



Treasury Securities and the U.S. Sovereign Credit Default Swap Market

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August 15, 2011

Congressional Research Service

7-5700

www.crs.gov

R41932

CRS Report for Congress

Prepared for Members and Committees of Congress

Summary

Paying the public debt is a central constitutional responsibility of Congress (Article I, Section 8). U.S. Treasury securities, which represent nearly all federal debt, have long been considered risk-free assets. The size of federal deficits and the projected imbalance between federal revenues and outlays, however, have raised concerns among some, including the rating agency Standard & Poor's (S&P), which downgraded the U.S. sovereign credit rating from AAA to AA+ on August 5, 2011. S&P also cited "political brinksmanship" in debt ceiling negotiations as a factor, which raised the issue of a hypothetical federal default. Prices for Treasuries suggest that financial markets continue to consider federal debt instruments a safe haven despite the S&P downgrade. Continued concerns about rising federal debt and the ability of policymakers to reach solutions to fiscal challenges could raise borrowing costs and negatively affect capital markets.

A credit default swap (CDS) contract is a way to hedge or speculate on credit risk, including sovereign credit risk. A CDS protection buyer, in exchange for an annual fee set by the market and paid quarterly, can trade an asset issued by a "reference entity" (or a cash equivalent) for its face value if a "credit event" occurs. A CDS buyer need not own or borrow an asset issued by the reference entity, thus may hold a "naked CDS." A committee of the derivatives trade organization, the International Swaps and Derivatives Association (ISDA), determines whether a credit event has occurred, according to their interpretation of applicable guidelines. In general, failure to make a timely payment usually constitutes a credit event, as does a repudiation of debts, and in some cases, debt restructuring.

Some view CDS price trends for U.S. debt as an indicator of the market's perception of the federal government's creditworthiness. The cost of buying CDS protection on federal debt for a one-year duration has roughly doubled since the start of 2011. In mid-August 2011, U.S. CDSs traded at about 55 basis points (bps; one-hundredths of 1%), after having risen to about 63 bps after the S&P downgrade. U.S. CDS trading volume rose and prices hit a record high of about 82 bps in the week before President Obama signed the Budget Control Act of 2011 (S. 365; P.L. 112-25) on August 2, 2011. The act included provisions to raise the debt limit and reduce deficits.

U.S. CDSs have traded in the same price range as Germany, which is far below sovereign CDS prices for Greece, Portugal, and Ireland. For example, in mid-August 2011, Greek CDSs traded around 1700 bps, Portuguese CDSs around 800 bps, and Irish CDSs around 700 bps. While the federal government faces fiscal challenges, especially in the long term, markets seem to regard fiscal stresses confronting some European governments as far more severe and immediate.

The U.S. CDS market is small and thinly traded, which may limit its reliability as a measure of the federal government's fiscal condition. CDSs may more usefully indicate sovereign default risks for countries with more immediate fiscal challenges, such as Greece and Portugal, where sovereign default risks may be more salient due to higher levels of fiscal stress, or for larger European economies, such as Italy and Spain, which have recently come under increased fiscal stress. Four Eurozone countries imposed certain restrictions on types of sovereign CDS trading in August 2011. This report explains how the sovereign CDS market works and how such CDS price trends may illuminate fiscal stresses facing sovereign governments. Although CDS prices may be imperfect measures of the federal government's fiscal condition, some investors may try to glean information from those price trends, which could potentially affect U.S. debt markets in the future. European calls for reform in sovereign CDS trading may also be of interest to U.S. lawmakers. This report will be updated as events warrant.

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Sovereign Default Risk

Concerns about developed-country sovereign default risks have grown in the aftermath of the 2007-2008 financial crisis and have intensified in the past year as some Eurozone countries have been facing several fiscal pressures. A sovereign default occurs when a sovereign government is unable to meet its financial obligations. Although U.S. Treasury securities, which represent nearly all federal debt, have long been considered risk-free assets, the magnitude of federal deficits and the projected imbalance between federal revenues and outlays has raised concerns among some.¹ The size of federal deficits and the projected imbalance between federal revenues and outlays have raised concerns among some, including the rating agency Standard & Poor's (S&P), which downgraded the U.S. sovereign credit rating from AAA to AA+ on August 5, 2011. S&P also cited as a factor "political brinkmanship" in debt ceiling negotiations, which raised the spectre that the United States might default on some of its obligations if the debt limit were not raised before Treasury's projected deadline of August 2. Prices for Treasuries suggest that financial markets continue to consider federal debt instruments a safe haven despite the S&P downgrade. Continued concerns about rising federal debt and the ability of policymakers to reach solutions to fiscal challenges could raise borrowing costs and negatively affect capital markets.

Many believe that risks were underestimated before the 2007-2008 financial crisis.² Some macroeconomists spoke of a "Great Moderation," reflected in reduced volatility of real economic output, which was seen to have resulted from improved monetary policy, more flexible labor markets, resurgent economic growth, and greater sophistication of financial markets.³ In hindsight, many financial risks appear to have been underappreciated. More recent analysis and commentary has put greater emphasis on managing and understanding risks. For example, one prominent macroeconomist noted that "there is no such thing as an absolutely safe sovereign."⁴ A former chief economist of the International Monetary Fund (IMF) and a coauthor note that from a broad historical perspective, sovereign defaults have not been uncommon.⁵

Financial analysts use many indicators to evaluate various risks associated with holding government securities. Some risks, such as interest rate risks, are generated by wider market trends. Sovereign default risks may depend on macroeconomic conditions, spending and revenue policies, as well as political and international factors. Some analysts use market prices for derivative financial instruments known as credit default swaps (CDSs) to track sovereign default risks.⁶

¹ For details of the structure of the federal debt, see CRS Report R41815, *Overview of the Federal Debt*, by D. Andrew Austin.

² Joseph Cassano, former head of AIG's Financial Products division, reportedly told investors in August 2007 that "(i)t is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing \$1 in any of those [CDS] transactions." Andrew Ross Sorkin, *Too Big to Fail* (New York: Viking, 2009), pp. 157-158.

³ Sean D. Campbell, "Macroeconomic Volatility, Predictability, and Uncertainty in the Great Moderation," *Journal of Business and Economic Statistics* vol. 25, issue 2 (April 1, 2007), pp. 191-200.

⁴ Willem Buiter, "Chief Economist Essay: Sovereign Debt Crisis Update," Global Economic Outlook and Strategy, Citibank, 29 November 2010, available at <http://www.nber.org/~wbuiter/sdcupdate.pdf>.

⁵ See Carmen Reinhart and Kenneth Rogoff, *This Time Is Different: Eight Centuries of Financial Folly* (Princeton University Press, 2009).

⁶ The value of a derivative depends on, or *derives* from, the value of other, underlying assets or indices.

Although CDS prices may indicate market assessments of default probabilities, the market for U.S. CDSs is small and thinly traded, which reduces its reliability as a measure of the federal government's fiscal condition.

What is a Credit Default Swap?

A credit default swap is a financial contract in which one party promises to pay another party if a third party defaults. The third party, in this case, is known as the "reference entity." In the case of a CDS on U.S. sovereign debt, the U.S. government is the reference entity.

A typical CDS contract on sovereign debt specifies that a buyer, in exchange for an annual fee set by the market and paid quarterly, obtains from a seller specified protection against default and broadly similar events affecting securities issued by a country (i.e., the reference entity). For "cash-settlement" CDS contracts, the buyer would receive a cash payment equal to the difference between the fair market value of the specified asset and its par value if a "credit event" occurs.⁷ Other CDS contracts, known as physical settlement CDSs, require the buyer to surrender the asset in return for a payment equal to its par value if a credit event occurs. Par, or face value, is the value of a bond at maturity. For widely held CDSs, recovery values are typically determined through an auction-based procedure specified by the International Swaps and Derivatives Association (ISDA).

CDSs are part of a larger class of financial instruments known as credit derivatives, which allow investors to hedge against or speculate that risks that a company or country will fail to meet its financial obligations may rise or fall. The market for credit derivatives has grown enormously since the mid-1990s.⁸

In legal terms, a CDS is a bilateral derivative contract traded in the over-the-counter (OTC) derivatives market. It transfers from one party to another the risk that a specified reference entity will experience a "credit event."⁹ The CDS protection buyer typically pays a periodic fee to a protection seller in return for compensation if a reference entity experiences a credit event. The reference entity, such as the U.S. government in this case, is almost never a party to the credit default swap contract.

In a typical sovereign CDS, such as for the United States, credit events include failure to pay, repudiation or moratorium on debt, and certain debt restructurings.¹⁰ Failure to pay means a failure by the reference entity (in this case, the U.S. government) to make any payments due on its obligations.¹¹ For U.S. sovereign CDS, there is an automatic grace period of three business days after the date of a missed payment before a "credit event" is triggered for the purpose of

⁷ David Mengle, ISDA Head of Research, "Credit Derivatives: An Overview," paper presented at the 2007 Financial Markets Conference, Federal Reserve Bank of Atlanta, May 15, 2007, available at http://www.frbatlanta.org/news/conferen/07fmc/07FMC_mengle.pdf.

⁸ Ibid.

⁹ Moorad Choudhry, "Credit Derivatives," *Handbook of Financial Instruments*, F. Fabozzi ed., (NJ: Wiley and Sons), 2002, pp. 790-797.

¹⁰ International Swaps and Derivatives Association, *CDS on US Sovereign Debt Q&A*, July 27, 2011, <http://www2.isda.org/news/cds-on-us-sovereign-debt-qampa>.

¹¹ Ibid.

CDS.¹² This is true for the purpose of CDS payments even if the underlying debt instrument does not specify any grace period, or specifies a shorter grace period.¹³ Also, under standard CDS contracts for sovereign U.S. debt, a credit rating agency's downgrade of the U.S. credit rating does not constitute a "credit event."¹⁴

The maturity of the credit default swap need not match the maturity of an asset issued by the reference entity—that is, a 10-year bond may be protected by a CDS that provides protection for only one year. Five-year CDSs have been the most widely traded, although CDS with shorter and longer maturities—up to 10 years—are also traded.¹⁵ Some observers find it helpful to think of a CDS as a tradable form of insurance, whereas others find it more analogous to a put option on a debt instrument.¹⁶ A put option gives its holder the right to sell a specified asset at a given price by a set date. Someone who thinks an asset will fall in price would value such an option.

