SUB PRIME CRISIS

&

EUROZONE CRISIS

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London Business School courtyard in snow

Housing Bubble - MORTGAGE LENDING

Prime — Prime credit is typically available to an individual who has paid his or her outstanding credit (car loans, credit cards, and mortgages) on time (Past Financial Credential).
Traditionally, the mortgage market set minimum lending standards based on a borrower's income, payment history, down payment, and the present financial soundness of the borrower

Subprime — A subprime loan is typically available to a person with either no credit history or a damaged credit history (Poor Past Financial Credential) and who is considered to be a high-risk borrower, which means that the borrower is more likely to default on the loan than low-risk borrowers. Subprime loans have higher-than-average interest rates. Subprime lenders reduce their risk in making loans by charging borrowers a higher interest rate and sometimes additional fees.

Mortgage-backed security (MBS)

- The traditional mortgage model involved a bank originating a loan to the borrower/homeowner and retaining the credit (default) risk. Securitization is a process whereby loans or other income generating assets are bundled to create bonds which can be sold to investors which gives banks capital to make more loans.

- The modern version of U.S. mortgage securitization started in the 1970s, as Government Sponsored Enterprises (GSEs) began to pool relatively safe conventional conforming mortgages, sell bonds to investors, and guarantee those bonds against default on the underlying mortgages

- A riskier version of securitization also developed in which private banks pooled non-conforming mortgages and generally did not guarantee the bonds against default of the underlying mortgages. In other words, GSE securitization transferred only interest rate risk to investors, whereas private label (investment bank or commercial bank) securitization transferred both interest rate risk and default risk.

Mortgage-backed security (MBS)

➢**Mortgage-backed security (MBS) is an asset-backed security whose cash flows are backed by the principal and interest payments of a set of mortgage loans. Payments are typically made monthly over the lifetime of the underlying loans.**

Borrower or Homeowner Prime/Subprime loan →	Bank / Lending Institution. → Sell equivalent Bonds & Security	Sell of Security of Mortgages by → GSEs / Pvt. Party (with Guarantee)	MBS purchaser or investor
Home Loan Rate – 6 % →	Retains 1% and passes (P'+5%) → to MBS Managers	Retain risk 1% and passes (P''+4%) → to MBS holders	Return to MBS holders P + 4% more than market

➢**Residential mortgagors in the United States have the option to pay more than the required monthly payment (curtailment) or pay off the loan in its entirety (prepayment). Because curtailment and prepayment affect the remaining loan principal, the monthly cash flow of a MBS is not known in advance, and therefore presents an additional risk to MBS investors.**

The yield on mortgage-backed securities is typically higher than that on comparable Treasury notes or bonds

Factors responsible for Subprime Crisis

Wrong fundamentals of the economy	Market driven in place of consumer driven
Plenty of cheap credits	Oil Countries & China (70 Trillion $)
Low interest rates	Due to increase in supply of credit
Aggressive mortgage selling	To absorb surplus money
Overly complex new debt instruments	MBS/CDOs To match market driven economy
Faulty rating agency system	No control of Govt., Relation with lenders
Business short-termism	To expand business, Bonus and quick profit
Leverage and excessive risk taking	Excess speculative borrowing & lending for short term profit

Background of Subprime Crisis

- Low interest rates and large inflows of foreign funds created easy credit conditions for a number of years prior to the crisis, fuelling a housing market boom and encouraging debt-financed consumption

- Between 1997 and 2006, the price of the typical American house increased by 124%.

- While housing prices were increasing, consumers were saving less and both borrowing and spending more. During 2008, the typical USA household owned 13 credit cards.

- Home mortgage debt GDP ratio increased from an average of 46% during the 1990s to 73% during 2008. From 2001 to 2007, U.S. mortgage debt almost doubled


Household mortgage debt as % of disposable income
40
50
60
70
80
Spain
71
Ireland
116
Australia
130
Britain
120
Canada
76
United States
68
Japan
64
Poland
17
Germany
72

High-risk mortgage loans & lending/borrowing practices

- In the years before the crisis, the behavior of lenders changed dramatically. Lenders offered more and more loans to higher-risk borrowers. Lending standards particularly deteriorated in 2004 to 2007
- The mortgage qualification guidelines began to change.
  i) Stated income, verified assets (SIVA) loans -Proof of income was no longer needed. Borrowers just needed to "state" it and show that they had money in the bank.
  ii) No income, verified assets (NIVA) loans - Lender no longer required proof of employment. Borrowers just needed to show proof of money in their bank accounts.
- The qualification guidelines kept getting looser in order to produce more mortgages and more securities. This led to the creation of NINA. NINA is an abbreviation of No Income No Assets

High-risk mortgage loans & lending/borrowing practices

- Interest-only adjustable-rate mortgage (ARM) - homeowner can pay a variable amount. Interest if not paid is added to the principal. 10% borrowers in 2005 & 2006 were of this category.

