DIALOGUE WITH THE FED

Beyond Today's Financial Headlines

Sovereign Debt: A Modern Greek Tragedy

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Out of the Frying Pan, Into the Fire

- For the second time in five years, the world faces a major financial crisis.

- The 2007-08 crisis was driven by excessive mortgage debt owed by **households**.

- The current crisis is driven by excessive government debt owed by **entire countries**.

- A key factor in both crises is the fear that debts will not be repaid.

Key Questions

- Why do governments borrow?
- When does the level of debt become a burden?
- What happens if a nation defaults on its debt?
- How did Europe get in trouble and can it get out?
- Is the U.S. in trouble because of its debt?

Debt Defined

- Governments must borrow to finance shortfalls in tax revenues.

- The current shortfall is called the **deficit**.

- If tax revenues exceed spending, a **surplus** occurs.

- The national **debt** is the sum of the current and all past deficits/surpluses.

The Function of National Debt

- Nations borrow to finance wars, civil works, and other public services.

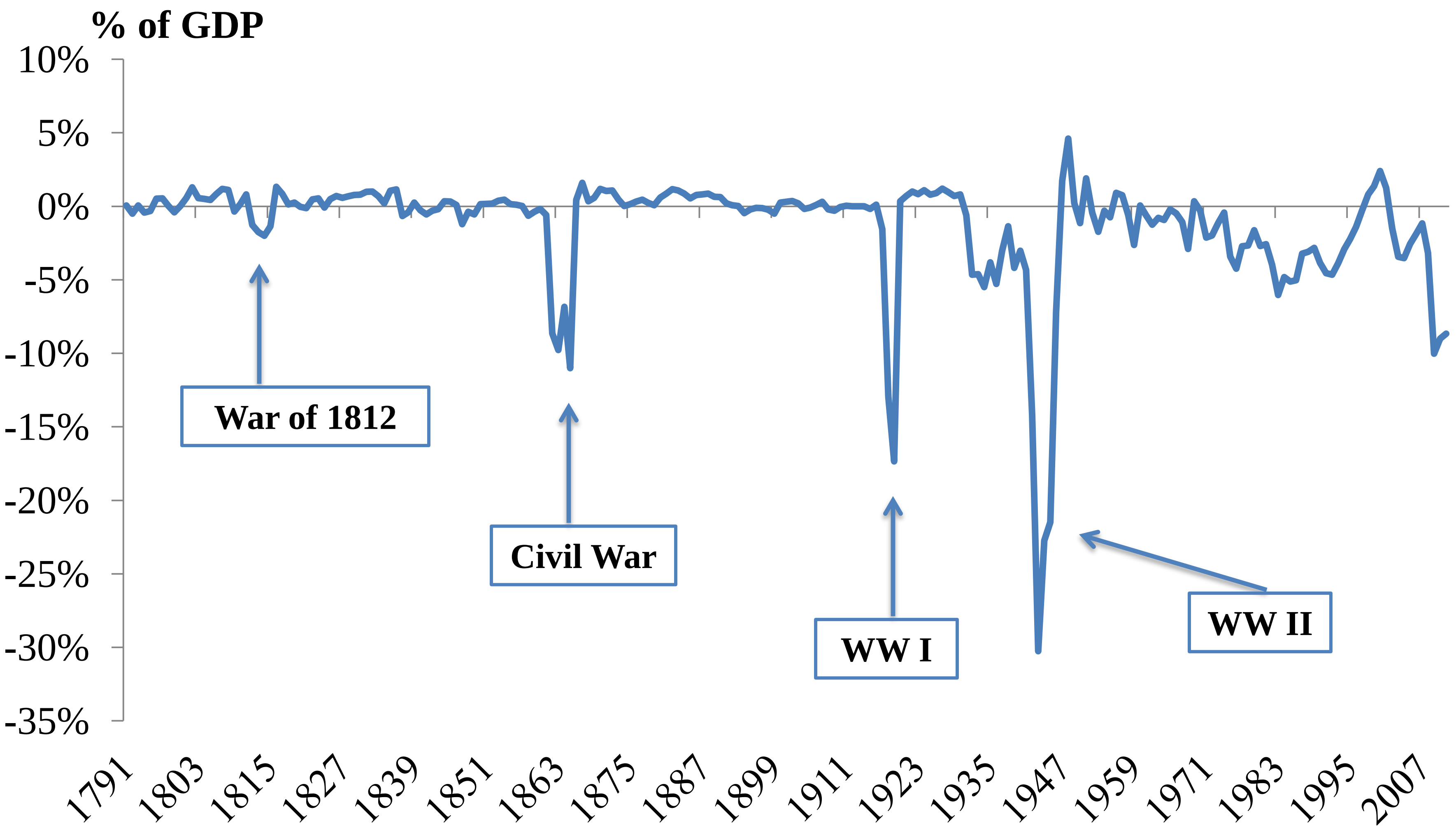
- Could raise taxes temporarily to pay for it.

- Better idea – borrow funds now and slowly repay the debt over time with permanently higher taxes.

- Similar to a mortgage—borrow a lot of money to buy a house now and slowly pay it off over time.

