

The Subprime and the Euro Debt Crises

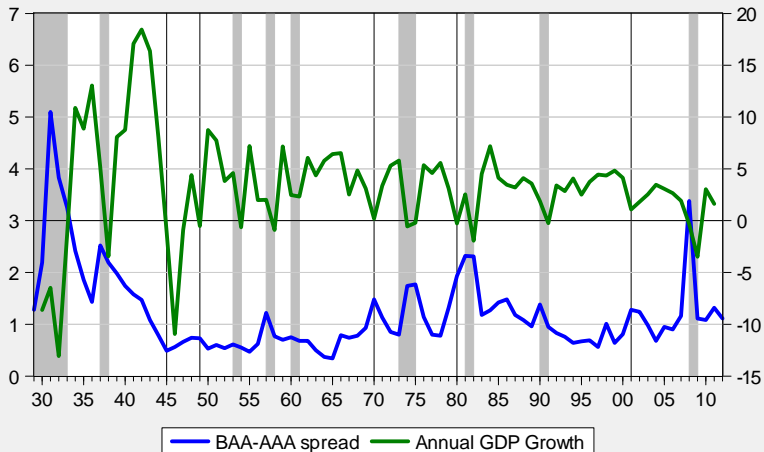
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The Big Picture

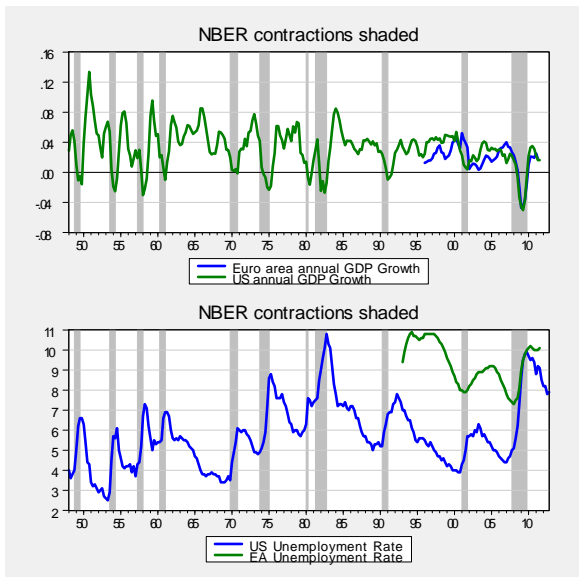
NBER contractions shaded



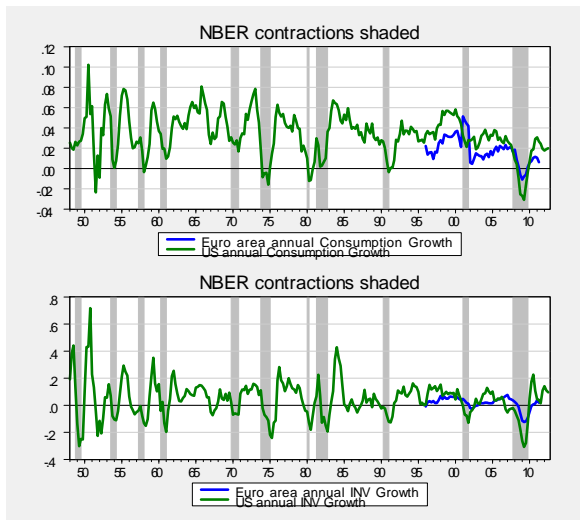
The dimension of the crisis

- The worst crisis in the postwar era. Global GDP contraction and rise in unemployment
- Contraction in Consumption and Investment, drop in Consumers' Confidence
- Global stock market collapse
- Huge drop in wealth
- Fluctuations in risk premia and euro area sovereign bond spreads

