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European Research Area



SEVENTH FRAMEWORK
PROGRAMME

Funded under Socio-economic Sciences & Humanities

AUGUR

Challenges for Europe in the world in 2030

Project no. SSH-CT-2009-244565

DELIVERABLE 1.2 (WP 1)

Presentation: historical data and initial scenarios to 2030

Abstract

This presentation reviews historical data and a baseline projection to 2030 to provide a preliminary assessment of the main outcomes to be expected as a consequence of continuation of past trends and provides six scenarios to illustrate the way in which specific changes in global governance and national and international policies could impact outcomes over the next two decades.

The historical analysis, baseline projection and alternative scenarios summarised here have been reviewed in a recent two-day workshop and will be refined progressively in the coming year in response to feedback from other participants in the AUGUR programme.

The purpose of WP1

Provide a historical databank and macro-model generating scenarios for the period to 2030 to set the scene globally and by world region. The analysis and scenarios will allow the AUGUR research programme to make progress at two levels:

- assess the relative efficiency of different mechanisms for adjusting world imbalances (changes in real exchange rates, adjustments through income, production and demand, wealth effects, role of macroeconomic policies)
- evaluate the impact of possible changes in policy goals and constraints in the fields of global finance, trade, energy and environmental and social protection with potential feedbacks into the political sphere.

Anticipated result

The macro-model will help AUGUR research teams to evaluate more precisely constraints impinging on national and international decision-making arenas. Special attention will be given to the assessment of constraints bearing on the European Union and its member countries.

Careful consideration of the challenges and constraints in the context of different governance models will provide a basis for a thorough analysis of policies and their potential impacts over the next two decades.

Methodology /1

Databank

- annual series 1970-2008 for all countries
- WEO estimates for 2009-2012
- UN population projections to 2030

Model

- the world economy decomposed into 4 large countries and 15 multi-country blocs
- Europe disaggregated into 5 regions - North, Central, East, South and West
- 'real' variables linked by identities and behavioural relationships

See AUGUR D1.1 "Introduction to the CAM databank and model"

Methodology /2

Behavioural variables - partially exogenous

- typical behavioural patterns (feedbacks) are estimated on historical panel data (28 years x 19 blocs)
- each behavioural variable has exogenous elements (residuals) that represent departures of policy and private sector behaviour from the typical pattern

The baseline projection

- starts from the current situation (WEO estimates)
- assumes continuation of 'typical' past behaviour as exogenous elements in the current situation die away
- implies future outcomes which are in many cases different from what has happened in the past, especially over the longer term beyond 2015 or 2020

Methodology /3

Scenarios

- how will the changing structure of the world economy influence the pattern of governance and the norms of economic, financial and structural policy ?
- what policies may be available to deal with current and future challenges, depending on the governance system ?
- how will policies of different countries and blocs interact through positive or negative spillovers ?
- at the end of the day, what is the chance that different governance patterns will be effective ?

Methodology /4

Scenario simulation as a tool for the study of policy

Governance assumptions set the scene for policy action

- exogenous (assumed) changes in behaviour
e.g. new confidence shocks, stronger trade performance, greater success in energy saving
- new policy rules seeking to adjust selected variables (instruments) in pursuit of defined objectives (targets)
e.g. trade policies intended to improve the balance of payments, fiscal policies intended to reduce government debt
- conditional policy rules, taking effect if and when a target outcome hits a floor or ceiling
e.g. action to cut deficits or keep real exchange rates above a certain level
- cooperation: many instruments used in pursuit of a common target (within a bloc or between blocs)

The baseline and key challenges

Global issues

- growth of population, income, trade
- continued growth of dependence on carbon energy sources and increased CO2 emissions
- commodity prices, the price of oil, inflation, financial stability
- labour force, migration and employment in high-income regions and countries
- low income growth rates in middle-income regions and countries
- development failures: non-convergence of low-income regions and countries

World growth rates, 1980-2030

Baseline

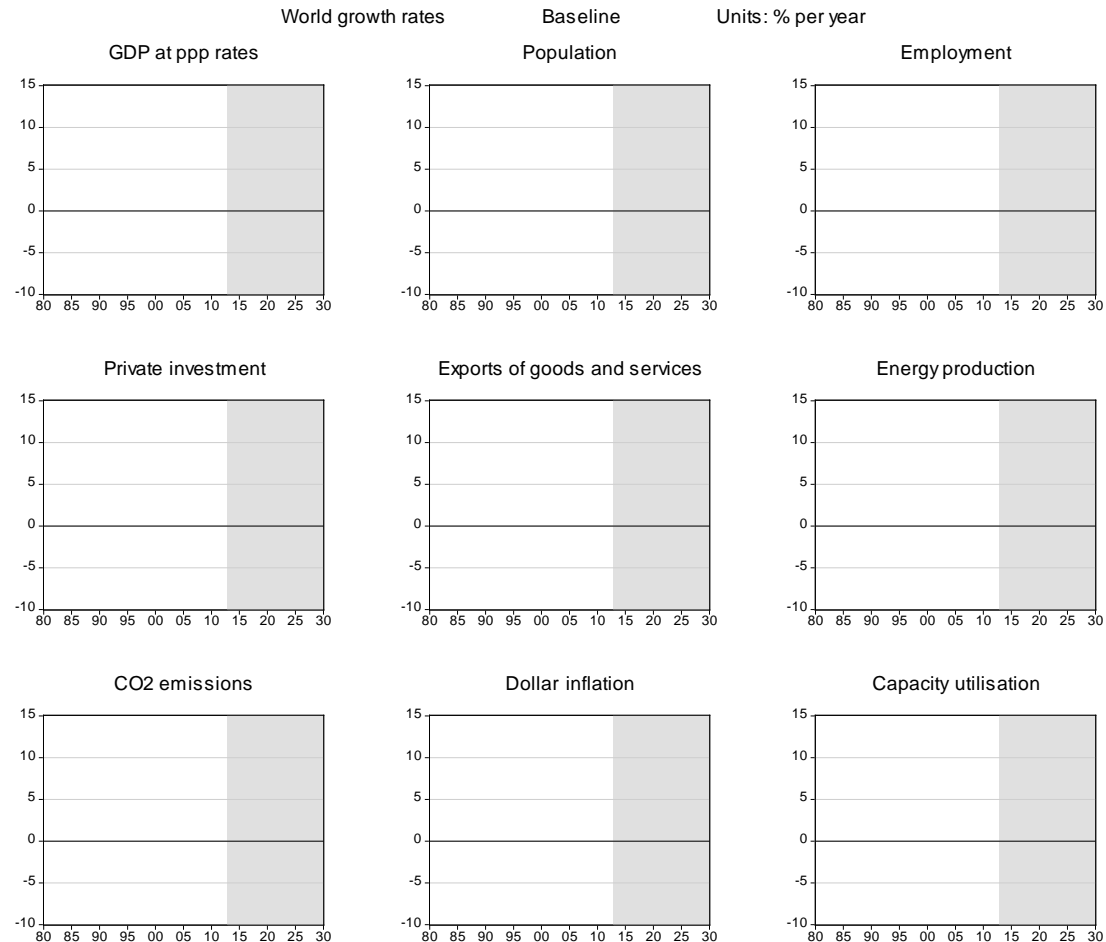
Assuming policies typical of the past 30 years:

- continued growth of GDP, investment and trade with slowing trends of population, employment and migration

- continued increases in energy use and CO2 emissions

- low inflation rates

- periodic financial crises ?



Terms of trade, 1980 - 2030

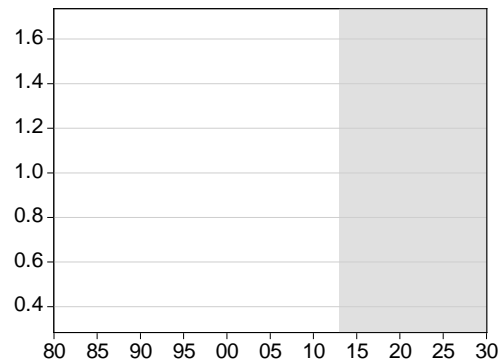
Resumed tendency of commodity prices to decline

Limited increases in the price of oil

Exports of manufactures and services are no longer getting cheaper relative to domestic products and services

Relative price indexes

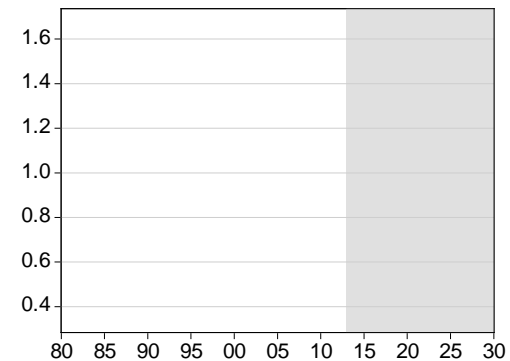
Primary commodities



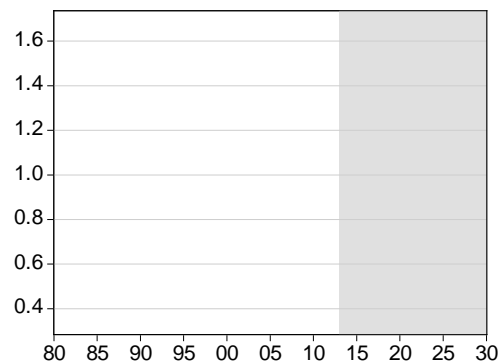
Baseline

Units: base 2005 = 1

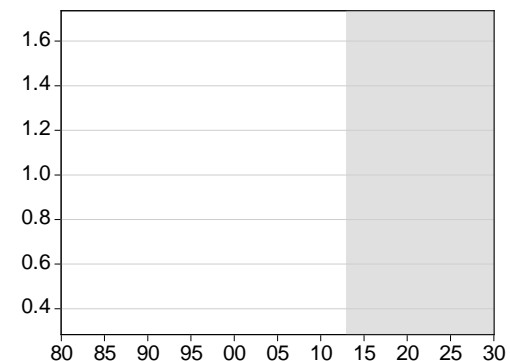
Oil



Exports of manufactures



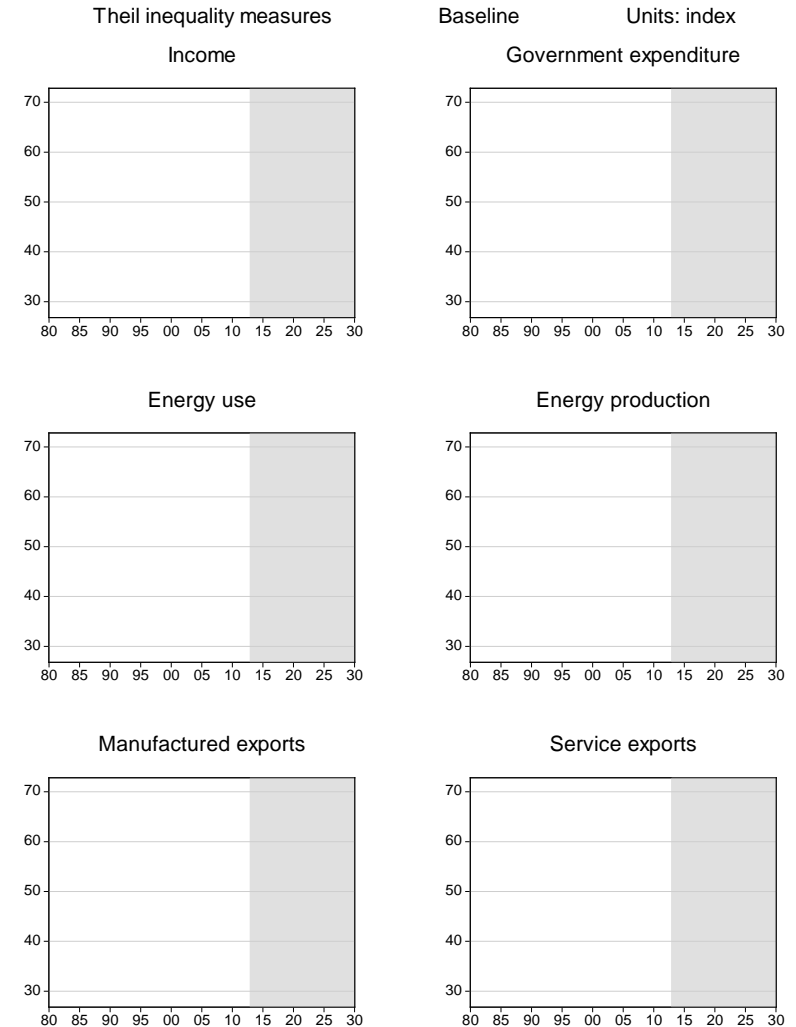
Exports of services



Limits of convergence ?