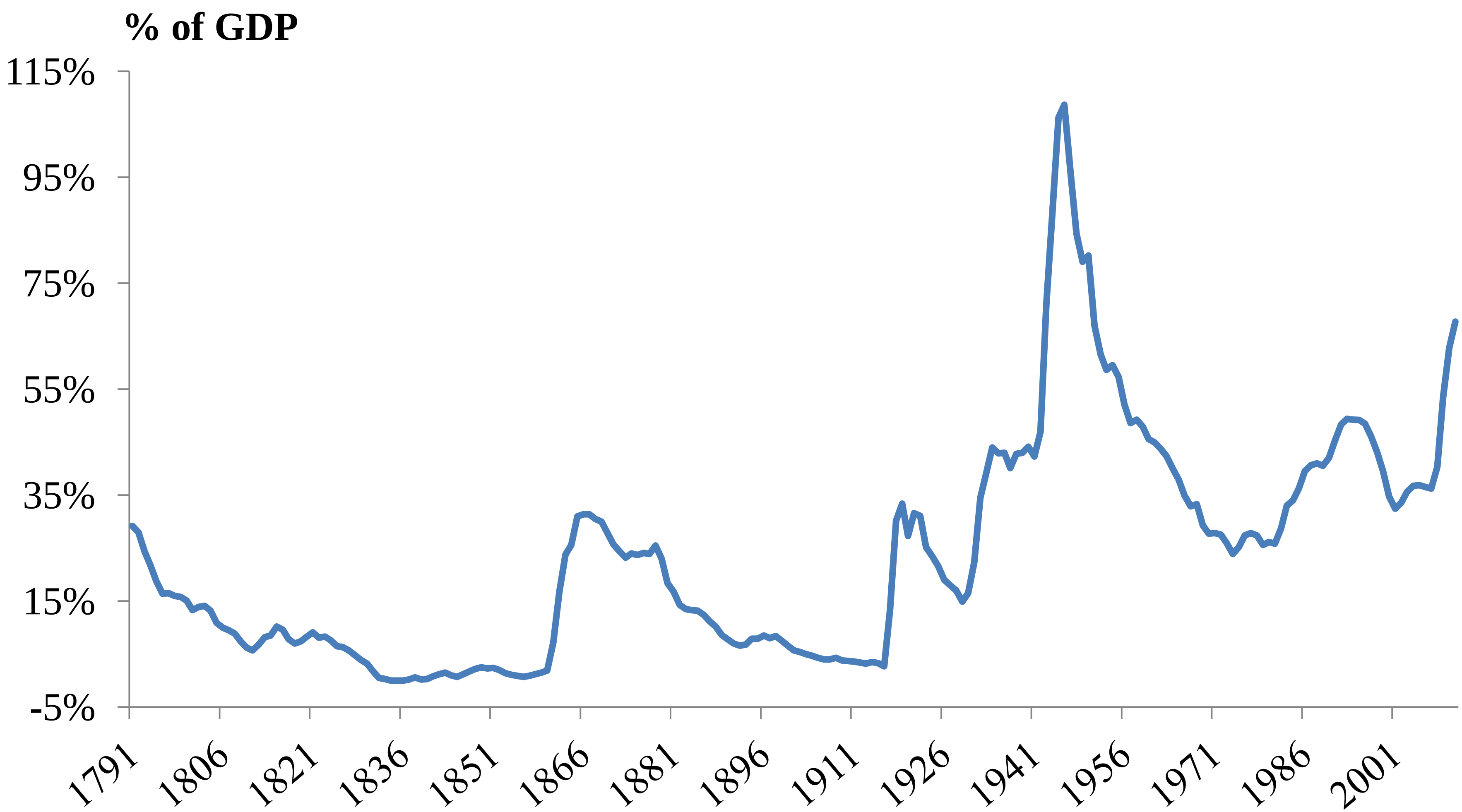
Deficit/Surplus Spending – 1791-2011

Wars are expensive endeavors



Federal Debt Held by the Public 1791-2011

Federal debt peaked in the 1940s



The Burden of National Debt

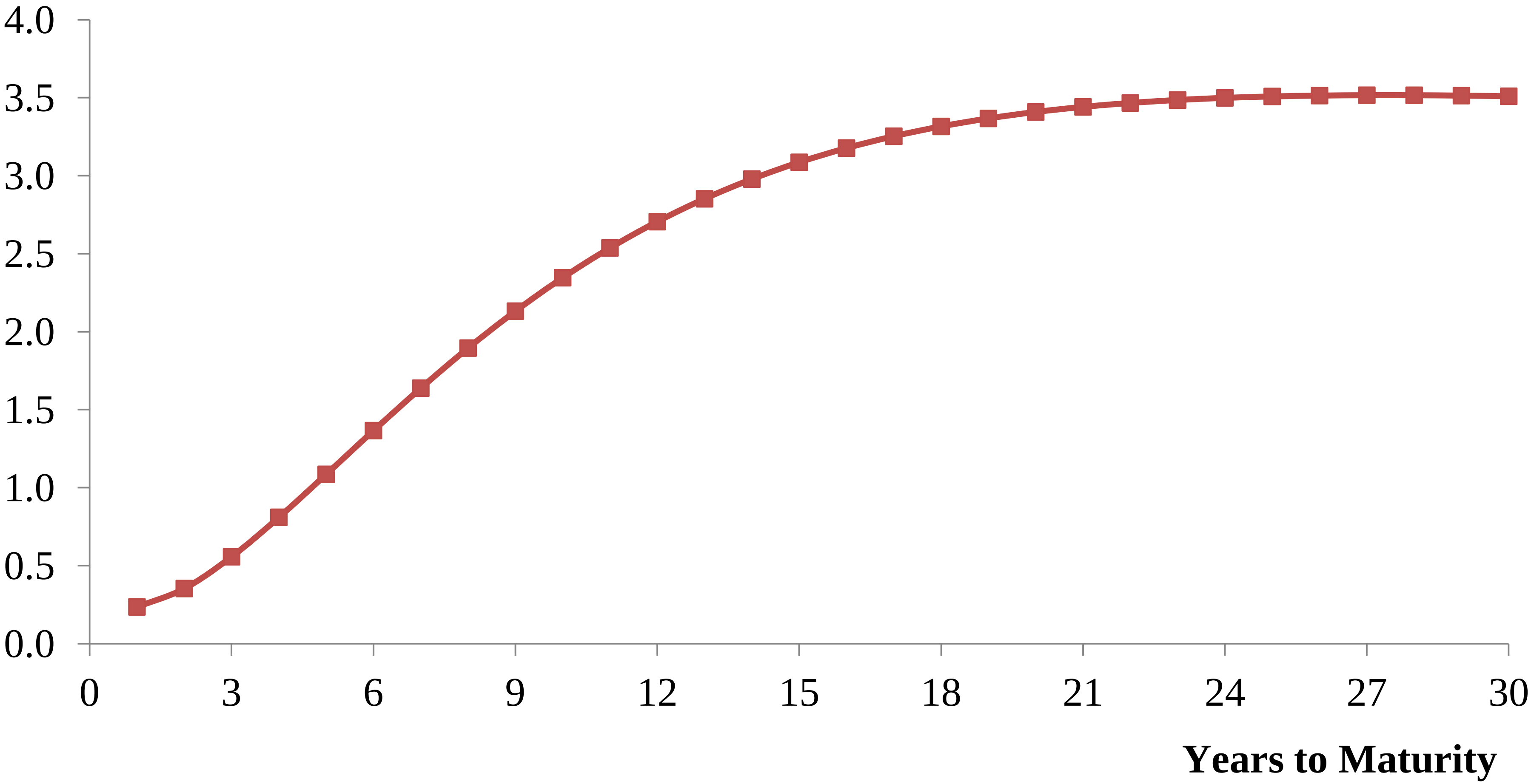
- Measuring the burden of the national debt is hard.
- Economists look at the **debt-to-GDP** ratio.
- It measures the ability to pay off the entire debt with one year's income and ignores the wealth of the nation.
- This is a conservative measure of debt burden.
- Some have argued a ratio over **90%** is cause for concern.

Rolling Over Debt

- In normal times, most nations **roll over** their debt when it's due.
- Rolling over the debt means paying off old debt by issuing new debt.
- Lenders must be willing to do so! **Rollover risk**.
- The interest rate paid depends on the **term to maturity**.

Yield Curve

Positive relationship between yield and time to maturity



The Allure of Short-Term Debt

- Governments issue short-term debt to take advantage of lower interest rates.

- But roll over is more frequent, hence more rollover risk!

- Investors may believe a government cannot meet its debt obligations.

- So they stop rolling over debt or charge a high interest rate to do so.

Debt Default

- The debt burden of a nation is not always a good predictor of default.

- Brazil and Mexico defaulted in the early 1980s with debt-to-GDP ratios around **50%**.

- Japan's current debt-to-GDP ratio is over **200%**!

- This shows that it is the nation's perceived **willingness** to repay its debt that matters.

Penalties of a Debt Default

- First default: 4th century BC Greece (oh, the irony), 10 of 13 municipalities defaulted on loans from Delos Temple.

- Capital markets close off to the defaulting country.

- Cost of future finance increases.

- Reduction in output growth.

Debt Default

- While defaulting on sovereign debt is not new, it hasn't occurred in a developed country since 1946!

- This is why the current financial crisis in Europe is of great concern.

- But European countries have had high debt-to-GDP ratios for decades.

- So why has this crisis surfaced now?

The Creation of the European Union

- After WWII, Europe vowed to never have another war fought on European soil.

- Since the early 1950s, they have steadily moved toward the creation of a "United States of Europe".

- This included the goal of a single currency – a monetary union.

- However, fiscal union was never a serious goal.

Maastricht Treaty and the Birth of the Euro

- **Long-Term Interest Rate**: Must be within 2 percentage points of the average of the three lowest-inflation EU members.

- **Inflation**: Within 1.5 percentage points of the average of the three best-performing EU members.