Banks can use CDSs to offload risks tied to certain assets while retaining legal ownership of the assets. CDS markets enable investors with negative information unrecognized by other traders to exploit that information, which could help discourage the emergence of pricing bubbles in asset markets, or could help limit their duration. Sovereign CDSs can provide a convenient way for major financial institutions to take positions or hedge risks associated with a region or a national economy. Some, however, have contended that CDS markets could also destabilize asset markets or financial institutions in some situations.¹⁷

Naked CDSs

An investor can buy a CDS without owning or ever having owned or borrowed debt of the reference entity. That is, the owner of a CDS will be eligible for compensation if a credit event occurs, even if he or she realized no actual loss. An investor holding a CDS while not owning or borrowing the underlying bond is often said to possess a "naked CDS." For example, an investor might buy a CDS on a foreign bank's debt in order to hedge against wider financial risks in the bank's home country or region.¹⁸ Issues related to naked CDSs are similar to issues raised by short selling of assets.¹⁹ A short seller contracts to sell an asset at a future date, typically in expectation of a fall in the asset's price. If the price does fall, the short seller can then fulfill the contract by buying the asset at a reduced price, thus collecting a profit.

¹² Ibid.

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Mengle, *op. cit.*, p. 12.

¹⁶ Legally, however, CDS are distinct from insurance contracts. This is partly because the CDS buyer or seller need not own the underlying bond to buy or sell CDS on it. Thus, unlike insurance policyholders, a CDS holder need not suffer an actual loss.

¹⁷ Warren Buffett of Berkshire Hathaway and David Einhorn of Greenlight Capital have both used CDSs and credit derivatives extensively and both have reportedly raised cautions about CDSs. Harry Sender, "Greenlight Founder Calls for CDS Ban," *Financial Times*, November 9, 2007. Andrew Frye, Bloomberg, "Buffett's Berkshire Profit Triples on Stock, Bond Derivatives," November 7, 2009, available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aZ7k46r1Ylqs&pos=3>.

¹⁸ Gary Gorton, "Are Naked Credit Default Swaps Too Revealing?" *Investment Dealers' Digest*, June 4, 2010, available at <http://faculty.som.yale.edu/garygorton/documents/NakedCDSTooRevealingIDDJune2010.pdf>.

¹⁹ For details, see CRS Report RS22099, *Regulation of Naked Short Selling*, by Mark Jickling.

Opponents of such naked CDSs charge that heavy buying of CDS protection, without owning an underlying bond, may contribute to credit-related market panics by fueling market perceptions that an entity is uncreditworthy. They contend that short selling and related transactions may restrict credit available to affected issuers or raise borrowing costs.²⁰

Others counter that trading in such naked CDSs simply allows traders to arrive at prices for credit protection that better reflect the actual credit risks for the reference entity. Some contend that CDS prices make differences in risk more transparent, which may increase borrowing costs for entities perceived to pose greater default risks, but may give investors a way to hedge against those risks.²¹

Public interests, in some cases, may be promoted by restricting the creation or publication of certain types of information. Restrictions on genetic testing, for example, may help maintain the viability of health insurance markets by preventing the splintering of risk pooling arrangements. Such restrictions can help societies spread costs of rare genetic conditions widely, lessening financial burdens on affected individuals, who had no control over their genes. Whether similar restrictions should be implemented to assist sovereigns or corporations under financial pressure, which presumably controlled some aspects of their material conditions, is less clear.

European Restrictions on Short-Selling and Naked CDSs

Some lawmakers in the United States and European Union (EU) have questioned whether widespread trading of naked CDSs could destabilize the market for a country's debt, particularly for certain sovereign debt under distress, such as that of Greece; or whether naked CDS trades might create destabilizing ripple effects in other markets as well.²² On July 4, 2011, the European Parliament discussed restrictions on CDSs and short selling. On July 5, the European Parliament voted to adopt a report calling for short-selling restrictions, but a final vote was postponed to allow time for negotiation with the Council of the European Union (formerly the Council of Ministers), which represents governments of member states.²³

On August 11, 2011, France, Italy, Spain, and Belgium adopted temporary restrictions on short selling of financial stocks.²⁴ On the same day, regulators in Turkey reportedly raised margin

²⁰ For a recent description of how this scenario might work, see Alasdair Reilly and Tessa Walsh, "Focus on French Banks' Lending Appetite as CDS Soar," Reuters, August 10, 2011, available at <http://www.reuters.com/article/2011/08/10/french-bank-lending-idUSL6E7JA1Z220110810>. The article noted that a sharp rise in CDS spreads on three major French banks on August 10, 2011 would likely raise borrowing costs for those banks, making it harder for them to lend to companies at low rates.

²¹ Gary Gorton, "Are Naked Credit Default Swaps Too Revealing?" *Investment Dealers' Digest*, June 4, 2010, available at <http://faculty.som.yale.edu/garygorton/documents/NakedCDSTooRevealingIDDJune2010.pdf>.

²² See e.g., "EU Sees Delays in Derivatives, Short-Selling Rules," Reuters, July 4, 2011, accessible at <http://www.reuters.com/article/2011/07/04/eu-derivatives-idUSL6E7HU0WM20110704>. Some EU lawmakers reportedly said that pressure from hedge funds and other investors on Greek debt in 2010, ahead of an EU bailout, showed the need for a ban on naked CDSs.

²³ European Commission, "Proposal for a Regulation of the European Parliament and of the Council of Europe on Short Selling and Certain Aspects of Credit Default Swaps" COM(2010) 482, available at http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosId=199648; Bloomberg News, "Naked CDS Curbs on Sovereign Debt Sought by EU Lawmakers," July 5, 2011; BBC News, "MEPs Clash Over Regulation of Short-Selling," available at http://news.bbc.co.uk/1/hi/europe/newsid_9464000/9464406.stm.

²⁴ Brooke Masters, "EU Splits on Short-Selling Ban," *Financial Times*, August 12, 2011, p. 1.

requirements on short selling.²⁵ Greece imposed short sale restrictions on August 8.²⁶ Several other European governments have imposed reporting and other requirements on short selling, naked CDS holdings, and related transactions.²⁷

SEC Restrictions on Short-Selling During 2008

At present, short selling and naked CDSs are legal under federal law, although certain short selling restrictions on financial institutions were temporarily imposed in 2008.²⁸ U.S. Securities and Exchange Commission (SEC) and its chairman Christopher Cox banned stock short sales of securities of mortgage guarantors Fannie Mae, Freddie Mac, and primary dealers at commercial and investment banks from July 21 through July 29, 2008.²⁹ SEC also banned short selling for stocks in 799 financial institutions between September 19, 2008, and October 3, 2008.³⁰

How Does the U.S. Sovereign CDS Market Work?

When a buyer purchases CDS protection on U.S. Treasury securities (often termed “Treasuries”), the seller of the CDS, in exchange for a stream of payments, essentially agrees to pay the CDS buyer in case of a credit event that affects U.S. Treasury securities. For many years, U.S. Treasury securities have been considered assets basically free of default risks. The emergence of a market in credit default swaps for U.S. government securities, and the growth in volume for this market in 2011, suggests that some investors believed a small but non-zero default risk exists. Investor concerns became more acute during the latter stages of the 2011 debt limit discussions. As noted above, Standard & Poor’s (S&P) downgraded the United States’ sovereign credit rating from AAA to AA+ on August 5, 2011. Prices for Treasuries suggest that financial markets continue to consider federal debt instruments a safe haven despite the S&P downgrade.

Some financial market and federal budget analysts view price trends of U.S. CDSs as an indicator of the risks of a sovereign default by the federal government. CDSs may help insure against

²⁵ Reuters, “Turkey to Penalise Short-Selling of Stocks,” *Business Law Currents*, August 11, 2011.

²⁶ Capital Market Commission (Greece), *Decision on Short Selling of Shares Listed on Athens Exchange*, 14/593/8.8.2011, available at <http://www.esma.europa.eu/popup2.php?id=7696>. Updates to this document reflect recent measures noted above.

²⁷ European Securities and Markets Authority, “Measures Adopted by Competent Authorities on Short Selling,” ESMA/2011/39a, February 9, 2011, available at <http://www.esma.europa.eu/popup2.php?id=7696>.

²⁸ News reports in July 2011 suggest that Italian financial authorities were considering a ban on naked short-selling, which refers to selling an asset short without owning or borrowing the underlying asset. Selling an asset short means one is engaging in a derivatives bet that the price of the underlying asset will fall. See Lorenzo Totaro and Elisa Martinuzzi, “Italy Orders Short-Sale Disclosures After Market Falls,” Bloomberg News, July 11, 2011, available at <http://www.businessweek.com/news/2011-07-11/italy-orders-short-sale-disclosures-after-market-falls.html>.

²⁹ U.S. Securities and Exchange Commission, “Emergency Order Pursuant to Section 12(K)(2) of the Securities Exchange Act of 1934 Taking Temporary Action to Respond to Market Developments,” Release No. 58166, July 15, 2008, available at <http://www.sec.gov/rules/other/2008/34-58166.pdf>.

