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Global growth and sovereign debt concerns drive markets[1]

Sharp downward revisions to the strength of recovery in several major economies, particularly in the developed world, drove down the prices of growth-sensitive assets during the review period. Market participants' concerns about growth were amplified by perceptions that monetary and fiscal policies had only limited scope to stimulate the global economy. The negative news about macroeconomic conditions was compounded by concerns about euro area sovereign debt spreading from Greece, Ireland and Portugal to Italy and Spain. This led to tighter funding conditions for European banks and even affected pricing in euro area core sovereign debt markets. All of these developments led to flows into safe haven assets. Table 1 summarises the major events that affected expectations for global growth and sovereign debt markets during the review period.

Scope for policy support questioned as recoveries falter

Signs of faltering growth drive risky asset prices lower ...

Developments in financial markets during the period under review largely reflected substantial downward revisions of market participants' expectations of growth in several major economies. Over this period, global equity prices declined by 11% on average, with larger falls in Europe and slightly smaller falls in emerging market economies (EMEs). Large declines in prices of cyclically sensitive assets pulled down average prices (Graph 1, left-hand panel). Corporate credit spreads generally widened, with greater increases for lower-rated debt, which is more vulnerable to non-payment in a downturn (Graph 1, centre panel). In addition, reflecting expectations of weaker demand for these key production inputs, prices of energy and industrial metals decreased sharply (Graph 1, right-hand panel).

... particularly between late July and mid-August

Much of the reassessment of growth trajectories occurred between late July and mid-August. Growth-sensitive asset prices dropped particularly sharply during this period. On 29 July, new US GDP figures showed not only that growth in the second quarter was weaker than expected, but also that the level of GDP was around 1% lower than previously recorded. In Europe, growth

[1] This article was produced by the BIS Monetary and Economic Department. The analysis covers the period to 8 September 2011. Questions about the article can be addressed to nick.vause@bis.org or goetz.vonpeter@bis.org. Questions about data and graphs should be addressed to magdalena.erdem@bis.org and garry.tang@bis.org.

Major events that drove developments in financial markets

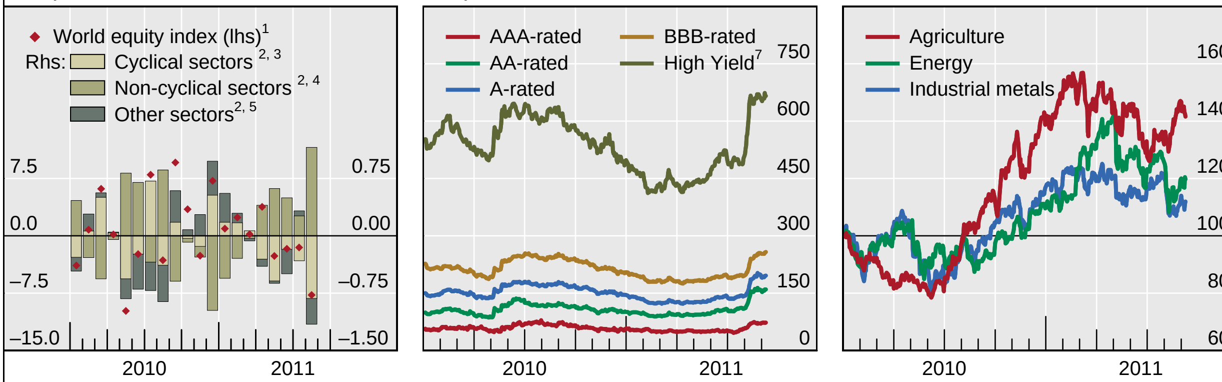
07 Jul	The ECB raises its main policy rate by 25 basis points to 1.5%.
13 Jul	Fitch downgrades its sovereign credit rating for Greece from B+ to CCC.
15 Jul	The European Banking Authority publishes the results of stress tests for 90 banks.
21 Jul	A euro area summit agrees a new financial assistance package for Greece and lower interest rates on loans from the European Financial Stability Facility for Greece, Ireland and Portugal.
25 Jul	Moody's downgrades its sovereign credit rating for Greece from Caa1 to Ca.
27 Jul	Brazil introduces a 1% transaction tax on certain foreign exchange derivatives trades.
	Standard & Poor's downgrades its sovereign credit rating for Greece from CCC from CC, maintaining a "negative outlook".
29 Jul	Weaker than expected US GDP data are released.
01 Aug	Weak surveys of purchasing managers in Asia, Europe and the United States are published.
02 Aug	The US Congress agrees to raise the limit on federal government debt on the date by which the US Treasury had forecast it could be reached.
03 Aug	The Swiss National Bank narrows its target rate for three-month CHF Libor and announces a significant increase in the supply of Swiss francs to the money market.
04 Aug	The Bank of Japan announces a ¥10 trillion expansion of its asset buying programme and intervenes in the foreign exchange market, selling yen.
	The ECB announces a special facility to supply six-month funds and resumes purchases of euro area sovereign bonds.
05 Aug	US Treasury bill yields fall to negative values as Bank of New York Mellon announces deposit charges.
08 Aug	Traders report that the Eurosystem bought Italian and Spanish government bonds.
09 Aug	The Federal Reserve declares its intention to hold its policy rate exceptionally low until at least mid-2013.
12 Aug	Selective bans on short selling are introduced in four euro area countries.
16 Aug	Weak second quarter EU GDP data are released.
26 Aug	Chairman Bernanke's Jackson Hole speech notes that additional tools for US monetary stimulus are still available.
	Chinese banks report that they will need to include margin deposits in their reserve requirements at the central bank.
01 Sep	More weak surveys of purchasing managers in Asia, Europe and the United States are published.
02 Sep	Weaker than expected US employment data are released.
06 Sep	The Swiss National Bank starts intervening in the foreign exchange market, selling Swiss francs to target a value of the currency no stronger than CHF 1.20 per EUR.
07 Sep	The German constitutional court rejects challenges to the Greek rescue package, and France, Italy and Spain approve budget savings, tax increases and deficit limits, respectively.
08 Sep	President Obama proposes a $447 billion fiscal stimulus package to Congress.

