

# Global imbalances and the financial crisis

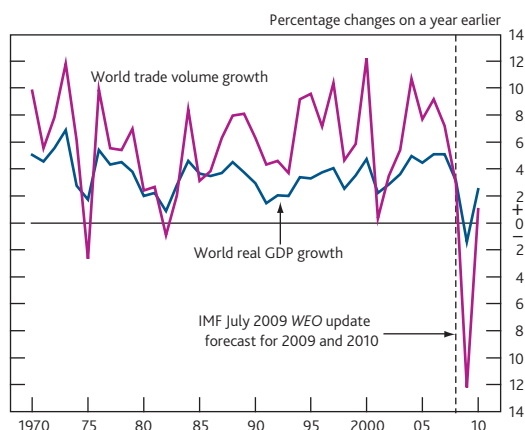
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The recent financial crisis has put the spotlight on the rapid rise in credit which preceded it and the macroeconomic context in which it developed. This article examines the contribution of international savings and investment imbalances to the crisis and how these imbalances have evolved since its onset, focusing on the UK experience as a deficit country over the past decade. It also briefly discusses some implications of the crisis for global imbalances over the medium term.

## Introduction

The global economy has, since the second half of 2007, experienced a deep financial crisis. This has been reflected in significant falls in asset prices, a sharp contraction in global output and precipitous falls in international trade flows (Chart 1). There have been significant negative effects on the United Kingdom, with UK real GDP falling by 5.5% between 2008 Q1 and 2009 Q2.

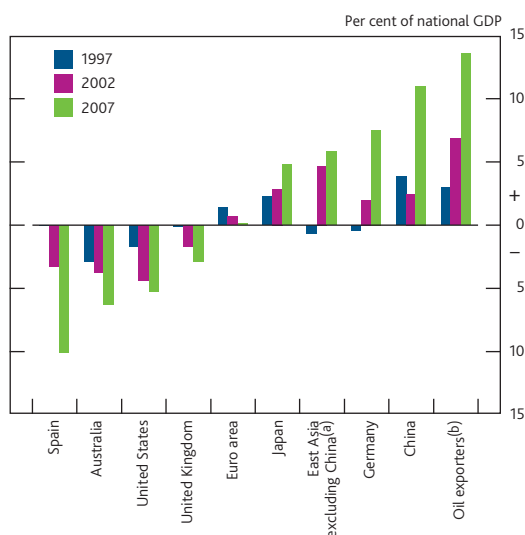
Chart 1 Global GDP and world trade



While the proximate causes of the crisis lie within financial markets, the build-up of substantial global macroeconomic imbalances over the past decade may also have contributed significantly.<sup>(2)(3)</sup> One imbalance of the UK economy, discussed in previous *Inflation Reports*,<sup>(4)</sup> has been the persistent UK current account deficit which has accompanied sustained growth of UK domestic demand.

One manifestation of global imbalances is that during the period of robust global growth preceding the crisis, a number of other advanced economies experienced growing current account deficits, most notably the United States (Chart 2).<sup>(5)</sup>

Chart 2 Global imbalances in the run-up to the crisis



Source: IMF April 2009 WEO.

(a) 'East Asia excluding China' includes Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand.

(b) 'Oil exporters' includes OPEC countries, Norway and Russia.

In contrast, commodity exporters and many East Asian economies (EAEs) experienced growing current account surpluses with the largest increases being in the oil-exporting economies and China.

The financial crisis has been a key influence on the prospects for UK inflation. From a monetary policy perspective, it is therefore important to try to understand why the crisis happened, including the contribution of global imbalances.

(1) The authors would like to thank Phillip Butler, Ed Dew, Abigail Hughes, Kirsty Knott, Ana Lasaosa, Alison Schomberg, Kyriaki Voutsinou and Pawel Zabczyk for their help in producing this article.

(2) See, for example, Bean (2009), Tucker (2008a, b, 2009).

(3) Surveys of the causes of the crisis can be found in Acharya and Richardson (2009) and Bank for International Settlements (2009).

(4) See, for example, boxes in the August 2001 and May 2006 *Reports*. The August 2009 *Report* discusses global imbalances, which are also examined in a box in the May 2002 *Report*.

(5) Japan and Germany were important exceptions and the euro area as a whole was broadly in balance.

Large global imbalances can be undesirable. For example, the continuation of these imbalances poses a risk of large corrections in asset prices and exchange rates, and these can have important implications for growth and inflation.<sup>(1)</sup>

The link between the financial crisis and these global imbalances is complex. This article discusses some of the factors underlying global imbalances. It shows how they were linked to international capital flows, which contributed to a fall in global real interest rates and an extended global credit boom. Importantly, however, other factors such as financial innovation and the underpricing of risk exacerbated those effects during the boom period, giving rise to vulnerabilities in the global economy. This article also considers the role these vulnerabilities may have played in amplifying the scale and impact of the subsequent financial crisis. The adjustments of global imbalances which have accompanied the financial crisis and some of the factors which may affect their longer-term evolution, are also discussed.

### How were global imbalances and the credit boom linked?

Various forces simultaneously contributed to the combination of global imbalances and a global credit boom. This section first examines the causes of increased international capital flows, which may have been an important contributory factor, before discussing the mechanisms which generated and amplified the effect on credit supply and demand.

#### Global savings and investment

A country's current account balance represents the difference between the savings and investment flows in that country. Non-zero current account balances are associated with international capital flows — countries running current account deficits (surpluses) experience capital inflows (outflows). So the global current account imbalances in recent years (Chart 2) have been associated with substantial capital flows from the high-saving EAEs and commodity producers to lower-saving western countries.

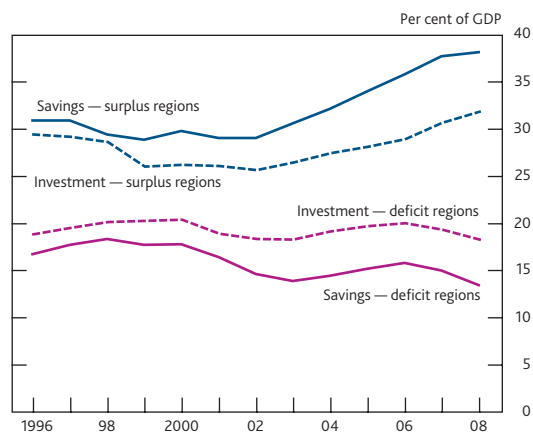
Economic theory suggests that international capital flows should reflect differences in rates of return on investments across countries. If a particular country offers relatively high expected returns it will tend to attract more capital from abroad, thereby allowing its investment to exceed domestically available savings, and resulting in a current account deficit.