- **Exchange Rate**: Applicant countries must have been in the exchange-rate mechanism (ERM) for two consecutive years and without having devalued its currency.

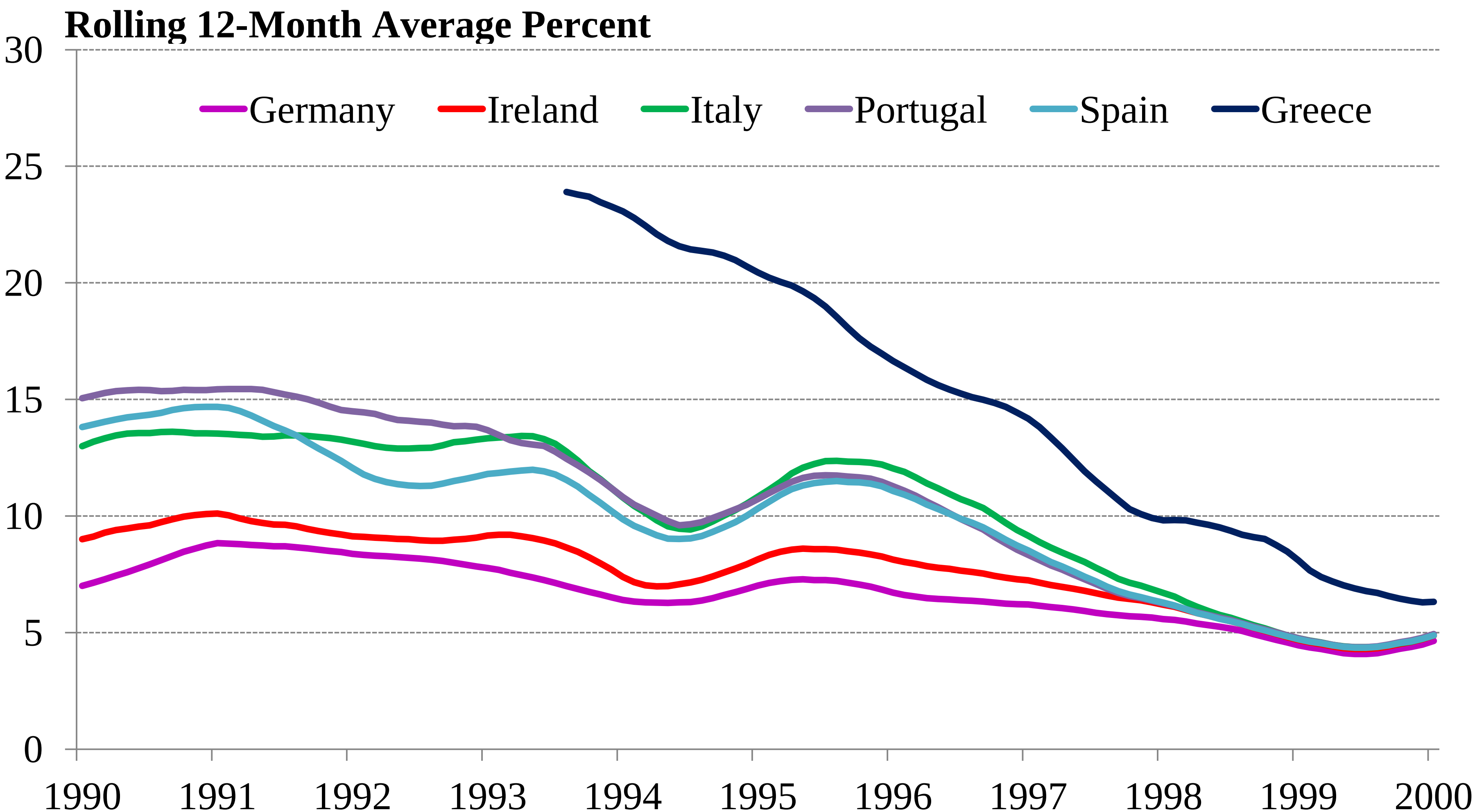
1997 Stability & Growth Pact

- **Deficit:** The deficit-to-GDP ratio must not exceed **3%** at the end of the preceding fiscal year.

- **Debt:** The debt-to-GDP ratio must not exceed **60%** at the end of the preceding fiscal year.

Long-Term Interest Rates – 1990-2000

Markets begin to view all EU sovereign debt as identical



A Major Issue with the EU

- A concern in the 1990s was how to handle secession or ouster of a country from the EU/EMU.

- Many argued that the Maastricht Treaty needed to lay out contingency plans for such an event.

- For political reasons, this was not even broached.

- Can't talk about divorce on wedding night!

Shaky Greek Entry into the EMU

- Greece won entry in 2000, taking effect January 2001.

- Greece was denied entry in 1998 because of:
  1. High inflation (**5.4%**)
  2. Large budget deficits (around **6.0%** of GDP)
  3. High long-term interest rate (**9.9%**)
  4. It did not participate in the ERM.

- In 2000, Greece's deficit-to-GDP ratio was **3.7%** and debt-to-GDP ratio was a whopping **103%**.

The Great Shocks

- After joining the EMU, Greece paid the same interest on its debt as Germany, despite its weak fiscal condition.

- In the summer of 2009, a new Greek government took power.

- At the time, the Greek government claimed that Greece's deficit-to-GDP ratio was just under **4%**.

- In reality, it was nearly **16%**!

The Great Shocks

- Meanwhile, Ireland incurred the cost of bailing out its banking system during the 2008 crisis.

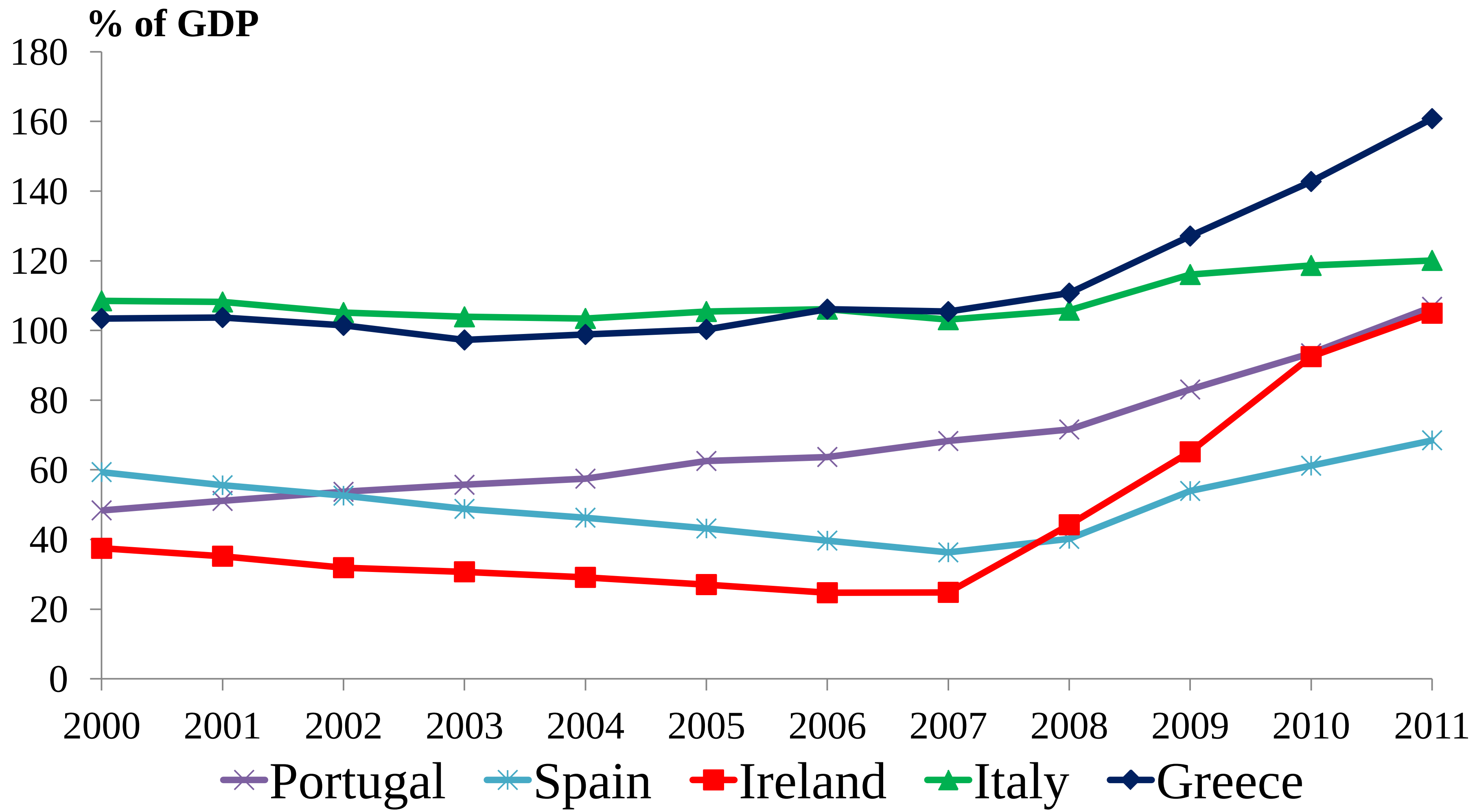
- In 2007, Ireland’s debt-to-GDP ratio was just **25%** and its deficit was **zero**.