In the past decade there was a major shift in global income distribution due to fast growth in Asia, especially China, reducing overall inequality between world regions.

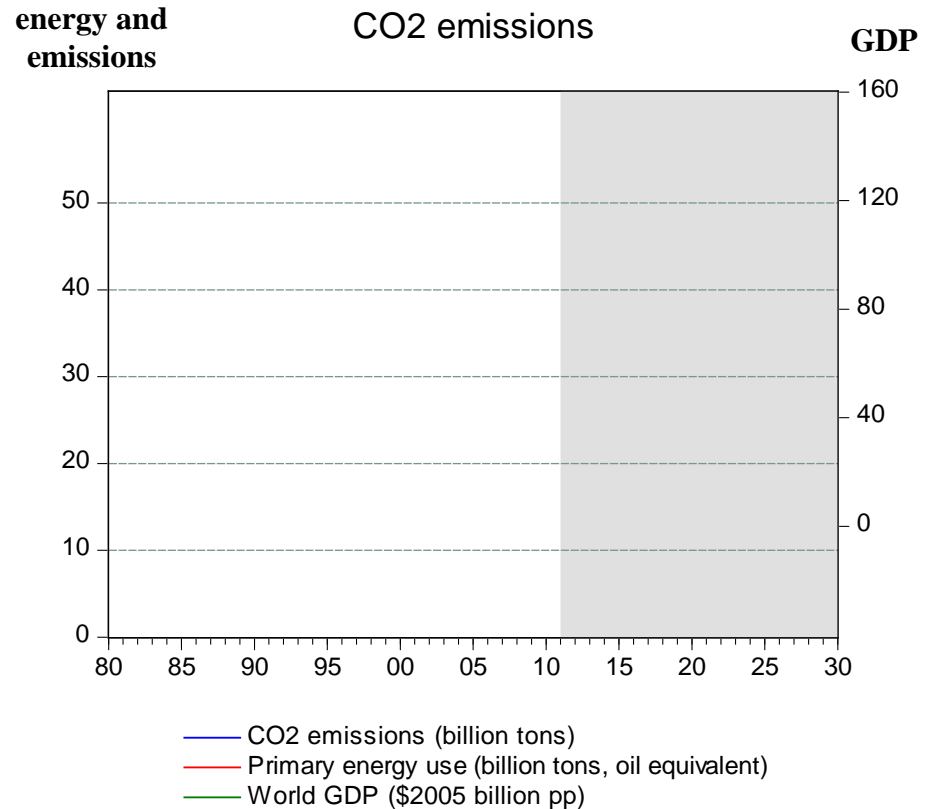
The baseline shows a slowdown of convergence in future as trade in manufactures and services remains highly concentrated and less competitive regions of the world are unable to improve their position.



Increasing emissions ?

In the baseline (no new policies) CO2 emissions increase from 30 billion tons in 2011 to nearly 50 billion tons in 2030 due to rapid GDP growth in Asia where low-carbon or carbon-free energy is less available.

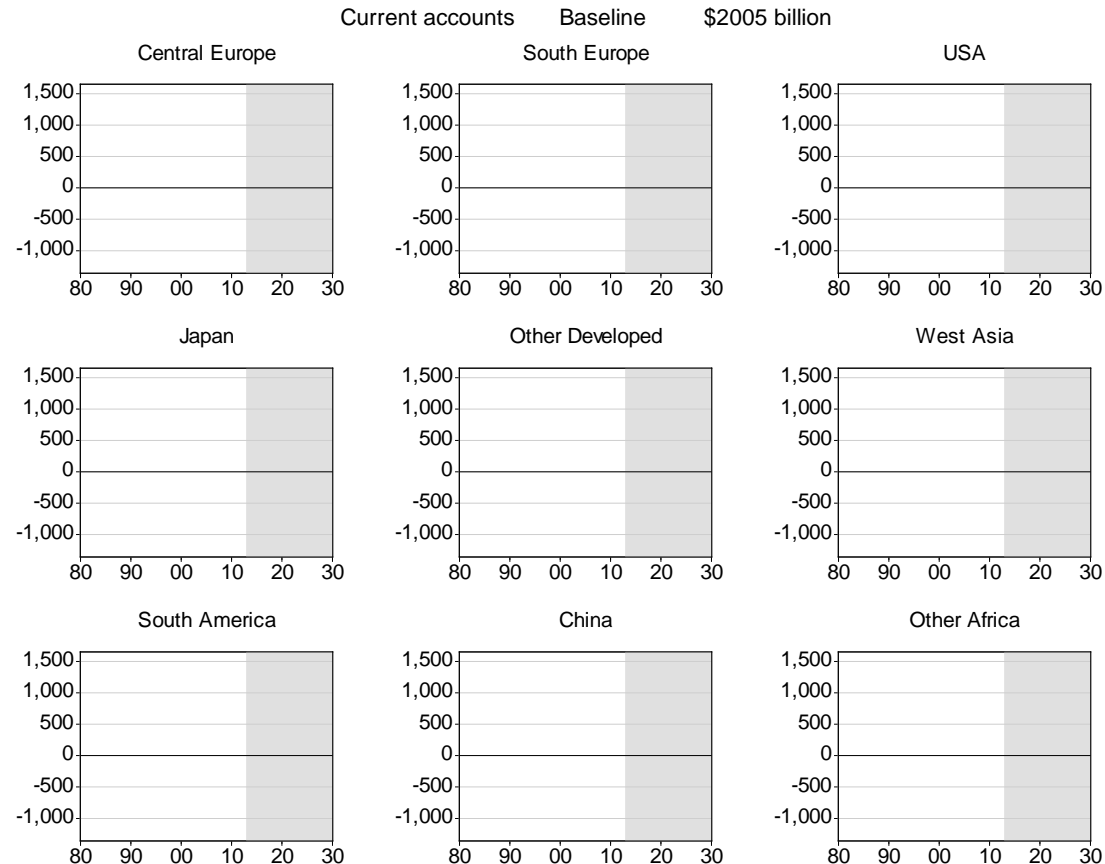
This trend is not going to be acceptable to Asian countries or to the rest of the world and many things may contribute to changing it.



Financial imbalances

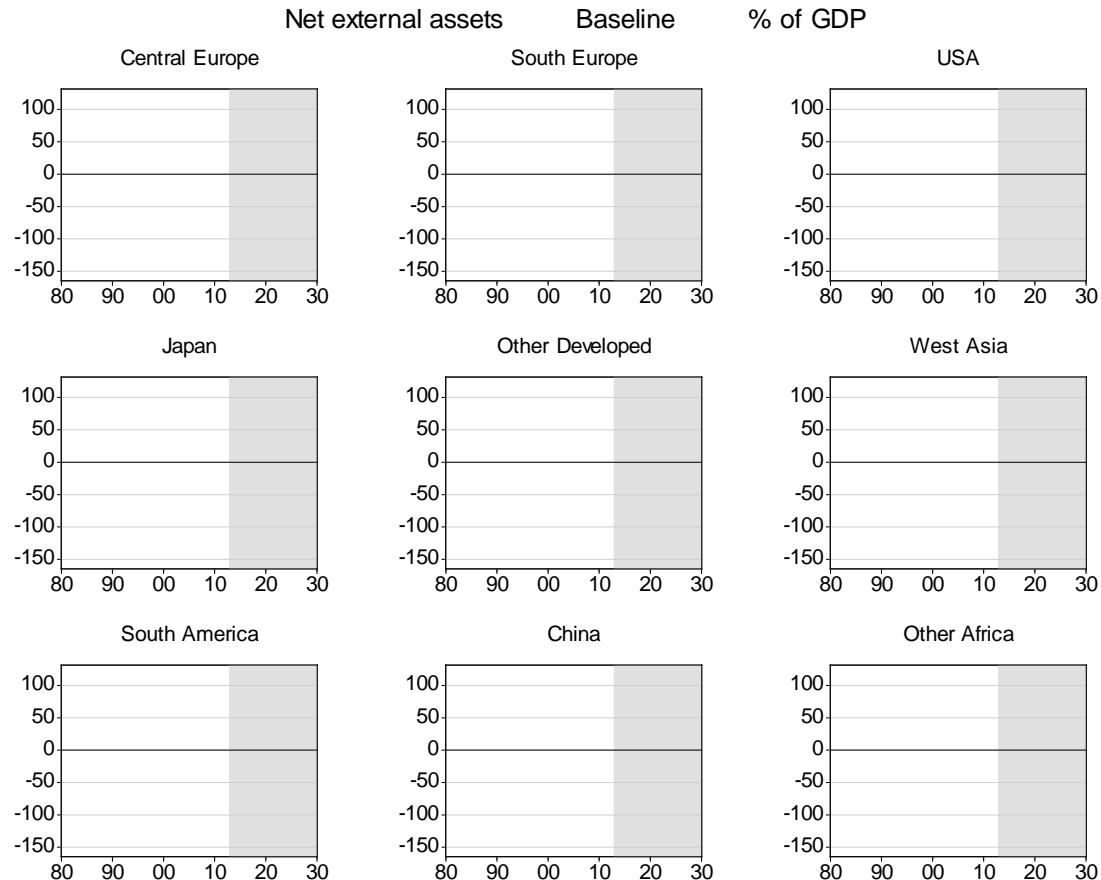
Export-import gaps and savings-investment gaps will continue so long as the gaps are financed on reasonable terms.

With integrated global financial markets and expanding trade and GDP financial imbalances will tend to grow. Since we don't know the point at which crises will occur, the baseline simulation shows them growing indefinitely.



Financial imbalances /2

Current account gaps can cause major difficulties if they continue and cumulate over longer periods of time. Thus deficits for South Europe, the US and some other global regions may trigger repeated financial crises if left unchecked while Central Europe, Japan and China could end up with very large net external positions.

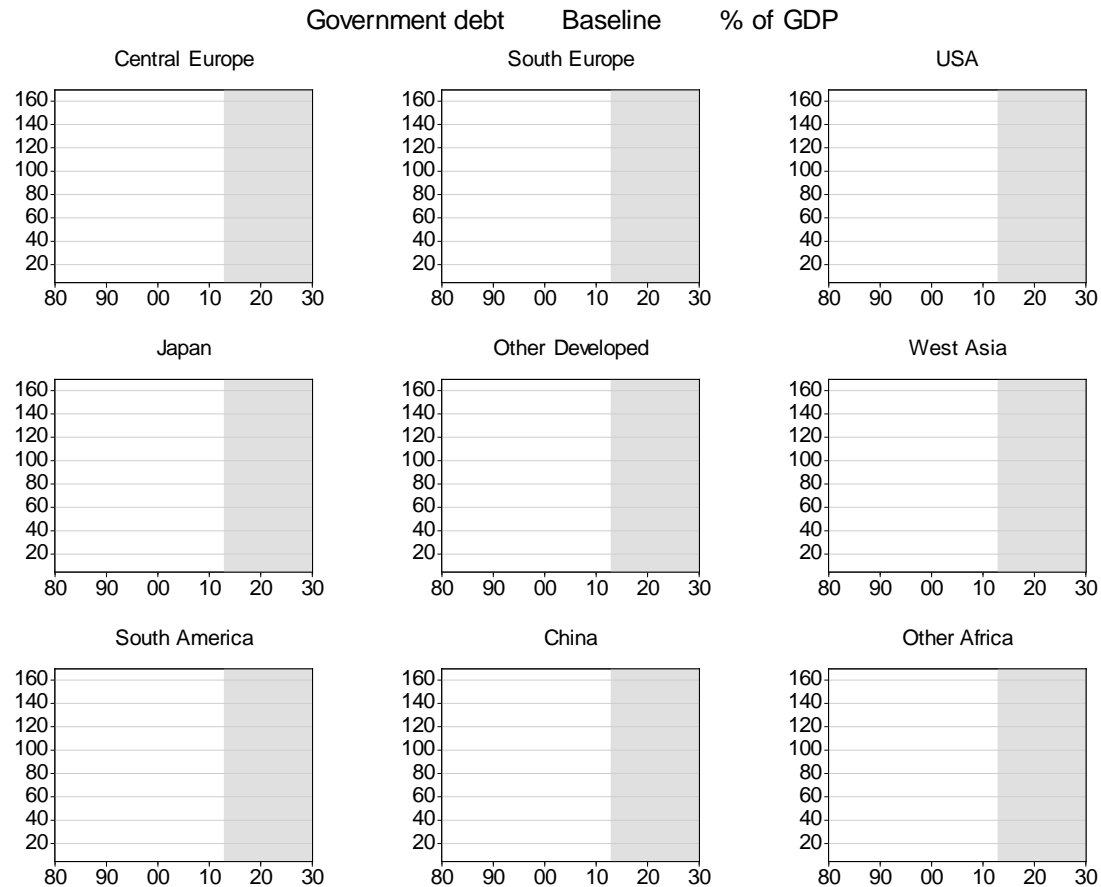


Government debt

Recent increases in government debt may be hard to reverse in the next two decades unless there is strong economic growth in the affected countries.