From this perspective, the international pattern of current accounts and capital flows in recent years appears puzzling. Faster-growing economies, for example those in East Asia, would typically be expected to offer higher rates of return on investment than the more mature industrialised economies.

So the net capital flows from East Asia (and commodity producers) towards industrialised countries seem to suggest that international capital had been 'flowing uphill'.<sup>(2)</sup>

So what accounts for those capital flows and current account imbalances? Examining changes in the saving and investment patterns in different regions, the counterparts to the capital flows and current account positions, provide some initial information. In particular, at an accounting level, the dominant drivers of the 'uphill' capital flows over the past decade have been the high and rising savings of the current account surplus countries (EAEs and oil producers) and the lower and falling savings of the current account deficit economies (Chart 3). Changes in investment rates in different regions, such as the falls in Asian investment following the 1997–98 currency crisis, and their subsequent rise, have been more muted.

**Chart 3** Savings and investment rates in current account deficit and surplus regions<sup>(a)</sup>



Source: IMF WEO.

(a) Surplus regions are those with current account surpluses greater than 1% of GDP in 2008 and include Commonwealth of Independent States and Mongolia, Developing Asia, Japan, Middle East and Newly Industrialised Asia; deficit regions are those with current account deficits greater than 1% of GDP in 2008 and include Central and Eastern Europe, Sub-Saharan Africa, United Kingdom and United States.

### What caused the East Asian countries and commodity producers to become exporters of capital?

The contribution of EAEs and commodity producers to global imbalances reflects both their high savings and the tendency to direct those savings to countries such as the United States and the United Kingdom. Both structural and macroeconomic factors appear to have contributed to the high savings rates, while policy choices and levels of financial market development help account for the direction of the flows.

The low degree of social security provision is an important structural factor contributing to high savings in East Asia. In

(1) See the July 2009 Monetary Policy Committee minutes and the July 2006 *Financial Stability Report*, for example.

(2) See Prasad, Rajan and Subramanian (2007), for example.

the case of China, for example, Chamon and Prasad (2009) argue that precautionary motives are one of the strongest candidates for explaining rises in the household savings rate. For example, they discuss how private sector education and health expenditures have increased significantly in recent years, in part because the government has scaled back public sector support in these areas.

But there were also a number of macroeconomic influences. The rapid acceleration in global growth, given sluggish growth in commodity supply, led to marked increases in oil prices — see Saporta, Trott and Tudela (2009)<sup>(1)</sup> — and the prices of other commodities which boosted commodity-exporting countries' income from net trade. And, as was the case alongside the 1970s' and 1980s' oil price rises, expenditure in commodity-exporting countries lagged behind that rise in income.

Another important macroeconomic factor was the large contribution of exports to the growth of the EAEs. An increase in exports leads directly to an increase in domestic income but is not necessarily associated with an increase in domestic spending. To the extent that this extra income is not spent it will tend to create excess saving. But why were the exports of the EAEs so strong? And why did they direct their excess savings to industrialised countries, such as the United States and the United Kingdom, instead of using them to finance more investment at home?

An important factor was the adoption of managed exchange rate policies by some EAEs,<sup>(2)</sup> whereby a particular level of their currency was targeted, usually against the US dollar. This policy was prompted, in part, by the aim of spurring economic development through exports, thereby addressing extensive rural underemployment.<sup>(3)(4)</sup> The desire to accumulate foreign exchange reserves as insurance against a repeat of the 1997–98 Asian currency crises was an additional motivation.<sup>(5)</sup> Another factor may have been the slow pace of financial development in many EAEs which meant that there was a dearth of domestic investment opportunities (see Caballero *et al* (2008)). This may have necessitated savings being channelled to the deeper and more liquid financial markets in western economies.

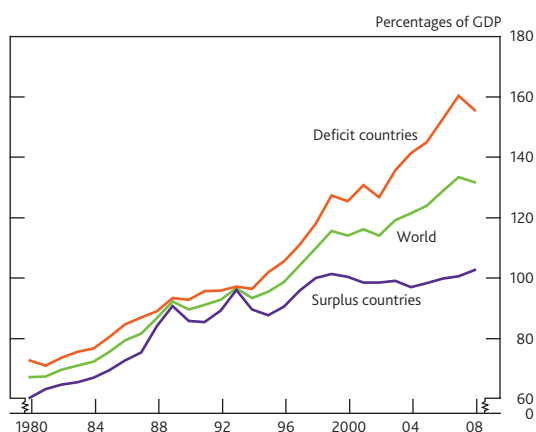
The managed exchange rate policy was implemented through foreign exchange interventions. Countries running current account surpluses would normally be expected to experience some upward pressure on their currencies. But many EAE monetary authorities offset this pressure by selling domestic assets and accumulating foreign currency reserves, principally US dollar-denominated bonds. This policy was sustainable because, in contrast to countries selling foreign exchange reserves to forestall currency depreciations, there is no fundamental constraint to the amount of foreign exchange reserves that a country can accumulate in preventing its

currency from appreciating. Orientating monetary policy towards managing the exchange rate rather than domestic price stability will, however, tend to eventually be associated with upward pressure on inflation if the monetary policy of the anchor country (the United States in this case) is too loose for the pegging country. But for example in China's case this was not a problem because its productivity growth was sufficiently fast to maintain inflation at a low level, and upward wage pressure was limited by the rapid increase in its workforce.<sup>(6)</sup>

### The global credit boom

The past decade was also characterised by rapid growth in credit in deficit countries, underpinning a global credit boom (Chart 4). The excess savings in EAEs and commodity exporters may have contributed to this. Bernanke (2005) has argued that the low and falling savings rates in deficit countries which accompanied the credit boom, were principally the outcome of an endogenous process by which the excess savings of the surplus countries — the 'global savings glut' — were recycled. The mechanism by which this occurred was a downward adjustment in the level of global real interest rates which restored equilibrium between saving and investment. For example, since the mid-1990s, UK long-term real interest rates derived from index-linked instruments declined by more than 2 percentage points. Real long-term interest rates have also fallen in other countries (Chart 5).<sup>(7)</sup>

Chart 4 Private sector loans<sup>(a)</sup>

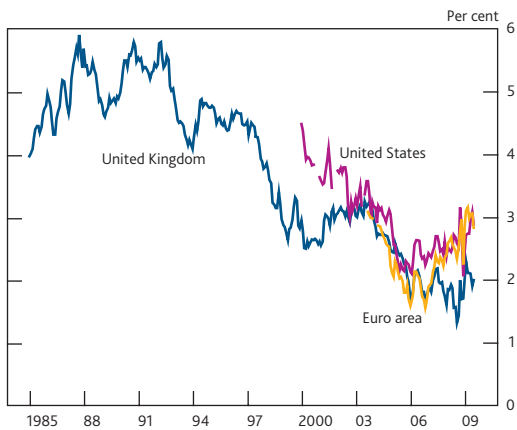


Sources: European Central Bank, IMF and Bank calculations.

