Medium-Term Prospects
for the World Economy

Period 2008-2015

Focus
The US housing market crisis

August 2008

**Federal
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Economic analyses and forecasts

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The NIME Outlook for the World Economy

Abstract of the medium-term world outlook

This August 2008 issue of the Federal Planning Bureau's medium-term prospects for the world economy presents a macroeconomic projection for the major areas of the world over the 2008-2015 period. The outlook was produced using the Belgian Federal Planning Bureau's NIME macroeconometric model of the world economy. The projection is based on data available through 14 August 2008. The main results can be summarised as follows.

In the *euro area,* the year 2007 was one of strong economic growth, despite the fallout from the North Atlantic financial crisis, the rise in world oil prices and the rapid appreciation of the euro against the US dollar. In 2008, we expect that the euro area will skirt both recession and the financial sector melt-down predicted by some pundits at the end of 2007. In our view, the main threat to growth in 2008 lies in the continued rise in the prices of energy and other basic commodities. Our baseline forecast is for real GDP to grow by a low 1.5 per cent on the year, as investment weakens due to tighter access to credit, as consumption growth declines on the back of rising inflation and as export growth is hit by a fall in foreign effective demand growth. GDP growth is projected to slow even more markedly in 2009 due to a significant negative contribution from net exports. The euro area should then see a temporary spurt in domestic demand in 2010-2011, but GDP growth should thereafter be negatively affected by a declining working-age population and by private sector capacity constraints which lead monetary authorities to raise interest rates.

Over the 2008-2015 period, GDP growth is projected to average 3 per cent per annum for the *Western non-euro EU Member States*, including the United Kingdom, Sweden and Denmark. Assuming only a temporary slowdown of activity in the third and fourth quarters of 2008, GDP growth in the *United States* is expected to reach 1.8 per cent in 2008. Real GDP growth in the US is projected to average only 2 per cent per annum over 2008-2015, slowing markedly in 2011 as a number of significant tax cut provisions expire, cutting into domestic income and demand growth. The US budget deficit should decline in 2011 and 2012 but then rise again to 3.7 per cent of GDP by 2015. The US current account should continue to post significant deficits, averaging 4.5 per cent of US GDP over the 2008-2015 period. In *Japan*, GDP growth is expected to reach 1 per cent in 2008 and fall to only 0.4 per cent in 2009. GDP is projected to rise at a low yearly average rate of 0.9 per cent over 2008-2015. Consumer price inflation should be positive as of 2008 and reach a yearly average rate of 1 per cent over 2008-2015. Japan's economic growth is projected to rapidly lose momentum as the ageing of the country's population leads to a decline in the labour supply. Japan's significant current account surplus is projected to fall off, while the government's budget deficit looks set to continue to rise over the projection period.

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Executive Summary of the August 2008 NIME Outlook for the World Economy

Introduction

This August 2008 issue of the "NIME Outlook for the World Economy" (NEO) presents readers with an outlook for the major areas of the world economy through 2015. Furthermore, we are pleased to once again provide our readers with an analytical "focus", this time featuring the US housing market.

This projection exercise builds on data from the European Commission's May 2008 AMECO database, which accompanied its Spring 2008 Economic Forecasts. The AMECO database provided us with the basic long-run macro data series on which our NIME world econometric model is estimated.

Since the inception of our world projection exercises in 2004, we have always calibrated our short-term forecasts on the Commission's most recent short-term assessments. However, recent refinements in our model simulation methodology now allow us to construct our own complete short-term scenarios. Consequently, our new forecasts for 2008 are now based on our own analysis of the data that have been released since the beginning of 2008. The cut-off date for data used in our current projection exercise is 14 August 2008.

This NEO ends with an appendix summarising the main assumptions that underlie our medium-term outlook, and with an appendix presenting the NIME model's basic structure. The differences in both the core assumptions and the estimated parameter values lead to the sometimes significant medium-term contrasts in projection results for the various areas of the world economy.

Finally, we once again draw the reader's attention to the fact that the short-term forecasts and the medium-term projections that the Federal Planning Bureau (FPB) provides for the Belgian economy do not make use of the international projection results produced with its international model. The international environments that underlie the FPB's forecasts and projections for Belgium remain exogenous and are constructed using a wide array of external data sources and expert opinions.

Outlook summary

The world economy was hit by a first wave of financial distress in May 2007, before bearing the full weight of the United States' housing-induced credit market turmoil in August 2007. Surprisingly, the world economy seems so far to have escaped relatively unscathed from this bout of financial upheaval, as economic growth in 2007 turned out to be relatively robust, even in the US. However, a debate has reopened on the "decoupling" between the US and other major economies, amid growing fears that the American woes could drag down growth prospects abroad. Thus far, the direct fallout from the US credit market crisis seems to have been largely contained to the North Atlantic area, with real output in the rest of the world remaining relatively unaffected by this situation. Even in those countries that were affected, overall growth in 2007 remained positive, though quarterly results do show a clear slowdown in activity in the last quarter of the year. In the US, the housing and credit market crises are widely expected to have sharp adverse effects in both 2008 and 2009, due to consumer retrenchment and sub-par growth in residential housing, business investment and commercial real estate.

Our analysis for 2008 leads us to side with the proponents of the decoupling scenario. In our view, economic growth outside the US should not be significantly affected by the US housing market slump and financial crisis; rather, the current relatively synchronised downturn in world growth should result mainly from normal movements in domestic business cycles and from the negative terms-of-trade effects of the sharply rising prices of oil and other raw materials. In the euro area, GDP growth in 2008 should hold up, skirting recession despite sagging consumer confidence thanks to job and income growth. In the US, consumer spending in 2008 should weaken but any significant downturn should be averted thanks to the government's massive fiscal stimulus package. Despite still sharply negative growth in real residential investment, overall GDP growth should also be propped up by robust export growth. Japan's economy should be negatively affected by the yen's appreciation against the dollar, by rising

energy and food prices, by a slower expansion in its foreign markets and by a new sharp policy-initiated reduction in residential investment. Finally, major emerging-market countries such as China and India are expected to continue to grow steadily, leading to a fairly resilient rise in output in the Rest of the World area. Oil prices were on the rise throughout 2007 and in the first half of 2008. They are currently expected to level out through December 2008, leading to a yearly average level of 114.1 US dollars per barrel of Brent crude. If real output growth continues to hold up while the world's major central banks continue to hold their main policy rates close to zero in real terms, an ensuing sharp and continued rise in world oil prices as well as a parallel increase in the prices of other major commodities such as food staples and metals could stoke inflation worldwide and spill over into so-called "second-round" wage-price spirals.

For the 2008-2015 period as a whole, worldwide output growth will likely be primarily supported by private consumption expenditure, coming on the back of employment and wage growth based on a continued rise in trend labour productivity. Trend labour productivity growth is projected to average 2.3 per cent in Japan, 1.3 per cent in the US and 1.2 per cent in the euro area over the 2008-2015 period. Inflation is projected to remain tame in the US and Japan, but should be contained in Europe only through significant increases in interest rates. The fiscal position of the euro area should show limited improvement through 2011 but deteriorate slightly thereafter. The US budget deficit is expected to shrink markedly in 2011 thanks to the expiration of significant tax cut provisions but begin to rise again thereafter. Barring any new measures aimed at a rapid and lasting fiscal consolidation, Japan should see its fiscal deficit balloon to unmanageable heights by 2015. The projection further indicates that the euro area's current account should swing back into deficit in 2008 and that the shortfall should persist throughout the projection period. The US current account deficit should tend to shrink over the medium term, while Japan's current account surplus should decline significantly between 2008 and 2015. The projection also indicates that demographic developments will crimp growth prospects in both the EU and Japan due to a trend decline in working-age populations.

Risks and uncertainties

The objective risks surrounding this medium-term outlook are inferred directly from the NIME model's structure and from the observed historical fluctuations in economic variables. As model results for 2008 are now largely determined by historical data that has become available since January 2008, no stochastic assessment is carried out for the current year. The analysis of the projection's underlying risk structure indicates that the ninety-five per cent confidence interval surrounding GDP growth in the euro area in 2009 lies between 0.1 and 1.8 per cent. The analysis shows that there exists a low but increasing probability for the euro area to slip into recession after 2013.

The evaluation of the measurable risks underlying the NIME outlook is accompanied by an assessment of other, non-quantifiable, uncertainties weighing on the world economy. In our view, there is one major short-term downside uncertainty surrounding our current forecasts. This uncertainty concerns the ultimate effect of the North Atlantic credit market crisis. In the US, this crisis could prove to be more protracted, deeper and more widespread than currently assumed; the US housing market downturn could last longer and the credit squeeze could turn out to be a greater drag on business investment and commercial real estate than currently expected. This would lead to less resilient US GDP growth than we currently forecast for 2008 and 2009. A medium-term downside uncertainty lies in a possible continued increase in the world prices of energy and basic agricultural and metals commodities. If major central banks allow what is basically a terms-of-trade shock to turn into a domestic inflationary spiral that affects medium-term inflation expectations, it might signal the end of the period of "Great Moderation" that has prevailed since the middle of the 1980s. Furthermore, the continued terms-of-trade shock from the current rise in the world price of oil also constitutes a supply-side shock to oil-dependant economies, as the rise in the price of oil inputs reduces potential output levels. A lasting rise in world oil prices would bring about a decline in world potential output growth. Finally, a medium-term upside uncertainty is currently seen to lie in the possible underestimation of trend productivity growth, especially in the European Union and Japan.

Summary table for the world areas

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2000-2007	Average 2008-2015
I. Euro area											
1. Gross domestic product	2.6	1.5	1.0	1.8	2.0	1.8	1.7	1.6	1.5	2.1	1.6
2. Deflator of private consumption	2.0	3.3	3.0	2.4	2.3	2.3	2.3	2.4	2.4	2.1	2.5
3. Unemployment rate (level, % of civilian labour force)	7.5	7.3	7.3	7.7	8.2	8.5	8.8	9.0	9.0	8.4	8.2
4. Short-term interest rate (level)	4.3	4.9	5.2	5.1	5.0	4.9	5.0	5.1	5.1	3.3	5.0
5. Nominal effective exchange rate (+: depreciation)	-3.2	-5.1	-4.3	-4.5	-4.7	-4.8	-5.0	-5.3	-5.6	-2.9	-4.9
6. Government net lending (level, % of GDP)	-0.6	-1.0	-0.9	-1.1	-0.9	-1.0	-1.1	-1.2	-1.3	-1.9	-1.1
7. Current account (level, % of GDP)	0.1	-0.1	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	0.2	-0.3
II. Western non-euro EU Member States											
1. Gross domestic product	3.1	1.7	2.9	2.1	3.5	3.6	3.6	3.5	3.3	2.7	3.0
2. Deflator of private consumption	2.3	3.6	2.8	2.0	1.5	1.2	1.0	0.9	1.0	1.9	1.7
3. Unemployment rate (level, % of civilian labour force)	5.3	5.4	5.0	5.3	5.3	5.3	5.3	5.2	5.3	5.2	5.3
4. Short-term interest rate (level)	5.5	5.7	5.6	5.2	4.6	4.1	3.7	3.5	3.3	4.5	4.5
5. Nominal effective exchange rate (+: depreciation)	-2.3	6.3	-4.5	-5.1	-4.8	-3.6	-2.6	-2.2	-2.2	-1.9	-2.3
6. Government net lending (level, % of GDP)	-1.6	-1.7	-1.8	-2.4	-3.1	-3.7	-4.4	-5.2	-6.0	-1.0	-3.5
7. Current account (level, % of GDP)	-2.1	-1.5	-1.3	-2.9	-3.7	-3.8	-3.4	-3.0	-2.6	-0.9	-2.8
III. Unites States											
1. Gross domestic product	2.0	1.8	2.1	2.3	1.5	1.8	2.0	2.1	2.2	2.5	2.0
2. Deflator of private consumption	2.6	3.4	3.3	3.1	3.0	2.7	2.4	2.1	1.8	2.4	2.7
3. Unemployment rate (level, % of civilian labour force)	4.6	5.4	5.3	5.2	5.6	5.7	5.6	5.5	5.2	5.0	5.4
4. Short-term interest rate (level)	5.3	3.2	3.7	3.8	3.6	3.1	2.5	1.9	1.4	3.6	2.9
5. Nominal effective exchange rate (+: depreciation)	5.6	7.6	-3.0	-4.0	-4.0	-3.0	-2.1	-1.4	-1.0	-0.1	-1.4
6. Government net lending (level, % of GDP)	-2.9	-3.5	-3.7	-3.9	-3.3	-3.2	-3.4	-3.5	-3.7	-2.6	-3.5
7. Current account (level, % of GDP)	-5.2	-4.9	-4.0	-4.5	-4.7	-4.7	-4.6	-4.4	-4.1	-4.9	-4.5
IV. Japan											
1. Gross domestic product	2.0	1.0	0.4	1.2	1.1	1.3	1.0	0.9	0.7	1.7	0.9
2. Deflator of private consumption	-0.5	1.2	0.6	0.5	0.7	0.9	1.2	1.4	1.6	-0.9	1.0
3. Unemployment rate (level, % of civilian labour force)	3.9	4.0	4.7	5.3	5.9	6.5	7.1	7.7	8.4	4.7	6.2
4. Short-term interest rate (level)	0.7	0.9	0.6	0.3	0.3	0.6	1.1	1.6	2.1	0.2	0.9
5. Nominal effective exchange rate (+: depreciation)	5.5	-5.9	-1.5	-1.3	-0.7	-1.0	-1.8	-3.2	-4.6	0.5	-2.5
6. Government net lending (level, % of GDP)	-1.6	-1.8	-2.5	-3.1	-3.7	-4.6	-5.6	-6.7	-7.7	-5.7	-4.5
7. Current account (level, % of GDP)	4.8	4.9	4.5	4.3	4.2	4.2	4.1	3.8	3.2	3.4	4.1
V. Central & Eastern EU Member States											
1. Gross domestic product	5.7	4.8	3.6	2.3	1.7	1.6	1.8	2.4	3.0	4.5	2.6
2. Deflator of private consumption	5.6	5.4	5.1	4.8	4.4	4.0	3.6	3.3	3.0	6.1	4.2
3. Short-term interest rate (level)	5.2	6.5	7.9	7.3	6.2	5.2	4.4	4.0	4.0	9.1	5.7
4. Nominal effective exchange rate (+: depreciation)	-3.8	-6.3	-2.4	-2.6	-2.4	-2.2	-1.9	-1.8	-1.7	-1.7	-2.7
5. Current account (level, % of GDP)	-3.7	-3.7	-4.9	-6.5	-8.2	-9.8	-11.1	-12.0	-12.6	-3.7	-8.6
VI. Rest of the World											
1. Gross output	7.0	6.1	1.9	4.2	5.0	5.3	5.4	5.3	5.2	6.2	4.8
2. Output deflator	4.6	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	6.1	5.2
3. Nominal effective exchange rate (+: depreciation)	-0.9	-0.1	6.5	7.5	7.4	6.5	5.9	5.9	6.2	3.0	5.7
VII. World											
1. Real GDP	3.8	3.0	1.5	2.7	2.8	3.1	3.2	3.2	3.1	3.4	2.8
2. Real GDP per capita	2.6	1.8	0.4	1.5	1.7	1.9	2.0	2.0	2.0	2.2	1.7
3. World trade	4.9	5.1	2.7	4.2	3.5	3.4	3.4	3.5	3.5	6.2	3.7
4. World short-term interest rate	4.1	3.2	3.3	3.0	2.8	2.9	2.9	2.8	2.5	2.8	2.9
5. World output price	3.7	3.5	3.2	2.7	2.6	2.6	2.6	2.5	2.4	3.2	2.7
6. Price of oil (Brent, $US/bbl)	72.5	114.1	118.5	119.9	121.1	123.1	125.9	129.5	133.7	42.2	123.2
7. Population	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.1
8. Population (billions of persons)	6.6	6.7	6.8	6.8	6.9	7.0	7.1	7.2	7.2	6.3	7.0

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.

Slovenia became a full member of the euro area on January 1st 2007. On July 10th 2007, the Council of the European Union decided to allow Cyprus and Malta to join the euro area as of January 1st 2008. More recently, the EU ECOFIN Council of July 8th 2008 formally accepted the adhesion of Slovakia to the euro area as of January 1st 2009. For practical purposes however, the NIME model of the euro area continues to represent the 12 Member States that composed the euro zone up to 2007.

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

The "Central & Eastern EU Member States" area comprises Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia.

The 25 largest countries (or economic areas) that are included in the NIME model's "Rest of the World" area are the following, by decreasing size of current $US GDP in 2006: PR China (mainland), Canada, Brazil, Russia, South Korea, India, Mexico, Australia, Turkey, Switzerland, Indonesia, Saudi Arabia, Norway, South Africa, Argentina, Iran, Thailand, Hong Kong PRC, Venezuela, United Arab Emirates, Malaysia, Chile, Israel, Colombia and Singapore.

Data for the world aggregate are computed at market exchange rates.

The Euro Area

The year 2007 was one of strong economic growth, despite the fallout from the North Atlantic financial crisis, the rise in world oil prices and the rapid appreciation of the euro against the US dollar. In 2008, we expect that the euro area will skirt both recession and the financial sector melt-down predicted by some pundits at the end of 2007. In our view, the main threat to growth in 2008 lies in the continued rise in the prices of energy and other basic commodities. Our baseline forecast is for real GDP to grow by a soft 1.5 per cent on the year, as private consumption moderates on the back of weak employment and income growth. GDP growth is projected to slow even more markedly in 2009 due to a significant negative contribution from net exports. The euro area should then see a temporary spurt in domestic demand growth in 2010-2011, but GDP growth should be negatively affected thereafter by a declining working-age population and by private sector capacity constraints which lead monetary authorities to raise interest rates.

In 2008 weak consumption and business investment should constrain euro area GDP growth in the wake of the slump in residential investment

Eurostat's flash estimate for second quarter euro area GDP growth in 2008 (2Q08) indicated that the euro area[1] economy is weakening. This is due mainly to escalating inflation, while the economy should escape relatively unscathed from the US housing and credit market woes. Incoming data indicate that, while the euro area has certainly entered the slowing phase of its economic cycle and notwithstanding the clear downturn in residential construction hitting certain regions, the euro area as a whole will most likely avoid recession this year.

Growth declined from an annualised quarter-on-quarter (qoq) rate of 2.9 per cent in 3Q07 to 1.4 per cent in 4Q07. GDP growth rebounded to 2.8 per cent in 1Q08, only to fall in 2Q08 at an annualised rate of 0.8 per cent. In our current 2008

scenario for the euro area, we forecast modest increases of 1.2 per cent (qoq, annualised) in both 3Q08 and 4Q08. Indeed, recent coincident confidence and production indicators, as well as leading indicators, announce a probable slowdown in activity over the coming six months. Though relatively modest growth rates now seem to be in the cards for the two remaining quarters of 2008, there is currently no hard data or leading indicator pointing to an inevitable recession in 2008. In year-on-year (yoy) terms, we forecast euro area GDP growth to reach 1.5 per cent. However, data presented in terms of yoy average growth rates often provide biased views of a given year as they can be strongly affected by base effects. A less biased assessment of effective growth in 2008 is provided by the 4Q08/4Q07 growth rate; in our current quarterly growth scenario, this indicator reveals that the euro area economy should expand in real terms by 1.1 per cent on the year. Our scenario for 2008 is based on the assumption of just one quarter of negative growth in 2008; hence, it does not present the usual characteristics of a recession. However, our scenario could be characterised as a *growth recession*[2]. Though this year's overall growth outlook is definitely weak, it is the inflation outlook that creates the most cause for concern. Indeed, consumer price inflation in the euro area (all items index) has been steadily increasing over the last months. Inflation has been fuelled by the sharp increases in the price of oil and other commodity staples since early 2007, accompanied by the neutral monetary policy stance of the euro area's monetary authorities. However, fears of inflation spiralling out of control currently seem to be unfounded, as core inflation has remained largely stable.

In 2008, our forecast is for real private consumption expenditure to increase by 1.1 per cent, down from a growth rate of 1.4 per cent in 2007. Euro area consumer spending is expected to be negatively affected by the currently escalating inflation, but it should simultaneously be bolstered by continued employment gains and slightly rising real wage rates, which combine to raise household real disposable income by 1 per cent on the year.

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[1]. Slovenia became a full member of the euro area on 1 January 2007. On 10 July 2007, the Council of the European Union decided to allow Cyprus and Malta to join the euro area as of 1 January 2008. For practical purposes however, the NIME model of the euro area continues to represent the 12 Member States that composed the euro zone up to 2007. Cyprus, Malta and Slovenia remain integrated within the NIME model's aggregate representing the twelve Central & Eastern EU Member States.

[2]. A recession is usually defined as at least two consecutive quarters of negative GDP growth. A growth recession is usually defined as a rate of GDP growth (or per capita GDP growth) that is below trend. In the euro area, trend GDP growth in 2008 can be estimated to be 1.8 per cent, while trend population growth is estimated to be 0.4 per cent; this implies a per capita trend GDP growth rate of 1.4 per cent.

This would be the first year since 2004 to see positive growth in real take-home wage rates in the euro area.
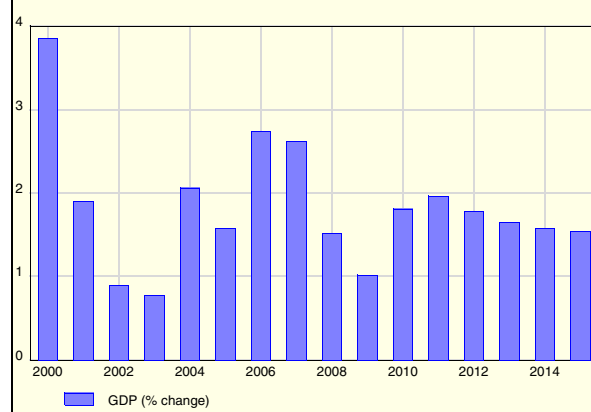
Business sector investment should rise by 3.2 per cent in 2008, after progressing at a clip in excess of 5 per cent in both 2006 and 2007. Gross fixed capital investment growth is set to weaken in the wake of the turbulence that began to shake world financial markets in August 2007 and led to an upward repricing of risk, tighter lending practices and generally more pessimistic expectations surrounding business conditions. Residential investment is forecast to decline by 1.3 per cent in 2008. This retrenchment is mainly due to sharp declines in specific areas in Ireland and Spain, following a decline in housing affordability and the cooling of housing supply. The rate of expansion of the euro area's total gross fixed capital expenditure is projected to decline from a hefty 4.2 per cent in 2007 to a much more tempered 2.1 per cent in 2008.

Euro area exports in 2006 and 2007 progressed at yearly average rates of 9.2 and 6.9 per cent, respectively; this is well above the already brisk 6.3 per cent average increase in exports over the 2000-2007 period and is linked to a combination of booming demand in central and eastern European countries and emerging market economies, and the effective depreciation of the euro over the 2005-2006 period[1]. In 2008, euro area export growth is expected to decline to a more moderate 4.7 per cent, as the progression in foreign effective demand for euro area exports tumbles from a 5.2 per cent rise in 2007 to only 0.4 per cent in 2008. Furthermore, the expansion of the area's exports is expected to be hindered by a loss of price competitiveness, as the area's exchange rate should appreciate strongly against both the US dollar and the major "rest of world" currencies.
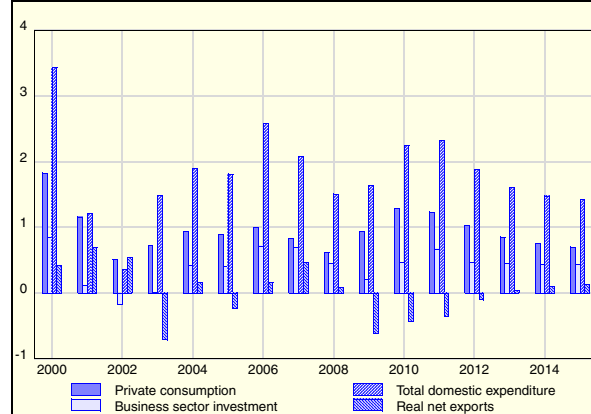
Euro area real import growth is expected to recede from 5.1 per cent in 2007 to 4.6 per cent in 2008. Import growth should thus fall below the 5.6 per cent yearly average growth rate of the 2000-2007

period, weighed down by the lagged effects of the real trade-weighted depreciation of the euro over 2005-2006 and the tepid growth in domestic demand in 2008. On balance, real net exports are slated to contribute 0.1 percentage point (p.p.) to the area's rate of real GDP growth in 2008, down from a contribution of 0.5 p.p. in 2007.