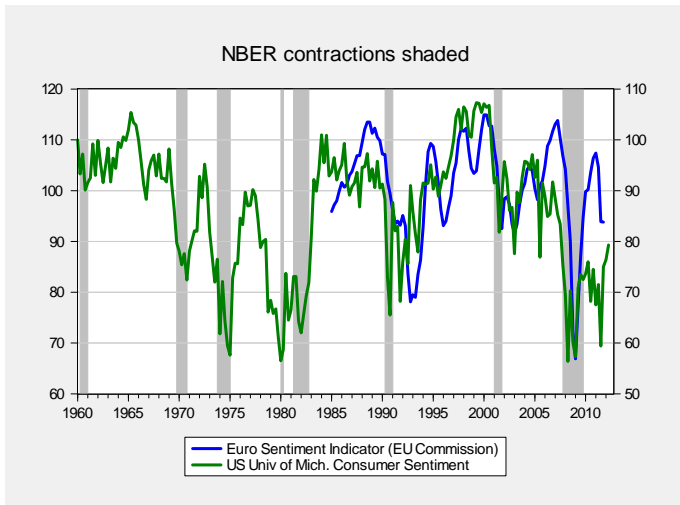
GDP Growth and Unemployment



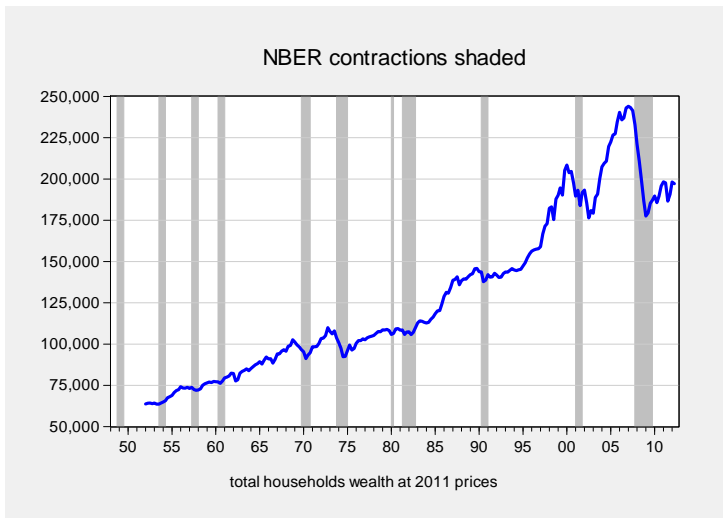
Consumption and Investment



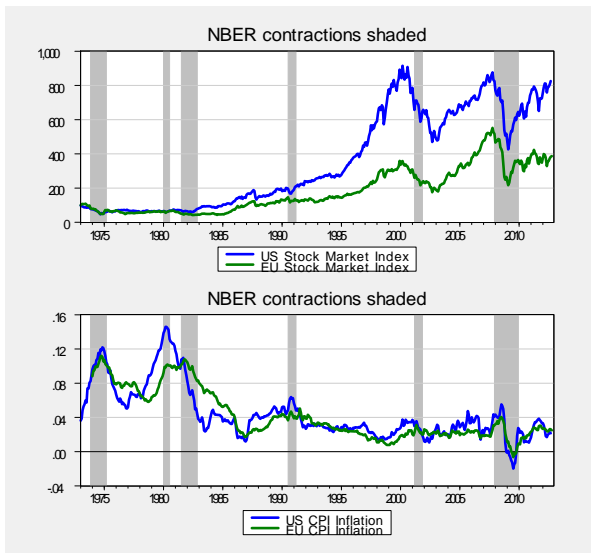
Consumer Confidence



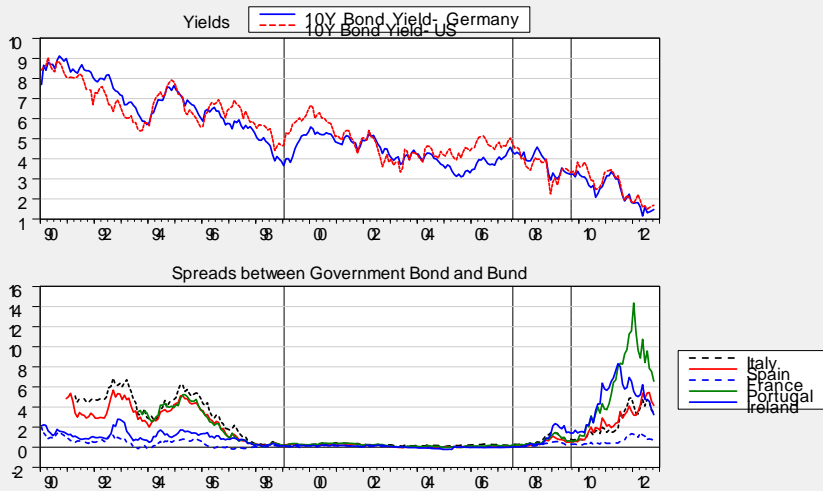
Households Wealth



The Stock Market and Inflation