(a) Claims on the domestic private sector by banks and, where available, other financial corporations.

- (1) Tucker (2008b) discusses the role of the entry of energy-intensive developing countries.
- (2) This was most apparent for China. Other EAEs also, however, had significantly less volatile exchange rates than the euro or the yen (Committee on the Global Financial System (2009)).
- (3) For a discussion of the choice of exchange rate regimes in emerging Asian economies see, among others, Calvo and Reinhart (2002).
- (4) This was particularly the case for China, whose exports rose by over 27% per annum between 2002 and 2008.
- (5) A strategy recommended by, for example, Feldstein (1999).
- (6) Inflation did, however, rise significantly in oil-exporting countries.
- (7) Shiller (2007) argues that although real long-term interest rates in the G7 declined over this period they only fell back to their long-run historical average. Others, such as Bems, Dedola and Smets (2007) and Bracke and Fidora (2008) have argued that monetary factors were important from the early 2000s onwards. For an overview of these and other factors see Hume and Sentance (2009).

**Chart 5** Real long-term interest rates<sup>(a)(b)</sup>

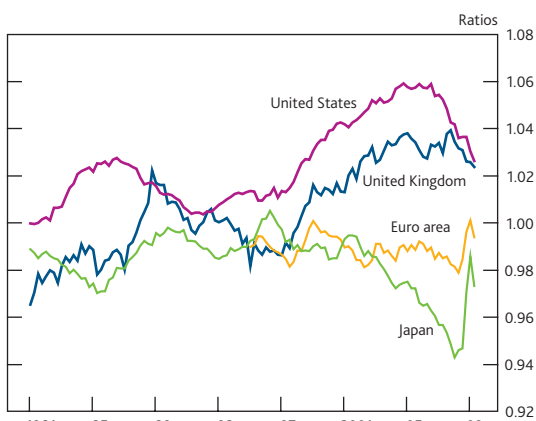


(a) United States and United Kingdom derived from index-linked securities. Euro area derived from inflation swaps. Ten-year real forward rates for the United Kingdom and the euro area, nine-year forward rates for the United States.  
 (b) UK data are adjusted for RPI.

But there were a number of factors other than international capital flows which may have contributed to the falling saving rates in deficit countries. For example, Berry, Waldron and Williams (2009) discuss the effect on the UK household saving rate of demographic factors and pensions, greater macroeconomic stability (via lower precautionary saving flows), rising asset prices, and looser credit conditions (which are discussed further below). Moreover, Bean (2008) argues that the downward pressure on real long-term interest rates may itself have been reinforced by loose monetary policy in some countries.<sup>(1)</sup>

Counterparts to the decline in saving rates were strong domestic demand and wider current account deficits. For example, in the United States and the United Kingdom, domestic demand began to grow more rapidly than GDP in the late 1990s (Chart 6). This interacted with exchange rate appreciations and the entry of low-cost producers such as China in the world trading system to produce wider current account deficits.

**Chart 6** Domestic demand to GDP ratios



Sources: Thomson Datastream and Bank calculations.

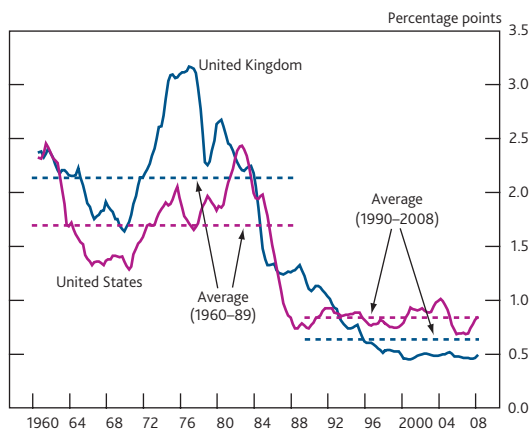
As consumption and investment increased in deficit countries demand for credit also increased, underpinning the global credit boom. However, as Berry, Waldron and Williams (2009) note, the rapid build-up in credit in the United Kingdom did not necessarily imply a boom in household consumption. Rather, as Nickell (2004) points out, much of the credit was used to finance purchases of housing and financial assets rather than goods and services. The credit boom was therefore closely linked to balance sheet expansion. From this perspective, while capital flows likely added to the growth of credit, they do not seem large enough to take the lion's share of the blame (see Bean (2009)).

However, in addition to their interaction with macroeconomic factors, capital flows may have further contributed to the credit expansion by encouraging a 'search for yield' by financial market participants. Although some of the capital flows were used to fund loans to households and firms directly, the majority were used to purchase existing safe assets, such as government bonds, which caused real long-term interest rates to fall (Chart 5).<sup>(2)</sup> This not only encouraged other investors to buy riskier assets but may also have contributed to the balance sheet expansion. The low interest rate environment seems to have interacted with strong competitive pressures on banks and asset managers to maintain returns, leading to a 'search for yield' in financial markets.<sup>(3)</sup> The October 2008 *Financial Stability Report* discussed how this was evident in reduced discrimination between assets of differing credit quality and the development of increasingly complex financial instruments employing leverage to generate higher returns.

Investors reportedly justified this 'search for yield' with the perception that financial market risks had declined. One element of this — lower credit risk premia — was underpinned by the continued stability of both macroeconomic and financial variables (often known as the 'great moderation', Chart 7). The low inflation environment associated with this stability also permitted a loosening in global monetary policy following the stock market crash in 2000–01. This may have increased confidence in the stabilising power of monetary policy, and hence in continued stability going forward. Financial market participants were lulled into a false sense of security by extrapolating only from recent benign data, thereby attaching low probabilities to adverse outcomes. This 'disaster myopia' may have contributed to the price of risk being set too low (see Haldane (2009)).