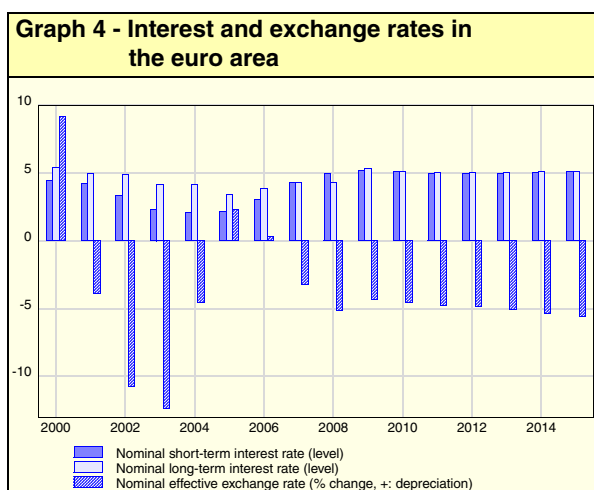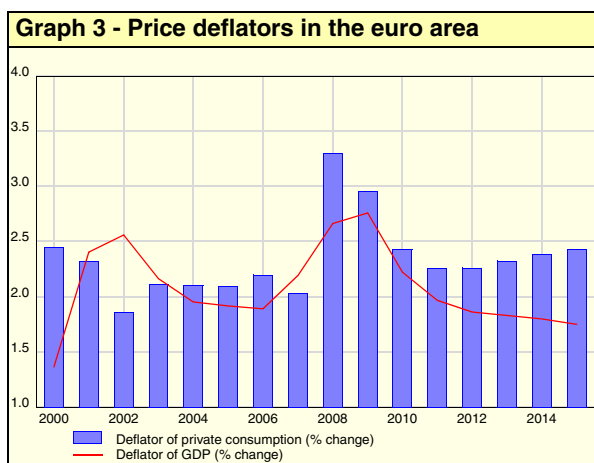**Graph 1 - Gross domestic product in the euro area**

GDP (% change)

Graph 2 - Contributions to real GDP growth in the euro area *(percentage points)*

Private consumption   Total domestic expenditure
Business sector investment   Real net exports

In 2008, employment in the euro area is set to rise for the fifth consecutive year, albeit progressing by just 0.9 per cent on the year. Employment is expected to be bolstered mainly by the uninterrupted decline of private sector real unit labour costs from 2004 through 2008. Moreover, total job creation should once again outpace the expansion of the labour force, reducing the area's unemployment rate from 7.5 per cent of the civilian labour force in 2007 to 7.3 per cent in 2008. The relatively modest rate of job creation in 2008 will however be accompanied by increases in both nominal and real rates of labour compensation. However, real wage growth should be matched by the rise in labour productivity; hence, economy-wide unit labour costs should hold steady on the year. In 2008, nominal compensation rates are slated to

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[1]. Effective exchange rates in the NIME model are computed on the basis of 46 different currencies, covering: the European Union, the US, Japan, 31 other advanced and emerging market countries or areas. NIME makes use of the currencies of all OECD countries as well as the currencies of 24 non-OECD countries or areas. In comparison, the OECD currently uses the 19 currencies of the OECD countries and the currencies of 12 non-OECD countries in its effective exchange rate computations.

increase by 3.2 per cent, leading to a modest 0.3 per cent rise in the rate of real take-home labour compensation. Real private sector wage costs are projected to remain relatively contained, progressing by 0.4 per cent while private sector labour productivity is expected to rise by 1.3 per cent rise in 2008; private sector unit labour costs are thus expected to decline by 0.8 per cent on the year.

Graph 3 - Price deflators in the euro area

Deflator of private consumption (% change)
Deflator of GDP (% change)

Graph 4 - Interest and exchange rates in the euro area

Nominal short-term interest rate (level)
Nominal long-term interest rate (level)
Nominal effective exchange rate (% change, +: depreciation)

Yearly average headline consumer price inflation (HICP) in the euro area[1] is usually considered to have breached the 2 per cent upper limit of the European Central Bank's (ECB) preferred range of inflation every year since 2000. The rate of yoy inflation reached 2.1 per cent in 2007 and prices are expected to rise yoy by fully 3.6 per cent in 2008. Escalating inflation recently sparked renewed concerns as the twelve-month rate of change in the HICP reached the 4 per cent mark in June and July 2008. In line with these heightened inflationary risks for 2008, our projection indicates that inflation, as measured by the yoy change in the deflator

of private consumption expenditures, will rise from 2 per cent in 2007 to 3.3 per cent in 2008. This steady rise in euro area inflation in 2008 comes as above-trend growth in final demand over recent years has pushed effective output levels up above the area's potential output level, as the area's rate of unemployment remains well below what can be taken as its current non-inflationary rate of unemployment, and as the massive terms-of-trade shock from the rise in world oil prices tends to reduce the euro area's potential output. Inflation has been fuelled by the continued sharp increases in the price of oil and other commodity staples since early 2007, accompanied by a neutral monetary policy stance assumed by the euro area's monetary authorities. However, fears of inflation spiralling out of control seem to be unfounded as core inflation[2] and inflation expectations have remained stable.

Policy interest rates[3] in the euro area stood at an average level of 3.9 per cent over 2007; this implies that real policy rates were effectively. Hence, it seems that views of monetary policy having been excessively tight in the euro area are largely unsubstantiated as far as 2007 is concerned. Furthermore, the ECB does not currently appear intent on defending a strict interpretation of it's price stability mandate; policy rates were raised from 4 to 4.25 per cent in early July 2008 and are now expected to remain stable throughout the year. This would lead to a policy rate averaging just 4.1 per cent in 2008. Given current rates of inflation, policy rates in the second half of 2008 should be only very slightly positive and thus still extremely accommodating. Monetary authorities appear to be reluctant to tighten their policy stance to any significant extent and to be counting on an inflation-driven erosion of purchasing power, on higher money market rates and on stricter access to credit, to gradually steer economic activity back into line with it's potential output level.

Over the 2003-2008 period, underlying inflationary pressures tended to re-emerge as slack in the economy gradually disappeared and as oil prices soared. Indeed, the euro area's output gap is esti-

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[1]. Inflation as measured by the year-on-year percentage change in the yearly average level of Eurostat's harmonised index of consumer prices (HICP).

[2]. Core HICP is the all-items HICP index less food, energy, alcohol and tobacco. The measure is for the year-on-year percentage change in the yearly average level of Eurostat's core HICP.
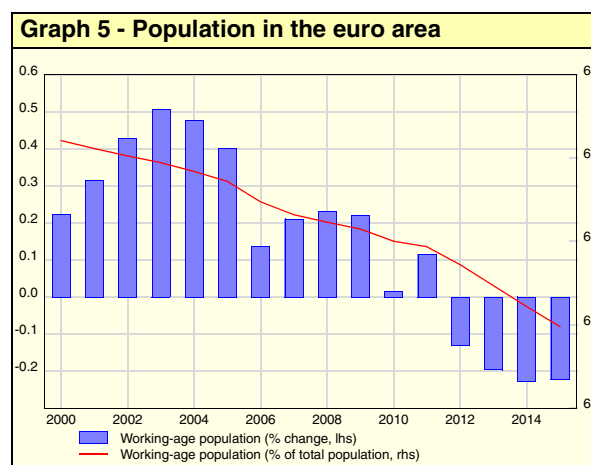
[3]. Minimum bid rate on variable rate tenders for the ECB's main refinancing operations.

mated to have swung from -1.1 in 2003 to an expected +1.1 per cent in 2008; the price of Brent Crude oil rose from a yearly average level of 24.4 $US/bbl in 2001 to an average of 112.8 $US/bbl in the first half of 2008.

In December 2005, the ECB began to gradually remove any unwarranted monetary accommodation that followed from the sharp fall in interest rates since 2000, increasing its main policy rate from 2 per cent in November 2005 to 4 per cent in June 2007. The bias towards a normalisation of the monetary policy stance came to an abrupt halt as the US housing-led financial crisis began to unfold in August 2007. Since then, policy rates had been on hold, up until the rate increase of July 2008, which pushed the rate up to 4.25 per cent. However, the run-up in money market rates, stemming from a rise in both risk and liquidity premia, led to an autonomous tightening of market financing conditions. Indeed, whereas the average spread between the reference three-month Euro Interbank Offered Rate (Euribor) and the ECB's repo rate was 28 basis points (b.p.) in 2006, it rose to a yearly average level of 43 b.p. in 2007, shot up to 86 b.p. in December 2007 and averaged 66 b.p. between January and July 2008. In June 2008, interest rate futures were indicating that the three-month Euribor was likely to rise from 4.9 per cent in June to 5.4 per cent in December 2008. We currently project an average 3-month market rate of 4.9 per cent in 2008, reflecting slightly more restrictive overall financing conditions in a context of escalating inflationary pressures. The real short-term market rate, as deflated by the change in the deflator of private consumption expenditure, should fall to a yearly average level of just 1.7 per cent in 2008, significantly below its 2.3 per cent yearly average level in 2007.

The relatively stable euro area interest rates and declining US interest rates are projected to lead to a further appreciation of the euro against the US dollar. The dollar exchange rate against the euro averaged 1.37 dollars per euro in 2007. This implies that the euro appreciated in year-on-year average terms by about 9.2 per cent against the US dollar in 2007. The euro's bilateral exchange rate is projected to strengthen yet again in 2008, reaching a yearly average level of 1.52 US dollars per euro. The euro appreciated by about 3.6 per cent against the average of "rest of world" currencies in 2007,
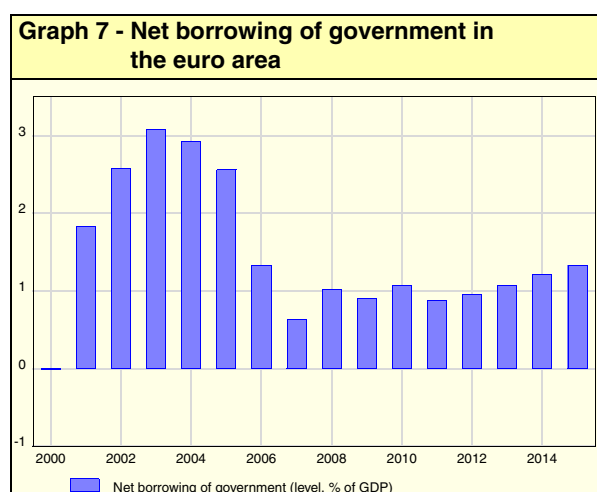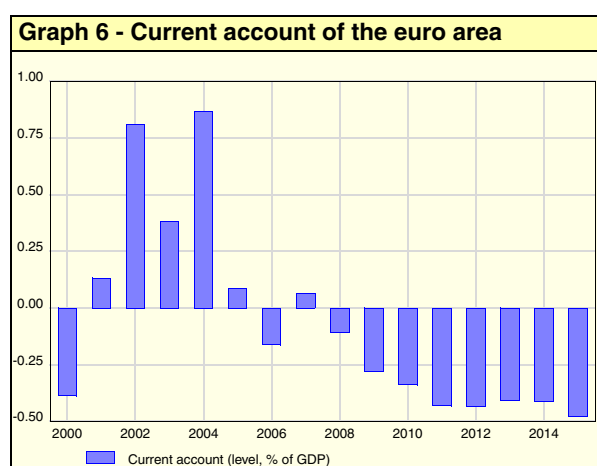
and is expected to appreciate by a further 4.2 per cent in 2008. While the Japanese yen depreciated sharply against the euro in 2007, its decline should be all but stopped in 2008 as the yen carry trade has been significantly curtailed by increased risk aversion following the outbreak of the North Atlantic financial crisis. The British pound, which was one of the "long" currencies in this carry, is now forecast to weaken against the euro following the demise of this particular currency trade. The euro's trade-weighted exchange rate appreciated by 3.2 per cent in 2007. The area's currency should appreciate somewhat more briskly in 2008, gaining 5.1 per cent in nominal effective terms. However, moderate export price increases should limit the real effective appreciation to no more than 1.5 per cent in 2008.

Graph 5 - Population in the euro area

Working-age population (% change, lhs)
Working-age population (% of total population, rhs)

Medium-term interest rate and price increases are expected to bring effective output back into line with the euro area's potential output level

Turning to the medium-term results, our projection indicates that growth in domestic demand should hold up relatively well over the 2009-2011 period, but falter thereafter as high real interest rates and rapidly rising prices gradually bring effective output levels back down towards the area's potential output level. In 2009, the moderate growth in domestic demand is projected to be partly offset by a sharp decline in export growth, linked to the slowdown in foreign effective demand growth. However, GDP should then rebound to above-trend rates of growth over the 2011-2012 period as export growth picks up and expands at rates similar to those of final domestic demand. While the current account position is forecast to post only a slightly negative balance of 0.1 per cent of GDP in 2008, the euro area's current

account deficit should deteriorate to 0.3 per cent of GDP in 2009. It should deteriorate only marginally thereafter, posting an average deficit of 0.4 per cent over the 2010-2015 period.

Graph 6 - Current account of the euro area

Current account (level, % of GDP)

Graph 7 - Net borrowing of government in the euro area

Net borrowing of government (level, % of GDP)

Private consumption expenditure is projected to climb to 1.7 per cent in 2009 and to a robust 2.3 per cent in 2010. The rebound in consumption builds on solid job creation and a low unemployment rate in 2009, accompanied by rising real take-home wage rates in both 2009 and 2010. Growth in private consumption expenditure is then projected to decline gradually to just 1.2 per cent in 2015. This decline follows from the high real interest rates that the area's monetary authorities maintain in order to ensure the gradual closing of the area's positive output gap, so that inflation expectations remain well anchored, and in order to bring inflation rates down towards levels consistent with their medium-term price stability objective. Private consumption is further weighed down by the gradual rise in unemployment as domestic demand growth slowly loses traction; this rise in unemployment is accompanied by a moderation

in real wage growth, which curtails the rise of household real disposable income.

Business sector investment jumps from a paltry growth rate of 1.5 per cent in 2009 to 4.7 per cent in 2011, underpinned by the robust rise in both private consumption and exports. Investment growth then falls back to more moderate rates between 2012 and 2015 as domestic demand weakens. Aggregate euro area gross fixed investment is projected to rise from 1.1 per cent in 2009 to 3.3 per cent in 2011, and then to progress at an average rate of 2.1 per cent between 2012 and 2015.

The area's consolidated real exports are projected to progress at an annual average rate of 1.9 per cent over the 2009-2015 period. Exports are expected to track the rise in the area's foreign effective demand, which should increase through 2013 and stabilise thereafter. Exports are projected to progress despite the persistent and strong nominal effective appreciation of the euro, which puts euro denominated export prices under pressure throughout the projection period. Import growth is projected to follow a trend decline over the 2009-2015 period, thus echoing the general evolution of euro area output. Real net exports should make a significant negative contribution to GDP growth in 2009; contributions should remain negative through 2012 but become positive thereafter. The negative contributions from net exports over 2009-2012 and the unfavourable terms-of-trade developments over the remainder of the projection period are projected to produce a persistent current account deficit. The area's current account shortfall should increase from 0.1 per cent of GDP in 2008 to 0.4 per cent of GDP in 2015.

After rising sharply to 3.3 per cent in 2008, consumer price inflation, measured by the percentage change in the deflator of private consumption expenditure, is projected to fall back towards rates more in line with the euro area monetary authorities' medium-term price stability objective. Inflation is still forecast at a yearly average rate of 3 per cent in 2009, but it is then projected to drop back to 2.3 per cent by 2011. Prices should remain slightly elevated over the remainder of the projection period, as effective output levels continue to exceed the area's trend output levels. Indeed, private sector potential

output growth is projected to weaken significantly throughout the projection period, as labour productivity growth is assumed to continue to rise by 1.3 per cent per annum while the trend labour supply growth should decline. These supply constraints imply that demand growth must be curtailed, and this is obtained through a combination of higher prices for goods and services and higher interest rates.

Short-term market interest rates are projected to rise from a yearly average level of 4.9 per cent in 2008 to 5.2 per cent in 2009. Short-term rates should then stabilise at an average level of 5 per cent throughout the 2010-2015 period. The rise in the nominal interest rate will raise the real short-term interest rate from 1.7 per cent in 2008 to 2.7 per cent over the 2009-2015 period. The nominal long-term interest rate is projected to rise from 4.3 per cent in 2008 to an average of 5.1 per cent over the remainder of the projection period.
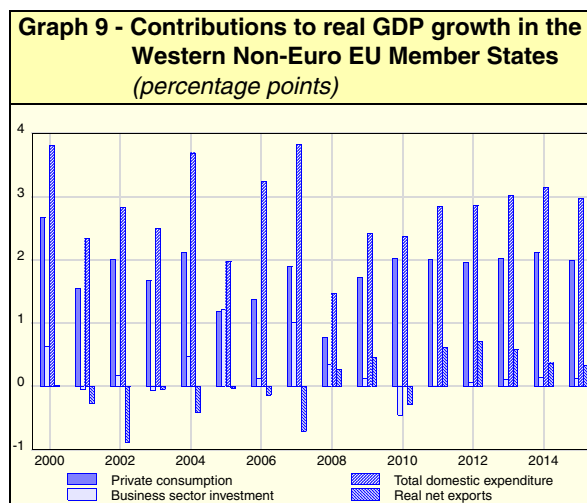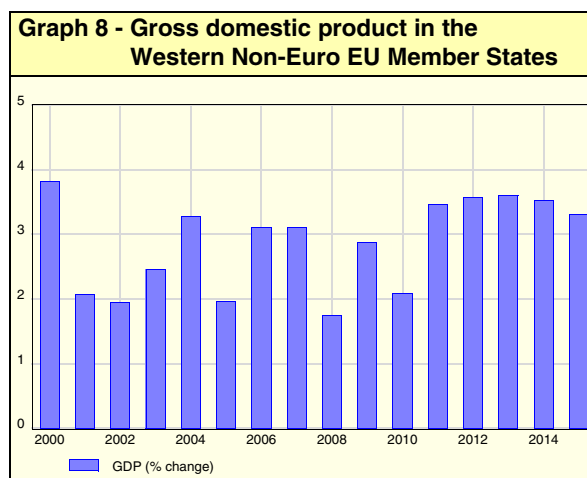
The euro area's consolidated fiscal position is not projected to change significantly from its forecast deficit of 1 per cent of GDP in 2008. The fiscal position should deteriorate slightly as of 2010 and post a deficit of 1.3 per cent of GDP in 2015.

The Western Non-Euro EU Member States

Real GDP growth in the western non-euro EU MS stood at 3.1 per cent in both 2006 and 2007. In 2008, growth is expected to plummet, reaching just 1.7 per cent for the year following sharp reductions in the growth rates of all major components of private domestic demand. Domestic demand growth should rebound as of 2009 and progress at a yearly average rate of 2.8 per cent through 2015, while real net exports are projected to contribute an average of 0.4 p.p. to GDP growth over the same period. Real GDP growth over 2009-2015 is projected to average a robust 3.2 per cent per annum. Consumer price inflation is forecast to spike to 3.6 per cent in 2008 but should moderate thereafter, presenting an annual average rate of 1.7 per cent over 2008-2015. On current trends, the area's fiscal position looks set to deteriorate rapidly, while it's current account deficit should increase mainly as a result of unfavourable terms-of-trade developments.

In 2008 GDP growth plummets due to tepid growth in major components of private domestic demand

In 2008, real GDP growth in the western non-euro European Union Member States[1] is currently forecast to fall to a dismal 1.7 per cent, tumbling from a growth rate of 3.1 per cent in 2007. This result stems from a substantial decline in both private consumption expenditure and business sector gross fixed capital formation in 2008. However, the area's consolidated real net exports should turn around and provide their first positive 0.3 p.p. contribution to overall GDP growth since 2001.

Graph 8 - Gross domestic product in the Western Non-Euro EU Member States

GDP (% change)

Graph 9 - Contributions to real GDP growth in the Western Non-Euro EU Member States
(percentage points)

Private consumption — Total domestic expenditure
Business sector investment — Real net exports

Private consumption growth is expected to fall off sharply in 2008, reaching only 1.2 per cent, compared with 3 per cent in 2007. In 2007, household consumption growth was underpinned mainly by firm employment growth, accompanied by a strong rise in take-home real wage rates. In 2008, the situation is expected to become much bleaker, as consumption should be weighed down

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

by a near absence of employment growth and by a significant decline in take-home real wage rates.

Graph 10 - Price deflators in the Western Non-Euro EU Member States

Deflator of private consumption (% change)
Deflator of GDP (% change)

Graph 11 - Interest and exchange rates in the Western Non-Euro EU Member States

Nominal short-term interest rate (level)
Nominal long-term interest rate (level)
Nominal effective exchange rate (% change, +: depreciation)
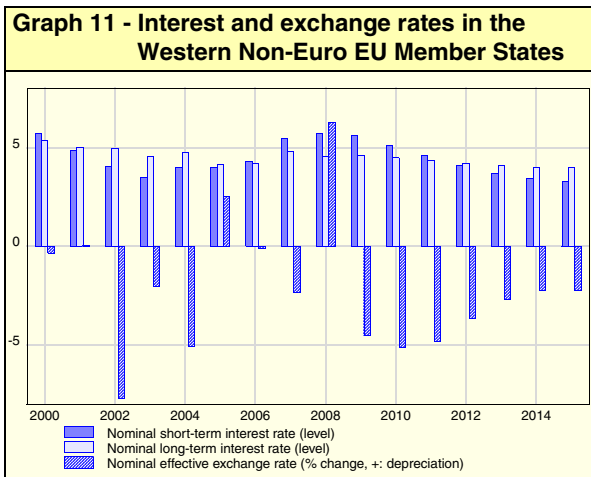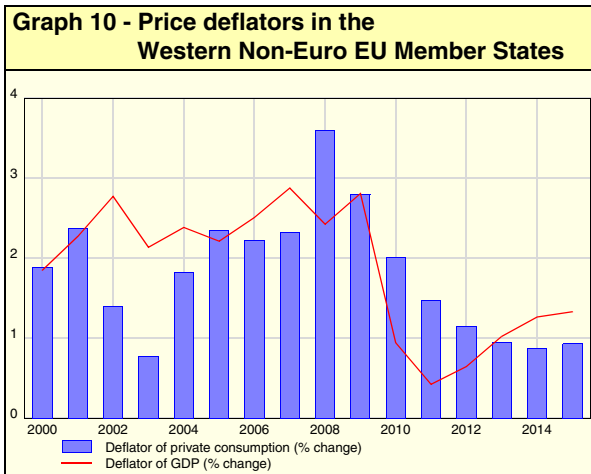
In 2008, business sector gross fixed capital expenditure is projected to progress by a meagre 2.6 per cent, retreating sharply from the high investment growth rates of the 2004-2007 period. Business investment is forecast to weaken in the face of much less favourable investment conditions, such as higher nominal interest rates, stricter terms for access to credit in financial markets, and significantly deteriorated prospects for final demand and private sector output growth. Real residential investment is also expected to take a significant hit in 2008, falling by 0.1 per cent on the year as declines in house prices in some parts of the United Kingdom lead to lower spending on residential construction while demand for new housing units is curtailed by rising inflation, tighter financing conditions and more pessimistic views as to the evolution of household income. All in all, aggregate gross fixed investment in the area is expected to progress by just 2.8 per cent in 2008, down from 6.4 per cent in 2007.

Between 2001 and 2007, the yearly average contribution of real net exports to GDP growth was -0.3 p.p. In 2008, net foreign trade is expected to turn around and provide a positive contribution of 0.3 p.p. on the area's growth rate. This upswing comes mainly as real exports rebound sharply, growing by 4.8 per cent on the year, after a 2.5 per cent decline in 2007. Exports are forecast to benefit from the marked depreciation of the area's real trade-weighted exchange rate, mainly following the considerable effective depreciation of the British pound sterling during 2008. Import growth is also expected to turn positive in 2008, but its progression should be more tempered due to the slowdown in final domestic demand.