- The use of automated loan approvals allowed loans to be made without appropriate review and documentation.

- "**Giant Pool of Money**" (represented by $70 trillion in worldwide fixed income investments) sought higher yields than those offered by U.S. Treasury bonds early in the decade.

- Investment banks on Wall Street answered this demand with financial innovation such as the mortgage-backed security (MBS) and collateralized debt obligation (CDO), which were assigned safe ratings by the credit rating agencies.

High-risk mortgage loans & lending/borrowing practices

- Wall Street connected this pool of money to the mortgage market in the U.S., with enormous fees accruing to those throughout the mortgage supply chain, from the mortgage broker selling the loans, to small banks that funded the brokers, to the giant investment banks behind them.

- By approximately 2003, the supply of mortgages originated at traditional lending standards had been exhausted.

- However, continued strong demand for MBS and CDO began to drive down lending standards, as long as mortgages could still be sold along the supply chain. Eventually, this speculative bubble proved unsustainable.

Sub-prime share of total US mortgage loans

Optimism ~ Reality

- **Easy credit, and a belief that house prices would continue to appreciate**, had encouraged many subprime borrowers to obtain adjustable-rate mortgages. These mortgages enticed borrowers with a below market interest rate for some predetermined period, followed by market interest rates for the remainder of the mortgage's term

- Borrowers who would not be able to make the higher payments once the initial grace period ended, were planning to refinance their mortgages after a year or two of appreciation.

- **As a result of the depreciating housing prices, borrowers ability to refinance became more difficult. Borrowers who found themselves unable to escape higher monthly payments by refinancing, started defaulting.**

Optimism ~ Reality

- As more borrowers stop paying their mortgage payments, foreclosures (possession of mortgage houses) and the supply of homes for sale increases. This places downward pressure on housing prices, which further lowers homeowners' equity.

- The decline in mortgage payments also reduces the value of mortgage-backed securities, which erodes the net worth and financial health of banks. This vicious cycle is at the heart of the crisis

- The sale of default risk to investors created a moral hazard in which an increased focus on processing mortgage transactions was incentivized but ensuring their credit quality was not.

Optimism ~ Reality

- Whereas in the past, a bank holding a mortgage would be likely to monitor its quality, and take action to minimize defaults or work out problems. The originator of subprime mortgages that were sold off typically had no such incentive.

- As private securitization gained market share and the GSEs retreated, mortgage quality declined dramatically. The worst performing mortgages were securitized by the private banks

Evaluation of Risk & Rating Agencies

- "Gaussian copula" technique developed by statistician David X. Li. This technique, widely adopted as a means of evaluating the risk associated with securitization transactions, used what turned out to be an overly simplistic approach to correlation.

- Credit rating agencies gave investment-grade ratings to MBSs based on risky subprime mortgage loans. These high ratings enabled these MBSs to be sold to investors, thereby financing the housing boom. These ratings were believed justified because of risk reducing practices, such as credit default insurance and equity investors willing to bear the first losses. Rating agencies suffered from conflicts of interest, as they were paid by investment banks and other firms that organize and sell structured securities to investors.

Government policies

- Government over-regulation, failed regulation and deregulation have all been claimed as causes of the crisis. Increasing home ownership has been the goal of several presidents including Roosevelt, Reagan, Clinton and G.W. Bush.
- ***Decreased regulation of financial institutions***

Securities and Exchange Commission (SEC) and Alan Greenspan claimed failure in allowing the self-regulation of investment banks

- ***Policies to promote affordable housing***

Securities and Exchange Commission and its fair-value accounting rules, especially the requirement for banks to mark their assets to market, particularly mortgage-backed securities

Credit default swaps

➢Credit default swaps (CDS) are financial instruments used as a hedge and protection for debt holders, in particular MBS investors, from the risk of default, or by speculators to profit from default. As the net worth of banks and other financial institutions deteriorated because of losses related to subprime mortgages, the likelihood increased that those providing the protection would have to pay their counterparties. This created uncertainty across the system, as investors wondered which companies would be required to pay to cover mortgage defaults.

➢As of 2008, there was no central clearing house to honor CDS in the event a party to a CDS proved unable to perform his obligations under the CDS contract. Insurance companies such as American International Group (AIG), MBIA, and Ambac faced ratings downgrades because widespread mortgage defaults increased their potential exposure to CDS losses. AIG's having CDSs insuring $440 billion of MBS resulted in its seeking and obtaining a Federal government bailout.The monoline insurance companies went out of business in 2008–2009.

➢**CDS** contributed significantly to the crisis. Companies were able to **sell protection to investors** against the default of mortgage-backed securities, helping to launch and expand the market for new, complex instruments such as CDO's.