The credit expansion was also facilitated by the decline in perceived liquidity risk. Illiquid financial markets can be defined as containing a shortage of investors willing to purchase assets at the prevailing price when other investors attempt to sell. This can mean that the price received for an

(1) See also Taylor (2007), among others.  
 (2) See, for example, Warnock and Warnock (2005).  
 (3) See Tucker (2008b) and October 2008 *Financial Stability Report*.

**Chart 7** Volatility of real GDP growth<sup>(a)</sup>

Sources: ONS, Thomson Datastream and Bank calculations.

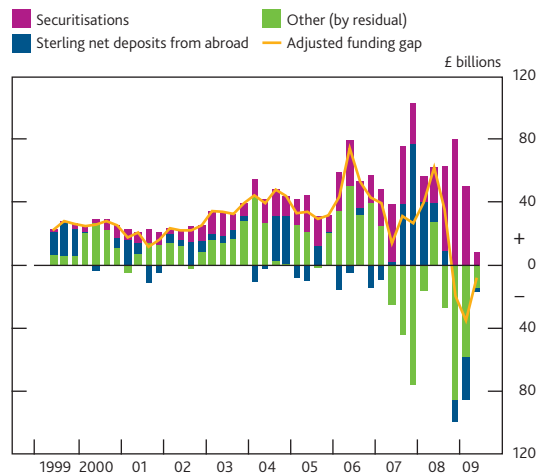
(a) Five-year rolling average of annualised volatility of quarter-on-quarter growth rate. 2008 data are to Q2.

asset is less than its underlying value. The years preceding the financial crisis were characterised by abundant liquidity in financial markets.

An important driver of the apparent declines in both credit and liquidity risk was financial innovation, driven in part by increased competitive pressures associated with the 'search for yield', and made possible by financial liberalisation in many advanced markets. A first form of innovation was the securitisation of mortgages, corporate loans and other assets. This 'created' higher-quality financial securities that were viewed in many cases as being less risky than the underlying assets, in part because they pooled a wide range of assets together.

An associated innovation was that banks changed their funding models. In particular, banks sold the new types of securities to end-investors via the so-called 'shadow banking system', encompassing structured investment vehicles (SIVs) and conduits, which provided a framework for lending and borrowing without accepting deposits. This was termed the 'originate to distribute' model: aiming to spread the risks associated with securitised assets off their balance sheets, banks sold them to SIVs, which then aimed to sell them on to end-investors.<sup>(1)</sup> At the same time, banks increasingly relied on wholesale funding markets, including in selling the securitised assets, see the October 2008 *Financial Stability Report*. The magenta bars in **Chart 8** show that the share of funding by UK banks derived from securitisations increased between 2000 and 2008.<sup>(2)</sup>

In summary, the credit boom in deficit countries was one of the mechanisms which ensured that global saving and investment balanced. The capital flows associated with global imbalances were an important element of this. By reducing real long-term interest rates on safe assets these flows encouraged other investors to invest in riskier assets such as

**Chart 8** Sources of UK banking sector funding<sup>(a)</sup>

(a) Quarterly data, six-month totals.

securitised assets and expand their balance sheets. If western financial markets had not responded in this way the global real interest rate may have needed to have fallen even further in order to bring global savings and investment into balance.

## Why did the financial crisis occur? What were the main channels and mechanisms?

The risks posed to the world economy by global imbalances had been widely discussed by policymakers, academics and market participants. It was, however, often thought that the correction of global imbalances would, in part, occur via a dollar depreciation following a slowing of international capital flows to the United States.<sup>(3)</sup>

This section discusses why it was the processes analysed above — and not a dollar depreciation — that eventually resulted in the financial crisis which engulfed the global economy. It first summarises the vulnerabilities generated during the build-up of imbalances and then considers the triggers of the financial crisis.

### Increased vulnerabilities

The processes discussed in the previous section generated substantial vulnerabilities to the global economy. On one hand, they led to high leverage in both the international financial system and the real economies of countries such as the United Kingdom and the United States. At the same time, they were linked to the underpricing of both credit and liquidity risk.

- (1) Tucker (2007) discussed the risk of those exposures flowing back onto banks' balance sheets. In the United States shadow banks also played a more direct role in lending, with the share of non-bank loans to households and non-financial corporations in the total rising from the late 1990s.
- (2) Note that these data overstate the role of securitisations in bank funding somewhat, since they include securitisations retained on banks' balance sheets.
- (3) See, for example, Blanchard *et al* (2005) and Obstfeld and Rogoff (2007). However a number of authors had argued that these imbalances were sustainable in the medium term. See, for example, Dooley *et al* (2004, 2008, 2009).



The high leverage in the real economy was concentrated in the household sector.<sup>(1)</sup> Much of the debt was secured against housing assets which had rapidly increased in price and thereby created a vulnerability to house price falls. In addition, in the United Kingdom, although income gearing of households remained low in aggregate this masked considerable variation across households.<sup>(2)</sup> This created a vulnerability to a change in economic conditions.

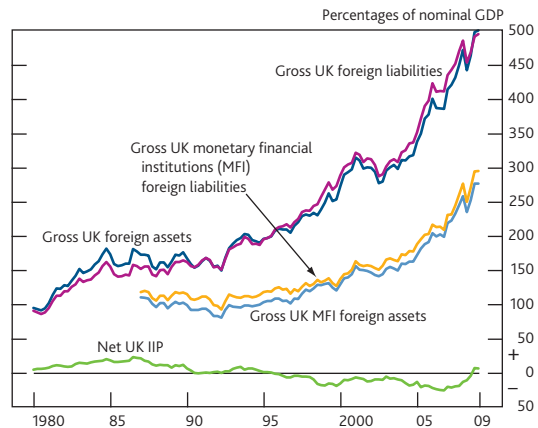
High leverage of financial institutions also generated its own vulnerabilities. With such high leverage, changes in market conditions can have an amplified effect on both the asset prices and the health of financial institutions (see the October 2008 *Financial Stability Report*).

The funding structure of financial institutions, with its reliance on wholesale markets and the use of securitised assets (Chart 8), was a related vulnerability. In particular, this funding model relied on the continued functioning of those markets. This funding often came from foreign investors and this, together with banks' increased lending overseas and the growth of the shadow banking system, generated the further vulnerability of increased and complex cross-border linkages between both financial institutions and between countries more generally. Such complex international linkages potentially give rise to unappreciated, but potent, interconnections between firms in the global financial system.