In 2008, growth in total employment is expected to fall off to just 0.2 per cent for the year, after progressing by a round 1 per cent in 2007. Economy-wide job creation in 2008 is forecast to be stymied by the decline in final domestic demand growth. At the same time, the labour supply is expected to expand by 0.3 per cent, thus pushing the unemployment rate up a notch to 5.4 per cent of the civilian labour force.

Inflation in the Western non-euro EU MS area, as measured by the change in the deflator of private consumption, rose to a yearly average high of 2.4 per cent per in 2005. In 2006 and 2007, inflation was somewhat tamer but it has now jumped to a new high and is expected to reach a yearly average rate of 3.6 per cent in 2008. Current inflationary pressures stem mainly from the rise in the prices of imported food, energy and other raw materials. Domestic inflationary tensions remain subdued as the area's estimated potential output level is expected to lie well above the current level of effective aggregate output, as the current 5.4 per cent unemployment rate is higher than the area's estimated natural rate of unemployment, and as real wage increases in 2008 are expected to be more than offset by increases in labour productivity.

Nominal short-term interest rates in the Western non-euro EU MS area increased sharply between 2003 and 2007, with e.g. UK 3-month money-market rates rising from 3.4 per cent in July 2003 to 6.6 per cent in September 2007. However, interest rates have retreated since then, with UK rates reaching 5.8 per cent in July 2008. The area's

yearly average short-term rate is currently expected to come out at 5.7 per cent in 2008. Notwithstanding the strong fears of inflation spiralling out of control, the simultaneous fear of stifling output growth should deter monetary authorities from raising rates to any significant extent through end 2008.

The area's nominal effective exchange rate is forecast to depreciate by a massive 6.3 per cent in 2008. This depreciation stems mainly from the weakness of the British pound which, due to its position as one of the major "long" currencies in world foreign exchange markets, suffered from the waning of the main international carry trades. The area's currency depreciation is also driven by the current high rates of inflation and the low probability of rapid interest rate hikes. The area's real effective exchange rate should however depreciate by a slightly more modest 3.4 per cent, as export prices progress more rapidly in 2008 than in 2007.

In the medium term declining domestic demand growth should be offset by positive real net exports

Turning to the medium-term results of the projection, after a sluggish GDP growth rate of 1.7 per cent in 2008, growth should rebound to 2.9 per cent in 2009 on the back of vigorous consumer spending and as the area's real net exports continue to provide a significant positive contribution to GDP growth. GDP growth is forecast to dip in 2010 as imports pick up following the return to more vigorous growth in private consumption expenditure. Subsequently, GDP growth is projected to gain traction and reach an annual average rate of 3.5 per cent over the 2011-2015 period. Despite robust real export growth, the area's current account deficit should rise significantly through 2012 due to unfavourable terms-of-trade developments, but should then decline due to stable foreign effective demand and rising export prices.

Private consumption is projected to rise at brisker rates as of 2009. Consumption should increase by 2.8 per cent in 2009 and by 3.2 per cent in 2010. Over the 2011-2015 period, private consumption expenditure is set to progress at a yearly average pace of 3.5 per cent. Consumption should be underpinned by declining inflation through 2015 and by falling real interest rates over the 2010-2015 period. Furthermore, robust gains in labour

productivity as of 2011 should also bolster real household income and thus consumer spending.

Business gross fixed capital formation is projected to increase only tepidly over the projection period. Business investment should be negatively affected by the relatively high rates of investment over the 2004-2008 period. Investment should also be adversely affected by high real interest rates and by steadily declining employment growth over 2009-2015. The growth rate of the area's aggregate gross fixed capital formation is expected to decline from 2.8 per cent in 2008 to 0.6 per cent in 2009, and then to fall by 1.8 per cent in 2010. Investment is then projected to rebound in 2011 and to rise at an annual average rate of 1.5 per cent through 2015.

Graph 12 - Population in the Western Non-Euro EU Member States
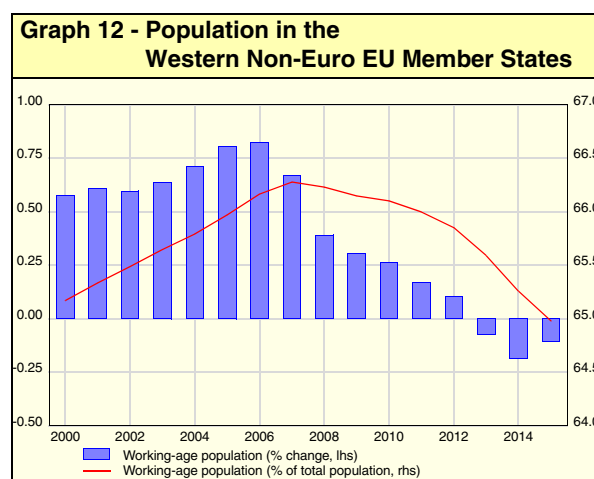
Real exports of the western non-euro EU MS are projected to progress at a stable and relatively robust annual average rate of 3.9 per cent over the 2009-2015 period. Export growth should mirror the steady rise in foreign effective demand. Exports should be weighed down by the area's rapid nominal effective currency appreciation over the 2009-2015 period, but should hold up thanks to the significant compression of export prices. Import growth over the 2009-2015 period is projected to progress at an annual average rate of 2.6 per cent, leading to regular and significant positive contributions of net exports to overall GDP growth rates. Adverse terms-of-trade should however lead to a deterioration of the area's current account deficit over the 2009-2012 period, after which a shift in the terms-of-trade and positive real net exports are expected to bring about a reduction in the area's current account deficit.

Inflation rates in the area are projected to reach 2.8 per cent in 2009 but to fall to just 2 per cent by 2010, partly due to a rise in real interest rates. Indeed, the real short-term interest rate, as deflated by the percentage change in the deflator of private consumption expenditure, is expected to jump from a yearly average level of 2.2 per cent in 2008 to 3.2 per cent in 2010. As of 2010, inflationary pressures are projected to subside rapidly as real unit labour costs moderate and regular exchange rate appreciations limit import price increases.

Graph 13 - Current account of the Western Non-Euro EU Member States

Current account (level, % of GDP)

Graph 14 - Net borrowing of government of the Western Non-Euro EU Member States

Net borrowing of government (level, % of GDP)
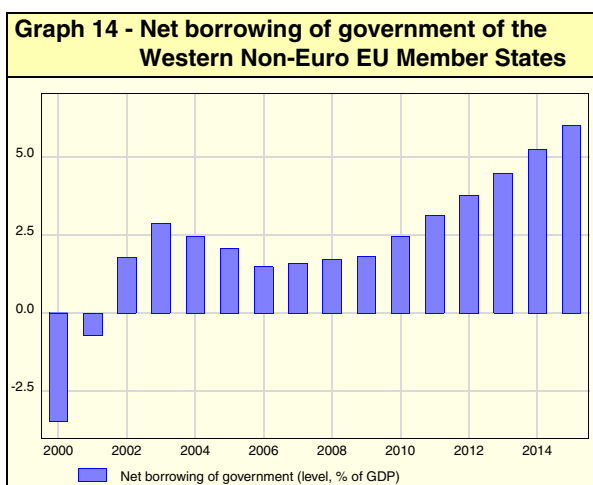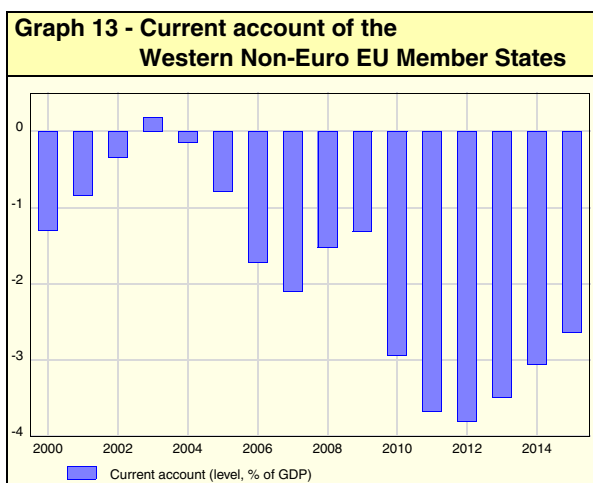
The elevated inflationary pressures over the 2008-2010 period should prompt the area's monetary authorities to increase real short-term interest rates in order to bring price increases back into a range that is deemed more compatible with the monetary authorities' medium-term inflation objectives. Accordingly, in 2009 and 2010, the nominal short-term interest rate is projected to remain at the relatively high levels of 5.6 per cent and 5.2 per cent, respectively; nominal interest rates should then decline to 3.3 per cent by 2015.

The area's consolidated fiscal deficit is projected to jump from 1.8 per cent of GDP in 2009 to a massive 6 per cent of GDP in 2015 if no determined effort is made to rein in the rise of expenditures on current transfers to households.

The United States

Real GDP in the United States progressed year-on-year by 2 per cent in 2007, despite a decline in fourth quarter GDP growth. Real GDP growth held up over the first half of 2008 but is now expected to weaken significantly over the second half of the year. We currently forecast that the US economy will skirt recession in 2008 but that GDP should expand by no more than 1.8 per cent on the year. We further expect the housing and financial crises to continue to unwind throughout 2009, limiting growth in 2009 to no more than 2.1 per cent. Looking further ahead, US GDP growth is projected to rise to 2.3 per cent in 2010 and then to expand at an annual average rate of 1.9 per cent over the 2011-2015 period. Assuming that the tax cuts enacted by the current administration over the 2001-2005 period expire as currently scheduled, the US federal budget deficit should decline slightly by 2012 but rise again thereafter. The US current account position is projected to shrink only moderately from an expected shortfall of 4.9 per cent of GDP in 2008 to a deficit of 4.1 per cent of GDP by 2015.

A full-blown recession should be averted in 2008 despite the housing market slump, the continued unwinding of the financial crisis and high oil prices

In the second quarter of 2007, the US woke up brutally from its dream of a "Goldilocks economy" with the outbreak of its housing and financial crises. The US economy ended 2007 on a sombre note, contracting in the fourth quarter (4Q07) at an annualised rate of 0.2 per cent. The final estimate of US GDP growth for 1Q08 then wrong-footed many analysts by rising an annualised rate of 0.9 per cent. In the second quarter, GDP progressed at an even more solid pace of 3.3 per cent, as a negative impact from inventories was offset by a sharp increase in net exports and as the tax rebates sent out to households as of May 2008 - part of a 167 billion dollar fiscal stimulus plan passed by Congress - underpinned private consumption. However, with the labour market shedding jobs at an average rate of about 70,000 per month over the first half of 2008 and recent ISM and University of

Michigan measures of output and expectations indicating a downturn, it is increasingly likely that output will show significant weakness in the coming quarters. Our forecast is for GDP growth to slow markedly, reaching 0.7 per cent in 3Q08 and 0.6 per cent in 4Q08. Over the year as a whole, our forecast is thus for US GDP growth to expand at an annual average rate of 1.8 per cent. In terms of fourth-quarter over fourth-quarter growth (4Q/4Q), this implies that the US economy will expand by a meagre 1.4 per cent in 2008. Given that trend labour productivity growth is estimated be 1.3 per cent in 2008, that trend labour supply is expected to rise by 1 per cent for the year, and that population is expected to rise by 0.9 per cent in 2008, the effective rate of per capita GDP growth will undoubtedly fall to 1.4 per cent, the threshold at which the economy can be considered to be in a *growth recession*[1].

Private consumption expenditure seems to have held up - albeit modestly - over the first two quarters of 2008, progressing at annualised qoq rates of 0.9 and 1.7 per cent, respectively. Leading indicators suggest that consumption will falter thereafter, as the effects of the rebate checks disappear and as households are faced with persistently high oil prices, rising unemployment and the decline in house prices. All in all, private consumption growth is expected to decline from 2.8 per cent in 2007 to 1.9 per cent in 2008.

Business sector capital expenditure is projected to be curtailed in 2008, due to current uncertainties surrounding the resilience of household expenditure and continued tight credit market conditions. However, investment should be boosted slightly by the significant decline in short-term money market rates that has come about since January 2008, thanks to the loosening of the Federal Reserve's monetary policy stance and the decline in risk premia in financial markets. In light of these ongoing events, business sector gross fixed capital formation is expected to decline year-on-year by 1.3 per cent in 2008.

Graph 15 - Gross domestic product in the US
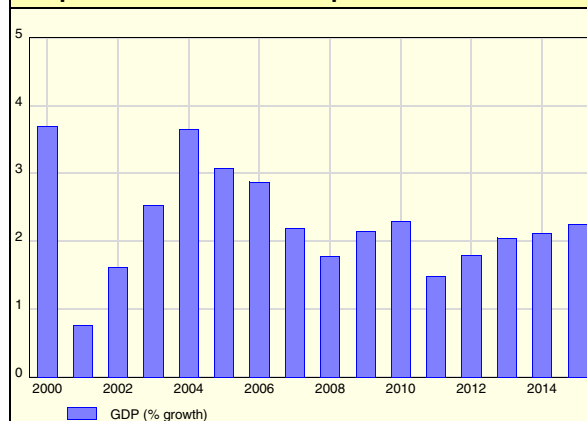
Graph 16 - Contributions to real GDP growth in the US *(percentage points)*
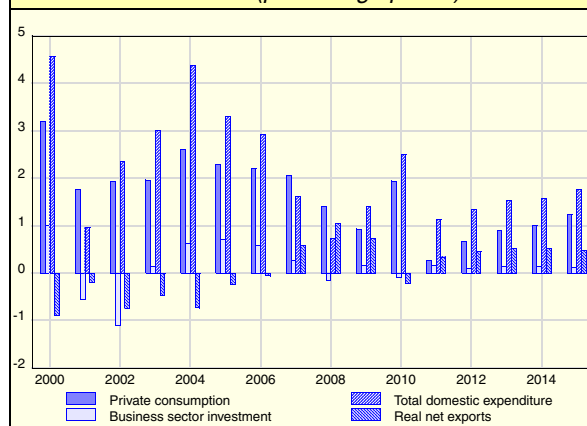
US residential investment fell by 7.1 per cent in 2006, then again by a massive 17.9 per cent in 2007, following a significant build-up of unsold homes. The annualised qoq rate of decline in residential investment accelerated from 11.5 per cent in 2Q07 to 27 per cent in 4Q07; the fall has since moderated somewhat, reaching 15.7 per cent in 2Q08[2]. The number of unsold new single-family homes stood at a high of about 566 thousand units in 3Q06 and has been declining since then. In 1Q08, the overhang of unsold homes was still in excess of 475,000 units, compared to a long-term average level of about 354,000 units. At the same time, US residential investment in per cent of GDP rose to 5.48 per cent in 3Q05, but has been declining ever since. The residential investment-to-GDP ratio dipped below the long-term average of 4.6 per cent in 1Q07 and has continued falling ever since, reaching a low of just 3.42 per cent in 1Q08.

Our current forecast is for residential investment to begin to pick up, gradually bringing the residential investment-to-GDP ratio back towards its

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[1.] Periods of recession in the US are formally declared by the National Bureau of Economic Research's (NBER) Business Cycle Dating Committee (BCDC). The BCDC defines a recession as "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production and wholesale-retail sales."

[2.] For a more complete overview of is topic, the reader may refer to this issue's "focus" on the US housing market.

long-term level of 4.6 per cent. The decline in residential investment is expected to lose momentum, as investment falls in qoq terms by 13.9 per cent and 9.4 per cent in 3Q08 and 4Q08, respectively. In year-on-year average terms, this translates into a yearly decline of 20.2 per cent in 2008. The decline in real investment is expected to be accompanied by a further steep decline in house prices. Indeed, we estimate that US nominal house prices[1] fell in year-on-year average terms by 2.9 per cent in 2007.

Graph 17 - Price deflators in the US

Legend:
- Deflator of private consumption (% change)
- Deflator of GDP (% change)

Graph 18 - Interest and exchange rates in the US

Legend:
- Nominal short-term interest rate (level)
- Nominal long-term interest rate (level)
- Nominal effective exchange rate (% change, +: depreciation)
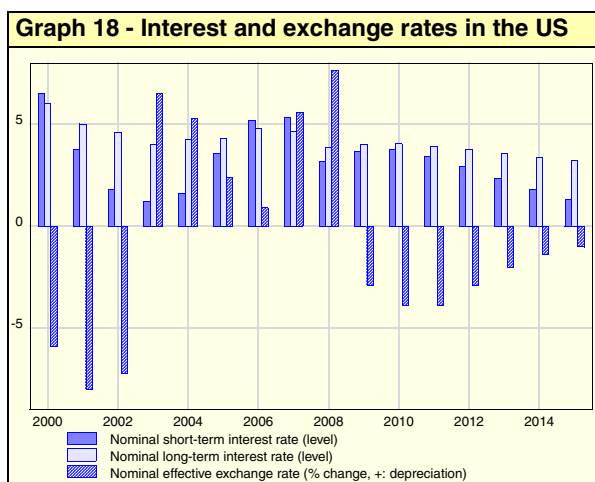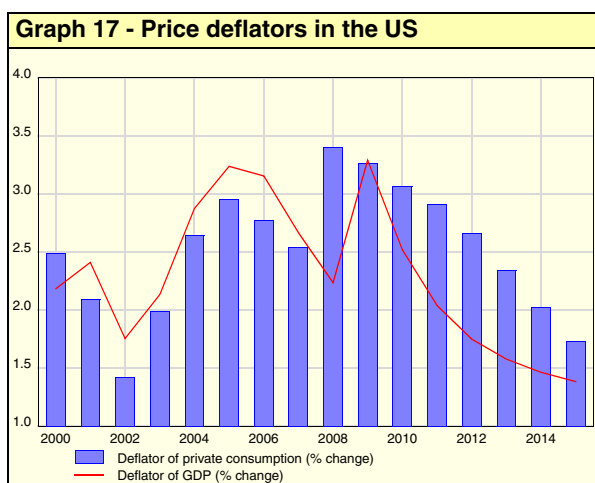
We assume that house prices will continue to decline, returning to their long-term equilibrium with respect to owners' equivalent rent (OER). Assuming that the rates of decline in the Case-Shiller and OFHEO house price indexes stabilise at their 1Q08 levels (i.e., -6.7 per cent and -1.5 per cent, respectively), our composite house price index is expected to decline at a yearly average rate of 15.8 per cent in 2008.

In 2008, US real export growth is expected rise to 9.7 per cent; it would thus be the fifth straight year seeing real export growth progress more rapidly than the historical average rate of 5.9 per cent[2] per annum. This continued strong export performance builds mainly on a string of significant real effective depreciations of the dollar. Indeed, the dollar's real trade-weighted exchange rate depreciated at an annual average rate of 4.8 per cent over the 2003-2007 period and is currently expected to depreciate by another 7.6 per cent in 2008[3]. Export growth should be further underpinned by the resilience of the economies of the United States' main trading partners in the face of the current world-wide economic headwinds. Indeed, US foreign effective demand is still expected to rise by 4.4 per cent on the year, down from the 5.5 per cent growth rate of 2007.

Real import growth is expected to fall to just 0.9 per cent in 2008, down from 2.2 per cent in 2007. This lower growth mirrors the fall in final domestic demand growth, which is forecast to expand by just 0.8 per cent in 2008. The slower import growth is however accompanied by a sharp rise in import prices. Indeed, total import prices are expected to increase by 8.6 per cent on the year, while crude oil prices are expected to post a yearly average increase of 57.4 per cent[4]. Hence, despite the massive rise in export volumes and the modest rise in imports over 2008, the significant rise in import prices should forestall any noteworthy improvement of the country's current account position. Indeed, the US current account is forecast to show a deficit of 4.9 per cent in 2008, only marginally down from the 5.2 per cent shortfall of 2007.

US consumer price inflation, as measured by the rate of change in the personal consumption expenditure price index, reached a yearly average rate of 2.6 per cent in 2007 and is forecast to reach a yoy average rate of 3.6 per cent in 2008. Headline inflation reached an annual rate of 3.7 per cent[5] in November 2007, declined to 3.4 per cent in April 2008 but then peaked at 4.1 per cent in June 2008. We currently forecast that inflation will stabilise at

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1. We measure the evolution of nominal house prices using a weighted average of the S&P/Case-Shiller US National house price index (weight of 70%) and the OFHEO US purchases only house price index (weight of 30%).

2. Yearly average rate of real export growth over the 1990-2007 period.
3. In 2007, the US dollar's nominal exchange rate depreciated by 9.1 per cent against the euro, by 4.6 per cent against the Chinese yuan and by 1.2 per cent against the Japanese yen.
4. The price of Brent crude is expected to rise from a yearly average level of 72.5 $US/bbl in 2007 to 114.1 $US/bbl in 2008.
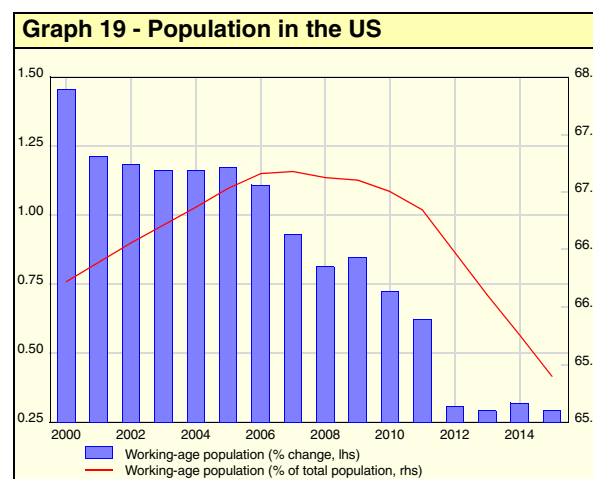5. Twelve month rate of change.

a twelve-month rate of 3.6 per cent and reach an identical 3.6 per cent in yoy terms. Core inflation, as measured by the rate of change in the consumer price index excluding food and energy, has held steady at a yearly average of 2.2 per cent in 2006 and 2 per cent in 2007 and is currently expected to rise to no more than 2.1 per cent in 2008. This stability in the measure of core inflation appears to indicate that there is currently no threat of any significant cost-push inflation and that rising food and energy prices are not passing through into other domestic prices. However, this apparently tame core inflation could be misleading as to the future course of inflation since it is strongly affected by the significant downward pressure from the declining growth rate of the price index for owners' equivalent rent, which currently accounts for about 24 per cent of the total consumer price index. Indeed, owners' equivalent rent inflation dropped from a monthly rate of 4.3 per cent in December 2006 to 2.6 per cent in June 2008. Furthermore, recent University of Michigan surveys of inflation expectations indicate that longer-term inflation expectations have risen sharply over the last months.

At the end of April 2008, the Federal Reserve's Federal Open Market Committee (FOMC) decided to lower its Fed Funds target rate from 2.25 per cent to 2 per cent; the main policy rate has been kept on hold since then. Given the weakening of recent economic indicators, US monetary authorities are expected to keep policy rates on hold throughout 2008, maintaining what can be viewed as a policy stance that is strongly supportive of economic growth and employment. This would leave the Fed's policy rate at 2.2 per cent on the year, markedly lower than the 5.1 per cent average of 2007. The Federal Reserve now appears to count on the dampening effects of the rising unemployment and the declining real income growth to rein in medium-term demand and inflation.

The reference 3-month money market rate (Libor) stood at an average level of 5.5 per cent in September 2007 and then declined to 3 per cent in July 2008. Notwithstanding the extraordinary measures taken by the Fed since August 2007 to ensure the smooth functioning of credit markets[1], there still appears to be considerable financial strain and markets continue to expect significant write-downs of banks' financial assets through

2008. Indicators of counterparty solvency and liquidity risks are still markedly above their pre-August 2007 levels, as indicated for instance by the Treasury/Eurodollar (TED) spread. This measure of risk rose from a normal (pre-August 2007) level of about 40 b.p. to more than 220 b.p. in August and December 2007. After a new peak to more than 200 b.p. in March 2008, the TED spread fell to 76 b.p. in May 2008 before rising to about 100 b.p. in early August 2008. Recent euro-dollar futures indicate that the reference short-term rate should increase somewhat throughout the remainder of the year, underpinned by rising inflation expectations and by the persistently elevated risk and liquidity premia in financial markets. The short-term market rate is forecast to reach a yearly average level of 3.2 per cent in 2008, well below the 5.3 per cent rate of 2007. This would imply that the yearly average real short-term interest rate would be negative in 2008.