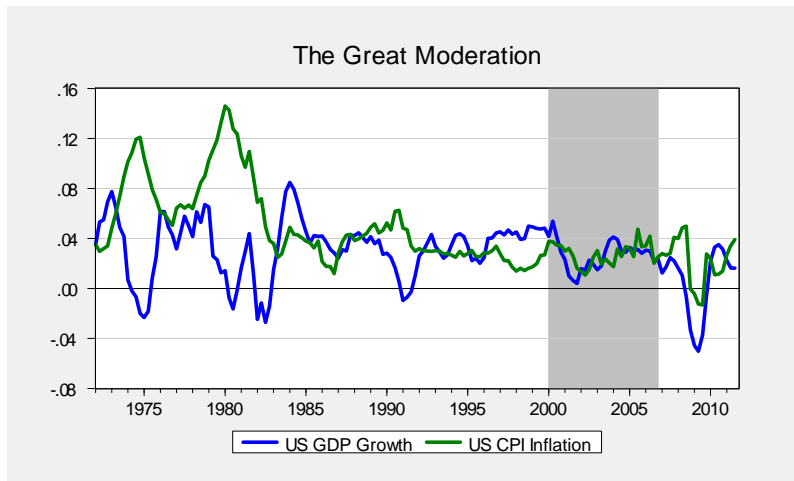
Sovereign Bonds



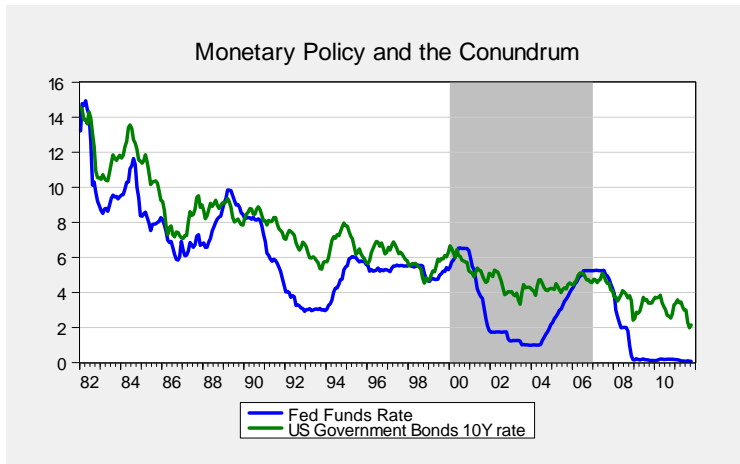
The Initial Conditions

- The great moderation: low volatility of inflation and growth
- monetary policy and the conundrum
- low risk aversion and restored confidence
- house price bubble and the "Greenspan put"