Associated with both of those vulnerabilities, at a global level banking flows accounted for more than half of the gross capital flows across countries (see the June 2009 *Financial Stability Report*). The UK banking sector was active in this process of rising international leverage, with its gross international asset and liabilities rising to nearly three times GDP in recent years (Chart 9). Those banking sector flows represented around half of the United Kingdom's substantial total foreign gross asset and liability positions, although the net foreign position of both the UK banking sector and the UK as a whole were significantly smaller.<sup>(3)</sup>

High leverage and overreliance on wholesale markets for funding were exacerbated by the mispricing of risk in the financial system discussed in the previous section. This vulnerability stemmed, in part, from the fact that the end-investors who purchased the securitised assets had less information about the underlying risk of these securities than the banks who originated the lending. And the originating banks may not have faced as strong incentives to assess and monitor risk as end-investors would have liked. Added to that, the scenarios which investors were considering when pricing (securitised) assets were too narrow, being based upon the patterns of recent history. It had also not been envisaged that the liquidity that helped fund these assets could dry up as quickly as it did.

**Chart 9** UK international investment position (IIP) and the role of financial institutions



### Triggers and amplification mechanisms

The financial crisis affecting the global economy over the past two years reflects the vulnerabilities of the financial and macroeconomic situation being exposed. Indeed, Bean (2008) argues that the capital flows from surplus countries and the consequent introduction of securitised products and larger role for the shadow banking system represented 'fuel for the fire' of the financial crisis.

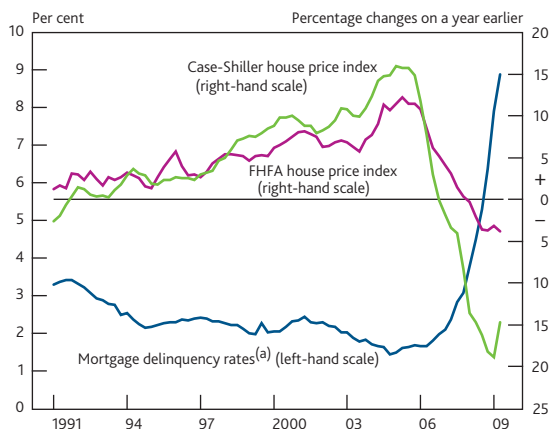
The crisis was triggered by growing delinquencies and a loss of confidence in the US housing market (see the October 2007 *Financial Stability Report*). As has already been discussed, the credit risk associated with securitised assets, including those backed by mortgages, had been underpriced. This was particularly the case for sub-prime borrowers who did not fulfil traditional credit standards and were hence riskier to lend to. Notwithstanding, lenders had extended mortgages with temporarily low interest rates. As those deals expired many sub-prime borrowers were unable to refinance at the same low rates, which initiated a spiral of rising delinquency rates and falling house prices (Chart 10). Since US mortgages were the underlying asset in a large proportion of securitised assets, this undermined confidence in markets for securitised assets more generally.

This caused a large-scale reassessment of the quality of securitised assets. The previous assumption that such assets had similar risk characteristics to more traditional assets such as government and corporate bonds was exposed as false. Not only were defaults higher than expected but they were also more correlated. Coval *et al* (2008) explain that the structure of securitised assets meant that their prices fell considerably more than traditional assets. More generally, asset price correlations tend to increase during a crisis, and because banks

(1) See Hume and Sentance (2009).

(2) See the box on page 21 of the November 2008 *Inflation Report*.

(3) Astley, Pain and Smith (2009) discuss the potential maturity and currency mismatches on the UK external balance sheet and the relatively large size of the UK banking sector compared with those in other countries.

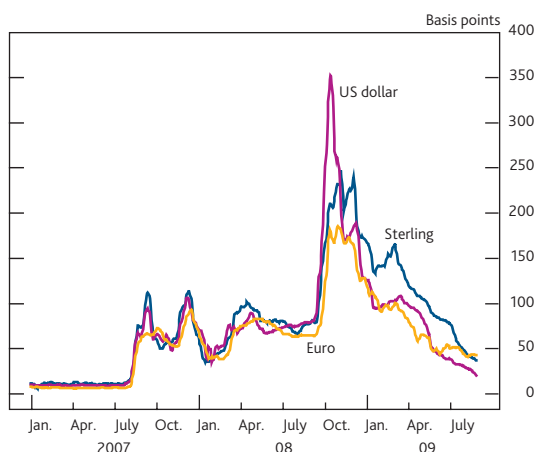
**Chart 10** US housing market indicators

Sources: Federal Housing Finance Agency (FHFA), Federal Reserve and Standard & Poor's.

(a) Mortgage delinquency rates are defined as the proportion of loans past due 30 days or more and still accruing interest as well as those in non-accrual status, measured as a percentage of end-of-period loans.

may not have taken this effect fully into account, they may have underestimated their balance sheet risks (see Haldane (2009)).

As the extent of the credit risk mispricing became clear, the markets for securitised assets broke down amid sudden repricings of risk. The complexity of securitised assets led to investor uncertainty over which financial institutions were most exposed to falls in their value. This increased perceptions of counterparty risk in interbank credit markets, leading to a substantial increase in the cost of interbank lending (Chart 11), with low transaction volumes.

**Chart 11** Three-month Libor-OIS spreads<sup>(a)</sup>

Sources: Bloomberg and Bank calculations.

(a) Spread of three-month London interbank offered rate (Libor) to three-month overnight index swap (OIS) rates. Five-day moving average.

These market developments adversely affected the funding of financial institutions, particularly those with a heavy reliance on issuance of securitised assets and the continued liquidity of wholesale markets for funding, such as Northern Rock building society.<sup>(1)</sup> In September 2007, the Chancellor announced a Government guarantee for the existing depositors of

Northern Rock,<sup>(2)</sup> prior to the temporary nationalisation of that institution in February 2008.

But more generally, the strong and complex interlinkages in the international financial system meant that the initial trigger of problems in the US housing market affected financial institutions in a large number of countries. Globally, financial institutions responded by hoarding liquid assets (see Tucker (2008b)). The dramatic fall in market liquidity (Chart 12) was an important mechanism amplifying the negative effects on prices of securitised assets and other risky assets of the initial repricing of risk.

**Chart 12** Financial market liquidity<sup>(a)</sup>

Sources: Bank of England, Bloomberg, Chicago Board Options Exchange, Debt Management Office, London Stock Exchange, Merrill Lynch, Thomson Datastream and Bank calculations.

(a) The liquidity index shows the number of standard deviations from the mean. It is a simple unweighted average of nine liquidity measures, normalised on the period 1999–2004. The series shown is an exponentially weighted moving average. The indicator is more reliable after 1997 as it is based on a greater number of underlying measures.

