have increased amid a sharp economic downturn, worsening funding conditions for both banks and sovereigns, and financial fragmentation within the euro area (see Box 2.3). The corporate sector could quickly become an additional force in this pernicious feedback loop, as downgrades of sovereign ratings threaten to drag investment-grade corporate debt down to the subinvestment-grade level. It is too early to tell whether the ECB's OMT program will relieve deleveraging pressures, as further measures at the national level are likely to be needed, as discussed below.

Restoring stability to reverse financial fragmentation within the monetary union remains the key policy challenge.

Restoring confidence among private investors is paramount for the stabilization of the euro area. Euro area policymakers are laying foundations to support that confidence, but numerous technical, legal, and political challenges remain. The urgency of the task is also increasing, as the fragmentation of funding markets remains intense despite the recent market rally, posing a risk of further damage to the

Box 1.1. Falling Confidence, Rising Risks, and Complacency

Investors are increasingly buying protection against extreme risks, even if investing in the instruments designed to provide the protection can be costly and may prove ineffective. Evaluating extreme risks can inform policymakers on threats to financial stability, by region, timing, and the structure of the protection. In Europe, markets point to some risk of currency redenomination. Reflecting medium-term fiscal challenges, markets are pricing in some upside risk to Japan's low interest rates. In contrast, U.S. markets are sanguine over both near- and medium-term risks from macro imbalances.

Rising Demand for Insurance against Global Tail Risks

The realization of extreme risk in 2008 led to a material alteration in investment strategies: strong demand for insurance against tail outcomes (the risk of low-probability but high-impact events). This demand has been relatively price insensitive in the recent past, indicative of a lasting structural shift in investment strategies. New instruments have emerged to satisfy investor demand, the most notable aimed at exploiting the inverse correlation between equity prices and the expected volatility of equity markets.

The S&P Volatility Index is an indicator of market expectations of future volatility and is widely used as a measure of global risk aversion. In January 2009, in the midst of the steep decline in global equity values, an instrument that tracks market expectations of volatility was introduced—the VXX. The demand for such products has surged, and they now account for a significant share of the equity options market.[1] Demand is also strong despite poor performance (the VXX is down 60 percent on an average annualized basis), indicative of investor focus on extreme risks.

Global tail risks may emanate from one or more sources, such as the euro area crisis or U.S. and Japanese fiscal imbalances. Evaluating the source of specific risks provides policymakers with a guide to areas of potential instability discussed below.

Euro Area Risks: Currency Redenomination Risk

Risks in the euro area are dominated by balance of payments imbalances across member states. Creditor countries are repatriating capital from debtor nations even when the cost of doing so is high, as demonstrated by negative nominal shorter-term interest rates in various countries (Figure 1.1.1). Investors are willing to accept negative interest rates as the cost of guarding against a euro breakup and the introduction of national or subregional currencies (currency redenomination risk). Creditor countries expect to see their currencies appreciate substantially, more than offsetting the negative interest rate.

Redenomination risks can be evaluated against Denmark, a country with a long-standing currency peg to the German mark and now the euro. Figure 1.1.2 estimates the probability of the Danish kroner breaking the strong side of the European Exchange Rate Mechanism (ERM-II) peg to the euro in one year's time

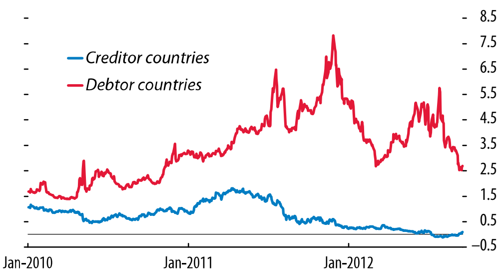
Note: Prepared by Marcel Kasumovich and Narayan Suryakumar.

[1]Instruments such as the VXX and other volatility-based products are roughly 40 percent of listed S&P 500 options.

Box 1.1 *(continued)*

Safe-haven flows have driven rates for creditor countries into negative territory…

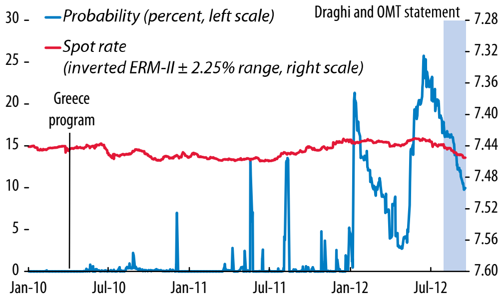
Figure 1.1.1. Two-Year Yields of Creditor and Debtor Countries in Europe
(Percent)



Source: Bloomberg L.P.
Note: Yields are weighted by nominal GDP. Creditor countries = Austria, Denmark, Finland, Germany, the Netherlands, and Switzerland. Debtor countries = Ireland, Italy, Portugal, and Spain.