Difficulties in financing government debt challenge the international governance system.

Taxpayers don't like the idea of paying for other countries' debt.

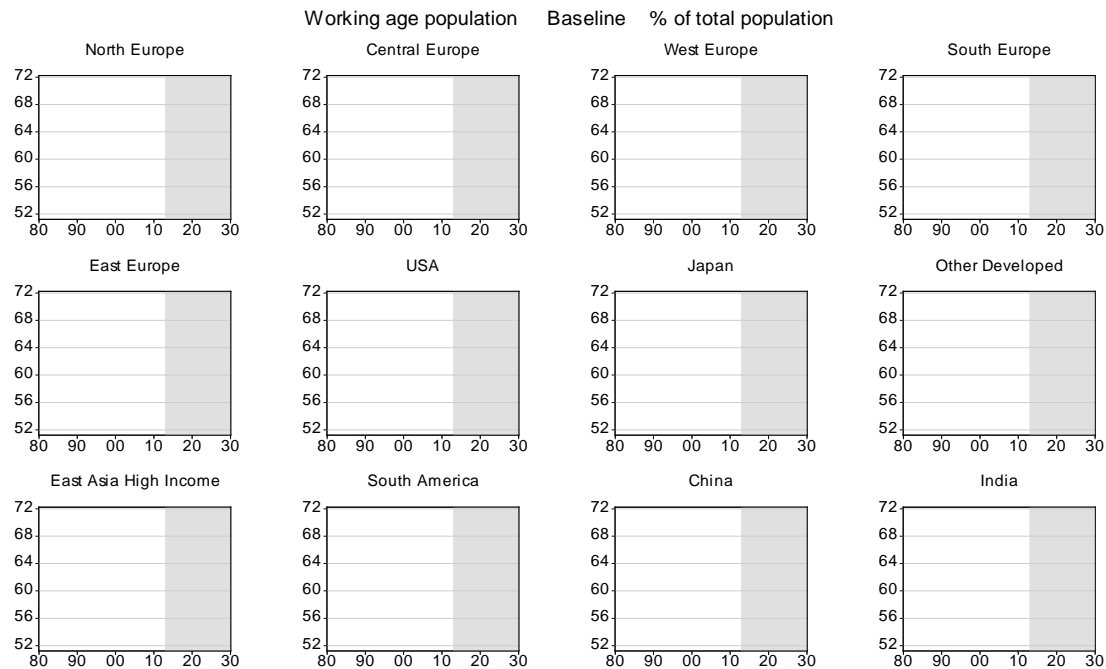


Ageing

Major declines in working-age population as a share of the total due to reduced numbers of children and increasing numbers of old people.

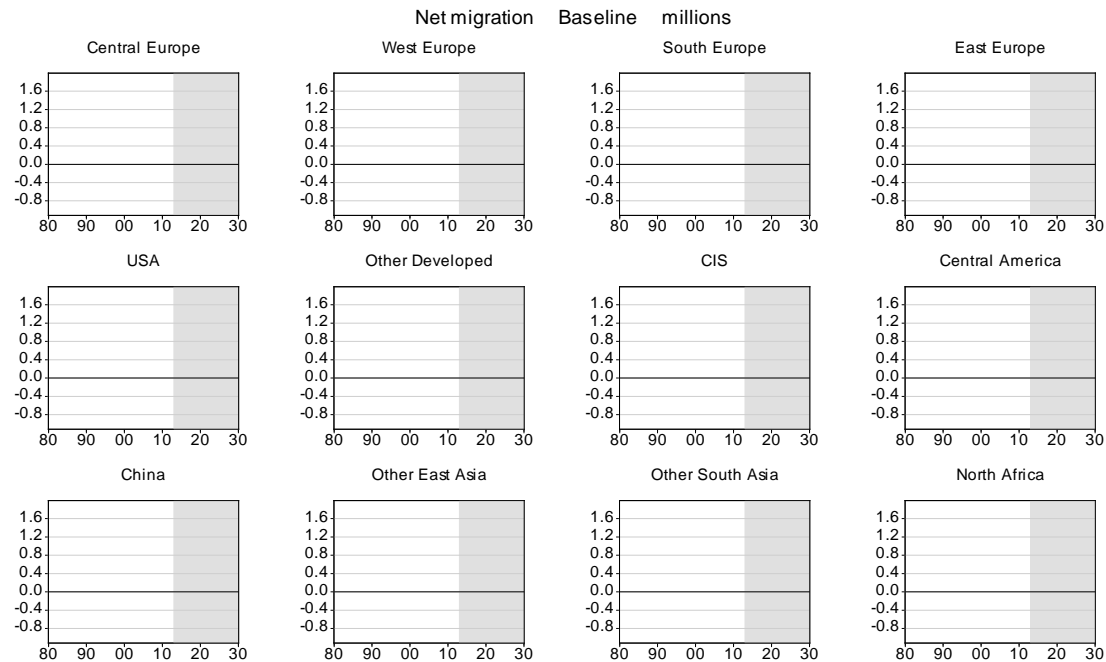
The same trend is starting in China.

Other middle and low income countries will experience similar declines some decades later.



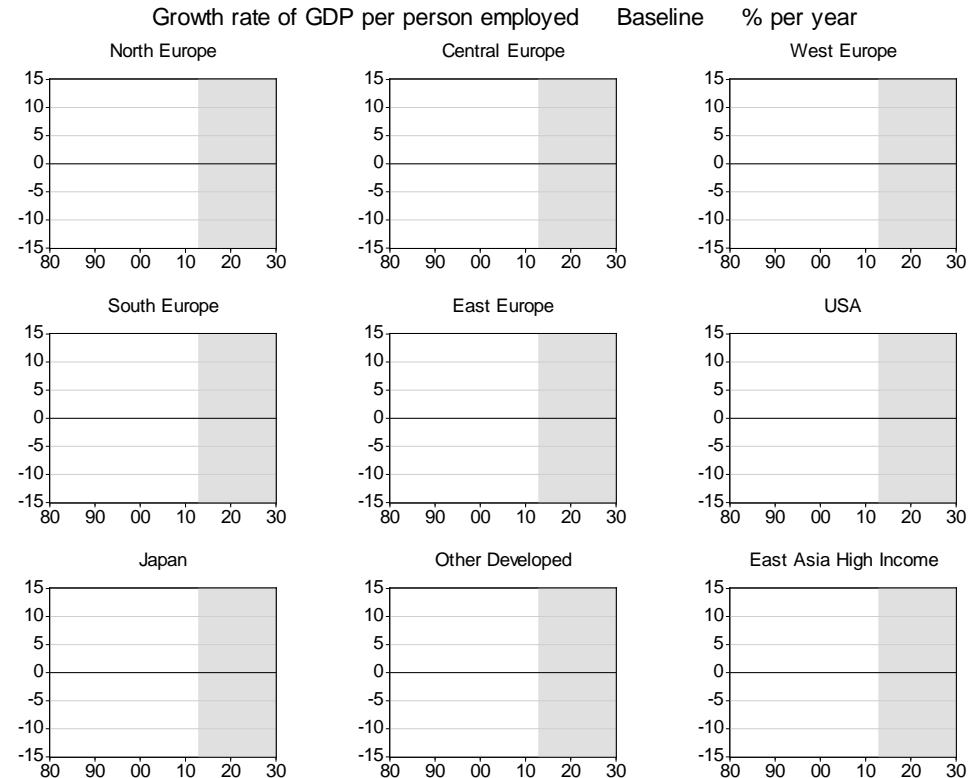
Net migration

Net immigration to rich countries is likely to decline following the recent recession, especially in the case of the US and Central America. China and other East Asian countries may become the most important areas of net emigration despite quite rapid economic growth.



GDP per person employed

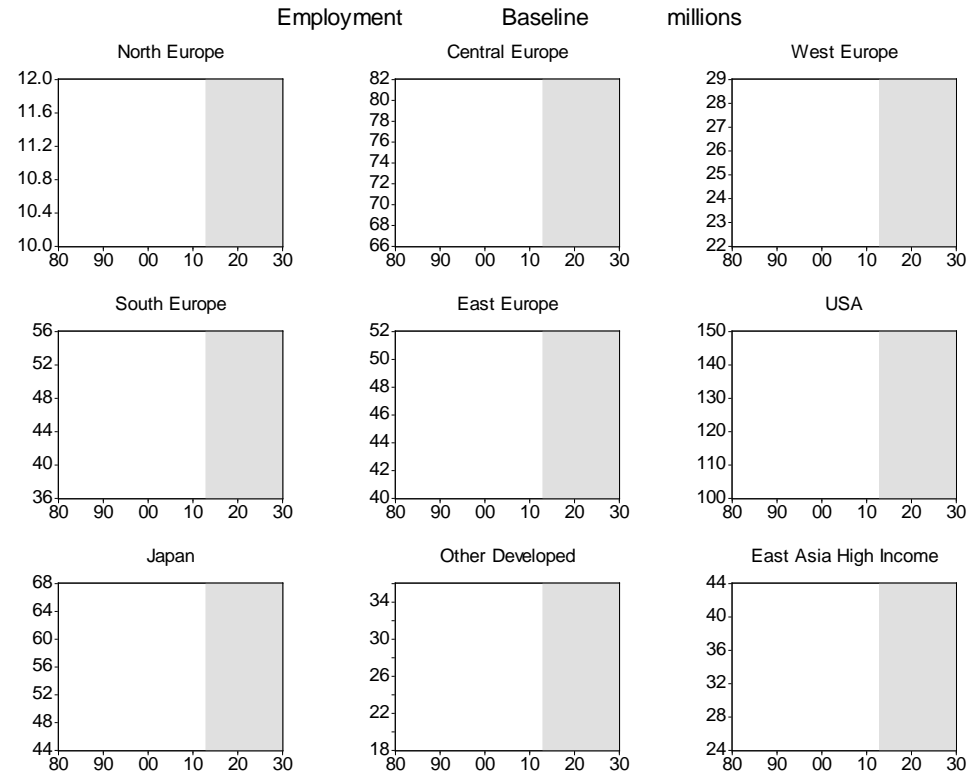
In the context of an ageing population GDP per person employed may increase steadily in rich countries.



Employment in high-income countries

Slow GDP growth and rising GDP per person employed is not a good context for job creation.

East and Central Europe, the USA and Japan are likely to see long-term reductions in employment, reversing the trend of the preceding 20 years.