Such adverse dynamics were exacerbated by the high leverage of financial institutions. In particular, the elevated fears over the adequacy of financial institutions' capital contributed to a number of financial institutions around the world liquidating asset positions in order to attempt to rebuild their capital. But such deleveraging generated further sharp asset price falls — there were few willing purchasers of such assets since many potential buyers were suffering from the same problems.<sup>(3)</sup>

There have also been adverse feedback cycles between financial markets and the real economy. In particular, as discussed in the October 2008 *Financial Stability Report*, falling asset prices and uncertainty about their values together with a deteriorating economic outlook caused concerns about banks' capital positions.<sup>(4)</sup> This contributed to banks tightening credit conditions, which in turn further weakened economic prospects.

(1) Box A in the October 2007 *Financial Stability Report* provides a detailed discussion of the funding crisis at Northern Rock and the UK authorities' initial response.

(2) See the October 2007 *Financial Stability Report*.

(3) Brunnermeier (2009) discusses the loss spirals that can be associated with leveraged positions. Adrian and Shin (2008) find strong correlation between US banks' leverage and the size of their balance sheets.

(4) Capital ratios did, however, remain above regulatory minima. See the October 2008 *Financial Stability Report*, pages 26–27.

This combination of deleveraging flows, adverse feedbacks between financial markets and the macroeconomy and increasing pressures in interbank funding markets reached a significant stress point with the failure of Lehman Brothers, a major US securities house, in September 2008.<sup>(1)</sup>

At that time the international financial system came close to breakdown, see King (2009). In the latter part of 2008 and early 2009 this prompted exceptional interventions by governments and central banks in a number of countries to help stabilise the banking system. Such actions included liquidity insurance, asset protection and capital investment in banking sectors combined with cuts in official interest rates to historic lows and, in the United Kingdom, the introduction of a large-scale asset purchase programme.

### How has the crisis affected global imbalances?

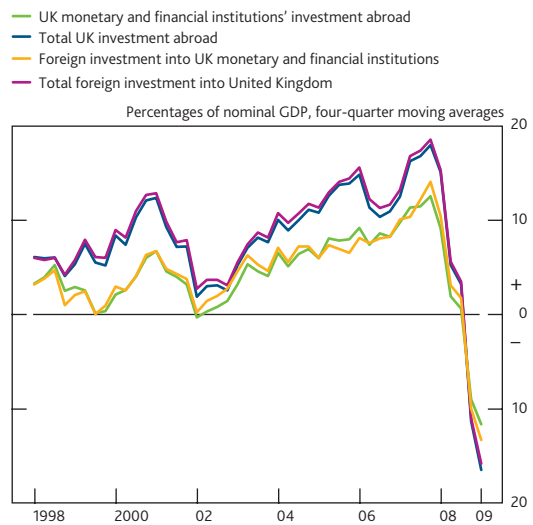
The financial crisis has generated a severe, and relatively synchronised, global recession driven by a collapse in confidence and demand (see the June 2009 *Financial Stability Report* and recent *Inflation Reports*). UK real GDP fell by 5.5% between 2008 Q1 and 2009 Q2. The global downturn has, at least temporarily, reversed some of the forces contributing to global imbalances, leading to some limited rebalancing. This section discusses that macroeconomic adjustment, with an emphasis on recent developments in the United Kingdom. Whether rebalancing will persist in a structural sense is the subject of the next section.

#### Adjustment in the United Kingdom and other deficit countries

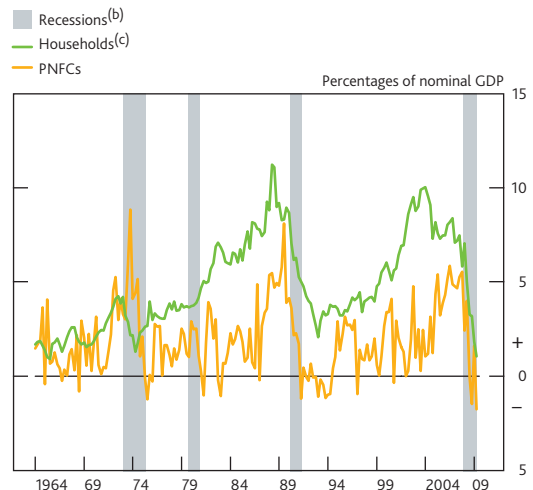
The previous section discussed how a number of financial institutions around the world liquidated asset positions during the crisis in order to attempt to rebuild their capital positions. Much of that international retrenchment showed up in cross-border flows, with banks' lending abroad falling more sharply than domestic lending, consistent with some 'home bias' in bank lending (see the June 2009 *Financial Stability Report*). UK banks also liquidated international asset positions, which largely accounted for the United Kingdom's significant sales of foreign assets during the crisis (**Chart 13**). Nevertheless, UK bank leverage remains high (see the June 2009 *Financial Stability Report*).

The international cross-border capital repatriation was one of the factors that contributed to reduced credit supply to UK residents. There was a sharp reduction in credit made available directly to UK residents by foreign banks, which had played a key role in the expansion of lending to UK residents prior to the crisis (see the May 2009 *Inflation Report*). And alongside the sharp rises in interbank interest rates (**Chart 11**), the capital repatriation may have adversely affected UK banks' ability to

**Chart 13 UK international capital flows**



**Chart 14 Net bank lending to private non-financial corporations (PNFCs) and households<sup>(a)</sup>**



(a) Sterling lending excluding the effects of securitisations and loan transfers.  
 (b) Recessions are defined as two consecutive quarters of falling output (at constant market prices) estimated using the latest data. The recessions are assumed to end once output began to rise, apart from the 1970s where two separate occasions of falling output are treated as a single recession.  
 (c) Sum of: secured lending to households; unsecured lending to households; and lending to unincorporated businesses and non profit making institutions serving households, over the periods where data are available.

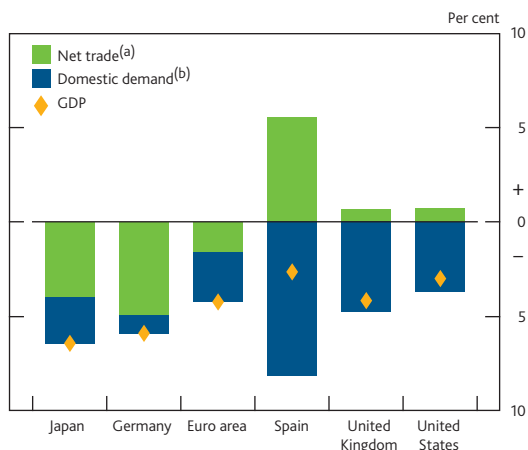
access funds in wholesale markets — during the crisis there was a sharp outflow of foreign capital from UK monetary and financial institutions (**Chart 13**). The need for UK banks to rebuild their capital positions also contributed to UK banks reducing the supply of credit to UK residents. The sharp fall in lending by UK banks to UK corporates and households (**Chart 14**), however, appears in part to have reflected lower demand for bank loans as UK activity contracted (see the August 2009 *Inflation Report*).