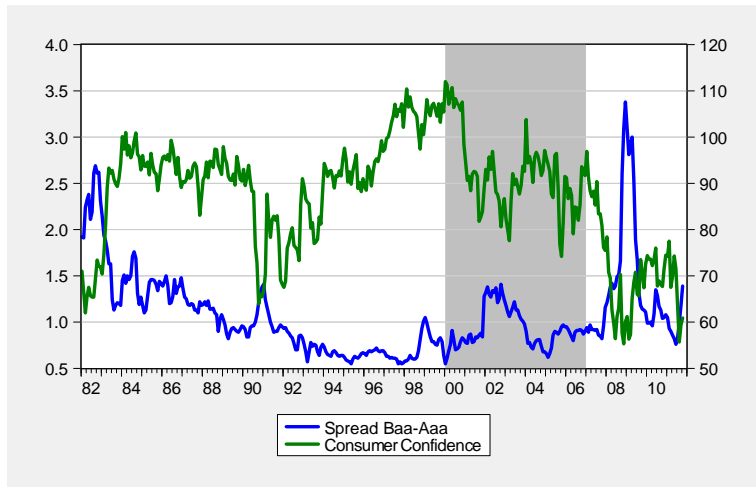
The Great Moderation



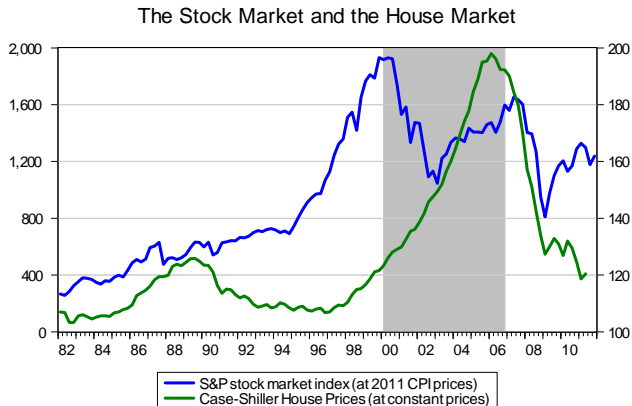
Monetary Policy and the Conundrum



Low Risk Aversion and Restored Confidence



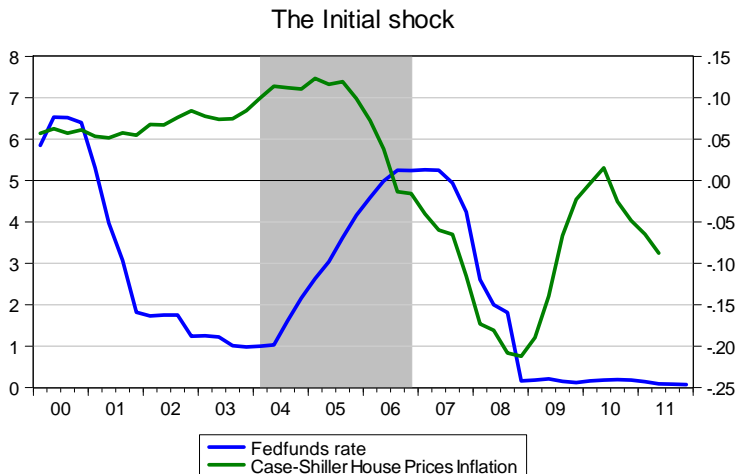
The House Price bubble and the "Greenspan put"



The Initial Shock

- In 2006, following the increase in monetary policy rates between 2004 and 2006, house prices started to fall.
- Between 2006 and 2008 house prices fell 20 per cent
- this is not a huge shock. The collapse in houseprices caused losses in the mortgage and especially in the subprime mortgage market. These losses can be estimated in around 650 billions USD, equivalent to a drop of **4 percent** in the S&P index.
- In October 1987 the S&P index fell by **20 per cent** in one-month, but this shock has not sparked neither a financial crisis nor a recession
- the peculiarity of the subprime crisis is not in the initial shock but in the transmission mechanism

The Initial Shock



The Transmission Mechanism

- Liquidity and Leverage. Procyclical leverage as the key in the transmission mechanism
- CDO and CDS. The link between procyclical leverage and the housing market
- A Black Swan in the money market. The effects of the lack of trust in the REPO market.