- By 2010, Ireland’s debt-to-GDP ratio was almost **100%**, and its deficit-to-GDP ratio was over **30%**!

- These shocks woke up the financial markets to the risk of default on sovereign debt.

Debt-to-GDP Ratios 2000-2011

Ratios become alarmingly high



Markets React

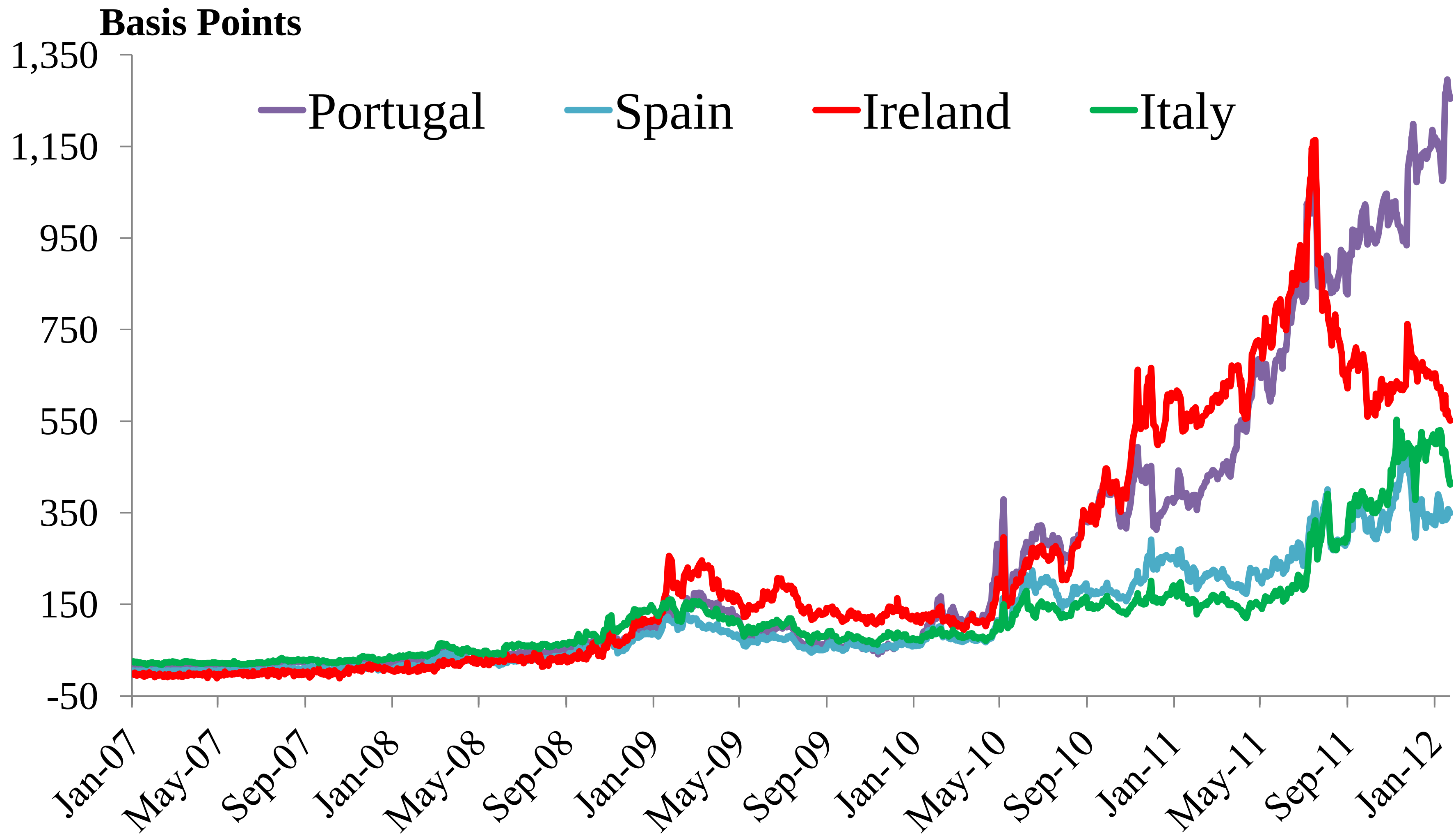
- Financial markets no longer view Italian, Greek, Portuguese, Irish, and Spanish debt as close substitutes for German bonds.

- Markets began hiking interest rates on sovereign debt to compensate for heightened risk of default.

- Between January 2008 and January 2012, the spreads between Greek and German debt increased **3,300 basis points**!

