Paris

OECD, 2003b, *Information Technology outlook; ICTs and the information economy*, Paris

Rele, H. ter, and G. van Steen, 2001, Housing subsidisation in the Netherlands: measuring its distortionary and distributional effects, CPB Discussion Paper no. 2.

RIVM, 2001, The IMAGE 2.2 implementation of the SRES scenarios: Climate change scenarios resulting from runs with several GCMs, RIVM CD-ROM Publication 481508019.

RIVM, 2003, Four scenarios for Europe based on UNEP's third Global Environment Outlook, RIVM rapport 402001021.

- Rodríguez, F. and D. Rodrik, 1999, Trade policy and economic growth: a skeptic's guide to the cross-national evidence, NBER Working Paper, 7081
- Rodrik, D., 1998, Why do more open economies have bigger governments?, *Journal of Political Economy*, 106, 5, 997-1032
- Roodenburg, H., R. Euwals and H. ter Rele, 2003, *Immigration and the Dutch economy*, The Hague, CPB & Koninklijke De Swart
- Sala-i-Martin, X.X., 1996, Regional cohesion: Evidence and theories of regional growth and convergence, *European Economic Review*, 40, 1325-1352.
- Sapir, A., 1992, Regional integration in Europe, *Economic Journal*, 102, pp. 1491-1506.
- Sapir, A., 2000, Who is afraid of globalization? The challenge of domestic adjustment in Europe and America, paper for conference on 'Efficiency, Equity and Legitimacy: The Multilateral Trading System at the Millennium'
- Sapir, A., 2001, Old and New Issues in EC-US Trade Disputes, paper for conference on 'Transatlantic Perspectives on US-EU Economic Relations'
- Sapir, A., P. Aghion, G. Bertola, M. Hellwig, J. Pisani-Ferry, D. Rosati, J. Viñals en H. Wallace, 2003, An agenda for a growing Europe – Making the EU economic system deliver, Report of an independent high-level study group established on initiative of the President of the European Commission.
- SER, 2001, Arbeidsmobiliteit in de EU, SER advies 01/04, The Hague.
- Sinn, H.-W., 2000, Why A funded pension system is useful and why it is not useful, *NBER Working Paper*, 7592
- Stiglitz, 2002, *Globalization and its discontents*, Norton, New York
- Straubhaar, T., 1988, International labour migration within a common market: some aspects of EC experience, *Journal of Common Market Studies*, 27, 45-62.
- Tinbergen, J. . 1975, *Income distribution; analysis and policies*, North-Holland, Amsterdam

Uhlig, H., 2002, One money, many fiscal policies in Europe: what are the consequences?, CEPR Discussion Paper, 3296

UNICE, 2000, *Memorandum on cross-border company taxation obstacles in the single market*.

Visser, J., 2001, Europa en de CAO: Drie scenario's en een toekomstverkenning, AIAS research paper, University of Amsterdam (in Dutch).

Vollaard, B., 2003, Performance contrasts for police forces, CPB Document no. 31.

WTO, 2001, Doha briefing notes: some facts and figures, see www.wto.org.

Zalm, G., 1999, Budgettaire coordinatie: to be or not to be?, in: *Langs de lijnen van geleidelijkheid* (in Dutch), Wolters Noordhoff.

Zuckerman, M.B., 1998, Debate: A second American century, *Foreign Affairs*, May/June.