³⁰ For details, see CRS Report RL34519, *The Uptick Rule: SEC Limit on Short Selling Reconsidered*, by Gary Shorter; U.S. Securities and Exchange Commission, “Emergency Order Pursuant To Section 12(K)(2) of the Securities Exchange Act of 1934 Taking Temporary Action to Respond to Market Developments,” Release No. 34-58592, September 18, 2008, available at <http://www.sec.gov/rules/other/2008/34-58592.pdf>.

default or other events that may damage the interests of those holding claims on the U.S. government.³¹

Pricing of U.S. CDS Contracts

Although prices of U.S. sovereign CDSs remain low compared with CDS prices of fiscally distressed Eurozone countries, five-year U.S. CDS prices have risen since early 2009, as shown in **Figure 1**. For instance, *The Economist* noted that U.S. CDS prices rose from about 20 basis points in 2010, to more than 40 basis points in mid-2011, as debt ceiling discussions in Congress remained unresolved.³² Large changes in U.S. CDS rates in 2008 appeared to track events that could have affected the long-term fiscal situation of the U.S. government, such as the failure of IndyMac Bank, the Lehman Brothers bankruptcy, and AIG's attempts to negotiate a bridge loan from the Federal Reserve.³³

Prices for five-year CDSs on federal debt are currently about 55 basis points (bps), in the range of Germany and major corporations such as Target and Walmart.³⁴ A CDS contract with a notional value of \$1 million and a price of 55 bps would require payment of \$5,500 over the course of a year. Notional value represents the par amount of credit protection bought or sold.³⁵ The net notional value for U.S. CDSs, which excludes amounts from offsetting positions, totaled \$4.6 billion for the week ending July 8, 2011. At a price of 55 bps, insuring \$4.6 billion of U.S. Treasuries would then cost a total of \$25.3 million, a small amount by the standard of global financial markets. The Depository Trust and Clearinghouse Corporation (DTCC) reported only 1,004 U.S. CDSs for the week ending July 8, 2011.³⁶

³¹ CDSs do not provide insurance against risks associated with interest rate fluctuations, which holders of fixed income securities, such as Treasuries, normally accept and which can be hedged against using other financial instruments.

³² "The Mother of All Tail Risks," *The Economist*, June 23, 2011. This article is the source for **Figure 1**.

³³ Christopher Neely, "Markets Worry More about Sovereign Debt," Federal Reserve Bank of St. Louis, *International Economic Trends*, February 2009, available at <http://research.stlouisfed.org/publications/iet/20090201/cover.pdf>.

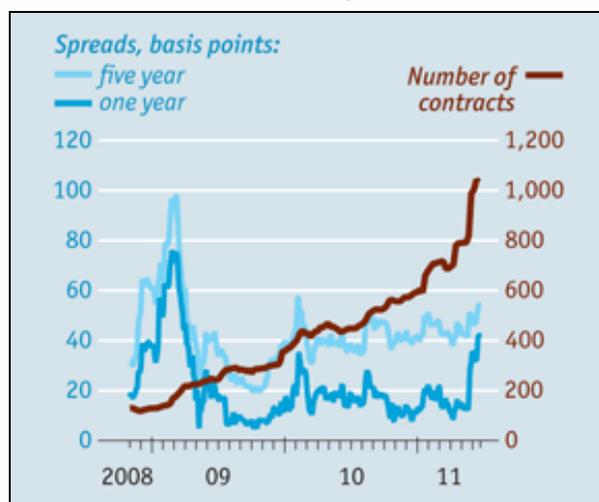
³⁴ A basis point (bp) is one-hundredth of a percent. Many CDS volumes can be found at the Depository Trust and Clearing Corporation website: <http://www.dtcc.com>. Listings for federal debt CDSs can be found under "United States of America."

³⁵ DTCC, Explanation of Trade Information Warehouse Data, May 24, 2011, available at http://www.dtcc.com/downloads/products/derivserv/tiw_data_explanation.pdf.

³⁶ Firms' net exposures are partially offset by the recovery value of the underlying bonds.

Figure 1. U.S. Credit Default Swap Price and Volume Trends

November 2008-June 2011



Source: *Economist*, June 23, 2011, based on Markit and DTCC data.

The number of CDSs traded on U.S. sovereign debt—though traded on a small and illiquid market—has been reported in the financial press to have grown noticeably, particularly since around mid-May, as the U.S. debt ceiling debate has intensified.³⁷ Figure 1 shows trends in U.S. CDS prices and number of contracts since late 2008.

Differences Between Sovereign and Corporate CDSs

CDSs for corporate and sovereigns differ in important ways that reflect differences between sovereign and corporate default risks. For one thing, legal barriers may make it difficult for creditors to successfully sue governments. For example, the doctrine of sovereign immunity, a well-established tenet of Anglo-American jurisprudence, may impose limits on a creditor's ability to seek redress through the courts. In addition, a 1937 Supreme Court decision made it difficult for federal debt holders to seek interest payments as damages, even in cases of default.³⁸ By contrast, holders of corporate debt may be able to force a defaulting corporation into bankruptcy or may have other forms of recourse through the judicial system. A desire by governments to borrow from financial markets in the future may provide a more consistent incentive for repayment. In terms of CDSs, sovereign and corporate debt restructurings may be treated differently under ISDA protocol for the purpose of determining CDS payments.³⁹ This could further complicate sovereign CDS holders' efforts to compel payment.

³⁷ See e.g., Anjail Cordeiro, "Brazil One-Year CDS Below U.S. on Debt Ceiling, Market Jitters," *Wall Street Journal*, June 15, 2011, available at <http://online.wsj.com/article/BT-CO-20110615-711546.html>.

³⁸ *Smyth v. United States*, 302 U.S. 329 at 353 (1937).

³⁹ For corporations, failure to pay, bankruptcy, and restructuring are considered credit events. For sovereigns, failure to pay, debt repudiation or moratorium, or restructuring are credit events.

Academics have found that sovereigns under severe fiscal stress typically restructure their obligations, rather than declare outright default.⁴⁰ Sovereigns in some cases have used changes in laws, taxes, and monetary systems to alter their financial obligations.⁴¹

The Market for U.S. CDSs Is Thin

The CDS market for U.S. Treasuries, however, is relatively small and illiquid. A relatively small number of CDS contracts, according to available data, trade on U.S. sovereign debt, compared to the amount of U.S. debt issued.

For most reference entities, however, the number of CDS contracts traded in a typical week is less than 50, as shown in **Figure 2**. During the week ending July 8, 2011, CDS trading volumes only exceeded 200 for Spain (341) and Italy (475). Similarly, for most reference entities the gross notional value of CDS contracts traded in a typical week is less than \$250 million, as shown in **Figure 3**. For a few reference entities, however, gross notional value traded may be much higher.

The number of CDS outstanding contracts on U.S. debt is small compared to some other sovereigns, such as Italy and Portugal. As noted above, only 1,004 U.S. CDS contracts, with a total net notional value of \$4.6 billion, were outstanding as of July 8, 2011, according to DTCC.⁴² By contrast, on that date the total federal debt held by the public was \$9.75 trillion—an amount roughly 2000 times that of the associated U.S. CDS market.

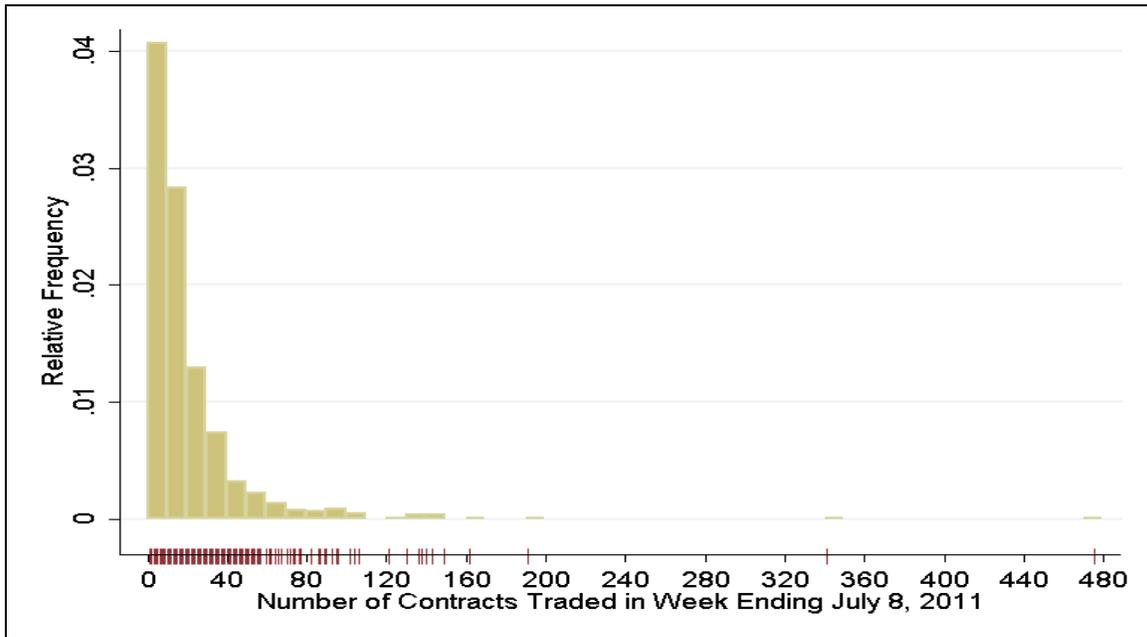
Unlike certain financial asset markets, no trader in CDS markets has market-maker responsibilities. In certain markets, designated traders known as market makers are obligated to post buy and sell prices for a specific stock or contract. The lack of a market maker in a thinly traded market such as U.S. CDSs may reduce liquidity. Thus, finding buyers and sellers for U.S. CDSs at reported prices could be harder than in more liquid derivatives markets.

⁴⁰ Darrell Duffie, Lasse Heje Pedersen, Kenneth J. Singleton, “Modeling Sovereign Yield Spreads: A Case Study of Russian Debt,” *Journal of Finance*, vol. 58, no. 1 (February 2003), p. 122.

⁴¹ For details, see Federico Sturzenegger and Jeromin Zettelmeyer, “Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998–2005” IMF working paper WP/05/137, July 2005, available at <http://www.imf.org/external/pubs/ft/wp/2005/wp05137.pdf>; and Carmen M. Reinhart and Kenneth S. Rogoff, “The Forgotten History of Domestic Debt,” *Economic Journal*, vol. 121 (2011), pp. 319-350.