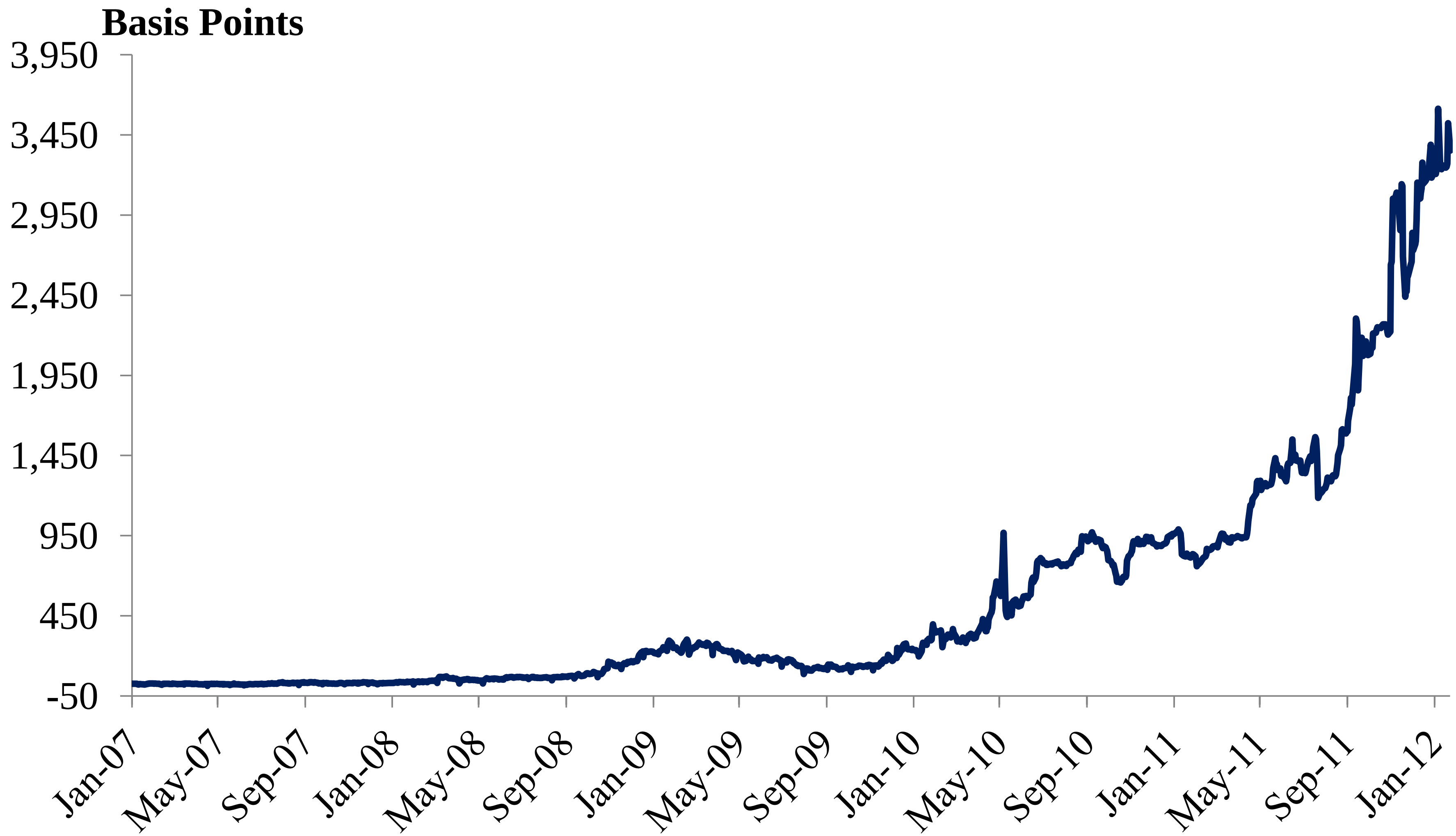
Yield Spreads Over German 10-Yr Bonds

Default risk carries with it a hefty price



Yield Spreads Over German 10-Yr Bonds

The Greek spread is in a league of its own



CDS Prices Reflect Greater Risk of Default

- Debt holders can insure themselves by purchasing **Credit Default Swaps (CDS)**.

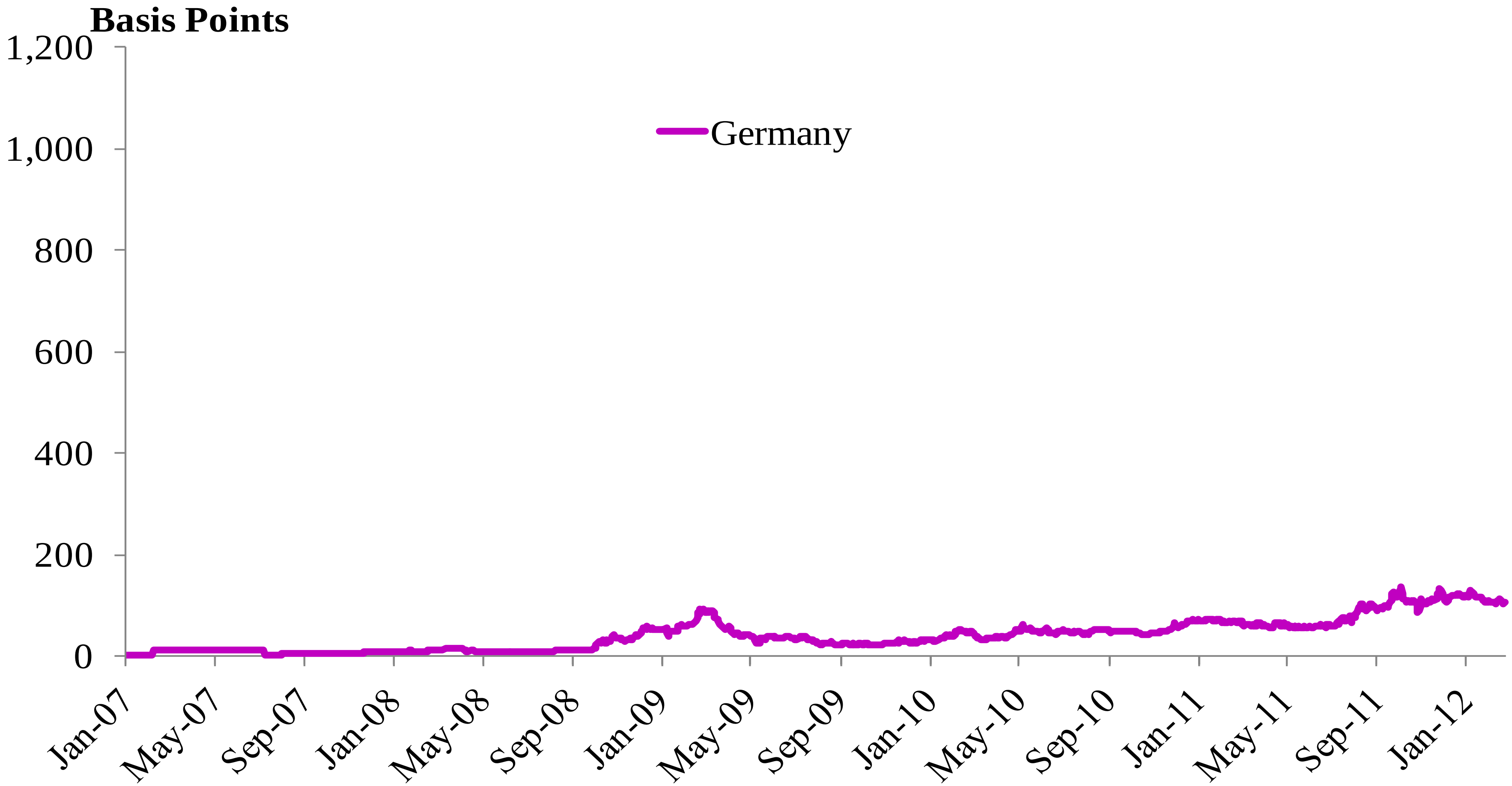
- CDS seller pays the value of the defaulted debt to the buyer in the event of a default.

- The price demanded by a CDS seller reflects the probability of default.

- The higher the probability of default, the higher the price charged to acquire the insurance.