Table 1

slowed markedly in the second quarter, according to data published on 16 August, with a particularly sharp deceleration in Germany. Furthermore, survey-based indicators pointed to an additional slowdown in the third quarter. For example, purchasing manager surveys published on 1 August indicated that growth in manufacturing activity had slowed across Asia, Europe and the United States in July. Global equity prices fell by 2% on average on the following day. The S&P 500 Index of US equity prices then declined by 4.5% on 18 August, when a measure of US manufacturing activity in August published by the Federal Reserve Bank of Philadelphia plunged to levels only

Growth-sensitive asset prices

Equities | Corporate bonds[6] | Commodities[8]



[1] Monthly changes in Datastream World Equity Index, in per cent. [2] Sectoral contributions to changes in world equity index relative to overall monthly changes, in percentage points. [3] Basic materials, finance, industrials and oil & gas sectors. [4] Consumer goods, consumer services, telecommunications and utilities sectors. [5] Health care and technology sectors. [6] Corporate bond asset swap spreads over Libor, in basis points. [7] Bank of America Merrill Lynch High Yield Master II index. [8] S&P GSCI price indices, 4 January 2010 = 100.

Sources: Bloomberg; Datastream; Merrill Lynch; BIS calculations. Graph 1

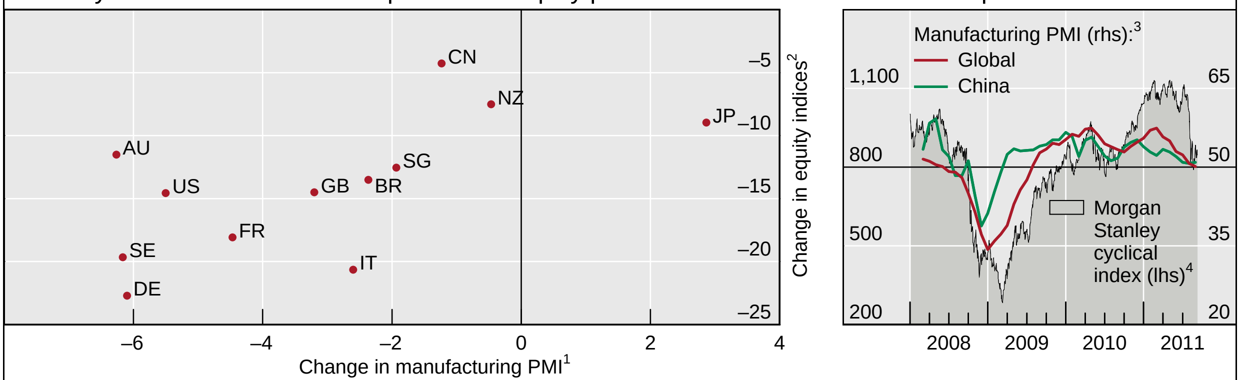
previously recorded shortly before or during recessions. Throughout the late July to mid-August period, some of the largest falls in equity prices occurred in countries for which survey-based indicators pointed to the sharpest third quarter growth slowdowns (Graph 2, left-hand panel).

Prices fall sharply due to perceived limits for growth stimulus …

It may be recalled that economic growth also appeared to be faltering in mid-2010. But growth-sensitive asset prices did not fall as sharply then as they have in the past few months (Graph 2, right-hand panel). In mid-2010, market participants expected that additional monetary and fiscal easing would support growth. And, those expectations turned out to be correct, as US authorities cut

Survey-based indicators of economic activity and equity prices

Activity slowdown from second quarter and equity price falls | Current and previous slowdowns



AU = Australia; BR = Brazil; CN = China; DE = Germany; FR = France; GB = United Kingdom; IT = Italy; JP = Japan; NZ = New Zealand; SE = Sweden; SG = Singapore; US = United States.

[1] Change in manufacturing purchasing managers index (PMI) between the July reading and the average reading in the second quarter of 2011. [2] Percentage change in Datastream equity indices between 26 July 2011 and 18 August 2011. [3] Levels above 50 indicate an expansion of activity, while levels below 50 indicate a contraction of activity. [4] Index of equity prices of 30 cyclical US companies.

Sources: Bloomberg; Datastream; BIS calculations. Graph 2 payroll taxes, extended the duration of income tax cuts and unemployment benefits, and launched a second round of quantitative easing. At the same time, local governments in China provided more financing for infrastructure and housing developments.

In contrast, market participants currently report that they see only limited scope for macroeconomic easing to support growth, including in some EMEs. As a result, they do not expect EMEs to drive global growth as strongly as previously. With all of this in mind, forecasters marked down their projections of growth in several major economies for 2012 and 2013, as well as the remainder of 2011. Prices of cyclically sensitive equities fell more sharply than they did in mid-2010 (Graph 2, right-hand panel).

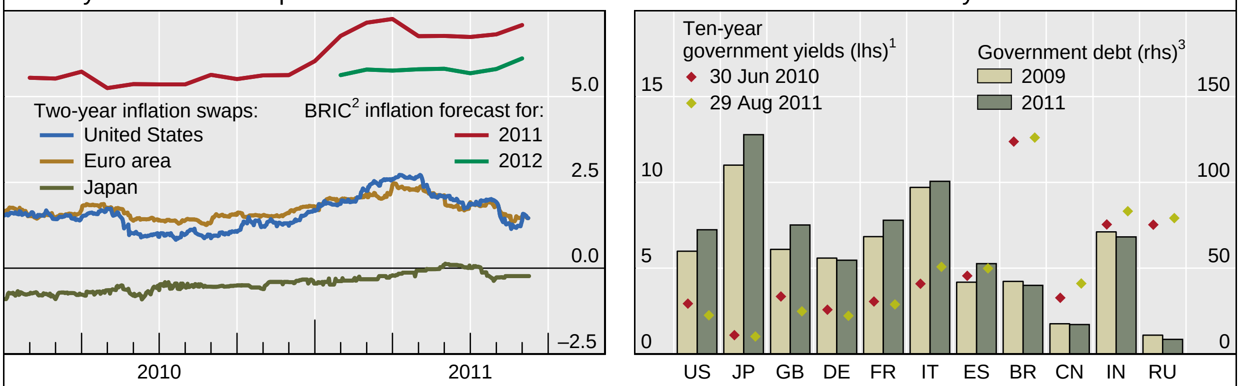
... from both monetary policy ...