⁴² Depository Trust and Clearinghouse Corporation website (www.dtcc.com), accessed July 18, 2011. For the week ended July 8, 2011, by comparison, DTCC reported 8,336 sovereign CDS contracts outstanding for Italy. Volumes for several emerging market CDSs were even higher. See **Table 1** in this report for additional information. Most CDSs transactions that are reported in some way are reported to DTCC.

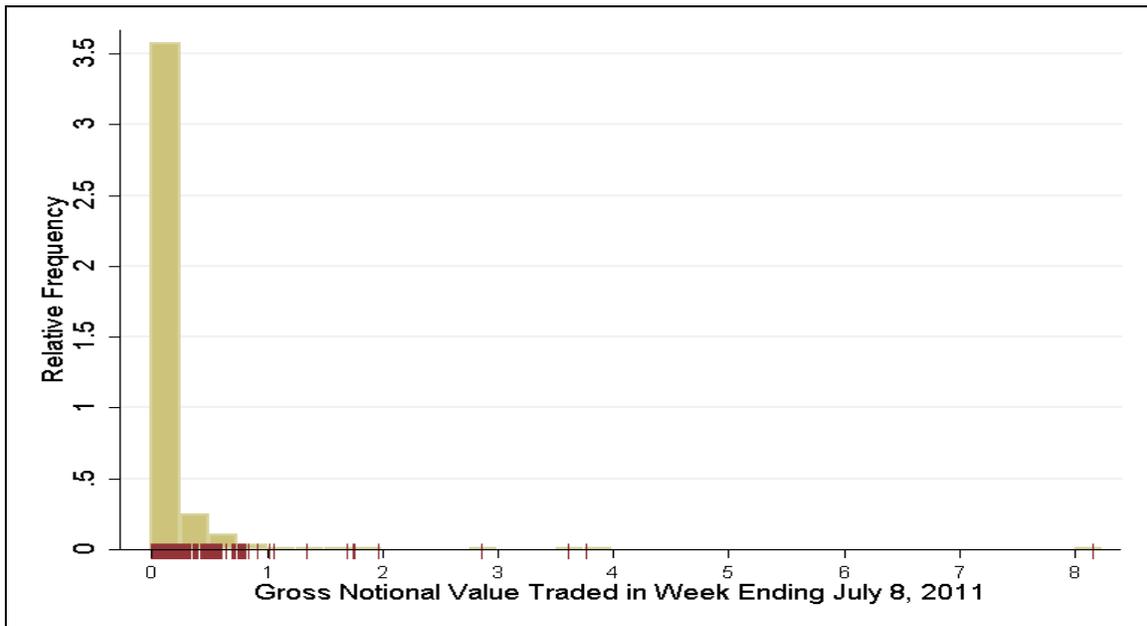
Figure 2. Distribution of CDS Trading Volumes
Trades on Single Reference Entities As Reported to DTCC



Source: CRS, based on analysis of DTCC data.

Notes: Width of histogram bars is 10 contracts. Each short vertical line under histogram represents one reference entity.

Figure 3. Distribution of Gross Notional Value (\$ Equivalent, billions)
Trading on Single Name Reference Entities As Reported to DTCC



Source: CRS, based on DTCC data.

Notes: Width of histogram bars is \$250 million. Each short vertical line under histogram represents one reference entity.

Some analysts, rather than focusing on U.S. CDS price trends, prefer to track a wider set of measures that might indicate changes in relative riskiness, such as spreads with German bonds, spreads between short-term and long-term Treasury bonds, and other comparisons. Those measures arguably also have shortcomings. Some ratings agencies also rely on their evaluation of how well political processes appear to be addressing fundamental fiscal challenges.⁴³

Why is the U.S. CDS Market Thin?

The lack of liquidity in this market means that some financial institutions may be reluctant to offer U.S. CDSs because of the small size of that market and the analytic challenges in estimating the probabilities of a credit event affecting Treasury securities. In such a market, buyers who wish to purchase U.S. CDSs may pay a premium reflecting the costs of offering low-volume contracts. If so, calculations of the probability of a credit event affecting Treasury securities based on U.S. CDS prices are likely to be imprecise. Moreover, investors holding U.S. CDSs could have different business models than investors holding sovereign CDSs that trade more widely, which could complicate imputations of relative risk.

Supply of U.S. CDSs is limited because U.S. banks or banks with strong ties to U.S. financial markets might not be credible counterparties in the event of a major credit event. Were a serious Treasury default to occur, major U.S. banks could face severe deterioration in their capital bases, leaving their ability to make CDS payments in doubt. Thus, counterparty risk may make many U.S. banks less attractive suppliers of U.S. CDSs.

Demand for CDS on emerging market (EM) government debt is greater than for CDS on Treasuries and the debt of most developed country governments. Borrowing costs for banks are typically above borrowing costs for the U.S. Treasury, Germany, and most developed countries, but many major banks can borrow more cheaply than several EM governments. Thus, borrowing to hold Treasuries is not a profitable strategy for banks. Borrowing to hold EM government debt whose yields exceed banks' borrowing costs, however, could be a profitable strategy. Banks holding EM debt may then want to hedge against EM default risks by holding matching CDSs. EM debt yields, even subtracting CDS costs, may offer banks an attractive risk-adjusted rate of return. Thus, demand for CDSs for EM government debt is much stronger than for CDSs on developed-country government debt.

Banks face capital regulations that may encourage purchase of CDSs for other types of assets, but those regulations provide little incentive to buy CDSs on U.S. Treasuries. Large banks subject to Basel II regulations face capital requirements that include risk-based adjustments to asset holdings. Bank regulators also evaluate the riskiness of asset holdings when evaluating the adequacy of a bank's capital. In general, holdings of riskier assets are given less weight in the calculation of a bank's capital reserves. During the run-up in housing prices from about 2000 to 2007, some banks met regulatory capital requirements by purchasing CDS protection on their mortgage-backed securities (MBS) and other assets. Basel II, however, puts a 0% standard risk weight on banks' holdings of debt issued by domestic and foreign sovereigns with credit ratings of AA- or higher.⁴⁴ Because Treasury debt is sufficiently highly rated, purchasing CDS protection on Treasuries would not help banks meet minimum capital requirements.⁴⁵

⁴³ Ibid, p. 11.

⁴⁴ Risk weights are higher for debt of lower-rated domestic and foreign sovereigns (20% for A-rated entities, 50% for (continued...))

What Constitutes a Credit Event?

What would constitute a “credit event” for a U.S. CDS holder is important, as it determines whether, and when, a buyer of CDS protection is paid by the CDS seller. Committees organized by the International Swaps and Derivatives Association (ISDA) determine when a credit event has occurred.⁴⁶ Although failure to make a timely interest payment generally would constitute a credit event, several other situations could also trigger a credit event. Typical credit events include failure to pay, bankruptcy, restructuring, repudiation, or a moratorium.

If a credit event occurs and if fair market value of the asset is below the par value, the resulting gap as a percentage of par value is known as the recovery rate. A credit event might occur that would leave an asset’s value at or above par, implying a recovery rate of 100%, in which case the CDS buyer would receive nothing. For example, many Treasury securities trade well above par because interest rates have fallen since they were issued. Were a credit event to occur that left such securities above par, CDS holders would receive zero payment.

For any sovereign CDS that used the standard ISDA documentation, the ISDA committee, at the request of a CDS buyer or seller, would determine whether a particular event would constitute a triggering credit event according to terms of the relevant ISDA documentation.⁴⁷ The ISDA standard contract provides detailed definitions of what would constitute a credit event, which the ISDA committee would then apply and interpret in a given case. Those entering into such contracts generally agree to be bound by the decisions reached by this ISDA committee. In a typical sovereign CDS, such as for the United States, credit events include failure to pay, repudiation or moratorium on debt, and certain debt restructurings.⁴⁸

Failure to pay means a failure by the reference entity (in this case, the U.S. government), to make any payments due on its obligations.⁴⁹ For U.S. sovereign CDS, there is an automatic grace period of three business days after the date of a missed payment before a “credit event” is triggered for the purposes of CDS.⁵⁰ This is true for the purposes of CDS payments even if the underlying debt instrument does not specify any grace period, or specifies a shorter grace period.⁵¹ Also, under

(...continued)

BBB-rated entities, 100% for B- to BB-rated entities). See Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards: A Revised Framework—Comprehensive Version*, Basel, June 2006.

⁴⁵ Buiter (2010, op. cit.) argues that the zero risk weight on highly rated sovereigns should be changed. For a summary of policy decisions during the development of the Basel II framework, see Daniel K. Tarullo, *Banking on Basel: The Future of International Financial Regulation* (Washington, DC: Peterson Institute, 2008), pp. 97-98.

⁴⁶ A more detailed description can be found on the ISDA website: <http://www.isda.org/credit>.

⁴⁷ A CDS contract might also contain amendments or modifications of the standard ISDA documentation. Documentation may be specified for countries in a particular region. For example, Greek CDSs are governed by the Standard Western European Sovereign (SWES) CDS contracts. See Barclay’s Capital Research, “Difficult Economic Realities are Becoming Increasingly Apparent,” Credit Alpha brief, June 3, 2011.

