The NIME Outlook for the World Economy

A Medium-Term Outlook for the World Economy: 2006-2012

The August 2006 issue of the NIME Outlook for the World Economy presents a 2006-2012 macroeconomic projection for the major areas of the world. The outlook was produced using NIME, the Belgian Federal Planning Bureau's macroeconometric world model. This issue features a stochastic evaluation of its world economic outlook. The major technical assumptions behind the outlook as well as a brief description of the NIME model are presented in the appendix.

After a year of frail economic growth in 2005, euro area GDP growth should rebound to 2 per cent in 2006 while consumer price inflation should rise to 2.1 per cent. The pick-up in growth is largely based on a rise in employment, on now positive real wage growth and on continued favourable monetary conditions. Over the 2006-2012 period, the area's GDP expands at an average annual rate of 1.8 per cent, notwithstanding the declining growth rate of the working-age population. Consumer price inflation should come out at an average rate of 1.8 per cent per annum over the period, edging up to 1.9 per cent toward the end of the period. The short-term interest rate is expected to rise from a year average level of 2.2 per cent in 2005 to 4.2 per cent in 2012 as the euro area's monetary authorities move to ensure price stability. Assuming no policy changes, the area's fiscal shortfall recedes only gradually from a deficit of 2.4 per cent of GDP in 2006 to 1.7 per cent of GDP in 2012.

Over the 2006-2012 period, GDP growth averages 2.8 per cent per annum for the group of countries comprising the United Kingdom, Sweden and Denmark. Real GDP in the United States is expected to rise at an average annual rate of 2.7 per cent over the same period. However, growth will most likely be uneven from year to year as, under current US laws and policies, a number of significant tax cut provisions should expire and stymie domestic demand growth over the projection period. At the same time, important fiscal and external imbalances should persist. Real GDP in Japan is expected to progress at an average annual rate of 2.1 per cent over the 2006-2012 period. Consumer price inflation should reach a year average rate of 0.5 per cent in 2006 and average 1.5 percent over the projection horizon. Japan's growth momentum should fall off noticeably by the end of the projection horizon as the ageing of the country's population leads to a decline in the labour supply.

This issue also features a stochastic evaluation of the outlook's results. This evaluation provides us with confidence intervals that indicate for instance that by the end of the projection period, there is a 95 per cent probability of GDP growth coming out between 0.3 and 2.6 per cent for the euro area; between 1.4 and 3.6 per cent for the Western non-euro EU Member States; between 1.5 and 3.2 per cent for the United States; and between -0.1 and 1.9 per cent for Japan. Similarly, the 95 per cent confidence interval around consumer price inflation in 2012 lies between 1.3 and 2.6 per cent for the euro area; between 1.1 and 2.9 per cent for the Western non-euro EU Member States; between 1.4 and 2.2 per cent for the United States; and between 1 and 3 per cent for Japan.

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Executive Summary of the 2006-2012 NIME Outlook for the World Economy

Introduction

This August 2006 issue of the "NIME Outlook for the World Economy" (NEO) presents readers with a macroeconomic outlook for the major areas of the world economy for the period 2006-2012. The outlook was prepared using the latest version of the Belgian Federal Planning Bureau's NIME macroeconometric world model. It updates the January 2006 NEO, following the release of new data and the subsequent complete re-estimation of the model's equations.

This NIME Economic Outlook builds on the European Commission's May 2006 Economic Forecasts. Indeed, as the NIME model is essentially medium-term-oriented, it is first calibrated to replicate the Commission's conjunctural estimates for 2006. However, the Commission's spring estimates for 2006 are based on data available up to April 24 and new data has been made available since; we have thus revised the Commission's spring estimates so as to reflect the developments in international financial markets up to mid-July 2006. The NIME model then provides a coherent and model-based outlook for the major economic areas of the world over the entire 2006-2012 period.

This issue of the NEO also features a *Focus* presenting results of a stochastic evaluation of its medium-term outlook. The various NIME outlooks that have been published to date have all presented results in the form of point projections. The stochastic evaluation presented in the Focus, which is based on the NIME model's properties and on the observed fluctuations of economic variables, will now provide the reader with a rigorous analysis of the risks underlying the NEO's deterministic projection.

The NEO ends with an appendix outlining the main assumptions of the outlook and presenting the NIME model's essential characteristics.

Finally, we draw the reader's attention to the fact that the "NIME Outlook for the World Economy" does not necessarily constitute the reference scenario for the economic forecasts and projections that are made for the Belgian economy by the Federal Planning Bureau.

Summary of the 2006-2012 Economic Outlook

World output growth in 2005 was underpinned mainly by the solid performance of the United States (US) economy, coupled with an upswing of growth in Japan and major emerging market countries such as China and India. In 2006, despite a slight cooling of real gross domestic product (GDP) growth in the US, world economic activity is expected to remain robust and to become more broad-based due to a pick-up in growth momentum within the European Union. High - and still rising - oil prices are not expected to cut significantly into world growth prospects for 2006; at the same time, the current cycle of monetary tightening in both the euro area and the United States should help to avert any second-round wage and price effects and keep inflation expectations sufficiently well anchored.

Looking forward, steady worldwide output growth is projected for the entire 2006-2012 period. Throughout the projection, output growth is primarily supported by robust productivity growth, except for the euro area where effective productivity growth remains noticeably below trend. Inflation remains contained, despite oil price hikes that are expected up to 2008. Nominal interest rates are expected to trend upward in the euro area and Japan and to decline in the United States. The projection also indicates that demographic developments are expected to crimp growth prospects, particularly in Japan where the labour supply should decline over the 2007-2012 period.

In the *euro area,* real GDP is projected to rise at an average annual rate of 1.8 per cent over the 2006-2012 period. Growth in the euro area should stem from the components of domestic demand, with no significant contribution to GDP growth from trade. Moreover, economic growth is set to slacken as of 2009 as the growth in the labour supply begins to decline in the face of a rapidly ageing population. Consumer price inflation - as measured by the change in the deflator of private consumption - should average 1.8 per cent per annum as the rise in demand tends to outpace potential output growth. The nominal short-term interest rate is projected to rise from a year average level of 3.1 per cent in 2006 to 4.2 per cent in 2012. The euro's nominal effective exchange rate is projected to appreciate on average by 2.4 per cent per year over 2006-2012 due to a combination of higher average inflation in the rest of the world and declining international interest rates. Only limited progress is expected with respect to fiscal consolidation over the projection horizon; indeed the area's fiscal deficit declines from an expected 2.4 per cent of GDP in 2006 to a shortfall of 1.7 per cent in 2012.

Real GDP growth in the *Western non-euro EU Member States*[1] is projected to average 2.8 per cent per annum over the 2006-2012 period; at the same time, consumer prices are expected to rise at an average annual rate of 1.6 per cent. The area's growth is projected to be predominantly based on domestic demand, as the average contribution of net exports to overall GDP growth remains negligible. The area's nominal short-term interest rate is expected to decline from a year average level of 4.1 per cent in 2006 to 3.9 per cent at the end of the period. Progress in the consolidation of the area's fiscal position is projected to be modest as the deficit-to-GDP ratio falls from an expected 1.7 per cent in 2006 to a deficit of 1.3 per cent in 2012.

In the *United States*, GDP growth is expected to average out at 2.7 per cent per annum over the 2006-2012 period. Growth is forecast to come out at 3.2 per cent in 2006 and is then projected to slip to just 2 per cent in 2011. Net exports should continue to cut into US GDP growth, while the rise in domestic demand looks set to weaken between 2009 and 2011 as, under current US laws and policies, a number of significant tax cut provisions will expire. At the same time, consumer price inflation is projected to average 2 per cent per annum. The nominal short-term interest rate is projected to come out at an average annual rate of 4.8 per cent. The dollar's nominal effective exchange rate appreciates at an average annual rate of 2.2 per cent due to the higher average inflation rate in the rest of the world. Although significant tax cut provisions expire over the projection horizon, the US fiscal deficit-to-GDP ratio is expected to improve only slowly, falling from a 4.1 per cent deficit forecast for 2006 to a deficit of 3 per cent of GDP in 2012. Finally, in the absence of any major shock to the external value of the dollar, the US current account-to-GDP ratio is expected to pursue its upward trend, rising from a deficit forecast for 2006 at 7.1 per cent of GDP to a deficit of 7.6 per cent of GDP in 2012.

1. The "Western non-euro EU Member States" comprise Denmark, Sweden and the United Kingdom.

Japanese real GDP is projected to progress at an average annual rate of 2.1 per cent over the 2006-2012 period. However, the country's growth rate is projected to tumble from 3 per cent in 2007 to just 0.9 per cent in 2012 as Japan's working-age population and labour force embark on a steady trend decline. After falling uninterruptedly for seven straight years, Japanese consumer price inflation is expected to turn positive in 2006; the deflator of private consumption is forecast to rise by 0.5 per cent in 2006 and to progress at an average annual rate of 1.5 per cent over the entire 2006-2012 period. Since early July 2006, the nominal short-term interest rate has begun to rise from its zero bound and should reach a year average level of 3.5 per cent in 2012. Assuming unchanged fiscal policy, Japan's fiscal deficit is expected to remain at a high annual average level of 5.4 per cent of GDP over the projection period.

The objective *risks* surrounding the current medium-term outlook can be inferred directly from the NIME model's structure and from the observed historical fluctuations in economic variables. These risks have been evaluated through stochastic simulation and are presented in the form of confidence intervals and probability estimates linked to specific occurrences. The presentation of these risks is the subject of this issue's *Focus*. The analysis of the projection's underlying risk structure reveals that by the end of the projection horizon, the 95 per cent confidence interval around the projection's point estimates for GDP growth fall between 0.3 and 2.6 per cent for the euro area; between 1.4 and 3.6 per cent for the Western non-euro EU Member States; between 1.5 and 3.2 per cent for the United States; and between -0.1 and 1.9 per cent for Japan. Similarly, the 95 per cent confidence interval around consumer price inflation in 2012 lies between 1.3 and 2.6 per cent for the euro area; between 1.1 and 2.9 per cent for the Western non-euro EU Member States; between 1.4 and 2.2 per cent for the United States; and between 1 and 3 per cent for Japan. Confidence intervals are generally found to be narrower for projection results for the United States than for other areas. The stochastic evaluation of the risks underlying the NIME outlook can be accompanied by an appreciation of other, less quantifiable, uncertainties currently weighing on the short- to medium-term prospects of the world economy. In the light of their potential to affect world economic conditions, major downside uncertainties can be seen in a possible abrupt and sharp depreciation of the US dollar; and in a possibly steep and lasting rise in the price of oil.

Summary World Area Table - Main results

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012	Average 1999-2005
I. Euro area										
1. Gross domestic product	1.3	2.0	2.0	2.0	1.9	1.7	1.5	1.4	1.8	1.9
2. Deflator of private consumption	1.9	2.1	1.7	1.5	1.7	1.8	1.9	1.9	1.8	1.9
3. Unemployment rate (level, % of civilian labour force)	8.6	8.4	8.0	7.6	7.4	7.4	7.4	7.5	7.7	8.5
4. Long-term interest rate (level)	3.4	3.9	4.0	4.0	4.1	4.2	4.4	4.5	4.2	4.5
5. Nominal effective exchange rate (+: depreciation)	2.0	0.2	-2.1	-2.4	-2.7	-3.0	-3.2	-3.4	-2.4	-2.8
6. Government net lending (level, % of GDP)	-2.4	-2.4	-2.5	-2.3	-2.0	-1.9	-1.7	-1.7	-2.1	-2.0
7. Current account (level, % of GDP)	0.2	-0.5	-0.1	0.3	0.4	0.4	0.3	-0.0	0.1	0.3
II. Western non-euro EU Member States										
1. Gross domestic product	2.0	2.6	2.6	2.8	3.1	3.0	2.8	2.5	2.8	2.6
2. Deflator of private consumption	1.9	1.9	1.7	1.2	1.3	1.5	1.8	2.0	1.6	1.9
3. Unemployment rate (level, % of civilian labour force)	5.2	5.3	5.1	4.9	4.7	4.7	4.8	4.9	4.9	5.2
4. Long-term interest rate (level)	4.2	4.1	4.1	4.1	4.0	4.0	4.0	4.1	4.1	4.8
5. Nominal effective exchange rate (+: depreciation)	2.3	0.8	-1.3	-1.3	-1.0	-0.9	-1.1	-1.4	-0.9	-2.1
6. Government net lending (level, % of GDP)	-1.9	-1.7	-1.8	-1.6	-1.4	-1.2	-1.1	-1.3	-1.4	-0.2
7. Current account (level, % of GDP)	-1.0	-1.5	-1.5	-1.8	-2.1	-2.4	-2.7	-3.0	-2.1	-0.8
III. Unites States										
1. Gross domestic product	3.5	3.2	3.0	2.7	2.8	2.7	2.0	2.3	2.7	3.0
2. Deflator of private consumption	2.8	2.3	2.2	1.9	1.9	1.9	1.9	1.8	2.0	2.8
3. Unemployment rate (level, % of civilian labour force)	5.1	4.8	4.6	4.8	5.0	5.3	6.4	6.9	5.4	5.0
4. Long-term interest rate (level)	4.3	5.0	5.0	4.9	4.8	4.8	4.7	4.6	4.8	4.8
5. Nominal effective exchange rate (+: depreciation)	2.0	0.7	-2.8	-3.0	-2.9	-2.7	-2.5	-2.4	-2.2	-1.5
6. Government net lending (level, % of GDP)	-3.8	-4.1	-3.7	-3.6	-3.5	-3.5	-3.0	-3.0	-3.5	-2.2
7. Current account (level, % of GDP)	-6.3	-7.1	-6.9	-6.9	-7.1	-7.2	-7.4	-7.6	-7.2	-4.5
IV. Japan										
1. Gross domestic product	2.7	2.8	3.0	2.9	2.3	1.6	1.2	0.9	2.1	1.4
2. Deflator of private consumption	-0.8	0.5	0.8	1.4	1.8	2.0	2.0	2.0	1.5	-0.8
3. Unemployment rate (level, % of civilian labour force)	4.4	4.3	4.2	4.1	4.2	4.3	4.5	4.6	4.3	4.9
4. Long-term interest rate (level)	1.4	1.9	2.3	2.7	2.9	3.0	3.1	3.3	2.8	1.4
5. Nominal effective exchange rate (+: depreciation)	3.4	5.5	4.6	1.9	-1.2	-3.8	-5.9	-7.2	-0.8	-3.5
6. Government net lending (level, % of GDP)	-6.5	-5.8	-5.4	-5.2	-5.2	-5.2	-5.3	-5.7	-5.4	-7.2
7. Current account (level, % of GDP)	3.6	3.5	4.2	5.1	5.7	5.9	5.4	4.6	4.9	3.2
V. Eastern non-euro EU Member States										
1. Gross domestic product	6.0	5.3	4.2	4.2	4.2	4.2	4.2	4.2	4.4	4.0
2. Deflator of private consumption	3.9	3.2	2.4	2.3	2.3	2.3	2.3	2.3	2.4	3.9
3. Long-term interest rate (level)	4.6	4.8	6.0	5.5	5.5	5.5	5.7	5.8	5.5	11.1
4. Nominal effective exchange rate (+: depreciation)	-4.3	0.2	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	1.6
5. Current account (level, % of GDP)	-2.8	-3.3	-3.1	-3.4	-3.8	-4.2	-4.7	-5.2	-4.0	-3.8
VI. Rest of the world										
1. Gross output	6.5	6.4	4.6	5.1	5.3	5.3	5.2	5.1	5.3	5.6
2. Output deflator	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.7
3. Nominal effective exchange rate (+: depreciation)	-2.9	-2.0	2.4	3.3	4.0	4.7	5.3	5.8	3.4	4.4

All figures are year-on-year average growth rates, unless otherwise noted.

The “Western non-euro EU Member States” comprise Denmark, Sweden and the United Kingdom.

The “Eastern non-euro EU Member States” comprise Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia, plus Bulgaria and Romania.

The Euro Area

After a year of relatively frail economic growth in 2005, euro area GDP growth is currently expected to rise to at least 2 per cent in 2006, while the deflator of private consumption should progress at a rate of 2.1 per cent. The pick-up in growth is largely based on a further rise in employment, on positive real wage growth and on accommodative monetary conditions despite the recent policy firming. Over the 2006-2012 period, the euro area's real GDP growth is projected to come out at an average annual rate of 1.8 per cent. Consumer price inflation should also average 1.8 per cent over the projection horizon. The nominal short-term interest rate rises from a year average level of 3.1 per cent in 2006 to 4.2 per cent in 2012, thus alleviating a buildup of inflationary pressures. Assuming no policy changes, the area's fiscal shortfall is projected to decline only gradually from a deficit forecast at 2.4 per cent of GDP for 2006 to a deficit of 1.7 per cent of GDP for 2012.

More vigorous employment growth and still favourable financing conditions underpin the euro area's economic expansion in 2006

Euro area real GDP growth is expected to gain traction over the course of 2006, progressing by at least 2 per cent on the year. The higher growth in 2006 stems from a rebound in domestic demand, while net exports are once again expected to provide a negative contribution to the year's overall growth rate. This 2 per cent growth estimate for 2006 is lower than the 2.1 per cent forecast contained in the European Commission's latest AMECO data for 2006, due mainly to an upward revision of interest rates, a euro exchange rate appreciation and higher oil prices. The estimate does not reflect possibly higher growth prospects underlying the upward revision of financial variables such as interest rates. The growth estimate now lies close to the lower bound of the Commission's most recent euro area GDP growth projections.

In 2006, private consumption should increase by 1.7 per cent, rebounding from its low level in 2005 as consumer spending is bolstered by both employment and real income growth, accompanied by continued favourable financing conditions. Growth in household real disposable income is forecast to come out at 1.4 per cent, primarily reflecting a 0.9 per cent increase in total employment, accompanied by a slim but positive 0.2 per cent rise in real take-home wages.

Business sector investment should track the change in output and benefit from the still favourable financing conditions and rise by 4.6 per cent in 2006. Public investment should rise by 2 per cent, converging toward its trend growth rate. Growth in residential investment is expected to recover from its meagre 1.8 per cent rise in 2005 and progress by 4.2 per cent in 2006.

Euro area exports should also post strong growth in 2006; the area's consolidated real exports should rise by 5.1 per cent on the year, reflecting the significant depreciation of the area's effective exchange rate over the 2005-2006 period. Indeed, while the euro is expected to appreciate on average by 0.6 per cent against the US dollar in 2006, the area's nominal effective exchange rate should depreciate by 0.2 per cent in 2006 after a 2 per cent depreciation in 2005. The area's real effective exchange rate is estimated to have depreciated by 4.8 per cent in 2005 and should weaken by a further 2.8 per cent in 2006. Euro area imports should rise by 6.2 per cent in the wake of the buoyant private sector output growth. On balance, the area's net exports should contribute a negative 0.2 percentage point to overall real GDP growth in 2006.

In 2006, employment should rise by 0.9 per cent, reacting to the area's improving private sector output growth as well as to the steady decline in real private sector unit labour costs since 2004. Moreover, employment should once again expand more rapidly than the labour force, thus reducing the unemployment rate from 8.6 per cent of the civilian labour force in 2005 to 8.4 per cent in 2006.

Nominal private sector wages are forecast to progress by 2.4 per cent in 2006, up from the 1.9 per cent rise of 2005. This stronger nominal wage growth should allow for a 0.2 per cent rise in real take-home wages, after a fall of 0.4 per cent in 2005. This limited rise in take-home wages should raise real private sector wage costs by only 0.3 per cent. Real wage growth remains contained, progressing less rapidly than labour productivity as the unemployment rate in the euro area remains relatively high. In 2006, private sector labour productivity growth is expected to pick up and come out at 2 per cent; private sector real unit labour costs are consequently expected to decline by 1.7 per cent.

Consumer price inflation, as measured by the change in the deflator of private consumption expenditure, has consistently come out around the 2 per cent mark for the last four years. In 2006 inflation is forecast to come out at 2.1 per cent; this is close to, but above, the 2 per cent upper limit of the ECB's definition of price stability. This new uptick in the inflation rate comes against the backdrop of a new effective depreciation of the euro in both nominal and real terms; and as the annual average price of oil in euro terms rises by approximately 30 per cent compared to the year before.

In the face of escalating inflationary pressures, the nominal short-term interest rate is expected to jump from a year average level of 2.2 per cent in 2005 to 3.1 per cent in 2006 as the monetary authorities act to limit price increases and anchor inflation expectations; the real short-term interest rate - as deflated by the change in the price of private consumption - should follow suit and rise from 0.3 per cent in 2005 to 1 per cent in 2006. Though the rise in the real short-term rate is noticeable, the real rate remains well below the 1.9 per cent average level at which it stood over the last ten-year period. The nominal long-term interest rate should edge upward and settle at a year average level of 3.9 per cent in 2006.

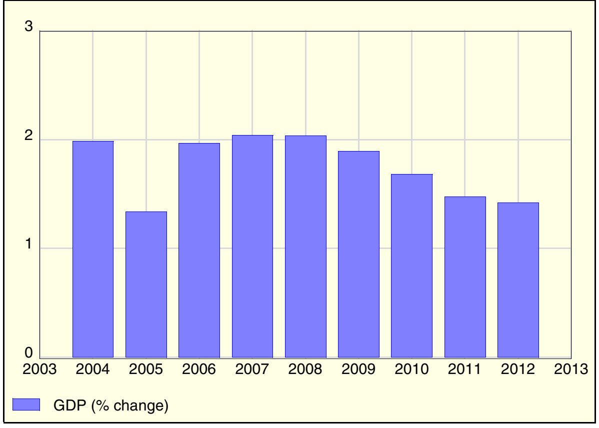
In 2006, aggregate government expenditure is set to grow slightly less rapidly than government revenue in nominal terms. However, the difference between the progression of outlays and income is small and does not lead to any significant improvement of the area's public sector net borrowing requirement, which is forecast to come out at 2.4 per cent of GDP, unchanged compared to the fiscal shortfall of 2005.