This reduction in the availability of credit was associated with a sharp contraction of UK domestic demand during the crisis (**Charts 6 and 15**), thereby in part reversing the imbalance characterising the UK economy prior to the crisis. Moreover,

(1) See the October 2008 *Financial Stability Report* for a detailed description of this period.



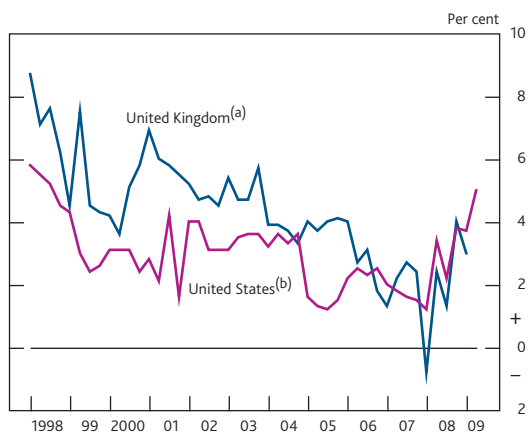
**Chart 15** Cumulative change in real GDP and contributions of components over 2008 Q4 and 2009 Q1



Sources: Thomson Datastream and Bank calculations.

(a) Contributions of net trade to GDP.  
(b) Contributions of domestic demand to GDP.

**Chart 16** Household saving ratios



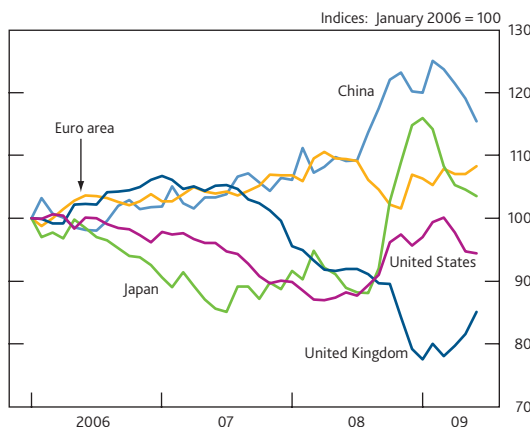
Sources: Bureau of Economic Analysis and ONS.

(a) Percentage of households' post-tax income.  
(b) Percentage of disposable personal income.

the constrained credit supply contributed to falls in UK house prices which started in late 2007 and to a flattening out in the household debt to income ratio. UK household savings also rose during the crisis (Chart 16), reflecting tighter credit conditions and other factors such as increased job uncertainty (see Berry, Waldron and Williams (2009)).

As discussed above, the counterpart to the strength of UK domestic demand prior to the crisis was persistent external deficits. But the UK current account deficit was narrower during the crisis period than in 2006 and 2007. UK net trade improved during the crisis, despite the collapse in world trade (Chart 1), as the weakness of UK demand contributed to UK imports falling by more than UK exports. The improvement in UK net trade also in part reflected the 20% depreciation of the sterling effective exchange rate which occurred between August 2007 and June 2009 (Chart 17). This depreciation appears to have been driven by a combination of the impact of deleveraging flows, concerns about UK relative

**Chart 17** Real effective exchange rates<sup>(a)</sup>



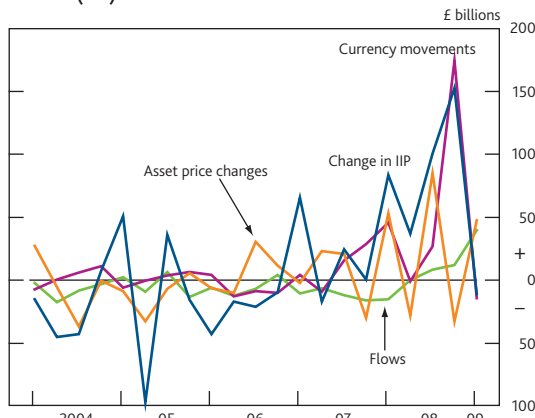
Sources: Bank for International Settlements and Bank calculations.

(a) Broad indices based on CPI.

macroeconomic prospects and the riskiness of UK assets, and perceptions of the need for the UK economy to rebalance. But there remains considerable uncertainty about the precise sources of the depreciation and their timing — see Astley, Pain and Smith (2009).

As well as stimulating net trade, sterling's depreciation during the crisis increased the sterling value of UK net external asset holdings (Chart 18). Indeed, those positive valuation effects from sterling's depreciation played an important role in shifting the United Kingdom from a net external debt position in 2008 Q3 to a net external asset position by 2009 Q1 (Chart 9). Those revaluation effects reflected the fact that the majority of UK external assets were denominated in foreign currencies, while UK liabilities were predominately in sterling, combined with the extremely large gross external assets and liabilities.<sup>(1)</sup> As such, in recent years fluctuations in the UK net external asset position have been more affected by movements in sterling and other asset prices than by the

**Chart 18** Reconciliation of changes in UK net external assets (IIP)



Note: 'Other changes' category omitted.

Sources: Bank calculations based on Bank of England, IMF and ONS data.

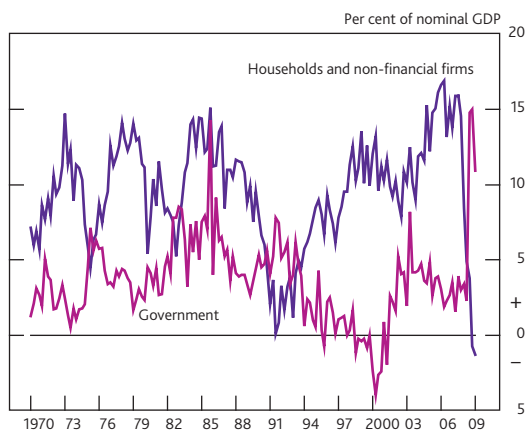
(1) See Whitaker (2006) for a discussion of the composition of UK assets and liabilities as well as substantial measurement issues surrounding the data.

negative 'flow' effects of persistent current account deficits (Chart 18).