⁴⁸ International Swaps and Derivatives Association, *CDS on US Sovereign Debt Q&A*, July 27, 2011, <http://www2.isda.org/news/cds-on-us-sovereign-debt-qampa>.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

standard CDS contracts for sovereign US debt, a credit rating agency's downgrade of the U.S. credit rating does not constitute a "credit event".⁵²

In a June 28, 2011, letter to the *Financial Times*, Robert Pickel, the executive vice chairman of ISDA, addressed concerns regarding what would constitute a credit event for the purposes of Greek sovereign CDSs. He noted that the committee would review any potential credit event, analyze ISDA's CDS definitions of a credit event, and then vote on whether the potential event was covered under the definitions.⁵³ He noted that, in the case of Greece, "it is well understood in the CDS market that certain types of restructuring will not trigger a credit event."⁵⁴ Jean-Claude Juncker, head of a Eurozone council of finance ministers, was quoted as saying in May 2011 that a "kind of reprofiling" of Greek debt could be under consideration.⁵⁵ For some, this appeared to reflect an attempt to avoid outcomes that would trigger CDS payments.⁵⁶

On July 21, 2011, the European Council announced a framework, which emphasized voluntary measures, to support Greece.⁵⁷ The framework included a call for further austerity measures by the Greek government, a stretchout of Greek government bond obligations, EU support for private sector bonds, and in conjunction with the International Monetary Fund (IMF), support totaling 109 billion euros. Implementation of those measures would require further action by member states and EU institutions. One prominent financial journalist termed the arrangement a "bailout" and "a kind of default."⁵⁸ As of this writing, no query has been filed with ISDA to determine whether this support package constitutes a credit event.⁵⁹

Roles of Credit Rating Agencies and ISDA Differ

Credit rating agency statements and rating decisions are not considered "credit events" for the purposes of CDS payments, under the standard CDS agreements.⁶⁰ Also, whereas some credit rating agencies normally consider certain types of restructuring as "defaults," the ISDA definition of restructuring is somewhat broader. Thus, an ISDA committee might not declare a credit event to have occurred, even if that event affected a security's credit rating.⁶¹ Some credit rating

⁵² Ibid.

⁵³ Robert Pickel, "Fair and Well-Tested Process for Determining Credit Events," *Financial Times*, June 28, 2011.

⁵⁴ Ibid.

⁵⁵ "Eurozone Talks in Brussels Focus on Greece," BBC Business News, 17 May, 2011, available at <http://www.bbc.co.uk/news/business-13420864>.

⁵⁶ For details, see Barclay's Capital Research, "Difficult Economic Realities are Becoming Increasingly Apparent," Credit Alpha brief, June 3, 2011.

⁵⁷ Council of The European Union, "Statement By The Heads of State or Government of The Euro Area and EU Institutions," Brussels, July 21, 2011, available at http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/123978.pdf. As noted above, the Council represents governments of member states.

⁵⁸ Relix Salmon, "Greece Defaults," July 21, 2011, Reuters, blog, available at <http://blogs.reuters.com/felix-salmon/2011/07/21/greece-defaults/>.

⁵⁹ A query had been submitted in March after an IMF support package for Ireland was announced. The relevant determinations committee concluded that no credit event had occurred. See the EMEA Determinations Committee Decision dated March 15, 2011, available at http://www.isda.org/dc/docs/EMEA_Determinations_Committee_Decision_15032011.pdf.

⁶⁰ International Swaps and Derivatives Association, *CDS on US Sovereign Debt Q&A*, July 27, 2011, <http://www2.isda.org/news/cds-on-us-sovereign-debt-qampa>.

⁶¹ Jeffrey S. Tolk, "Understanding The Risks In Credit Default Swaps," special report, Moody's Investors' Service, March 16, 2001, available at <http://www.securitization.net/pdf/MoodysSyntheticCDORisks.pdf>.

agencies have also been more willing to discuss contingencies than ISDA, which generally seeks to avoid statements regarding hypothetical future events.

Credit Rating Agency Warnings and the S&P Downgrade

The rating agency Standard & Poor's (S&P) downgraded the United States' sovereign credit rating from AAA to AA+ on August 5, 2011. S&P not only expressed concerns about the federal government's fiscal outlook, but also cited "political brinksmanship" in debt ceiling negotiations, which raised the issue of a hypothetical federal default, as a factor in its decision.

On August 2, 2011, Moody's confirmed the federal government would retain its Aaa rating, Moody's highest, although it would continue to keep it on "negative outlook."⁶² Fitch Ratings also confirmed its AAA rating of federal debt on the same day.⁶³ Both agencies, however, expressed concerns about the federal government's fiscal outlook.

S&P provided the U.S. Treasury with an advance draft of its downgrade announcement that contained an error that overestimated federal government's accumulation of debt of the next decade by about \$2 trillion.⁶⁴ The error resulted from confusion in the use of budget baselines and led many economists to criticize S&P. A former CBO acting director termed the error "remarkably sloppy."⁶⁵ S&P contends that factors that led to the downgrade—"current level of debt, the trajectory of debt as a share of the economy, and the lack of apparent willingness of elected officials as a group to deal with the U.S. medium term fiscal outlook"—were unaffected by its choice of baseline. As many budget experts have noted, the CBO current-law baseline used to score legislation is likely an overly optimistic indicator of the federal government's fiscal condition.⁶⁶

Previous Credit Agency Warnings

On April 18, 2011, Standard and Poor's had affirmed the U.S. government's long-term AAA rating on its debt, although it expressed concerns about "very large budget deficits and rising government indebtedness" and that "the path to addressing these is not clear to us."⁶⁷ On July 14,

⁶² Moody's Investors' Service, "Moody's Confirms US Aaa Rating, Assigns Negative Outlook," August 2, 2011, available at http://www.moodys.com/research/Moodys-confirms-US-Aaa-Rating-assigns-negative-outlook?lang=en&cy=global&docid=PR_223568#.

⁶³ Reuters, "Text: Fitch on U.S. Debt, Sovereign Rating," August 2, 2011, available at <http://www.reuters.com/article/2011/08/02/us-text-fitch-idUSTRE7714M620110802>.

⁶⁴ John Bellows, "Just the Facts: S&P's \$2 Trillion Mistake," *Treasury Notes*, August 6, 2011, available at <http://www.treasury.gov/connect/blog/Pages/Just-the-Facts-SPs-2-Trillion-Mistake.aspx>.

⁶⁵ Donald Marron, "S&P's \$2 Trillion Error," weblog, posted August 7, 2011, available at <http://dmarron.com/2011/08/07/sps-2-trillion-error/>.

⁶⁶ For details, see CRS Report RL33623, *Long-Term Measures of Fiscal Imbalance*, by D. Andrew Austin. For a comparison of baselines, see Alan J. Auerbach, "Long-Term Fiscal Sustainability in Major Economies," paper presented at the Bank of International Settlements Annual Conference, June 23-24, 2011, Lucerne, Switzerland, available at <http://www.bis.org/events/conf110623/auerbach.pdf>.

⁶⁷ Standard and Poor's, "AAA/A-1+ Rating On United States of America Affirmed; Outlook Revised To Negative," April 18, 2011, available at <http://www.standardandpoors.com/ratings/articles/en/us/?assetID=1245302886884>.

2011, it announced that it had placed its rating of federal debt on a negative watch because of its perception of the state of budgetary negotiations.⁶⁸

Standard and Poor's also stated that it would maintain the U.S. government's long-term AAA rating if Congress and the President could reach an agreement on a fiscal consolidation plan of about \$4 trillion over the "medium term."⁶⁹ One analyst criticized Standard and Poor's for framing a credit rating warning in those terms, contending that "[r]esolving the long-term fiscal imbalances facing the United States will be a project for an entire political generation, not a one-time affair that can be wrapped up in a single Congressional session."⁷⁰ The analyst also noted that Standard and Poor's had reportedly issued private warnings that prioritizing obligations that would delay commercial payments risk the federal government's AAA long-term rating, even if all payments to holders of federal securities were made.⁷¹

The Fitch ratings agency announced on June 8, 2011, that it would place the U.S. sovereign rating on negative watch if Congress did not raise the federal government's borrowing ceiling by August 2.⁷² Fitch also stated that if the U.S. government missed an August 15 coupon payment, then Fitch would place the rating on restricted default. Although Moody's and S&P have issued warnings along the same lines, Fitch was the first large ratings agency to say directly that U.S. Treasury securities could be downgraded, even for a short period. In 1995, Fitch reportedly issued a similar warning when a default on Treasury interest payments was viewed as possible. After the debt limit was raised, that warning was dropped.⁷³

On June 2, Moody's announced that it would likely review the U.S. government's Aaa bond rating in mid-July if negotiations to raise the debt limit failed to make adequate progress. On July 13, 2011, Moody's stated it would place the U.S. government's Aaa bond rating on review because of the possibility that the "debt limit will not be raised in a timely basis." Moody's also stated that a default, however short lived, would lead to a downgrade from Aaa to "somewhere in the Aa range."⁷⁴

Criticisms of Credit Rating Agencies

Credit rating agencies in general and S&P in particular have been criticized in the wake of the 2007-2009 financial crisis and the S&P downgrade of federal debt.⁷⁵ The Financial Crisis Inquiry Commission concluded that "three credit rating agencies were key enablers of the financial

⁶⁸ Standard and Poor's, "United States of America 'AAA/A-1+' Ratings Placed on CreditWatch Negative on Rising Risk of Policy Stalemate," *Research Update*, July 14, 2011.

⁶⁹ *Ibid.*, p. 4.

⁷⁰ Wrightson Research/ICAP, "Rating Agency Downgrade Threats," *Money Market Observer*, July 18, 2011.

⁷¹ *Ibid.*

⁷² "Fitch Sees Risk of Greece, U.S. Defaults," Reuters, June 21, 2011, accessible at <http://www.reuters.com/article/2011/06/21/us-fitch-usa-debt-idUSTRE75K0AP20110621>.

⁷³ Joe Deaux, "Fitch: U.S. Risks Downgrade of AAA Rating," *TheStreet.com*, June 8, 2011, available at <http://www.thestreet.com/story/11147046/1/fitch-us-risks-downgrade-of-aaa-rating.html>.

⁷⁴ Moody's Investors Service, "Moody's Places US Aaa Government Bond Rating and Related Ratings on Review for Possible Downgrade," July 13, 2011, available at <http://www.moody.com/research/Moodys-Places-US-Aaa-Government-Bond-Rating-and-Related-Ratings>.

⁷⁵ For details, see CRS Report R40613, *Credit Rating Agencies and Their Regulation*, by Gary Shorter and Michael V. Seitzinger.

meltdown,” due to their role in rating structured financial products and the institutions that issued them.⁷⁶ Others have criticized rating agencies for tending to assign higher ratings to corporate securities than to public sector securities, even though historical public sector default rates have been far lower than corporate default rates.⁷⁷ Ratings agencies contend that they have taken steps to recalibrate their scales to ensure that securities with the same rating have similar risk characteristics.⁷⁸ Low rates of public sector defaults in the past, of course, is no guarantee of future behavior.