Well-oriented fundamentals provide balanced medium-term growth prospects overshadowed only by the effects of an ageing population

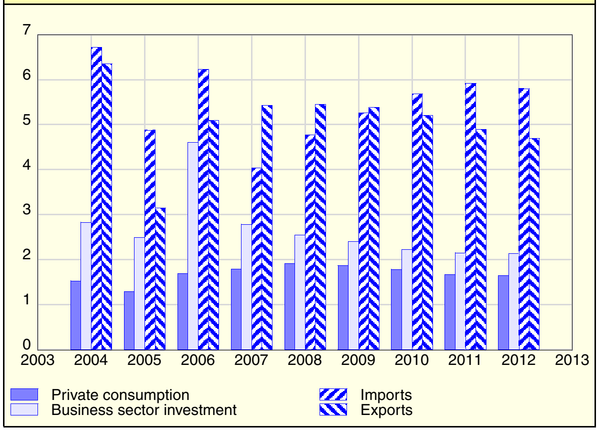
Looking ahead, above-trend GDP growth is projected to gradually close the gap between effective and potential output over the 2007-2010 period. Euro area growth is then projected to taper off as the progression of domestic demand is crimped by rising real interest rates and a slower expansion of the labour supply.

Over the 2007-2012 period as a whole, euro area real GDP rises at an average annual rate of 1.8 per cent. However, the area's growth rate trends downward over the period, due to a steady decline in the growth rate of the working-age population. The negative impact of this demographic trend on GDP growth is partly off-set by an increase in the euro area's labour participation rate.

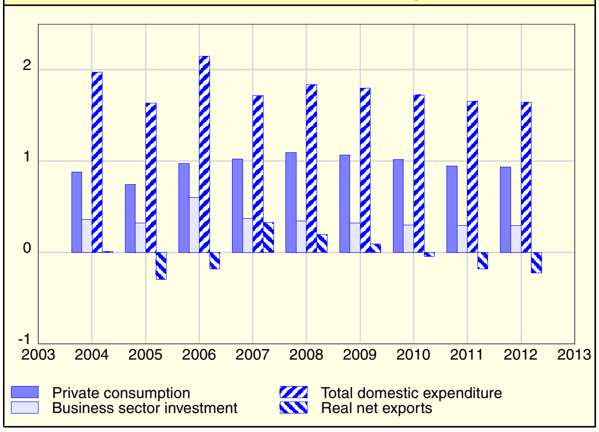
Graph 1 - Gross domestic product in the euro area



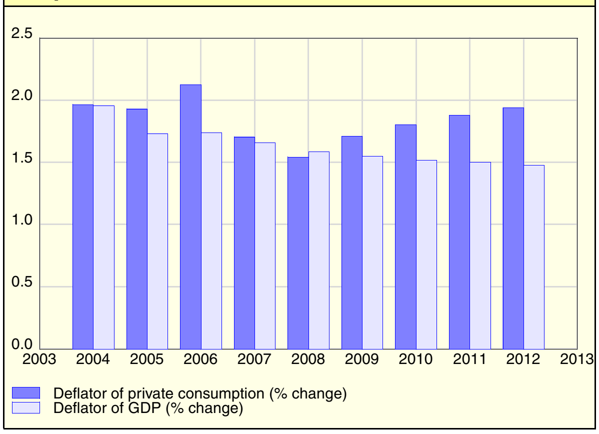
Graph 2 - Selected components of demand in the euro area



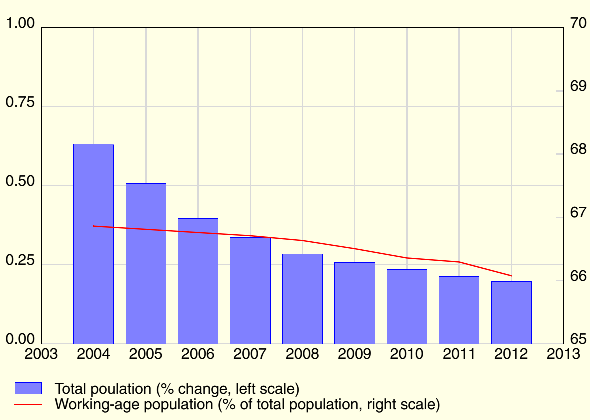
Graph 3 - Contributions to real GDP growth in the euro area *(percentage points)*



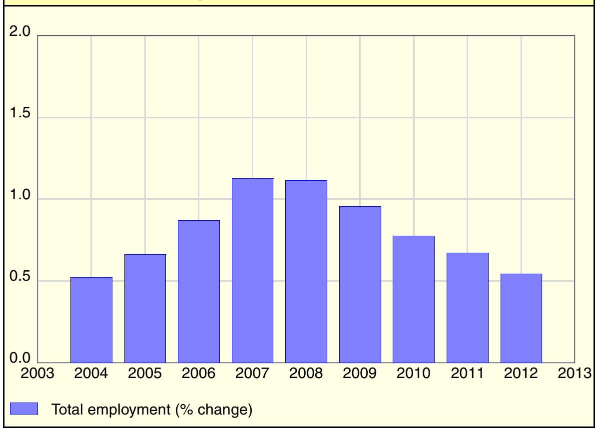
Graph 4 - Price deflators in the euro area



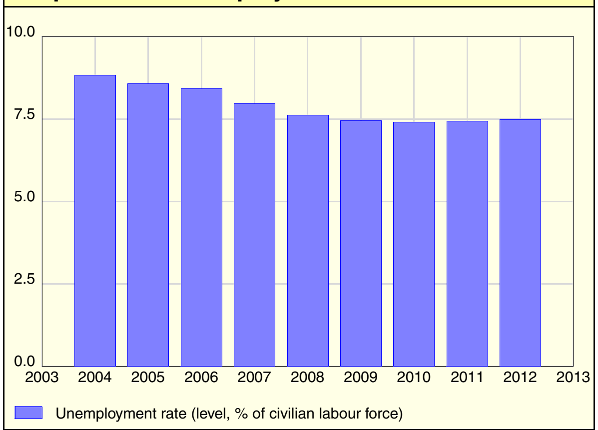
Graph 5 - Population in the euro area



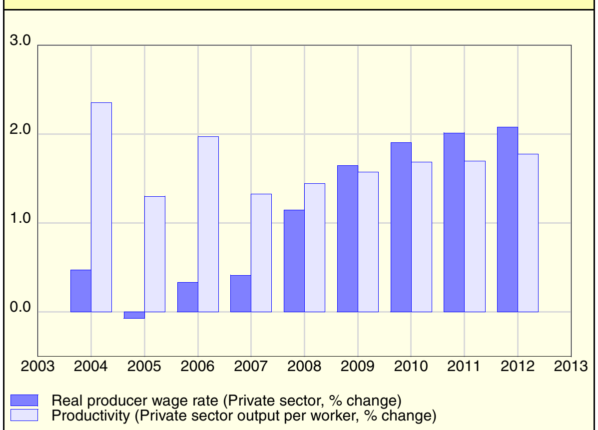
Graph 6 - Employment in the euro area



Graph 7 - The unemployment rate in the euro area



Graph 8 - Real wages and productivity in the euro area



Domestic demand over the 2007-2012 period is mainly driven by private consumption and business sector investment. Private consumption growth is projected to remain relatively robust over the 2007-2012 period, coming out at an average annual rate of 1.8 per cent. Private consumption growth is mainly based upon the steady 0.9 per cent average rise in total employment, accompanied by a 1.1 per cent average annual rise in real take-home wages. Though external trade makes a limited positive contribution to the area's overall GDP growth rate over 2007-2009, this contribution becomes negative thereafter due to a steady appreciation of the euro's effective exchange rate.

Growth in business sector gross fixed capital formation is projected to come out at a robust average rate of 2.4 per cent per annum over the 2007-2012 period. Though this average result for the period is somewhat less impressive than the 4.6 per cent rise in investment that is forecast for 2006, it remains significantly higher than the 1.5 per cent average annual rise in business investment that has been noted since the economic downturn of 2001. The relatively robust investment over the projection horizon is chiefly due to sustained private sector output growth and favourable financing conditions. All in all, total gross fixed capital formation increases at an average annual rate of 1.9 per cent over the 2007-2012 period.

The euro area's consolidated exports should progress by 5.4 per cent in 2007 on the back of a real effective exchange rate that has been appreciating since 2005. Export growth should then post an average annual rise of 5.2 per cent between 2007 and 2012. Over this period, the area's export growth momentum tends to fall due to a somewhat less robust foreign effective demand and the euro's real effective exchange rate appreciation as of 2009. The euro area's consolidated imports progress at an average annual rate of 5.2 per cent over the 2007-2012 period, in response to both the sturdy rise in domestic output and the 2.8 per cent average annual nominal effective appreciation of the euro.

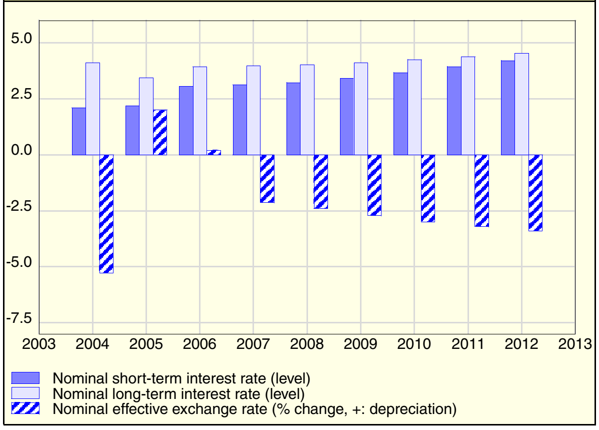
Private sector employment in the euro area is set to increase on average by 0.9 per cent per annum over the 2007-2012 period, bolstered by sturdy output growth and only limited increases in real unit labour costs. Employment growth is projected to come out above the 1 per cent mark over the

2007-2009 period. Employment growth should subsequently fall off as real wage costs curtail growth in labour demand. Indeed, over 2007-2012, growth in the demand for labour outpaces the rise in the labour supply. Hence, the euro area's unemployment rate declines from 8 per cent of the civilian labour force in 2007 to just 7.5 per cent in 2012. The particularly marked decline in the unemployment rate between 2006 and 2009 emboldens workers to request real wage increases. Subsequently, real private sector wage costs come under pressure, leading to a rise in real unit labour costs as of 2009. Real wage growth is itself underpinned by an average annual rise of 1.6 per cent in private sector labour productivity that effectively limits the rise in real private sector unit labour costs; though real unit labour costs do start to rise as of 2009, they increase by no more than 0.2 per cent per annum between 2009 and 2012.

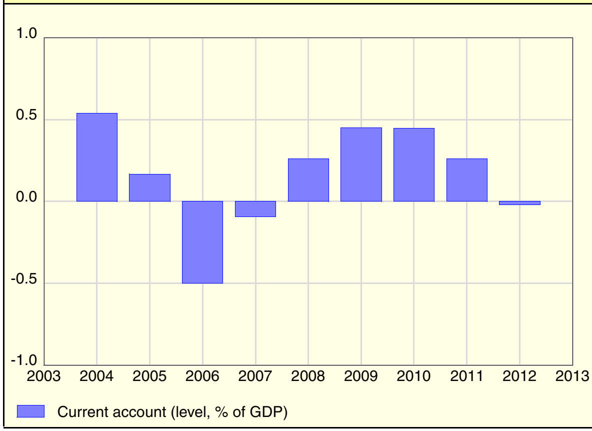
The deflator of private consumption expenditure is forecast to jump by 2.1 per cent in 2006, on the back of a 29.7 per cent rise in euro-denominated oil prices. In 2007, euro-denominated oil prices should rise by a much more tempered 10.2 per cent and then embark on a regular decline over the remainder of the projection horizon, thus effectively helping to put a curb on incipient inflationary pressures in the euro area. The year average rate of inflation is projected to fall to just 1.5 per cent in 2008. However, over the 2009-2012 period, potential private sector output growth begins to lag behind growth in effective demand, partly in response to the area's underlying demographic developments. Inflationary pressures build up once again and consumer price inflation edges up to 1.9 per cent in 2012. Nominal short-term interest rates follow suit as monetary authorities act to maintain price stability by reducing the degree of monetary accommodation: the euro area's nominal short-term interest rate is raised from a year average level of 3.1 per cent in 2007 to 4.2 per cent in 2012. In consequence, the euro area's nominal long-term interest rate rises from 4 per cent in 2007 to 4.5 per cent at the end of the projection horizon.

In a context of rising employment and firm output growth, the automatic fiscal stabilisers allow government revenue to progress more rapidly than public spending. Consequently, the euro area's consolidated fiscal deficit is projected to fall from 2.5 per cent of GDP in 2007 to 1.7 per cent of GDP in 2012. Furthermore, robust nominal GDP growth should slightly reduce the area's public debt-to-GDP ratio from 70.6 per cent of GDP in 2007 to 69.2 per cent of GDP in 2012.

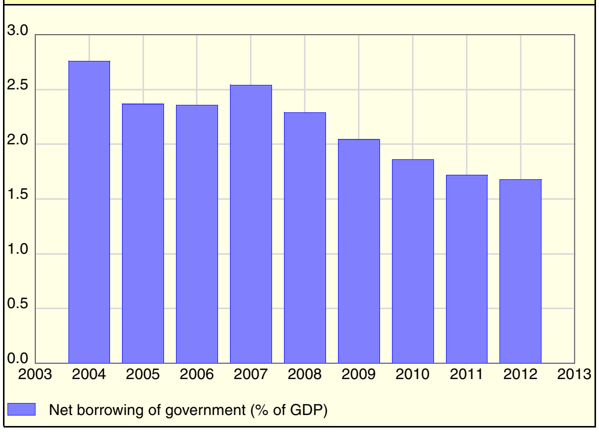
Graph 9 - Interest and exchange rates in the euro area



Graph 10 - Current account of the euro area



Graph 11 - Net borrowing of government in the euro area



The Western Non-Euro EU Member States

Real GDP growth in the Western non-euro EU Member States is forecast at 2.6 per cent in 2006. Over the whole 2006-2012 period, the area's GDP should rise at an average rate of 2.8 per cent per annum, with no significant contribution to growth stemming from the area's net exports. Consumer prices are projected to increase at an average annual rate of 1.6 per cent over the period but inflation should pick up toward the end of the projection horizon as aggregate demand progresses more rapidly than private sector potential output.

In 2006, real GDP growth should progress though failing to match the area's trend output growth

Real GDP growth in the Western non-euro European Union Member States[1] is forecast to come out at 2.6 per cent in 2006. Though this is higher than the tepid 2 per cent growth rate registered in 2005, aggregate output growth remains somewhat below trend. Real GDP growth is however expected to be underpinned by a slightly more vigorous private sector demand, while growth in public sector investment should fall markedly from the previous year's exceptionally high rate of growth.

Private consumption growth is projected to pick up from 1.9 per cent in 2005 to 2.1 per cent in 2006. This slightly higher rate of growth stems from a 1.4 per cent rise in real take-home wages accompanied by a 0.5 per cent rise in total employment. Private consumption expenditure also continues to benefit from the very favourable level of real interest rates.

In 2006, business sector gross fixed capital formation is expected to progress by 3.1 per cent; business investment growth should remain relatively moderate as the previous year's decline in the rate of growth of private sector output curtailed private sector capital expenditure plans. Growth in residential investment should rise from a rate of 3.4 per cent in 2005 to 3.9 per cent in 2006 as real interest rates remain relatively low. Though growing at a slightly slower pace than the year before, government investment is expected to increase by a still impressive 9.3 per cent in 2006. All in all, aggregate gross fixed capital formation should post a brisk 4.1 per cent increase in 2006, after a 4.4 per cent rise the year before.

The Western non-euro EU area's consolidated net exports are expected to provide a positive 0.1 percentage point contribution to the year's overall rate of GDP growth. The negative contribution of external trade to overall growth in 2005 is thus reversed as the area's effective exchange rate depreciation in both 2005 and 2006 tends to reduce import growth, while exports benefit from the greater price competitiveness as well as from the robust progression of foreign effective demand.

Labour demand is projected to rise by 0.5 per cent in 2006, down slightly from the 0.9 per cent increase of 2005. Employment growth slows in 2006 after the relatively sturdy job creations of the previous year and as real wage costs rise. The rise in total employment should come out just below the expected 0.6 per cent increase in the labour supply, pushing the area's unemployment rate up a notch from 5.2 per cent of the civilian labour force in 2005 to 5.3 per cent in 2006.

Notwithstanding the substantial rise in total domestic demand and in oil prices in 2006, the deflator of private consumption expenditure is forecast to rise by no more than 1.9 per cent on the year. This relatively benign price development comes mainly in response to the markedly stronger rise in potential output than in final aggregate demand.

As the contemporaneous rate of inflation remains subdued, monetary authorities make only a minor upward correction to the nominal short-term interest rate, raising it by 0.1 percentage point to a year average level of 4.1 per cent in 2006. The real short-term rate is expected to remain unchanged at a year average level of 2.2 per cent in 2006; hence, real short-term interest rates should remain in line with those recorded over the three previous years and well below the record 4.2 per cent and 3.9 per cent rates registered in 1998 and 2000, respectively. The nominal long-term interest rate should decline from an average level of 4.2 per cent in 2005 to 4.1 per cent in 2006.

The area's net public borrowing requirement is expected to decline from a shortfall of 1.9 per cent of GDP in 2005 to a deficit of 1.7 per cent of GDP in 2006. This slightly improved fiscal stance is primarily due to a noticeably stronger rise in nominal fiscal revenue than in current expenditures.

1. The "Western non-euro EU Member States" comprise Denmark, Sweden and the United Kingdom.

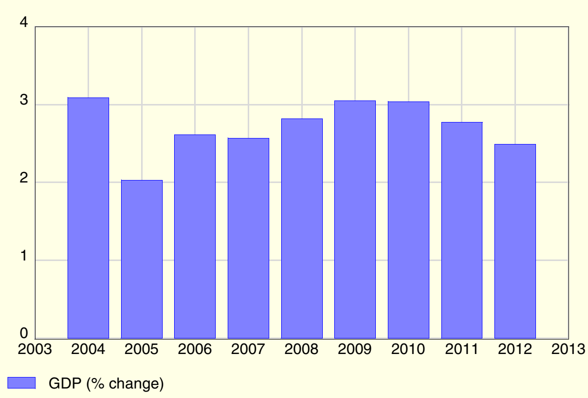
Medium-term demographic trends curb an otherwise sound domestic-led economic expansion

Real GDP of the Western non-euro EU Member States is projected to grow at an average annual rate of 2.8 per cent over 2007-2012. Economic activity should be supported primarily by domestic demand; net exports should make no significant contribution to overall GDP growth except in 2007, when the contribution from net trade comes out at a positive 0.3 percentage point as import growth is curtailed by three consecutive years of real effective exchange rate depreciation. Real GDP growth weakens toward the end of the projection period as labour supply growth trends rapidly downward due to the declining rate of growth of the area's working-age population.

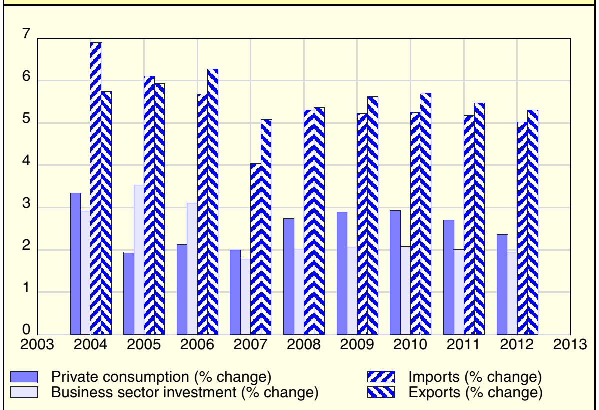
Private consumption expenditure rises on average by a sturdy 2.6 per cent per annum over the 2007-2012 period; this comes on the back of a solid 2.6 per cent average annual rise in real take-home wages and declining real interest rates. The 2.6 per cent progression in real wages is accompanied by a relatively meagre 0.4 per cent average annual rise in total employment, yielding an average yearly rise in aggregate household real disposable income of 3 per cent.

Growth in business sector gross fixed capital formation is projected to fall off to just 1.8 per cent in 2007 in reaction to the deceleration in private sector output growth and to a sharp rise in real interest rates (as deflated by the change in the private sector output price). Business sector investment rebounds in 2008 and levels out at an average annual rate of growth of 2 per cent up to the end of the projection period. Growth in household investment in residential buildings also falls sharply off in 2007, posting a meagre gain of 0.9 per cent on the back of the 3.9 per cent rise in residential investment the year before and reacting negatively to the rise in real interest rates. Residential investment subsequently picks up, rebounding by 2.7 per cent in 2008 and coming out at an average annual growth rate of 2 per cent over the entire 2007-2012 period. Government gross investment growth is expected to pursue its steady decline and to converge to a growth rate of 2.5 per cent toward the end of the projection period. All in all, total gross fixed capital formation is projected to progress at an average annual rate of 2.2 per cent over the 2007-2012 period.