…while currency markets reflect euro redenomination risks.

Figure 1.1.2. Probability of the Danish Kroner Breaking the ERM-II



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: ERM-II = European Exchange Rate Mechanism. The probability of breaking the strong side of the ERM-II boundary is estimated from the one-year euro-Danish kroner forward and volatility from option markets.

from market prices, which has been rising and falling alongside strains in the euro area. This can be viewed as a proxy for the expectation that a stronger, northern euro bloc will emerge from the crisis where the Danish kroner peg is reset to the stronger-currency countries and appreciates against the weak-currency ones.

Longer-Term Risks Emerging in Japan

Japan's imbalances are unique in the context of history: very high government debt yet a very large external creditor position. The resolution of these imbalances could have significant implications for both interest rates and exchange rates. The natural expectation leans to a significant increase in bond yields. Interest rate markets do indeed reflect the potential for higher yields in the medium term.

The implications for foreign exchange markets are more complex. As seen during the March 2011 natural disaster in Japan, rapid currency appreciation may occur given the potential for the repatriation of foreign assets. Alternatively, the threat of an erosion of confidence in domestic policy, or, over the longer run, of a deterioration in the current account, might cause substantial depreciation. The market has resolved these two competing forces by anticipating a very high level of medium-term volatility in the dollar-yen exchange rate (as shown in Figures 1.1.3 and 1.1.4), well above realized volatility and high relative to past crises.

U.S. Risks: Complacency or Confidence?

The United States has a blend of the imbalances seen in the other major countries. U.S. government debt is high, though not as high as in Japan. The United States is an international net debtor, though not to the same extent as Spain and other countries in the euro area periphery. Nevertheless, markets have a benign expectation for the resolution of U.S. imbalances. Evidence of extreme risks in interest rate and currency markets is absent at virtually all horizons.

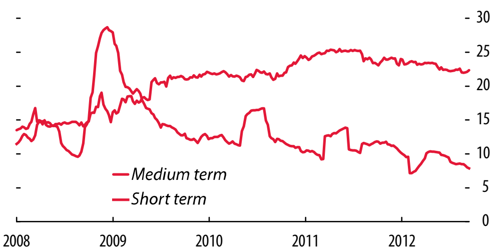
While the capacity of the U.S. government to repay its debt is not in doubt, continued growth in macro imbalances would raise the likelihood of a misalignment of policy incentives across internal and external creditors. If the expansion of the Federal Reserve balance sheet is the last-resort policy that prevents a large rise in bond yields, the clearest transmission mechanism is currency depreciation. Medium-term expectations have been, instead, leaning toward a U.S. dollar appreciation (Figure 1.1.5).

In the near term, the U.S. sovereign credit default swap curve suggests that the debt ceiling, as well as the fiscal cliff, will be resolved without issue (Figure 1.1.6). Uncertainty about a potential technical default as a result of the debt ceiling led to credit risk in short-term default swaps rising above those over longer horizons in July 2011. No such pattern has emerged this time around. In the longer term,

Box 1.1 *(continued)*

Markets are pricing in higher yen exchange rate volatility in the medium term…

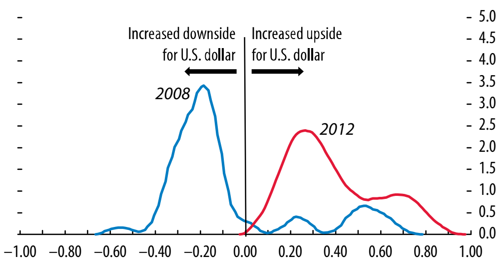
Figure 1.1.3. Short- and Medium-Term Expectations of the Yen Exchange Rate Volatility
(Annualized percent)



Source: Bloomberg L.P.
Note: The medium term is derived from the difference between the 5-year and 10-year implied volatility in the yen versus the U.S. dollar and the euro. The short term is the historical 3-month volatility.

Medium-term expectations have been biased toward further U.S. dollar appreciation despite macroeconomic imbalances…

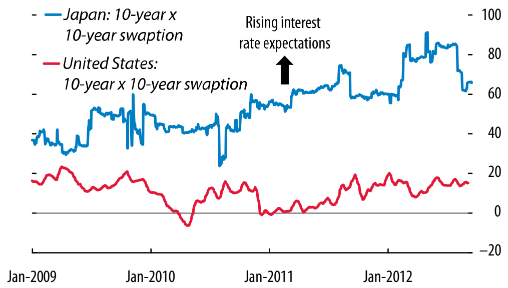
Figure 1.1.5. Index Measure of U.S. Dollar Appreciation-Depreciation Bias
(Trade-weighted dollar risk reversal index)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Trade-weighted dollar risk reversal index is constructed using 5-year option risk reversals on the euro, yen, and British pound, indexed to a medium-term mean, reflecting investors' bias toward appreciation or depreciation. Data for 2012 are through August 31.