Graph 19 - Population in the US
Working-age population (% change, lhs)
Working-age population (% of total population, rhs)

Medium-term trend output growth should decline due to mounting labour supply weaknesses

US potential private sector output growth increased spectacularly over the 1990s, rising from an average of 3.6 per cent per annum over 1984-1990, to 4.3 per cent over 1994-2000. Since then, we estimate that potential output growth declined steadily, reaching only 2.9 per cent in 2007. The slide in the growth rate of potential output is projected to continue, dropping to 2.4 per cent in 2012 and stabilising at that level thereafter. The expected medium-term decline in trend

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1. E.g.: cuts in the target Fed Funds rate; cuts in the discount rate; cuts in the discount rate's "penalty spread"; revised procedures for the pricing of collateral offered to the Fed; creation of the TAF, the TSLF and the PDCF; the bailout of Bear Stearns; the discount window access granted to Fannie Mae and Freddy Mac.

private sector output is attributable to a fall in trend labour supply growth, which should tumble from 1 per cent in 2008 to 0.5 per cent as of 2012. Growth in the labour supply is expected to mirror the sharp decline in growth of the country's working-age population over 2008-2015.

Graph 20 - US current account

Current account (level, % of GDP)

Graph 21 - Net borrowing of government in the US

Net borrowing of government (level, % of GDP)
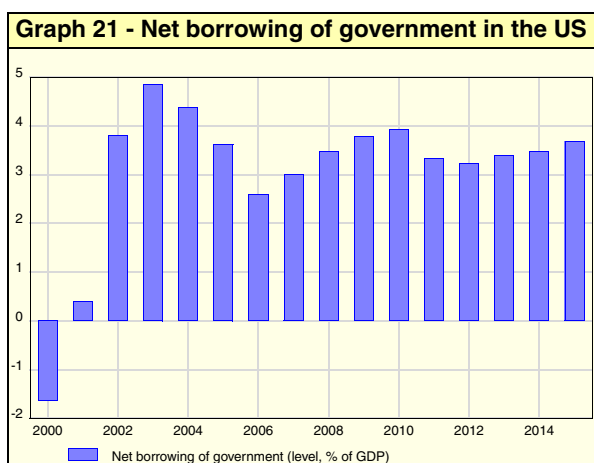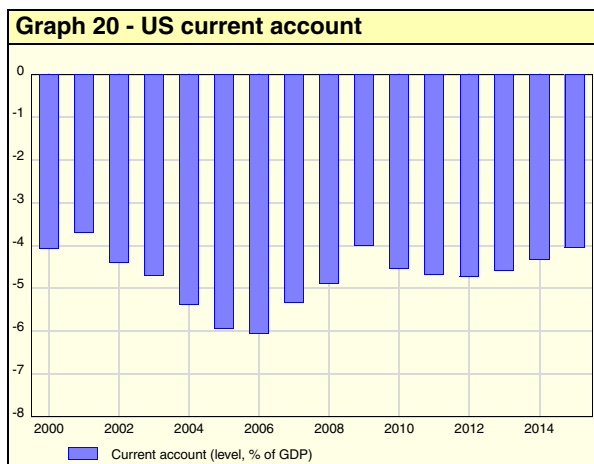
Against this backdrop of weakening trend output growth, effective GDP growth in the US is projected to remain modest in 2009, rising by no more than 2.1 per cent. At this rate of expansion, GDP should fall well below trend, leading to a negative output gap of 0.5 per cent. Growth in 2009 should be mainly underpinned by a strong positive contribution from real net exports, while private consumption and investment should remain weak. After 2009, GDP growth is projected to rebound and to average 2 per cent per annum. However, growth is expected to dip abruptly in 2011 as domestic demand falters following the scheduled expiration of provisions in current tax laws, leading to a rise in personal and corporate tax liabilities. All in all, growth is expected to remain relatively subdued throughout the projection period, and aggregate output levels should remain consistently below trend output.

In 2009, private consumption growth is projected to decline to just 1.3 per cent, curtailed by high unemployment, rapidly rising domestic prices, high and rising oil prices and rising interest rates. All of these factors are expected to limit household purchasing power and raise the household saving rate. Furthermore, the meagre rise in household consumption also results from the continued strong decline in US house prices[1], which leads to a reduction in aggregate net household wealth. Private consumption is expected to rebound vigorously in 2010 only to be curtailed by the expected tax hikes of 2011. Private consumption should expand thereafter at the modest rate of 1.4 per cent per year due to persistently high rates of unemployment, modest employment growth and tepid increases in household real take-home wage rates.

Real residential investment is forecast to decline in yoy terms by 20.2 per cent in 2008, but by no more than 3.8 per cent in 2009 as the residential investment-to-GDP ratio is assumed to gradually return to its long-term average level of 4.6 per cent. While this ratio stood at just 3.42 per cent in 1Q08, it is assumed to rise to 3.70 per cent by 1Q09 and to reach 4.01 per cent by 1Q10, thus pulling up residential investment. The decline in house prices is assumed to continue through the first half of 2009. House prices should fall by 5 per cent in 1Q09 and by 0.5 per cent in 2Q09; prices should then be flat in 3Q09 and begin to rise by about 0.7 per cent as of 4Q09. In yoy terms, this implies that house prices should fall by 12.4 per cent in 2009, after declining by 15.8 per cent in 2008. In 2009, business sector capital investment is projected to rise by just 1.6 per cent, undermined by the deteriorated economic environment that has prevailed since the summer of 2007. Investment is expected to be particularly vulnerable to a possible sharp downturn in commercial real estate, as well as to continued tightness in financial markets. Aggregate gross fixed capital formation is projected to stabilise as of 2010, rising at a yearly average rate of 1.9 per cent over 2010-2015.

Economic activity in 2009 is projected to be markedly less underpinned by real exports than in 2008; exports should progress by only 4.8 per cent, compared with 9.7 per cent in 2008. Exports in 2009 are forecast to suffer from a further weaken-

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[1.] Measured by the S&P/Case-Shiller US national home price index, house prices began to fall in the third quarter of 2006.

ing in foreign effective demand, which should rise by just 1.8 per cent on the year. Furthermore, the dollar's nominal effective exchange rate in 2009 is projected to appreciate, leading to a limited real effective depreciation of 0.5 per cent on the year. In 2009, real imports should decline due to the very weak growth in domestic demand in both 2008 and 2009, the deterioration in the country's terms-of-trade, and the ongoing rise in oil prices. Real exports are projected to increase by 5.5 per cent over 2010-2015, providing a significant boost to GDP growth alongside the moderate rise in domestic demand. Imports are expected to rise once again as of 2010 but import growth should remain subdued as the US dollar is projected to continue to weaken in real trade-weighted terms. The stable rise in export volumes and the declining growth of import prices is projected to gradually reduce the US current account deficit. The deficit is expected to shrink from 4.9 per cent of GDP in 2008 to 4.1 per cent of GDP in 2015.

All in all, the moderate growth over the 2008-2015 period is projected to lead to declining rates of inflation. Consumer price inflation, as measured by the change in the deflator of private consumption expenditure, should fall from a yearly average rate of 3.4 per cent in 2008 to just 1.8 per cent by 2015. Accordingly, monetary policy should become significantly more accommodative as of 2011, bringing about a decline in the short-term money-market rate which is projected to fall from a yearly average level of 3.8 per cent in 2010 to 1.4 per cent in 2015.

The possibility and implications of making permanent the tax cut provisions originally enacted in the Economic Growth and Tax Relief Reconciliation Act (EGTRRA) of 2001 and the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003 is the subject of debate in the run-up to the US presidential elections of November 2008. The president's budgetary proposals for fiscal year 2009, as transmitted to Congress in February 2008, requested the extension of a number of these tax provisions and the adoption of these proposals would have significant effects throughout the 2008-2015 period. To date however, such requests have not been enacted and our current projection for US fiscal outlays and income over 2008-2015 are made under the assumption of the unaltered implementation of current fiscal laws and policies. Over the 2008-2015

period, the US federal budget deficit is projected to rise to 3.5 per cent of GDP in 2008 and 3.9 per cent of GDP in 2010, before falling to 3.2 per cent of GDP in 2012 due to the reduction of the exemption amounts for the AMT and the slated expiration of fiscal provisions originally enacted in EGTRRA and JGTRRA. The most significant impact on fiscal revenue is set to come from the expiration of tax provisions at the end of December 2010, as these will increase statutory tax rates on ordinary income, capital gains and dividends. Our projection further indicates that these measures alone will not be sufficient to balance the federal budget sustainably, as the deficit is projected to rise again as of 2013 and reach 3.7 per cent of GDP in 2015.

Japan

Japan's economy grew at a strong annual average rate of 2 per cent in 2007. In 2008, GDP growth is currently forecast to fall to just 1 per cent due to a massive decline in residential investment and a slight fall in real export growth. Over the 2008-2015 period, relatively resilient private consumption growth should be accompanied by falling business sector investment and waning export growth, effectively limiting the expansion of GDP to an annual average rate of 0.9 per cent. Working-age population is projected to fall at an annual average rate of 0.8 per cent over the 2008-2015 period, dragging down employment by 1.4 per cent per annum over the same period. Unfavourable terms-of-trade developments and declining export growth are expected to reduce Japan's current account surplus from 4.9 per cent of GDP in 2008 to 3.2 per cent of GDP by 2015. Furthermore, unless renewed efforts geared towards lasting fiscal consolidation are rapidly implemented, the government's fiscal deficit is projected to continue to deteriorate markedly over the projection period.

A massive decline in residential investment and weaker export growth stifle GDP growth in 2008

Japanese real GDP is currently forecast to expand at the relatively paltry pace of 1 per cent in 2008. Fears emerged in the course of 2007 that the financial crisis and economic slowdown in the US would rapidly have an adverse effect on Japan's economy. Though real GDP did indeed fall by 1.7 per cent in annualised qoq terms in the second quarter of 2007, it then turned around and posted an unexpectedly vigorous rise of 3.2 per cent in the first

quarter of 2008. Our forecast for 2008 is for the headwinds from the US-led slowdown to finally undermine Japanese economic growth. However, rather than leading to a full-blown recession, we anticipate only a temporary downturn, with the recently announced contraction of 2.4 per cent (qoq, annualised) in 2Q08 giving way to increases of respectively 1 and 1.3 per cent in 3Q08 and 4Q08. This would yield a yearly average growth rate of 1 per cent over 2008. The effective rate of GDP growth, as measured by the 4Q08/4Q07 growth rate, is forecast to reach a low 0.7 per cent in 2008.

Graph 22 - Gross domestic product in Japan

GDP (% change)

Graph 23 - Contributions to real GDP growth in Japan *(percentage points)*

Private consumption
Business sector investment
Total domestic expenditure
Real net exports
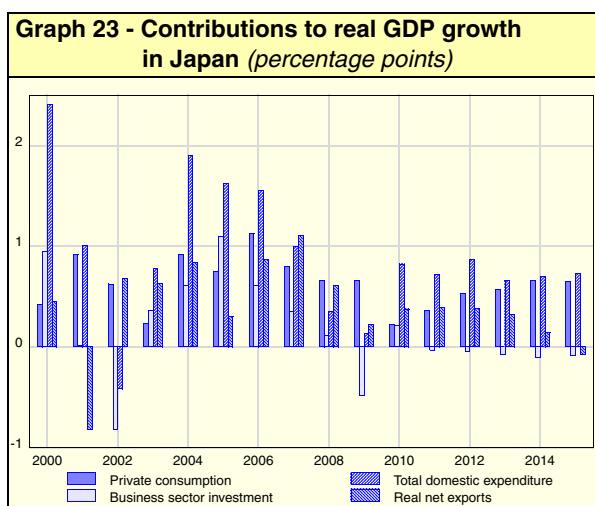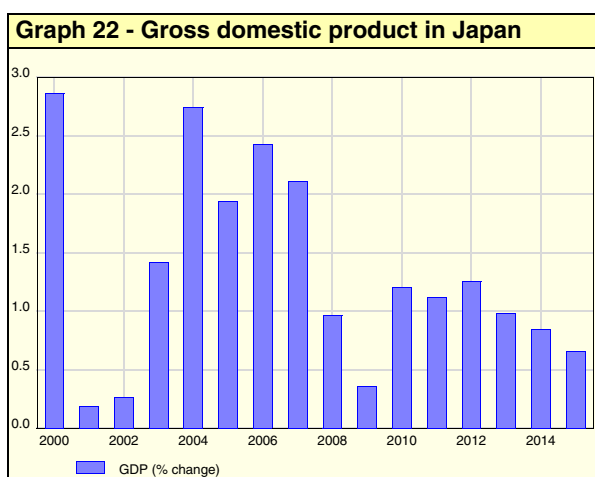
Private consumption expenditure growth is forecast to reach a yearly average rate of 1.2 per cent in 2008, down from 1.4 per cent in 2007. Consumption is expected to continue to expand on the back of a slight rise in employment, accompanied by a fall in real interest rates. Indeed, an inflation-induced reduction in real interest rates should provide further support for consumption expenditure by reducing the household saving rate. The decline in the July reading for Japan's consumer confidence index suggests that even this relatively

weak scenario is currently threatened as rising nominal wages do not seem to be able to keep up with the rise in headline inflation.

The slump in Japanese residential construction in 2007, in large part attributable to the revised Building Standards Law, is expected to spill over into 2008 and lead to a massive 12.4 per cent decline in residential building in 2008. The quarterly profile of residential investment shows a surprising 18.3 per cent rise (qoq, annualised) in residential investment in 1Q08, coming after a 33.8 per cent fall in 4Q07. However, we currently forecast that residential investment should resume its decline as of 2Q08, posting a 4.1 per cent fall on the year in 4Q/4Q terms. Business investment, which weakened in 2007 as Japan's Credit Guarantee Corporations tightened credit conditions for small and medium-size businesses, is now projected to progress by a slim 0.7 per cent in 2008. The Bank of Japan's July Tankan offered a downbeat assessment on coming business investment, indicating a downward revision in business capital expenditures and a sharp deterioration in expected business conditions over the coming quarters due to widespread pessimism on future earnings, the rise in input costs and bleak expectations on US economic performance. All in all, we forecast that economy-wide gross fixed capital formation will contract in 2008 at a yearly average rate of 1.9 per cent, after a decline of 0.3 per cent in 2007.

Japanese real exports progressed by a hefty 8.8 per cent in 2007, benefiting from seven consecutive years of real trade-weighted exchange rate depreciation. Building on this momentum, exports in 2008 should continue to rise, posting a 6.2 per cent yearly increase. Export growth is also expected to be underpinned by economic activity in the rest of the world, which is forecast to hold up though 2008; however, Japanese exports should be somewhat negatively affected by a significant retrenchment in US imports. Though the rise in real exports should be accompanied by an effective appreciation of the yen exchange rate in 2008, this should be insufficient to reverse the now decade-long deterioration in the country's terms-of-trade. Nevertheless, the rise in real exports should still allow for a slight increase in the current account surplus, which is forecast to rise from 4.8 per cent of GDP in 2007 to 4.9 per cent in 2008.

Growth in total employment is projected to rise by a slim 0.2 per cent in 2008, rebounding from a 0.2 per cent decline in 2007. This slight upturn in employment follows a 0.3 per cent rise in Japan's labour supply and comes as both total population and working-age population decline for the third consecutive year. As the rise in the labour supply in 2008 is accompanied by a smaller increase in employment, Japan's unemployment rate is forecast to increase from 3.9 per cent of the civilian labour force in 2007 to 4 per cent in 2008.

In 2005, the Japanese government attempted to begin to rein in its ballooning budget deficit and debt. The former Koizumi administration managed to bring the government deficit down from 6.7 per cent of GDP in 2005 to 1.4 per cent of GDP in 2006. However, the current Fukuda government appears to be encountering difficulties pursuing these essential reforms. Notwithstanding the government's renewed commitment to adhere strictly to the "Basic Policies 2006", the "Basic Policies 2007" and the "Integrated Reform of Expenditures and Revenues" programmes[1], doubts remain as to how effectively the necessary reforms will be implemented. The overall budget deficit for the fiscal year ending on 31 March 2009 is expected to rise to 1.8 per cent of GDP and Japan's budget deficit is projected to continue to drift upwards in the coming years.

Medium-term demographic trends are projected to undermine GDP growth while the country's budget deficit looks set to increase significantly

Japan's real GDP is projected to progress at an annual average rate of no more than 0.9 per cent over the 2009-2015 period. Domestic demand is expected to rise at an annual average rate of 0.7 per cent over the period, while exports should increase at a moderate pace of 2.7 per cent. GDP growth should fall off markedly from 1 per cent in 2008 to just 0.4 per cent in 2009, as growth in export volumes declines and as business capex falls. GDP growth is projected to exhibit a temporary jump to 1.2 per cent in 2010, driven by an upswing in gross fixed capital formation and a firm rebound in export growth, but economic activity should then wane throughout the 2011-2015 period as the

significant and steady decline in Japan's total population curtails trend output growth and as yearly appreciations in the yen's nominal effective exchange rate stymie real export growth.

Graph 24 - Price deflators in Japan

Legend:
- Deflator of private consumption (% change)
- Deflator of GDP (% change)

Graph 25 - Interest and exchange rates in Japan

Legend:
- Nominal short-term interest rate (level)
- Nominal long-term interest rate (level)
- Nominal effective exchange rate (% change, +: depreciation)
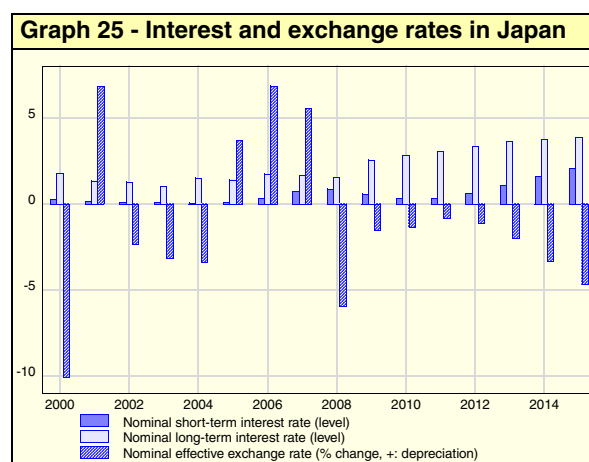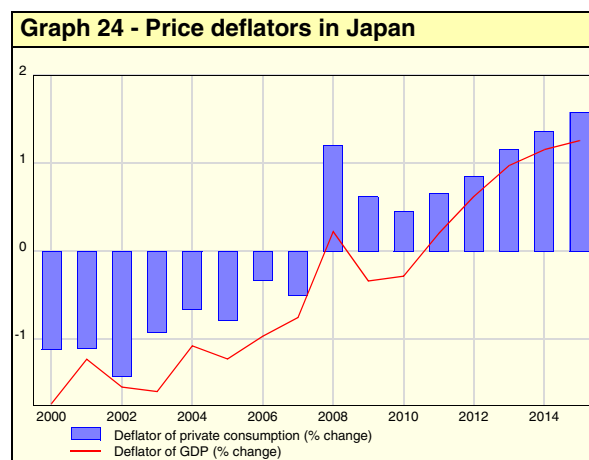
Demographic developments should constitute an increasingly strong drag on Japanese GDP growth, as labour productivity is projected to continue to rise by 2 per cent per annum[2] while the country's trend labour supply should decline by 0.7 per cent per year over the 2009-2015 period. The demographic decline is projected to hit both the younger-aged and the working-aged populations; the younger-aged population is projected to fall by 1.3 per cent per year, while the working-aged population is slated to decline by 0.9 per cent per year over 2009-2015. The number of older-aged persons should increase at an annual average rate of 2.4 per cent over the same period.

Real private consumption expenditure is expected to hold up relatively well in 2009, expanding by 1.2 per cent on the year. Consumption should prove to be resilient as a large decline in employment and a

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1. See the Japanese government's June 2008 "Economic and Fiscal Reform 2008 (Basic Policies)" agenda. Internet: http://www.keizai-shimon.go.jp/english/index.html.

2. Private sector trend labour productivity growth.

parallel rise in the unemployment rate is expected to be offset by an equally robust rise in real take-home wage rates.

Graph 26 - Population in Japan

Working-age population (% change, lhs)
Working-age population (% of total population, rhs)

Graph 27 - Current account of Japan

Current account (level, % of GDP)

Graph 28 - Net borrowing of government in Japan

Net borrowing of government (level, % of GDP)
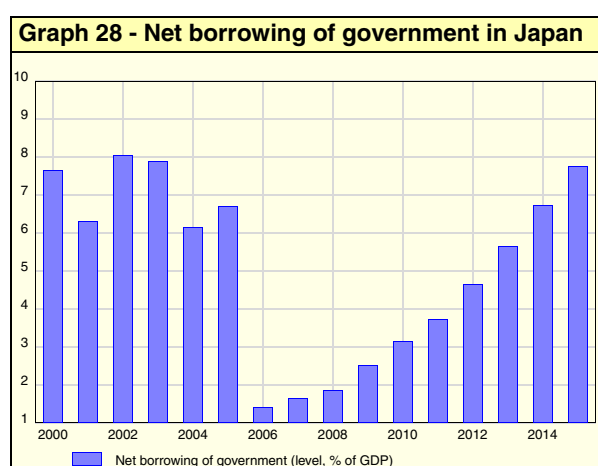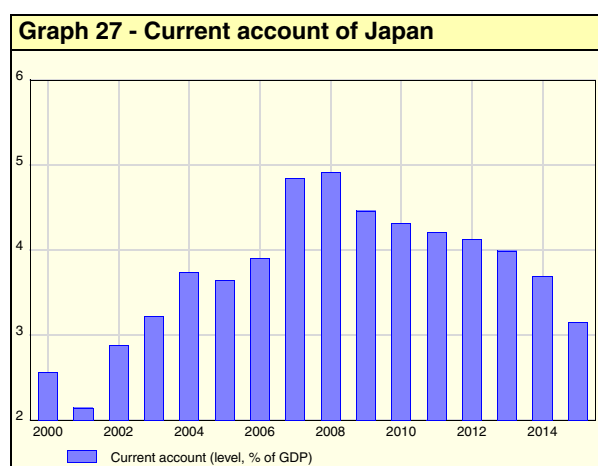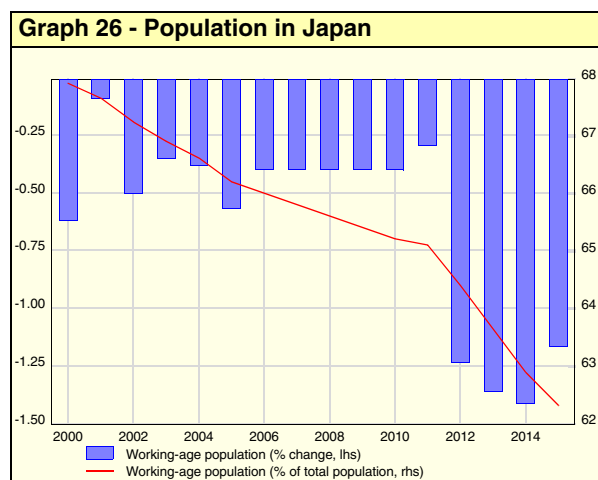
However, in 2010, private consumption expenditure is projected to increase by a paltry 0.4 per cent on the year, as employment falls ever more rapidly and as households choose once again to spend a greater part of their total available means on residential buildings. Consumption growth should progress at a more rapid pace thereafter, reaching

a yearly average rate of 1 per cent over the 2011-2015 period.

Japanese gross fixed business investment is projected to decline by 3 per cent in 2009, as the rapid decline in domestic demand since 2008 pushes effective output levels down well below potential output levels. Except for a temporary rebound in 2010, business investment is projected to fall throughout the projection period due to lingering weaknesses in final demand and employment. Residential investment is projected to return to positive growth in 2010, shaking off the effects of the 2007 Building Standards Law. Aggregate gross fixed investment should rise at an average yearly rate of 0.5 per cent over 2010-2015.