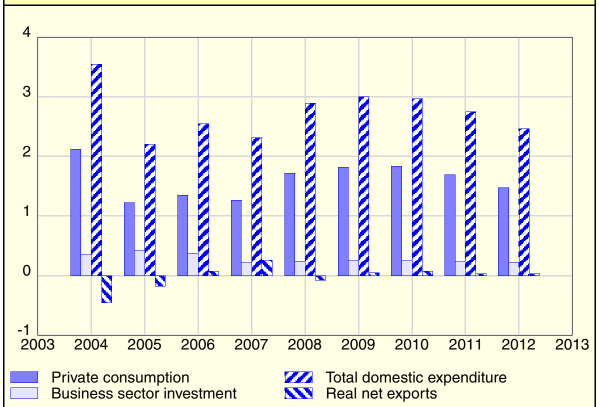
Graph 12 - Gross domestic product in the Western non-euro EU Member States



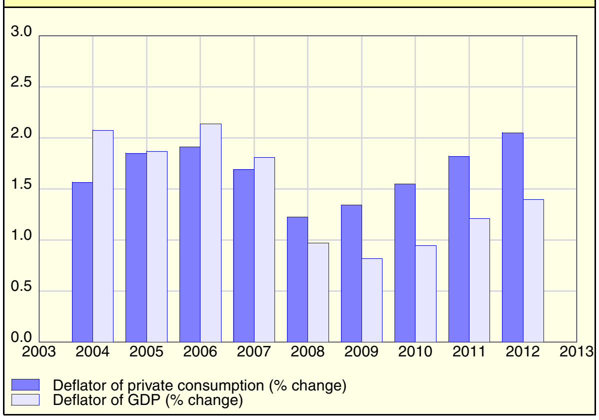
Graph 13 - Selected components of demand in the Western non-euro EU Member States



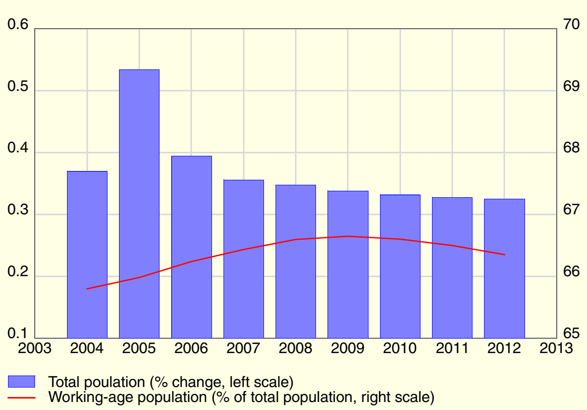
Graph 14 - Contributions to real GDP growth in the Western non-euro EU Member States *(percentage points)*



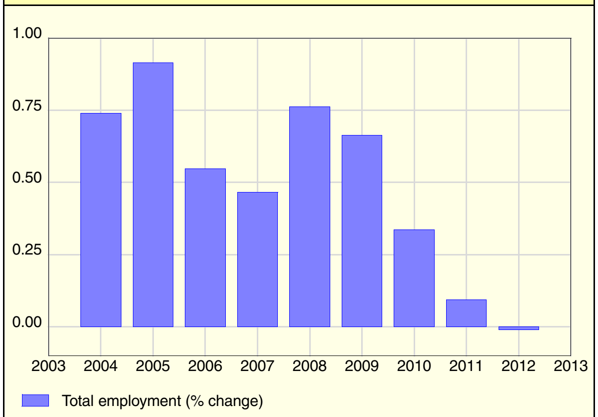
Graph 15 - Price deflators in the Western non-euro EU Member States



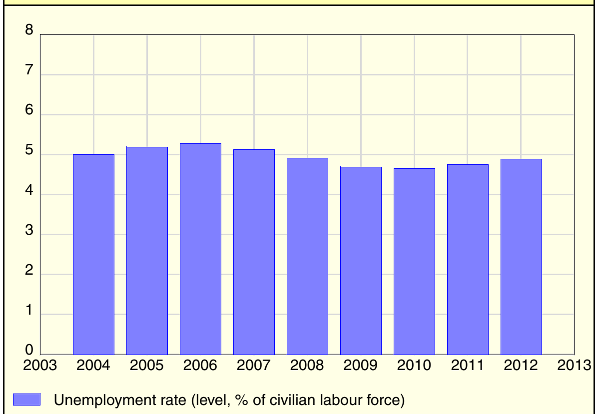
Graph 16 - Population in the Western non-euro EU Member States



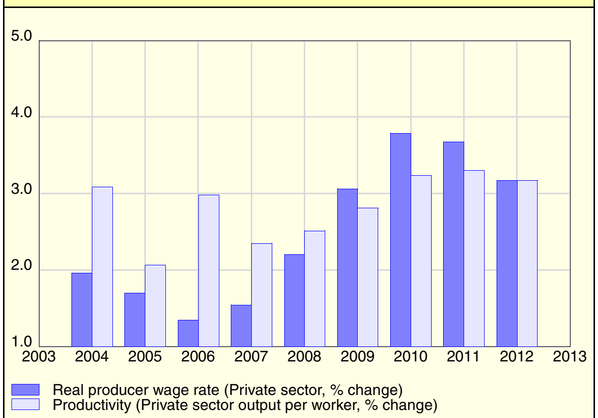
Graph 17 - Employment in the Western non-euro EU Member States



Graph 18 - The unemployment rate in the Western non-euro EU Member States



Graph 19 - Real wages and productivity in the Western non-euro EU Member States

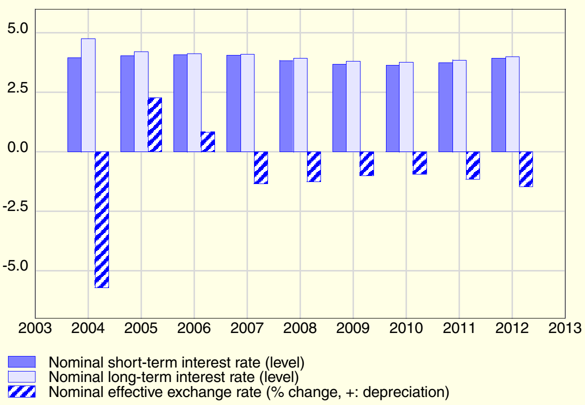


After posting a relatively high and positive 0.3 percentage point contribution to the area's rate of GDP growth in 2007, consolidated real net exports are projected to provide no significant contribution to growth over the remainder of the projection period. The area's exports of goods and services should expand by just 5.1 per cent in 2007, falling back from a 6.3 per cent growth rate in 2006 in the wake of declining growth in foreign effective demand. Export growth then increases to an average annual rate of 5.4 per cent between 2007 and 2012, driven by foreign effective demand and by very measured export price growth. Imports are projected to progress by just 4 per cent in 2007 as private sector output growth decelerates and as the area's real effective exchange rate depreciates for the third consecutive year. Import growth subsequently picks up, progressing at an average annual rate of 5 per cent over the 2007-2012 period.

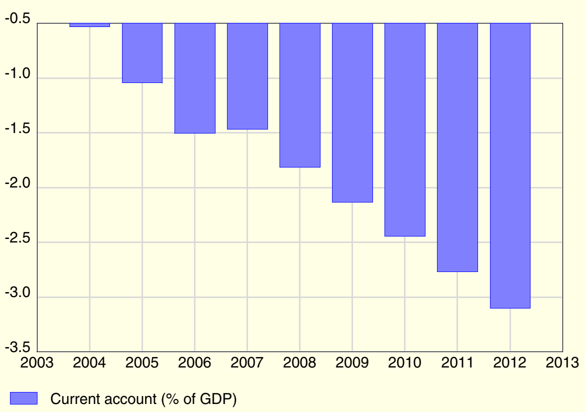
Total employment is projected to rise at an average annual rate of 0.4 per cent over the 2007-2012 period. Employment exhibits a regular progression up to 2009 as domestic demand drives effective output upward and closes the gap with potential supply. Thereafter, employment growth tumbles, turning negative at the end of the projection horizon as job creation is hindered by the progression of real wage costs. Indeed, real private sector wage costs increase on average by 3.4 per cent per annum between 2009 and 2012, outpacing the 3.1 per cent rise in private sector labour productivity over the same period; hence average real unit labour costs rise by 0.3 per cent over the 2009-2012 period. The labour supply expands on average at roughly the same pace as employment, leaving the unemployment rate at an average annual level of 4.8 per cent of the civilian labour force between 2007 and 2012. The unemployment rate first falls to a trough of 4.7 per cent in 2010 before edging back up to 4.9 per cent in 2012 as total employment growth stalls in the wake of the rising real private sector wage costs.

Consumer price inflation is projected to average 1.6 per cent per annum between 2007 and 2012. Inflationary pressures tend to abate in 2008 as oil prices begin to decline; however, at the same time, the area's economy shifts from a situation where effective demand is smaller than potential output to one where aggregate demand closes the output gap and finally outpaces the rise in production capacity; this then exacerbates inflationary pressures and drives consumer price inflation up from 1.2 per cent in 2008 to a full 2 per cent in 2012.

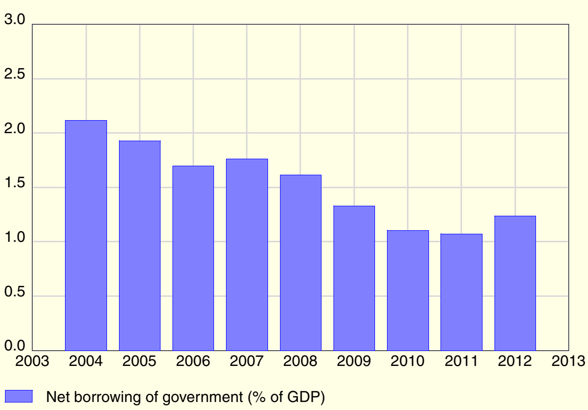
Graph 20 - Interest and exchange rates in the Western non-euro EU Member States



Graph 21 - Current account of the Western non-euro EU Member States



Graph 22 - Net borrowing of government in the Western non-euro EU Member States



The area's nominal short-term interest rate comes out at an average annual level of 3.8 per cent over the 2007-2012 period. The short-term rate is projected to remain flat at 4.1 per cent in 2007 before slipping to 3.6 per cent in 2010 on the back of mild price increases and negative output gaps over the first years of the projection period. The short-term rate is then projected to rise to 3.9 per cent in 2012 as inflationary pressures build up once again as growth in demand outpaces the rise in aggregate supply. The nominal long-term interest rate settles at an average annual level of 4 per cent over the 2007-2012 period. As of 2007, the area's nominal effective exchange rate returns to its previous pattern of appreciation after having depreciated in both 2005 and 2006. The nominal effective exchange rate posts an average annual appreciation of 1.2 per cent over the 2007-2012 period, reflecting the significantly higher rates of inflation in the other areas of the world economy.

The area's aggregate fiscal position is projected to improve throughout the 2007-2011 period; the fiscal deficit declines from an estimated 1.8 per cent of GDP in 2007 to 1.1 per cent of GDP in 2011. This improvement in the area's fiscal stance reflects a distinctly faster rise in income than in expenditure up to 2011. This evolution is then reversed in 2012 as current expenditures progress more rapidly than revenue owing to a regular rise in transfers to households on the back of rising unemployment rates and an ageing population.

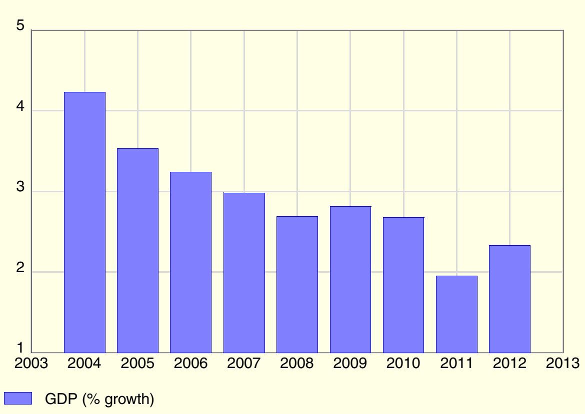
The United States

Real GDP in the United States (US) is expected to expand at an average annual rate of 2.7 per cent over the 2006-2012 period. However, annual growth rates are projected to exhibit significant variations as, under current US laws and policies, the sunset of a number of important tax cut provisions will cut significantly into domestic demand growth. After rising to a year average level of 5.3 per cent in 2007, the nominal short-term interest rate should decline as monetary policy adjusts to remove any undue monetary restriction. Despite the expiration of significant tax cut provisions, fiscal deficits are expected to recede only slowly from a forecast of 4.1 per cent of GDP in 2006 to 3 per cent of GDP in 2012. Assuming no sharp and unexpected drop in the external value of the dollar, the US current account is projected to pursue on its present course, spiralling up to a deficit of 7.6 per cent of GDP in 2012.

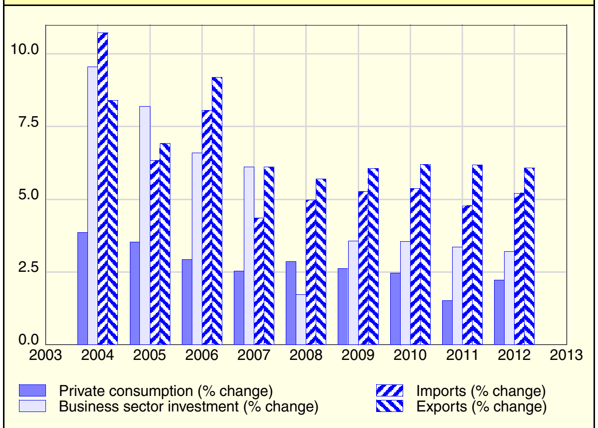
A less accommodative monetary policy stance is forecast to weigh on domestic demand in 2006

US GDP is projected to increase at a year average rate of 3.2 per cent in 2006, slightly down from the 3.5 per cent growth rate achieved in 2005. The slowing of GDP growth comes as growth in both private consumption expenditure and investment taper off and as the country's net export position continues to provide a negative 0.3 percentage point contribution to the overall growth rate.

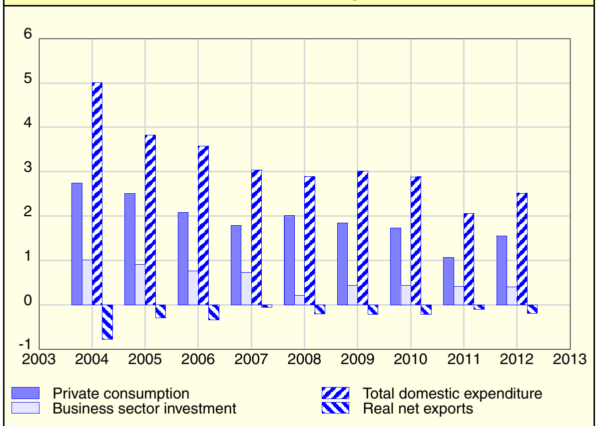
Graph 23 - Gross domestic product in the US



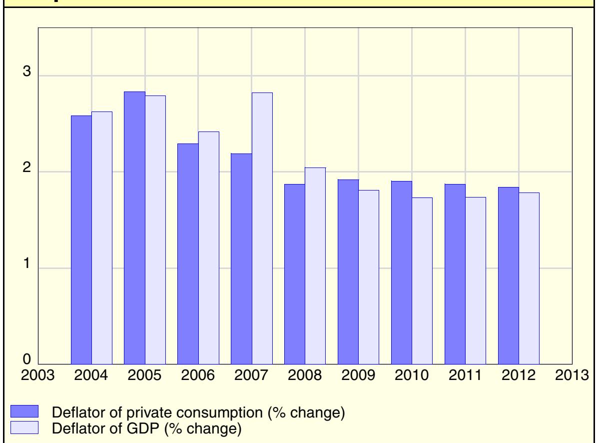
Graph 24 - Selected components of demand in the US



Graph 25 - Contributions to real GDP growth in the US *(percentage points)*



Graph 26 - Price deflators in the US



Private consumption growth is forecast to slip from 3.5 per cent in 2005 to 2.9 per cent in 2006 as households start to increase their savings in the face of the recent sharp interest rate hikes and the rising tax liabilities. Indeed, after rising by 1.6 percentage points to 5.2 per cent in 2005, the nominal short-term interest rate is expected to rise to a year average level of 5.3 per cent in 2006. Moreover, tax liabilities rise as a number of important tax cut provisions sunset after 2006.

Business sector gross fixed capital formation should expand by a brisk 6.6 per cent in 2006; however, this result is down from the two previous years' unsustainably high investment rates and as the rise in interest rates raise the cost of capital. Growth in residential investment is expected to come out at 2.6 per cent in 2006; this result is markedly lower than the previous year's 7.1 per cent growth as rising interest rates help bring about a cooling of the US housing market. Aggregate gross fixed investment is expected to progress at a 5.3 per cent pace in 2006, markedly down from the 7.4 per cent rise registered for 2005.

US exports are expected to expand by 9.2 per cent in 2006, benefiting from continued robust global demand and from the dollar's string of effective depreciations since 2003. Import growth jumps from 6.3 per cent in 2005 to 8.1 per cent in 2006, chiefly reflecting strong private sector output growth. On balance, the US current account deficit is expected to rise noticeably, from 6.3 per cent of GDP in 2005 to 7.1 per cent of GDP in 2006.

After having risen by a vigorous 1.8 per cent in 2005, total employment should expand at a more sustainable pace of 1.4 per cent in 2006. At the same time, the labour supply should increase by a somewhat more subdued 1.1 per cent, leaving the unemployment rate down 0.3 percentage point at 4.8 per cent of the civilian labour force. Moreover, though private sector real take-home wages progress by 1.7 per cent, private sector real wage costs increase by only 1.4 per cent; as private sector labour productivity rises by a robust 3 per cent, this leads to a 1.6 per cent fall in real unit labour costs in 2006.

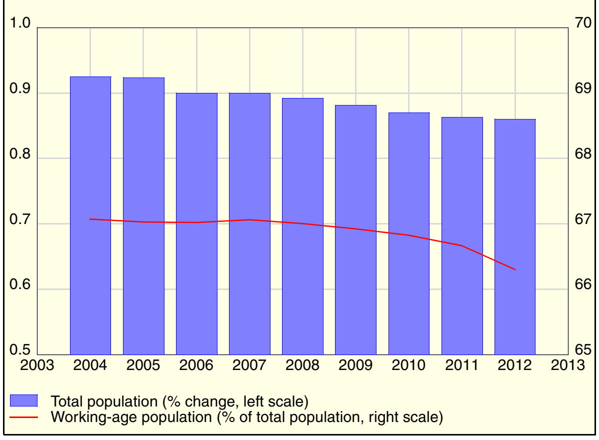
Despite an expected further 30.5 per cent rise in oil prices in 2006, inflation - as measured by the change in the deflator of private consumption expenditure - should fall from 2.8 per cent in 2005 to 2.3 per cent in 2006. This indicates that the recent phase of tightening of monetary policy is succeeding in gradually bringing the expansion of domestic demand more into line with the economy's longer-term growth potential.

US monetary authorities are expected to stand by their current policy of measured monetary firming, gradually withdrawing any remaining unwarranted monetary stimulus and pushing the nominal short-term interest rate up from a year average level of 3.6 per cent in 2005 to 5.2 per cent in 2006. At the same time, the nominal long-term interest rate is expected to increase by 0.7 percentage point, rising from a year average level of 4.3 per cent in 2005 to an even 5 per cent in 2006. Monetary authorities first began to reduce monetary accommodation in June 2004, aiming to temper the heady expansion of US economic activity and to keep a firm lid on inflation. The current phase of US monetary firming is generally viewed to be nearing a pause. What's more, interest rates are now also on the rise in the euro area and Japan. At the same time, the rising US current account deficit seems to be bringing increasing downward pressure to bear on the US dollar. Hence, the US currency's nominal effective exchange rate looks set to continue to depreciate in 2006, albeit at a year average rate of just 0.7 per cent. The dollar's exchange rate against the euro should depreciate by 0.6 per cent in 2006, with the dollar settling at a year average level of 1.251 for one euro compared to 1.244 dollars for one euro in 2005.

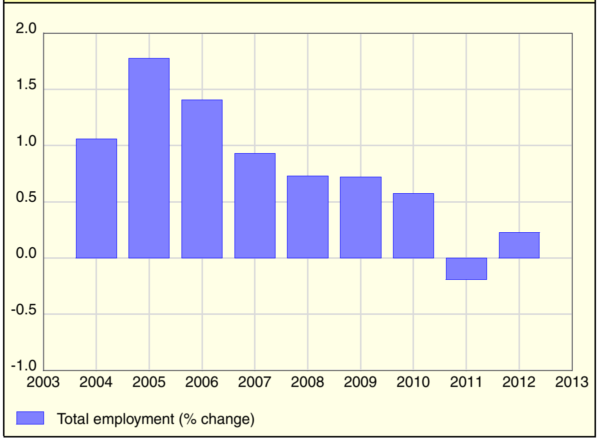
In 2005 a marked and largely unexpected rise in tax revenue led to a noticeable fall in the year's (on-budget) budget deficit, which came out at 3.8 per cent of GDP. The reduced budgetary shortfall is linked mainly to increased revenue from individual income tax receipts, strong corporate income tax receipts and rising social insurance taxes. In 2006, public outlays are expected to rise while the increase in fiscal revenue should be somewhat more moderate, raising the US fiscal deficit to 4.1 per cent of GDP. The 2006 budget shortfall is expected to spring mainly from increased spending and losses in revenue linked to hurricanes Katrina and Rita, as well as from higher outlays stemming from the new Medicare prescription drug benefit plan.[1]

[1] See the technical appendix for details regarding the baseline assumptions for US fiscal policy.