➢This further fuelled the housing bubble. They also amplified the losses from the collapse of the housing bubble by allowing **multiple bets on the same securities** and helped spread these bets throughout the financial system. Companies selling protection, such as AIG, were **not required to set aside sufficient capital to cover their obligations** when significant defaults occurred. Because many CDS were not traded on exchanges, the obligations of key financial institutions became hard to measure, creating uncertainty in the financial system.

- Between June 2007 and November 2008, Americans lost more than a quarter of their net worth.

- By early November 2008, a broad U.S. stock index, the S&P 500, was down 45 percent from its 2007 high.

- Housing prices had dropped 20% from their 2006 peak, with futures markets signaling a 30–35% potential drop.

- Total home equity in the United States, which was valued at $13 trillion at its peak in 2006, had dropped to $8.8 trillion by mid-2008 and was still falling in late 2008.

- By September 2008, average U.S. housing prices had declined by over 20% from their mid-2006 peak.

- This major and unexpected decline in house prices means that many borrowers have zero or negative equity in their homes, meaning their homes were worth less than their mortgages.

- By September 2010, 23% of all U.S. homes were worth less than the mortgage loan.

- Increasing foreclosure rates increases the inventory of houses offered for sale. The number of new homes sold in 2007 was 26.4% less than in the preceding year. By January 2008, the inventory of unsold new homes was 9.8 times the December 2007 sales volume

- U.S. home values dropped by 26 percent from their peak in June 2006 to November 2010, more than the 25.9 percent drop between 1928 to 1933 when the Great Depression occurred.

- Speculative borrowing in residential real estate has been cited as a contributing factor to the crisis.

- In other words, a record level of nearly 40% of homes purchased were not intended as primary residences.

- Housing prices nearly doubled between 2000 and 2006, a vastly different trend from the historical appreciation at roughly the rate of inflation.

- U.S. total national debt rose from 66% GDP in 2008 pre-crisis to over 103% by the end of 2012

➢The five largest U.S. investment banks, with combined liabilities or debts of $4 trillion, either went bankrupt (Lehman Brothers), were taken over by other companies (Bear Stearns and Merrill Lynch), or were bailed-out by the U.S. government (Goldman Sachsand Morgan Stanley) during 2008. Government Sponsored Enterprises (GSE) Fannie Mae and Freddie Mac also failed and could not do anything.

➢**During 2007, the crisis caused panic in financial markets and encouraged investors to take their money out of risky mortgage bonds and shaky equities and put it into commodities as "stores of value**". Financial speculation in commodity futures following the collapse of the financial derivatives markets has contributed to the world food price crisis and oil price increases due to a "commodities super-cycle."Financial speculators seeking quick returns have removed trillions of dollars from equities and mortgage bonds, some of which has been invested into food and raw materials

EUROZONE CRISIS

- Before the crisis started, only a few banks or funds considered the **liquidity of these securities** when investing significant amounts of money in them because they focused on maximizing their returns.

- When larger problems in the US subprime mortgage market became evident, **liquidity became the major concern** for investors and investor preferences significantly **shifted to safer assets** such as government bonds

- This **caused severe problems in the money market**, which **ultimately brought the crisis across the Atlantic to Europe.**

- Funding problems emerged and caused the **first bank run in Europe** in decades when depositors in **Britain started to queue outside Northern Rock** branches for hours to withdraw their deposits in light of fears that the bank might have to file for bankruptcy

People waiting to withdraw money from Banks

EUROZONE CRISIS - SOVEREIGN DEBT AND AUSTERITY

➢The crisis in Europe generally **progressed from banking system crises to sovereign debt crises**, as many countries elected to bailout their banking systems using taxpayer money. Greece was different in that it concealed large public debts in addition to issues within its banking system. Several countries received bailout packages from the "troika" (European Commission, European Central Bank, International Monetary Fund), which also implemented a series of emergency measures.

➢Many European countries embarked on austerity programs, reducing their budget deficits relative to GDP from 2010 to 2011. For example, according to the *CIA World Factbook* Greece improved its budget deficit from 10.4% GDP in 2010 to 9.6% in 2011. Iceland, Italy, Ireland, Portugal, France, and Spain also improved their budget deficits from 2010 to 2011 relative to GDP