Liquidity and Leverage (Adrian and Shin,2007)

	Passive Investor		Active Investor	
time	Assets	Liabilities	Assets	Liabilities
0	House, 10	Mortgage, 9	House, 10	Mortgage, 9
		Equity, 1		Equity, 1
Leverage	10		10	
1	House price goes up 1 per cent			
	House, 10.1	Mortgage,9	House 10.1	Mortgage,9
		Equity 1.1	Trading Ass,1	Debt 1
				Equity 1.1
Leverage	9.2		10.1	

Liquidity and Leverage (Adrian and Shin, 2007)

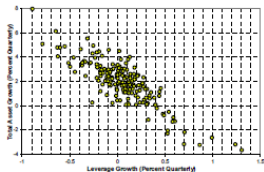
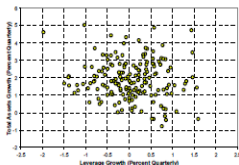


Figure 2.2: Total Assets and Leverage of Household



Total Assets and Leverage of Non-financial, Non-farm Corporates

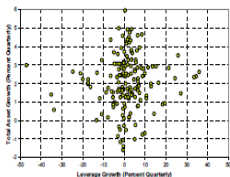


Figure 2.4: Total Assets and Leverage of Commercial Banks

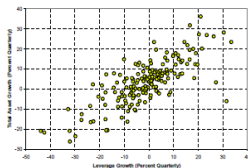
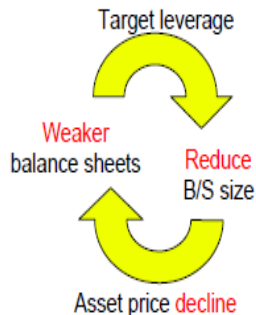
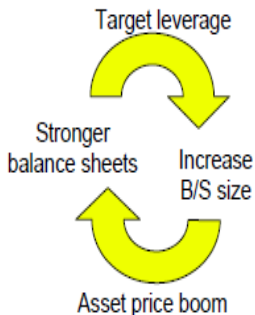


Figure 2.5: Total Assets and Leverage of Security Brokers and Dealers

The balance sheet of an investment bank

Assets	Liabilities
Trading assets	Short positions
Reverse repos	Repos
Other assets	Long term debt
	Shareholder equity

Procyclical leverage and the transmission mechanism



- Collateralized debt obligations are the instruments to transform mortgages into securities that are considered safer and can be used as collateral in repo's
- Credit Default Swap can provide insurance against the worst case scenarios

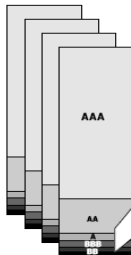
Collateralized Debt Obligations

Collateralized Debt Obligations

Collateralized debt obligations (CDOs) are structured financial instruments that purchase and pool financial assets such as the riskier tranches of various mortgage-backed securities.

1. Purchase

The CDO manager and securities firm select and purchase assets, such as some of the lower-rated tranches of mortgage-backed securities.



**New pool
of RMBS
and other
securities**

2. Pool

The CDO manager and securities firm pool various assets in an attempt to get diversification benefits.