Over the 2009-2015 period, the export sector's contribution to Japan's GDP growth should decline. Indeed, while export volumes progressed at an annual average rate of 6.6 per cent over the 1997-2007 period, our projection is for export volumes to increase by no more than 2.8 per cent per annum over 2009-2015. Exports, like aggregate supply for final domestic demand, should be adversely affected by a trend decline in potential output growth linked to Japan's declining labour supply. At the same time, the country's large current account surplus and rising interest rates are projected to lead to a steady appreciation of the yen's real trade-weighted exchange rate, which should reduce real export growth. The waning export growth should then combine with a persistent deterioration in the country's terms-of-trade and bring about a gradual decline in Japan's large current account surplus. The current account surplus is projected to fall from 4.9 per cent of GDP in 2008 to 3.2 per cent of GDP in 2015.

The fundamental framework and principles behind the drive in recent years to achieve a sustainable medium-term fiscal position were laid out in the Council on Economic and Fiscal Policy's "Course and Strategy for the Japanese Economy" of December 2006. As the Koizumi government made way for the Abe government, which has since been replaced by a government now headed by Prime Minister Yasuo Fukuda, the achievements in terms of rapid fiscal consolidation appear to be faltering. The government budget deficit fell from 6.7 per cent of GDP in 2005 to an estimated 1.6

per cent of GDP for the fiscal year ending on 31 March 2008. However, assuming the pursuit of recent developments in public expenditure and income, the government's budget deficit is projected to return to a steadily increasing trend. If measures are not taken to ensure the strict observance of the integrated medium-term budgetary strategy reaffirmed in the government's June 2008 "Economic and Fiscal Reform 2008 (Basic Policies)" programme, our projection indicates that Japan's budget deficit and debt may rise to unmanageable levels by the end of the projection period.

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The Central & Eastern EU Member States and the Rest of the World

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The Central & Eastern EU Member States

Real GDP growth of the Central & Eastern EU MS is forecast to decline from an elevated 5.7 per cent in 2007 to 4.8 per cent in 2008. In 2008, economic activity is projected to pursue its headlong expansion, fuelled by strong increases in private consumption and investment. Real net exports should once again provide a negative contribution to GDP growth. The contribution from net exports is forecast to be slightly less negative in 2008 than in 2007, due to less vigorous final domestic demand growth, which leads to a less pronounced rise in imports. Exports are slated to progress by 8.9 per cent on the year, down from 10.6 per cent in 2007. This slightly slower export growth follows from milder foreign effective demand growth in 2008, accompanied by strong and regular currency appreciations - both against the euro and in trade-weighted terms - since 2005.

After the very high growth period of 2003-2007, GDP growth is projected to become more moderate over 2008-2015. GDP growth reached an average rate of 5.1 per cent over 2003-2007, but should fall to 2.6 per cent over 2008-2015. This moderation should stem from a marked cooling in growth of final domestic demand. The area's real net exports should continue to have a negative impact on growth, but these negative contributions should shrink as import growth falls to more sustainable levels and as exports expand at rates more in line with the rise in foreign effective demand.

The decline in domestic output growth should follow from the fall in the area's rate of trend output growth. Both trend labour productivity growth and labour supply growth are estimated to have fallen significantly over recent years; annual labour productivity growth fell from 2.3 per cent in 1996 to an estimated 1.6 per cent in 2008; growth in the labour supply declined from 1 per cent in 1992 to an estimated 0.4 per cent in 2008. Our projection builds on the assumption that labour productivity growth will stabilise at 1.6 per cent throughout our projection period, while growth in the area's labour supply will fall to 0.1 per cent by 2015. This would imply a decline in trend potential output growth from 2 per cent in 2008 to no more than 1.7 per cent by 2015.

Consumer price inflation, as measured by the rate of change in the deflator of private consumption, fell to a historic low of just 4.3 per cent in 2005, despite the area's heady rate of expansion. Inflationary pressures picked up subsequently, reaching 5.6 per cent in 2007 due to the pace of the economic expansion and the rise in energy and raw materials prices. Inflation is now expected to reach 5.4 per cent in 2008, but should then begin to subside as monetary policy is tightened drastically in order to temper domestic demand growth and steer the area's economy towards greater convergence with the euro area's medium-term inflation objective.

Since the beginning of their transition in the early 1990s towards modern service-oriented market economies, final domestic demand in the Central & Eastern Member States of the European Union[1] has surged, rising at an annual average clip of 3.4 per cent over 1991-2007. Since the first wave of accessions to the European Union in May 2004, demand has progressed even more heatedly, expanding at a yearly average rate of 6.1 per cent through 2007. Real convergence with the other member states of the EU has progressed through an explosion in consumer spending and investment, part of which was based on large foreign capital inflows.

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[1]. The "Central & Eastern EU Member States" include Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia. Data for this area results from the aggregation of national data using market exchange rates.

Graph 29 - Gross domestic product in the Central & Eastern EU Member States

Graph 30 - Selected components of final demand in the Central & Eastern EU Member States

Graph 31 - Price deflators in the Central & Eastern EU Member States
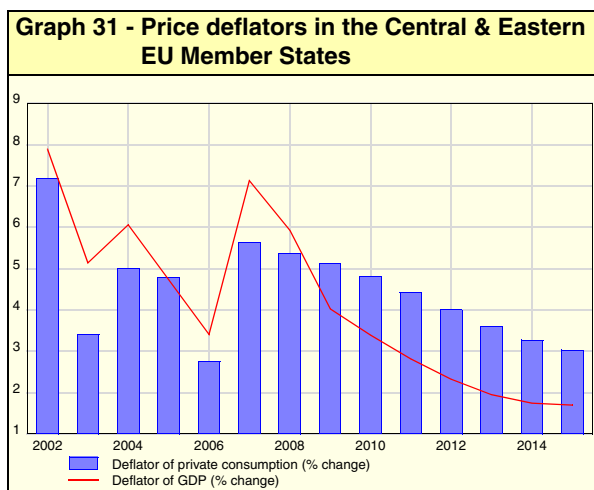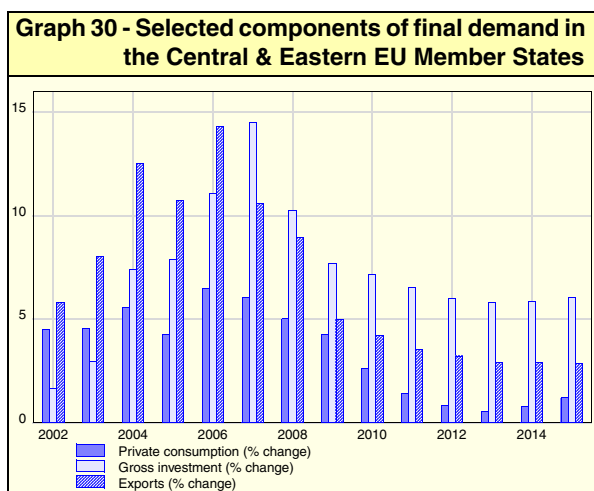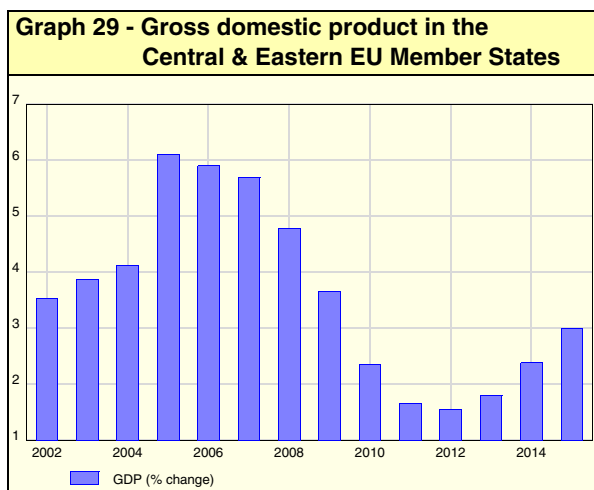
The corollary of this real convergence has been a rapid rise in import volumes and the build-up of significant current account deficits, as indicated by a string of consecutive negative real net export contributions. Indeed, real net exports have subtracted from real GDP growth in all but five years since 1991. The area's current account has been in chronic deficit, with the shortfall in 2007 reaching an estimated 3.7 per cent of GDP. Current account deficits are projected to persist throughout the projection period, averaging a worrying 8.6 per

cent of GDP. These recurrent deficits come as the area's real net exports remain negative, even though they tend to shrink throughout the projection period; the deficits are expected to be compounded by generally large deteriorations in the terms-of-trade, coming about despite the significant nominal trade-weighted exchange rate appreciation over the 2008-2015 period. Under these circumstances, the area looks set to become extremely vulnerable to exchange rate volatility, a weakening of it's foreign effective demand and abrupt changes in foreign capital flows.

The Rest of the World

Over the 1990-2007 period, output growth in the "Rest of the World" area[1] progressed at a yearly average rate of 5.2 per cent. Growth accelerated in the mid-1990s, rising to a yearly average rate of 6.2 per cent over 1994-1996 before grinding to a halt as the Asian financial crisis unfolded in July 1997. Rest of World output growth then spurted once again after 2002, reaching an average of 6.2 per cent over 2003-2007. This latest period of heady expansion boosted growth back to the levels of the previous high growth period of the mid 1990s. The rate of expansion of gross output in our rest of world area reached a stunning 7.4 per cent in 2006 and 7 per cent in 2007. Our current projection is for the area's output to expand by a still impressive 6.1 per cent in 2008, but to plummet to just 1.9 per cent in 2009. Growth is projected to rebound thereafter, reaching 5.1 per cent over the 2010-2015 period.

This scenario implies that world output growth will reach 3 per cent in 2008, down from 3.8 per cent in 2007. World growth would thus fall below the yearly average growth rate of 3.2 per cent that was achieved over the 1997-2007 period. World growth is projected to plummet to just 1.5 per cent in 2009 as economic activity weakens significantly in the euro area, Japan and in the Rest of the World area. World output is then slated to pick up, progressing at a yearly average rate of 3 per cent over 2010-2015. In terms of real per capita output growth, the world economy is forecast to expand

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[1]. The 25 largest economic areas that are included in the NIME model's "Rest of the World" area are the following, by decreasing size of current $US GDP in 2006: PR China (mainland), Canada, Brazil, Russia, South Korea, India, Mexico, Australia, Turkey, Switzerland, Indonesia, Saudi Arabia, Norway, South Africa, Argentina, Iran, Thailand, Hong Kong PRC, Venezuela, United Arab Emirates, Malaysia, Chile, Israel, Colombia and Singapore.

by 1.8 per cent in 2008 and to just avoid stalling in 2009, as growth is projected to reach a mere 0.4 per cent on the year. Per capita output is projected to reach 1.7 per cent over 2008-2015, noticeably below the 2.2 per cent growth rate registered by the world economy over the 2000-2007 period.

Inflation in the Rest of the World progressed at an average rate of 18.2 per cent over 1990-2007, mostly due to the high inflation period of 1990-1996. Inflation fell markedly after the financial turmoil of 1997-1998, as indicated by the decline in the yearly average rate of inflation which plummeted to 6.3 per cent over 1999-2007. Rest of world inflation has picked up over recent years, rising from an all-time low of 4.2 per cent in 2006 to 4.6 per cent in 2007 in the wake of particularly strong real output growth. In 2008, inflation is forecast to edge up to a yearly average rate of 5.2 per cent, on the back of strong increases in oil and other raw materials prices. Inflation is expected to stabilise thereafter at an annual rate of 5.2 per cent.

Import growth in the Rest of the World area expanded at a yearly average pace of 6.6 per cent over the 1990-2007 period, accelerating to 8 per cent over the more recent high-growth period of 2003-2007. Our current projection pencils in a trend decline in real import growth. Imports are projected to rise by a still robust 8.5 per cent in 2008, but are then assumed to decline in the wake of the moderation of real output growth over the 2008-2015 period. Over this same period, real imports are expected to increase at a yearly average rate of 5.4 per cent, matching the average performance noted over the 1980-2007 period.

Exports from the Rest of the World to other areas of the world expanded at a yearly average rate of 5.5 per cent over 1980-2007. The area's exports progressed somewhat more moderately than imports since the beginning of this decade, and export growth rates fell from 12.1 per cent in 2004 to just 2.7 per cent in 2007. Exports are projected to continue to expand at a modest pace in 2008, increasing by 2.5 per cent on the year. Exports should then expand slightly more vigorously, posting yearly average increases of 3.2 per cent over the 2008-2015 period. After progressing by a massive 8.7 per cent in 2006 and falling to a more modest 4.9 per cent in 2007, world trade - as meas-

ured by the rise in the volume of world exports - looks set to expand by a robust 5.1 per cent in 2008. World trade growth should tumble to 2.7 per cent in 2009 as economic activity falls off in the euro area, Japan and the Rest of the World area. Growth in world trade should rebound to 4.2 per cent in 2010 and average 3.7 per cent over 2008-2015.

Graph 32 - Rest of World output growth

- Real output (% change)
- Real per capita output (% change)

Graph 33 - Relative current price GDP per capita
(in euro, euro-12 GDP = 100)

- Western non-euro EU MS
- United States
- Japan
- Rest of World
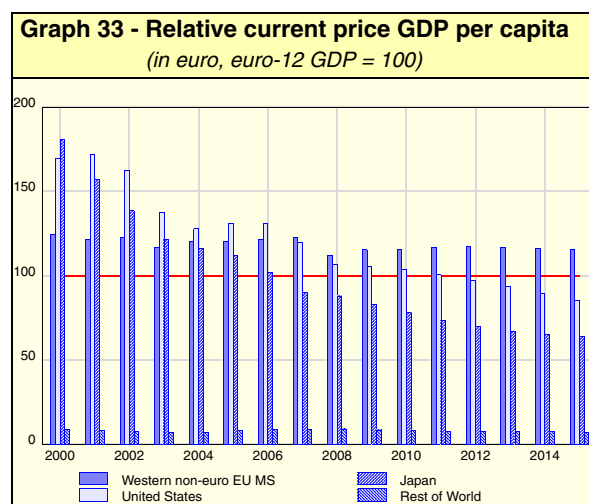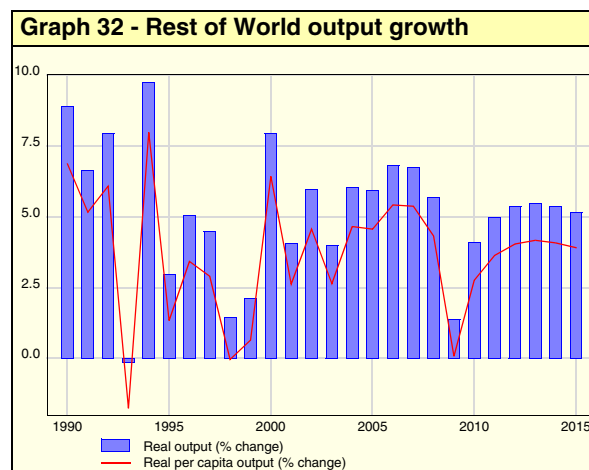
Finally, on the aggregate, the currencies of the Rest of the World area have been appreciating in nominal effective terms over the 2005-2007 period. These currencies have appreciated against the US dollar ever since 2003; they appreciated against the euro in 2005 and 2006 but depreciated markedly in 2007. In 2008, our forecast indicates that the area's currencies should appreciate by a slight 0.1 per cent in nominal effective terms; the appreciation is expected to be 6.3 per cent against the US dollar, while we expect a 4.2 per cent depreciation of the area's currencies against the euro. Thereafter, the area's nominal trade-weighted exchange rate is projected to revert to a trend depreciation, reaching an annual average rate of 6.6 per cent over the 2009-2015 period.

Main uncertainties surrounding the 2008-2015 projection

Significant short-term uncertainties surround the ultimate effects of recent oil price increases and how the North Atlantic financial crisis will play out

Recent data for the euro area suggest that the area's economy has now reached the end of a period of above-trend growth that began in 2Q05. Though the downturn is clear, it is difficult to foresee whether it will evolve into a full-blown recession or not. In the short run, this will depend to a crucial extent on the final impact of the rise in oil and food prices on consumption patterns. If the prices of these staples pursue the decline that began in mid-July 2008, their effects could prove to be limited and of relatively short duration. However, if prices were to begin to rise once again, they could further undermine growth prospects for 2008 and 2009.

Graph 34 - The price of oil ($US/bbl, yearly averages) [a]

Brent price ($US/bbl)
Real Brent price (deflated by US consumer prices)
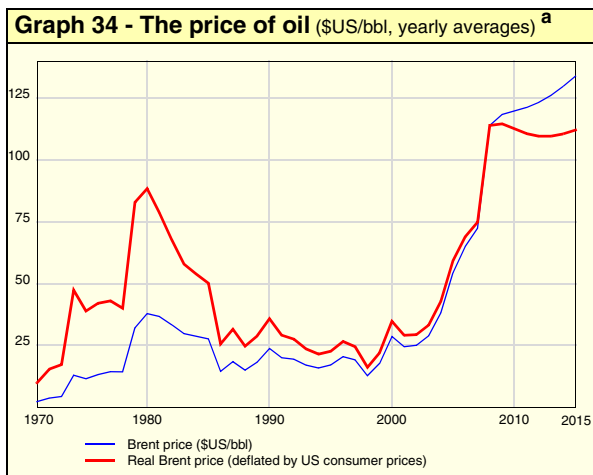
a. Price of Brent crude oil. Period 2008-2009: historical data and ICE oil futures data. Period 2010-2015: assumption.

Greater uncertainty surrounds our results for the US economy as they also hinge decisively on assumptions as to the evolution of the US housing market, the unwinding of the financial crisis and the possible new fiscal stimulus package that could be implemented before the end of the year. In Japan, the uncertainties surrounding our forecasts are mainly linked to the resilience of its main export markets and the possible end of the country's deflationary stint. Finally, while the rise in world oil prices has been a boon for major oil exporting countries, it has led to difficulties in oil importing countries and even to significant economic distress in the poorer oil importing

developing economies. Uncertainties thus also surround the impact of the rise in world commodity prices on growth in the rest of the world.

Medium-term downside uncertainties reside in oil price trends while an upside uncertainty lies in the evolution of long-term labour productivity growth

A first potential downside risk to world medium-term GDP growth resides in a possible continuing upward drift of world oil prices. Over the last six years, oil prices have been constantly on the rise in year-on-year average terms. Long-dated Brent futures currently indicate that oil prices are not expected to fall significantly over the projection period. Capacity constraints stemming from increased marginal demand played a role in past price hikes. However, capacity constraints could also come increasingly from the supply-side. Oil production levels have peaked and are now in decline[1] in the United States, Russia, Mexico and in the North Atlantic, while no significant new supply is expected to go on-stream over the next five years. In the absence of any clear medium-term alternatives to conventional fossil fuels, supply and demand trends could make rising oil prices a permanent feature of the world economy and curtail medium-term output growth.

A second upside risk to GDP growth is linked to a possible structural rise in trend productivity growth in both the euro area and Japan. Indeed, speculations have recently surfaced regarding a "European growth revival", while the Japanese government is announcing measures aimed at increasing productivity growth. An increase in trend productivity growth could lead to higher-than-projected rates of GDP growth and help mitigate the adverse effects of declining working-age populations in Europe and Japan. However, recent analyses from the European Commission services[2] themselves state that it is too early to make such a call and that the recent spurt in growth could turn out to be only cyclical in nature.

1. See: United States Government Accountability Office, "Crude Oil: Uncertainty about Future Oil Supply Makes It Important to Develop a Strategy for Addressing a Peak and Decline in Oil Production", Report to Congressional Requesters, February 2007.
2. See for instance: European Commission, "The EU economy: 2007 review: Moving Europe's productivity frontier", November 2007. Internet: http://ec.europa.eu/economy_finance/publications/publication_summary10132_en.htm

Detailed Tables - The Euro Area

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Private consumption	1.4	1.1	1.7	2.3	2.2	1.8	1.5	1.3	1.2	1.6
2. Government consumption	2.2	1.8	2.3	2.0	1.7	1.8	1.4	1.4	1.3	1.7
3. Gross fixed capital formation	4.2	2.1	1.1	2.5	3.3	2.2	2.1	2.0	2.0	2.2
. of which business sector	5.2	3.2	1.5	3.3	4.7	3.1	3.0	2.9	2.8	3.0
4. Exports	6.9	4.7	1.2	1.7	1.8	2.1	2.2	2.2	2.1	2.3
5. Imports	5.1	4.6	3.9	3.6	3.3	2.5	2.0	1.8	1.6	2.9
6. Gross domestic product	2.6	1.5	1.0	1.8	2.0	1.8	1.7	1.6	1.5	1.6
7. Private sector value added	2.6	1.6	1.1	1.8	2.0	1.8	1.7	1.7	1.6	1.7
8. Private sector gross output	3.1	2.2	1.7	2.2	2.3	2.0	1.8	1.7	1.6	1.9
9. Output gap (deviation of GDP from trend GDP, in %)	1.2	1.1	-0.0	-0.0	0.1	0.3	0.3	0.3	0.2	0.3
10. Contributions to real GDP growth										
a. Total domestic expenditure	2.1	1.6	1.6	2.2	2.3	1.9	1.6	1.5	1.4	1.8
b. Net exports	0.5	0.1	-0.6	-0.4	-0.3	-0.1	0.1	0.1	0.1	-0.1
II. Deflators										
1. Private consumption	2.0	3.3	3.0	2.4	2.3	2.3	2.3	2.4	2.4	2.5
2. Gross fixed capital formation	2.6	1.7	1.7	1.5	1.3	1.2	1.1	1.1	1.0	1.3
. of which business sector	2.2	2.0	1.7	1.4	1.2	1.0	0.9	0.8	0.7	1.2
3. Exports	1.4	1.3	1.2	1.0	0.8	0.6	0.4	0.2	0.0	0.7
4. Imports	1.2	2.1	0.4	0.4	0.6	0.8	1.0	1.1	1.2	0.9
5. Gross domestic product	2.2	2.7	2.8	2.2	2.0	1.9	1.8	1.8	1.8	2.1
6. Private sector value added	2.3	2.6	2.6	2.5	2.0	1.9	1.8	1.8	1.7	2.1
7. Private sector output	2.0	2.5	2.2	2.0	1.7	1.7	1.7	1.6	1.6	1.9
III. Financial Markets										
1. Short-term interest rate (level)	4.3	4.9	5.2	5.1	5.0	4.9	5.0	5.1	5.1	5.0
2. Long-term interest rate (level)	4.3	4.3	5.3	5.1	5.1	5.0	5.1	5.1	5.1	5.0
3. Spot exchange rate, euro/$US (level x 100)	73.0	65.7	64.3	63.3	62.1	60.6	58.6	56.3	53.7	60.6
4. Spot exchange rate, euro/$US (+: depreciation)	-8.3	-10.0	-2.2	-1.6	-1.8	-2.5	-3.3	-4.0	-4.5	-3.7
5. Nominal effective exchange rate (+: depreciation)	-3.2	-5.1	-4.3	-4.5	-4.7	-4.8	-5.0	-5.3	-5.6	-4.9
6. Real effective exchange rate (+: depreciation)	-0.9	-1.5	-1.7	-1.9	-2.2	-2.1	-2.1	-2.2	-2.3	-2.0
IV. Labour Market										
1. Labour supply	0.8	0.6	1.1	0.7	0.7	0.3	0.3	0.3	0.3	0.5
2. Employment	1.7	0.9	1.0	0.4	0.1	-0.0	-0.0	0.1	0.3	0.3
. of which private sector	1.9	0.9	1.0	0.2	0.1	-0.2	-0.1	0.1	0.3	0.3
3. Unemployment rate (level, % of civilian labour force)	7.5	7.3	7.3	7.7	8.2	8.5	8.8	9.0	9.0	8.2
4. Nominal rate of labour compensation, private sector	2.3	3.2	3.6	3.7	3.5	3.2	3.0	2.9	2.8	3.2
5. Real take-home rate of labour compensation, private sector	-0.3	0.2	0.7	1.2	1.2	0.9	0.7	0.5	0.3	0.7
6. Real producer wage rate, private sector	0.2	0.4	1.4	1.6	1.7	1.5	1.4	1.2	1.2	1.3
7. Labour productivity (GDP per worker)	0.9	0.6	0.0	1.5	1.8	1.8	1.7	1.5	1.3	1.3
V. Household sector										
1. Total real means	1.4	2.2	1.1	1.2	1.0	0.7	0.6	0.5	0.5	1.0
. of which real disposable income	1.1	1.0	1.5	1.6	1.5	1.2	1.1	1.0	0.9	1.2
2. Net saving by households (level, % of disposable income)	8.0	8.1	7.9	7.4	6.9	6.5	6.1	5.9	5.7	6.8
VI. Fiscal sector										
1. Net lending (+) or borrowing (-) (% of GDP)	-0.6	-1.0	-0.9	-1.1	-0.9	-1.0	-1.1	-1.2	-1.3	-1.1
2. Government gross debt (% of GDP)	66.7	65.4	63.9	62.5	60.9	59.7	58.8	58.0	57.5	60.8
VII. International environment										
1. Foreign effective output	5.2	0.4	2.1	3.4	3.7	4.0	4.1	4.1	4.1	3.2
2. Foreign effective output price	3.8	5.2	4.0	3.7	3.5	3.5	3.5	3.5	3.5	3.8
3. Foreign effective short-term interest rate (level)	5.4	3.8	4.0	3.6	3.3	3.2	3.1	2.9	2.6	3.3
4. Current account (level, % of GDP)	0.1	-0.1	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3
VIII. Memo items										
1. Real GDP per capita	2.2	1.1	0.7	1.6	1.8	1.6	1.5	1.4	1.4	1.4
2. Total population	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2
3. Working-age population (% of total population)	66.3	66.2	66.1	66.0	65.9	65.7	65.5	65.2	65.0	65.7

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.