Given that major developed economy central banks have had little or no scope for further policy interest rate cuts for some time, market participants watched for signals that authorities would engage in alternative forms of monetary stimulus. Expectations of such measures increased as some inflation pressures diminished during the review period. Many commodity prices fell, for example, leading to lower inflation expectations implied by swap contracts for some major developed economies (Graph 3, left-hand panel).

In the United States, the Federal Reserve announced on 9 August that it expected to keep its policy rate at exceptionally low levels until at least mid-2013. This pushed down federal funds futures rates (Graph 4, left-hand panel) and, hence, longer-term interest rates and boosted US and international equity prices. Equity prices also increased somewhat after Chairman Bernanke's Jackson Hole speech on 26 August. This noted that a range of tools to provide additional monetary stimulus remained available to the Federal Reserve, use of which would be discussed at an extended monetary policy meeting towards the end of September.

Factors affecting the scope for monetary and fiscal stimulus

Two-year inflation swap rates[1] | Government debt stocks and yields



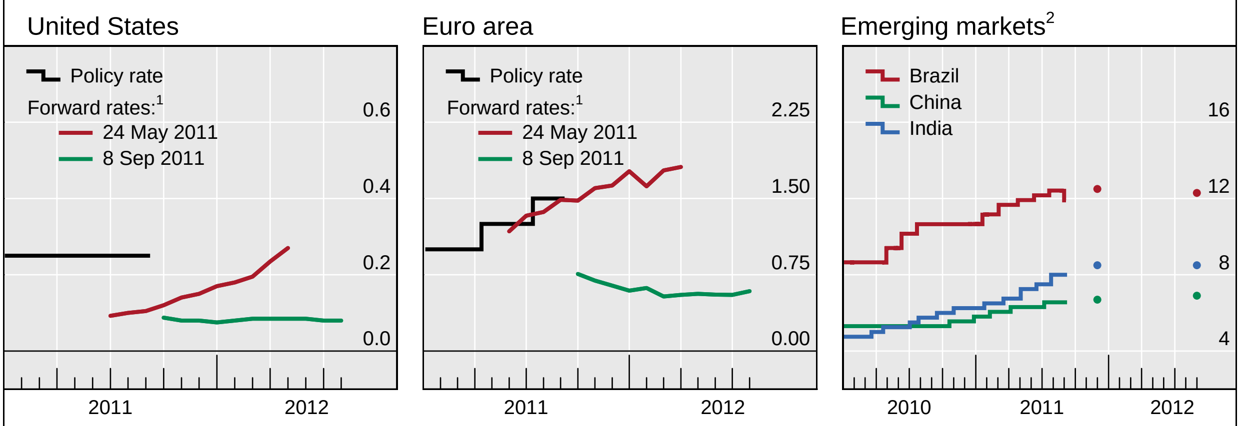
BR = Brazil; CN = China; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; IN = India; IT = Italy; JP = Japan; RU = Russia; US = United States.

[1] In per cent. [2] Simple average of inflation forecasts for Brazil, China, India and Russia. [3] Net general government debt as a percentage of GDP; for China, India and Russia, gross government debt as a percentage of GDP. End-of-year values. Forecast for 2011.

Sources: IMF, *World Economic Outlook*; Bloomberg; © Consensus Economics; BIS calculations. Graph 3

Short-term interest rates

In per cent



[1] For the United States, federal funds futures; for the euro area, one-month EONIA forward rates implied by overnight index swaps. [2] For Brazil, SELIC rate; for China, one-year lending rate for working capital; for India, repo rate. Dots indicate latest forecasts as reported by Consensus Economics.

Sources: Bloomberg; © Consensus Economics; JPMorgan Chase. Graph 4

Meanwhile, on 4 August the Bank of Japan announced a ¥10 trillion expansion of its asset buying programme, with the TOPIX index of Japanese equity prices subsequently maintaining its value amid sharp falls in other major international equity price indices.

Investors also reassessed the prospects for monetary policy in the euro area and in EMEs. The ECB raised its main policy rate by 25 basis points to 1.5% on 7 July to help anchor inflation expectations. In response to news about weakening economic activity, however, prices of futures on short-term interest rates in the euro area started to decline shortly afterwards (Graph 4, centre panel). Some EME central banks also raised policy interest rates during the period under review, including in China and India. The People's Bank of China further tightened monetary policy by broadening the scope of reserve requirements to cover margin deposits after inflation reached a three-year high of 6.5% in July. In contrast, the central banks of Brazil and Turkey cut policy rates in reaction to signs of slower growth. But with expectations of inflation in the major EMEs remaining elevated (Graph 3, left-hand panel), forecasters predict that short-term interest rates in these countries will stay close to current levels through to the second half of 2012 (Graph 4, right-hand panel).