*First claim to cash flow from
principal & interest payments...*

*next
claim...*

*next...
etc.*

High risk, high yield

3. CDO tranches

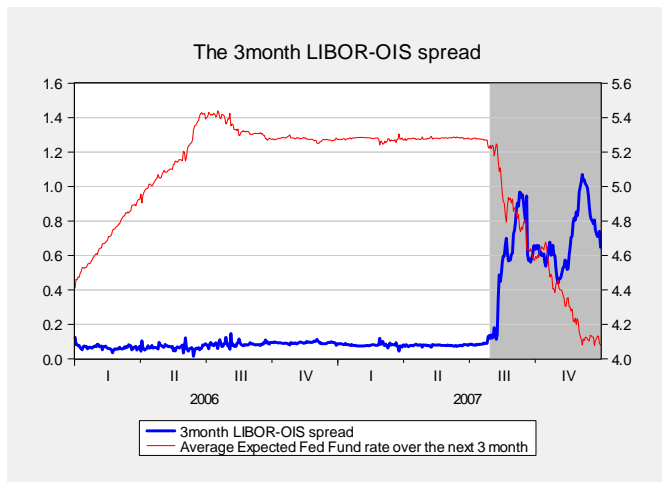
Similar to mortgage-backed securities, the CDO issues securities in tranches that vary based on their place in the cash flow waterfall.

Low risk, low yield



- So long as house prices increase CDOs are easy to refinance and estimation of default risk is unimportant
- they can be used as collateral in REPO and allow to expand banks balance sheet
- if a SIV is used to redistribute risky subprime mortgages are not anymore in banks balance sheet (and the incentive to monitor disappears)
- but when house prices start collapsing the whole construction falls and a **black swan** in the money market appears

A Black Swan in the money market



The explosion of the crisis

Early 2007	Spreading Subprime Worries
Summer 2007	Disruptions in Funding
Late 2007 to Early 2008	Billions in Subprime Losses
March 2008	The Fall of Bear Stearns
March to August 2008	Systemic Risk Concerns
September 2008	Conservatorship of Fannie Mae and Freddie Mac
	Bankruptcy of Lehman
	Bailout of AIG

The Policy Interventions

- Expansionary Monetary Policy: Conventional (but policy rates hit the zero bound) and unconventional
- Expansionary Fiscal Policy:

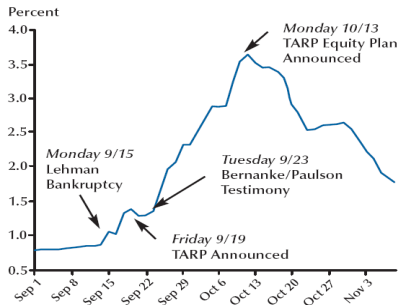
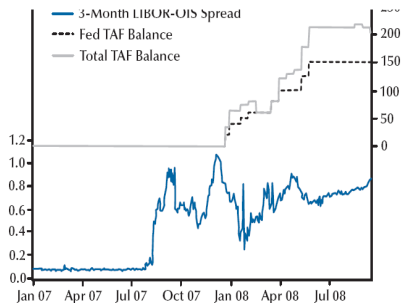
Monetary Policy Interventions

- Extending Liquidity Provision: Term Auction Facilities, Term Securities Lending facility (reduce the discount window stigma by making the money available to all banks at once through a regular auction)
- Asset Repurchases: TARP 1
- Recapitalization: TARP Equity Plan

The first two measures create a buyer for bad assets, which is not enough if banks do not have capital

Monetary Policy Interventions

TAF and TARP 1 do not work, but TARP Equity Plan has an important effect on the market