CDS Prices on Sovereign 10-Year Bonds

CDS prices dramatically ramp up



Source: Bloomberg

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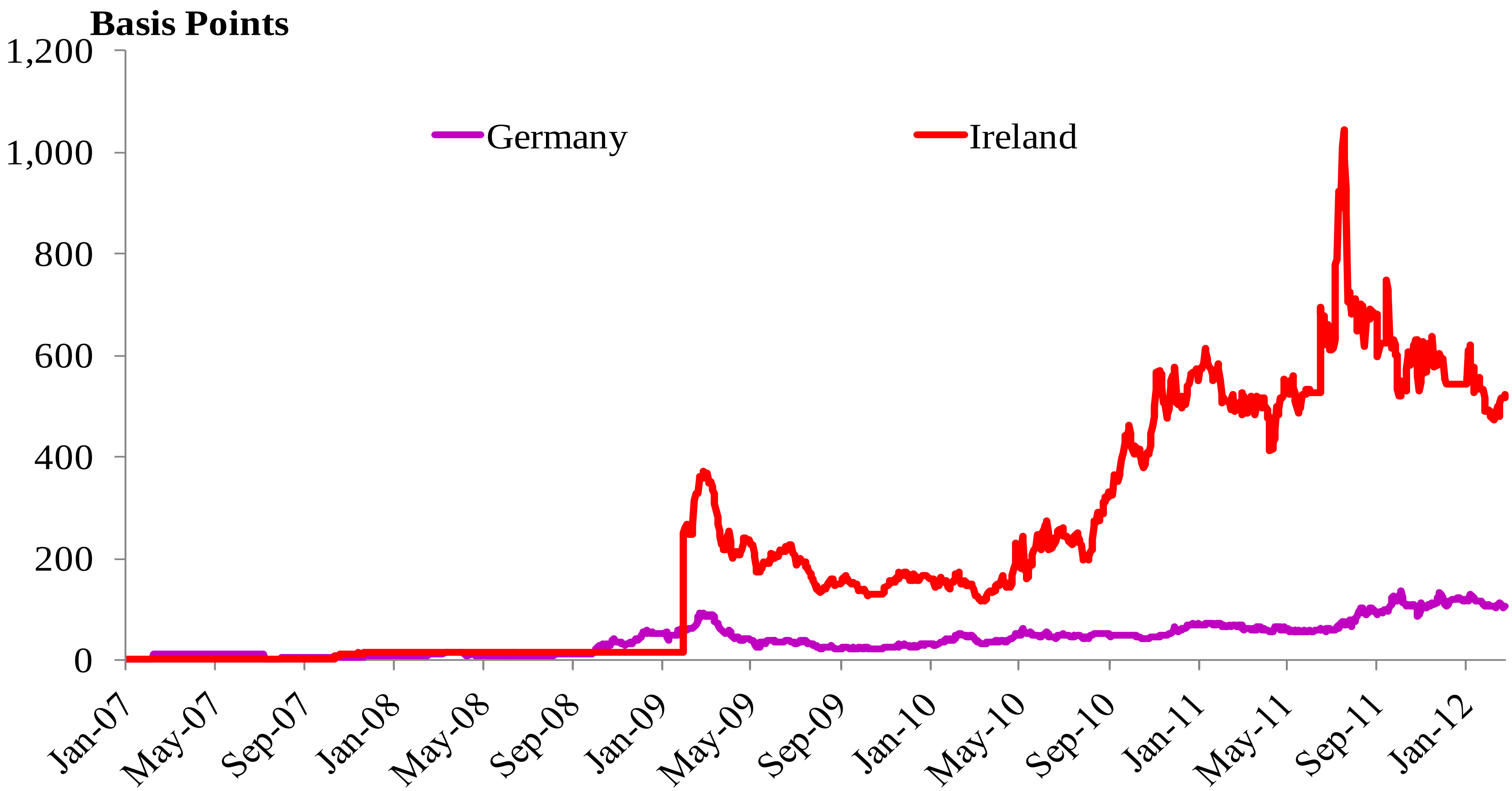

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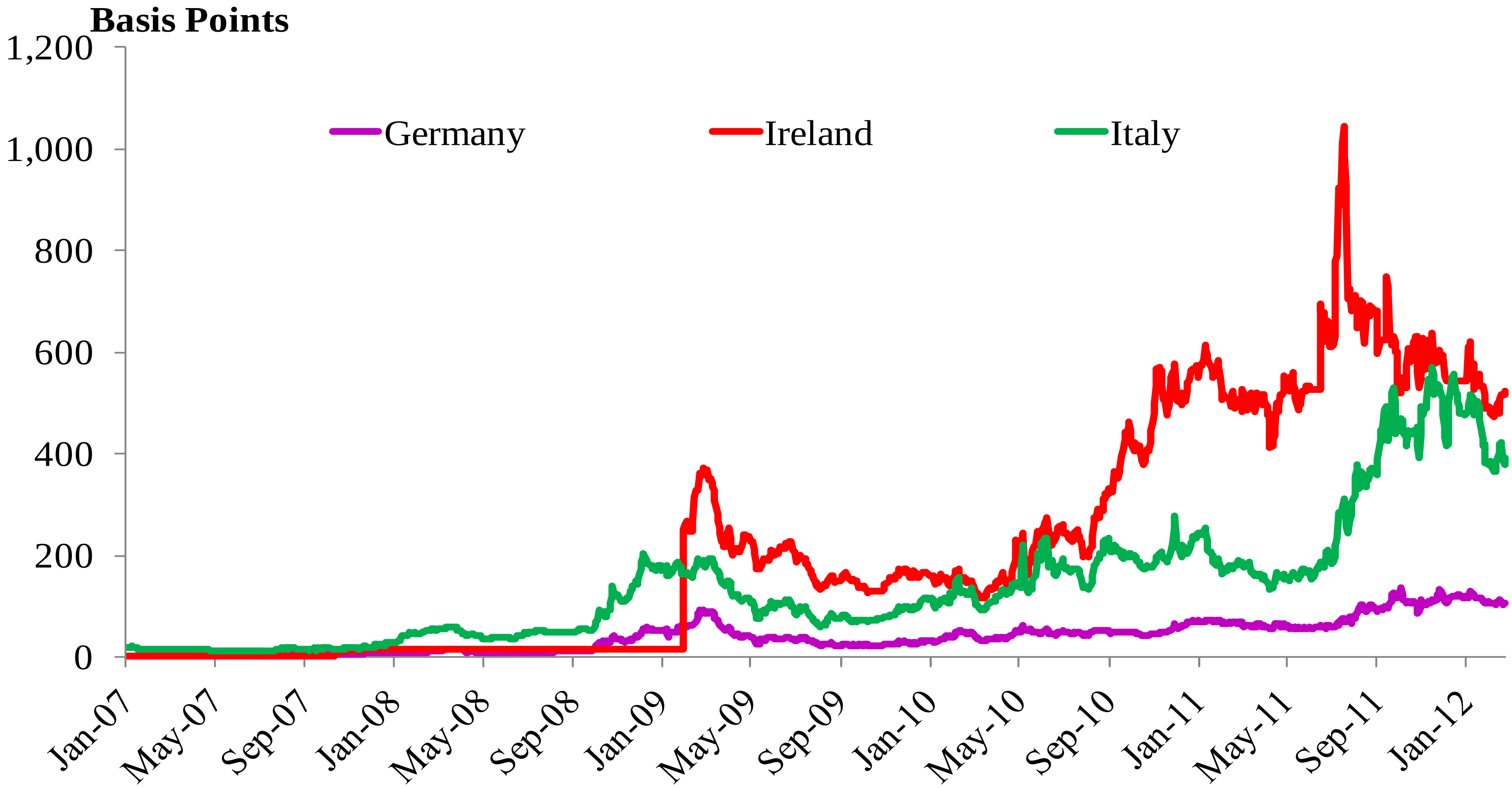