Slovenia became a full member of the euro area on January 1st 2007. On July 10th 2007, the Council of the European Union decided to allow Cyprus and Malta to join the euro area as of January 1st 2008. More recently, the EU ECOFIN Council of July 8th 2008 formally accepted the adhesion of Slovakia to the euro area as of January 1st 2009. For practical purposes however, the NIME model of the euro area continues to represent the 12 Member States that composed the euro zone up to 2007. Cyprus, Malta and Slovenia remain integrated within the NIME model's aggregate representing the twelve Central & Eastern EU Member States.

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 Tables - The Western Non-Euro EU Member States

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Private consumption	3.0	1.2	2.8	3.2	3.2	3.1	3.2	3.4	3.2	2.9
2. Government consumption	1.7	2.0	2.8	3.5	3.6	3.5	3.4	3.2	3.2	3.1
3. Gross fixed capital formation	6.4	2.8	0.6	-1.8	0.6	1.1	1.7	2.1	2.0	1.1
. of which business sector	7.6	2.6	0.9	-3.3	0.0	0.5	1.0	1.2	1.2	0.5
4. Exports	-2.5	4.8	3.2	3.5	4.5	4.5	4.2	3.9	3.6	4.0
5. Imports	-0.4	3.7	1.7	4.1	2.5	2.3	2.4	2.8	2.7	2.8
6. Gross domestic product	3.1	1.7	2.9	2.1	3.5	3.6	3.6	3.5	3.3	3.0
7. Private sector value added	3.4	1.6	2.9	1.9	3.4	3.6	3.6	3.6	3.3	3.0
8. Private sector gross output	2.3	2.2	2.6	2.5	3.2	3.2	3.3	3.3	3.1	2.9
9. Output gap (deviation of GDP from trend GDP, in %)	-0.6	-1.1	-0.8	-1.7	-1.2	-0.6	0.0	0.7	1.1	-0.5
10. Contributions to real GDP growth										
a. Total domestic expenditure	3.8	1.5	2.4	2.4	2.8	2.9	3.0	3.1	3.0	2.6
b. Net exports	-0.7	0.3	0.5	-0.3	0.6	0.7	0.6	0.4	0.4	0.4
II. Deflators										
1. Private consumption	2.3	3.6	2.8	2.0	1.5	1.2	1.0	0.9	1.0	1.7
2. Gross fixed capital formation	2.2	2.4	2.4	2.6	2.6	2.5	2.3	2.1	1.8	2.3
. of which business sector	2.2	5.4	4.3	3.4	2.6	2.1	1.6	1.3	1.0	2.7
3. Exports	2.2	6.9	0.7	-1.8	-1.8	-0.3	1.1	1.8	1.9	1.1
4. Imports	1.0	8.8	1.0	2.0	2.1	1.8	1.5	1.3	1.3	2.5
5. Gross domestic product	2.9	2.4	2.8	0.9	0.4	0.7	1.0	1.3	1.3	1.4
6. Private sector value added	2.9	2.3	2.6	1.0	0.3	0.6	1.0	1.3	1.3	1.3
7. Private sector output	2.5	4.0	2.2	1.3	0.8	0.9	1.1	1.3	1.3	1.6
III. Financial Markets										
1. Short-term interest rate (level)	5.5	5.7	5.6	5.2	4.6	4.1	3.7	3.5	3.3	4.5
2. Long-term interest rate (level)	4.8	4.6	4.6	4.5	4.3	4.2	4.1	4.0	4.0	4.3
3. Spot exchange rate, local/euro (+: depreciation)	0.3	9.3	-1.0	-1.4	-1.0	0.1	1.1	1.7	1.9	1.3
4. Nominal effective exchange rate (+: depreciation)	-2.3	6.3	-4.5	-5.1	-4.8	-3.6	-2.6	-2.2	-2.2	-2.3
5. Real effective exchange rate (+: depreciation)	-1.3	3.4	-1.9	-0.0	0.1	-0.2	-0.6	-0.9	-1.0	-0.1
IV. Labour Market										
1. Labour supply	0.8	0.3	0.3	0.7	0.5	0.5	0.3	0.2	0.3	0.4
2. Employment	1.0	0.2	0.7	0.5	0.5	0.4	0.4	0.3	0.2	0.4
. of which private sector	1.2	0.2	0.7	0.4	0.4	0.2	0.2	0.1	0.1	0.3
3. Unemployment rate (level, % of civilian labour force)	5.3	5.4	5.0	5.3	5.3	5.3	5.3	5.2	5.3	5.3
4. Nominal rate of labour compensation, private sector	3.9	2.7	5.1	4.8	3.8	3.7	3.8	4.3	4.3	4.0
5. Real take-home rate of labour compensation, private sector	1.8	-1.1	2.4	2.7	2.2	2.5	2.8	3.3	3.3	2.3
6. Real producer wage rate, private sector	1.4	-1.5	2.9	3.4	2.9	2.7	2.6	2.9	2.9	2.4
7. Labour productivity (GDP per worker)	2.1	1.6	2.1	1.6	3.0	3.2	3.2	3.2	3.1	2.6
V. Household sector										
1. Total real means	3.6	2.1	1.5	1.8	1.8	2.2	2.5	2.7	2.7	2.2
. of which real disposable income	3.2	-1.5	3.2	3.4	3.3	3.5	3.9	4.4	4.2	3.1
2. Net saving by households (level, % of disposable income)	0.6	-1.8	-1.4	-1.1	-0.9	-0.4	0.3	1.3	2.3	-0.2
VI. Fiscal sector										
1. Net lending (+) or borrowing (-) (% of GDP)	-1.6	-1.7	-1.8	-2.4	-3.1	-3.7	-4.4	-5.2	-6.0	-3.5
2. Government gross debt (% of GDP)	42.5	41.9	41.4	42.6	44.1	46.0	48.4	51.4	55.0	46.3
VII. International environment										
1. Foreign effective output	4.7	2.7	1.8	3.0	3.3	3.3	3.3	3.3	3.2	3.0
2. Foreign effective output price	3.3	3.9	3.5	3.4	3.2	3.2	3.2	3.1	3.1	3.3
3. Foreign effective short-term interest rate (level)	4.9	3.9	4.1	3.8	3.6	3.6	3.6	3.5	3.3	3.7
4. Current account (level, % of GDP)	-2.1	-1.5	-1.3	-2.9	-3.7	-3.8	-3.4	-3.0	-2.6	-2.8
VIII. Memo items										
1. Real GDP per capita	2.6	1.3	2.4	1.8	3.1	3.2	3.3	3.2	3.0	2.7
2. Total population	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
3. Working-age population (% of total population)	66.3	66.2	66.1	66.1	66.0	65.9	65.6	65.3	65.0	65.8

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.

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

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 Tables - The United States

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Private consumption	2.8	1.9	1.3	2.7	0.4	0.9	1.3	1.4	1.8	1.5
2. Government consumption	1.9	2.0	2.6	1.8	2.3	2.5	2.3	2.0	1.8	2.2
3. Gross fixed capital formation	-2.1	-4.4	0.6	1.7	3.1	1.8	1.7	1.6	1.6	1.0
. of which business sector	4.9	-1.3	1.6	-0.8	1.5	1.0	1.3	1.3	1.2	0.7
4. Exports	8.4	9.7	4.8	3.8	4.8	5.5	6.2	6.5	6.5	6.0
5. Imports	2.2	0.9	-0.6	4.4	1.9	1.9	2.3	2.7	3.3	2.1
6. Gross domestic product	2.0	1.8	2.1	2.3	1.5	1.8	2.0	2.1	2.2	2.0
7. Private sector value added	2.0	2.2	2.4	2.2	1.3	1.6	1.9	2.0	2.2	2.0
8. Private sector gross output	2.1	2.0	2.0	2.6	1.4	1.6	2.0	2.1	2.4	2.0
9. Output gap (deviation of GDP from trend GDP, in %)	0.3	-0.1	-0.5	-0.5	-1.1	-1.1	-0.9	-0.5	-0.1	-0.6
10. Contributions to real GDP growth										
a. Total domestic expenditure	1.4	0.8	1.4	2.5	1.1	1.3	1.5	1.6	1.8	1.5
b. Net exports	0.6	1.0	0.7	-0.2	0.3	0.5	0.5	0.5	0.5	0.5
II. Deflators										
1. Private consumption	2.6	3.4	3.3	3.1	3.0	2.7	2.4	2.1	1.8	2.7
2. Gross fixed capital formation	2.0	0.3	1.2	2.3	2.0	1.9	1.9	1.8	1.7	1.6
. of which business sector	1.4	7.0	4.8	3.3	2.2	1.5	1.0	0.7	0.5	2.6
3. Exports	3.5	4.3	1.4	-0.0	-0.5	-0.4	-0.1	0.3	0.6	0.7
4. Imports	3.7	8.6	1.4	2.8	3.1	2.9	2.3	1.8	1.4	3.0
5. Gross domestic product	2.7	2.2	3.3	2.5	2.1	1.8	1.6	1.5	1.4	2.1
6. Private sector value added	2.8	2.0	3.0	2.6	2.1	1.9	1.7	1.6	1.5	2.0
7. Private sector output	3.1	3.0	2.7	2.6	2.2	2.0	1.8	1.6	1.5	2.2
III. Financial Markets										
1. Short-term interest rate (level)	5.3	3.2	3.7	3.8	3.6	3.1	2.5	1.9	1.4	2.9
2. Long-term interest rate (level)	4.6	3.9	4.0	4.1	4.0	3.8	3.6	3.4	3.2	3.8
3. Spot exchange rate, $US/euro (level x 100)	137.0	152.2	155.6	158.1	160.9	165.0	170.6	177.7	186.2	165.8
4. Spot exchange rate, $US/euro (+: depreciation)	9.1	11.1	2.2	1.6	1.8	2.5	3.4	4.2	4.8	3.9
5. Nominal effective exchange rate (+: depreciation)	5.6	7.6	-3.0	-4.0	-4.0	-3.0	-2.1	-1.4	-1.0	-1.4
6. Real effective exchange rate (+: depreciation)	5.6	7.6	-0.5	-0.3	0.1	1.1	1.8	2.2	2.3	1.8
IV. Labour Market										
1. Labour supply	1.1	0.6	1.2	1.0	0.9	0.6	0.5	0.5	0.5	0.8
2. Employment	1.1	-0.2	1.3	1.2	0.6	0.6	0.6	0.7	0.8	0.7
. of which private sector	1.1	-0.2	1.3	1.2	0.5	0.5	0.6	0.7	0.8	0.7
3. Unemployment rate (level, % of civilian labour force)	4.6	5.4	5.3	5.2	5.6	5.7	5.6	5.5	5.2	5.4
4. Nominal rate of labour compensation, private sector	4.4	2.7	3.6	3.9	3.9	3.4	3.1	3.0	2.9	3.3
5. Real take-home rate of labour compensation, private sector	1.5	-1.6	0.5	0.8	-0.7	-0.2	0.5	0.6	1.1	0.1
6. Real producer wage rate, private sector	1.3	-0.4	0.8	1.3	1.6	1.3	1.2	1.3	1.4	1.1
7. Labour productivity (GDP per worker)	1.0	2.0	0.8	1.1	0.9	1.2	1.4	1.4	1.5	1.3
V. Household sector										
1. Total real means	1.9	-1.5	1.2	2.0	0.6	1.4	1.8	2.3	2.8	1.3
. of which real disposable income	1.9	-1.1	1.6	2.0	0.7	1.3	1.9	2.0	2.4	1.3
2. Net saving by households (level, % of disposable income)	0.3	-2.8	-2.4	-3.0	-2.6	-2.1	-1.4	-0.7	0.1	-1.9
VI. Fiscal sector										
Net lending (+) or borrowing (-) (% of GDP)	-2.9	-3.5	-3.7	-3.9	-3.3	-3.2	-3.4	-3.5	-3.7	-3.5
VII. International environment										
1. Foreign effective output	5.5	4.4	1.8	3.4	4.0	4.2	4.2	4.1	4.0	3.8
2. Foreign effective output price	3.6	4.3	4.0	3.9	3.8	3.8	3.9	3.9	3.9	3.9
3. Foreign effective short-term interest rate (level)	4.6	3.3	3.3	2.9	2.7	2.9	3.0	3.0	2.9	3.0
4. Current account (level, % of GDP)	-5.2	-4.9	-4.0	-4.5	-4.7	-4.7	-4.6	-4.4	-4.1	-4.5
VIII. Memo items										
1. Real GDP per capita	1.3	0.9	1.3	1.4	0.6	0.9	1.2	1.2	1.4	1.1
2. Real residential investment	-17.9	-20.2	-3.8	10.7	9.9	4.3	2.4	2.3	2.4	1.0
3. Price of residential buildings	0.9	-15.8	-12.4	2.2	3.6	4.6	5.2	5.4	5.5	-0.2
4. Total population	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.9
5. Working-age population (% of total population)	67.2	67.1	67.1	67.0	66.8	66.5	66.1	65.8	65.4	66.5

All figures are year-on-year growth rates of yearly averages, 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 Tables - Japan

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Private consumption	1.4	1.2	1.2	0.4	0.6	1.0	1.0	1.2	1.2	1.0
2. Government consumption	0.8	1.0	1.0	1.6	1.4	1.3	0.2	0.1	0.3	0.9
3. Gross fixed capital formation	-0.3	-1.9	-2.9	1.5	0.6	0.5	0.3	0.1	0.1	-0.2
. of which business sector	2.2	0.7	-3.0	1.4	-0.2	-0.3	-0.5	-0.7	-0.6	-0.4
4. Exports	8.8	6.2	1.8	3.8	3.8	3.8	3.3	2.2	0.9	3.2
5. Imports	1.7	3.2	0.5	2.1	2.1	2.3	2.2	2.2	1.9	2.1
6. Gross domestic product	2.0	1.0	0.4	1.2	1.1	1.3	1.0	0.9	0.7	0.9
7. Private sector value added	2.3	1.0	0.3	1.2	1.2	1.4	1.2	1.0	0.8	1.0
8. Private sector gross output	2.2	1.3	0.3	1.3	1.3	1.5	1.3	1.1	0.9	1.1
9. Output gap (deviation of GDP from trend GDP, in %)	-0.3	-1.0	-2.4	-2.9	-3.5	-3.5	-3.5	-3.6	-3.8	-3.0
10. Contributions to real GDP growth										
a. Total domestic expenditure	0.9	0.3	0.1	0.8	0.7	0.9	0.7	0.7	0.7	0.6
b. Net exports	1.1	0.6	0.2	0.4	0.4	0.4	0.3	0.2	-0.1	0.3
II. Deflators										
1. Private consumption	-0.5	1.2	0.6	0.5	0.7	0.9	1.2	1.4	1.6	1.0
2. Gross fixed capital formation	0.9	0.4	-0.2	-0.4	0.4	0.7	0.8	0.8	0.9	0.4
. of which business sector	0.8	0.4	-0.3	-0.4	-0.3	-0.1	0.1	0.2	0.4	-0.0
3. Exports	2.3	0.5	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.5
4. Imports	7.1	3.4	1.8	0.4	0.2	-0.1	-0.3	-0.4	-0.2	0.6
5. Gross domestic product	-0.8	0.2	-0.3	-0.3	0.2	0.6	1.0	1.2	1.3	0.5
6. Private sector value added	-0.9	0.2	-0.3	-0.1	0.3	0.7	1.0	1.1	1.2	0.5
7. Private sector output	0.2	0.8	0.1	-0.0	0.3	0.6	0.8	0.9	1.1	0.6
III. Financial Markets										
1. Short-term interest rate (level)	0.7	0.9	0.6	0.3	0.3	0.6	1.1	1.6	2.1	0.9
2. Long-term interest rate (level)	1.7	1.5	2.5	2.8	3.1	3.3	3.6	3.8	3.9	3.1
3. Spot exchange rate, yen/euro (level)	161.2	160.6	165.3	170.5	177.3	183.9	189.4	193.1	194.8	179.4
4. Spot exchange rate, yen/euro (+: depreciation)	10.4	-0.4	2.9	3.2	4.0	3.7	3.0	1.9	0.9	2.4
5. Nominal effective exchange rate (+: depreciation)	5.5	-5.9	-1.5	-1.3	-0.7	-1.0	-1.8	-3.2	-4.6	-2.5
6. Real effective exchange rate (+: depreciation)	6.9	-2.5	2.5	2.8	3.3	3.1	2.2	0.8	-0.6	1.4
IV. Labour Market										
1. Labour supply	-0.4	0.3	-0.3	-0.5	-0.5	-1.1	-1.4	-1.5	-1.5	-0.8
2. Employment	-0.2	0.2	-1.0	-1.2	-1.2	-1.6	-2.0	-2.2	-2.2	-1.4
. of which private sector	-0.2	0.2	-1.0	-1.2	-1.3	-1.7	-2.0	-2.2	-2.2	-1.4
3. Unemployment rate (level, % of civilian labour force)	3.9	4.0	4.7	5.3	5.9	6.5	7.1	7.7	8.4	6.2
4. Nominal rate of labour compensation, private sector	-0.2	0.6	1.3	1.7	2.2	2.9	3.5	3.8	4.0	2.5
5. Real take-home rate of labour compensation, private sector	-0.1	-0.7	0.7	1.3	1.5	2.0	2.3	2.4	2.4	1.5
6. Real producer wage rate, private sector	-0.4	-0.2	1.2	1.7	1.9	2.3	2.6	2.9	2.9	1.9
7. Labour productivity (GDP per worker)	2.3	0.8	1.4	2.4	2.4	3.0	3.1	3.1	2.9	2.4
V. Household sector										
1. Total real means	1.3	1.2	0.3	0.0	0.2	-0.0	-0.2	-0.2	-0.2	0.1
. of which real disposable income	1.3	-0.5	1.2	1.0	1.1	1.5	1.5	1.6	1.5	1.1
2. Net saving by households (level, % of disposable income)	3.4	2.0	2.2	2.9	3.4	4.1	4.6	5.1	5.5	3.7
VI. Fiscal sector										
Net lending (+) or borrowing (-) (% of GDP)	-1.6	-1.8	-2.5	-3.1	-3.7	-4.6	-5.6	-6.7	-7.7	-4.5
VII. International environment										
1. Foreign effective output	4.5	3.5	1.9	3.3	3.3	3.5	3.7	3.7	3.6	3.3
2. Foreign effective output price	3.6	4.1	3.8	3.7	3.5	3.4	3.4	3.3	3.3	3.6
3. Foreign effective short-term interest rate (level)	5.5	3.6	3.9	3.7	3.5	3.3	3.1	2.8	2.4	3.3
4. Current account (level, % of GDP)	4.8	4.9	4.5	4.3	4.2	4.2	4.1	3.8	3.2	4.1
VIII. Memo items										
1. Real GDP per capita	2.2	1.1	0.5	1.3	1.3	1.4	1.2	1.1	0.9	1.1
2. Total population	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2
3. Working-age population (% of total population)	65.8	65.6	65.4	65.2	65.1	64.4	63.7	62.9	62.3	64.3

All figures are year-on-year growth rates of yearly averages, 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 Tables - The Central & Eastern EU Member States

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Private consumption	6.0	5.0	4.2	2.6	1.4	0.8	0.5	0.8	1.2	2.1
2. Gross fixed capital formation	14.5	10.2	7.7	7.2	6.5	6.0	5.8	5.9	6.1	6.9
3. Exports	10.6	8.9	5.0	4.2	3.6	3.2	2.9	2.9	2.9	4.2
4. Imports	12.5	10.0	6.7	6.1	5.2	4.3	3.5	3.0	2.7	5.2
5. Gross domestic product	5.7	4.8	3.6	2.3	1.7	1.6	1.8	2.4	3.0	2.6
II. Deflators										
1. Private consumption	5.6	5.4	5.1	4.8	4.4	4.0	3.6	3.3	3.0	4.2
2. Gross fixed capital formation	6.3	4.1	1.9	1.7	1.9	2.0	2.0	2.0	2.0	2.2
3. Exports	2.9	2.0	1.3	0.8	0.4	0.2	0.2	0.3	0.6	0.7
4. Imports	1.3	1.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9
5. Gross domestic product	7.1	5.9	4.0	3.4	2.8	2.3	1.9	1.7	1.7	3.0
III. Financial variables										
1. Short-term interest rate (level)	5.2	6.5	7.9	7.3	6.2	5.2	4.4	4.0	4.0	5.7
2. Long-term interest rate (level)	5.5	6.0	7.1	6.9	6.2	5.6	5.1	4.9	4.9	5.8
3. Nominal exchange rate, local/euro (+: depreciation)	-1.7	-3.5	1.6	1.7	2.1	2.1	2.3	2.6	2.9	1.5
4. Nominal exchange rate, local/$US (+: depreciation)	-9.8	-13.2	-0.6	0.1	0.3	-0.4	-1.0	-1.5	-1.8	-2.3
5. Nominal effective exchange rate (+: depreciation)	-3.8	-6.3	-2.4	-2.6	-2.4	-2.2	-1.9	-1.8	-1.7	-2.7
6. Real effective exchange rate (+: depreciation)	-3.3	-4.5	-0.0	0.2	0.6	1.0	1.3	1.3	1.1	0.1
IV. International environment										
1. Foreign effective output	5.0	4.2	1.8	3.3	3.7	3.8	3.8	3.7	3.6	3.5
2. Foreign effective output price	3.4	4.0	3.8	3.7	3.5	3.5	3.5	3.5	3.5	3.6
3. Foreign effective short-term interest rate (level)	5.2	4.0	4.1	3.9	3.7	3.7	3.6	3.5	3.4	3.7
4. Current account (level, % of GDP)	-3.7	-3.7	-4.9	-6.5	-8.2	-9.8	-11.1	-12.0	-12.6	-8.6

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.

Slovenia became a full member of the euro area on January 1st 2007. On July 10th 2007, the Council of the European Union decided to allow Cyprus and Malta to join the euro area as of January 1st 2008. More recently, the EU ECOFIN Council of July 8th 2008 formally accepted the adhesion of Slovakia to the euro area as of January 1st 2009. For practical purposes however, Cyprus, Malta and Slovenia remain integrated within the NIME model's aggregate representing the twelve Central & Eastern EU Member States.