... and fiscal policy

With high and rising stocks of government debt, market participants also reported that they perceived less scope for advanced economies' fiscal policies to be loosened than had been the case in mid-2010 (Graph 3, right-hand panel). In the euro area, IMF-EU programmes tied some heavily indebted governments to fiscal consolidation, while others followed the same course due to the high compensation demanded by investors to hold their bonds (Graph 3, right-hand panel). In contrast, investors were willing to finance deficits of the US government at ever lower interest rates. However, few expected additional fiscal stimulus, at least during the early part of the review period. Indeed, President Obama signed an agreement on 2 August to cut planned spending while raising the statutory ceiling on government debt. Investors then interpreted Standard & Poor's credit rating downgrade of US long-term debt from AAA to AA+, which took place on 5 August, as increasing the urgency of fiscal consolidation, which would weigh on medium-term growth. This contributed to a fall of over 6% in the S&P 500 Index on the next business day. By early September, however, further signs of weakness in the US economy led the US President to propose a $447 billion fiscal stimulus package to Congress, although the reaction of equity markets was muted.

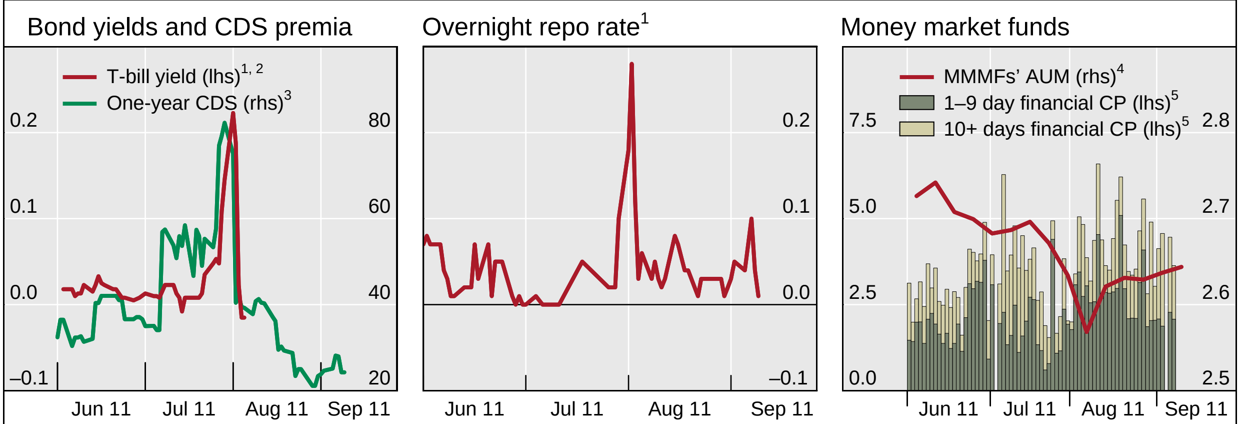
Market participants also thought that additional fiscal stimulus was unlikely to be introduced in the near term in many EMEs. Although debt stocks are in several cases lower than in advanced economies, fiscal stimulus would put upward pressure on exchange rates, which have appreciated further during the review period in a number of EMEs.

No lasting effects of the US debt ceiling negotiations and downgrade

The near breach of the US debt ceiling generates some short-lived stresses in money markets ...

The US debt ceiling negotiations generated some short-lived stresses in money markets. Reaching the ceiling would have forced the federal government to choose whom it would pay. This politically extremely unappealing prospect led most market participants to expect that an agreement would be reached to allow the debt ceiling to be raised. Such an agreement was signed on 2 August, the day that the US Treasury had estimated its ability to borrow would otherwise have been exhausted. During the preceding days of negotiations, securities and derivatives prices had begun to reflect a non-negligible probability that the US government would default. The yield on the US Treasury bill maturing on 4 August, for example, jumped from close to zero to over 20 basis points, while premia on credit default swaps (CDS) offering insurance against US default within a year increased from around 30 to almost 80 basis points (Graph 5, left-hand panel). Interest rates on overnight repos, typically used by banks to raise a significant portion of their funding,

Effects of the US debt ceiling negotiations on money markets



[1] In per cent. [2] For bills maturing on 4 August 2011. [3] Euro-denominated, in basis points. [4] US money market mutual funds' assets under management, in trillions of US dollars. [5] Issuance of AA-rated commercial paper by financial institutions with maturities between 1 and 9 days and of 10+ days, respectively, in billions of US dollars.

Sources: Federal Reserve Board; Bloomberg; Investment Company Institute; Markit. Graph 5 climbed suddenly from around zero to almost 30 basis points (Graph 5, centre panel). US money market funds, which invest heavily in US Treasury securities, experienced redemptions, although they had prepared by substituting cash for less liquid assets, such as financial commercial paper (CP), in their portfolios (Graph 5, right-hand panel). Once the debt ceiling was raised, these effects quickly dissipated.

... while the sovereign downgrade leads to little forced selling

The decision of Standard & Poor's to downgrade US long-term debt did not appear to trigger mechanisms that could have led to sharp falls in the prices of US Treasury securities and other assets. Haircuts on US Treasury securities accepted in repurchase agreements, for example, did not increase to the extent of forcing borrowers to sell assets that they were no longer able to finance. Indeed, the Depository Trust & Clearing Corporation did not change haircuts on the repurchase agreements that it clears. Similarly, US banks were not forced to liquidate assets, because federal regulators held constant the risk weight applied to securities issued or guaranteed by the US Treasury, its agencies or sponsored enterprises in determining regulatory capital ratios. There was little forced selling by asset managers, as mandates to hold only AAA-rated securities are very rare. Finally, few institutions were forced to find alternative collateral to support positions in other securities or derivatives.

The euro area sovereign debt crisis intensifies

The concerns over a worldwide growth slowdown added fuel to the euro area sovereign debt crisis. A broad-based global recovery had been viewed as an important avenue for reducing public debt burdens. Following disappointing macroeconomic releases from around the world, the focus turned to the question of where the necessary growth might come from at a time when policymakers were running out of ammunition. With a US slowdown, faltering growth in France and Germany and declining momentum from emerging markets, market participants followed euro area developments with increasing anxiety amid political uncertainty.

