THE WORLD ECONOMY: Consumer spending and the financial crisis

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Consumer spending and the financial crisis

The lack of adequate banking regulation by supervisors and flawed assessment of risk by financial institutions over the past several years has proved extremely costly. We estimate that the level of global output declined by a cumulative 2.4 per cent between the onset of the crisis triggered by the collapse of Lehman Brothers and the first quarter of 2009, with a decline of 4 per cent in the OECD economies over the same period. This is equivalent to a loss of roughly $850 billion relative to what was then considered potential output. We estimate that government debt levels in the OECD economies have risen by about 25 per cent in aggregate, entailing many years of higher tax burdens to come, a rise in long-term real interest rates and lower levels of income-generating wealth. The level of employment in the OECD economies declined by 2.2 per cent between the second quarter of 2008 and the second quarter of 2009, and we expect a further 2.5 million people will lose their jobs in the OECD economies by early 2010. While we expect growth to resume by the end of this year in most countries, the level of output in the OECD will remain permanently lower than was expected fifteen months ago. The degree of scarring in individual economies depends on the extent to which lenders underestimated risk before the crisis and the recent rise in the economy's government debt burden. This is discussed in greater detail in a note on pp. 36–8.

Table 1. Forecast summary — *Percentage change*

	Real GDP[a]												
	World	China	OECD	EU–27	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	World trade[b]
2005	4.4	10.1	2.7	2.0	1.8	3.1	1.9	0.9	1.9	0.8	2.2	3.0	8.1
2006	5.1	11.0	3.1	3.3	3.1	2.7	2.0	3.4	2.4	2.1	2.9	2.9	9.5
2007	5.2	13.0	2.7	2.9	2.7	2.1	2.3	2.6	2.3	1.5	2.6	2.5	7.1
2008	3.2	9.1	0.6	0.7	0.6	0.4	–0.7	1.0	0.3	–1.0	0.6	0.4	2.8
2009	–1.1	8.2	–3.7	–4.1	–4.1	–2.8	–6.0	–5.2	–2.3	–5.3	–4.4	–2.2	–11.6
2010	2.8	9.3	1.4	1.0	0.8	1.3	1.2	1.9	1.3	–0.2	1.3	1.6	7.8
1999–2004	3.6	8.3	2.6	2.3	2.1	3.0	1.2	1.2	2.2	1.5	3.0	3.4	7.1
2011–2015	4.0	8.6	2.7	2.2	2.0	3.1	1.2	1.4	2.0	1.7	2.6	2.8	5.4

	Private consumption deflator										World prices	
	OECD	EU–15	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	Exports ($)[c]	Oil($ per barrel)[d]
2005	2.1	2.0	2.0	3.0	–0.8	1.4	1.4	2.2	2.4	1.7	3.7	51.8
2006	2.1	2.1	2.1	2.7	–0.2	1.0	1.6	2.7	2.7	1.4	3.0	63.4
2007	2.2	2.2	2.1	2.7	–0.4	1.8	1.4	2.2	2.9	1.6	7.1	70.5
2008	3.0	2.8	2.8	3.3	0.5	2.1	2.3	3.2	3.0	1.7	7.4	95.7
2009	0.4	0.2	–0.1	0.2	–1.5	0.0	–0.3	0.2	1.1	0.4	–7.4	60.1
2010	1.5	0.9	0.8	2.2	–0.4	1.0	0.5	1.1	1.6	1.2	3.9	71.1
1999–2004	1.8	1.9	2.0	2.0	–1.0	1.2	1.3	2.7	1.6	1.8	1.7	26.0
2011–2015	2.4	1.9	1.8	2.5	1.4	1.6	1.3	2.3	2.3	1.9	2.2	92.1

Notes: Forecast produced using the NiGEM model. (a) GDP growth at market prices. Regional aggregates are based on PPP shares. (b) Trade in goods and services. (c) Non–commodity export prices. (d) Average of Dubai and Brent spot prices.