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 Tables - The Rest of the World

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. Real aggregate demand and supply										
1. Gross output	7.0	6.1	1.9	4.2	5.0	5.3	5.4	5.3	5.2	4.8
2. Gross output per capita	5.6	4.8	0.6	2.9	3.6	4.0	4.1	4.1	3.9	3.5
3. Exports	2.7	2.5	2.3	6.2	3.5	2.7	2.5	2.9	3.3	3.2
4. Imports	8.3	8.5	4.3	4.6	5.0	5.2	5.3	5.3	5.2	5.4
II. Deflators										
1. Output	4.6	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
2. Exports, in euro	1.6	4.9	5.9	8.6	9.5	8.8	7.7	6.9	6.5	7.3
3. Imports, in euro	1.7	1.3	4.9	5.5	5.5	5.5	5.4	5.4	5.3	4.8
4. Price of oil (Brent, $US/bbl)	72.5	114.1	118.5	119.9	121.1	123.1	125.9	129.5	133.7	123.2
III. Financial variables										
1. Nominal exchange rate, local/euro (+: depreciation)	3.6	4.2	7.9	8.6	8.8	8.2	8.0	8.2	8.6	7.8
2. Nominal exchange rate, local/$US (+: depreciation)	-5.0	-6.3	5.6	6.9	6.9	5.6	4.5	3.9	3.6	3.8
3. Nominal effective exchange rate (+: depreciation)	-0.9	-0.1	6.5	7.5	7.4	6.5	5.9	5.9	6.2	5.7
4. Real effective exchange rate (+: depreciation)	-3.6	-5.3	-4.7	-7.1	-8.3	-8.1	-7.5	-7.0	-6.8	-6.9
5. Nominal short-term interest rate (level)	6.0	3.4	3.5	3.1	3.0	3.0	3.0	2.9	2.6	3.1
IV. International environment										
1. Foreign effective output	2.9	-2.4	1.8	2.2	1.8	1.8	1.9	2.0	2.0	1.4
2. Foreign effective output price	2.4	3.6	2.2	2.0	1.7	1.6	1.6	1.5	1.5	2.0
3. Foreign effective short-term interest rate (level)	3.7	3.4	3.5	3.1	3.0	3.0	3.0	2.8	2.6	3.1

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.

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.

The 25 largest economic areas that are included in the NIME model's "Rest of the World" area are the following, by decreasing size of current $US GDP in 2006: PR China (mainland), Canada, Brazil, Russia, South Korea, India, Mexico, Australia, Turkey, Switzerland, Indonesia, Saudi Arabia, Norway, South Africa, Argentina, Iran, Thailand, Hong Kong PRC, Venezuela, United Arab Emirates, Malaysia, Chile, Israel, Colombia and Singapore.

Detailed Tables - The World

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average 2008-2015
I. World real output										
1. Gross Domestic Product	3.8	3.0	1.5	2.7	2.8	3.1	3.2	3.2	3.1	2.8
2. Gross Domestic Product per capita	2.6	1.8	0.4	1.5	1.7	2.0	2.1	2.1	2.0	1.7
II. World prices										
1. Output price	3.7	3.5	3.2	2.7	2.6	2.6	2.6	2.5	2.4	2.7
2. Price of oil (bbl Brent crude)										
a. Level, in US$	72.5	114.1	118.5	119.9	121.1	123.1	125.9	129.5	133.7	123.2
b. % change, in US$	11.4	57.4	3.9	1.2	1.1	1.6	2.3	2.9	3.2	9.2
c. % change, in euro	2.1	41.6	1.6	-0.4	-0.8	-0.9	-1.0	-1.3	-1.5	4.7
d. % change, at world prices	6.9	48.2	4.8	2.7	2.6	2.6	2.6	2.5	2.4	8.5
III. World interest rates										
1. Short-term nominal rate	4.1	3.2	3.3	3.0	2.8	2.9	2.9	2.8	2.5	2.9
2. Short-term real rate	0.5	-0.2	0.1	0.3	0.2	0.3	0.3	0.2	0.1	0.2
IV. World population										
1. Population (% change)	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
2. Population (billions of persons)	6.6	6.7	6.8	6.8	6.9	7.0	7.1	7.2	7.2	7.0

All figures are year-on-year growth rates of yearly averages, unless otherwise noted.
Data for the world aggregate are computed at market exchange rates.

Ninety-five per cent confidence intervals for selected variables (variables in growth rates)

		2009	2010	2011	2012	2013	2014	2015
	Confidence bounds							
The Euro Area								
	Upper bound	1.8	2.8	3.1	3.2	3.1	3.3	3.3
Real gross domestic product	Sample mean	1.0	1.8	2.0	1.8	1.7	1.6	1.5
	Lower bound	0.1	0.7	0.6	0.4	0.1	-0.2	-0.3
	Upper bound	3.4	2.9	2.8	2.8	3.1	3.2	3.3
Deflator of private consumption	Sample mean	3.0	2.4	2.3	2.3	2.3	2.4	2.4
	Lower bound	2.5	1.9	1.6	1.6	1.5	1.4	1.2
The United States								
	Upper bound	2.8	3.1	2.4	2.8	3.0	3.2	3.3
Real gross domestic product	Sample mean	2.1	2.3	1.5	1.8	2.0	2.1	2.2
	Lower bound	1.2	1.3	0.6	0.9	1.1	1.1	1.2
	Upper bound	3.5	3.5	3.4	3.1	2.8	2.5	2.3
Deflator of private consumption	Sample mean	3.3	3.1	3.0	2.7	2.4	2.1	1.8
	Lower bound	3.0	2.7	2.5	2.2	1.8	1.3	1.0
Japan								
	Upper bound	1.1	2.1	2.1	2.2	1.8	1.7	1.7
Real gross domestic product	Sample mean	0.4	1.2	1.1	1.3	1.0	0.9	0.7
	Lower bound	-0.4	0.2	0.1	0.1	-0.1	-0.2	-0.5
	Upper bound	1.0	0.9	1.1	1.4	1.8	2.0	2.3
Deflator of private consumption	Sample mean	0.6	0.5	0.7	0.9	1.2	1.4	1.6
	Lower bound	0.2	-0.1	0.1	0.2	0.3	0.5	0.6

The table should be interpreted as follows: in any given year, there is a 95% probability that a variable will effectively fall within its specified upper and lower bounds. E.g.: there is a 95% probability that euro area GDP growth will effectively turn out between 0.1% and 1.8% in 2009. The probabilities are based on the observed variances of the historical data series.

## Detailed probability distributions for selected euro area variables

	Distribution	2009	2010	2011	2012	2013	2014	2015
		Associated probabilities						
Real gross domestic product (% change)	> 4.0	0.0	0.0	0.2	0.4	0.6	0.9	1.3
	3.5 - 3.0	0.0	0.5	1.4	1.5	1.3	2.2	2.1
	3.0 - 3.5	0.0	2.1	6.4	5.7	4.0	5.5	5.9
	2.5 - 3.0	0.3	8.8	13.1	11.1	10.4	7.1	10.2
	2.0 - 2.5	2.1	23.6	23.1	18.3	16.2	14.1	13.6
	1.5 - 2.0	12.0	29.6	27.2	23.8	21.3	19.7	17.7
	1.0 - 1.5	32.1	23.9	17.1	20.2	19.8	20.0	17.4
	0.5 - 1.0	33.3	9.6	8.1	11.8	16.0	13.8	13.4
	0.0 - 0.5	16.7	1.8	2.9	5.7	6.6	8.5	10.8
	< 0.0	3.5	0.1	0.5	1.5	3.8	8.2	7.6
Deflator of private consumption (% change)	> 4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3.5 - 4.0	0.7	0.0	0.0	0.0	0.3	0.5	2.9
	3.0 - 3.5	44.3	2.9	1.2	2.3	6.6	9.5	10.9
	2.5 - 3.0	50.3	35.1	20.9	21.8	23.7	26.0	24.4
	2.0 - 2.5	4.7	50.5	51.6	47.1	41.1	33.7	31.2
	1.5 - 2.0	0.0	11.5	24.8	25.2	22.8	23.0	20.3
	1.0 - 1.5	0.0	0.0	1.5	3.6	5.4	6.4	8.1
	0.5 - 1.0	0.0	0.0	0.0	0.0	0.1	0.9	2.1
	< 0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Unemployment rate (% of civilian labour force)	< 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.0 - 6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.5 - 7.0	21.1	3.5	0.0	0.0	0.0	0.0	0.0
	7.0 - 7.5	76.4	46.9	7.9	0.8	0.2	0.0	0.1
	7.5 - 8.0	2.5	46.1	44.5	18.2	6.2	3.8	3.6
	8.0 - 8.5	0.0	3.5	40.9	47.3	31.2	23.3	21.0
	8.5 - 9.0	0.0	0.0	6.6	29.0	44.6	43.2	44.4
	9.0 - 9.5	0.0	0.0	0.1	4.6	16.1	24.4	25.0
	9.5 - 10.0	0.0	0.0	0.0	0.1	1.7	5.2	5.8
	10.0 - 10.5	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	10.5 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The table should be interpreted as follows: in any given year, the probability that a variable will effectively fall within a specific range is given by the range's associated probability. E.g.: there is a 33.3% probability that euro area GDP growth will effectively turn out between 0.5% and 1.0% in 2009. The probabilities are based on the observed variances of the historical data series.

Focus on the US housing market

Crisis? ... What Crisis?

The bursting of the US house price bubble, the explosion of sub-prime debt, ballooning mortgage default rates, securitisation of non-prime asset-backed financial products, bank write-downs and bailouts, economic downturn: these are a few of the buzz words and expressions that one encounters daily in the world media since the summer of 2007. But what is all this really about? After months of widespread reporting on these subjects, it appears that the issues behind the US housing market downturn and the global (in fact, essentially North Atlantic) financial market turmoil are often conflated and misunderstood.

Chart 1 - Real residential investment and GDP growth
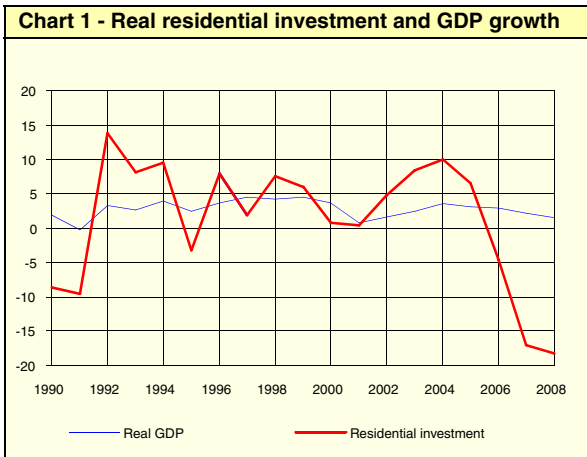
Historical data from the US Bureau of Economic Analysis.
Year 2008: FPB estimate.

We argue that there are in fact two distinct (but related) crises, a housing market slump and a financial market crisis. The key factor behind the current housing market downturn is the build-up of excess demand for residential assets over the 2001-2006 period; the housing market crisis was brought about mainly by excessively loose monetary policy accompanied by speculation on house prices. The continuing North Atlantic financial crisis is mainly linked to the more recent intensification of the "search for yield" by financial market participants, operating in increasingly opaque and inadequately regulated or supervised markets, thus leading to poorly evaluated (or excessive) risk-taking. Our analysis will focus only on the first of these two events, i.e. the US housing market surge and its subsequent slump.

i. The housing market downturn: a real shock

The US housing market (private residential investment) weighed on average 4.62 per cent in US real GDP over the 1970-2007 period. The sector's weight reached a local low after the US downturn of 1991, and then slowly rose over the 1990s reaching a high of 6.2 per cent of GDP in 2006. Residential investment then fell and returned to the long-term average of 4.6 per cent in 2007. However, quarterly data indicate that the sector's share in real GDP declined throughout 2007 and was still falling in early 2008, amounting to only 3.4 per cent in 1Q08. The sector's average yearly contribution to US real GDP growth is a positive 0.10 percentage point (p.p.) over 1970-2007; the contribution progressed markedly as of 2002 and reached a high of 0.53 percentage point in 2004. The sector's contribution to growth then fell, turning negative in 2006 and 2007. In 2007, real residential investment subtracted a massive 0.98 p.p. from the US real year-on-year rate of GDP growth.
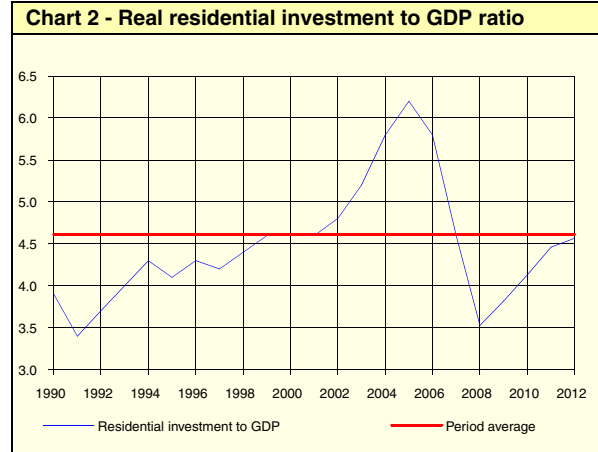
Chart 2 - Real residential investment to GDP ratio

Historical data from the US Bureau of Economic Analysis.
Year 2008: FPB estimate; Period 2009-2012: FPB assumptions.

Residential investment (essentially comprising new residential building plus home improvements) is a sector in the US economy whose importance exceeds its weight in GDP. Indeed, US residential investment is particularly responsive to changes in interest rates and is thus an essential channel through which monetary policy affects the US economy. Fed interest rate hikes aimed at curbing excessive demand growth lead to a strong fall in spending on residential investment which cools aggregate demand growth, while rate cuts provide a particularly strong boost to residential invest-

ment, which helps monetary authorities nudge the economy out of demand slumps. The sector has typically been leading the economy in downturns, but has also been leading into economic recoveries[1].
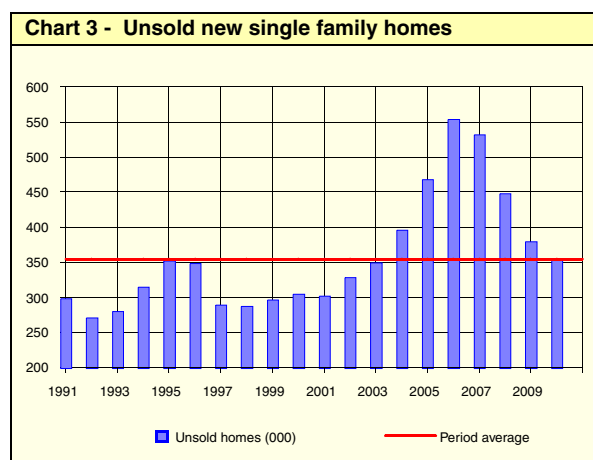
Chart 3 - Unsold new single family homes

Unsold homes (000)   Period average

Historical data from the US Bureau of Economic Analysis.
Year 2008: FPB estimate; Period 2009-2010: FPB assumptions.

US residential investment currently suffers from a large overhang of unsold housing units, which will undoubtedly reduce the potency of the residential building channel in terms of the impact of Fed rate cuts on the US economy in 2008. Over 1Q91:1Q08, there was an average of 354,000 unsold new single-family homes[2] each year. The number of unsold homes rose as from 2Q01 reaching around 566,000 in 3Q06. Though the number has since been declining steadily, it still stood at 475,000 in 1Q08. At current rates of decline, the number of unsold homes should not return to the historical average until 1Q10. As stated above, US residential investment typically accounted for some 4.6 per cent of GDP over the 1970-2007 period. This ratio rose to 5.5 per cent in 3Q05, returned to its average in 1Q07, and has since fallen to just 3.4 per cent in 1Q08. Though now well below historical average levels, residential investment cannot be expected to pick up significantly until the overhang of unsold homes is reduced and home prices stabilise.

To date, the construction component of residential investment has fallen significantly, but the home improvement component has remained relatively high, still above its long-term average share in GDP. This indicates that, even if residential construction bottoms out soon, a further fall in residential investment could come as spending on home improvement declines. Assuming that the ratio of residential investment to GDP will bottom out at 3.2 per cent in 2Q08 and gradually rise thereafter, we do not expect it to return to its historical average before 2Q10.

Chart 4 - US nominal house price indexes

OFHEO hpi   Case/Shiller national hpi
Composite hpi
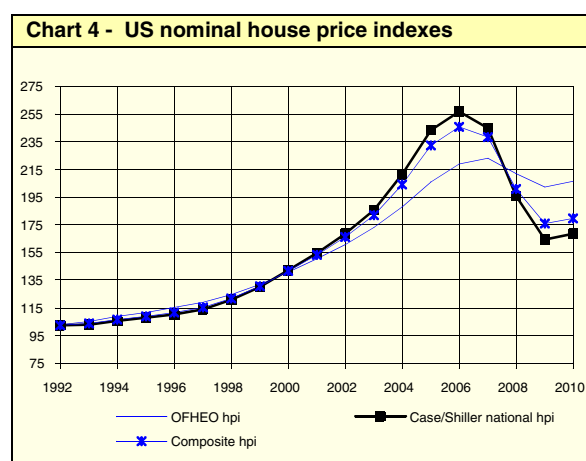
Historical data from US OFHEO and Standard & Poor's.
Year 2008: FPB estimate; Period 2009-2010: FPB assumptions.

House prices have been a hotly debated issue in the last few months, as various closely-watched indicators seemed to be issuing different messages in terms of the direction and speed of changes in house prices. We will focus here on the two most-often cited house price indicators, the Office of Federal Housing Enterprise Oversight's (OFHEO) US purchases-only house price indicator and the S&P/Case-Shiller US national house price indicator. Both of these indicators are based on repeated sales of single-family homes. The essential differences between the two are that the OFHEO index monitors sales linked to conforming loans over all US states, while the Case-Shiller index is not restricted to home sales linked to conforming loans, is value-weighted, and does not cover the entire US territory[3].

US housing market economists[4] now widely agree that both indexes give a partial picture of the

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1. See: Edward E. Leamer (2007), "Housing IS the business cycle", Working Paper 13428, NBER.
Internet: http://www.nber.org/papers/w13428
See also: IMF (2008), World Economic Outlook, Chapter 3. "The Changing Housing Cycle and the Implications for Monetary Policy".
Internet: http://www.imf.org/external/pubs/ft/weo/2008/01/pdf/c3.pdf
2. This figure underestimates the current overhang, as it excludes existing homes, condominiums and other housing units up for sale.

3. For a detailed discussion of the differences between the S&P/Case-Shiller and the OFHEO indexes, see:
http://www.ofheo.gov/media/research/OFHEOSPCS12008.pdf
4. For insightful blog analyses of the US housing market, see: http://calculatedrisk.blogspot.com/

evolution of US house prices: the OFHEO index appears to be relatively more limited in the type of sales covered than the Case-Shiller index, while the Case-Shiller index appears to be relatively more limited in its geographical coverage. Hence, a composite house price index has been suggested, in which the OFHEO index is used to represent the evolution of home prices for those parts of the US that are thought to be inadequately covered by the Case-Shiller index[1].

Chart 5 - Nominal and real house price indexes *(% change)*
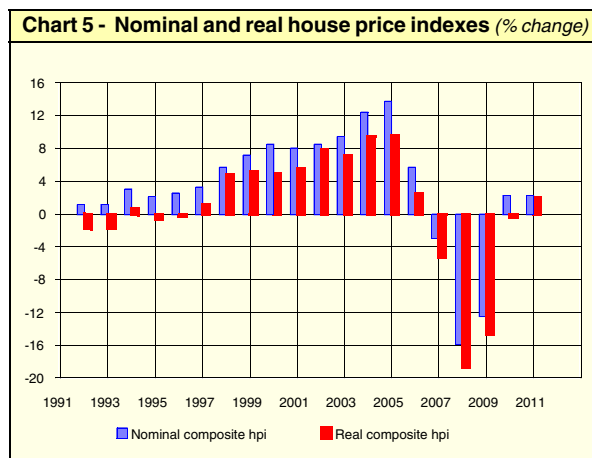
Historical data for CPI less shelter from US Bureau of Labor Statistics. Year 2008: FPB estimate; Period 2009-2011: FPB assumptions.

ii. Will the real house price please stand up ?

The Case-Shiller and the OFHEO indexes both indicate dramatic increases in house prices as of the latter part of the 1990s. Over the 1991-1997 period, these indexes progressed at annual average rates of 2 and 2.9 per cent, respectively. However, prices jumped as of 1998 and, over the 1998-2005 period, the Case-Shiller and OFHEO indexes rose at annual average rates of 10 and 7.1 per cent, respectively. The rise in the Case-Shiller index reached a phenomenal annualised rate of 19 per cent in 2Q05 and rose by 15.3 per cent in year-on-year average terms in 2005. House price increases plummeted thereafter, turning negative in 3Q06 in quarter-on-quarter terms. Year-on-year, the Case-Shiller index fell by 4.6 per cent in 2007. The OFHEO index generally mirrored the Case-Shiller index over 1997-2006, but with somewhat more muted price increases. It turned negative only as of 3Q07, but still posted a 1.8 increase in 2007 in year-on-year terms[2]. Our own "composite Case-Shiller/OFHEO house price index" indicates

that house prices rose by 9.2 per cent in year-on-year average terms over the 1998-2005 period. By this metric, US house prices declined by 2.9 per cent on the year in 2007.

Our composite house price index (HPI) still fails to provide a accurate picture of the evolution of US house prices in terms of their relative price. Indeed, the changes shown in the usual house price indexes are *nominal* changes, while the more relevant measure of the change in effective price of houses is the change in their *relative* price. To measure this, we must deflate US house prices by their appropriate deflator[3]. We compute a "real composite Case-Shiller/OFHEO house price index", which provides us with a somewhat different picture of the evolution of US real house prices. Our real composite HPI indicates that real house prices actually fell by 0.4 per cent per annum over 1991-1997 and rose at an annual average rate of 6.8 per cent over the 1998-2005 period. In real terms, US house prices in 2007 declined by 5.2 per cent; this is much more pronounced than the 2.9 decline indicated by the nominal composite HPI.

Chart 6 - The house price index and the OER index
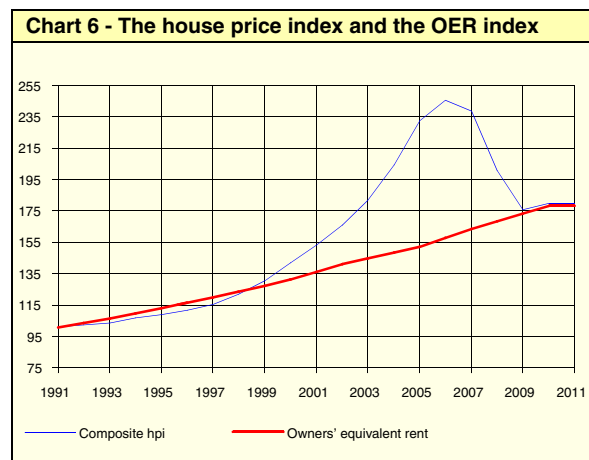
Historical data for OER from the US Bureau of Economic Analysis. Year 2008: FPB estimate; Period 2009-2011: FPB assumptions.

Another insightful measure of the evolution of US house prices is their evolution in relation to owners' equivalent rent (OER). The OER element of the US consumer price index is a measure of what home owners would have to pay in order to rent (or what they would receive from renting) the houses they own and occupy[4]. The data indicate

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1. Our "Composite CS/OFHEO house price index" is a weighted average of the Case-Shiller and the OFHEO indexes, which are given weights of 0.7 and 0.3, respectively.

2. Observers of the US housing market often comment on the *peak-to-trough* decline in house prices. Peak-to-trough, the Case-Shiller quarterly HPI fell by 16.2 per cent between 02Q06 and 01Q08; our own composite HPI indicates that quarterly nominal house prices declined by 12.1 per cent over the same period.

3. House prices are deflated by the US Bureau of Labor Statistics' (BLS) series for "CPI less shelter".

that both the Case-Shiller and the OFHEO home price indexes closely followed the evolution of OER from 1Q91 to 1Q99. Thereafter, growth in the home price indexes shot up, as is attested by the ratio of our composite HPI to OER. Setting the ratio value at 1 in 1Q91, the ratio is still at 1.01 in 1Q99. It then rose to 1.58 in 1Q06 before beginning to decline. The ratio was still 1.30 in 1Q08.

iii. The origins of the current housing mess

It has often been suggested that the rapid rise in house prices and the subsequent bursting of the US house price bubble was the result of lax mortgage lending practices on the part of financial institutions/mortgage brokers and of speculation on the part of buyers wishing to make a quick and significant return on "flipping", i.e. buying real estate with the intent of selling to pocket a capital gain. The generalised race for profit is supposed to have generated a bubble based largely on an ever-widening spread in the origination of risky, i.e. *non-prime*, loans.