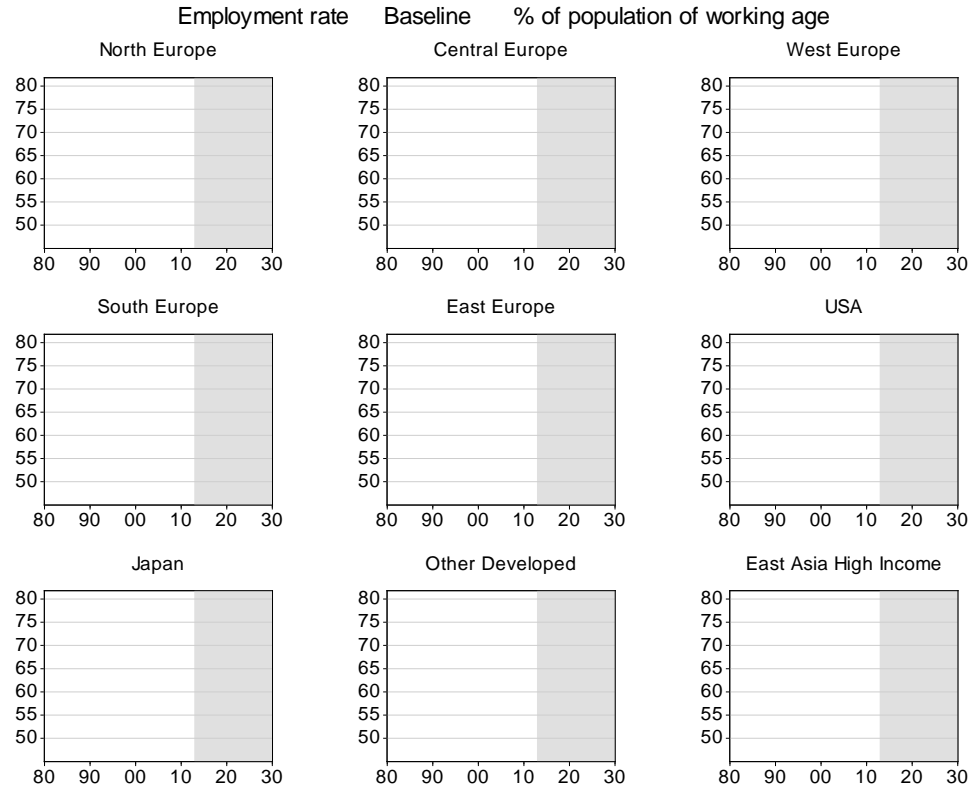


The result - employment rates

The impact on employment rates (share of working age population) depends on the balance between employment, demographic trends and migration.

The employment rate is projected to remain low in East Europe and continue to fall in the USA.

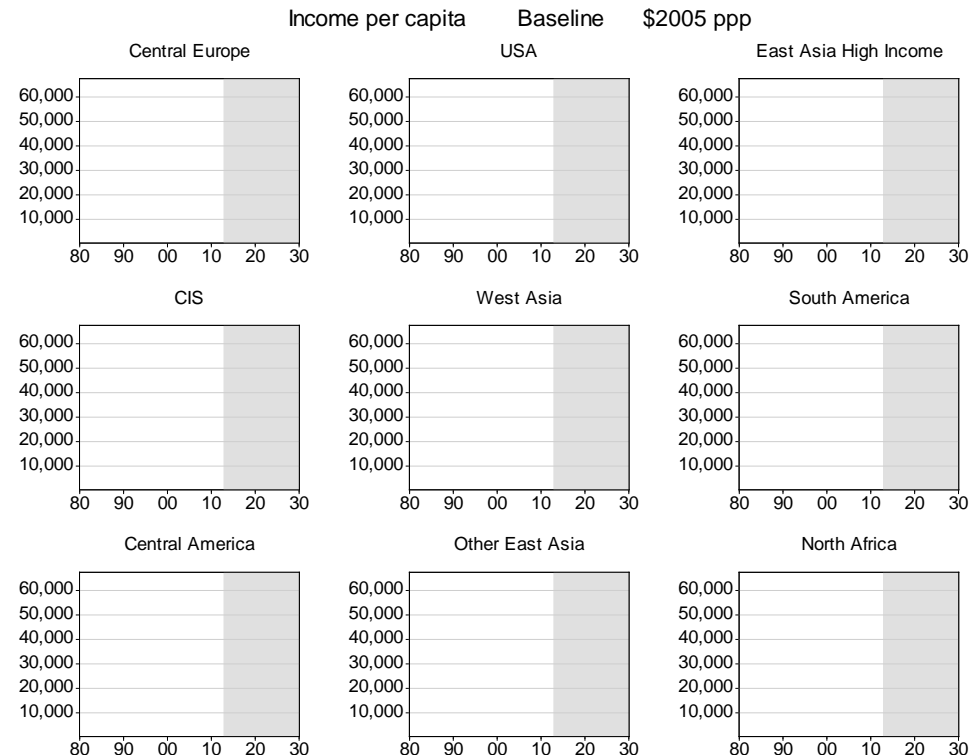
In other high-income regions the ageing factor may dominate implying a high or rising employment rate.



Stagnation in middle-income regions

Even with a strong oil market and growing demand for other primary products, it seems impossible for middle-income regions such as the CIS, West Asia, North Africa and Other East Asia to catch up with the US and Europe.

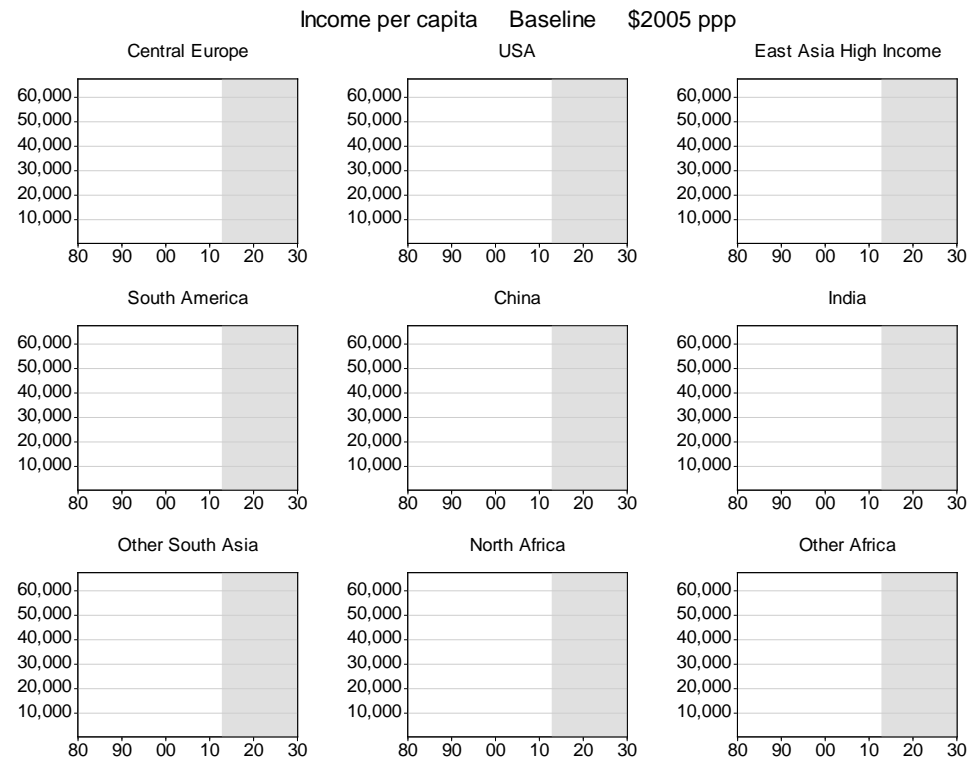
The main problem for these regions is inability to compete strongly in global export markets for manufactures.



Development failures

Income per capita is projected to increase progressively in high-income regions and rapidly in China and India.

Other countries in South Asia and Africa are projected to make slow progress over the next 20 years, leaving them very far behind the rest of the world. At some point this must be hard to accept and a source of increasing tension in the world community.



Six policy scenarios

The following scenarios are designed to illustrate possible policy changes in the face of gaps demonstrated in the baseline.

- S1. Fiscal consolidation
- S2. East Asian growth
- S3. Global energy policy
- S4. Global development
- S5. Extended Eurozone
- S6. CMEA development

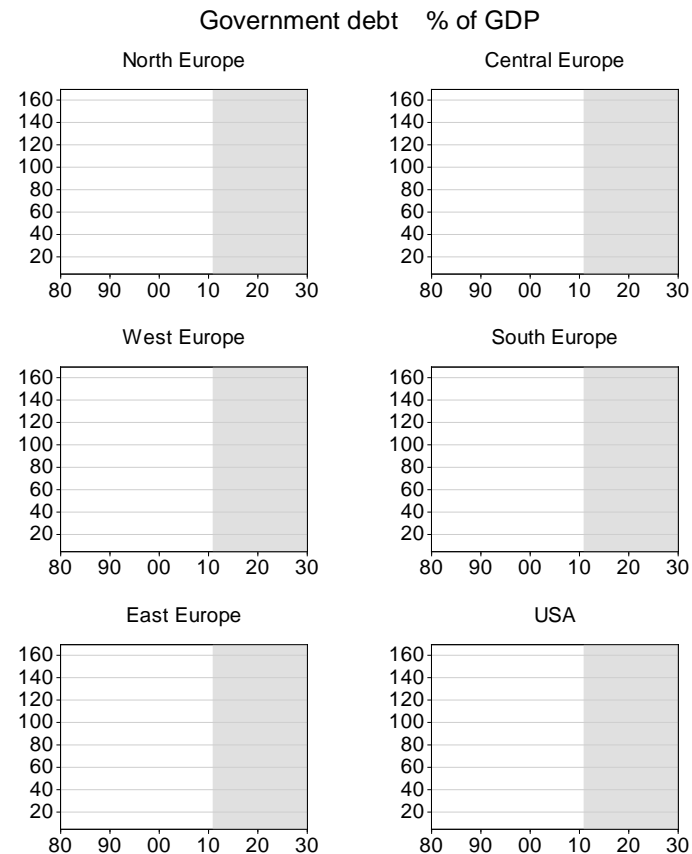
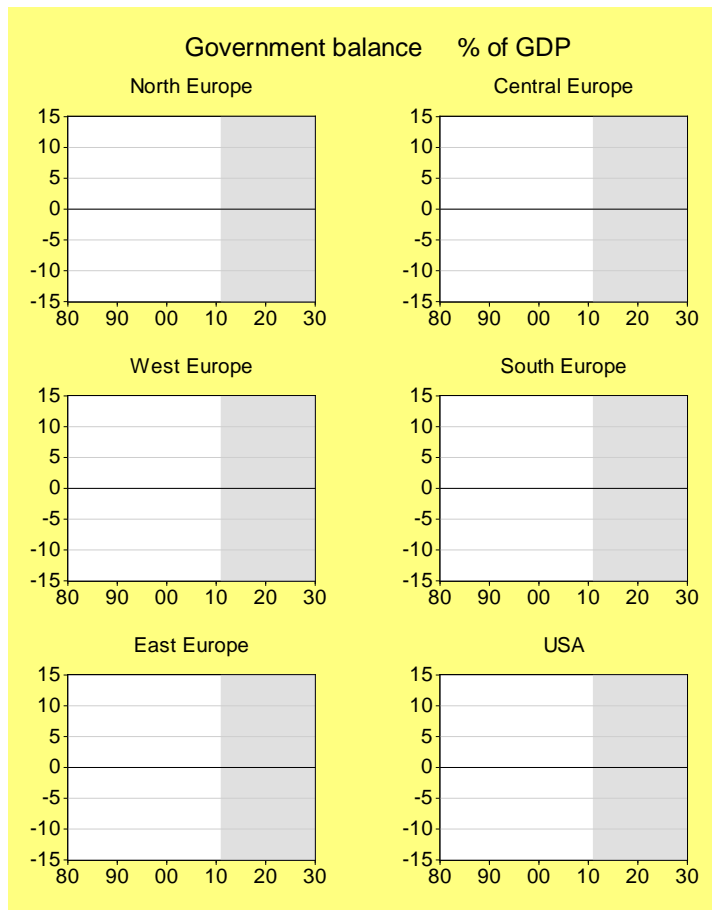
Note: in the next phase of the project a new set of governance scenarios will be designed and elaborated on the basis of advice from the different AUGUR teams.