Sharp declines in output are expected in all the OECD economies this year, with the notable exceptions of Australia and Poland, which seem to have withstood the collapse in global finance and world trade, partly on the strength of sharp currency depreciations. Output in Japan and Germany has suffered disproportionately during the crisis, as these economies have been severely affected by the collapse in world trade. Our forecast for GDP growth in Japan in 2009 has been revised down by 7.7 percentage points since July 2008, while our forecast for Germany has been revised down by 6.8 percentage points. The sharp decline in world trade is generally attributed to a freeze in financing for shipment of goods, due to the collapse of liquidity in the global banking system; the sharp drop in global investment; and an abrupt adjustment of stock levels in capital goods sectors, which are disproportionately open to trade. We estimate that since the third quarter of 2008, destocking has reduced growth in the OECD economies by 1.2 percentage points, accounting for more than a quarter of the total output contraction over this period. Our estimates of the contribution of stockbuilding to GDP growth in the OECD are illustrated in figure 1. The excessive inventory overhangs that built up in the final quarter of 2008 now seem to have been corrected, and the rate of destocking should moderate, supporting growth in the short term.

As major exporters of capital goods, Japan and Germany saw exports decline by 33 per cent and 17½ per cent, respectively, between the third quarter of 2008 and the first quarter of 2009, compared to a decline of 13 per cent in the US and France and 15 per cent in China. Japan was also hampered by a sharp rise in relative export prices, as the yen appreciated by 25 per cent in effective terms over the same period. World trade declined by 13.6 per cent over this period, significantly more than might have been expected given the more modest decline in global demand. This has allowed the ratio of world trade to world output to decline by 3 percentage points, far sharper than any previous decline in this ratio since at least 1969, as illustrated in figure 2. We continue to maintain the view that import penetration ratios are unlikely to shift so dramatically on a permanent or medium-term basis. We have, therefore, assumed that the emergent recovery in world trade strengthens in the second half of the year, allowing the ratio of world trade to GDP to revert towards previous levels by the end of 2012. If world trade recovers more gradually than anticipated, this would imply weaker growth in many trade sensitive economies in 2010–11 than currently forecast.

We forecast a decline of 1 per cent in global output this year and 3¾ per cent in OECD output, an improvement on the decline of 1½ per cent and 4 per cent, respectively, that was expected three months ago. Over the past few months, financing conditions have eased substantially and global growth appears to have resumed. Corporate bond spreads have narrowed, share

Figure 1. Contribution of stockbuilding to GDP growth in the OECD

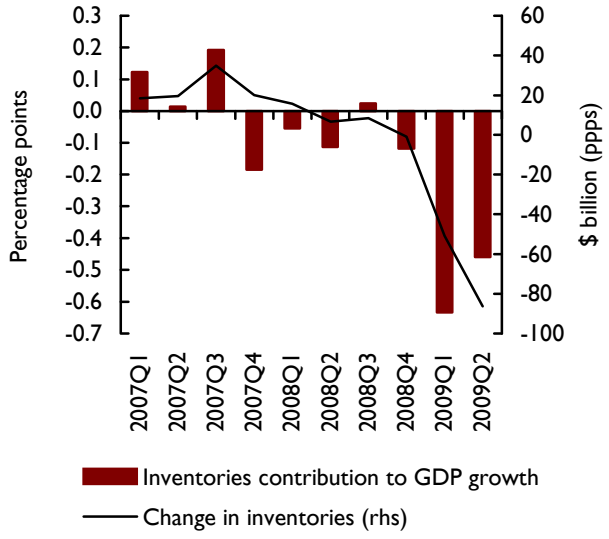
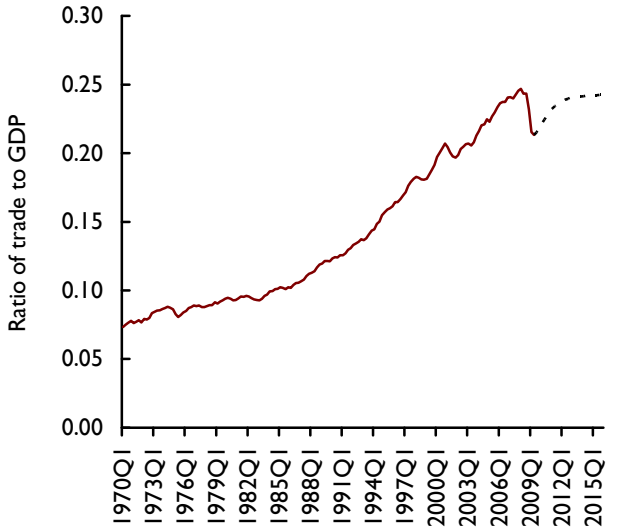