…and risk of higher interest rates in the medium-term in Japan but not in the United States.

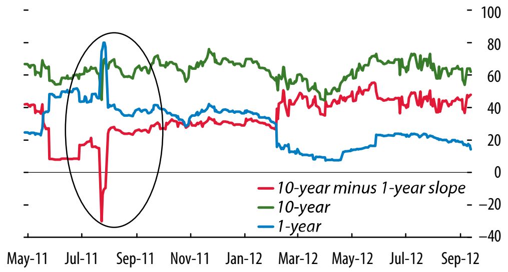
Figure 1.1.4. Relative Option Premiums on Long-Term Interest Rates
(In basis points, notional swaption value)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: A 10-year by 10-year swaption is a 10-year call or put option on a 10-year interest rate swap agreement. The option premium differential depicted here indicates the relative demand for insurance against the possibility that future interest rates will be higher than expected.

…while markets are sanguine about the near-term U.S. fiscal cliff and debt ceiling risks.

Figure 1.1.6. U.S. Credit Default Swap Spreads and Slope
(Basis points)



Sources: Bloomberg L.P.; and IMF staff estimates.

option markets are pricing far less fear of a rise in longer-term interest rates compared with Japan (as shown in Figure 1.1.4).

Financial Stability Implications

Evaluating extreme risks supports financial stability in three important ways. First, policymakers can disagree with the market assessment and provide targeted, logical foundations to the contrary both when there is too much and, importantly, too little concern about future imbalances. Second, understanding strategies that attempt to insure against extreme risks can reveal potential vulnerabilities in the financial system. Seemingly effective hedges, such as long-term euro interest rate swaps, could further concentrate counterparty exposures, exacerbating risks when extreme events occur. Third, changes in investment strategies lead to financial innovation. New products, particularly fast-growing ones where risk diversification is likely to lag innovation, could lead to risks simply being transferred and concentrated, and therefore should be closely monitored.

Box 1.2. Recent Policy Initiatives, Developments, and Challenges in the Euro Area

Since the April 2012 GFSR, European policymakers have announced further important policy measures aimed at reversing the fragmentation of euro area financial markets and strengthening the architecture underpinning the Economic and Monetary Union (EMU). To ensure maximum effectiveness, these measures will need to be followed by implementation at the national level, with further steps taken toward more complete integration.

June 29 European Union Summit

In addition to agreeing on up to €120 billion in European Union (EU) growth-enhancing initiatives, euro area leaders promoted measures to address the sovereign-banking nexus. These included removing the seniority of the European Stability Mechanism (ESM) loan to recapitalize Spanish banks once the European Financial Stability Facility (EFSF) loan rolls over; opening the possibility for the ESM to directly recapitalize Spanish banks once the single supervisory mechanism is in place; and restating the commitment to use EFSF/ESM interventions to stabilize secondary sovereign bond markets. Bond spreads in the euro area periphery narrowed sharply in the aftermath of the summit in the belief that these steps constituted a significant step toward spreading the liability for future bank rescues across the euro area.

German Constitutional Court

In a preliminary ruling on September 12, 2012, the German Constitutional Court stated that the ESM and the Fiscal Pact were consistent with the German Constitution, paving the way for Germany to ratify the ESM Treaty. The Court attached the condition that Germany's commitment to the ESM is capped at the currently planned €190 billion unless the lower house of parliament decides to approve additional funds. The court also ruled that both houses of parliament must be informed about ESM decisions and that granting it a banking license would be incompatible with primary EU law.