Other exchange rates also moved sharply during the crisis. Even though the crisis originated in the United States, the dollar appreciated as the crisis intensified (Chart 17). This seems in part to again reflect deleveraging flows (see Astley, Pain and Smith (2009)). In particular, large-scale sales of foreign assets by US institutional investors, as they sought to repatriate funds, accounted for the financing of the US current account deficit in 2008 Q4 and 2009 Q1 (see the June 2009 *Financial Stability Report*). Despite declining from their high pre-crisis levels, foreign purchases of US assets on the whole also remained positive during the crisis, due in part to the US dollar's status as a reserve currency.

Other aspects of the US adjustment to the financial crisis are, however, more similar to the United Kingdom, with some rebalancing of the economy again being apparent. In particular, a sharp slowdown in lending and the wealth losses from asset price falls were associated with a significant rise in the US household savings ratio (Chart 16). This private sector retrenchment was, however, offset by higher government borrowing, associated with cyclical falls in revenue and financial sector support (Chart 19). With national savings remaining broadly unchanged, the narrowing of the 2009 Q1 US current account to its smallest deficit since 1999 (Chart 20) was to a large extent due to a sharp decline in private investment. The significant fall in oil prices in the second half of 2008 also meant that the value of imports decreased significantly.<sup>(1)</sup>

Chart 19 US net borrowing



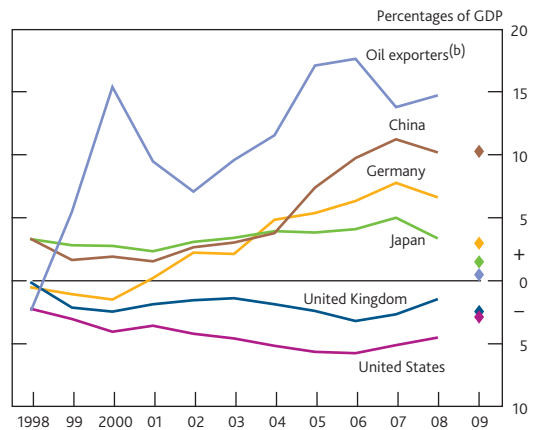
Sources: Bureau of Economic Analysis, Federal Reserve and Bank calculations.

### Adjustment in surplus countries

The lower oil price has also played an important role in reducing the current account surpluses of oil-exporting countries. The IMF forecasts that their combined surplus will all but disappear in 2009 (Chart 20).

For China, a large importer of oil, lower oil prices on their own would imply a higher trade surplus because the value of oil

Chart 20 Current account balances<sup>(a)</sup>



Sources: IMF April 2009 WEO, various national accounts and Bank calculations.

- (a) For Germany, Japan, United Kingdom and United States diamond is 2009 Q1 observation, for China and oil exporters is the IMF April 2009 WEO forecast for 2009.
- (b) Oil exporters include OPEC countries, Norway and Russia.

imports falls. But over past quarters, China's trade surplus has declined as total imports fell by less than exports. In 2009 Q2, the trade surplus narrowed to its lowest level in three years. Some of this may be due to the appreciation of China's real effective exchange rate, having pegged the renminbi closely to the US dollar throughout the crisis (Chart 17). But China's substantial fiscal stimulus also appears to have succeeded in keeping domestic demand, particularly investment, growing at a robust pace.<sup>(2)</sup>

The pattern of a smaller fall in imports than exports was mirrored in other surplus countries such as Germany and Japan. Over 2008 Q4 and 2009 Q1, these countries experienced sharper contractions in activity than the deficit countries, in part reflected by the fact that the fall in world demand has been disproportionately concentrated in intensively internationally traded items such as capital goods and consumer durables (see May 2009 *Inflation Report*). Output was driven down by the stark fall in exports relative to imports, with domestic demand falling by less (Chart 15). This is in contrast to deficit countries such as the United States and United Kingdom where the decline in output was more than driven by domestic demand. As a result, the current account surpluses of Germany and Japan have narrowed sharply since the onset of the crisis (Chart 20).

### Will the crisis have lasting effects on global imbalances?

The crisis has been unprecedented in several respects,<sup>(3)</sup> so there are considerable uncertainties surrounding the likely

(1) Oil prices fell from around \$130/barrel in July 2008 to around \$40/barrel in December 2008 — see Saporta, Trott and Tudela (2009). They subsequently rose however, to around \$70/barrel in June 2009.  
 (2) See the World Bank's quarterly update on China in June 2009.  
 (3) See Reinhart and Rogoff (2008) and Borio (2008).

path of adjustment, and previous crises may not provide a reliable guide to the pattern of adjustment.

The previous section showed how the recent partial correction in global imbalances was driven by several factors including a more pronounced fall in domestic demand in deficit countries than surplus countries, exchange rate adjustment in some countries such as the United Kingdom, and a steep drop in commodity prices. But if the correction of global imbalances is to persist as the global economy recovers, some structural rebalancing in global demand is also likely to be required. Whether increased private saving in deficit countries will be sustained is a major uncertainty in this regard. Another uncertainty is whether the changes in saving behaviour required for rebalancing are taking hold in the EAEs. Some reforms encouraging household consumption in surplus countries are already under way but are likely to take some time to affect behaviour.

One lesson from the crisis is that the persistence of global imbalances may also depend on the ability of deficit countries to supply enough high-quality assets to meet the demands of investors. In the short run, increased supply of government bonds resulting from the expansionary fiscal policies pursued in deficit countries has provided an ongoing source of asset supply to meet the investment demand from surplus countries. However, to the extent that savers in surplus countries may become more reluctant over time to invest funds in deficit-country government bonds this

would tend to raise the cost of borrowing in deficit countries. This shift in the relative cost of borrowing could be an important part of the process by which a rebalancing of demand from deficit to surplus countries is achieved over the medium term.

## Conclusion

Global imbalances contributed to the financial crisis and resulting recession through associated large capital flows. Such capital flows contributed to a misallocation of funds and the mispricing of risk. Being a small open economy with a large financial sector, the UK economy was greatly affected and its recent experience is best understood in an international context.

Relative price changes were important: sterling's depreciation improved the United Kingdom's net external asset position and, alongside slowing demand, helped support net trade and hence some narrowing of the UK current account deficit. This shift was mirrored in other countries, resulting in some partial correction of global imbalances.

But whether such rebalancing in the United Kingdom and the global economy can be sustained depends on structural forces, including the extent to which consumers in deficit countries remain restrained and domestic demand in surplus countries picks up.

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