Figure 2. World trade relative to GDP



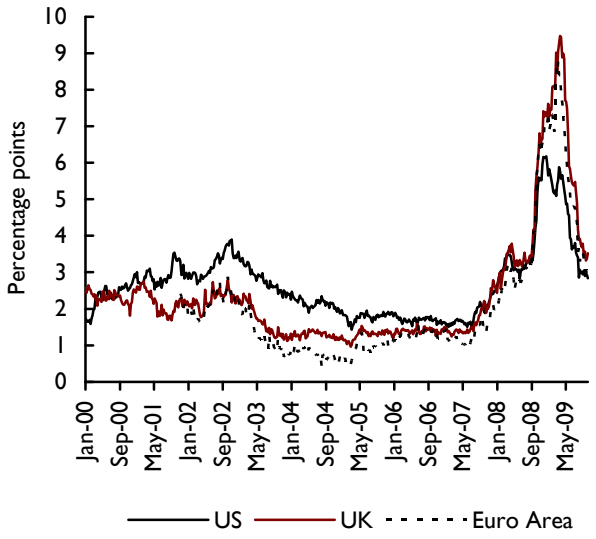
Note: NiGEM model-based forecast is black dashed line.

prices have recovered some of their recent losses, money market liquidity has been restored, excess inventory overhangs have largely been corrected, world trade has stabilised and shows signs of recovery, and the US housing market also appears to have stabilised. While the recovery now appears to have set in earlier than expected, it is important to bear in mind that recent improvements have been reliant on a number of temporary factors such as fiscal expansions, quantitative easing and other interventions to support banks and reduce banking sector risk, and a turn in the inventory cycle. There is a risk that when these short-term effects and measures are lifted, several economies may dip back into recession. We remain cautious for the outlook next year, forecasting global growth of 2.8 per cent and growth in the OECD economies of 1.4 per cent in 2010.

Global financing conditions have eased substantially in recent months, facilitated by government guarantees and support for bank balance sheets as well as intervention in credit markets. Figure 3 illustrates corporate bond spreads in the US, Euro Area and the UK. Corporate bond spreads began to widen following the onset of the US subprime crisis in August 2007, after several years of very low margins during the period known as the Great Moderation. Following the collapse of Lehman Brothers in September 2008, corporate spreads jumped to their highest level since the Great Depression, peaking at 9.4 percentage points in the UK, 9 percentage points in the Euro Area and 6.7 percentage points in the US. Spreads have now receded to levels seen prior to the collapse of Lehman Brothers, and we expect them to remain near to current levels over the forecast horizon, maintaining a positive margin over the low levels seen in 2000–6. The rise relative to recent history reflects a reassessment of risk in financial markets, which will have a long-run impact on the cost of borrowing and the equilibrium capital–output ratio. Corporate spreads have narrowed more rapidly than anticipated, and there is a risk of 'undershooting' the long-run level, allowing risk premia to fall further than currently expected. This would lead to a burst of investment and rise in inflationary pressures, and we examine this possibility for the case of the US in the next section.