S1. Fiscal consolidation

Assumption

US and European governments target a progressive reduction of government debt to not more than 60% of GDP.

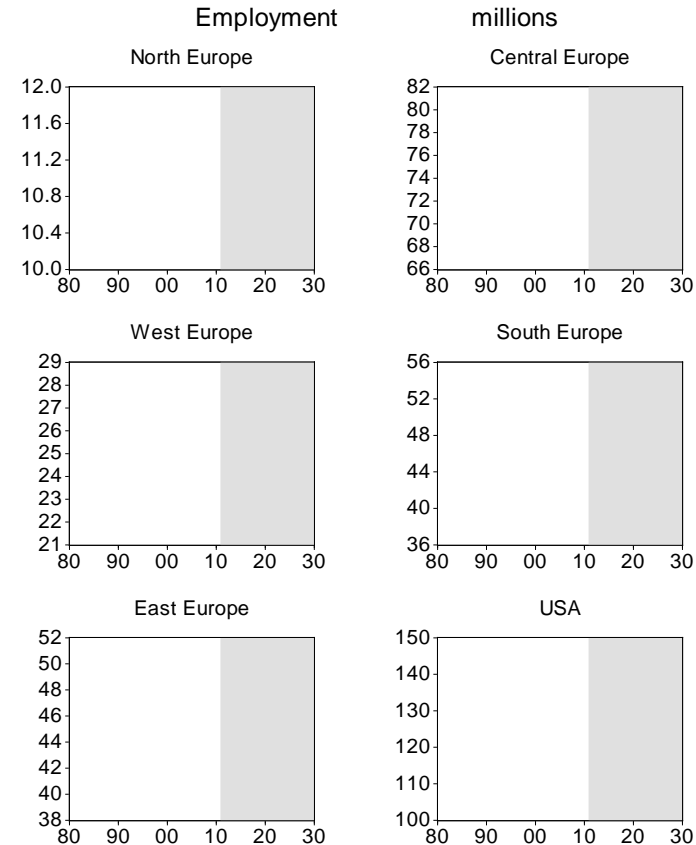
North, East and Central Europe can comply without much difficulty. The US and West and South Europe have to make massive fiscal adjustments.



S1 Result for the US & Europe

Major impacts on income and jobs in West and South Europe and in the US.

Spillover effects imply some cost for the rest of Europe as well, but not on the same scale.

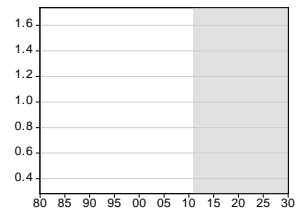


S1 Global impacts

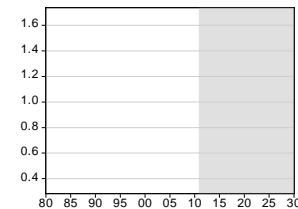
Global impacts are limited as trade of the US and Europe no longer dominates the world market.

But there is a question whether government debt in the US and Europe can be reduced in a less damaging way - through faster economic growth and higher private spending in the countries affected.

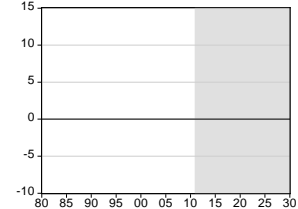
Real price of primary commodities



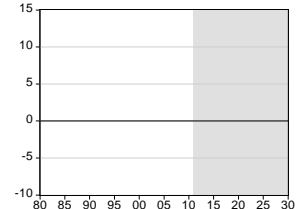
Real price of oil



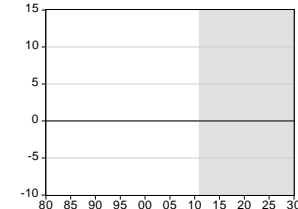
World GDP growth



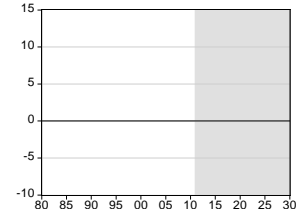
Growth of private investment



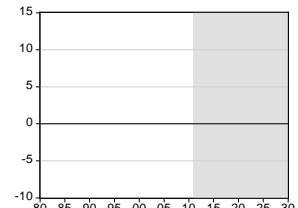
World exports of goods and services



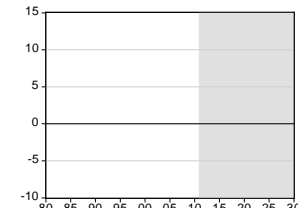
World exports of manufactures



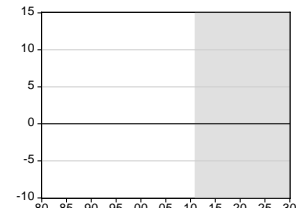
Growth of world energy use



Growth of world CO2 emissions



Dollar inflation

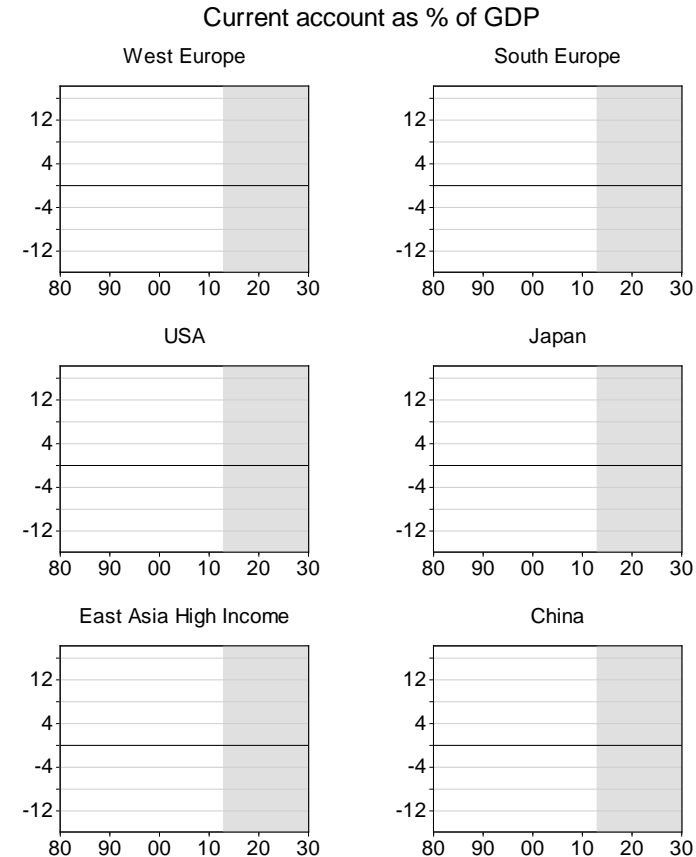
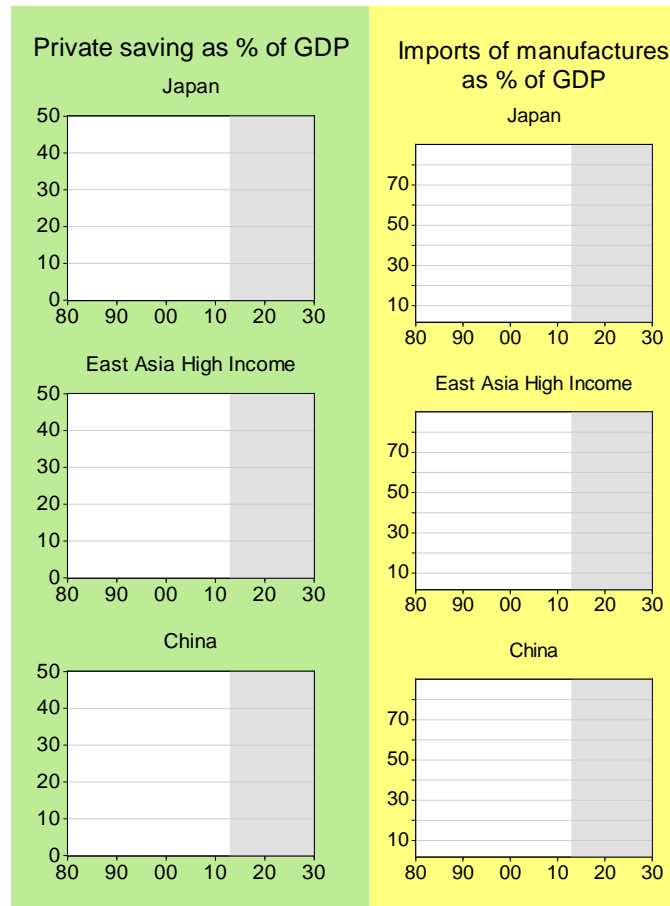


S2. East Asian growth

Assumption

China, Japan and other high income East Asian countries target a progressive reduction of current account surpluses to not more than 3% of GDP.

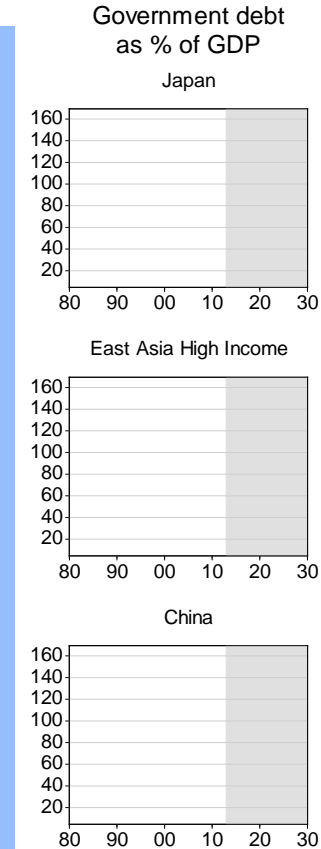
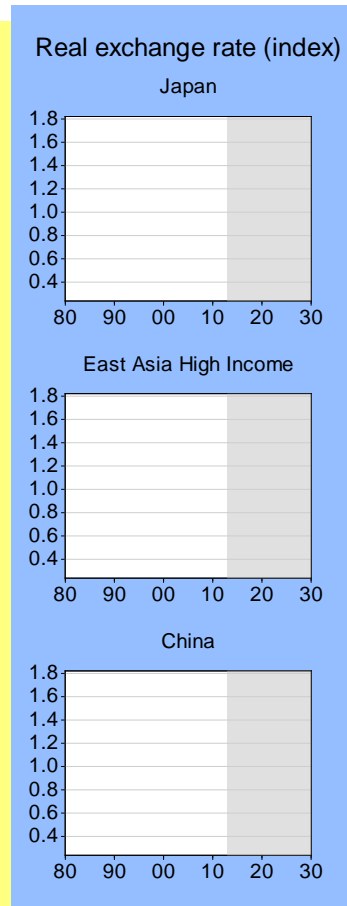
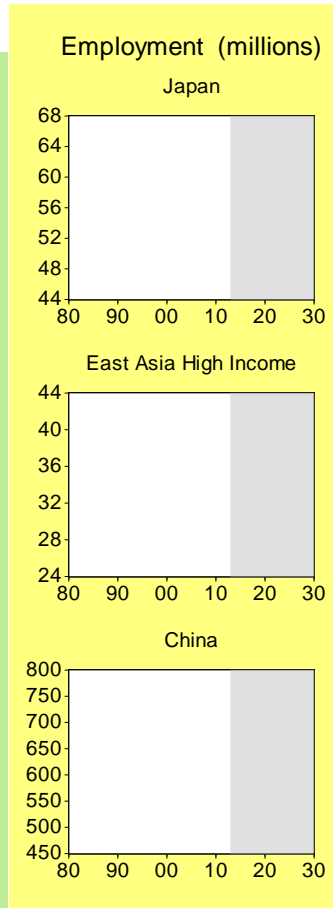
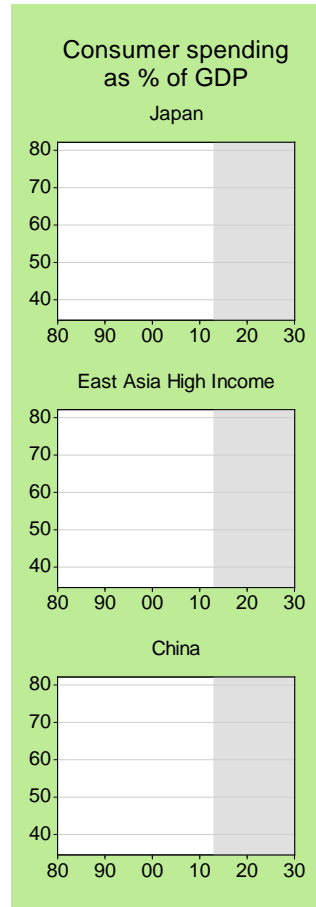
The target is achieved by reducing private savings and increasing imports.