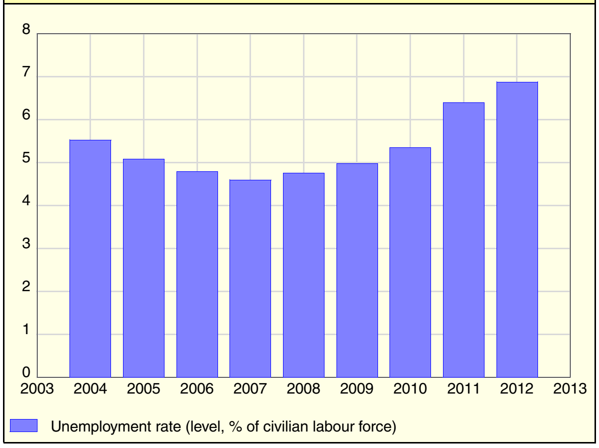
Graph 27 - Population in the US



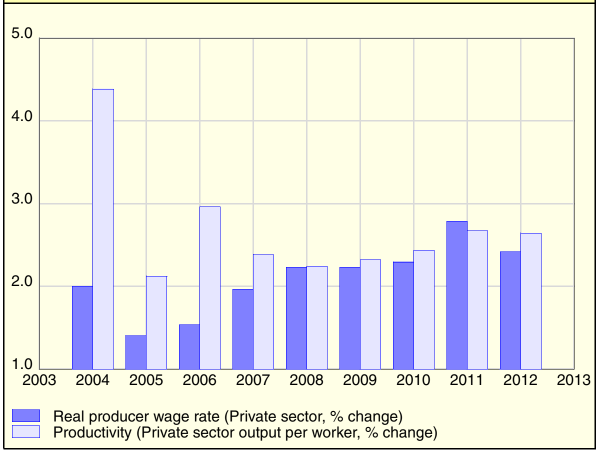
Graph 28 - Employment in the US



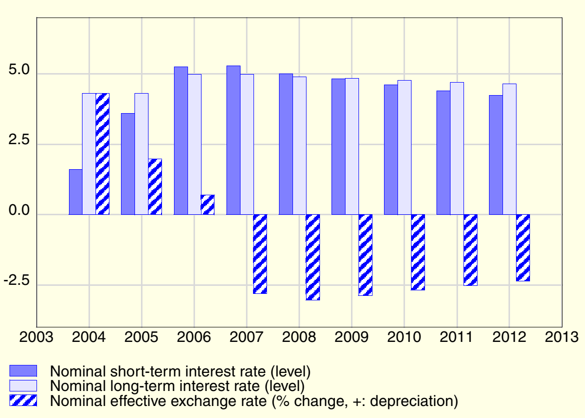
Graph 29 - Unemployment rates in the US



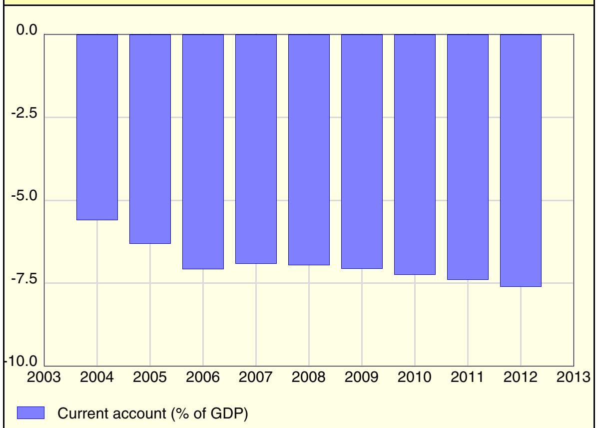
Graph 30 - Real wages and productivity in the US



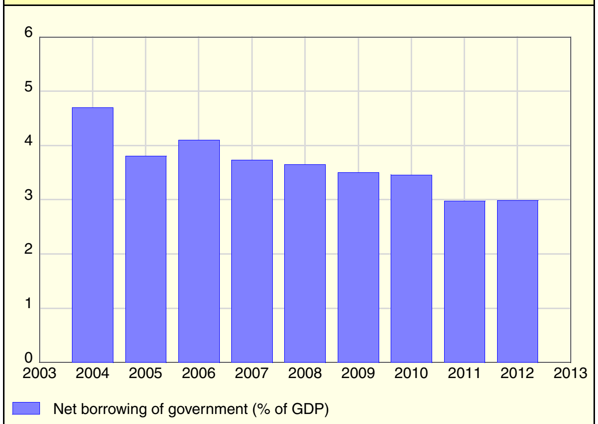
Graph 31 - Interest and exchange rates in the US



Graph 32 - US current account



Graph 33 - Net borrowing of government in the US



An ageing population and the expiration of various tax reductions are expected to curtail economic activity over the medium term

GDP growth in the US is projected to follow a somewhat declining trend over the 2007-2012 period; this slide in projected growth rates comes about as the cautious policy firming by monetary authorities in 2005 and 2006 brings the rate of expansion of the US economy down to a more sustainable level; as tax cut provisions expire according to the current schedule; and as demographic trends increasingly constrain aggregate output growth.

In 2007, GDP growth is projected to edge down from 3.2 per cent in 2006 to 3 per cent as domestic demand is adversely affected by rising real interest rates and tax rates. Net exports should once again provide a negative contribution to growth, stymied by an effective exchange rate appreciation. Real GDP growth is then projected to stabilise around 2.7 per cent over the 2008-2010 period, before a sharp rise in taxes reduces growth to just 2 per cent in 2011 and to 2.3 per cent in 2012.

Over the 2007-2012 period, private consumption is projected to expand at an average annual rate of 2.4 per cent. In 2007-2008, consumption is still underpinned by a moderate rise in employment, accompanied by robust real wage growth. However, the expiration of a number of significant tax cut provisions over the 2007-2012 period begins to cut into household real disposable income growth; consumption growth tracks the evolution of disposable income and exhibits a distinctly declining trend between 2008 and 2011. Indeed, the growth rate of private consumption expenditure falls from a peak of 2.9 per cent in 2008 to a lacklustre 1.5 per cent in 2011. Consumer spending rebounds by 2.2 per cent in 2012 as the main adverse effects of the previous years' string of tax increases are gradually eroded by a new 1.4 per cent rise in real take-home wages.

Business sector gross fixed capital formation progresses at an average annual rate of 3.6 per cent over the 2007-2012 period. After its sturdy performance over the years 2004-2007, growth in business investment plummets to just 1.7 per cent in 2008 under the combined effects of high and rising real interest rates and a slackening of private sector output growth. Subsequently, business sector investment growth rebounds, progressing at an average annual rate of 3.4 per cent between 2009 and 2012 as real interest rates tend to decline and as potential output expands to better accommodate the rise in final demand.

Net exports are projected to provide only negative contributions to overall GDP growth over the projection horizon, subtracting an annual average 0.2 percentage point from GDP growth between 2007 and 2012. Export growth falls to an average of 6.1 per cent over 2007-2012, reflecting a slight tempering of foreign effective demand growth and a string of nominal effective exchange rate appreciations. At the same time, US import growth tracks to a large extent the changes in domestic economic activity, rising at an average annual rate of 5 per cent over the same period. Import prices increase on average by 1.6 per cent per annum over the period, while export prices rise at an average annual rate of 0.7 per cent. All in all, this leads to a persistent US current account deficit which culminates at 7.6 per cent of GDP in 2012.

Although private sector employment growth averages 0.7 per cent per year over the 2007-2010 period, employment growth falters toward the end of the projection period as demographic trends weigh on economic activity and as tax cut provisions expire. Indeed, the rising tax rates reduce aggregate demand through their effect on household disposable income. They also put pressure on real private sector wage costs as workers request higher nominal wages in an attempt to limit the income loss incurred by the tax hikes. Finally, the expiration of the various tax cuts increases marginal tax rates and acts as a disincentive to work. The tax increases peak in 2011 leading to a limited 0.9 per cent growth in private sector real take-home wages, while real private sector wage costs jump by 2.8 per cent. These developments precipitate a 0.4 per cent fall in private sector employment in 2011; private sector employment then rises by a tepid 0.1 per cent in 2012. Over the 2007-2012 period, the US labour supply increases on average by 0.9 per cent per annum. This rise in the labour force, combined with a relatively low 0.5 per cent average annual rise in total employment, pushes the unemployment rate up from 4.6 per cent of the civilian labour force in 2007 to 6.9 per cent in 2012.

Real private sector wage costs progress at an average annual rate of 2.3 per cent over the 2007-2012 period, compared to a 1.6 per cent average annual rise in real take-home wages over the same period. Private sector labour productivity increases at an average annual rate of 2.4 per cent, reducing real unit labour costs by an average 0.1 per cent per year. For the economy as a whole, labour productivity growth - measured in terms of GDP per worker - averages 2.1 per cent per annum while real unit labour costs progress at an average annual rate of 0.2 per cent.

Both private sector producer price inflation and consumer price inflation remain relatively subdued over the 2007-2012 period, posting average annual increases of 2 and 1.9 per cent, respectively. Consumer prices remain tame due to the rise in taxes that limits growth in household real disposable income and allows potential output to expand more rapidly than domestic demand. The deflator of GDP rises on average by 2 per cent per annum over the same period.

After its significant rise over 2005-2007, the nominal short-term interest rate is projected to trend downward over the 2007-2012 period, slipping from a year average level of 5.3 per cent in 2007 to 4.2 per cent in 2012. The nominal long-term interest rate averages 4.8 per cent over the 2007-2012 period. As inflation expectations for the coming years are assumed to remain well-anchored, real interest rates - deflated by the change in the price of private consumption - are projected to remain relatively stable; over the 2007-2012 period the real short-term rate is projected to stand at an average level of 2.8 per cent, while the real long-term rate should come out at an average of 2.9 per cent.

The present projection indicates that the dollar's nominal effective exchange rate will appreciate at an average annual rate of 2.7 per cent over 2007-2012. This strengthening of the external value of the US currency is primarily due to the higher inflation in the rest of the world and the relatively higher - albeit declining - US interest rate levels. This outcome crucially hinges on the assumption of unchanged risk premia on the dollar exchange rate, implying no abrupt or disorderly reversal in market sentiment regarding the dollar, nor any significant retrenchment vis-à-vis the dollar by Asian central banks and Middle Eastern oil exporters, which have been major buyers of US financial assets in recent years. The dollar's real effective exchange rate is projected to depreciate on average by a marginal 0.2 per cent per annum over 2007-2012; however, this proves to be insufficient to produce any significant turn-around in the country's mounting current account deficits.

Over the 2007-2012 period, fiscal revenue should rise due to the expiration of various tax cut provisions enacted in the Economic Growth and Tax Relief Reconciliation Act of 2001, modified by the Jobs and Growth Tax Relief Reconciliation Act of 2003 and by the Working Families Tax Relief Act of 2004. Notwithstanding these scheduled tax increases, the US fiscal deficit-to-GDP ratio is projected to decline only slowly. The net (on-budget) public borrowing requirement is projected to fall from 3.7 per cent of GDP in 2007 to 3.5 per cent of GDP in 2010. A more rapid fall in the deficit is then projected over 2011-2012 as new tax hikes bring about a surge in fiscal revenue that reduces the shortfall to 3 per cent of GDP in 2012.

Japan

Japanese real GDP is expected to progress at an average annual rate of 2.1 per cent over the 2006-2012 period. However, growth is projected to slacken noticeably over the projection horizon as the labour supply shrinks due to the ageing of the population. Consumer price inflation should progress at an average annual rate of 1.5 per cent over 2006-2012. Over this same period, the Japanese economy runs the risk of a premature monetary or fiscal tightening that could stifle the domestic recovery and push Japan back into a deflationary spiral. However, fiscal consolidation appears critical to regain control over spiralling government deficits and debt.

Strong economic growth and positive consumer price inflation are expected in 2006

Japanese real GDP is forecast to continue on its sturdy upward course in 2006, expanding at an average annual rate of 2.8 per cent. Growth is driven by both private consumption and business sector gross fixed capital formation. More crucially, a seven-year streak of deflation is finally broken in 2006 after several years of an effective zero-interest-rate policy supplemented by a strategy of massive quantitative easing.

In 2006, private consumption growth is forecast to come out once again at 2.2 per cent. This stable expansion of consumer spending primarily reflects a new steady rise in employment and a sudden decline in the real short-term interest rate brought about by the now positive price developments. The progression of real take-home wages should be stymied by the rise in domestic prices and by a rise in taxes; hence, real wages should not underpin consumer spending in 2006.

Growth in business sector gross fixed capital formation is expected to remain particularly buoyant in 2006, coming out at 7 per cent. This impressive result comes mainly in response to the steady rise in total domestic demand, accompanied by a sharp increase in the country's total exports. Household investment in residential buildings is expected to increase by 1.7 per cent in 2006, rebounding after a 1.1 per cent decline the previous year. Public sector investment is forecast to continue to decline, falling by 4.1 per cent in 2006 after a 4.8 per cent drop in the previous year.

Japanese exports are forecast to jump by an impressive 10 per cent in 2006, coming after a 6.9 per cent progression in 2005. This is mainly due to a 5.1 per cent rise in foreign effective demand, coupled with a 3.4 per cent real effective exchange rate depreciation in 2006 and a 6 per cent depreciation the year before. The contribution of net exports to GDP growth rises from 0.3 percentage point in 2005 to 0.5 percentage point in 2006, even though import growth is expected to jump from 6.2 per cent in 2005 to a heady 8.1 per cent in 2006. Import growth should pick up in response to the stronger growth in private sector output; imports thus appear to remain robust even in the face of a steep 9.4 per cent rise in import prices, fuelled in part by a 36.5 per cent rise in the - yen-denominated - price of oil.

In 2006, the deflation that has plagued Japanese consumer prices uninterruptedly since 1999 is expected to finally come to an end; the deflator of private consumption expenditure should increase at a year average rate of 0.5 per cent, while the deflator of GDP is expected to record a final 0.3 per cent decline on the year.

Total employment is expected to progress by 0.4 per cent in 2006; this comes on the back of a continued strong rise in private sector output and declining real wage costs. Though nominal wage rates are expected to rise in 2006, real take-home wages and real producer wage costs should decline as both consumer prices and private sector output prices break free from deflation; consumer prices are expected to rise by 0.5 per cent while private sector output prices should jump by a full 1 per cent. Overall labour productivity is forecast to rise by 2.4 per cent in 2006, outpacing total real wage costs and thus reducing real unit labour costs by 1.2 per cent on the year. Notwithstanding an already noticeable fall in working-age population, the Japanese labour force is expected to expand by 0.3 per cent in 2006; this rise falls slightly short of the 0.4 per cent rise in employment, reducing the unemployment rate from 4.4 per cent of the civilian labour force in 2005 to 4.3 per cent in 2006.

In mid-July 2006, the Bank of Japan put an end to its longstanding zero rate policy by raising its key policy rate from an effective level of zero to 0.25 per cent. The Japanese nominal short-term interest rate is expected to continue its gradual rise and to come out at a year average level of 0.4 per cent in 2006. The long-term interest rate should rise from 1.4 per cent in 2005 to an average of 1.9 per cent in

2006. As deflation is finally vanquished and with the consumer price index rising 0.5 per cent on the year, real interest rates decline from the previous year's levels: the real short-term rate should come out at a negative 0.1 per cent while the real long-term rate should fall to 1.4 per cent.

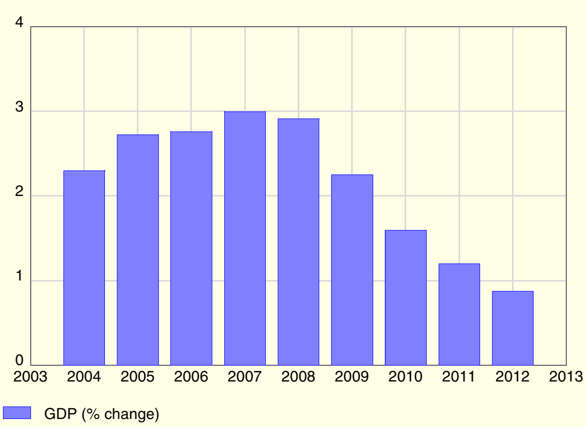
As positive inflation rates re-emerge and as real interest rates decline, Japan's nominal effective exchange rate should depreciate by a significant 5.5 per cent on the year. The real effective exchange rate should depreciate by a more measured 3.4 per cent, indicating that the inflation differential with the rest of the world is now starting to diminish.

As of 2007 economic growth falters in the face of mounting pressures from an ageing population

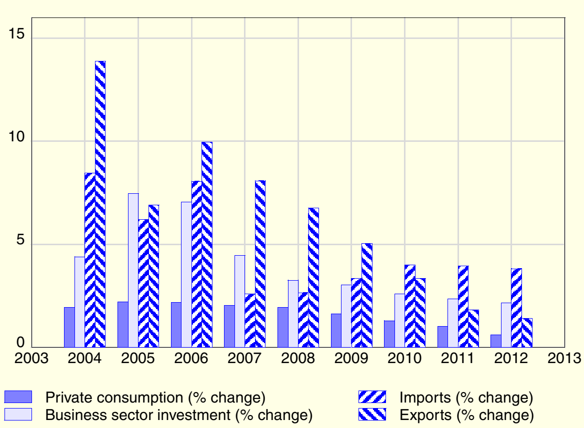
Looking ahead, Japan's real GDP is projected to grow at an average annual rate of 2 per cent over the 2007-2012 period. Economic growth is primarily supported by private consumption and gross fixed capital formation, while the marked positive contribution to growth posted by net exports in the early years of the projection period dwindles and finally turns negative in 2011 and 2012. At the same time, the deflator of private consumption expenditure is projected to progress at an average annual rate of 1.7 per cent. The government fiscal deficit appears to stabilise over the 2007-2011 period; however, a lack of durable fiscal consolidation could lead to a new rise in the deficit in 2012, inexorably raising the public debt-to-GDP ratio and ultimately jeopardising the country's current phase of solid economic expansion.

Private consumption expenditure is expected to rise by an even 2 per cent in 2007, on the back of a 1.9 per cent increase in real take-home wages. The higher real wages come as private sector output expands by a brisk 3.4 per cent while the labour force embarks on a trend decline that pushes the unemployment rate consistently down below the economy's natural rate of unemployment. Real take-home wages pursue their strong progression in 2008 and 2009, thereby underpinning consumer spending. However, consumption growth begins to tumble as of 2009, coming out at just 0.6 per cent in 2012. This dive in private consumption growth between 2009 and 2012 reflects the declining growth of total real household means linked to the rapidly shrinking Japanese labour force.

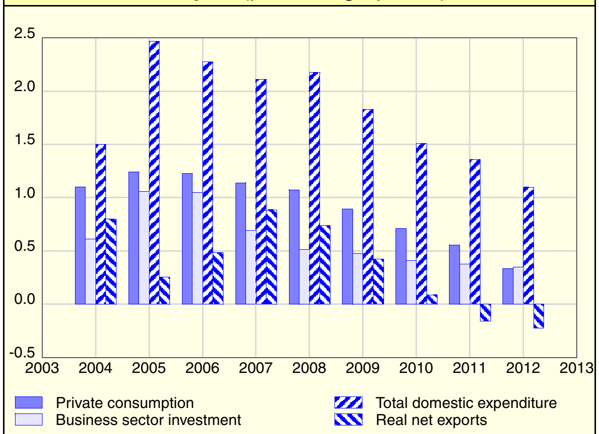
Graph 34 - Gross domestic product in Japan



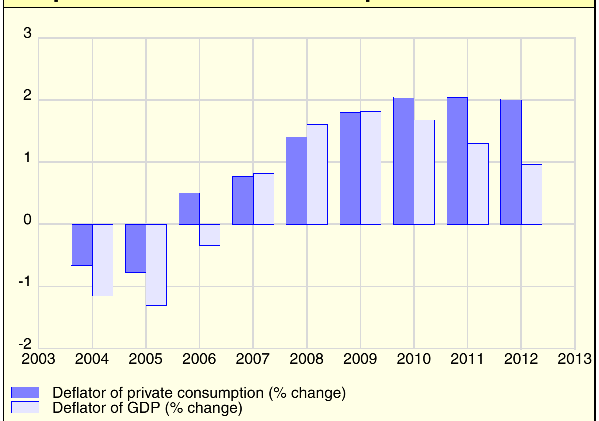
Graph 35 - Selected components of demand in Japan



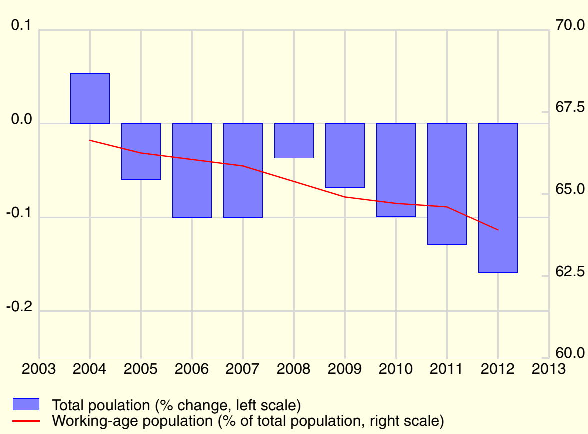
Graph 36 - Contributions to real GDP growth in Japan *(percentage points)*



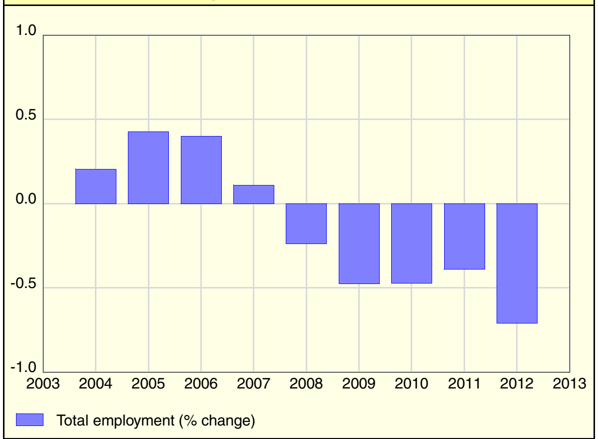
Graph 37 - Price deflators in Japan



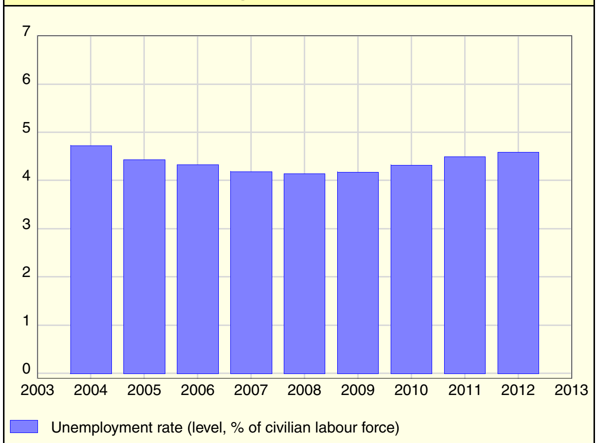
Graph 38 - Population in Japan



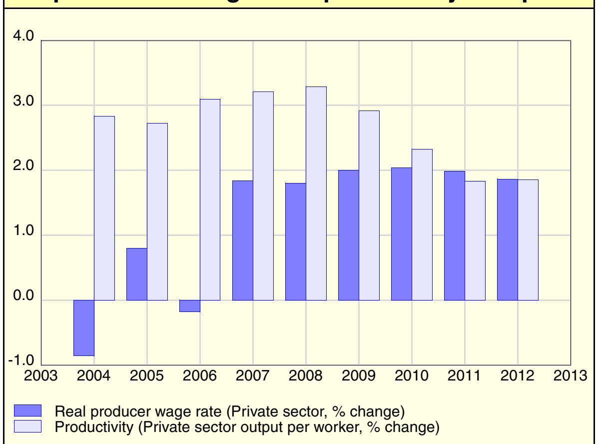
Graph 39 - Employment in Japan



Graph 40 - Unemployment rates in Japan



Graph 41 - Real wages and productivity in Japan



Business sector gross fixed capital formation is projected to rise by 4.5 per cent in 2007, coming after a massive 7 per cent jump in 2006. Investment growth then tends to fall off over the 2008-2012 period, crimped by the fall in the labour supply and the parallel decline in new fixed capital requirements. Household investment in residential buildings is projected to grow strongly up to 2009, underpinned by increases in household real disposable income and still very modest real interest rates. However, income growth slows markedly as of 2010 and the progression of investment in residential buildings tapers off to an average annual rate of just 1.4 per cent in 2012.