Renewed tensions in the euro area periphery ...

Market prices reflected the concern that the sovereign debt crisis was spreading progressively from the periphery to the core of the euro area. Reassessments of the repayment capacities of Greece, Ireland and Portugal, and increasing doubts over their ability to return to bond markets in the time specified in official support programmes, continued to drive the price of sovereign debt (Graph 6, left-hand panels). CDS spreads referencing the three sovereigns rose from April to June, spiking up in July, until the euro area summit on 21 July brought them down from record levels.

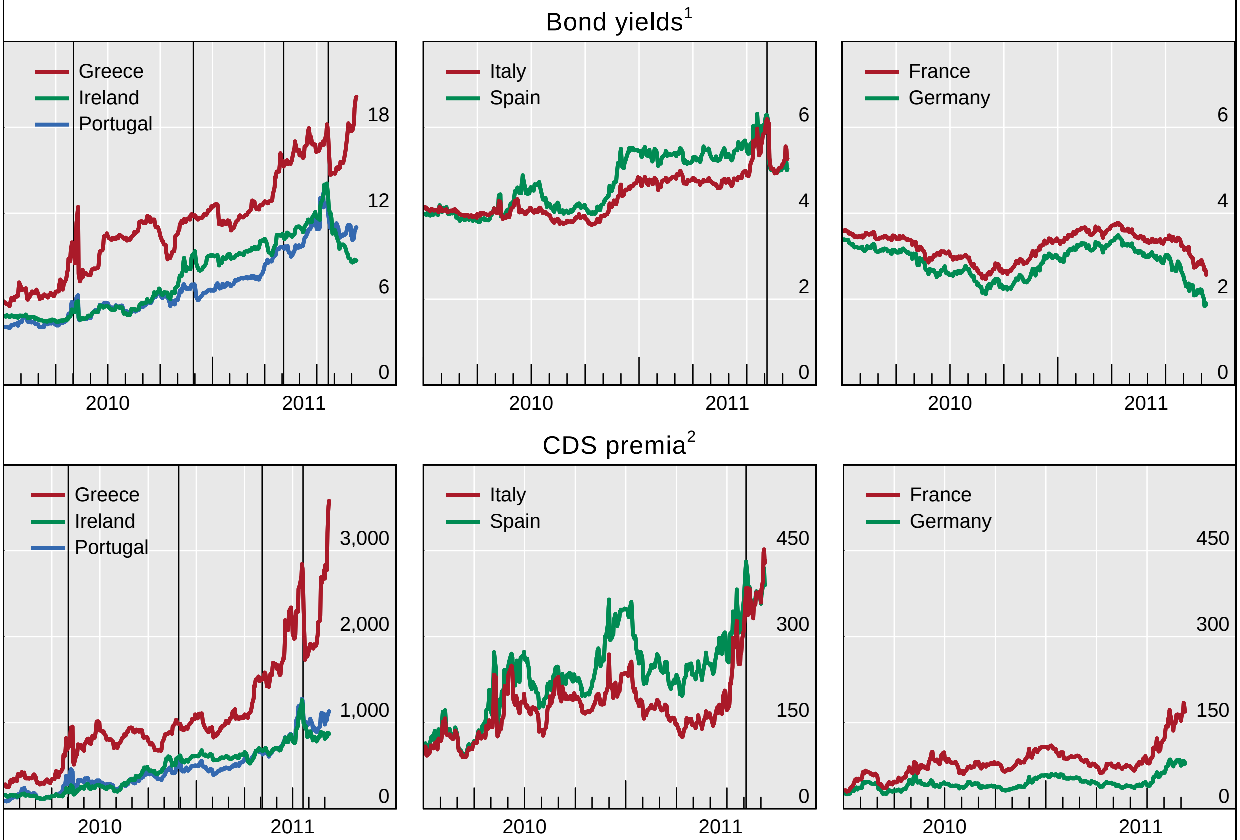
The support measures announced at the summit were at the top end of market expectations. They included a second Greek rescue package of €109 billion from the European Financial Stability Facility (EFSF) and the IMF. A relief rally reduced the two-year bond yields of Greece and the other programme countries by hundreds of basis points, with less movement at longer maturities. Lower interest rates and longer maturities on future EFSF loans and a bond exchange involving private investors lowered the future debt servicing burden, although the extent of private sector involvement depended on which of the several options were finally chosen. Even though the voluntary nature of the exchange meant, according to the International Swaps and Derivatives Association, that it would not trigger a credit event, rating agencies interpreted the exchange as a selective default and continued to downgrade Greece's sovereign rating.

… spill over to Italy and Spain …

From July through August, contagion spread to the large southern European countries on concerns over growth and the limited size of the EFSF. Perceptions that planned EFSF reforms could prove insufficient should more countries lose access to market funding led to a widening of Italian and Spanish yield spreads. The rises in yields and in the cost of credit protection on government debt (Graph 6, centre panels) began to undermine the previous belief that Italy and Spain had decoupled from tensions in the euro area periphery. The self-perpetuating dynamics gathered pace through July, with bondholders selling in anticipation of future losses in their portfolios, thereby raising volatility and perceived risk, which led to further selling. As a result, on 4 August, yields on Italian and Spanish government bonds spiked to 6.2%.

Against the backdrop of growing contagion, the Eurosystem reactivated its Securities Market Programme. Of particular significance was the understanding

Euro area sovereign bonds and CDS



The vertical lines in the left-hand panels indicate the dates on which the financial assistance packages were agreed for Greece (2 May 2010), Ireland (28 November 2010), Portugal (4 May 2011) and Greece again (21 July 2011). The vertical line in the centre panels indicates the first date on which the Eurosystem was reported to have bought Italian and Spanish government bonds (8 August 2011).

[1] Ten-year government bond yields, in per cent. [2] Five-year CDS premia, in basis points.