Some analyses suggest that credit ratings for sovereigns are more closely tied to reputational indicators rather than factors that are predictive of default or severe fiscal stress.⁷⁹ Another analysis found that Moody’s sovereign ratings and *Institutional Investor* scores were poor predictors of banking and currency crises.⁸⁰ That rating agencies had been overly optimistic about the performance of some corporations, structured financial products, or emerging market sovereigns in the past need not imply that credit ratings agencies are now too pessimistic regarding the federal government’s fiscal situation in the future.

Historical Precedents

The U.S. Treasury missed a payment on Treasury bills only once, as far as is generally known. In 1979, the Treasury failed to redeem \$122 million of Treasury bills on time, blaming unusually high interest from small investors, a delay in raising the debt ceiling, and a word-processing equipment failure, according to *The Economist* magazine.⁸¹ One study concluded that it resulted in a 60-basis point interest premium on certain federal debt for several years afterwards.⁸²

Small investors affected by the missed payment then filed a class action suit against the federal government.⁸³ Some were persuaded to accept compensation and agreed to withdraw from the suit. The case was dismissed on June 10, 1980.⁸⁴ Representative Gephardt introduced a measure (H.R. 6054, 96th Congress) on December 6, 1979, to authorize the Treasury Secretary to

⁷⁶ National Commission on the Causes of the Financial and Economic Crisis in the United States, *Final Report*, January 2011, p. xxv, available at <http://www.gpoaccess.gov/fcic/fcic.pdf>.

⁷⁷ Moody’s Investors Service, Public Finance Credit Committee, “Request for Comment: Mapping of Moody’s U.S. Municipal Bond Rating Scale to Moody’s Corporate Rating Scale and Assignment of Corporate Equivalent Ratings to Municipal Obligations,” June 2006, available at <http://www.moodys.com/cust/content/content.ashx?source=StaticContent/Free%20pages/Credit%20Policy%20Research/documents/current/2005700000427679.pdf>.

⁷⁸ U.S. Congress, House Committee on Financial Services, Subcommittee on Oversight and Investigations, *Credit Rating Agencies: Part Two*, 112th Cong., 1st sess., July 27, 2011. See questions posed by Representative Capuano.

⁷⁹ Nate Silver, “Why S.&P.’s Ratings Are Substandard and Porous,” *New York Times*, Five Thirty Eight Blog, August 8, 2011, available at <http://fivethirtyeight.blogs.nytimes.com/2011/08/08/why-s-p-s-ratings-are-substandard-and-porous/>.

⁸⁰ Carmen M. Reinhart and Kenneth S. Rogoff, *This Time is Different: Eight Centuries of Financial Folly*, (Princeton: Princeton, NJ, 2009), ch. 17. The twelve countries that showed the greatest improvement on the Institutional Investor sovereign credit ratings from 1979 to 2008 include Portugal, Spain, and Greece.

⁸¹ “The Mother of All Tail Risks,” *The Economist*, June 23, 2011.

⁸² Terry L. Zivney and Richard D. Marcus, “The Day the United States Defaulted on Treasury Bills,” *Financial Review*, vol. 24 (1989), issue 3, pages 475-89.

⁸³ *Claire G. Barton v. United States*, Docket No. 79, 1718LTL (Gx), United States District Court, Central District of California.

⁸⁴ Zivney and Marcus, op. cit.

compensate the remaining investors from the case, which was referred to the House Committee on Banking, Finance and Urban Affairs, but was not enacted.

Some economists contend that the departure of the United States and several other advanced countries from the gold standard in the 1930s constituted a de facto sovereign default, although not all economic historians have characterized those events as defaults.⁸⁵ The Supreme Court ruled in the 1935 case *Perry v. United States*⁸⁶ that Congress could statutorily adjust the conditions for repayment on existing bonds, specifically from gold to legal tender.⁸⁷

In the early 1840s, several state governments defaulted on obligations. Nine governments defaulted in the period 1841 to 1843, and five governments repudiated their debts, in part or in whole. Many of these states, having observed the success of the Erie Canal, had invested heavily in canals, turnpikes, and other internal improvements.⁸⁸ A severe economic downturn in the 1840s left several states unable or unwilling to service their bond debt. Following the Civil War, 10 southern states repudiated at least some of their public debts.⁸⁹ Several other states defaulted on obligations following the Panic of 1873.⁹⁰

Some economists have noted that while defaults among highly developed countries have been rare in the past half century, sovereign defaults have occurred many times in the past.⁹¹

Information and Market Prices

Markets for contingent contracts, such as CDSs, can provide valuable information about the probability of the occurrence of defined events as perceived by financial markets. Economists have long noted that market prices may convey valuable signals about economic fundamentals.⁹² More recently, economists have engineered markets in order to induce individuals to reveal private information.⁹³ In some cases, however, predictions drawn from such markets have not always performed as well as predictions generated in more traditional ways.⁹⁴

⁸⁵ Carmen M. Reinhart and Kenneth S. Rogoff, "Banking Crises: An Equal Opportunity Menace," NBER Working Paper 14587, December 2008, p. 10.

⁸⁶ 294 U.S. 330 (1935).

⁸⁷ *Ibid.* at 357. A Joint Resolution of Congress adopted on June 5, 1933 declared that provisions requiring "payment in gold or a particular kind of coin or currency" were "against public policy." Christina Romer found that countries that left the gold standard earlier started their economic recovery from the Great Depression more quickly. See Christina Romer, "What Ended the Great Depression?" *Journal of Economic History*, vol. 52, no. 4, December 1992.

⁸⁸ William B. English, "Understanding the Costs of Sovereign Default: American State Debts in the 1840's," *American Economic Review*, vol. 86, no. 1 (March 1996), pp. 259-275; Arthur Grinath, III, John J. Wallis, and Richard E. Sylla, "Debt, Default, and Revenue Structure: The American State Debt Crisis in the Early 1840s," NBER Historical Paper 97, March 1997. Illinois, Indiana, Maryland, and Pennsylvania defaulted temporarily; Arkansas, Louisiana, and Michigan partially repudiated their debts; Mississippi and the Florida Territory completely repudiated their debts.

⁸⁹ William A. Scott, *Repudiation of State Debts in the United States*, (New York: Crowley, 1893), p. 276. Those states were Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

⁹⁰ *Ibid.*, ch. V; R. P. Porter, "State Debts and Repudiation," *International Review*, November 1880, pp. 556-592.

⁹¹ See Carmen Reinhart and Kenneth Rogoff, *This Time Is Different: Eight Centuries of Financial Folly* (Princeton University Press, 2009).

⁹² Friedrich von Hayek, "The Use of Knowledge in Society," *American Economic Review* vol. 35 (1945), pp. 519-530.

⁹³ Charles R. Plott, "Markets as Information Gathering Tools," *Southern Economic Journal*, vol. 67, no. 1 (2000), pp. (continued...)

Under strong technical assumptions, default probabilities can be extracted from CDS prices conditional on an assumed recovery rate.⁹⁵ The recovery rate, were a credit event to occur, would be one minus the percentage loss deemed to have occurred. For example, if an analyst assumed a recovery rate would be 95%, then a default probability could be inferred from a CDS price.⁹⁶

The reliability of inferred default probabilities, however, may be low for several reasons. In small and thinly traded markets, a few large trades might have strong effects on prices. Large spreads between bid and ask prices (i.e., offered buying and selling prices) can affect reliability of inferences about default probabilities. Prices for CDSs on U.S. Treasuries, therefore, may be an imperfect and potentially misleading indicator of actual sovereign default risks.

In thin markets, investors with strong information but weak financial backing may have difficulty leveraging insights into trading profits. Such traders seeking financing may experience conflicts between revealing some information to signal credibility while keeping enough information private to maintain a trading advantage.⁹⁷ This may discourage some traders from participating in these markets, which in turn hinders the flow of information to markets. In addition, information or the ability to understand the consequences of key information may not flow smoothly in markets, but may respond sharply at a few key turning points. For example, CDSs on the investment banks Bear Stearns and Lehman Brothers, as well as insurer AIG, moved dramatically before their bankruptcies.⁹⁸

Even if CDS prices are an imperfect signal of credit events, they may nonetheless react systematically to economic or political events. CDSs, however, probably provide a more useful indicator of sovereign default risks for countries whose sovereign CDSs are more actively traded. Thus, pricing and volume trends for sovereign CDSs on countries facing more immediate fiscal challenges, such as Greece and Portugal, where default risks appear more salient due to higher levels of fiscal stress, may be more informative indicators.⁹⁹

U.S. CDSs Versus Other Sovereign CDSs

Volumes of outstanding contracts and trading activity for U.S. CDSs are limited in comparison with CDS markets for several Eurozone countries. CDS markets have been more active for

(...continued)

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⁹⁴ Christopher Wlezien and Robert S. Erikson, "Markets vs. Polls as Election Predictors: An Historical Assessment," Temple University working paper, 2011, available at <http://www.temple.edu/polsci/wlezien/documents/MarketsandPollsIIfordistribution.pdf>.

⁹⁵ Deutsche Bank Research, "How Do CDS Spreads Relate to the Probability Of Default?" no date, available at http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD000000000183612.pdf.

⁹⁶ More sophisticated techniques designed to analyze CDSs with different time horizons can, under certain technical assumptions, impute more information about default events. See Jun Pan and Kenneth J. Singleton, "Default and Recovery Implicit in the Term Structure of Sovereign CDS Spreads," MIT working paper, May 26, 2007, available at <http://www.mit.edu/~junpan/sovrev.pdf>.

⁹⁷ For an example, see Michael Lewis, *The Big Short* (New York: Norton, 2010), ch. 2.

⁹⁸ See William D. Cohan, *House of Cards* (New York, Doubleday, 2009); Andrew Ross Sorkin, *Too Big to Fail* (New York: Viking, 2009).