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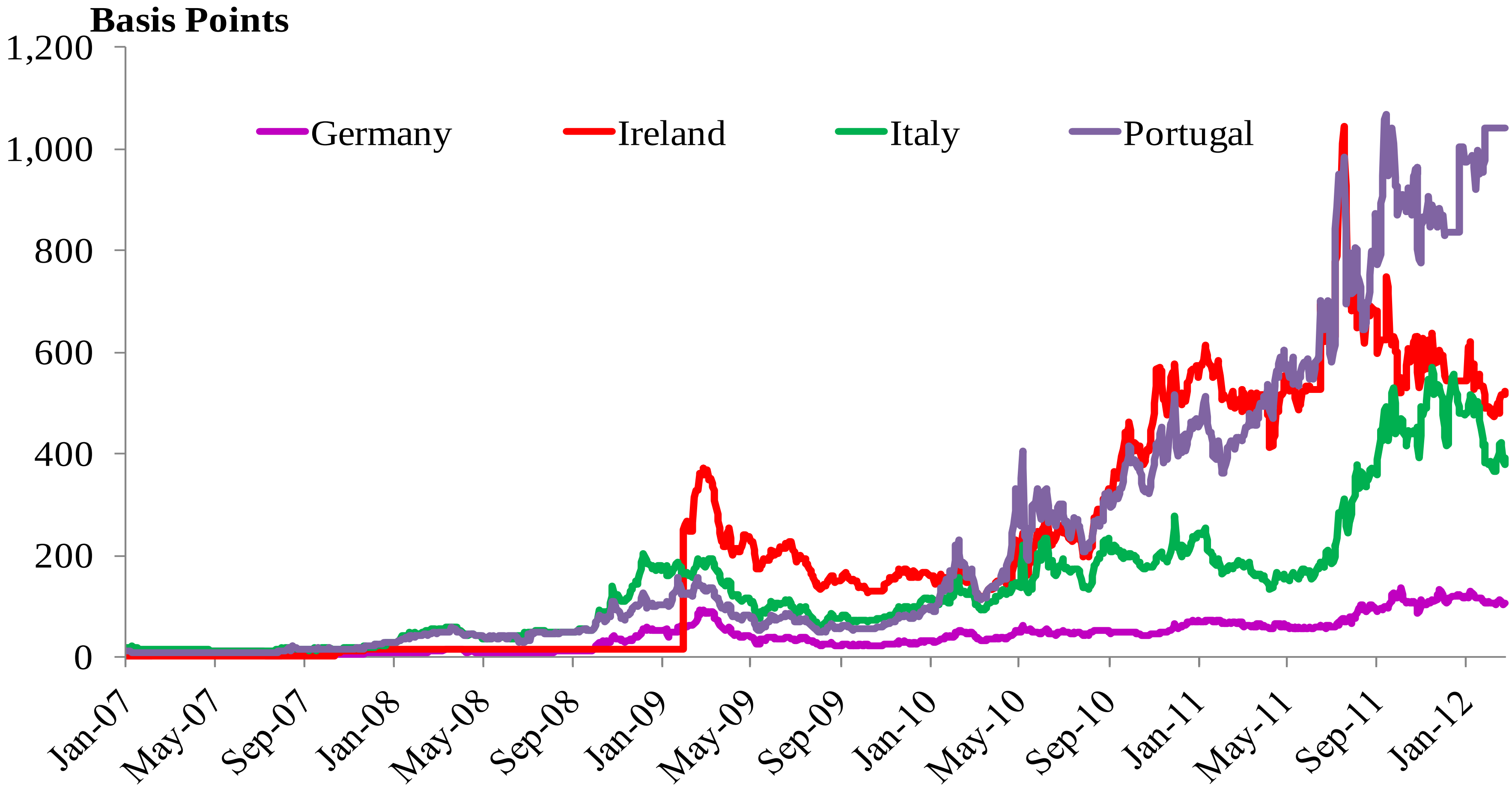