EUROZONE CRISIS - SOVEREIGN DEBT AND AUSTERITY

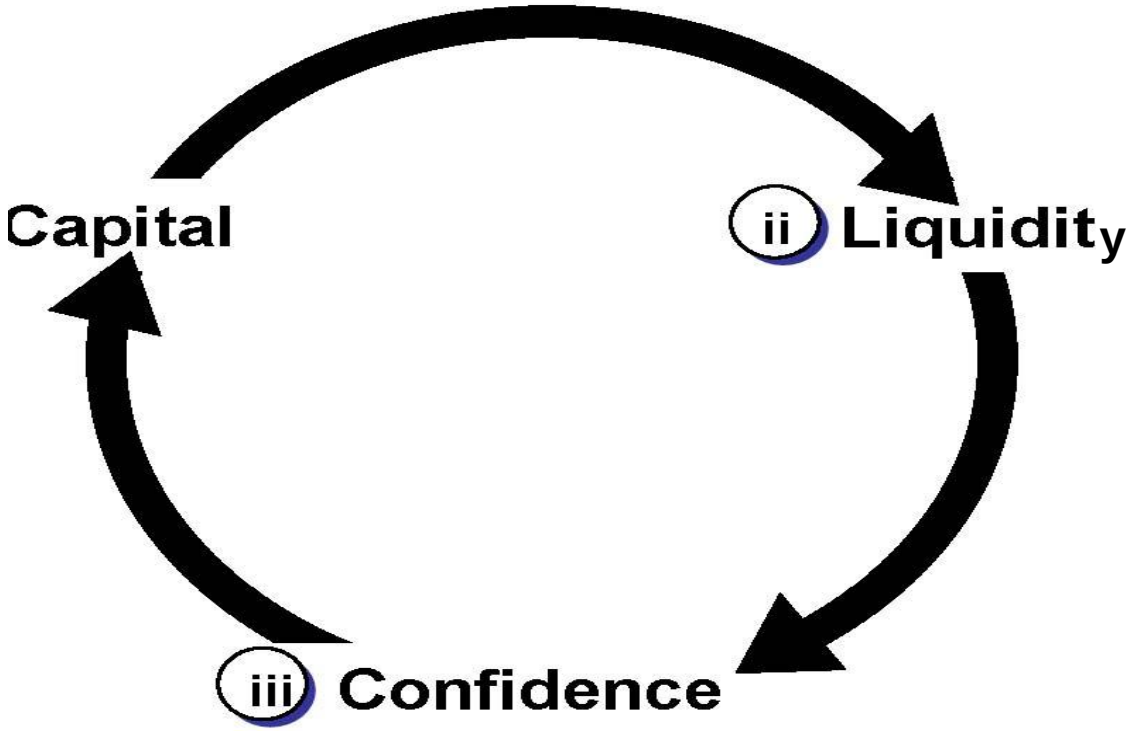
- However, with the exception of Germany, each of these countries had public-debt-to-GDP ratios that increased (i.e., worsened) from 2010 to 2011, as indicated in the chart at right. Greece's public-debt-to-GDP ratio increased from 143% in 2010 to 165% in 2011.This indicates that despite improving budget deficits, GDP growth was not sufficient to support a decline (improvement) in the debt-to-GDP ratio for these countries during this period.

- Debt to GDP ratio for the 17 Euro area countries together was 70.1% in 2008, 79.9% in 2009, 85.3% in 2010, and 87.2% in 2011.

- Unemployment is another variable that might be considered in evaluating austerity measures. Unemployment rates in Spain, Greece, Ireland, Portugal, and the UK increased. France and Italy had no significant changes, while in Germany and Iceland the unemployment rate declined.

Action Taken to restore economy

In order to revive the economies, 3 essential ingredients are needed – increasing the capital available, boosting liquidity and restoring people's confidence Capital Confidence Liquidity



Action Taken to restore economy

For more Liquidity :

•Lowered the target for the Federal funds rate from 5.25% to 2%, and the discount rate from 5.75% to 2.25%. This took place in six steps occurring between 18 September 2007 and 30 April 2008; In December 2008, the Fed further lowered the federal funds rate target to a range of 0–0.25% (25 basis points).

Increase in Capital:

•Undertaken, along with other central banks, open market operations to ensure member banks remain liquid. These are effectively **short-term loans to member banks collateralized by government securities**. Central banks have also lowered the interest rates (called the discount rate in the USA) they charge member banks for short-term loans.

•Created a **variety of lending facilities to enable the Fed to lend directly to banks and non-bank institutions**, against specific types of collateral of varying credit quality. These include the Term Auction Facility (TAF) and Term Asset-Backed Securities Loan Facility(TALF).

EUROZONE CRISIS - SOVEREIGN DEBT AND AUSTERITY

Confidence building measures:

•In November 2008, the Fed announced a $600 billion program **to purchase the MBS of the GSE**, to help lower mortgage rates.

•In March 2009, the Federal Open Market Committee decided to increase the size of the Federal Reserve's balance sheet further by purchasing up to an additional $750 billion of government-sponsored enterprise **(MBS of the GSE)** mortgage-backed securities, bringing its total purchases of these securities to up to $1.25 trillion this year, and to increase its purchases of agency debt this year by up to $100 billion to a total of up to $200 billion.

•Moreover, to help improve conditions in private credit markets, the Committee decided to purchase up to $300 billion of longer-term Treasury securities during 2009.

THANK YOU