S2 Result for East Asia

Within East Asia consumer spending would increase generating some additional jobs and reducing government debt as a share of GDP.

Japan's real exchange rate may be pushed up while China and other East Asian countries are unaffected.

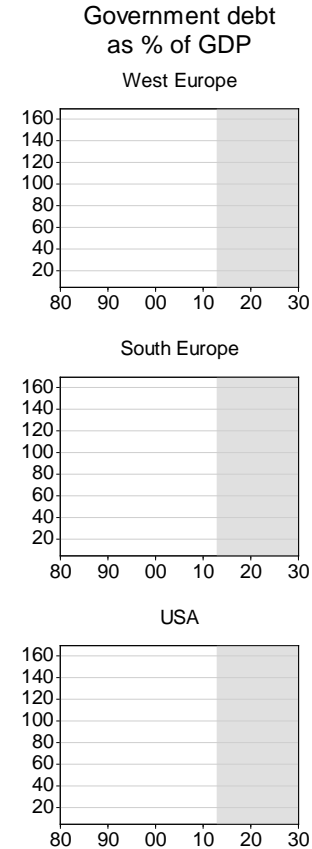
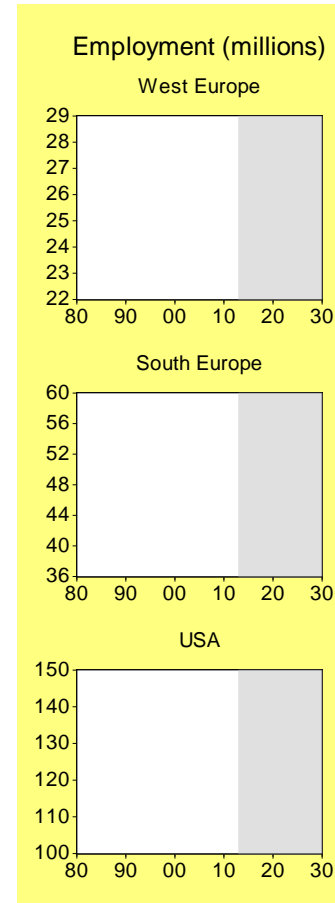
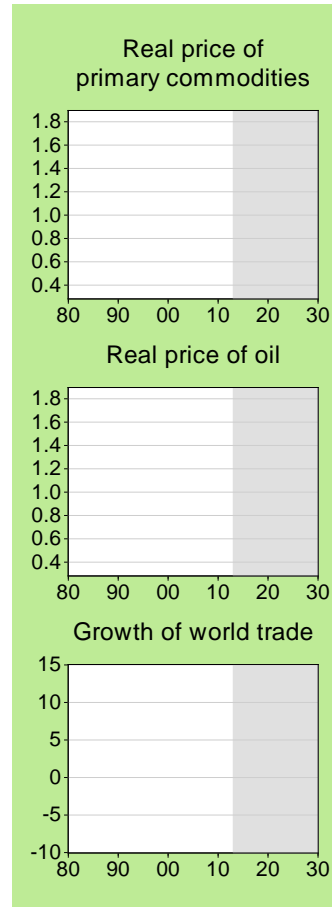


S2 Global impact

Faster growth of world trade pushes up prices of primary commodities and oil.

Europe and the US benefit from improved GDP growth, providing job creation and some reduction in the government debt to GDP ratio.

Similar benefits are realised by middle and low income blocs.



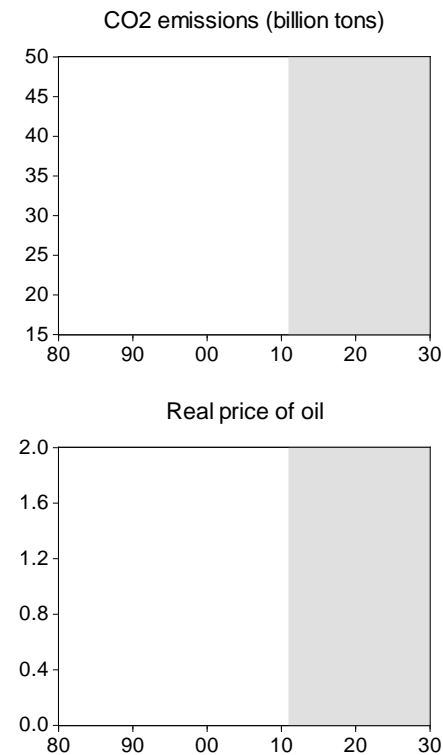
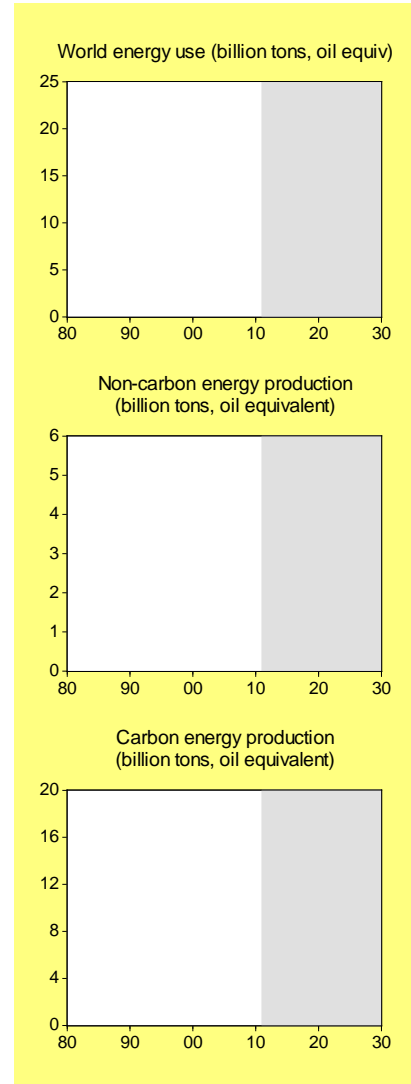
S3. Global energy policy

Assumption

All countries cooperate with the objective of keeping further increases in CO2 emissions to the minimum and maintaining a gradual increase in the real price of oil.

These objectives are pursued by energy saving, reduced emissions per ton of carbon energy, a sustained increase in energy from non-carbon sources and reduced production of coal and oil.

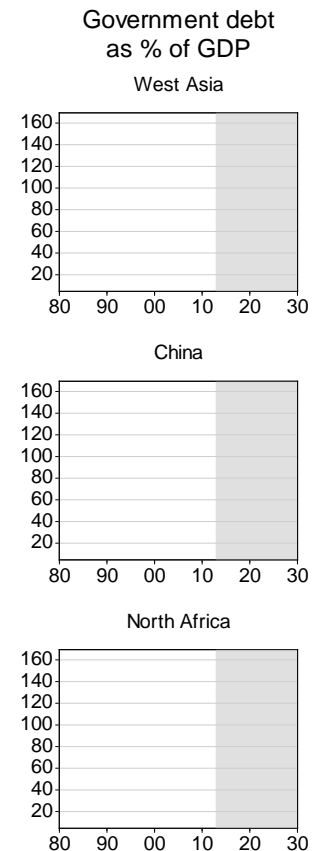
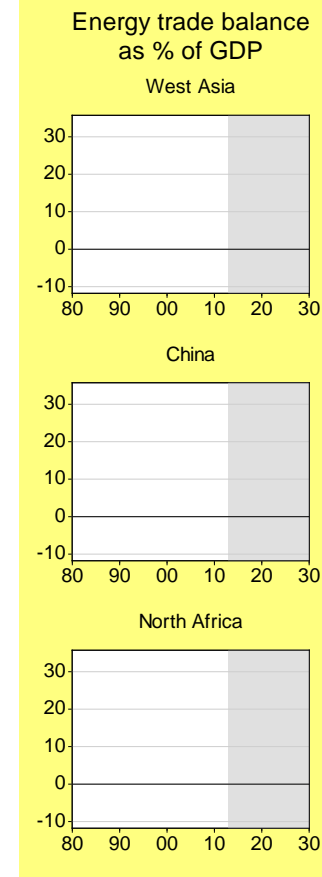
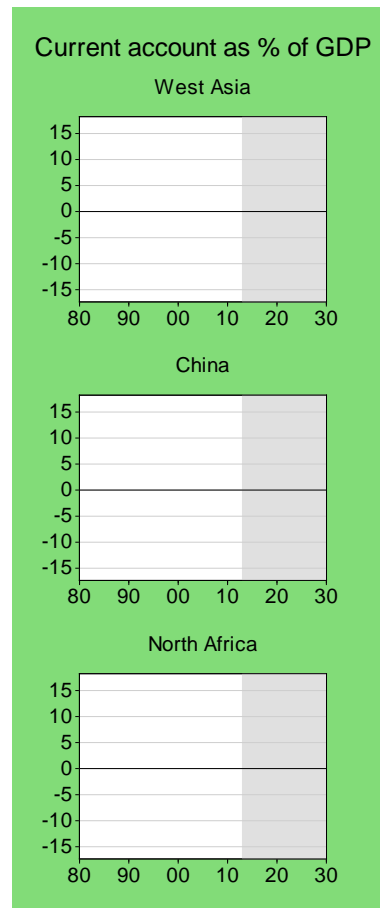
The increase in CO2 emissions between now and 2030 is held down to around 10%.



S3 Impact on different blocs

The scenario is not so good for West Asia and North Africa as these regions are heavily dependent on oil and do not have good opportunities for development of non-carbon sources.

The US, Europe, China and other world regions including the CIS can benefit from energy saving and the switch to non-carbon sources.



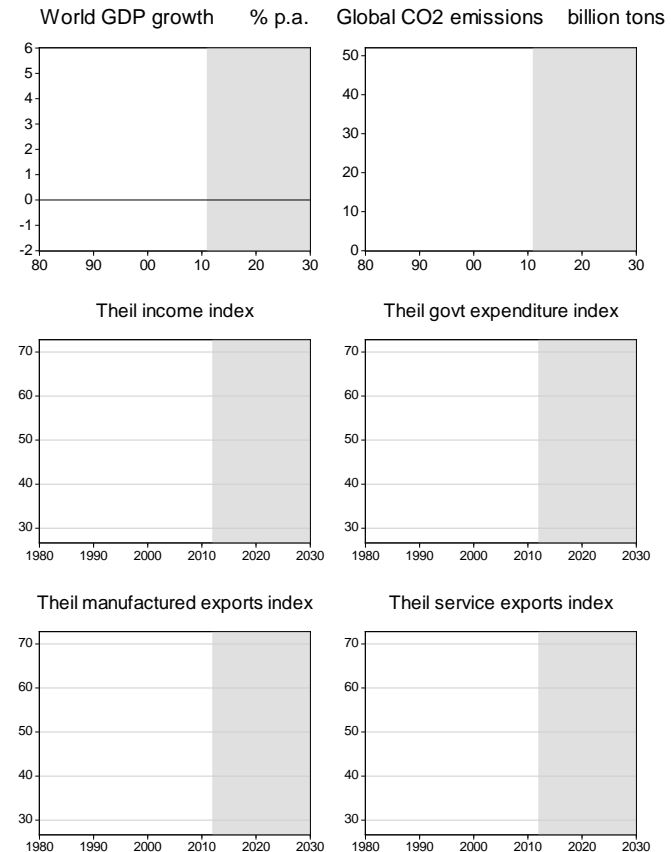
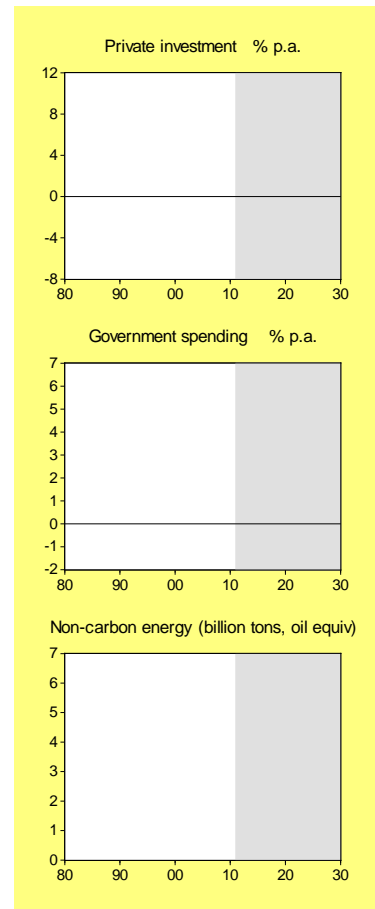
S4. Global development

Assumptions

All countries cooperate to accelerate global convergence. The main targets are per capita income, trade in manufactures and services and control of CO2 emissions.