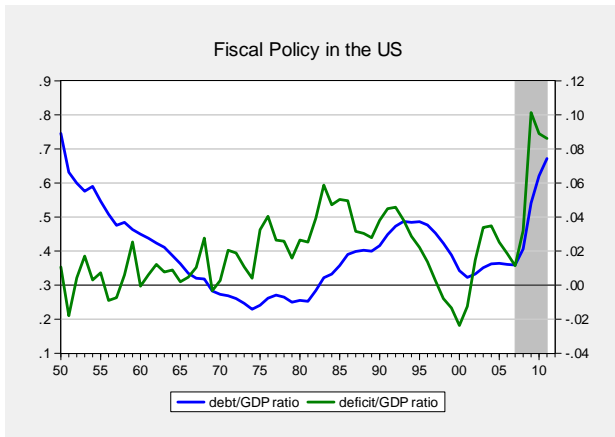
The Fed Balance Sheet: Assets

Federal Reserve Assets (in billions of dollars)		
	4 July 07	26 Nov 08
<u>Securities</u>		
Held Outright		
Uncommitted	\$790.6	\$295.4
Committed to TSLF		\$193.2
Repurchase Agreements	\$ 30.3	\$ 80.0
<u>Loans</u>		
Primary Credit	\$ 0.19	\$ 91.7
Term Auction Credit		\$406.5
Primary Dealer Credit		\$57.9
Portfolio of Maiden Lane LLC [†]		\$27.0
Portfolio of Maiden Lane III LLC ^{††}		\$21.1
ABCP Money Market Liquidity Facility		\$53.3
Credit to American International Group		\$55.9
Other credit extensions		\$0.0
Commercial Paper Funding Facility		\$294.1
Foreign Exchange Reserves [†]	\$ 20.8	\$24.8
FX Swaps		\$476.7 [†]
Gold [*]	\$ 11.0	\$ 11.0
<u>Other assets</u>	<u>\$27.5</u>	<u>\$ 20.5</u>
Total Assets	\$880.4	\$2,109.1

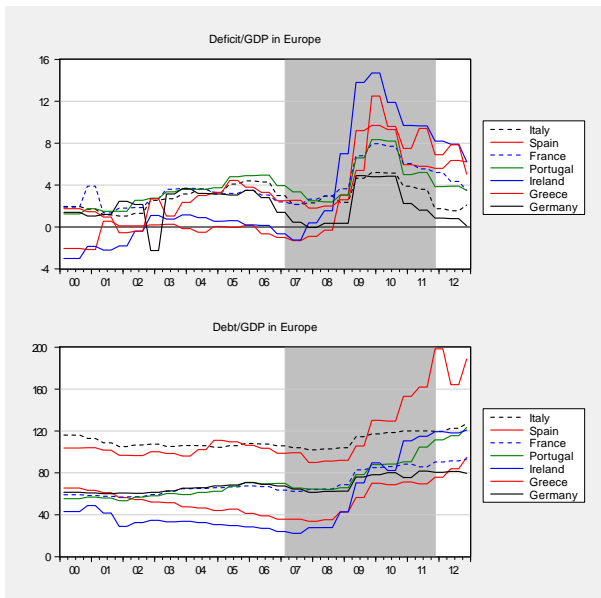
The Fed Balance Sheet: Liabilities

Federal Reserve Liabilities (in billions of dollars)		
	4 July 07	26 Nov 08
Federal Reserve Notes	\$781.4	\$835.1
Commercial Bank Reserve Balances	\$ 16.8	\$582.7
Reverse Repos w/ Dealers		\$25.0
U.S. Treasury Supplementary Financing Account		\$479.1
Liabilities related to Foreign Official and US Treasury Deposits	\$ 42.4	\$136.8
Other Liabilities	\$ 5.7	\$5.8
Total Liabilities	\$846.3	\$2,065.5
Capital	\$ 34.1	\$49.4