The contribution of net exports to overall growth is projected to remain positive over the first years of the projection period but to subsequently decline from a high of 0.9 percentage point in 2007 to just 0.1 percentage point in 2010. Net exports then turn negative, trimming the growth rate of GDP by 0.2 percentage point in both 2011 and 2012. The weakening contribution to growth from external trade stems mainly from a decline in export growth in the wake of the return to positive output and export price developments and a sharp nominal effective exchange rate appreciation over the 2009-2012 period. Import demand loses momentum in 2007, suffering from the high import price increases incurred over the previous years following the substantial exchange rate depreciations over the 2005-2007 period. Import growth then picks up, progressing at an average annual rate of 3.5 per cent between 2008 and 2012 as the accelerating effective exchange rate appreciation over the latter part of the projection period cuts into import price increases.

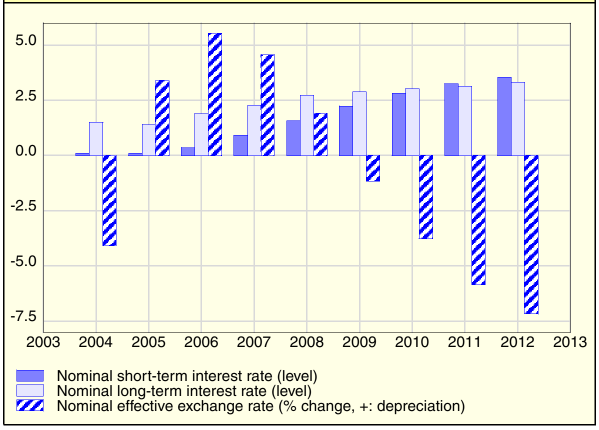
Over the 2007-2012 period, total population in Japan is projected to decline at an average annual rate of 0.1 per cent; at the same time, working-age population is projected to tumble by 0.6 per cent per year, reducing the Japanese labour force by an average 0.3 per cent per year. The decline in the working-age population could knock off 0.4 percentage point from the GDP growth rate of 2007 and reduce growth by an average of 0.6 percentage point each year over the 2007-2012 period. However, these potentially severe output effects are mitigated by a relatively resilient private consumption, underpinned by steady household real disposable income growth. Overall labour productivity - measured in terms of GDP per worker - is projected to progress at an average annual rate of 2.3 per cent over the 2007-2012 period. This robust productivity growth allows for the fairly strong growth in real wage rates without it leading to any significant rise in real unit labour costs. Real take-home wages track the rise in wage costs up to 2009; as of 2010 however, consumer price inflation reaches 2 per cent per annum and cuts into the rise in real take-home wages, curbing the expansion of households' real disposable income.

Over the 2007-2012 period, inflation remains relatively contained, as attested by the 1.7 per cent average annual rise in consumer prices and the 1.4 per cent average annual increase in the price of private sector output. Consumer prices progress rapidly in the early years of the projection period as expectations of positive inflation arise and become entrenched; consumer price inflation increases from a rate of 0.8 per cent in 2007 to an average of 2 per cent between 2010 and 2012. Over the last years of the projection horizon, monetary authorities move to keep inflation under control and within the limits of their current definition of price stability, which requires that the rate of inflation remain between 0 and 2 per cent per annum.

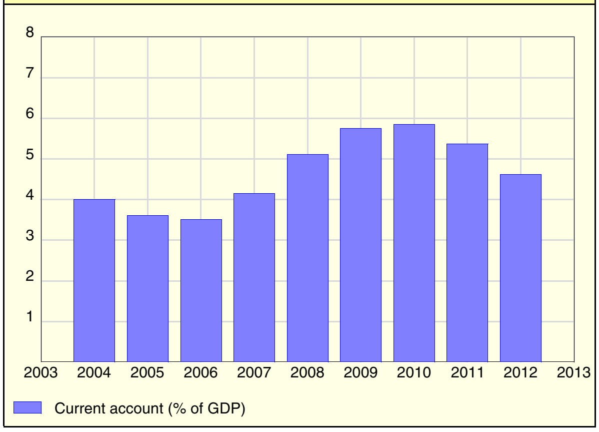
Growth in domestic demand noticeably outstrips the rise in Japan's potential output over the 2007-2010 period. Hence, the Japanese monetary authorities move to raise the nominal short-term interest rate from 0.9 per cent in 2007 to 2.8 per cent in 2010. Simultaneously, the long-term interest rate shifts upward from 2.3 per cent to 3 per cent over the same period. Demand growth loses traction as the nominal short-term interest rate is pushed up to 3.5 per cent in 2012 in order to maintain inflation below the 2 per cent mark. The significant rise in Japanese interest rates, combined with relatively moderate inflation when compared to foreign rates of inflation, leads to a 1.9 per cent average annual appreciation of the yen's nominal effective exchange rate over the 2007-2012 period. The real effective exchange rate appreciates by a more measured 0.6 per cent over the same period due to the robust rise in Japanese export prices in the early years of the projection period.

The Japanese government's fiscal stance improved noticeably between 2002 and 2006 as the deficit fell from 8.2 to 5.8 per cent of GDP. The shortfall in the public budget is projected to pursue its decline in 2007, sliding to 5.4 per cent of GDP. The deficit is then expected to stabilise around an average annual level of 5.2 per cent of GDP between 2008 and 2011, before jumping to 5.7 per cent of GDP in 2012. The new upward drift in the Japanese budget deficit toward the end of the projection horizon is largely due to underlying demographic developments which tend to reduce consumption and output, thereby exerting downward pressure on tax receipts while raising public transfers to households. The budget shortfall in per cent of GDP is also increased by the marked slowdown in nominal GDP growth, following from the decline in real growth rates and declining inflation as measured by the deflator of GDP. This development underscores the importance of a steadfast and longer-term approach to fiscal consolidation.

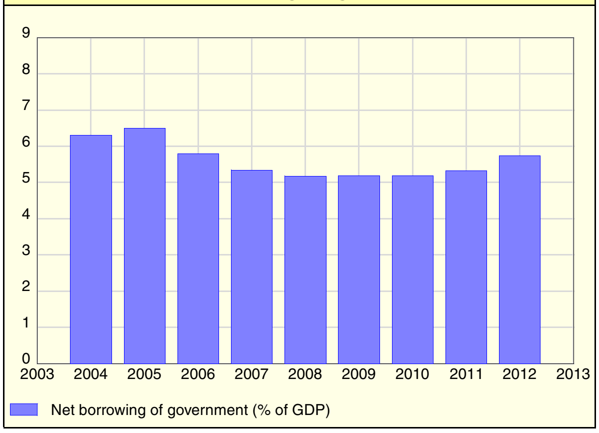
Graph 42 - Interest and exchange rates in Japan



Graph 43 - Current account of Japan



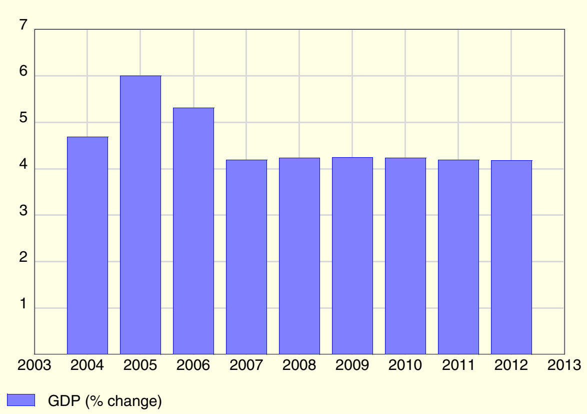
Graph 44 - Net borrowing of government in Japan



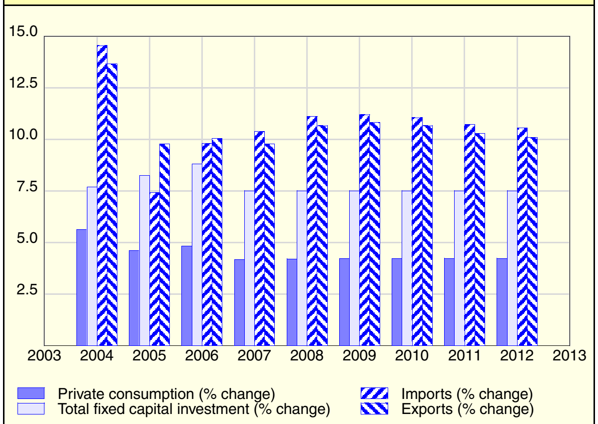
The Eastern Non-Euro EU Member States

Real GDP growth in the Eastern non-euro EU Member States[1] is forecast to reach 5.3 per cent in 2006 and should come out at an average annual rate of 4.4 per cent over the 2007-2012 period. The area's rate of growth is firmly underpinned by a robust expansion of both private consumption expenditure and gross fixed capital formation. Inflation should remain relatively stable, with the deflator of private consumption increasing at an average annual rate of 2.4 per cent.

Graph 45 - Gross domestic product in the Eastern non-euro EU Member States



Graph 46 - Selected components of demand in the Eastern non-euro EU Member States



Robust consumer spending and investment should continue to drive the area's output growth in 2006

The new Eastern non-euro Member States of the European Union are once again forecast to post a particularly high rate of GDP growth in 2006; GDP is forecast to rise by 5.3 per cent on the year, down slightly from the 6 per cent growth achieved in 2005 but still well above the 2 per cent growth rate forecast for the euro area in 2006. Growth in private consumption expenditure is forecast at 4.8 per cent in 2006. The continued pursuit of real convergence with the rest of the European Union is underscored by the particularly high growth rates of aggregate gross fixed capital formation. Indeed, gross fixed investment is estimated to progress by an impressive 8.8 per cent in 2006. At the same time, the area's overall economic growth should also be underpinned by a 2.9 per cent rise in overall public consumption. On balance, total domestic expenditure is expected to contribute 5.6 percentage points to the year's overall rate of growth.

In 2006, the area's consolidated net external trade balance is expected to turn out negative once again, thus contributing a negative 0.3 percentage point to the area's overall economic performance. Exports should rise by an impressive 10 per cent in 2006 on the back of a 2.9 per cent real effective exchange rate depreciation and robust foreign effective demand growth; import volumes are also expected to post a particularly strong progression of 9.8 per cent in 2006, in response to the continued heady rise in domestic consumption and investment.

On the whole, the Eastern non-euro EU Member States should see their nominal effective exchange rate depreciate by a limited 0.2 per cent between 2005 and 2006. The area's currencies are expected to appreciate on average by approximately 0.1 per cent relative to the euro and, given the US dollar's depreciation against the euro, to appreciate by a somewhat stronger 0.7 per cent against the US currency. The real effective exchange rate is expected to depreciate by a more significant 2.9 per cent as the area's export prices progress somewhat less rapidly than foreign prices.

As of 2007 robust domestic demand growth leads to widening current account imbalances

Real GDP of the Eastern non-euro EU Member States is projected to expand at an average annual rate of 4.2 over 2007-2012, far outstripping the 1.8 per cent growth of the euro area over the same period. The area's GDP growth is bolstered by a 5.2 per cent average annual increase in domestic demand while negative real net exports trim overall GDP growth with a negative average annual contribution to growth of 0.9 percentage point.

[1] The "Eastern non-euro EU Member States" comprise Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia, plus Bulgaria and Romania.

Private consumption is projected to grow on average by 4.2 per cent per annum over the 2007-2012 period. Consumption growth progresses at a relatively rapid pace as the area's consumption patterns tend to catch up with average consumption levels in the rest of the European Union.

Consumer price inflation is stabilised around an average rate of 2.3 per cent per annum over the 2007-2012 period, as the area's nominal effective exchange rate follows a trend appreciation and as nominal interest rates rise to keep aggregate demand growth within sustainable margins.

Growth in total gross fixed capital formation averages 7.5 per cent per annum between 2007 and 2012. These high growth rates for capital investment reflect the efforts that are expected to be made to facilitate the ongoing transition of the area to a modern service-oriented market economy.

The area's nominal effective exchange rate is projected to appreciate by just 0.3 per cent per annum over the 2007-2012 period. However, the area's currencies should depreciate on average by 1.5 per cent per year against the euro and by 1.2 per cent per year against the US dollar. All in all, as the rise in domestic export prices remains more subdued than the rise in foreign effective prices, the area's real effective exchange rate is expected to depreciate by 0.1 per cent per annum over 2007-2012. This real effective exchange rate depreciation should however prove to be insufficient to curb the area's widening consolidated current account deficit, which should jump from 3.1 per cent of GDP in 2007 to 5.2 per cent of GDP in 2012.

The Rest of the World

In 2006, gross output of the rest of the world is forecast to progress by 6.4 per cent, pursuing on its high growth momentum of the previous years. Output growth should moderate to 4.6 per cent in 2007 and output should then rise at an average annual rate of 5.2 per cent over the 2008-2012 period. Inflation is projected to remain relatively contained, rising at an average annual rate of 5 per cent over the projection period.

Continued robust output growth and stable inflation are projected over the 2006-2012 period

After a peak growth rate of 6.9 per cent in 2004 followed by a slightly more measured growth rate of 6.5 per cent in 2005, gross output growth of the rest of the world is forecast to edge down just a notch to a rate of 6.4 per cent in 2006. Economic activity should then fall off to a more moderate growth rate of 4.6 per cent in 2007. Assuming no major shocks to the area's economies over the 2008-2012 period, growth is projected to remain firm as output expands at an average annual rate of 5.2 per cent, converging toward its long-run trend rate of growth.

The area's rate of inflation is expected to stabilise at an average level of 5 per cent over the projection horizon. This relatively tempered rate of inflation lies well below the 7 per cent average annual rate of inflation that the area experienced over the ten preceding years and thus reflects the decline in world inflation that is patent since the end of the last decade.

Export growth for the rest of the world slipped from 11.9 per cent in 2004 to 5.9 per cent in 2005. Exports are forecast to rebound by 7.4 per cent in 2006 before averaging out at an annual growth rate of 5.4 per cent over the 2007-2012 period.

Import growth also plummeted from 11.6 per cent in 2004 to a much more modest 5.4 per cent in 2005. Import growth is expected to pick up and reach 7.9 per cent in 2006. Imports should then continue to rise steadily, progressing at an average annual rate of 6.2 per cent over the rest of the projection period.

Export prices - denominated in euro - are forecast to rise by 3.8 per cent in 2006. However, this rise in 2006 is partly due to the depreciation of the euro, as export prices in local currency should progress by a more moderate 2.8 per cent. Euro-denominated export prices are then projected to rise at an average annual rate of 2.2 per cent over the 2007-2012 period. At the same time, import prices - denominated in euro - should fall by 0.4 per cent in 2006, pursuing the decline that began four years before. Euro-denominated import prices should then rise at an average annual rate of 1.8 per cent between 2007 and 2012.

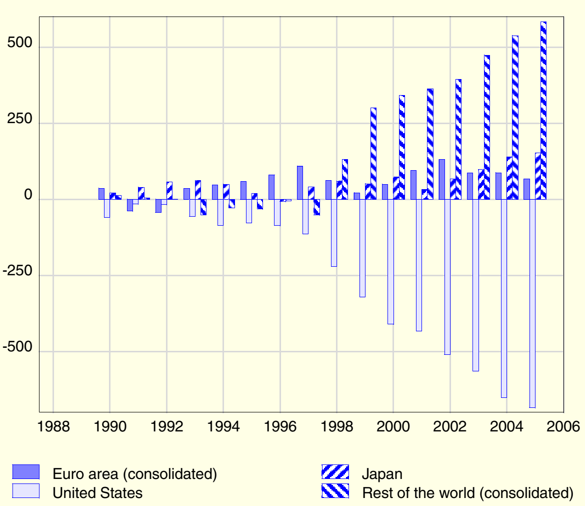
Finally, after an interruption in 2005 and 2006, the area's nominal effective exchange rate should resume its steady trend depreciation; the exchange rate should depreciate at an average annual rate of 4.3 per cent over the 2007-2012 period due to higher overall inflation in this area than in the other major economic areas of the world.

Main uncertainties regarding the prospects for the world economy

Though the current NIME projection reflects a relatively benign medium-term trajectory, there does appear to be a number of current concerns with respect to the short- to medium-term prospects of the world economy. In our view, the two most prominent of these in terms of their potentially disruptive effects on the world economy are an abrupt and disorderly unwinding of the current significant trade and financial imbalances between regions of the world; as well as a sharp and lasting rise in world energy prices.

Rising global imbalances

Graph 47 - Net export positions of main economic areas (exports minus imports, in billions of constant euro)

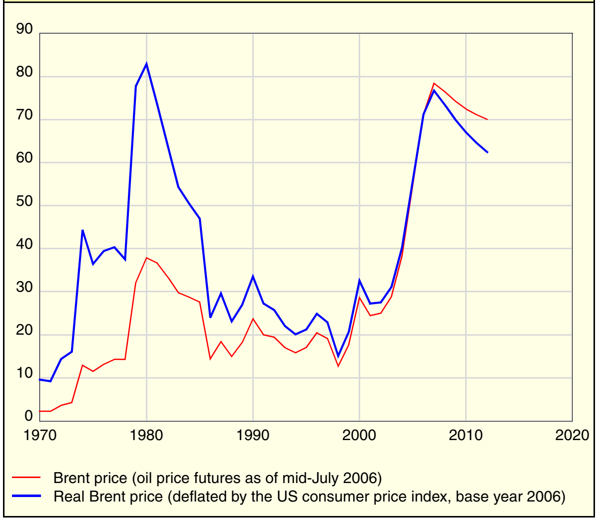


Despite widening global trade imbalances in 2005, nominal effective exchange rates remained fairly stable; at the same time, long-term interest rates remained relatively subdued. However, it seems likely that the US current account will one day have to be brought back into balance, most probably through a reduction in domestic demand growth combined with a depreciation of the dollar.[1] This adjustment could take place gradually through appropriate efforts at policy coordination; or more suddenly with an unexpected reversal in market sentiment, accompanied by an abrupt retrenchment by the Asian central banks and Middle Eastern oil exporting countries, which have been major buyers of US financial assets in recent years. An abrupt unwinding of global imbalances could materialise in the form of a sharp fall-off in the external value of the US currency and a sharp rise in US interest rates, which could severely curtail the growth prospects presented in this outlook.

The peaking of world conventional oil output and a lasting increase in the price of oil

The price of oil fell significantly in the 1990s, troughing in 1998 at a year average level of 12.8 US dollars (Brent, $US/bbl). Oil prices subsequently rebounded and have been rising steadily ever since March 1999. The price of Brent averaged 54.5 $US/bbl in 2005 and closed above 76.1 $US/bbl in mid-July 2006, partly on the back of heightened political concerns in the Middle East; at the same time, long-term oil futures contracts came out above 69 $US/bbl for the entire 2006-2012 period.

Graph 48 - The price of oil ($US/bbl, year averages)



The risk of a lasting rise in oil prices seems particularly acute for conventional oils - low sulphur liquid fuels - as the production of this grade of oil is already declining in many of the world's largest oil-producing countries. What's more, world oil discoveries have now been in decline for decades and there are doubts as to whether higher oil prices and improved oil recovery processes can effectively mitigate the supply-side effects of the coming peak in world oil production.[2] If world oil consumption growth were to consistently outpace the rise in oil production and refining capacity, the risk exists that persistently higher oil prices could reduce global output growth more than projected in this outlook.