Sources: Bloomberg; Markit. Graph 6

among market participants that the intervention on 8 August involved purchases of Italian and Spanish government bonds for the first time. The scale of purchases, at €22 billion in the week ending 12 August, represented the largest intervention to date, albeit small relative to outstanding stocks of Italian, Spanish and peripheral sovereign bonds. Yet market participants interpreted the intervention as an important signal that the Eurosystem, which many regarded as the most credible buyer at that juncture, would bridge the gap until the EFSF was authorised to purchase debt on the secondary market in the autumn. Over the following days, Italian and Spanish 10-year benchmark yields declined by over 100 basis points to settle below 5%. Actual financing costs came to 5.22% when Italy issued 10-year bonds on 30 August, after backtracking on proposed fiscal consolidation plans. Two days later, Spain was able to issue five-year bonds at a yield of 4.49%, 38 basis points lower than in the previous auction, after the main political parties had agreed on a constitutional deficit limit proposal the week before.

… and affect core markets

Given a deteriorating macroeconomic outlook, fears of contagion also left a mark on euro area core sovereign debt markets. Beginning in July, the cost of credit protection on French and German government debt increased noticeably (Graph 6, right-hand panels). The 10-year spread of French over German bonds rose from 35 basis points at end-May to 89 basis points on 8 August, before falling back to around 65 basis points. These moves tested France's AAA rating following the US credit rating downgrade, as investors fretted about France's structural deficit, low growth rate and potential contingent liabilities to the EFSF in the event of a major sovereign default. German markets also witnessed higher volatility. In one incident on 25 August, the German stock market index plunged 4% within 15 minutes on rumours concerning Germany's AAA rating and over a possible extension of short-selling bans to German markets.

Amid disappointing revisions to growth in the core economies, the French and German leaders' joint statement on 16 August in support of the euro was met with scepticism. In the days that followed, CDS spreads soon returned to their previous levels, and the DAX and CAC equity indices declined by 7% on growth concerns. Market participants considered the proposed measures – which included closer coordination of economic policies, a financial transaction tax and constitutional deficit rules – as lacking in detail and as insufficient for addressing the underlying debt problems. Investors were also disappointed that an expansion of EFSF guarantee commitments beyond €440 billion and the introduction of collectively guaranteed euro bonds had been ruled out in the joint statement. After continued deterioration up to 6 September, markets recorded a short-lived rebound on 7–8 September. Bond yields and CDS spreads fell, while major European equity indices recovered 4%, when France, Italy and Spain demonstrated renewed resolve to implement austerity measures and the German constitutional court rejected challenges to the Greek rescue package and the establishment of the EFSF.

Bank funding conditions deteriorate

The deterioration in sovereign creditworthiness continued to adversely affect banks' funding costs and market access. Sovereign debt problems can affect banks in various ways, ranging from direct losses on sovereign holdings and lower collateral values for wholesale and central bank funding, to the reduced benefits that banks derive from government guarantees, including lower bank ratings.[2] Market participants remained concerned about sovereign exposures after the European Banking Authority (EBA) published the results of its second round of bank stress tests. Market reactions on 18 July were muted, despite improvements in terms of quality, severity and cross-checking relative to last year's exercise. The EBA identified capital shortfalls in eight out of 90 major banks, and recommended capital raising for another 16 banks that had passed the test within 1 percentage point of the 5% core Tier 1 capital threshold.[3] The broad market impact of the release was limited but indicated somewhat greater differentiation across banks. CDS spreads edged up for Greek and Spanish banks, and eased for Irish and Portuguese banks. Analysts focused on the disclosures of sovereign exposures accompanying the official results to run their own sovereign default scenarios. In most cases, these suggested that market-implied haircuts on peripheral European debt would cut capital ratios, but to manageable levels.

Investors sell off bank exposures …

However, fears that serious debt strains would spill over to Italy and Spain led to a broad-based sell-off of bank stocks and bonds. Selling pressure went from banks in Italy and Spain to those in Belgium and France, and later extended to banks across the entire continent, including those headquartered in the Nordic countries. Bank equity valuations plunged as asset managers reportedly lowered their overall allocations to bank equity as an asset class. This caused bank equity to sharply underperform an already declining broader market, and drove up CDS spreads across the banking industry (Graph 7, left-hand panel).

By early September, bank valuations had tested new depths on both sides of the Atlantic. In the United States, new lawsuits over subprime mortgages compounded the pressure on bank equity resulting from negative growth revisions. The market's outlook on the banking industry as a whole remained clouded by growth concerns and sovereign risk as well as low interest rates and regulatory changes, a combination that left investors unsettled about the industry's future course and earnings potential.

… compounding bank funding challenges

These developments went hand in hand with tensions in bank funding markets. The senior unsecured term funding segment had been difficult to access for some time, but issuance declined further in July and August. Euro area banks' bond issuance fell sharply, to $20 billion in July, along with a shortening of maturities (Graph 7, right-hand panel). Many European banks

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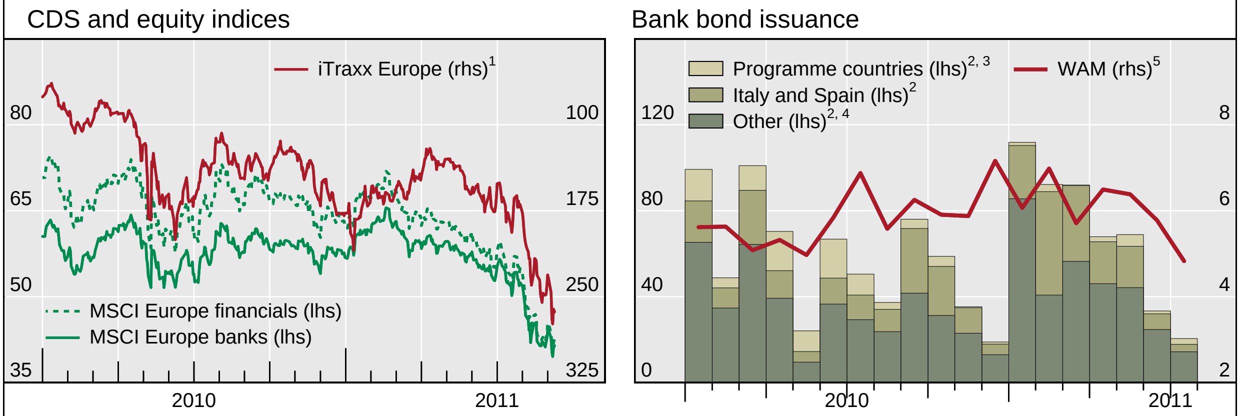
2 See the special feature by Michael Davies and Timothy Ng in this issue of the *BIS Quarterly Review*.