⁹⁹ For a description of Greece's financial situation, see CRS Report R41167, *Greece's Debt Crisis: Overview, Policy Responses, and Implications*, coordinated by Rebecca M. Nelson.

sovereigns such as Greece, Ireland, and Portugal, which have been facing investor concerns over potential defaults or restructurings; and for the larger countries Spain and Italy, reflecting concerns that Eurozone fiscal pressures could spread. CDS markets on emerging market (EM) government debt has typically been more active than CDS markets for governments of developed countries. The CDS market on U.S. CDSs, as noted above, is illiquid and thinly traded.

On June 15, 2011, Dow Jones reported that the one-year CDS spread for the United States was at 43 basis points—higher than the 41 basis points spread for Brazil, and that the cost of insuring one-year U.S. debt against default had been rising since mid-May on worries related to the debt ceiling.¹⁰⁰ Price trends for selected governments and their banking sectors are presented in Appendix **Figure A-1**.

CDS Contracts and Net Notional Values Outstanding

Table 1 shows summary totals for outstanding CDS for sovereign entities with net notional value above \$3 billion equivalent value for the week ending July 8, 2011, as reported by DTCC.¹⁰¹ Volumes of outstanding contracts were higher for Eurozone member states facing fiscal strains, either directly in the present, or potentially in the future. Italy was the sovereign with the largest net CDS notional value outstanding (\$23.8 billion equivalent), according to DTCC data for the week ending July 8, 2011, followed by France (\$20.4 billion equivalent), Spain (\$18.9 billion equivalent), Brazil (\$16.9 billion equivalent), and Germany (\$16.4 billion equivalent). Total CDS notional value outstanding for the United States was far lower (\$4.6 billion).

Differences in the number of CDS contracts outstanding are similar. For the week ending July 8, 2011, the DTCC repository reported only 1,004 outstanding CDS contracts on the United States. CDS contracts on Italy, by contrast, totaled 8,336, and some EM countries, such as Brazil (11,783 contracts) and Mexico (9,707 contracts) had even more.

CDS Transactions

Recent trading in sovereign CDSs on Eurozone countries such as Italy, Spain, Portugal, and Greece has been heavier than trading in U.S. CDSs, despite the fact that the total amount of U.S. debt outstanding dwarfs the amount of sovereign debt of these smaller Eurozone countries.¹⁰²

Table 2 shows reference entities with the highest trading volumes for the week ending July 8, 2011, as reported to DTCC. In general, trading in CDS contracts remains small in comparison with deeper, more liquid markets in foreign exchange swaps or interest rate swaps.

Italy was the sovereign with the heaviest CDS trading, with 475 contract transactions covering a notional value of \$8.16 billion.¹⁰³ By contrast, the United States had a total of 19 CDS contracts

¹⁰⁰ Ibid.

¹⁰¹ These data, of course, only capture CDS transactions reported to DTCC. Other sovereign CDS contracts may be traded but not reported to this DTCC repository. Thus, DTCC data may not reflect all CDS trades carried out globally on these reference entities. No window into how many such contracts currently trade is publicly available.

¹⁰² The Eurozone refers to EU member states that have adopted the euro, the single European currency. Eurozone countries are Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, The Netherlands, Portugal, Slovenia, Slovakia, and Spain.

¹⁰³ These data at http://www.dtcc.com/products/derivserv/data_table_iv.php?tbid=0&tabid=0&tid=0&kid=1&asc=0.

traded and reported to DTCC, on a total notional value of \$607.1 million worth of U.S. government bonds.

Table I. Outstanding Sovereign CDS for Week Ended July 8, 2011

Countries with Net Notional Value Above \$3 Billion Equivalent

| Country | Gross Notional ^a | Net Notional ^a | Outstanding Contracts |
|----------------------|-----------------------------|---------------------------|-----------------------|
| Italy | 292.0 | 23.8 | 8336 |
| France | 96.7 | 20.4 | 4636 |
| Spain | 168.2 | 18.9 | 8021 |
| Brazil | 176.3 | 16.9 | 11783 |
| Germany | 95.6 | 16.4 | 2992 |
| United Kingdom | 64.1 | 11.9 | 4587 |
| Mexico | 122.8 | 8.9 | 9707 |
| Japan | 51.8 | 8.6 | 5340 |
| China (PRC) | 47.5 | 7.4 | 4833 |
| Belgium | 53.8 | 7.4 | 2862 |
| Portugal | 67.0 | 6.1 | 3604 |
| Austria | 51.0 | 6.1 | 2115 |
| Turkey | 146.5 | 6.1 | 9173 |
| Greece | 79.1 | 4.7 | 4636 |
| United States | 25.6 | 4.6 | 1004 |
| Russia | 106.1 | 4.5 | 7616 |
| Australia | 21.2 | 4.4 | 1846 |
| Ireland | 42.3 | 4.3 | 2522 |
| South Korea | 56.3 | 4.3 | 6260 |
| Hungary | 70.2 | 3.4 | 5825 |
| Indonesia | 36.8 | 3.1 | 4635 |
| Sweden | 18.8 | 3.0 | 1038 |
| Philippines | 57.0 | 3.0 | 6228 |

Source: DTCC.

Notes: This table ranks the largest sovereign CDS markets, as determined by net notional value, for the week ended July 8, 2011. The U.S. ranked 15th, just after Greece, for that week, according to data reported to DTCC repository. Notional value represents the face value of bonds on which credit protection is bought or sold.

a. Values in billions of U.S. dollar equivalents.

Table 2. CDS Transactions by Most Actively Traded Reference Entities

Data for Week Ended July 8, 2011

| Reference Entity | Gross Notional (\$billion equivalent) | Traded Contracts |
|--|--|------------------|
| Italy | 8.16 | 475 |
| Spain | 3.61 | 341 |
| Telefonica | 0.80 | 191 |
| Eastman Kodak | 0.35 | 162 |
| Portugal | 1.75 | 149 |
| Germany | 3.76 | 143 |
| Telecom Italia | 0.76 | 140 |
| Belgium | 1.96 | 138 |
| France | 2.85 | 136 |
| K. Hovnanian Enterprises | 0.27 | 130 |
| Brazil | 1.06 | 121 |
| Enel | 0.74 | 106 |
| General Electric Capital | 0.91 | 106 |
| The PMI Group | 0.72 | 104 |
| Ireland | 1.34 | 102 |
| Bank of America | 0.81 | 96 |
| Portugal Telecom International Finance | 0.57 | 96 |
| Anadarko Petroleum | 0.49 | 95 |
| China (PRC) | 0.78 | 95 |
| United Kingdom | 1.75 | 95 |
| Gas Natural Sdg. | 0.49 | 93 |
| Austria | 1.69 | 93 |
| MBIA Insurance | 0.69 | 90 |
| Glencore International AG | 0.70 | 89 |
| Casino Guichard-Perrachon | 0.43 | 87 |
| Clear Channel Communications | 0.36 | 87 |
| Greece | 0.71 | 87 |
| United States | 0.61 | 19 |

Source: DTCC.

Notes: This table ranks all reference entities (sovereign, municipal and private) by number of CDS contracts traded for week ended July 8, 2011, for CDS contracts reported to the DTCC repository. For the U.S. sovereign CDS, only 19 contracts were traded that week and reported to DTCC. Gross notional value includes totals for offsetting contract positions. Values are in billions of U.S. dollar equivalents. According to DTCC data, the U.S. ranked 292nd – tied with Poland—among single name reference entities in terms of number of contracts traded in the week ending July 8, 2011.

Market Context

Heavier sovereign CDS trading in recent months among Eurozone and other developed countries reflects several distinct tensions. CDS trading on EM governments, which has typically been more active than trading in CDS covering debt of most developed countries, in general reflects different considerations.¹⁰⁴

The introduction of the euro stems from a broader EU aim to develop deeper and wider ties on several levels among European countries. Eurozone countries share a common monetary policy controlled by the European Central Bank (ECB). The Stability and Growth Pact (SGP), adopted as part of the 1992 Maastricht Treaty, was intended to ensure that overly expansionary fiscal policies of member states would not undermine macroeconomic stability of the Eurozone and the EU. According to SGP rules, member states running government deficits above 3% of gross domestic product (GDP) and public debt levels above 60% of GDP are subject to the “excessive deficit procedure” (EDP), although EDP penalty provisions have often been waived. Despite revisions in SGP, however, member states often exceeded those target levels.¹⁰⁵ Some member governments, such as Greece, submitted budgetary data to EU institutions that misreported fiscal conditions.¹⁰⁶

The 2007-2008 financial crisis also strongly affected public finances of many advanced economies. Some countries guaranteed bank deposits and other liabilities of the financial sector, leading to an entanglement of public sector and financial sector balance sheets.¹⁰⁷ The ensuing economic downturn strongly affected economies of most developed countries. On average, EU government ran deficits of under 1% of GDP in 2007. In 2010, those deficits were expected on average to reach over 7% of GDP.¹⁰⁸ Many European countries face some of the same long-term fiscal challenges as the United States, such as a demographic shift to an older population and rising health care costs.

Concerns about the sustainability of the fiscal situations of Greece, Ireland, and Portugal have been fueled by high levels of public debt and weak prospects for economic growth. These countries are currently receiving financial support from other Eurozone countries and the International Monetary Fund (IMF) to avoid defaulting on their debt. Those economies, however, are small relative to the Eurozone as a whole. A wider concern is that an uncontained sovereign debt crisis in one of those countries could spark fiscal contagion, leading to larger challenges for EU policymakers.¹⁰⁹ Italy and Spain, which are much larger economies, have also been

¹⁰⁴ For further details on the Greece’s situation, see CRS Report R41167, *Greece’s Debt Crisis: Overview, Policy Responses, and Implications*, coordinated by Rebecca M. Nelson.

¹⁰⁵ For details, Mark Hallerberg, Rolf Strauch, and Jürgen von Hagen, “The Design of Fiscal Rules and Forms of Governance in European Union Countries,” Working Paper Series 419, European Central Bank, 2004.