Figure 3. Corporate bond spreads

Spread between BAA corporate and government bond yields



Source: Derived from Datastream series.

Consumers have also found it difficult and costly to secure finance during this period of global financial turmoil. Consequently consumer spending is forecast to decline in the US, Japan, the UK, Canada and the Euro Area as a whole this year, although it has remained more resilient in Germany and France than in most of the other Euro Area economies.

We model consumption decisions as dependent on real disposable income and real wealth in the long run, based on the theoretical framework discussed by Barrell and Davis (2007). Total wealth is composed of both financial wealth and tangible (housing) wealth where the latter data are available. The long-run relationship can be expressed as:

$$\ln(C) = \alpha + \beta \ln(RPDI) + (1-\beta)\ln(RFN + RTW) \quad (1)$$

where C is real consumption, $RPDI$ is real personal disposable income, RFN is real net financial wealth and RTW is real tangible wealth. We restrict the parameters on income and wealth to sum to one, to ensure a stable savings ratio in the long run that is determined by the long-run constant term α and the wealth to income ratio. Shifts in the savings ratio that are not explained by developments in wealth will show up in the residual on this equation. A change in the lending behaviour of banks might induce such a shift, as could a change in the perceived risk of losing one's job. We embed this long-run relationship within a dynamic error-correction model. The dynamics of adjustment to the long run are derived from estimates reported in Al Eyd *et al.* (2005), and differences across countries indicate differences in the relative importance of types of

Table 2. Key consumption equation parameters

	β	$\Delta\ln(RPDI)$	$\Delta\ln(RTW)$	$\Delta\ln(RTW_{-1})$	$\Delta\ln(RNW_{-1})$
US	0.81	0.15		0.154	0.034
Japan	0.90	0.24			
Germany	0.78	0.68	0.022		
France	0.71	0.51			0.038
UK	0.93	0.17		0.160	0.029

Note: β gives the long-run weight on income from equation 1, while other parameters indicate the short-run response of consumption to changes in real income and wealth.

wealth and of liquidity constraints. The key parameters embedded in our model equations for the US, UK, Germany, France and Japan are reported in table 2. The impact of a change in housing wealth is about five times stronger than the impact of a change in financial wealth in the short run in the US and the UK, whereas wealth effects are relatively weak in Japan, Germany and France. Al Eyd and Barrell (2005) discuss borrowing constraints, and investigate the role of changes in the number of borrowing constrained households. It is common to associate the severity of borrowing constraints with the coefficient on changes in current income in the equilibrium correction equation for consumption. This suggests relatively few borrowing constraints in the US and the UK, with a greater degree of borrowing constraints in Germany and France.

If consumers have found it more difficult than usual to access finance for consumption, we would expect to see actual consumer spending underperform projected consumer spending, which would imply a decline in the equation residual. Figures 4–8 illustrate the historical residual on our consumption equations for the US, UK, Japan, Germany and France, in order to assess the extent to which consumer behaviour has deviated from expected behaviour as a result of the financial crisis.

It is interesting to note that only in the case of the UK do we see clear evidence of a decline in the equation residual since the third quarter of 2008. Looking at the 5-period moving average,[1] the residuals in the US and Germany actually exhibit an upward trend over this period, suggesting that consumer spending in these economies has been stronger than might be expected since the onset of the crisis, given developments in income and wealth. Prior to this period, the residual on consumer spending in Germany was exhibiting a downward trend, reflecting a steady rise in the savings ratio since 2001 that cannot be attributed to a deterioration in wealth holdings. The savings ratio in