The instruments are acceleration of private investment and government spending in developing blocs, energy saving and development of non-carbon sources and trade preferences for manufactured exports from low and middle income countries.

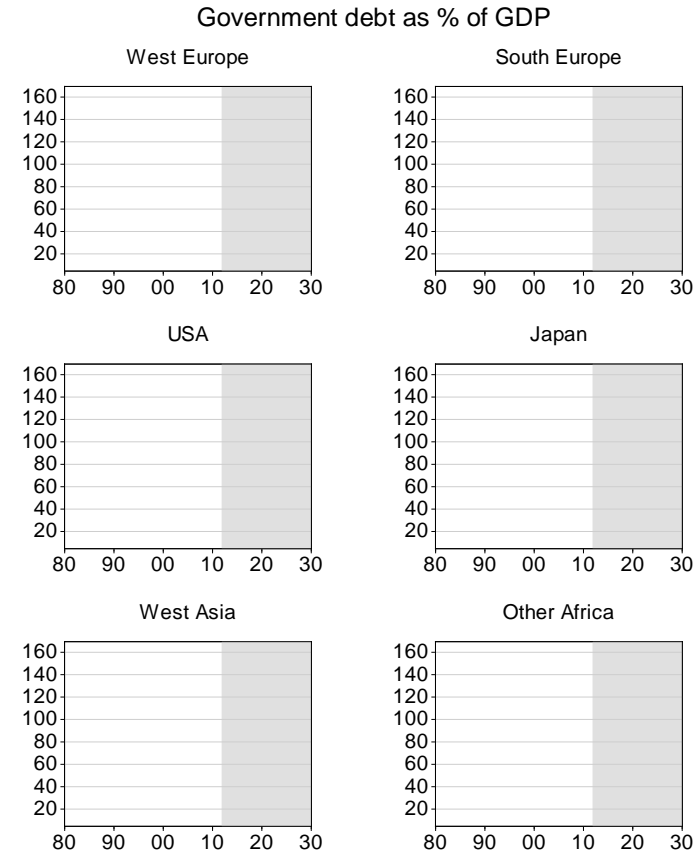
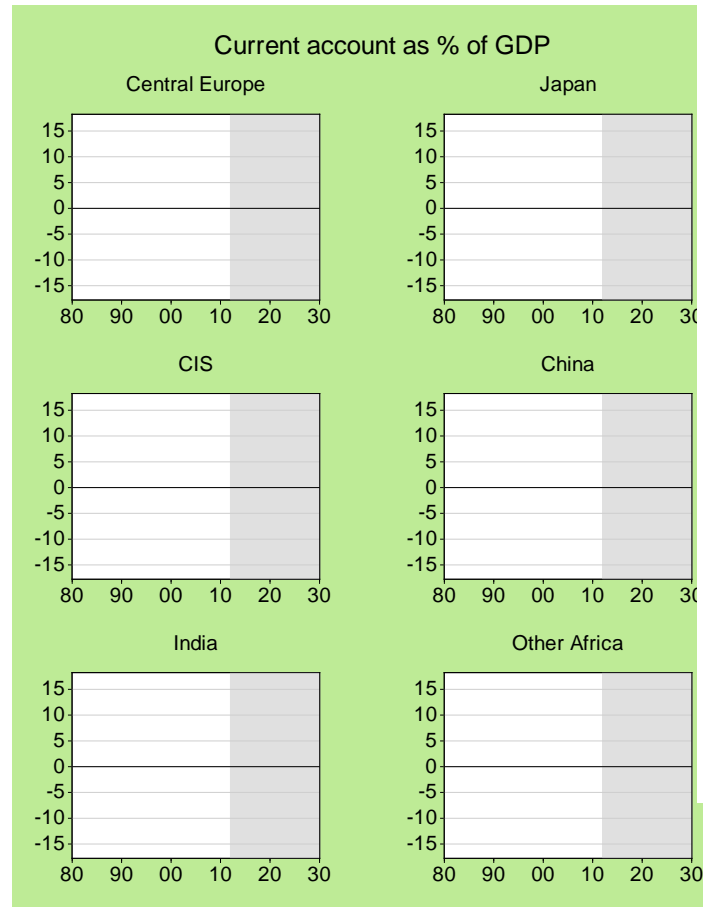
The scenario is not entirely successful as CO2 emissions increase from 30 to 50 billion tons p.a. by 2030 despite the highly cooperative global energy policy.



S4 Results

Accelerated growth tends to reduce government debt-to-GDP ratios everywhere but generates new imbalances in trade balances and private sector financial flows.

Can such imbalances be financed and can rising CO2 emissions be curbed in a global convergence scenario ?



S5. Extended Eurozone

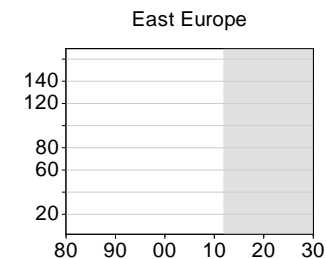
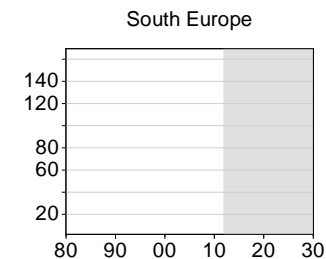
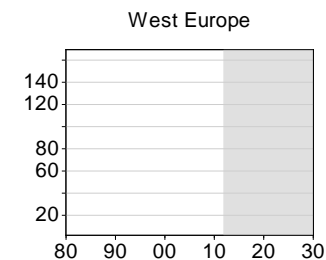
Assumptions

The Eurozone is extended to all countries in Europe with new norms for macro-economic policy: 80% government debt-to-GDP (ceiling), 22% government net revenue to GDP (floor), 70% employment rate (floor).

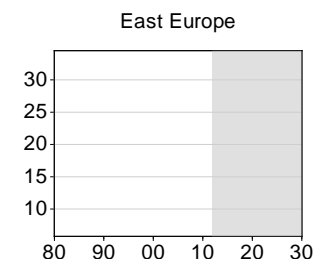
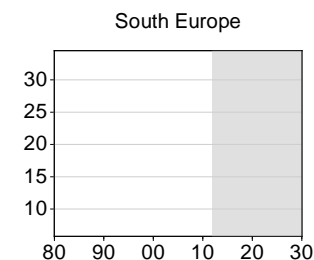
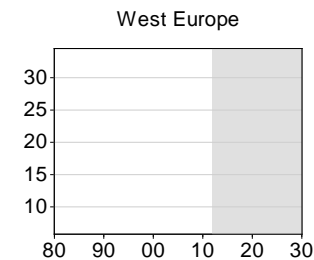
The instruments are fiscal and monetary policy and investment incentives

The main adjustments that have to be made are a large reduction in the government debt-to-GDP (S Europe) and a large increase in the employment rate (E Europe).

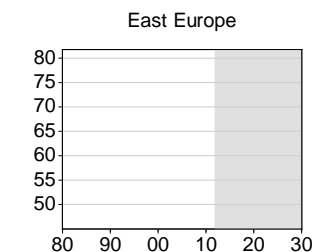
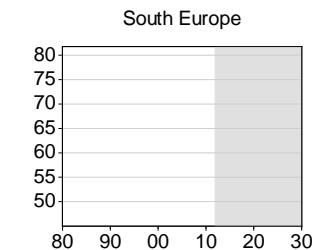
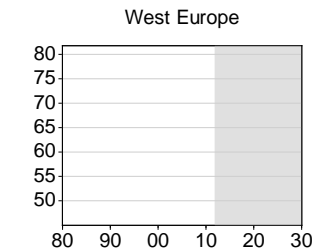
Government debt as % of G



Government income as % of GDP



Employment rate
% of working-age population



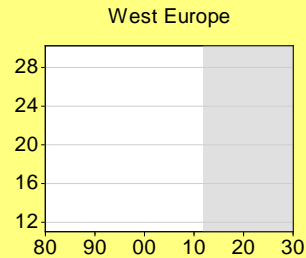
S5 Requirements

South Europe: a reduction in government spending equal to 5% of GDP to bring down the debt-to-GDP ratio.

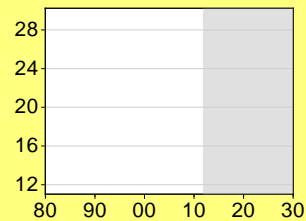
East Europe: a massive private investment inflow to create the required jobs and cover the current account deficit.

West Europe (UK): a minor reduction in government spending to keep the debt-to-GDP ratio within the guideline.