1. See for instance Eichengreen, B. (2006), "The Blind Men and the Elephant", *Brookings Policy Brief*, The Brookings Institution, Washington, D.C., January. http://www.brook.edu/views/papers/200601_iiep_eichengreen.pdf

2. For an in-depth presentation of the peak oil analysis see Robert L. Hirsch et al. (2005), "Peaking of World Oil Production: Impacts, Mitigation and Risk Management", Report to the US Department of Energy. http://www.netl.doe.gov/publications/others/pdf/Oil_Peaking_NETL.pdf

Detailed World Area Tables - The Euro Area

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Private consumption	1.3	1.7	1.8	1.9	1.9	1.8	1.7	1.6	1.8
2. Government consumption	1.3	1.9	1.2	1.5	1.6	1.6	1.7	1.6	1.6
3. Gross fixed capital formation	2.1	4.2	2.1	2.1	2.0	1.8	1.8	1.8	2.2
. of which business sector	2.5	4.6	2.8	2.6	2.4	2.2	2.2	2.1	2.7
4. Exports	3.2	5.1	5.4	5.4	5.4	5.2	4.9	4.7	5.2
5. Imports	4.9	6.2	4.0	4.8	5.3	5.7	5.9	5.8	5.4
6. Gross domestic product	1.3	2.0	2.0	2.0	1.9	1.7	1.5	1.4	1.8
7. Private sector value added	1.3	2.1	2.2	2.2	2.0	1.7	1.5	1.4	1.9
8. Private sector gross output	2.0	2.9	2.6	2.7	2.6	2.5	2.4	2.4	2.6
9. Output gap (deviation of GDP from trend GDP, in %)	-1.4	-1.1	-0.7	-0.3	0.0	0.1	-0.0	-0.0	-0.3
10. Contributions to real GDP growth									
a. Total domestic expenditure	1.6	2.1	1.7	1.8	1.8	1.7	1.7	1.6	1.8
b. Net exports	-0.3	-0.2	0.3	0.2	0.1	-0.0	-0.2	-0.2	0.0
II. Deflators									
1. Private consumption	1.9	2.1	1.7	1.5	1.7	1.8	1.9	1.9	1.8
2. Gross fixed capital formation	2.5	2.7	2.2	1.6	1.2	1.0	0.8	0.7	1.4
. of which business sector	1.9	2.4	2.0	1.7	1.3	1.1	0.8	0.6	1.4
3. Exports	1.2	1.2	1.0	0.8	0.7	0.5	0.4	0.3	0.7
4. Imports	3.4	4.0	1.3	0.6	0.6	0.7	0.8	0.9	1.3
5. Gross domestic product	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.6
6. Private sector value added	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.6
7. Private sector output	1.9	2.1	1.5	1.4	1.4	1.3	1.3	1.3	1.5
III. Financial Markets									
1. Short-term interest rate (level)	2.2	3.1	3.1	3.2	3.4	3.7	3.9	4.2	3.5
2. Long-term interest rate (level)	3.4	3.9	4.0	4.0	4.1	4.2	4.4	4.5	4.2
3. Spot exchange rate, local/$US (level x 100)	80.4	79.9	79.9	80.0	79.9	79.6	79.1	78.4	79.6
4. Spot exchange rate, local/$US (+: depreciation)	-0.0	-0.6	0.0	0.1	-0.1	-0.4	-0.7	-0.9	-0.4
5. Nominal effective exchange rate (+: depreciation)	2.0	0.2	-2.1	-2.4	-2.7	-3.0	-3.2	-3.4	-2.4
6. Real effective exchange rate (+: depreciation)	4.8	2.8	0.4	0.1	-0.1	-0.2	-0.3	-0.3	0.4
IV. Labour Market									
1. Labour supply	0.4	0.7	0.6	0.7	0.8	0.7	0.7	0.6	0.7
2. Employment	0.7	0.9	1.1	1.1	1.0	0.8	0.7	0.5	0.9
. of which private sector	0.7	0.9	1.2	1.2	1.1	0.8	0.7	0.6	0.9
3. Unemployment rate (level, % of civilian labour force)	8.6	8.4	8.0	7.6	7.4	7.4	7.4	7.5	7.7
4. Nominal wage rate, private sector	1.9	2.4	1.9	2.5	3.0	3.2	3.3	3.4	2.8
5. Real take-home wage rate, private sector	-0.4	0.2	0.5	1.0	1.3	1.4	1.4	1.4	1.0
6. Real producer wage rate, private sector	0.1	0.3	0.4	1.1	1.6	1.9	2.0	2.1	1.4
7. Labour productivity (GDP per worker)	0.7	1.1	0.9	0.9	0.9	0.9	0.8	0.9	0.9
V. Household sector									
1. Total real means	1.7	1.9	1.9	1.6	1.3	1.1	0.9	0.8	1.4
. of which real disposable income	1.0	1.4	1.7	1.8	1.8	1.8	1.7	1.7	1.7
2. Net saving by households (level, % of disposable income)	9.4	9.0	8.9	8.9	9.0	9.1	9.3	9.5	9.1
VI. Fiscal sector									
1. Net lending (+) or borrowing (-) (% of GDP)	-2.4	-2.4	-2.5	-2.3	-2.0	-1.9	-1.7	-1.7	-2.1
2. Government gross debt (% of GDP)	70.9	70.6	70.6	70.4	70.1	69.8	69.5	69.2	70.0
VII. International environment									
1. Foreign effective output	5.3	5.3	4.0	4.3	4.5	4.4	4.3	4.2	4.4
2. Foreign effective output price	4.0	3.8	3.7	3.5	3.4	3.4	3.4	3.5	3.5
3. Foreign effective short-term interest rate (level)	3.4	4.5	4.8	4.6	4.5	4.4	4.3	4.3	4.5
4. Current account (level, % of GDP)	0.2	-0.5	-0.1	0.3	0.4	0.4	0.3	-0.0	0.1
VIII. Memo items									
1. Total population	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3
2. Working-age population (% of total population)	66.8	66.8	66.7	66.6	66.5	66.4	66.3	66.1	66.5

All figures are year-on-year average growth rates, unless otherwise noted.

The euro area includes Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

Exports and imports: consolidated trade flows.

The real effective exchange rate of the area is defined here as the ratio of the area's foreign effective output price to its export price, measured in the area's own currency.

Detailed World Area Tables - The Western Non-Euro EU Member States

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Private consumption	1.9	2.1	2.0	2.7	2.9	2.9	2.7	2.4	2.5
2. Government consumption	2.5	2.5	2.9	3.7	3.7	3.4	3.2	3.1	3.2
3. Gross fixed capital formation	4.4	4.1	2.4	2.3	2.3	2.3	2.1	1.8	2.5
. of which business sector	3.5	3.1	1.8	2.0	2.1	2.1	2.0	2.0	2.1
4. Exports	5.9	6.3	5.1	5.4	5.6	5.7	5.5	5.3	5.5
5. Imports	6.1	5.7	4.0	5.3	5.2	5.3	5.2	5.0	5.1
6. Gross domestic product	2.0	2.6	2.6	2.8	3.1	3.0	2.8	2.5	2.8
7. Private sector value added	1.9	2.7	2.4	2.7	2.9	2.9	2.7	2.4	2.7
8. Private sector gross output	3.1	3.5	2.9	3.4	3.6	3.6	3.4	3.2	3.4
9. Output gap (deviation of GDP from trend GDP, in %)	-1.1	-1.3	-1.0	-0.9	-0.5	0.0	0.4	0.5	-0.4
10. Contributions to real GDP growth									
a. Total domestic expenditure	2.2	2.5	2.3	2.9	3.0	3.0	2.7	2.5	2.7
b. Net exports	-0.2	0.1	0.3	-0.1	0.0	0.1	0.0	0.0	0.1
II. Deflators									
1. Private consumption	1.9	1.9	1.7	1.2	1.3	1.5	1.8	2.0	1.6
2. Gross fixed capital formation	2.1	2.2	2.0	1.6	1.3	1.1	0.9	0.8	1.4
. of which business sector	1.2	1.9	1.6	1.3	1.1	0.9	0.8	0.8	1.2
3. Exports	2.4	3.6	1.1	0.7	0.4	0.3	0.4	0.5	1.0
4. Imports	3.7	4.3	1.6	1.3	1.3	1.3	1.3	1.4	1.8
5. Gross domestic product	1.9	2.1	1.8	1.0	0.8	0.9	1.2	1.4	1.3
6. Private sector value added	1.7	1.9	1.7	1.0	0.8	0.9	1.1	1.3	1.3
7. Private sector output	2.1	2.5	1.7	1.1	1.0	1.0	1.2	1.3	1.4
III. Financial Markets									
1. Short-term interest rate (level)	4.0	4.1	4.1	3.8	3.7	3.6	3.7	3.9	3.8
2. Long-term interest rate (level)	4.2	4.1	4.1	4.1	4.0	4.0	4.0	4.1	4.1
3. Spot exchange rate, local/euro (+: depreciation)	0.8	0.6	0.3	0.5	1.0	1.2	1.2	1.1	0.8
4. Nominal effective exchange rate (+: depreciation)	2.3	0.8	-1.3	-1.3	-1.0	-0.9	-1.1	-1.4	-0.9
5. Real effective exchange rate (+: depreciation)	3.3	0.6	0.7	1.0	1.6	1.7	1.4	1.0	1.2
IV. Labour Market									
1. Labour supply	1.1	0.6	0.3	0.5	0.4	0.3	0.2	0.1	0.4
2. Employment	0.9	0.5	0.5	0.8	0.7	0.3	0.1	-0.0	0.4
. of which private sector	1.0	0.5	0.5	0.9	0.7	0.4	0.1	-0.0	0.4
3. Unemployment rate (level, % of civilian labour force)	5.2	5.3	5.1	4.9	4.7	4.7	4.8	4.9	4.9
4. Nominal wage rate, private sector	3.9	3.9	3.2	3.3	4.0	4.8	4.9	4.5	4.1
5. Real take-home wage rate, private sector	0.9	1.1	1.2	2.0	2.7	3.3	3.1	2.5	2.3
6. Real producer wage rate, private sector	1.4	1.1	1.6	2.2	3.1	3.8	3.7	3.2	2.7
7. Labour productivity (GDP per worker)	1.1	2.1	2.1	2.0	2.4	2.7	2.7	2.5	2.3
V. Household sector									
1. Total real means	2.1	2.4	2.2	2.6	2.3	2.0	1.8	1.6	2.1
. of which real disposable income	2.0	2.3	2.2	3.0	3.2	3.4	3.2	2.8	2.9
2. Net saving by households (level, % of disposable income)	0.3	0.4	0.6	0.9	1.3	1.9	2.5	3.0	1.5
VI. Fiscal sector									
1. Net lending (+) or borrowing (-) (% of GDP)	-1.9	-1.7	-1.8	-1.6	-1.4	-1.2	-1.1	-1.3	-1.4
2. Government gross debt (% of GDP)	43.7	43.8	43.7	43.7	43.5	43.0	42.5	42.1	43.2
VII. International environment									
1. Foreign effective output	4.2	4.6	3.6	3.8	3.8	3.8	3.6	3.6	3.8
2. Foreign effective output price	3.4	3.4	3.1	3.0	3.0	3.0	3.0	2.9	3.1
3. Foreign effective short-term interest rate (level)	2.7	3.9	4.1	4.1	4.1	4.2	4.2	4.2	4.1
4. Current account (level, % of GDP)	-1.0	-1.5	-1.5	-1.8	-2.1	-2.4	-2.7	-3.0	-2.1
VIII. Memo items									
1. Total population	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
2. Working-age population (% of total population)	66.0	66.2	66.4	66.6	66.6	66.6	66.5	66.3	66.5

All figures are year-on-year average growth rates, unless otherwise noted.

The "Western non-euro EU Member States" includes Denmark, Sweden and the United Kingdom.

Exports and imports: consolidated trade flows.

The real effective exchange rate of the area is defined here as the ratio of the area's foreign effective output price to its export price, measured in the area's own currency.

Detailed World Area Tables - The United States

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Private consumption	3.5	2.9	2.5	2.9	2.6	2.5	1.5	2.2	2.5
2. Government consumption	1.5	1.9	2.4	3.3	3.8	3.6	3.2	2.7	3.0
3. Gross fixed capital formation	7.4	5.3	4.5	1.9	3.0	3.0	2.5	2.7	3.3
. of which business sector	8.2	6.6	6.1	1.7	3.6	3.6	3.4	3.2	4.0
4. Exports	6.9	9.2	6.1	5.7	6.1	6.2	6.2	6.1	6.5
5. Imports	6.3	8.1	4.4	5.0	5.3	5.4	4.8	5.2	5.4
6. Gross domestic product	3.5	3.2	3.0	2.7	2.8	2.7	2.0	2.3	2.7
7. Private sector value added	3.5	3.7	3.2	2.5	2.6	2.5	1.7	2.2	2.6
8. Private sector gross output	3.9	4.4	3.3	2.9	3.0	3.0	2.3	2.8	3.1
9. Output gap (deviation of GDP from trend GDP, in %)	0.2	0.3	0.7	0.6	0.6	0.5	0.2	0.1	0.4
10. Contributions to real GDP growth									
a. Total domestic expenditure	3.9	3.6	3.0	2.9	3.0	2.9	2.1	2.5	2.9
b. Net exports	-0.3	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2
II. Deflators									
1. Private consumption	2.8	2.3	2.2	1.9	1.9	1.9	1.9	1.8	2.0
2. Gross fixed capital formation	3.3	3.9	4.2	3.9	3.3	2.9	2.6	2.4	3.3
. of which business sector	2.5	3.8	4.6	4.4	3.9	3.5	3.3	3.1	3.8
3. Exports	3.7	2.5	1.5	0.9	0.5	0.5	0.5	0.5	1.0
4. Imports	6.1	4.3	2.1	1.4	1.4	1.5	1.6	1.6	2.0
5. Gross domestic product	2.8	2.4	2.8	2.0	1.8	1.7	1.7	1.8	2.0
6. Private sector value added	3.0	2.1	2.8	2.2	2.0	1.9	1.8	1.8	2.1
7. Private sector output	3.5	2.4	2.7	2.1	1.9	1.8	1.8	1.7	2.0
III. Financial Markets									
1. Short-term interest rate (level)	3.6	5.2	5.3	5.0	4.8	4.6	4.4	4.2	4.8
2. Long-term interest rate (level)	4.3	5.0	5.0	4.9	4.8	4.8	4.7	4.6	4.8
3. Spot exchange rate, local/euro (level x 100)	124.4	125.1	125.1	125.0	125.1	125.6	126.4	127.6	125.7
4. Spot exchange rate, local/euro (+: depreciation)	0.0	0.6	-0.0	-0.1	0.1	0.4	0.7	0.9	0.4
5. Nominal effective exchange rate (+: depreciation)	2.0	0.7	-2.8	-3.0	-2.9	-2.7	-2.5	-2.4	-2.2
6. Real effective exchange rate (+: depreciation)	2.1	2.1	-0.6	-0.2	0.2	0.5	0.6	0.7	0.5
IV. Labour Market									
1. Labour supply	1.3	1.1	0.7	0.9	1.0	1.0	0.9	0.7	0.9
2. Employment	1.8	1.4	0.9	0.7	0.7	0.6	-0.2	0.2	0.6
. of which private sector	1.8	1.4	0.9	0.7	0.7	0.5	-0.4	0.1	0.6
3. Unemployment rate (level, % of civilian labour force)	5.1	4.8	4.6	4.8	5.0	5.3	6.4	6.9	5.4
4. Nominal wage rate, private sector	4.9	4.0	4.7	4.3	4.2	4.1	4.6	4.2	4.3
5. Real take-home wage rate, private sector	0.2	1.7	1.8	2.0	1.8	1.8	0.9	1.4	1.6
6. Real producer wage rate, private sector	1.2	1.4	2.0	2.2	2.2	2.3	2.8	2.4	2.2
7. Labour productivity (GDP per worker)	1.7	1.8	2.0	1.9	2.1	2.1	2.1	2.1	2.0
V. Household sector									
1. Total real means	2.0	3.7	2.6	2.6	2.4	2.3	1.8	2.1	2.5
. of which real disposable income	2.3	3.3	3.1	3.4	3.2	3.1	2.1	2.8	3.0
2. Net saving by households (level, % of disposable income)	1.9	2.3	2.9	3.5	4.1	4.8	5.3	5.9	4.1
VI. Fiscal sector									
Net lending (+) or borrowing (-) (% of GDP)	-3.8	-4.1	-3.7	-3.6	-3.5	-3.5	-3.0	-3.0	-3.5
VII. International environment									
1. Foreign effective output	5.1	5.3	4.0	4.4	4.4	4.3	4.2	4.1	4.4
2. Foreign effective output price	3.8	3.9	3.8	3.8	3.8	3.7	3.7	3.7	3.8
3. Foreign effective short-term interest rate (level)	2.4	3.6	4.0	4.1	4.1	4.2	4.2	4.1	4.0
4. Current account (level, % of GDP)	-6.3	-7.1	-6.9	-6.9	-7.1	-7.2	-7.4	-7.6	-7.2
VIII. Memo items									
1. Total population	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
2. Working-age population (% of total population)	67.0	67.0	67.1	67.0	66.9	66.8	66.7	66.3	66.8

All figures are year-on-year average growth rates, unless otherwise noted.

The real effective exchange rate of the country is defined here as the ratio of the country's foreign effective output price to its export price, measured in the country's own currency.

Detailed World Area Tables - Japan

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Private consumption	2.2	2.2	2.0	1.9	1.6	1.3	1.0	0.6	1.5
2. Government consumption	1.7	0.9	0.2	1.5	1.4	1.5	2.1	2.3	1.4
3. Gross fixed capital formation	3.3	3.9	3.6	3.6	3.0	2.3	1.9	1.6	2.9
. of which business sector	7.5	7.0	4.5	3.3	3.0	2.6	2.3	2.2	3.6
4. Exports	6.9	10.0	8.1	6.8	5.0	3.3	1.8	1.4	5.2
5. Imports	6.2	8.1	2.6	2.7	3.2	3.7	4.2	3.8	4.0
6. Gross domestic product	2.7	2.8	3.0	2.9	2.3	1.6	1.2	0.9	2.1
7. Private sector value added	2.8	3.0	3.5	3.1	2.4	1.6	1.1	0.7	2.2
8. Private sector gross output	3.2	3.5	3.4	3.1	2.5	1.9	1.4	1.1	2.4
9. Output gap (deviation of GDP from trend GDP, in %)	0.3	0.6	1.4	2.3	2.9	2.7	2.1	1.7	2.0
10. Contributions to real GDP growth									
a. Total domestic expenditure	2.5	2.2	2.1	2.2	1.8	1.5	1.4	1.1	1.8
b. Net exports	0.3	0.5	0.9	0.7	0.4	0.1	-0.2	-0.2	0.3
II. Deflators									
1. Private consumption	-0.8	0.5	0.8	1.4	1.8	2.0	2.0	2.0	1.5
2. Gross fixed capital formation	-0.3	-0.0	0.3	0.4	0.4	0.5	0.5	0.5	0.4
. of which business sector	-0.5	-0.1	0.1	0.3	0.4	0.4	0.5	0.5	0.3
3. Exports	1.4	5.8	3.5	4.0	3.4	2.0	0.3	-1.3	2.5
4. Imports	7.9	9.4	3.7	1.3	0.8	0.5	0.3	0.1	2.3
5. Gross domestic product	-1.3	-0.3	0.8	1.6	1.8	1.7	1.3	1.0	1.1
6. Private sector value added	-1.4	-0.4	0.7	1.8	1.9	1.8	1.4	1.0	1.2
7. Private sector output	-0.3	1.0	1.1	1.7	1.8	1.6	1.3	0.9	1.4
III. Financial Markets									
1. Short-term interest rate (level)	0.1	0.4	0.9	1.6	2.2	2.8	3.2	3.5	2.1
2. Long-term interest rate (level)	1.4	1.9	2.3	2.7	2.9	3.0	3.1	3.3	2.8
3. Spot exchange rate, local/euro (level)	136.8	144.0	153.1	159.0	160.6	158.5	153.5	146.9	153.7
4. Spot exchange rate, local/euro (+: depreciation)	1.8	5.2	6.3	3.9	1.0	-1.3	-3.2	-4.3	1.1
5. Nominal effective exchange rate (+: depreciation)	3.4	5.5	4.6	1.9	-1.2	-3.8	-5.9	-7.2	-0.8
6. Real effective exchange rate (+: depreciation)	6.0	3.4	4.7	1.3	-1.3	-2.6	-3.1	-2.9	-0.1
IV. Labour Market									
1. Labour supply	0.1	0.3	-0.0	-0.3	-0.4	-0.3	-0.2	-0.6	-0.2
2. Employment	0.4	0.4	0.1	-0.2	-0.5	-0.5	-0.4	-0.7	-0.3
. of which private sector	0.4	0.4	0.1	-0.2	-0.5	-0.5	-0.4	-0.7	-0.2
3. Unemployment rate (level, % of civilian labour force)	4.4	4.3	4.2	4.1	4.2	4.3	4.5	4.6	4.3
4. Nominal wage rate, private sector	0.5	0.8	3.0	3.6	3.8	3.7	3.3	2.8	3.0
5. Real take-home wage rate, private sector	0.9	-0.1	2.2	2.1	2.0	1.6	1.2	0.8	1.4
6. Real producer wage rate, private sector	0.7	-0.3	1.9	1.8	2.0	2.0	2.0	1.9	1.6
7. Labour productivity (GDP per worker)	2.3	2.4	2.9	3.2	2.7	2.1	1.6	1.6	2.3
V. Household sector									
1. Total real means	1.7	1.7	2.0	1.5	1.0	0.8	0.7	0.2	1.1
. of which real disposable income	2.0	1.9	2.0	2.1	2.0	1.8	1.6	1.3	1.8
2. Net saving by households (level, % of disposable income)	3.4	3.4	3.5	3.9	4.4	5.0	5.7	6.4	4.6
VI. Fiscal sector									
Net lending (+) or borrowing (-) (% of GDP)	-6.5	-5.8	-5.4	-5.2	-5.2	-5.2	-5.3	-5.7	-5.4
VII. International environment									
1. Foreign effective output	4.9	5.1	3.8	4.0	4.1	4.1	3.8	3.9	4.1
2. Foreign effective output price	3.9	3.6	3.6	3.3	3.3	3.2	3.2	3.2	3.4
3. Foreign effective short-term interest rate (level)	3.4	4.8	4.9	4.6	4.5	4.4	4.3	4.2	4.5
4. Current account (level, % of GDP)	3.6	3.5	4.2	5.1	5.7	5.9	5.4	4.6	4.9
VIII. Memo items									
1. Total population	-0.1	-0.1	-0.1	-0.0	-0.1	-0.1	-0.1	-0.2	-0.1
2. Working-age population (% of total population)	66.2	66.0	65.9	65.4	64.9	64.7	64.6	63.9	65.1

All figures are year-on-year average growth rates, unless otherwise noted.

The real effective exchange rate of the country is defined here as the ratio of the country's foreign effective output price to its export price, measured in the country's own currency.