Figure 4. Residual on US consumption equation

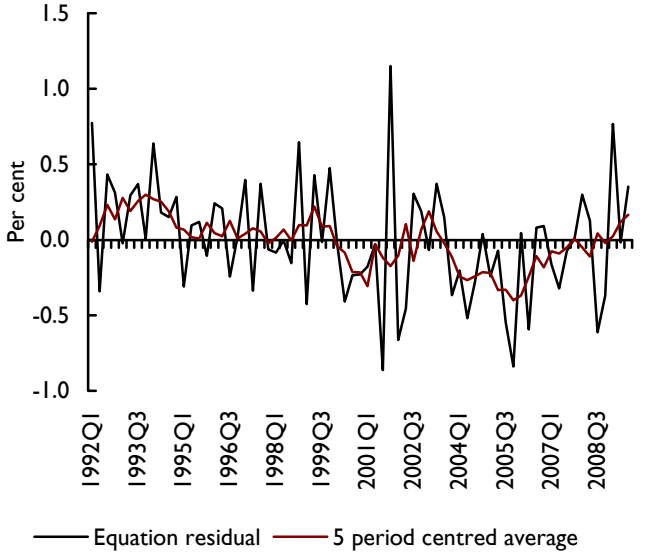
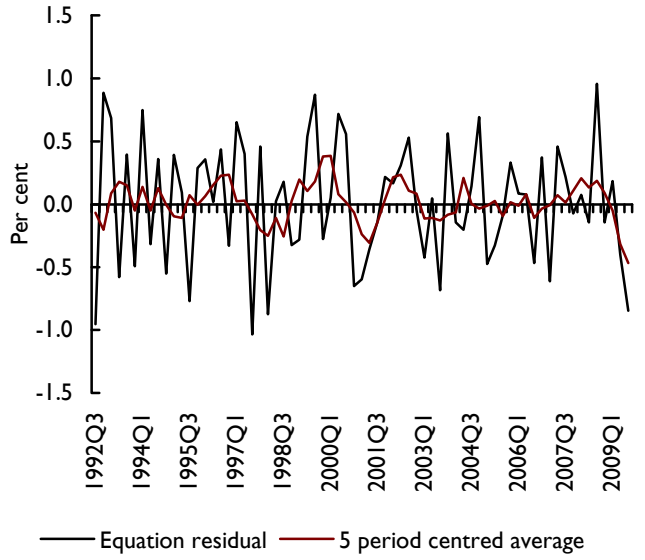


Figure 5. Residual on UK consumption equation



France began to rise in 2006, well before the onset of the financial crisis, and this is reflected in a downward shift in the French consumption residual. Since 2006, however, there has not been a clear shift in the average level of the residual. In Japan, on the other hand, the consumer savings ratio shifted downward in 2001, as Japan's 'lost decade' following the financial crisis of the