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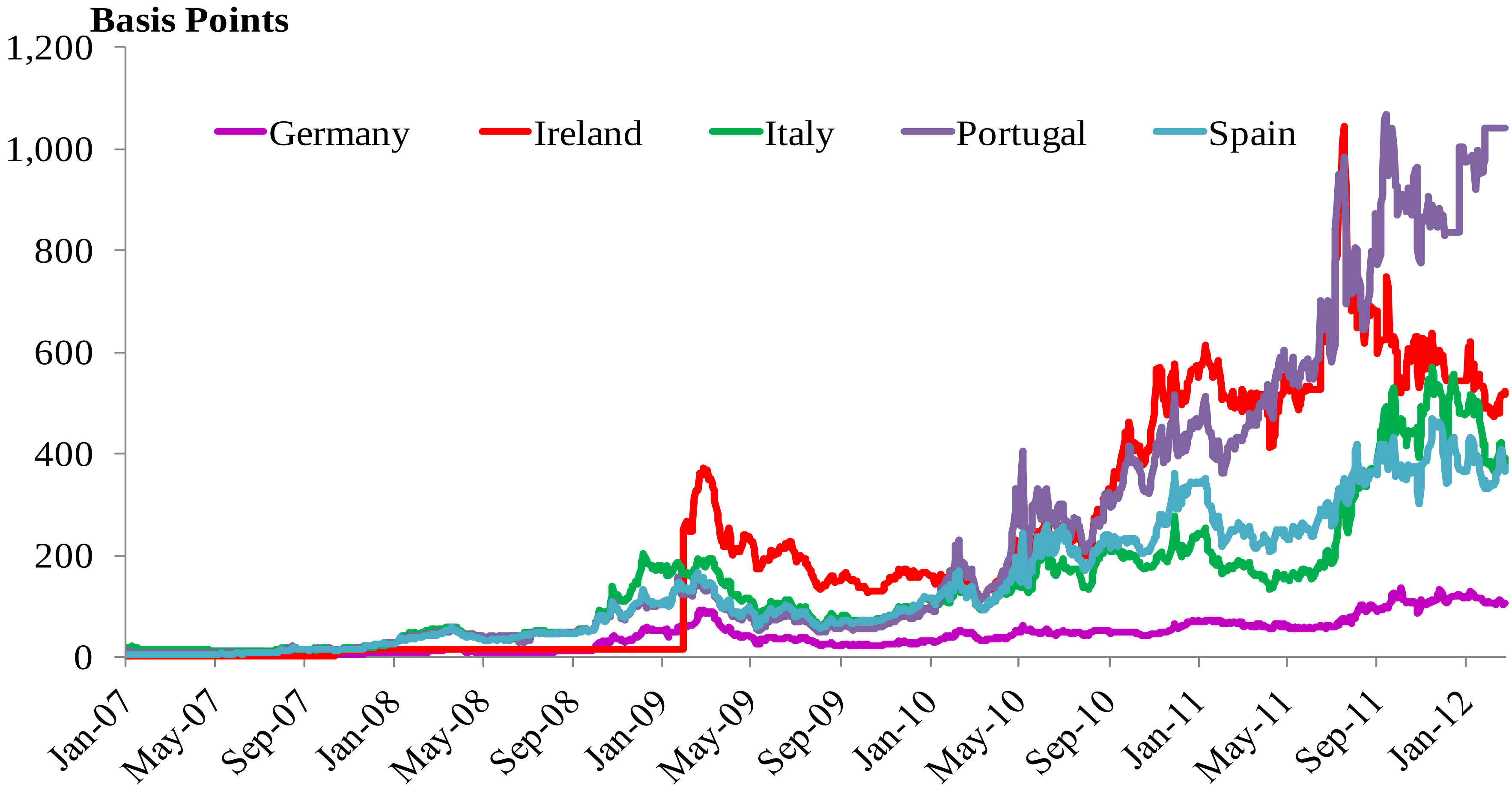
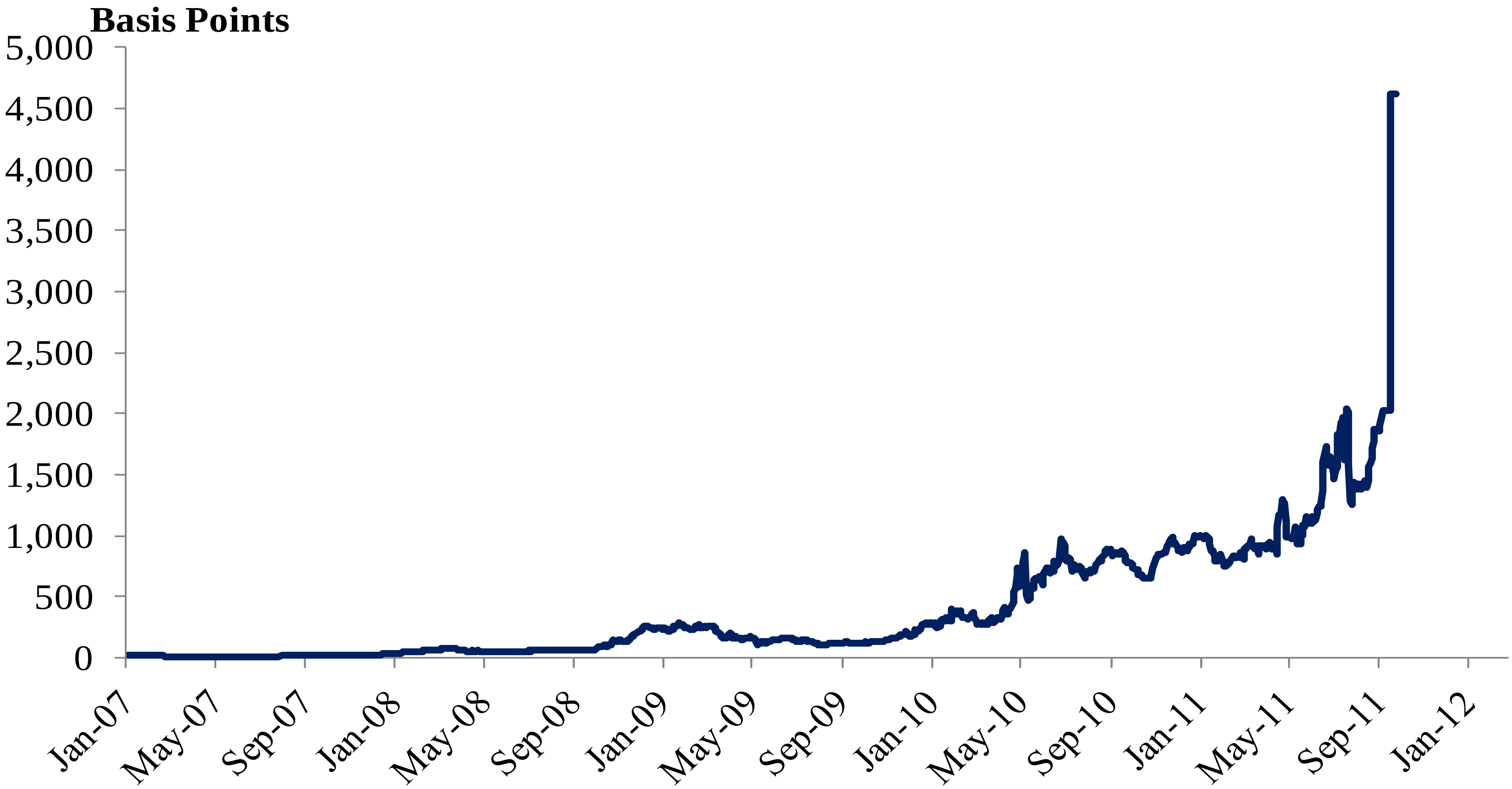


Source: Bloomberg

CDS Prices on Sovereign 10-Year Bonds

Greek CDS basically stop trading in the market



Source: Bloomberg

Roll Over Problem Hits the Banks

- Greek banks hold about **20%** of Greek sovereign debt (€60 billion), and the eventual Greek default dramatically weakened their balance sheets.

- Markets stopped rolling over Greek bank debt due to fears that they would no longer honor obligations.

- This in turn meant that Greek banks could not roll over funding of Greek government debt.

Austerity Measures

- Greek and Irish governments enacted unpopular austerity measures to remedy fiscal woes.

- Greece's deficit-to-GDP ratio fell from around **16%** in 2009 to a projected **9%** for 2011.

- Ireland's fell from a peak **31%** in 2010 to close to **10%** in 2011.

- This has generated substantial social unrest.

The EU Response to the Crisis

- In May 2010, the EU and IMF provided **€750 billion** to ease the rollover problem for struggling countries.

- The biggest contributors were Germany (€120 billion) and France (€90 billion).

- German banks held **8%** (€24 billion) of Greek debt, and French banks held about **5%** (€15 billion).

- EU leaders feared that a default on Greek and Irish debt could instigate a run on their own banks.

The Fuse to the Powder Keg

- Greece, Ireland, and Portugal are small countries. Italy and Spain are the real threat!

- Italy has close to **€2 trillion** of debt outstanding, half of which is held externally.

- Italy needs to roll over more than **€300 billion** of debt in 2012, an amount greater than the entire Greek debt!

- Similarly, Spain's debt has reached about **€735 billion**; €175 billion matures in less than a year!

Tough Fiscal Road Ahead

- Several difficult options: increase taxes, cut spending, or inflate away the debt (print money).

- The pain associated with these actions will fall on different groups, and that leads to political conflict.

- Political conflict means delay in getting the fiscal situation on firmer ground.

- Political conflict erodes investor confidence.

The EU Takes Further Action

- It became clear in 2011 that the initial round of assistance would not be enough to support Italian and Spanish debt.

- An extra **€340 billion** was provided by the EU.

- In December 2011, the ECB poured **€1 trillion** of liquidity into the banking system.

- This calmed things down until very recently.

The Bond Swap

- In March 2012, 80% of Greece’s private creditors agreed to a bond swap.

- This debt restructuring will reduce obligations by **€100 billion**.

- The Greeks effectively defaulted on half of their debt.

- CDS were triggered after some private creditors were forced into the debt restructuring.

The U.S. Situation

- U.S. total deficit spending went from **1.2%** of GDP in 2007 to **8.7%** in 2011.

- Federal debt will go from **68%** of GDP in 2011 to a projected peak of **76%** in 2013.

- **Gross** U.S. debt has surpassed **90%**!

- These deficits are the result of lower tax revenue and higher outlays.

Flight to Quality

- Despite the large increase in U.S. debt and deficit spending, U.S. bond yields have remained near record lows.

- As investors moved away from troubled private asset markets (e.g. mortgages) and risky sovereign debt, the demand for U.S. treasuries has soared.

- This is not a reason to be at ease – the U.S. fiscal situation carries with it significant risk.

The Moral of this Tragedy

- The ability to borrow to finance current spending can be very beneficial.

- We have many examples of this:
  - WWII
  - Interstate Highway System
  - New Deal

The Moral of this Tragedy

- However, borrowing is **seductive** – the rewards are felt immediately and the pain is postponed to the future.

- It is very tempting to borrow for short-term gains while downplaying the pain to come.

- As a result, debt burdens can rise to unsustainable levels, leading to crisis and austerity.

- This is the tragedy of sovereign debt.