3 Most banks that narrowly passed last year's European bank stress test have sought recapitalisations since.

Spillover to European banks



[1] Europe five-year senior financial CDS index, inverted scale, in basis points. [2] Syndicated domestic and international gross issuance of bonds of maturities of one year or more, issued by banks headquartered in the euro area, immediate issuer basis, in billions of US dollars. Preliminary data for August 2011 (not shown) indicate low issuance, mostly in collateralised instruments. [3] Banks headquartered in Greece, Ireland and Portugal. [4] Banks headquartered in other euro area countries (excluding Italy, Spain and the programme countries). [5] Weighted average maturity of fixed rate issuance, in years.

Sources: Bloomberg; Datastream; Dealogic; BIS calculations. Graph 7

faced difficulties in raising long-term funding in the past few months, and market participants became increasingly concerned about prohibitive pricing. US money market mutual funds (MMMFs), traditionally an important funding source, substantially reduced their banking exposures, especially those vis-à-vis European banks. Fitch Ratings reports that the 10 largest prime MMMFs cut back their European bank holdings by 20% (approximately $79 billion) between end-May and end-July, and by 97% vis-à-vis banks from Italy and Spain, to protect themselves against banks facing writedowns on their holdings of debt issued by their home sovereign. On related concerns, several major French banks faced intense pressure and scrutiny over their short-term funding profile.

In the absence of market funding, banks headquartered in countries associated with sovereign debt problems continued to rely on Eurosystem liquidity to fund a significant share of their balance sheet. For Greek banks, central bank funding accounted for €96 billion (end-July) plus emergency liquidity; for Irish and Portuguese banks, the corresponding figures were €98 billion and €46 billion (August), respectively.[4] In July alone, banks in Italy doubled their borrowing from the Eurosystem to €80 billion (€85 billion in August). However, industry research indicates that most large European banks have already funded some 90% of their 2011 term funding targets and even prefunded for 2012.[5]

The rise in funding spreads reflects several factors

Bank funding spreads rose noticeably in August, but remained far below the levels reached in the aftermath of the Lehman Brothers bankruptcy. Some signs suggested that banks had grown more reluctant to lend to each other and had placed funds at the central bank instead. The use of the ECB's overnight

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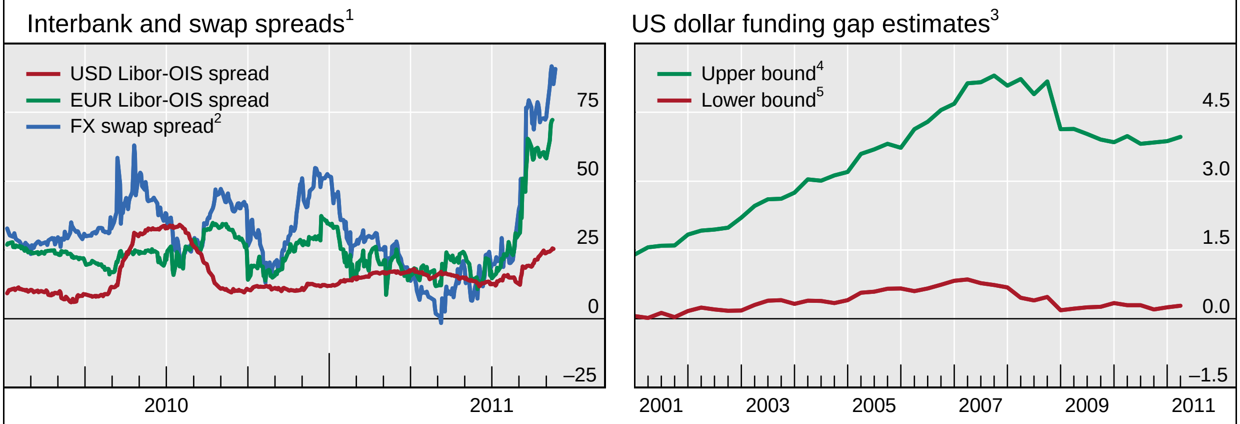
[4] See also Graph 2 in the special feature on sovereign risk in this *Quarterly Review*.

[5] Morgan Stanley Research, "European Banks: the stress in bank funding and policy options", 15 August 2011.

Spreads and dollar funding needs among European banks



[1] In basis points. [2] Spread between three-month FX swap implied dollar rate and three-month US dollar Libor; the FX swap implied rate is the implied cost of raising US dollars via FX swaps using euros. [3] Estimates are constructed by aggregating the worldwide on-balance sheet cross-border and local positions reported by internationally active banks headquartered in Germany, the Netherlands, Switzerland and the United Kingdom, four major European banking systems with on-balance sheet US dollar assets exceeding their US dollar liabilities at the start of the crisis. Measures of US dollar funding gaps were developed in P McGuire and G von Peter, "The US dollar shortage in global banking and the international policy response", *BIS Working Papers*, no 291, 2009 and refined in I Fender and P McGuire, "European banks' US dollar funding pressures", *BIS Quarterly Review*, June 2010. [4] Gross US dollar positions vis-à-vis non-banks plus local positions vis-à-vis US residents (all sectors) booked by banks' offices in the United States, all assumed to be long-term and backed by short-term borrowing. [5] Gross positions, as defined above, minus liabilities vis-à-vis non-banks, assumed to be long-term.