Figure 6. Residual on Japan consumption equation

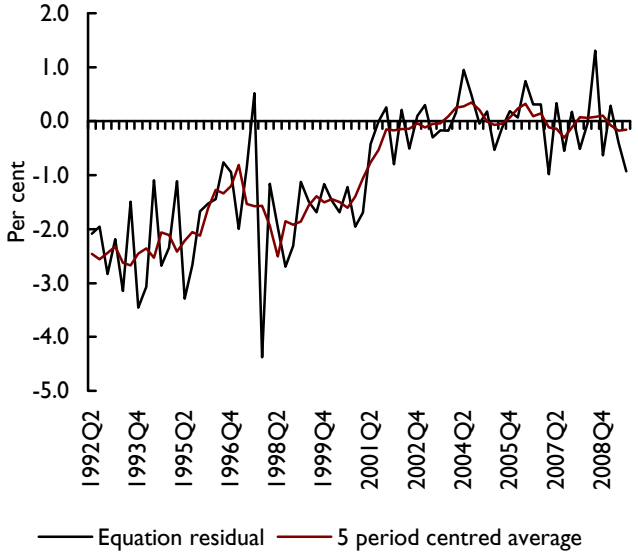


Figure 8. Residual on France consumption equation

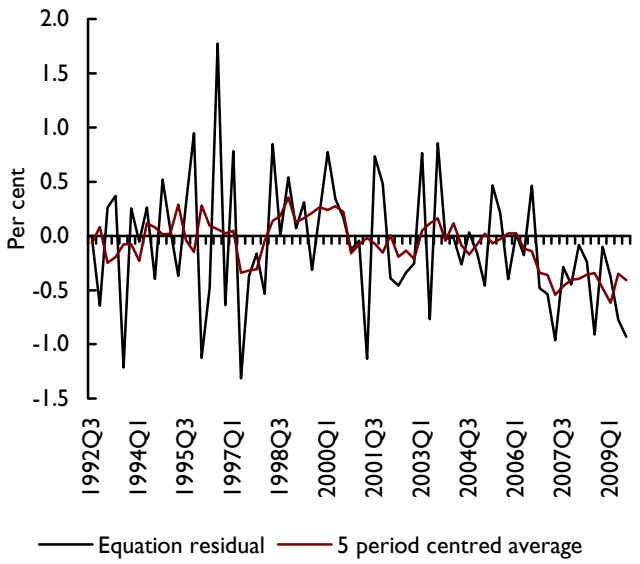
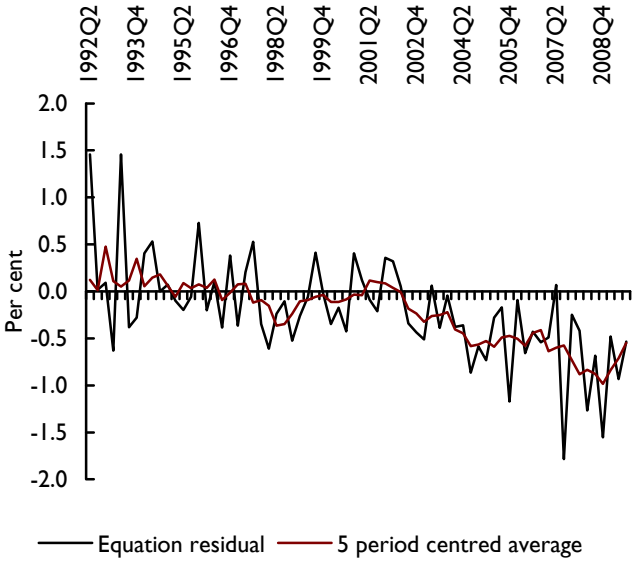


Figure 7. Residual on Germany consumption equation



early 1990s came to an end, and consumers were willing to reduce their level of precautionary savings. However, there is no evidence of a shift in behaviour in recent quarters.

The upward trend in the US consumer spending residual has been going on since mid-2005, and notably this period has generally not been associated with a decline in the US savings ratio, as might be expected when the consumption residual exhibits an upward shift. This suggests that consumer spending has not been depressed by the deterioration of US housing wealth over this period to the extent predicted by our model equation.

The general lack of a downward shift in consumption behaviour outside the UK suggests that the difficulty in securing finance for consumption is more or less adequately explained in our equation by the decline in personal sector wealth and income. In other words, individuals may find it difficult to secure finance because their incomes have declined or because the value of the assets they can offer as collateral has declined, but we cannot identify any evidence of a rise in precautionary savings or a change in bank lending behaviour that can be attributed to the financial crisis. The story is different for the UK, where consumers appear to be saving a greater share of their income than they have in recent history, after allowing for the deterioration in personal sector income and wealth since early 2008. What we cannot determine from this brief analysis is whether this rise in savings is voluntary (a rise in desired precautionary savings) or involuntary (a change in bank lending behaviour that limits the supply of finance). It is likely that there is a combination of both demand and supply factors behind the observed shift in consumer spending behaviour in the UK.