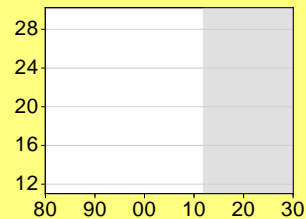
Government spending as % of GDP



South Europe

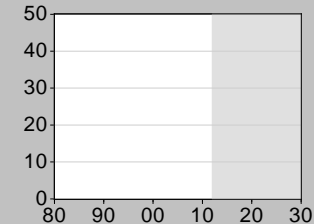


East Europe

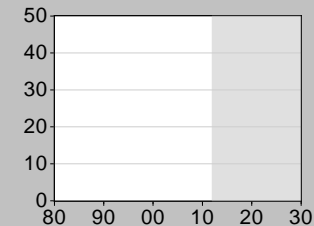


Private investment as % of GDP

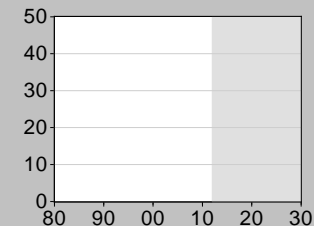
West Europe



South Europe

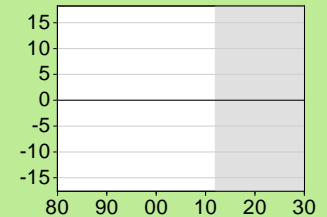


East Europe

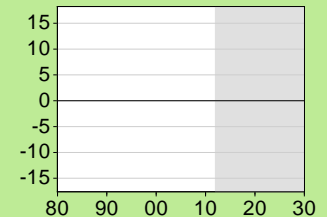


Current account as % of GDP

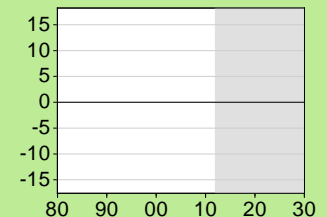
West Europe



South Europe



East Europe

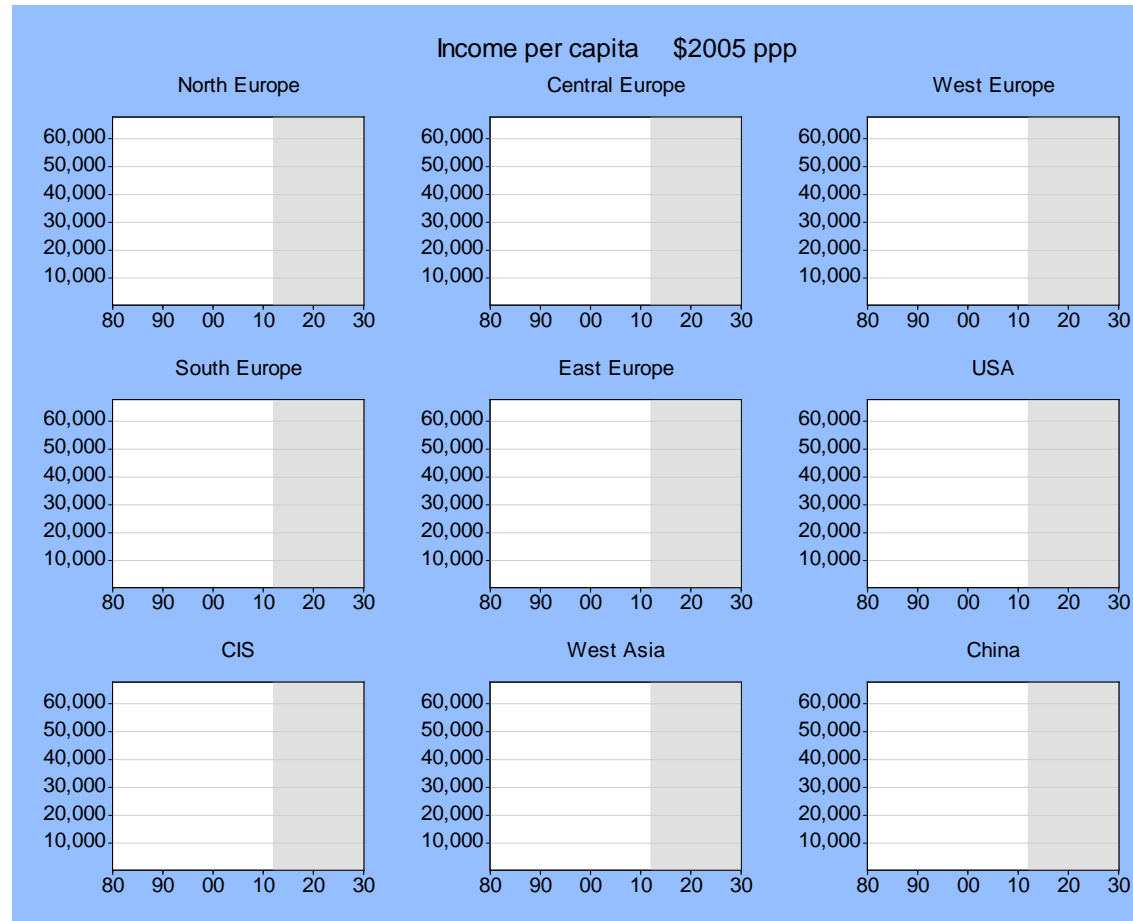


S5 Income effects

Investment and job creation boost income per capita in East Europe.

Income per capita increases very little in South Europe due to spending cuts and low productivity trends.

There is very little impact on income in other parts of Europe or the rest of the world.

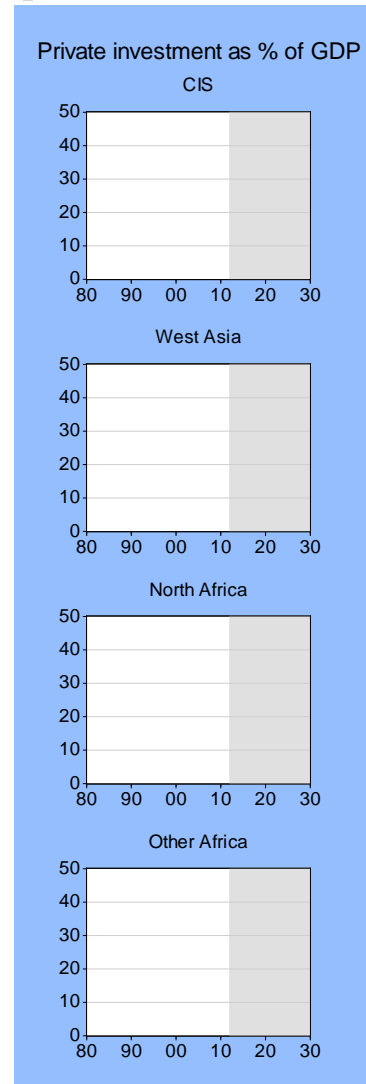
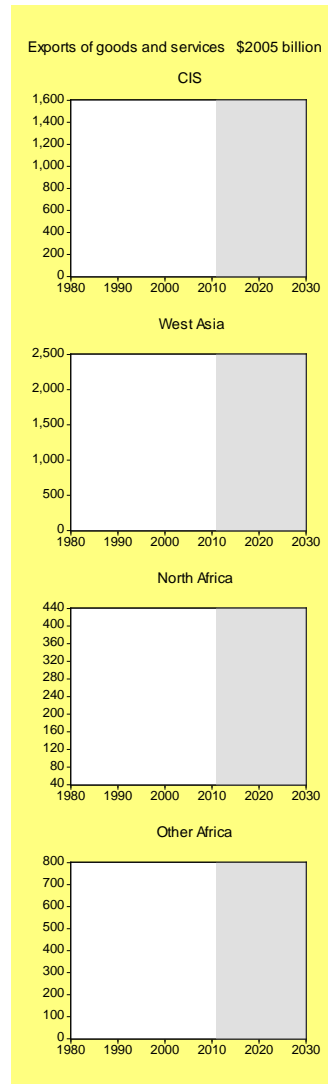


S6. CMEA development

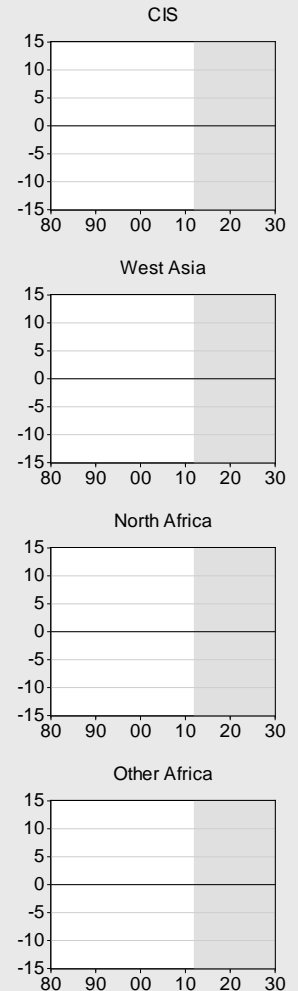
Assumptions

Europe strongly supports development in neighbouring regions in order to generate 4-5% p.a. growth of per capita income and reduce the income gap.

The policies include FDI incentives, trade preferences, accelerated growth of government spending in neighbouring regions and a comprehensive energy policy to reduce CO2 emissions.



Growth of per capita income % p.a.



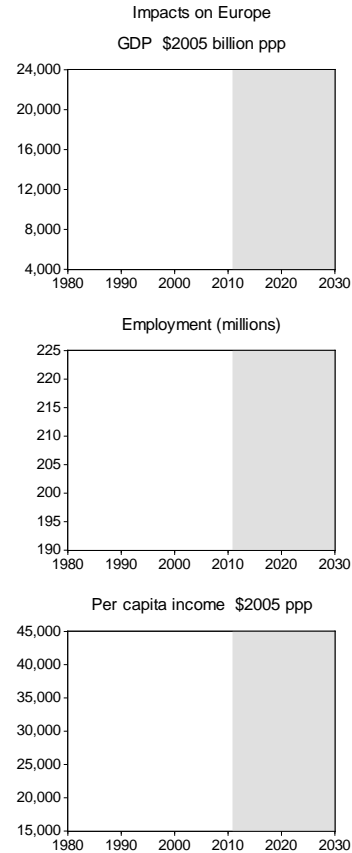
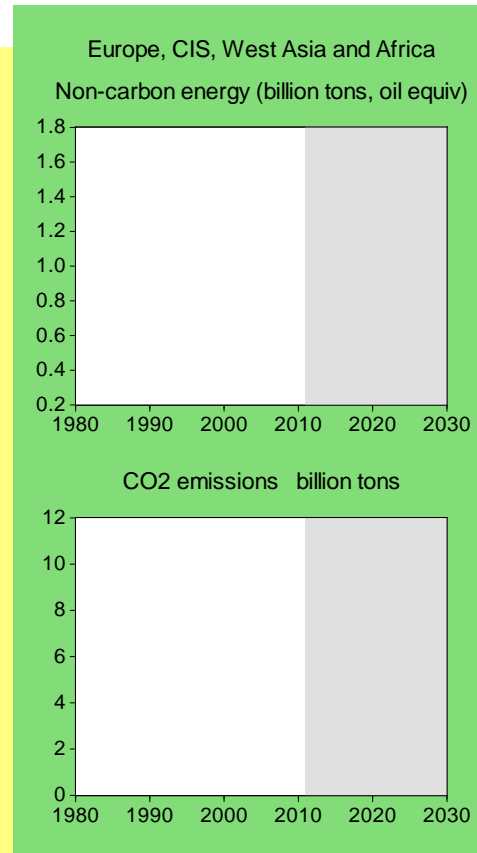
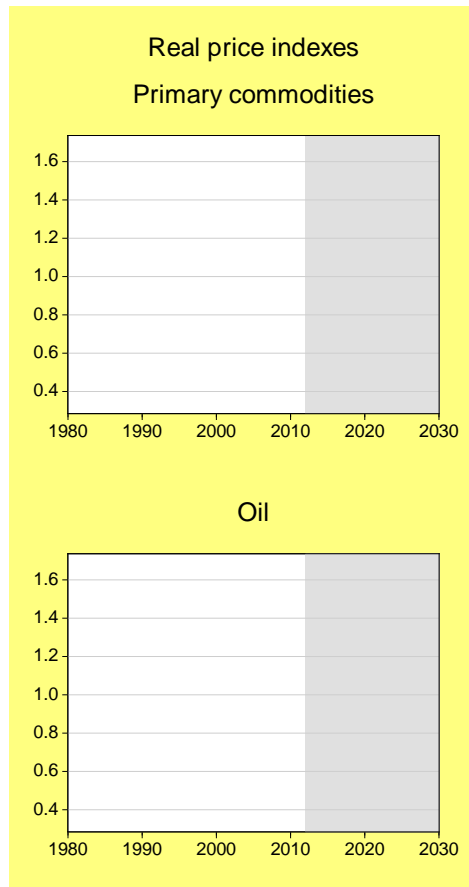
S6 Results

Global market: higher price of commodities, lower price of oil

Emissions: small reduction despite income increases in neighbouring regions

European economy: slightly higher GDP, employment and per capita income

Negligible impact on other world regions



Next steps

1. Analysis of the baseline
2. New scenarios
3. Extension of the model

Analysis of the baseline

The baseline projection will be examined in detail to identify the main challenges more clearly and describe the way in which each challenge is expected to impact different world regions and different parts of Europe.

The analysis will be extended to include variants covering critical areas of uncertainty including the potential impact of financial market volatility and credit crises, changing trends in global competition, technology development etc.

New scenarios

Scenarios will be defined to reflect discussion of governance assumptions at the November 2010 workshop and further advice from other AUGUR teams.

The objective is to provide scenarios that set the scene for reviews of different issues in covered by AUGUR work packages in a consistent and coherent framework.

The governance assumptions and scenarios will be further examined at the next workshop in May 2011 in preparation for a conference later in 2011.

Extension of the model

The model will be extended to incorporate structural indicators relevant to economic performance and social and human indicators relevant to well-being. Historical data for a number of indicators have already been included in the databank and these will be revised and brought into model equations and simulations following comments from participants at the November 2010 workshop.