Sources: Bloomberg; BIS consolidated banking statistics (immediate borrower basis); BIS locational statistics by nationality; BIS calculations.

Graph 8

deposit facility reached a 12-month high of €145 billion on 8 August, and nearly €173 billion on 8 September. From early August, Libor-OIS spreads increased sharply; the three-month euro spread widened to 72 basis points, well beyond the dollar spread (Graph 8, left-hand panel).

At the same time, signs of renewed US dollar funding pressures resurfaced. FX swap spreads, which represent the premium paid by financial institutions for swapping euros into dollars, jumped to 92 basis points at a time when US money market mutual funds were reducing their exposure to European bank debt. By contrast, dollar Libor has risen only modestly since July. That said, Libor is calculated from quotes rather than from actual transactions, so there is no information on the volume of lending that takes place at this rate. Estimates of US dollar funding gaps among European banks suggest that funding needs remained sizeable, although they have come down substantially from their 2007–08 peaks (Graph 8, right-hand panel). Renewed dollar funding needs prompted the first uptakes in six months of US dollars at Swiss National Bank and ECB dollar auctions, on 11 and 17 August respectively. However, current swap spreads and the minimal use of international dollar swap lines remained far below the extremes witnessed in the autumn of 2008.

Safe haven assets in demand

Prices of safe haven assets rise as investors avoid risk ...

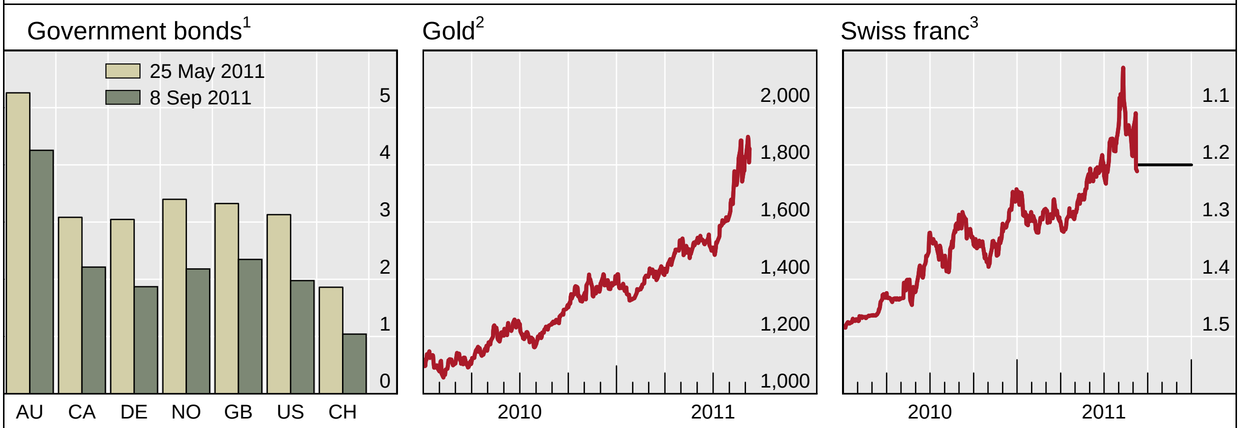
Fears of recession in some mature economies and serious strains in the euro area sovereign bond markets increased the demand for traditional safe haven assets. As a result, yields on some of the most highly rated and liquid sovereign bonds fell markedly during the period under review (Graph 9, left-hand panel). Ten-year yields on US, German and Swiss government debt fell below 2%, while real interest rates on long-term US and UK inflation-linked bonds entered negative territory. Nominal yields on some short-dated US Treasury bills even fell below zero in early August, although this coincided with Bank of New York Mellon's announcement that it would begin charging fees on large deposits. Also, the price of gold set new historic records (Graph 9, centre panel) and the Swiss franc appreciated sharply as investors moved into Swiss assets (Graph 9, right-hand panel). These included Swiss government bonds, which had negative yields out to two-year maturities for much of August.

... causing some currencies to appreciate and authorities to intervene

The Swiss National Bank (SNB) reacted strongly to the appreciation of its currency. On 3 August, the SNB announced that it would cut its target interest rate to "as close to zero as possible". It also boosted the amount that it lends in the interbank market from CHF 30 billion to CHF 200 billion, reducing interbank borrowing rates at all maturities. This contributed to a decline in the value of the Swiss franc of over 10% against the euro. It began to appreciate again at the beginning of September, however, prompting the SNB to state on 6 September that: "With immediate effect, it will no longer tolerate a EUR/CHF exchange rate below the minimum rate of CHF 1.20. The SNB will enforce this minimum rate with the utmost determination and is prepared to buy foreign currency in unlimited quantities."

Other countries also introduced measures to counter upward pressure on the value of their currencies. In Japan, for example, the authorities sold yen in the foreign exchange markets from early August. After a short-lived depreciation of around 2%, the value of the yen stabilised against the dollar for the remainder of August and into September. And the Brazilian government introduced on 27 July a 1% transaction tax on onshore foreign exchange derivatives trades that result in US dollar short positions over $10 million. Since then, the Brazilian real has depreciated by around 5% against the dollar.

Prices of safe haven assets



AU = Australia; CA = Canada; CH = Switzerland; DE = Germany; GB = United Kingdom; NO = Norway; US = United States.

[1] Ten-year yields, in per cent. [2] In US dollars per troy ounce. [3] Against the euro. The horizontal line shows the maximum value of the Swiss currency that the Swiss National Bank will "tolerate" as of 6 September 2011.

Sources: Bloomberg; Datastream; BIS calculations. Graph 9