¹⁰⁶ The European Commission in 2004 complained that “the quality of public data is not satisfactory.” European Commission *Report from the Commission: Greece*, Brussels, May 19, 2004, available at http://ec.europa.eu/economy_finance/sgp/pdf/30_edps/104-03/2004-05-19_el_104-3_en.pdf. In a subsequent report, the Commission has indicated that it considers the quality of Greek public data to have improved.

¹⁰⁷ Bank of International Settlements (BIS), “The Impact of Sovereign Credit Risk on Bank Funding Conditions,” CGFS Papers no. 43, July 2011.

¹⁰⁸ European Commission, Directorate-General for Economic and Financial Affairs, *Public Finances in EMU 2010*, available at http://ec.europa.eu/economy_finance/publications/european_economy/2010/pdf/ee-2010-4_en.pdf.

¹⁰⁹ For details, see Barclay’s Capital Research, “Difficult Economic Realities are Becoming Increasingly Apparent,” Credit Alpha brief, June 3, 2011.

experiencing heavy selling of stocks and bonds, as apprehension grows among investors about the sustainability of public finances and the scope of the Eurozone crisis.¹¹⁰

Is the United States Different?

Significant differences appear to exist in the market for U.S. CDSs compared with that of Greece and other EU countries under severe fiscal pressure, even if some long-term challenges are similar. Economists point to various reasons for the differences, particularly the low amount of extant CDSs on U.S. debt relative to other countries facing financial difficulties.

The U.S. dollar's status as an international reserve currency implies that the U.S. government can earn additional seignorage, a privilege that policymakers may wish to protect. Seignorage is earned on the difference between a currency's production cost and its circulating value. U.S. debt is also denominated in dollars, the supply of which is controlled by the U.S. government. This might, in theory, provide a short-run incentive for monetary policies that would lead to higher inflation rates, thus reducing the real value of the debt. On the other hand, many government expenses would rise with inflation, and the financial burden of past accumulations of debt (which inflation would cut) have been projected to be smaller than the costs of future entitlement payments (which inflation would not in itself cut).¹¹¹

Despite the upward trend in U.S. CDS prices, U.S. Treasury yields remain at historically low levels, in part due to the United States' status as a "safe haven," amidst potential turmoil in Eurozone countries. The Federal Reserve System, which has a dual mandate to maintain price stability and to pursue maximum sustainable employment, has run a more accommodating monetary policy than the European Central Bank, as inflationary pressures in the United States have generally been more subdued. The federal government is not subject to the structural stresses facing the Eurozone resulting from a common monetary policy and a less centralized set of fiscal policies. That noted, the United States also faces long-term fiscal challenges.

The Debt Limit and Long Term Fiscal Challenges

President Obama signed the Budget Control Act of 2011 (S. 365; P.L. 112-25) on August 2, 2011, which included provisions to raise the debt limit and reduce deficits. The narrowing of the spread between one-year and five-year CDSs on Treasury debt in the first half of 2011, as shown in **Figure 1**, suggests that market concerns were focused on debt limit constraints facing the U.S. Treasury. The consequences of not raising the debt limit before that point, according to some financial analysts, could be severe.¹¹² Debt limit concerns appear to have decreased demand for longer-maturity Treasury securities and increased demand for shorter-term securities, as some

¹¹⁰ See Andrew Davis, "Plunge Brings Europe Debt Crisis to Italy," Bloomberg News, July 12, 2011, available at <http://www.bloomberg.com/news/2011-07-11/italian-plunge-brings-debt-crisis-to-europe-s-biggest-borrower.html>.

¹¹¹ Christopher Neely, "Markets Worry More About Sovereign Debt," International Economic Trends, February 2009, Federal Reserve paper at <http://www.research.stlouisfed.org>.

¹¹² See Fitch Ratings, "Thinking the Unthinkable—What if the Debt Ceiling Was Not Increased and the US Defaulted?" June 8, 2011; JPMorgan Fixed Income Strategy Group, "The Domino Effect of a US Treasury Technical Default," April 19, 2011.

financial institutions take steps to ensure liquidity.¹¹³ While U.S. CDS prices rose to a record high of about 82 bps before passage of the act.

After the Budget Control Act was enacted, U.S. CDSs fell to previous levels, trading at about 55 bps in mid August 2011. U.S. CDSs have been trading in the same price range as Germany's, but far below CDS prices for Greece, Portugal, and Ireland. For example, in mid August 2011, Greek CDSs traded around 1700 bps, Portuguese CDSs around 800 bps, and Irish CDSs around 700 bps.

Prices for Treasuries suggest that financial markets continue to consider federal debt instruments a safe haven despite the S&P downgrade. Treasury price trends shortly after enactment of the Budget Control Act suggested an unwinding of liquidity positions taken beforehand, leading to a slight increase in yields on shorter maturity Treasuries, while longer maturity Treasury yields fell, perhaps reflecting renewed concerns about economic growth and events in the Eurozone.

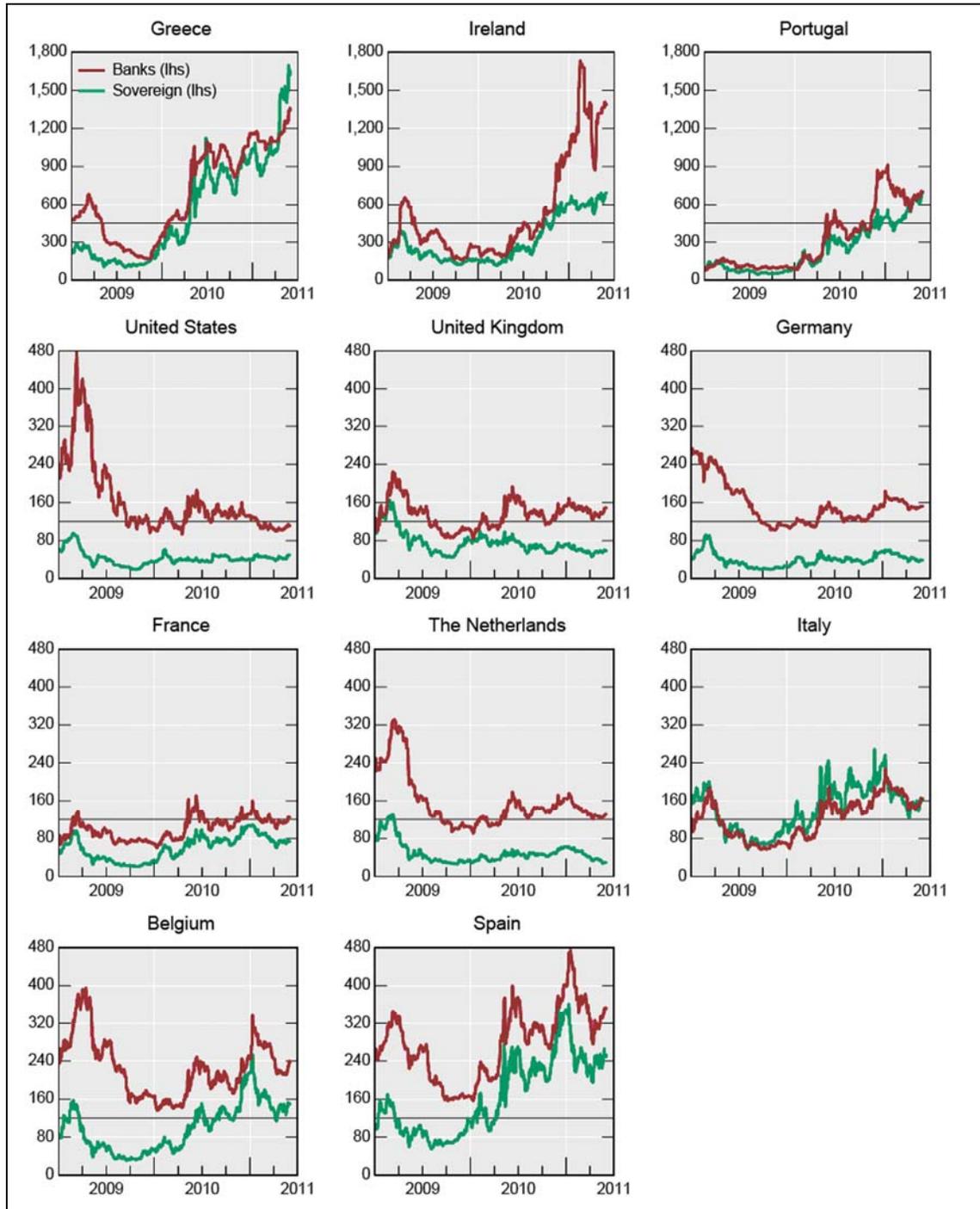
While passage of the Budget Control Act eased concerns about the U.S. Treasury's ability to meet federal financial obligations for the time being, market participants remain concerned about longer-term fiscal challenges facing the U.S. government, even if the relevant horizon for those issues extends well beyond the window of a five-year CDS contract. The Congressional Budget Office (CBO), the Government Accountability Office (GAO), the IMF, and others consider the federal government's current fiscal path unsustainable.¹¹⁴ Moreover, the tenor of the debt limit discussions raised additional concerns among credit rating agencies, among others. Protection of the federal government's full faith and credit in the long term, according to most public finance experts, requires measures to bring the trajectories of spending and revenues into line with each other.

¹¹³ Michael Mackenzie and Aline van Duyn, "Wall Street to Cut Reliance on Treasuries Amid Debt Ceiling Fears," *Financial Times*, June 13, 2011, p. 1.

¹¹⁴ For details, see CRS Report RL33623, *Long-Term Measures of Fiscal Imbalance*, by D. Andrew Austin.

Appendix. CDS Price Trends for Selected Countries

Figure A-1. Sovereign and Bank CDS Premiums in Selected Countries
In Basis Points (Left-hand scale)



Source: Bank of International Settlements (BIS); based on Datastream data. Excerpted BIS, "The Impact of Sovereign Credit Risk on Bank Funding Conditions," CGFS Papers no. 43, July 2011.

Notes: Premia on five-year CDS on senior bonds issued by sovereigns or banks. Scale is on left-hand side.

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