Summary of key forecast assumptions

The forecasts for the world and the UK economy reported in this *Review* are produced using NIESR's in-house model, NiGEM. The NiGEM model has been in use at the National Institute for forecasting and policy analysis since 1987, and is also used by a group of about 50 model subscribers, mainly in the policy community. Most countries in the OECD[2] are modelled individually, and there are also separate models of China, India, Russia, Hong Kong, Taiwan, Brazil, South Africa, Estonia, Latvia, Lithuania, Slovenia, Romania and Bulgaria. The rest of the world is modelled through regional blocks so that the model is global in scope. All country models contain the determinants of domestic demand, export and import volumes, prices, current accounts and net assets. Output is tied down in the long run by factor inputs and technical progress interacting through production functions. Economies are linked through trade, competitiveness and financial markets and are fully simultaneous. Further details on the NiGEM model are available on http://nimodel.niesr.ac.uk/advert/niesr2nigem.php.

There are a number of key assumptions underlying our current forecast. The interest rates and exchange rate assumptions are shown in tables 3–4. Our short-term interest rate assumptions are generally based on current financial market expectations, as implied by the rates of return on Treasury yields of different maturities. Long-term interest rate assumptions are based on the forward convolution of our assumed short-term interest rates. We have assumed that short-term interest rates begin to rise in the second quarter of 2010 in all the major economies. Financial markets have priced in a rise closer to the turn of the year, but given the fragility of the recovery and weak inflation we assume a more cautious approach by monetary authorities. The monetary stance will remain expansionary until 2012, when real interest rates are expected to stabilise close to historical levels (although nominal interest rates will continue to rise after this point to reach 4.8 per cent per annum in the longer term).

Nominal exchange rates against the US dollar are generally assumed to remain constant at the prevailing rate (fixed on 2 October 2009) in the short term, that is

Table 3. Interest rates — *Per cent per annum*

	Central bank intervention rates					Long–term interest rates				
	USA	Canada	Japan	Euro Area	UK	USA	Canada	Japan	Euro Area	UK
2006	5.0	4.0	0.2	2.8	4.6	4.8	4.2	1.7	3.8	4.5
2007	5.1	4.4	0.5	3.8	5.5	4.6	4.3	1.7	4.3	5.0
2008	2.1	3.0	0.5	3.9	4.7	3.6	3.6	1.5	4.2	4.5
2009	0.3	0.4	0.1	1.3	0.6	3.2	3.2	1.3	3.7	3.6
2010	0.8	1.0	0.2	1.4	0.9	3.5	3.5	1.5	3.7	3.8
2011	1.8	2.4	0.5	2.3	2.6	3.9	3.9	1.7	4.0	4.1
2012	2.7	3.3	0.7	3.1	3.5	4.2	4.1	1.9	4.3	4.4
2013	3.5	3.6	1.2	3.5	3.7	4.4	4.3	2.1	4.4	4.5
2014–2017	4.1	3.9	1.8	4.2	4.2	4.6	4.5	2.5	4.7	4.7
2008 Q1	3.2	3.9	0.5	4.0	5.4	3.6	3.7	1.4	4.1	4.5
2008 Q2	2.1	3.1	0.5	4.0	5.0	3.9	3.7	1.6	4.4	4.8
2008 Q3	2.0	3.0	0.5	4.2	5.0	3.8	3.6	1.5	4.5	4.7
2008 Q4	1.1	2.1	0.3	3.4	3.3	3.2	3.4	1.4	3.9	4.0
2009 Q1	0.3	0.9	0.1	2.0	1.1	2.7	2.8	1.3	3.7	3.5
2009 Q2	0.3	0.3	0.1	1.1	0.5	3.3	3.1	1.4	3.9	3.6
2009 Q3	0.3	0.3	0.1	1.0	0.5	3.5	3.4	1.3	3.7	3.8
2009 Q4	0.3	0.3	0.1	1.0	0.5	3.2	3.3	1.3	3.5	3.6
2010 Q1	0.3	0.3	0.1	1.0	0.5	3.3	3.4	1.4	3.6	3.6
2010 Q2	0.8	0.8	0.2	1.3	0.7	3.5	3.5	1.4	3.7	3.7
2010 Q3	1.0	1.3	0.3	1.5	1.1	3.6	3.6	1.5	3.8	3.8
2010 Q4	1.3	1.6	0.3	1.7	1.4	3.7	3.7	1.5	3.8	3.9