ECB's Outright Monetary Transactions

Following its policy meeting on September 6, the European Central Bank (ECB) announced its Outright Monetary Transactions (OMTs) program as a replacement for the Securities Market Programme (SMP).[1] The ECB will consider OMTs for countries under a macroeconomic adjustment or precautionary program with the EFSF/ESM, which should help to ensure that low policy rates transmit to borrowing costs in countries in the periphery with a program. In addition, it relaxed its collateral framework for sovereigns in an OMT program and for foreign currency collateral. OMTs are likely to be more effective than the SMP in slowing and reversing capital flight from the periphery due to:

- *Greater credibility.* By explicitly targeting intervention to address convertibility risk and the broken transmission mechanism, and by tying intervention to conditionality and shorter maturity bonds, the ECB gained near-universal acceptance that it is acting well within its mandate.
- *Operational lessons learned.* OMTs will not dilute existing bondholders by taking a senior position in the sovereign's capital structure, thereby lessening investors' incentive to sell as the ECB buys. Additional transparency will enable investors to assess the ECB's position in, and commitment to, OMT country bonds.
- *Easing of periphery bank liquidity and capital concerns.* An OMT program is likely to encourage domestic banks to continue to participate in sovereign primary bond markets as the ECB will act as a backstop buyer of one- to three-year bonds. The OMT announcement reopened the primary market for unsecured debt of periphery banks—if sustained, this will reduce liquidity concerns for banks.

[1]OMT features include (1) conditionality: the assisted sovereign signs up for an ESM/EFSF program or precautionary credit line; (2) mode of intervention: unlimited, fully sterilized, short-dated (one to three years) ECB bond purchases in the secondary market with no formal yield target; (3) ranking of claim: pari passu ranking with other bondholders for OMT purchases of sovereign bonds; (4) transparency: OMT holdings and their market values to be published weekly and the average duration and country breakdown to be published monthly; and (5) collateral policy: minimum credit rating requirements for sovereign-issued collateral used for ECB liquidity operations are to be suspended for sovereigns eligible for the OMT program.

Box 1.2 *(continued)*

- *Potential reduction in sovereign bond volatility.* A credible OMT program, with potential backup support from the ESM in the primary market, should help anchor sovereign yields at the short end, encourage domestic banks to participate at longer maturities, and reduce volatility, thereby attracting external investors back.

The ECB's actions have eliminated a number of the potential "bad equilibria" arising from fears that a periphery sovereign and its banks will face an extreme liquidity crisis. By addressing many of the operational defects of the SMP and being more clearly within the ECB's mandate, the OMT program has greater credibility and is likely to be deployed with less hesitancy. However, the OMT program still faces significant political and implementation risks. Governments now need to ask for support under the EFSF/ESM, agree on conditionality, and implement reforms. Furthermore, steps need to be taken to put in place the other elements of the *complete policies* scenario—notably, moves toward greater fiscal integration, credible bank recapitalization and resolution, and a banking union. The OMT program does not give categorical assurance that debt sustainability will be restored given the uncertain impact of conditionality.

Banking Union

On September 12, the European Commission published its proposals for banking union within the euro area. These envisage rapid implementation of a Single Supervisory Mechanism (SSM) by January 2013, with the ECB empowered to act from that point on, taking over supervision for systemically important financial institutions in July 2013 and all banks from January 2014. EU countries outside the euro area can opt into "close cooperation" with the ECB, which will then issue guidelines and requests to these authorities and their banks. The European Commission envisaged adoption, by end-2012, of EU legislation harmonizing national prudential regulations, bank resolution, and deposit insurance, and steps toward a single bank recovery and resolution framework. It also proposed that the European Banking Authority's powers of "binding mediation" over national authorities be extended to the ECB.

Numerous issues with this ambitious plan now need to be resolved and agreed upon. These include the boundary of responsibility and delegation between the ECB and national supervisors, the balance between euro area and other EU regulators, the future of macroprudential policymaking across the EU, and the optimum timetable for implementation. Furthermore, these proposals, while important, are only preliminary steps in the creation of a full "banking union" with the aim of weakening the nexus between a sovereign and its banks. This will require, in particular, adequate pan-euro area backstops for deposit insurance and bank resolution, and a bank resolution mechanism. Without these, the cost of banks' capital will still be linked to their home country, while a sovereign's creditworthiness will remain tied to that of its banks.

financial system and the real economy. This report explores these policy challenges by updating and extending the euro area scenarios for *baseline policies, weak policies,* and *complete policies* introduced in the April 2012 GFSR.[1] Developed in detail in Chapter 2, these updated scenarios are briefly summarized below. Owing to mounting pressures on periphery banks since the April 2012 GFSR, the degree of deleveraging stress under all three scenarios is now higher than it was in that report, rising to $2.8 trillion under the *baseline policies* scenario*,* or as high as $4.5 trillion under the *weak policies* scenario (Figure 1.9).

- The WEO/GFSR *baseline policies* scenario assumes a gradual restoration of confidence based on additional policy actions that demonstrate political commitment to closer integration. Specifically, it assumes that policymakers establish a single supervisory mechanism on

[1]In the April 2012 GFSR, the *baseline policies* scenario was called the *current policies* scenario.