Detailed World Area Tables - The Eastern Non-Euro EU Member States

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Private consumption	4.6	4.8	4.2	4.2	4.2	4.2	4.2	4.2	4.3
2. Gross fixed capital formation	8.3	8.8	7.5	7.5	7.5	7.5	7.5	7.5	7.7
3. Exports	9.8	10.0	9.8	10.7	10.8	10.7	10.3	10.1	10.3
4. Imports	7.4	9.8	10.4	11.1	11.2	11.1	10.7	10.6	10.7
5. Gross domestic product	6.0	5.3	4.2	4.2	4.2	4.2	4.2	4.2	4.4
II. Deflators									
1. Private consumption	3.9	3.2	2.4	2.3	2.3	2.3	2.3	2.3	2.4
2. Gross fixed capital formation	3.9	3.7	2.2	1.9	2.0	2.0	2.0	2.0	2.3
3. Exports	-0.3	0.5	3.2	2.2	2.1	2.1	2.1	2.1	2.0
4. Imports	0.4	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
5. Gross domestic product	4.0	2.9	2.8	2.3	2.3	2.3	2.4	2.4	2.5
III. Financial variables									
1. Short-term interest rate (level)	4.0	3.8	6.7	5.8	5.8	5.9	6.1	6.3	5.8
2. Long-term interest rate (level)	4.6	4.8	6.0	5.5	5.5	5.5	5.7	5.8	5.5
3. Nominal exchange rate, local/euro (+: depreciation)	-5.4	-0.1	1.0	1.3	1.5	1.7	1.8	2.0	1.3
4. Nominal exchange rate, local/$US (+: depreciation)	-5.5	-0.7	1.0	1.4	1.4	1.3	1.2	1.0	0.9
5. Nominal effective exchange rate (+: depreciation)	-4.3	0.2	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
6. Real effective exchange rate (+: depreciation)	-0.9	2.9	-0.7	0.3	0.3	0.3	0.3	0.3	0.5
IV. International environment									
1. Foreign effective output	3.9	4.3	3.4	3.7	3.8	3.7	3.6	3.5	3.7
2. Foreign effective output price	3.2	3.3	2.9	2.8	2.8	2.8	2.8	2.8	2.9
3. Foreign effective short-term interest rate (level)	2.8	3.9	4.0	3.9	4.0	4.0	4.1	4.2	4.0
4. Current account (level, % of GDP)	-2.8	-3.3	-3.1	-3.4	-3.8	-4.2	-4.7	-5.2	-4.0

All figures are year-on-year average growth rates, unless otherwise noted.

The “Eastern non-euro EU Member States” comprise Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia, plus Bulgaria and Romania.

Exports and imports: consolidated trade flows.

The real effective exchange rate of the area is defined here as the ratio of the area’s foreign effective output price to its export price, measured in the area’s own currency.

Detailed World Area Tables - The Rest of the World

	2005	2006	2007	2008	2009	2010	2011	2012	Average 2006-2012
I. Aggregate demand and supply									
1. Gross output	6.5	6.4	4.6	5.1	5.3	5.3	5.2	5.1	5.3
2. Exports	5.9	7.4	4.4	4.6	5.0	5.7	6.1	6.4	5.7
3. Imports	5.4	7.9	7.9	6.3	5.8	5.7	5.6	5.6	6.4
II. Deflators									
1. Output	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
2. Exports, in euro	5.0	3.8	3.2	3.1	2.7	1.9	1.3	0.8	2.4
3. Imports, in euro	-0.3	-0.4	2.7	3.6	2.8	1.6	0.6	-0.2	1.5
4. Price of oil (Brent, $US/bbl)	54.5	71.2	78.4	76.5	74.2	72.5	71.1	70.0	73.4
III. Financial variables									
1. Nominal exchange rate, local/euro (+: depreciation)	-3.2	-1.0	3.5	4.0	4.5	4.9	5.4	5.8	3.9
2. Nominal exchange rate, local/$US (+: depreciation)	-3.2	-1.6	3.5	4.1	4.4	4.5	4.7	4.8	3.5
3. Nominal effective exchange rate (+: depreciation)	-2.9	-2.0	2.4	3.3	4.0	4.7	5.3	5.8	3.4
4. Real effective exchange rate (+: depreciation)	-2.2	-2.6	-2.1	-2.0	-1.4	-0.5	0.2	0.7	-1.1
IV. International environment									
1. Foreign effective output	3.4	3.8	3.2	3.1	3.0	2.9	2.5	2.6	3.0
2. Foreign effective output price	2.4	2.2	2.0	1.7	1.7	1.6	1.6	1.5	1.8
3. Foreign effective short-term interest rate (level)	3.6	5.2	5.3	5.0	4.8	4.6	4.4	4.2	4.8

All figures are year-on-year average growth rates, unless otherwise noted.

Exports and imports: consolidated trade flows.

The real effective exchange rate of the area is defined here as the ratio of the area’s foreign effective output price to its export price, measured in the area’s own currency.

A Stochastic Appraisal of the NIME Outlook for the World Economy

This Focus presents the results of stochastic simulations implemented in the context of this issue's medium-term economic outlook for the world economy, as prepared with the NIME model. We begin by addressing the question of the model's intrinsic risk structure; we then present stochastic results for the medium-term projections of the euro area, the Western non-euro EU Member States, the United States and Japan.

Introduction

The basic results of the NIME model's world economic projections are presented in the form of point projections for each relevant variable. The presentation of such point projections are related to the way the NIME model is simulated in view of producing projections. Indeed, the baseline projection of the NEO is the outcome of a deterministic simulation whereby the values of the error terms of the NIME model's behavioural equations are assumed to be zero, while the values of the model's exogenous variables are set to predetermined levels. This baseline is thus associated with a specific set of underlying assumptions and, as such, it constitutes only one of many possible baseline projections. As a projection's results are conditional on the underlying assumptions, the choice of these assumptions should ideally be presented in the most transparent possible manner.

One approach that allows great transparency as to the underlying assumptions while avoiding that the model user's own a priori beliefs condition forecast or projection results is to produce macroeconomic forecasts and projections through stochastic simulation. Repeated random drawings for the values of equations' error terms and for exogenous variables of the model, followed by simulation, yield what are commonly referred to as stochastic outcomes. These stochastic outcomes then allow for the computation of confidence intervals as well as for the computation of the probabilities of occurrence of specific events.

In section two of the Focus, we briefly present the types of risks associated with the preparation of the NIME Economic Outlook. The risks relate to the error terms of the model's behavioural equations and to the model's exogenous variables[1].

In the following four sections, we present a stochastic appraisal of this issue's medium-term economic outlook for the euro area, the Western non-euro EU Member States, the United States and Japan. The stochastic evaluation covers only the 2007-2012 period as the outlook's results for 2006 are largely conditional on the European Commission's 2006 Spring Forecast.

The underlying risk structure of the NIME model

The significant advances in the power of computers since the early 1990s now make it feasible to perform stochastic simulation with even relatively large macroeconometric models. Stochastic simulation is thus increasingly used to generate forecasts and projections in the form of a central baseline surrounded by confidence intervals; to gauge the probabilities of the occurrence of specific outcomes; and to analyse the effectiveness of policy rules in stochastic environments. Indeed, though point forecasts may be useful, the apparent simplicity of such results can veil the crucial role played by exogenous assumptions and the potential effects of risks. Risks can be related, for instance, to the misspecification of a model's behavioural equations; to the values of the behavioural equations' error terms; and to estimated parameter values. Furthermore, risks also stem from the fact that, due to lags in data availability and measurement errors, the economy's current real-time situation is known only imprecisely.

This Focus presents stochastic simulation results in which we evaluate only the risks relating to the error terms of the NIME model's behavioural equations and the risks surrounding the model's exogenous variables. Though risks also clearly exist around the NIME model's estimated parameter values, the basic assumption under which the model has been estimated implies that these estimated coefficients should in this case be treated as fixed. Note also that the stochastic simulations presented here do not allow us to evaluate risks associated with regime changes.

1. A more detailed presentation of the methodology behind the stochastic simulation of the NIME model can be found in Meyermans and Van Brusselen (2006.b).

Stochastic results for the euro area

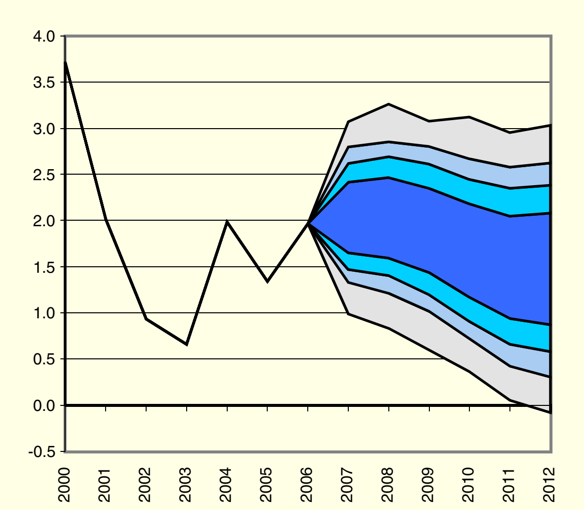
The NEO's baseline projection indicates that GDP growth in 2007 will come out at 2 per cent, matching the rate of growth currently expected for 2006. However, stochastic simulation reveals that the 95 per cent confidence interval for GDP growth lies between 1.3 and 2.8 per cent in 2007. Hence, the 95 per cent confidence interval indicates that growth in 2007 should fall within an interval of about 0.7 percentage point around the 2 per cent mark. Further inspection of the stochastic simulation results show that there is only a 45.5 per cent probability that euro area growth will come out lower in 2007 than in 2006. Moreover, the stochastic simulation results reveal that there is an 85.3 per cent probability of the euro area's GDP growth turning out higher than 1.6 per cent, which is the estimate of the area's potential rate of growth for 2007. Looking forward, the stochastic results show that the lower 95 per cent growth bound slips from 1.3 per cent in 2007 to just 0.3 per cent in 2012 while the lower 99 per cent bound comes out negative in 2012. In this light, the area's growth prospects appear to be relatively fragile with growth very likely to decline over the projection period.

The NEO's baseline projection indicates that consumer price inflation should wane in the first years of the projection period, effectively slipping from 2.1 per cent in 2006 to 1.7 per cent in 2007 and to 1.5 per cent in 2008. The expected reduction in inflationary pressures is relatively significant and the probability of consumer price inflation coming out above the European Central Bank's 2 per cent ceiling in 2007 is estimated at only 19.3 per cent. However, in the medium-term, the potential for higher inflationary pressures remains entrenched as the probability of inflation coming out consistently below the 2 per cent mark over the entire 2007-2012 period is just 19.2 per cent.

The baseline projection indicates that the nominal short-term interest rate should gradually rise over the projection horizon, reacting to the rise in euro area inflation. In the baseline, the euro area short-term interest rate comes out at 3.1 per cent in 2007, unchanged compared to 2006. Stochastic simulation reveals that the probability of the area's short-term interest rate coming out at least 25 basis points higher in 2007 is 16.8 per cent. The probability of a rise of at least 50 basis points in 2007 falls to just 0.9 per cent, indicating a relatively low risk of any significant short-term interest rate increases.

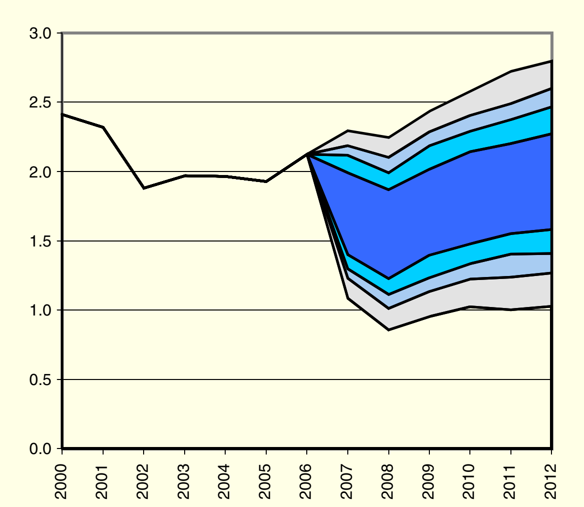
Fan Chart 1 - Euro area: real GDP growth

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



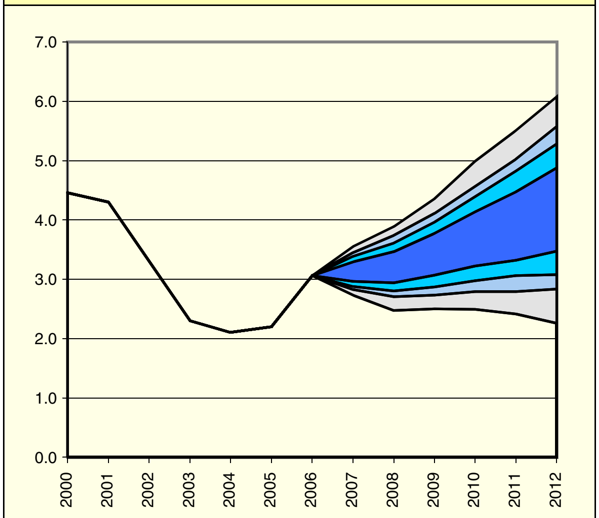
Fan Chart 2 - Euro area: consumer price inflation

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



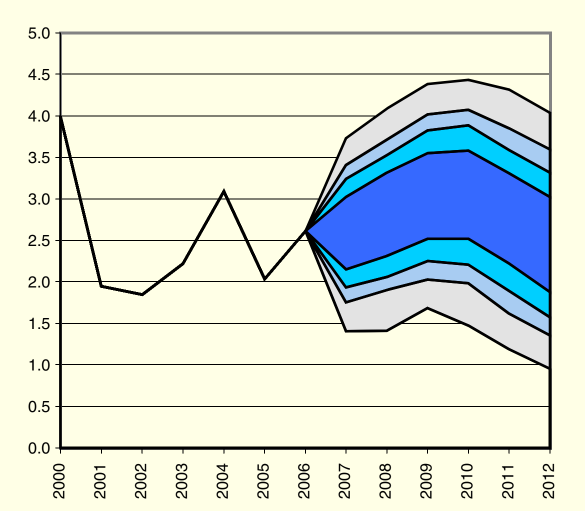
Fan Chart 3 - Euro area: short-term interest rates

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



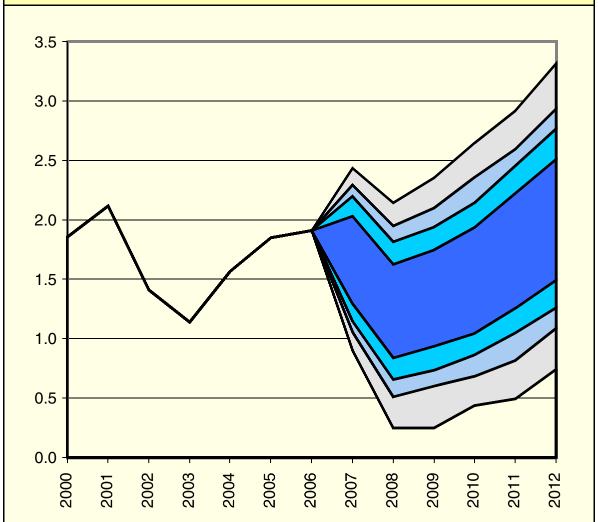
Fan Chart 4 - Western non-euro EU Member States: real GDP growth

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



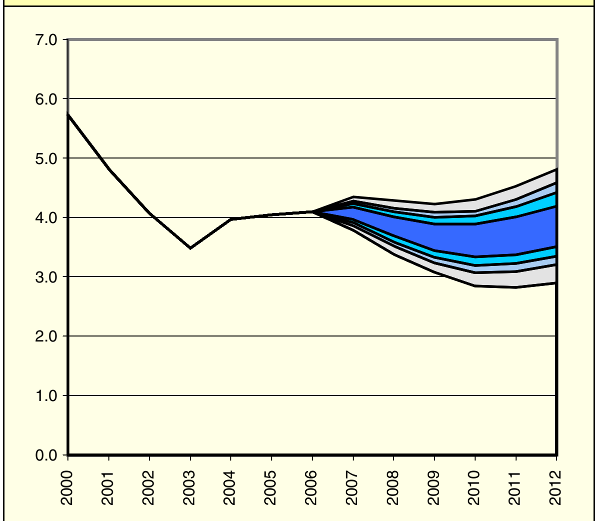
Fan Chart 5 - Western non-euro EU Member States: consumer price inflation

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



Fan Chart 6 - Western non-euro EU Member States: short-term interest rates

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



Stochastic results for the Western non-euro EU Member States

The NEO's baseline projection indicates that GDP growth of the Western non-euro EU Member States will come out at 2.6 per cent in 2007. However, stochastic simulation reveals that this point projection is surrounded by a 95 per cent confidence interval whose lower and upper bounds in 2007 are 1.8 and 3.4 per cent, respectively. The simulation results show that the probability of growth in 2007 falling below that of 2006 is 54.1 per cent, indicating a roughly balanced risk on growth. The stochastic simulation results also indicate that there is a 65.5 per cent probability of GDP growth in 2007 turning out higher than the potential growth estimate of 2.3 per cent for 2007. The upper bound of the 95 per cent confidence interval rises to 4.1 per cent in 2010 before falling back to 3.6 per cent at the end of the projection horizon; the confidence interval's lower bound never exceeds 2 per cent and falls to just 1.4 per cent in 2012. In this light, the area's growth prospects appear to be modest.

This outlook's baseline projection is for the rate of consumer price inflation of the area to decline from 1.9 per cent in 2006 to 1.7 per cent in 2007 and 1.2 per cent in 2008. The stochastic results indicate clearly that the risk of inflation settling at a rate above the 2 per cent mark in 2007 is just 22.2 per cent. Inflationary pressures rise as of 2009, pushing the rate of inflation up to 2 per cent in 2012. The upper 95 per cent confidence bound increases from 1.9 per cent in 2008 to 2.9 per cent in 2012; at the same time, the lower bound shifts from 0.5 per cent in 2008 to 1.1 per cent in 2012. These trends indicate that though inflation should remain well contained, a slight upward drift is possible over the medium term. The probability of inflation coming out consistently above 2 per cent between 2007 and 2012 is a relatively high 76.2 per cent.

The confidence intervals around the area's nominal short-term interest rate indicate that the risk surrounding the short-term rate will most likely be drifting upward over the medium term. The baseline projection is for the short-term rate to reach 3.9 per cent in 2012, with an upper 95 per cent confidence bound at 4.6 per cent. The probability of the short-term rate rising by at least 25 basis points above the 2006 level of 4.1 per cent is only a marginal 1.1 per cent for 2007; though this probability rises somewhat over the projection period, it reaches only 13.4 per cent for 2012.

Stochastic results for the United States

In this outlook's baseline projection, US GDP growth is expected to edge down a notch from 3.2 per cent in 2006 to an even 3 per cent in 2007 as domestic demand is adversely affected by rising interest rates and tax rates[1] and as net exports continue to trim overall growth on the back of a further nominal effective appreciation of the dollar. However, the stochastic simulation reveals that the probability of growth coming out above its potential growth rate of 2.5 per cent in 2007 is approximately 84.2 per cent. Though growth is expected to decline slightly in 2007, the upper 95 per cent confidence bound lies at 3.7 per cent, indicating potential for upward revision. Real GDP growth declines to just 2 per cent in 2011 before rebounding to 2.3 per cent in 2012. The upper bound for growth also falls, coming out at just 2.8 per cent in 2011 before rising to 3.2 per cent in 2012. The projection's lower 95 per cent bound for US GDP growth drops to just 1.1 per cent in 2011. The decline in growth comes mainly on the back of the expiration of a series of tax cut provisions.

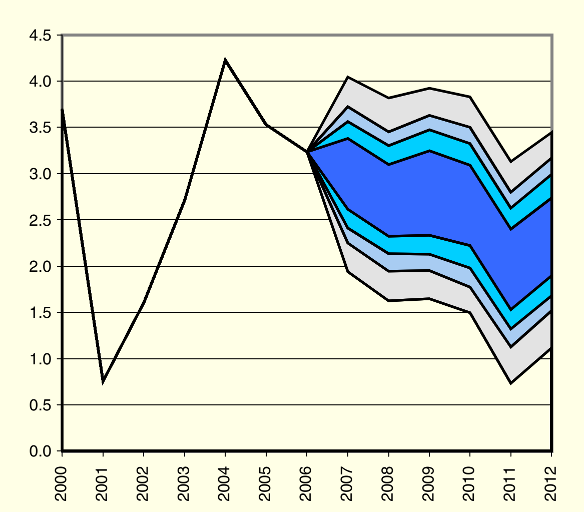
Consumer price inflation is expected to decline from 2.3 per cent in 2006 to 2.2 per cent in 2007. The probability of inflation coming out above 2 per cent in 2007 is estimated at 82.1 per cent. The 95 per cent confidence interval around the rate of inflation lies between 1.9 and 2.5 per cent in 2007; the lower bound then falls to an average of 1.5 per cent between 2008 and 2012 while the upper bound remains level around 2.3 per cent over the same period. These evolutions indicate that monetary and fiscal policies should succeed in gradually bringing aggregate demand growth into line with the evolution of potential output growth.

This outlook's baseline projection is for the US nominal short-term interest rate to rise from 5.2 per cent in 2006 to 5.3 per cent in 2007 and then to decline to 4.2 per cent in 2012. Stochastic simulation indicates that the probability of the short-term interest rate increasing in 2007 by at least 25 basis points above its 5.2 per cent level of 2006 is only 9 per cent; the probability of a 25 basis point rate hike then declines to approximately nil by 2012. The declining confidence intervals indicate that a decline in the US short-term interest rate will become increasingly likely over the medium term.

1. The stochastic simulation does not consider tax policy - and particularly changes in tax rates - to be a random event to which we must attribute a probability distribution. Hence, all probabilities discussed in this section are conditional on an exogenous fiscal framework.