Table 4. Nominal exchange rates

	Percentage change in effective rate								Bilateral rate per US dollar			
	USA	Canada	Japan	Euro Area	Germany	France	Italy	UK	Canadian dollar	Yen	Euro	Sterling
2006	–1.5	6.7	–6.7	0.1	0.0	0.1	0.0	0.7	1.13	116.3	0.797	0.543
2007	–4.4	4.8	–4.5	4.0	1.8	2.0	2.0	2.3	1.07	117.8	0.731	0.500
2008	–2.2	0.1	13.1	5.6	2.2	2.9	2.7	–11.9	1.07	103.4	0.683	0.545
2009	7.5	–6.0	15.5	3.1	1.7	1.2	1.8	–11.1	1.15	93.5	0.723	0.645
2010	–3.3	4.9	2.0	2.2	0.8	1.1	1.0	–1.0	1.08	89.8	0.689	0.627
2011	1.3	0.0	0.2	1.6	0.5	0.6	0.8	0.9	1.09	90.7	0.692	0.628
2008 Q1	–1.2	–2.7	6.4	2.2	0.9	1.2	1.1	–5.5	1.00	105.2	0.667	0.505
2008 Q2	–1.4	–1.0	–0.3	2.8	1.1	1.4	1.4	–3.0	1.01	104.6	0.640	0.507
2008 Q3	2.3	–2.5	–1.3	–2.1	–1.1	–0.9	–1.2	–1.3	1.04	107.6	0.666	0.529
2008 Q4	11.9	–12.1	20.6	–2.3	–0.9	–1.2	–0.9	–8.1	1.21	96.1	0.757	0.637
2009 Q1	3.1	–2.1	4.4	3.3	2.0	1.3	1.9	–6.9	1.25	93.6	0.768	0.697
2009 Q2	–3.8	5.8	–6.1	1.1	0.3	0.5	0.5	4.5	1.17	97.3	0.735	0.645
2009 Q3	–3.7	5.5	1.8	1.7	0.5	0.8	0.8	1.8	1.10	93.6	0.699	0.610
2009 Q4	–0.9	1.0	3.7	1.1	0.5	0.6	0.5	–4.2	1.08	89.6	0.688	0.627
2010 Q1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.08	89.6	0.688	0.627
2010 Q2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.08	89.6	0.688	0.627
2010 Q3	0.3	0.1	–0.1	0.4	0.1	0.2	0.2	0.3	1.08	89.9	0.689	0.627
2010 Q4	0.4	0.0	0.0	0.4	0.1	0.2	0.2	0.3	1.08	90.2	0.690	0.627

for three consecutive quarters. After that, they follow a backward-looking uncovered-interest parity condition, based on interest rate differentials relative to the US.

Fiscal policies for 2009–10 follow announced policies, and are consistent with the size and timing of fiscal packages detailed in Table 1.7 of OECD (2009). The only specific fiscal assumptions that we incorporate for countries outside the OECD are for China, where we have incorporated a fiscal expansion worth 4.5 per cent of GDP, with the bulk of this effected through a rise in domestic demand in 2009. Except in the case of the UK, we assume all countries introduce gradual fiscal tightening measures from 2011, in order to bring the deficit back towards recent historical levels.

Our oil price assumptions for the short term are based on those of the US Energy Information Administration, which use information from forward markets as well as an evaluation of supply conditions. In the longer term, we assume that real oil prices will rise in line with the real interest rate. Oil prices have risen since the summer, and we assume they average $68.4 per barrel in the fourth quarter. See table 1 for the longer-term outlook for oil prices.

Corporate bond spreads are expected to stabilise at current levels, based on data available to 5 October 2009.

Equity prices in the US reflect the return on capital. Other equity markets are assumed to move in line with the US market but are adjusted for differential exchange rate movements.