Our data show that real house prices began to rise at close to 5 per cent annual rates as of 1998. However, data for February 2008 on US mortgage origination[1] indicate that by far the largest part of existing non-prime mortgage loans (84.4 per cent of "alt-A" loans and 77.7 per cent of "sub-prime" outstanding loans) were originated in or after 2005, thus only in the very last stage of the US house price run-up. So what was behind the rise in prices as of 1998? A significant part of the answer is... monetary policy.

In January 1995, the effective Federal Funds overnight rate averaged 5.5 per cent. The rate remained relatively constant for five years, averaging 5.5 per cent from January 1995 through December 1999. Rates rose slightly as the US economic expansion peaked in 1999, and then fell dramatically as the Fed cut rates aggressively to limit the downturn in real GDP growth that materialised in 3Q00. The effective Fed Funds rate fell from 6 per cent in January 2001 to 1 per cent in May 2004. Effective Fed Fund rates then gradually rose to 5.25 per cent

in August 2006, where they remained up until the outbreak of the financial crisis in August 2007. The reference fixed 30-year mortgage rate declined from 9.2 per cent in January 1996 to 7.9 per cent in December 1999. From January 2001 to August 2007, the 30-year mortgage rate fell from 7 per cent to 6.6 per cent, thus remaining well below its long-term average[2] of 9.2 per cent. Thus, the generally low and declining mortgage rates between January 1995 and May 2004 were conducive to a steady rise in (mostly prime) mortgage origination. The strong demand for housing pushed up real house prices and fuelled strong residential investment, and ended up with the extension of significant mortgage origination in the alt-A and sub-prime segments of the credit market just as the house price bubble reached its peak.

Chart 7 - US interest rates
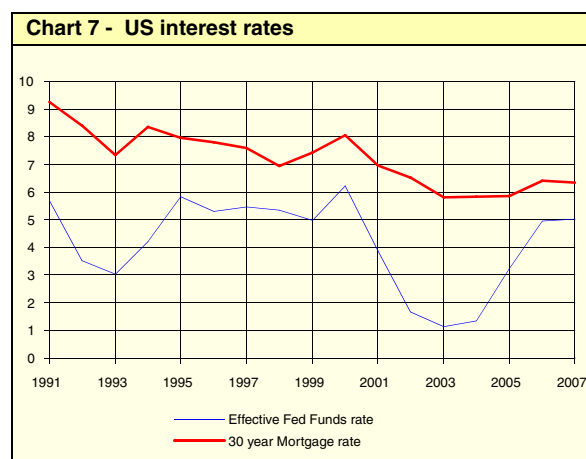
Historical interest rate data from US Federal Reserve.

Econometric research[3] indicates that, in a traditional Taylor rule framework for monetary policy, short-term interest rates would most likely have been significantly higher than they actually were over the 2Q02:3Q06 period. Had monetary policy been set according to a Taylor rule, growth in real residential investment would have been much more limited and market turmoil resulting from the end of the housing boom would likely not have been as sharp as it turned out to be. A counterfactual simulation carried out with the Federal Planning Bureau's NIME model also indicates that monetary policy was generally looser than what would have been prescribed by a Taylor rule framework. The historical yearly average

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4. On OER, see: http://www.bls.gov/cpi/cpifact6.htm. In our analysis, we use the series for housing services from the US Bureau of Economic Analysis (BEA).

1. See the data on mortgage origination published by the Federal Reserve: http://www.newyorkfed.org/regional/subprime.html

2. Average level of the conventional 30-year fixed rate first mortgage contract over the June 1971 - August 2007 period.

3. See Taylor (September 2007), "Housing and Monetary Policy": http://www.stanford.edu/~johntayl/Housing%20and%20Monetary%20Policy--Taylor--Jackson%20Hole%202007.pdf

short-term interest rate[1] fell from 6.5 per cent in 2000 to 3.8, 1.8 and 1.2 per cent in 2001, 2002 and 2003, respectively. Our counterfactual simulation results suggest that while monetary policy had steered rates to levels generally compatible with the Taylor rule in 2000 and in 2006 and 2007, the rates in the 2000-2006 interval were 160 to 300 basis points below what would have been expected from a Taylor rule framework.

Chart 8 - Historical and counterfactual US interest rates
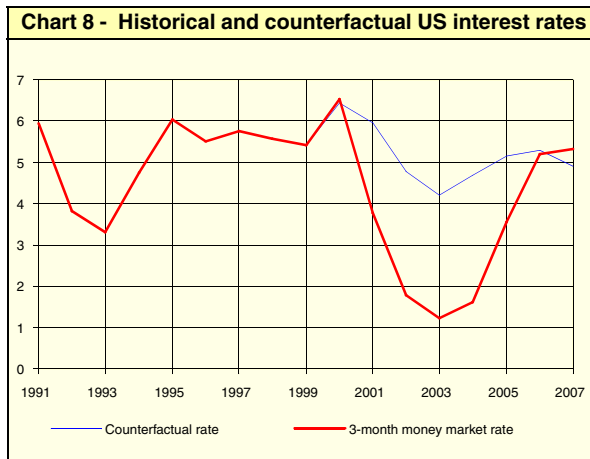
Counterfactual interest rate results from the FPB's NIME model.

iv.Where do we go from here ?

When trying to assess how US economic activity is going to evolve over the coming months, it is important to attempt to determine where real residential investment and house prices are heading. On the basis of the most recent quarter-on-quarter data and some relatively standard assumptions (inter alia, that stocks of housing units for sale and house prices will exhibit mean-reversion properties), we constructed a simple scenario for the US housing market over the 2008-2010 period. The scenario is based on a number of observations:

• The number of unsold new single-family homes has been declining ever since 3Q07; at current rates of decline, the overhang of unsold homes will return to long-term average levels by 2Q10.

• Real private residential investment has been declining as a share of real GDP ever since 4Q05; at 3.4 per cent in 1Q08, the residential investment-to-GDP ratio is currently well below its long-term average and is even lower than its previous low point of 3.7 per cent in 1Q91. Assuming that the ratio will bottom out in 3Q08 and subsequently return to its long-term average

level of 4.6 per cent at the same speed as during the recovery over the 2Q91:2Q94 period, real residential investment should return to balance by 4Q11.

• Our nominal composite measure of house prices has been falling ever since 3Q06; at current rates of decline, our measure of the HPI/OER ratio is expected to return to balance by 4Q09.

In this scenario, the decline in nominal house prices is finally halted in 3Q09, after which prices rise at a quarterly average rate of 0.7 per cent through 4Q10. This implies that real house prices should decline through 3Q09 and subsequently rise at a quarterly average rate of 0.1 per cent through 4Q10.

Chart 9 - Market value of household real estate assets
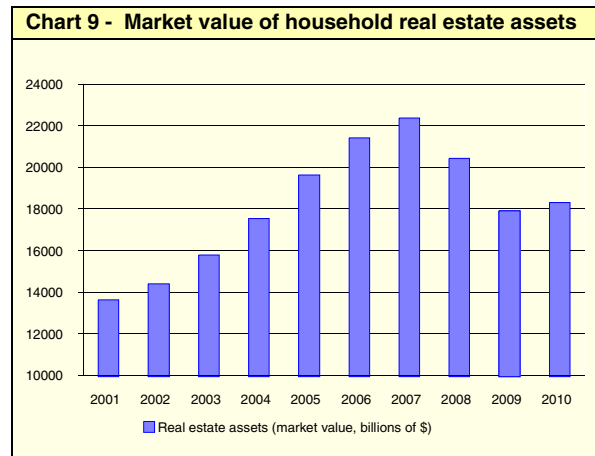
Historical data from US Federal Reserve Z1. Flow of Funds Accounts. Year 2008: FPB estimate; Period 2009-2010: FPB assumptions.

In year-on-year average terms, our scenario translates into a fall in unsold housing units of 15.8, 15.3 and 6.5 per cent in 2008, 2009 and 2010, respectively. The real residential investment-to-GDP ratio would fall to 3.96 per cent in 2007 and 3.52 per cent in 2008, but then rebound to 3.82, 4.13 and 4.46 per cent in 2009, 2010 and 2011, respectively. Our scenario assumes that this will lead to real residential investment declining by 20.2 and 3.8 per cent in 2008 and 2009, then rising by 10.7 per cent in 2010. Our nominal composite house price index would fall by 15.8 per cent in 2008 and by a further 12.4 per cent in 2009, but then increase year-on-year by 2.2 per cent in 2010. Our real composite house price index should fall by 18.6, 14.6 and 0.3 per cent in 2008, 2009 and 2010, respectively. It should return to positive territory as of 2011.

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1. Three-month money market (Libor) dollar rate, year average.

Finally, there remains the important subject of household residential assets. The value of the real estate assets of households and non-profit institutions progressed at an average quarter-on-quarter (not seasonally adjusted) rate of 2.8 per cent over 2004-2005. In year-on-year average terms, we estimate that the total value of household real estate assets progressed by 11 per cent in 2004 and 11.9 per cent in 2005. This is well above the increase in total real residential investment for those years, which stood at 10 per cent in 2004 and 6.6 per cent in 2005, indicating a sharp run-up in the valuation of homes. This stems from the fact that the Federal Reserve estimates data for households' residential assets on the basis of the house price increases as measured by the OFHEO.

As of 3Q05 however, real residential investment and real house price growth rates were steadily declining. The result was a parallel decline in the growth rate of household residential assets. The growth rate of the total value of these assets stood at 2.8 per cent quarter-on-quarter in 3Q05, fell to just 0.4 per cent in 3Q07, and then turned negative. The fall was estimated to be 1.4 per cent in quarter-on-quarter terms in 1Q08. Assuming that the evolution of the value of household residential assets follows the expected change in our nominal composite HPI, residential asset valuation could fall by about 5 per cent quarter-on-quarter throughout 2008. In year-on-year average terms, this evolution translates into the value of household residential assets progressing by 11.9, 9.1 and 4.5 per cent in 2005, 2006 and 2007, respectively. In 2008, total value of houses could plunge by 8.6 per cent, followed by a further 12.4 per cent fall in 2009, before a 2.2 per cent recovery in 2010.

Clearly, the evolution of the value of household residential assets is important, not just due to its impact on activity and employment in the US residential construction sector. Indeed, in 1Q08, the estimated total value of these assets was still slightly above 210 per cent of personal disposable income. In a permanent income private consumption framework, households determine their present and future consumption level in function of their present and expected future wage income, income flows from assets, and total means (net worth). Hence the value of household residential assets is a direct determinant of present and future consumption. The run-up in the value of residen-

tial assets is one of the likely explanations of the remarkable resilience of the US consumer over recent years, as growth in consumption expenditure over 2000-2007 stubbornly refused to fall below 2.5 per cent (year-on-year), despite the collapse of the tech stock market bubble, the corporate sector scandals, the real and psychological shocks from attacks on New York City's Twin Towers, the "jobless recovery" of 2002-2003, and the huge adverse terms-of-trade shock produced by the steady rise in oil prices ever since 1999.

v. The economy-wide effects of the housing slump

As already stated, the residential construction sector weighed on average 4.6 per cent in total US real GDP over the 1970-2007 period. Given its relative weight in the economy, a 10 per cent rise (decline) in residential investment is expected to lead - *ex ante* and *ceteris paribus* - to a 0.46 per cent rise (decline) in US real GDP.

Macro effects of alternative assumptions for US real residential investment and house prices in 2009		
	2008	2009
US baseline scenario		
Assumption for real residential investment	-20.2	-3.8
Assumption for price of residential buildings	-15.8	-12.4
US real GDP	1.6	2.1
US real private consumption	1.7	1.3
US real exports	9.7	4.8
US real imports	0.9	-0.6
World trade of goods and services	5.1	2.7
US alternative scenario 1		
Assumption for real residential investment	-20.2	0.0
Assumption for price of residential buildings	-15.8	-12.4
US real GDP	1.6	2.3
US real private consumption	1.7	1.3
US real exports	9.7	4.8
US real imports	0.9	-0.4
World trade of goods and services	5.1	2.7
US alternative scenario 2		
Assumption for real residential investment	-20.2	0.0
Assumption for price of residential buildings	-15.8	0.0
US real GDP	1.6	3.2
US real private consumption	1.7	2.8
US real exports	9.7	4.9
US real imports	0.9	0.7
World trade of goods and services	5.1	3.0

Simulation results from the FPB's NIME model.

In 2007, real residential investment declined by 17.9 per cent in year-on-year average terms, and contributed a negative 1.02 percentage point to the GDP growth rate. In 2008, US real residential investment is expected to decline in year-on-year terms

by 20.2 per cent. This fall in residential investment should subtract about 0.83 p.p. from the year's overall rate of GDP growth.

In 2009, one may wonder how much the expected 3.8 per cent decline in real residential investment will dent the year's GDP growth rate. A simple back-of-the-envelope calculation indicates that it should reduce real GDP growth by about 0.17 p.p. on the year. However, the net *ex post* effect may be different, because when a household chooses to spend less of its income on a given expenditure category, it has the possibility of spending the amount on alternative expenditure categories, or to increase thrift, thereby increasing its total means available for consumption in the next period. What is more, the household's consumption plans also reflect effective and expected changes in relative prices and their propensity to consume out of total means, which is affected, *inter alia*, by the mark-to-market valuation of residential assets.

Effects of an autonomous and temporary 10% increase in the price of US residential buildings	
	Short-term effects (%)
US household real wealth	+2.62
US real GDP	+0.46
US real private consumption	+0.61
US real residential investment	+2.89
US real exports	+0.10
US real imports	+0.59
Euro area real GDP	+0.02
Euro area real exports	+0.11
World real output	+0.14
World trade of goods and services	+0.16

Simulation results from the FPB's NIME model.

In the baseline projection, our model indicates that US real GDP growth should reach 2.1 per cent in 2009, with real private consumption expenditure progressing by 1.3 per cent, residential investment subtracting 0.12 p.p. from growth, and real net exports providing a positive contribution of 0.7 p.p. to GDP growth. A simple "what if" simulation experiment with our NIME model indicates that, if we see a more rapid rebound in real residential investment, characterised by no year-on-year decline in investment in 2009 (a nil growth rate instead of a 3.8 per cent decline), US GDP would increase by 0.2 p.p. relative to the baseline, reaching 2.3 per cent. The baseline's negative 0.12 p.p. contribution from residential investment would disappear, but this positive effect on GDP growth

would be cancelled out by a somewhat smaller decline in real imports. Hence, our model indicates that, given the sector's weight in the US economy, unless there is a dramatic reversal in real investment in residential buildings, no substantial positive effect should be expected on overall real GDP growth from an eventual (and quite unlikely) rebound of residential investment in 2009.

However, should the decline in the price of residential buildings also come to a halt in 2009 (a nil growth rate instead of a 12.4 per cent decline), our model indicates that private consumption growth would jump from 1.3 per cent in the baseline to 2.8 per cent on the year. Real import growth would turn around from a 0.6 per cent decline to a 0.7 per cent increase, while real exports would increase from 4.8 per cent in the baseline to 4.9 per cent; the contribution of net exports to GDP growth would decline from 0.7 p.p. in the baseline to 0.5 p.p. in this second variant. US GDP growth would increase markedly relative to the baseline, progressing by 3.2 per cent on the year compared to 2.1 per cent in the baseline. Hence, our model indicates that there is another channel through which the US housing market affects the economy and that this channel can have a significant impact (at least in the short run) on household consumption and GDP growth. This channel is the household wealth effect.

A sensitivity analysis has been carried out with the NIME model to evaluate the macro effects of a change in the price of residential buildings and of the mark-to-market value of the stock of residential assets. The situation that was modelled is one where households make a one-off rise in the appraisal of the (subjective) value of their homes relative to the value they assign to all other types of goods, services and investment opportunities. In the model, this translates into a one-off 10 per cent rise in the relative price level of residential investment and of the value of the stock of residential assets. The simulation results show that this leads to an immediate increase in real household contemporaneous wealth of about 2.6 per cent, and raises real private consumption by about 0.6 per cent. Over the medium term, the effects on the US economy tend to decline. At the same time, changes in international relative prices tend to lead to a more drawn-out effect on US imports and on world trade.

Our simulation experiment further indicates that in the short run (i.e., on impact), a 10 per cent increase in US house prices and it's resulting 0.6 per cent rise in US real private consumption expenditure would benefit the euro area, raising its real exports by about 0.1 per cent. Euro area real GDP would increase only marginally, as the rise in exports would be accompanied by an increase in the area's imports. All in all, world trade in goods and services would rise on impact by about 0.2 per cent, while world real output would increase in the short run by 0.1 per cent.

At this point, it may be useful to provide the reader with two caveats. First, as we stated, the impact elasticities provided above do not represent "steady-state" results. Indeed, the theoretical properties of the NIME model ensure that any change in a country's long-run output is linked to changes in trend productivity and/or trend labour supply. Hence, a one-off increase in the aggregate wealth of a country's aggregate household sector might provide a short-term boost to the level of aggregate domestic expenditure, but it will not lead to any change in the long-term level of real GDP. In particular, the medium-term inflation objective in the monetary authorities' policy reaction function is assumed to remain *unchanged*, implying that although the boost in spending may lead to short- and medium-term changes in relative prices (domestic prices may change, e.g., the relative prices of private consumption and investment; international prices may also change, through modifications in effective exchange rates), it will not affect the long-term general price level.

Secondly, we stated that our model simulations show that a rise in US house prices may have a positive effect on household real aggregate wealth and thus boosts consumption expenditure. However, it can be shown that in an intertemporal framework with an aggregate household sector which sets its present and future consumption levels following a permanent income model of consumption, intertemporal consumption is unaffected by changes in wealth that are driven by temporary phenomena such as asset price bubbles[1].

Indeed, the intuition is straightforward. A perceived rise in real aggregate household wealth, but unsubstantiated because unaccompanied by a rise in overall productivity, can only increase current consumption levels at the expense of future consumption, causing an intertemporal shift in consumption but leaving the total present discounted value of current and future consumption unchanged. This is also true for debt-financed consumption (e.g., consumption financed by HELOCs[2]), as this debt needs to be serviced in future years and must thus lead to a decline in future consumption. What is more, in the case of the US house price bubble, one must bear in mind that part of the aggregate wealth effect is purely a rise in the household sector's inside assets, and is matched by an identical rise in inside liabilities. In particular, the representative household is simultaneously its own landlord and tenant.

Furthermore, even if a house price bubble can lead to a temporary increase in the level of current consumption, it can be shown that in a relatively standard version of a permanent income consumption function, where consumption is proportional to real aggregate wealth and where real aggregate wealth includes a measure of the value of the housing stock, the marginal propensity to consume out of housing wealth is identical to the propensity to consume out of any other source of wealth.

Of course, even though the effects of a house price bubble on private consumption are nil on the aggregate and in intertemporal terms, changes in house prices can lead to a redistribution of wealth within the household sector. A rise in house prices will push the present discounted value of housing wealth up above the present discounted value of housing services and thus tend to redistribute wealth from tenants to landlords, and from the young to the older. Conversely, a decline in house prices redistributes wealth from landlords to tenants, and so tends to benefit the young and those planning to trade up in the housing market.

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[1]. See Willem H. Buiter (2008), "Lessons from the North Atlantic financial crisis".
Internet: http://www.nber.org/~wbuiter/NAcrisis.pdf

[2]. Home equity lines of credit.

Underlying Assumptions of the Medium-Term Economic Outlook

Model estimation

The NIME model that was used to prepare this August 2008 World Outlook was estimated on historical data from the European Commission's most recent AMECO database[1], data from the International Monetary Fund's Direction of Trade Statistics and International Financial Statistics, and the United Nations' World Population Prospects, as well as demographic projections from various national sources.

Forecasts for 2008

The forecasts we present for 2008 are based on our own independent evaluation of world economic conditions, based on data released since the beginning of 2008 and extending through 12 August 2008, and also making use of short-term indicators and other soft data.

Average core trend values for the 2008-2015 World Economic Outlook				
	Euro area	Western non-euro EU	United States	Japan
Labour productivity growth [a]	1.2	2.4	1.3	2.3
Equilibrium real interest rate	1.8	2.6	1.6	2.1
Secular inflation	2.1	1.8	2.4	1.5
Population growth	0.2	0.4	0.9	-0.2
Trend labour supply growth	0.6	0.5	0.7	-0.7
Price of oil (Brent, $US/bbl)	123.2			

[a] GDP per worker

Medium-term projections through 2015

The NIME model's medium-term results are basically driven by underlying core trend values such as trend productivity growth, the equilibrium real interest rate and secular inflation. These trends were set to their latest available estimates, 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, Eurostat, and the latest 2006 revision of the United Nations' "World Population Prospects".

Our oil price scenario for 2008 and 2009 is based on long-dated oil price futures for Brent Crude, as quoted on the IntercontinentalExchange (ICE)

global commodities market in mid-August 2008. For the 2010-2015 period, we assume that oil prices remain constant in real terms. This assumption leads to the nominal price of Brent Crude rising from 118.5 $US/bbl in 2009 to 133.7 $US/bbl in 2015.

As compared with our last published projection[2], the main changes to the long-term structural determinants of the model are the following. Trend inflation in the euro area has been revised upward from 1.9 to 2.1 per cent. In the US, trend labour productivity growth has been revised downward from 1.8 per cent to 1.3 per cent; the equilibrium real interest rate has been revised down from 2.2 per cent to 1.6 per cent. In Japan, trend labour productivity growth has been revised upward from 1.8 per cent to 2.3 per cent; long-run population growth has been revised downward from -0.1 per cent to -0.2 per cent; trend labour supply growth has been revised downward from -0.6 per cent to -0.7 per cent. Finally, the world price of crude oil has been raised from a period average of 69.7 $US/bbl to 123.2 $US/bbl.

Fiscal and monetary policies

With respect to the conduct of fiscal policy, we make a usual constant policy assumption. However, wherever 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 should expire over the projection horizon[3]. With respect to the conduct of monetary policy, we assume that monetary authorities set policy rates according to a Taylor-type rule and that changes in policy rates affect short-term money market rates.

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[1]. The AMECO database is available on the Commission's website. http://ec.europa.eu/economy_finance/db_indicators/db_indicators8646_en.htm
The European Commission's *Spring 2008 Economic Forecasts* are available on the Commission's website: http://ec.europa.eu/economy_finance/publications/specpub_list9253.htm

[2]. The last published projection is that of August 2007. The January 2008 outlook is an unpublished document.

[3]. See the US Congressional Budget Office: "The Budget and Economic Outlook: Fiscal Years 2008 to 2018", January 2008. Internet: http://www.cbo.gov/Index.cfm

Overview of the NIME model of the world economy

The Belgian Federal Planning Bureau's NIME model is a macroeconometric world model. 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 NIME, the world economy is divided into six entities: the euro-12 area, a bloc consisting of three "Western non-euro EU Member States", the twelve "Central & Eastern EU Member States", the United States, Japan and a bloc representing the "Rest of the World". All areas are linked through trade and financial flows. Data for the euro area is aggregated using ECU/euro market exchange rates. Data for the Western non-euro EU MS, for the Central & Eastern EU MS and for the Rest of World are aggregated, respectively, into a synthetic currency unit using market exchange rates.

In all blocs except the Central & Eastern EU MS and the Rest of 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 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 wage income and its transfers. Error correction mechanisms and partial adjustment schemes capture sluggish adjustments in households' expenditure plans.

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-term demand for the production factors. In these demand schemes, the long-term 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 assumed to remain constant in real terms. 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. Changes in nominal effective exchange rate are determined by changes in the interest rate differentials and the (expected) inflation differentials. The risk premia in the financial markets are assumed to remain constant.

Selected NIME Studies and Publications

Case studies, technical variants and outlooks

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, the NIME model is also used twice a year to produce medium-term world economic outlooks.

Selected NIME publications

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.

Van Brusselen, P. (2006.c), "The NIME Outlook for the World Economy: 2006-2012. Focus: A Stochastic Appraisal of the NIME Outlook for the World Economy", August 2006, Federal Planning Bureau, Brussels.

De Smet, J. and Van Brusselen, P. (2007.a), "The NIME Outlook for the World Economy: 2007-2013", January 2007, Federal Planning Bureau, Brussels.

De Smet, J. and Van Brusselen, P. (2007.b), "The NIME Outlook for the World Economy: 2007-2013", August 2007, Federal Planning Bureau, Brussels.