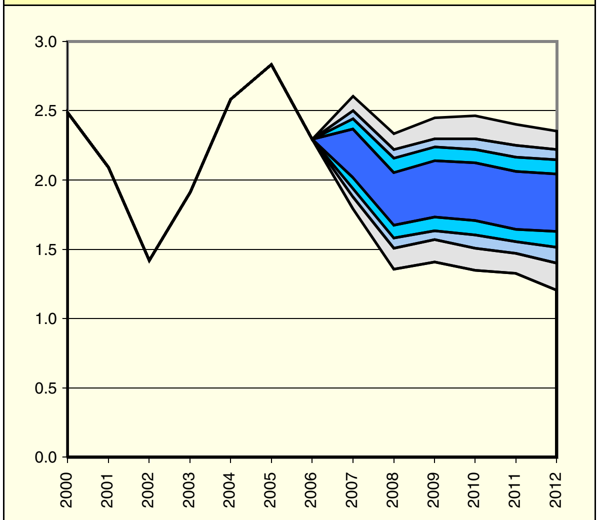
Fan Chart 7 - US: real GDP growth

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



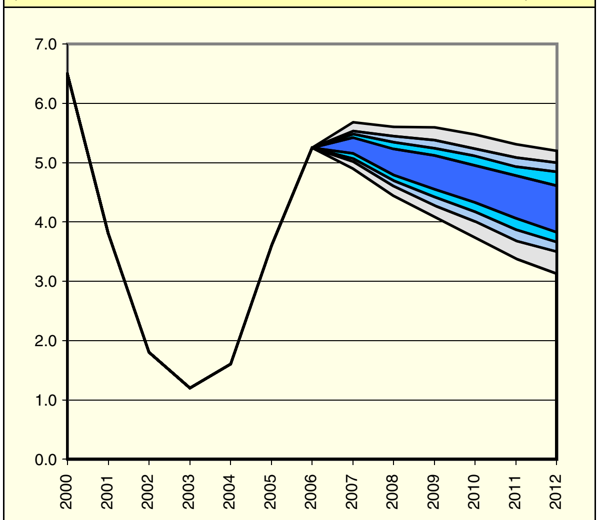
Fan Chart 8 - US: consumer price inflation

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



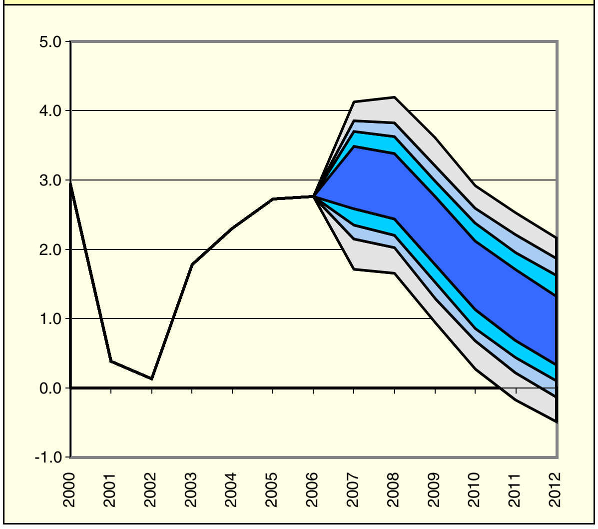
Fan Chart 9 - US: short-term interest rates

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



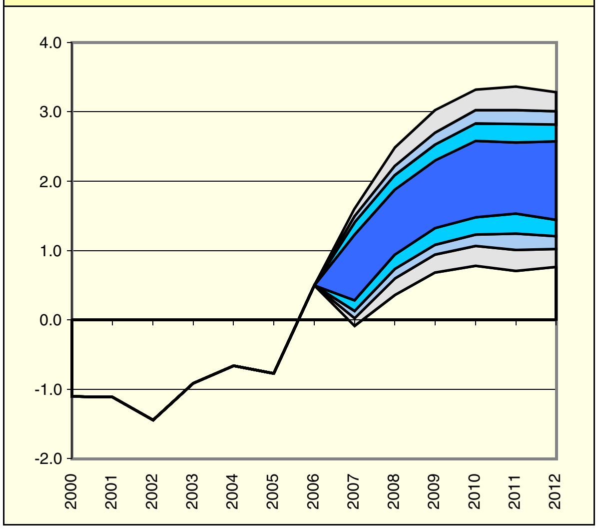
Fan Chart 10 - Japan: real GDP growth

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



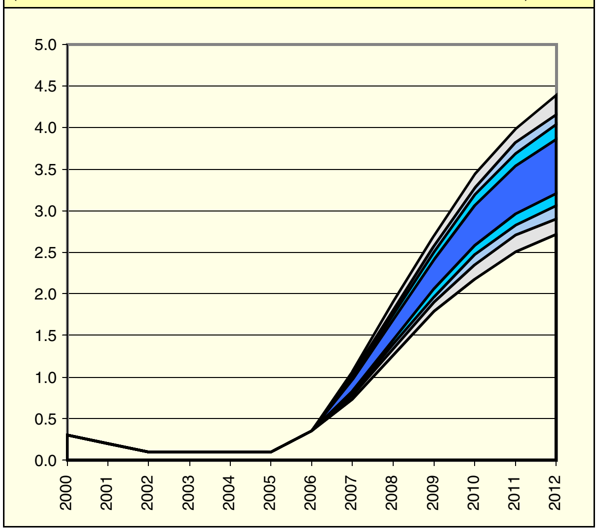
Fan Chart 11 - Japan: consumer price inflation

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



Fan Chart 12 - Japan: short-term interest rates

(external band: 99% confidence interval; internal bands: 95%, 90%, 80%)



Stochastic results for Japan

This outlook's baseline projection indicates that Japanese real GDP growth should pick up from 2.8 per cent in 2006 to 3 per cent in 2007. The 95 per cent confidence interval around GDP growth for 2007 lies between 2.1 and 3.9 per cent. The country's economy will most likely expand at an above-trend rate as there is a 94.3 per cent probability of growth in 2007 coming out above the economy's potential growth rate of 2.2 per cent for 2007. Japan's economic growth looks set to weaken considerably over the rest of the projection period. Indeed, growth should decline steadily to just 0.9 per cent in 2012. The 95 per cent confidence interval around Japan's GDP growth remains relatively stable around the baseline projection. The combined decline in the baseline projection for GDP growth and the stable confidence bounds push the lower bound of the 95 per cent confidence interval to a value of -0.1 per cent in 2012, highlighting the risk that Japan's ageing population will gradually increase the vulnerability of Japan's economy to periods of negative growth.

The baseline's point projection results for Japanese consumer price inflation are based on the assumption that Japan effectively moves out of deflation in 2006; consumer price inflation should come out at a positive 0.8 per cent in 2007 and rise to 2 per cent toward the end of the projection. Only the lower bound of the 99 per cent confidence interval remains negative for 2007, indicating a remote 3.8 per cent probability of deflation in 2007. The lower bounds of both the 95 and 99 per cent confidence intervals come out around 1 per cent toward the end of the projection horizon. The stochastic results further indicate that the probability of inflation remaining below 2 per cent throughout the 2007-2012 period is no greater than 9.4 per cent.

In 2006, Japan's nominal short-term interest rate is expected to rise from its zero bound, coming out at a year average level of 0.4 per cent. The short-term rate is then projected to pursue its rise, moving to 0.9 per cent in 2007 before rising to 3.5 per cent in 2012. The probability of the short-term rate coming out in 2007 at least 50 basis points higher than in 2006 is 74.7 per cent. The lower and upper bounds of the confidence intervals around the Japanese short-term rate follow quite closely the rise in the baseline point projections; this leads to a probability of approximately 100 per cent of the short-term rate in 2012 rising at least 100 basis points above the 0.4 per cent rate of 2006.

95% confidence intervals for selected variables of the outlook (variables in growth rates)

		2007	2008	2009	2010	2011	2012
The euro area							
	Upper bound	2.8	2.9	2.8	2.7	2.6	2.6
- Gross domestic product	Sample mean	2.0	2.0	1.9	1.7	1.5	1.4
	Lower bound	1.3	1.2	1.0	0.7	0.4	0.3
	Upper bound	2.2	2.1	2.3	2.4	2.5	2.6
- Deflator of private consumption	Sample mean	1.7	1.5	1.7	1.8	1.9	1.9
	Lower bound	1.2	1.0	1.1	1.2	1.2	1.3
	Upper bound	3.4	3.7	4.1	4.6	5.0	5.6
- Nominal short-term interest rate	Sample mean	3.1	3.2	3.4	3.7	3.9	4.2
	Lower bound	2.8	2.7	2.7	2.8	2.8	2.8
The Western non-euro EU Member States							
	Upper bound	3.4	3.7	4.0	4.1	3.8	3.6
- Gross domestic product	Sample mean	2.6	2.8	3.1	3.0	2.8	2.5
	Lower bound	1.8	1.9	2.0	2.0	1.6	1.4
	Upper bound	2.3	1.9	2.1	2.4	2.6	2.9
- Deflator of private consumption	Sample mean	1.7	1.2	1.3	1.5	1.8	2.0
	Lower bound	1.1	0.5	0.6	0.7	0.8	1.1
	Upper bound	4.3	4.2	4.1	4.1	4.3	4.6
- Nominal short-term interest rate	Sample mean	4.1	3.8	3.7	3.6	3.7	3.9
	Lower bound	3.9	3.5	3.2	3.1	3.1	3.2
The United States							
	Upper bound	3.7	3.5	3.6	3.5	2.8	3.2
- Gross domestic product	Sample mean	3.0	2.7	2.8	2.7	2.0	2.3
	Lower bound	2.2	1.9	2.0	1.8	1.1	1.5
	Upper bound	2.5	2.2	2.3	2.3	2.3	2.2
- Deflator of private consumption	Sample mean	2.2	1.9	1.9	1.9	1.9	1.8
	Lower bound	1.9	1.5	1.6	1.5	1.5	1.4
	Upper bound	5.5	5.4	5.4	5.2	5.1	5.0
- Nominal short-term interest rate	Sample mean	5.3	5.0	4.8	4.6	4.4	4.2
	Lower bound	5.0	4.6	4.3	4.0	3.7	3.5
Japan							
	Upper bound	3.9	3.8	3.2	2.6	2.2	1.9
- Gross domestic product	Sample mean	3.0	2.9	2.3	1.6	1.2	0.9
	Lower bound	2.1	2.0	1.3	0.7	0.2	-0.1
	Upper bound	1.5	2.2	2.7	3.0	3.0	3.0
- Deflator of private consumption	Sample mean	0.8	1.4	1.8	2.0	2.0	2.0
	Lower bound	0.0	0.6	0.9	1.1	1.0	1.0
	Upper bound	1.0	1.8	2.6	3.3	3.8	4.2
- Nominal short-term interest rate	Sample mean	0.9	1.6	2.2	2.8	3.2	3.5
	Lower bound	0.8	1.3	1.9	2.4	2.7	2.9

Selected event probabilities in the outlook

	Probability score (*in %*)
Euro area	
GDP growth rate lower in 2007 than in 2006	45.5
Effective GDP growth rate in 2007 higher than potential GDP growth rate (1.6%) in 2007	85.3
Consumer price inflation rate above 2% in 2007	19.3
Consumer price inflation remains below the ECB's 2% threshold throughout 2007-2012	19.2
Nominal short-term interest rate in 2007 at least 25 basis points higher than the rate in 2006	16.8
Nominal short-term interest rate in 2007 at least 50 basis points higher than the rate in 2006	0.9
The Western non-euro EU Member States	
GDP growth rate lower in 2007 than in 2006	54.1
Effective GDP growth rate in 2007 higher than potential GDP growth rate (2.3%) in 2007	65.5
Consumer price inflation rate above 2% in 2007	22.2
Consumer price inflation above 2% throughout 2007-2012	23.8
Nominal short-term interest rate in 2007 at least 25 basis points higher than the rate in 2006	1.1
Nominal short-term interest rate in 2012 at least 25 basis points higher than the rate in 2006	13.4
The United States	
GDP growth rate lower in 2007 than in 2006	69.3
Effective GDP growth rate in 2007 higher than potential GDP growth rate (2.5%) in 2007	84.2
Consumer price inflation rate above 2% in 2007	82.1
Consumer price inflation above 2% throughout 2007-2012	96.1
Nominal short-term interest rate in 2007 at least 25 basis points higher than the rate in 2006	9.0
Nominal short-term interest rate in 2012 at least 25 basis points higher than the rate in 2006	0.0
Japan	
GDP growth rate lower in 2007 than in 2006	30.3
Effective GDP growth rate in 2007 higher than potential GDP growth rate (2.2%) in 2007	94.3
Consumer price inflation rate negative in 2007	3.8
Consumer price inflation below 2% throughout 2007-2012	9.4
Nominal short-term interest rate in 2007 at least 50 basis points higher than the rate in 2006	74.7
Nominal short-term interest rate in 2012 at least 100 basis points higher than the rate in 2006	100.0

Underlying Technical Assumptions of the 2006-2012 NIME Economic Outlook

The August 2006 NEO is produced with a version of the NIME model which is based on data from the most recent AMECO database of the European Commission, data from the Direction of Trade Statistics and the International Financial Statistics of the International Monetary Fund, and the World Population Prospects of the United Nations as well as demographic projections from various national sources. The AMECO database[1] provides historical and estimated data for the 1970-2005 period and forecasts for 2006, as published in the European Commission's Spring 2006 Economic Forecasts.

Calibration of the projection for 2006

In mid-July 2006, we reviewed the assumptions retained in the NIME model for the year 2006 and updated the model's data for variables such as oil prices, interest rates and exchange rates, on the basis of both the latest available historical data and financial futures data. A first-run computation was made of the impact of all these changes on the overall macroeconomic conditions for 2006. Once these revised initial conditions for 2006 had been determined, the model was run to generate the projection for the entire 2006-2012 period.

Medium-term trends

The NIME model's underlying trend values, such as trend productivity growth (i.e. growth in private sector gross output per worker), the equilibrium real interest rate (i.e. the long-term nominal interest rate deflated by the consumer price index) and secular inflation (with the exception of secular inflation in Japan, which is assumed to rise gradually as of 2006), were set to their latest available estimates and maintained constant over the projection period. These estimates were obtained by applying a Hodrick-Prescott filter to the historical data. Trend values for population are based on the latest official data from national sources, from Eurostat, and from the latest 2004 revision of the United Nations' "World Population Prospects". Oil price projections are based on oil price futures as quoted in commodity markets in mid-July 2006.

The table below shows the medium-term trend values for labour productivity growth, the equilibrium real interest rate, secular inflation, population growth, labour supply growth and the price of oil. These trend values are kept constant throughout the simulation period, except for oil prices, population data.

Note that since the spring of 2005, the AMECO data updates have led to upward revisions of labour productivity measures for the US and Japan and to steady downward revisions for the euro area[2]. Note further that the trend-based projections for Japan's output gap are affected by Japan's low output growth over the 1997-2003 period.

Main medium-term trend values for the 2006-2012 World Economic Outlook

	Euro area	Western non-euro EU	United States	Japan
Labour productivity growth [a, b]	0.8	2.1	2.0	2.1
Equilibrium real interest rate	2.0	2.5	2.5	2.2
Secular inflation	1.8	1.7	2.0	1.5 [b]
Population growth [b]	0.3	0.3	0.9	-0.1
Trend labour supply growth [b]	0.6	0.4	1.0	-0.4
Price of oil (Brent, $US/bbl) [b]	73.4	73.4	73.4	73.4

[a] GDP per worker
[b] 2006-2012 average

Finally, due to the limited scope of the available data for the Eastern non-euro EU Member States, the 2007-2012 projections of this area's gross investment and public consumption are set equal to the 2003-2007 average of the values available in the latest AMECO database.

Monetary and fiscal policies

With respect to the conduct of fiscal policy, we use a constant policy assumption. However, whenever possible, the anticipated effects of existing legislation are taken into account. This is of particular relevance for the United States where, under current laws and policies, various tax cut provisions will sunset over the projection horizon[3]. With respect to monetary policy, we assume that short-term interest rates follow a Taylor rule, embedded in a partial adjustment scheme.

1. The AMECO database is available on the Commission's website. http://ec.europa.eu/economy_finance/indicators/annual_macro_economic_database/ameco_en.htm
The European Commission's *Spring 2006 Economic Forecasts* are available on the Commission's website. http://ec.europa.eu/economy_finance/publications/european_economy/forecasts_en.htm

2. Euro area trend labour productivity was estimated at 1% in the NEO of August 2005 and at 0.9% in the NEO of January 2006.
3. See the US Congressional Budget Office, "Current Budget Projections", March 2006. http://www.cbo.gov/budget/budproj.pdf

The NIME Model of the World Economy

The NIME model is a macroeconometric world model developed by economists at the Belgian Federal Planning Bureau. The model is used to make medium-term projections for the international economy, as well as to study the transmission mechanisms of economic policies and exogenous shocks.

In the current version of the NIME model, the world is divided into six blocs, i.e. the euro area, the bloc consisting of the Western non-euro EU Member States, the new Eastern non-euro EU Member States, the United States, Japan and a bloc representing the rest of the world. All of these areas are linked together through trade and financial flows. Data for the euro area is aggregated using ECU/euro exchange rates. Data for the Western and for the Eastern non-euro EU Member States are aggregated into synthetic currency units.

In all of these blocs but two, i.e. the Eastern non-euro EU Member States and the rest of the world, we distinguish a household sector, an enterprise sector, a government sector and a monetary sector. A similar set of behavioural equations and accounting identities is specified for each sector across blocs, while the parameter values of the equations are obtained using econometric techniques applied to the aggregated, annual data of the different blocs.

The household sector allocates its total available means over goods and services, real money balances, residential buildings and other assets as a function of the nominal interest rate, the real interest rate, the user cost of residential buildings and a scale variable. This scale variable consists of the household sector's assets (including bonds and residential buildings), its current income from assets, its current and expected future take-home labour income and its transfers. Error correction mechanisms and partial adjustment schemes are used to capture sluggish adjustment in household's expenditure plans. Moreover, households are liquidity-constrained in the short-run, implying that a fraction of its expenditures must be financed by disposable income.

The enterprise sector maximises its profits by hiring production factors and selling its output to final users. Gross output consists of goods for private consumption, investment and exports. There are three production factors: labour, fixed capital and intermediary imports. Error correction mechanisms and partial adjustment schemes are used to model the short-run demand for the production factors. In these demand schemes, the long-run factor demand equations are derived from a Cobb-Douglas production function with constant returns to scale.

Prices and wages are not fully flexible and clear the markets only in the long run. Moreover, country blocs are engaged in multilateral trade where importers are price setters and exporters are price takers, except for the price of oil which is determined outside the model. The (equilibrium) real wage rate is a weighted average of labour productivity and the reservation wage, while the natural rate of unemployment is determined by the gap between the take-home wage and the reservation wage of the employees.

Government income is determined by endogenous tax bases and predetermined tax rates, while its expenditures are to a large extent determined by the business cycle and trend growth. The automatic fiscal stabilisers operate on the expenditure side mainly through unemployment benefits and interest payments on government gross debt and, on the revenue side, mainly through direct wage income taxes, profit taxes, social security contributions and indirect taxes.

Short-term interest rates are set according to the Taylor principle. This implies that the monetary authorities increase (decrease) the short-term nominal interest rate more than proportionally to increases (decreases) in inflation, thus increasing (decreasing) real interest rates when inflationary pressures arise (subside). It also implies that the monetary authorities keep the short-term interest rate below (above) the equilibrium interest rate if demand is below (above) potential output. Long-term interest rates are determined by the term structure theory of interest rates. In this outlook, changes in an area's nominal effective exchange rate are determined by changes in the interest rate differential and the (expected) inflation differential. The risk premia in the financial markets are kept constant.

NIME Studies and Publications

Case studies, technical variants and outlooks

Several studies have been carried out with the NIME model[1]. Meyermans (2002.a and 2002.b) used the NIME model to investigate to what extent the working of the automatic fiscal stabilisers and monetary policy can contribute to the full realisation of potential output and price stability. Meyermans (2003) used the NIME model to assess the transmission of shocks from the United States to the euro area under alternative exchange rate policies. Meyermans (2004) studied how a cut in the social security contribution rate and an increase in the labour participation rate affect economic activity in the euro area in the medium term. Meyermans and Van Brusselen (2005.b) assessed the impact of an oil price shock on the world economy, while Meyermans and Van Brusselen (2005.d) studied the interactions between monetary policy, asset prices and economic growth in the world economy over the 1995-2004 period. Meyermans and Van Brusselen (2006.b) use stochastic simulation to assess the risks surrounding a medium-term projection for the world economy. Finally, Meyermans and Van Brusselen (2004, 2005.a, 2005.c and 2006.a) used the NIME model to produce economic outlooks for the world economy for the periods 2004-2010, 2005-2011, and 2006-2012.

Selected NIME publications

Meyermans, E. (2002.a), "Automatic Fiscal Stabilisers in the Euro Area. Simulations with the NIME Model", in Banca d'Italia (2002), The Impact of Fiscal Policy, pp. 389-416.

Meyermans, E. (2002.b), "Monetary Policy in the Euro Area. Simulations with the NIME Model", in Bayar, A. and A. Dramais (eds., CD-ROM) (2002), EcoMod2002, International Conference on Policy Modeling, Proceedings, Brussels.

Meyermans, E. (2003), "The International Transmission of Shocks. Some Selected Simulations with the NIME Model", Working Paper 9-03, Federal Planning Bureau.

Meyermans, E. (2004), "The Macro-Economic Effects of Labour Market Reforms in the European Union. Some Selected Simulations with the NIME Model", Working Paper 12-04, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2000.a), "The NIME Model: Specification and Estimation of the Demand Equations of the Household Sector", Working Paper 8-00, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2000.b), "The NIME Model: Specification and Estimation of the Enterprise Sector", Working Paper 10-00, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2001), "The NIME Model: A Macroeconometric World Model", Working Paper 3-01, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2004), "The NIME Economic Outlook for the World Economy: 2004-2010. Also in this issue: Oil Price Shocks", Working Paper 16-05, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2005.a), "The NIME Economic Outlook for the World Economy: 2005-2011. Also in this issue: The Lisbon Strategy", Working Paper 02-05, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2005.b), "The Macroeconomic Effects of an Oil Price Shock on the World Economy. A Simulation with the NIME Model", Working Paper 6-05, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2005.c), "The NIME Economic Outlook for the World Economy: 2005-2011. Focus: Monetary Policy, Asset Prices and Economic Growth", August 2005, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2005.d), "Monetary Policy, Asset Prices and Economic Growth in the World Economy over the 1995-2004 Period. A Counterfactual simulation with the NIME Model", Working Paper 17-05, Federal Planning Bureau.

Meyermans, E. and Van Brusselen, P. (2006.a), "The NIME Economic Outlook for the World Economy: 2006-2012. Focus: The macroeconomic effects of a shift from direct to indirect taxes in the euro area", January 2006, Federal Planning Bureau, Brussels.

Meyermans, E. and Van Brusselen, P. (2006.b), "An Evaluation of the Risks Surrounding the 2006-2012 NIME Economic Outlook. Illustrative Stochastic Simulations", Working Paper 2-06, Federal Planning Bureau.

1. The technical details concerning the NIME model are primarily discussed in Meyermans and Van Brusselen (2000.a, 2000.b, and 2001).