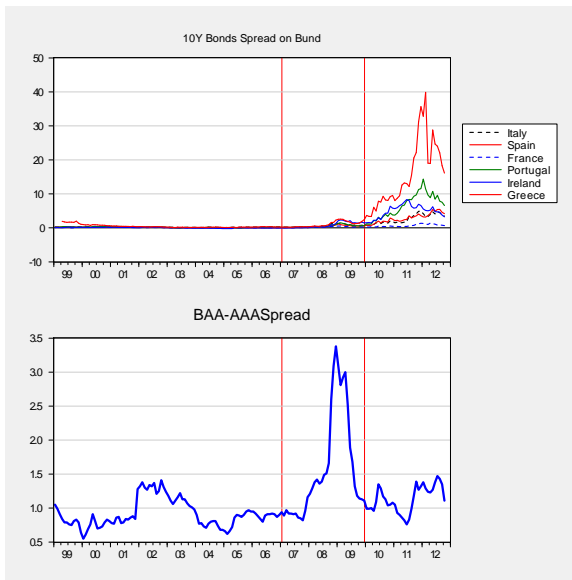
Expansionary Fiscal Policy in the US



Expansionary Fiscal Policy in Europe

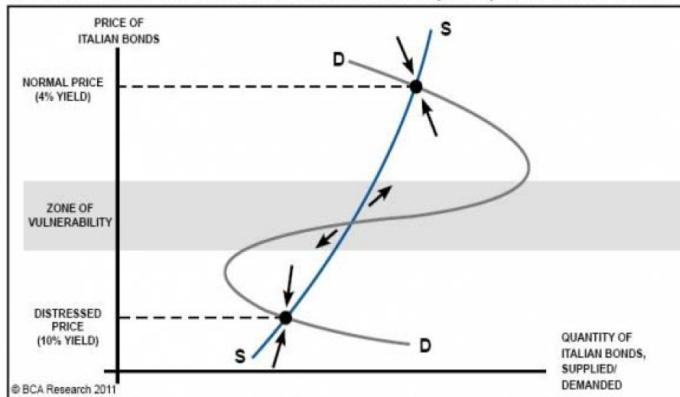


Spreads: local versus international factors



Same fundamentals different yields

When A Lender Of Last Resort Is Absent, Multiple Equilibria Are Possible

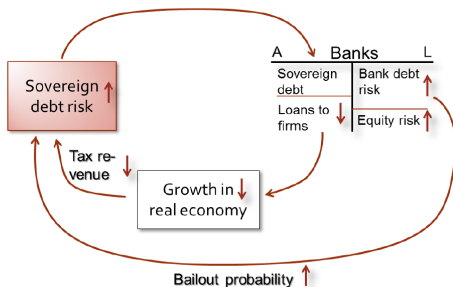


Same fundamentals different yields

$$\left(R_{t,t+k}^i - R_{t,t+k}^{ger} \right) = \Delta e_{t,t+k} + RP_{t,t+k}^i$$

The mechanism(The Euro-nomics group)

Figure 1: Diabolic loop between sovereign debt risk and banking debt risk.



The transmission mechanism of monetary policy

- Monetary policy controls directly short-term rates but it affects the economy through long-term rates.
- Long term rates are determined by two factors the average (future) short term-rate until maturity of the bond and the term premium
- In normal times the expectations channel dominates the term premium
- The crisis has changed this by inducing a negative term premium in the US and a positive and heterogeneous term-premium in Euro area

The negative term premium in the US

- LSAPs influence interest rates via supply-and-demand effects in the long-term bond market.
- As the Fed buys more long-term bonds, their price goes up, and their yield falls, even if expectations of future short rates are unchanged. Said differently, the so-called term premium on long-term bonds declines.
- As a matter of fact LSAP have induced a negative risk premium

The negative term premium in the US

- When policy works by moving term premiums, as opposed to moving expectations about the path of short rates, the transmission to the real economy may be altered
- A risk-neutral firm faces a rate on its 10-year bonds of 2 percent. At the same time, it expects that the sequence of rolled-over short-term rates over the next 10 years will average 3 percent. Hence, there is a term premium of minus 1 percent.
- The firm should take advantage of the cheap long-term debt by issuing bonds.
- It can take the proceeds of the bond issue and use these to pay down short-term debt, repurchase stock, or buy short-term securities.
- These capital-structure adjustments all yield an effective return of 3 percent.
- the hurdle rate for new investment remains pinned at 3 percent

The positive term premium in Europe

- In Europe the debt crisis has induced positive term premia heterogeneous across countries.
- The same monetary policy is associated to very different long-term rates, these rates are higher in countries with a more difficult fiscal situation, which are countries where the stimulus is most needed
- The same monetary policy impacts differently on consumption and investment in the euro area because fiscal fundamentals affect the transmission of monetary policy