Financial Crisis

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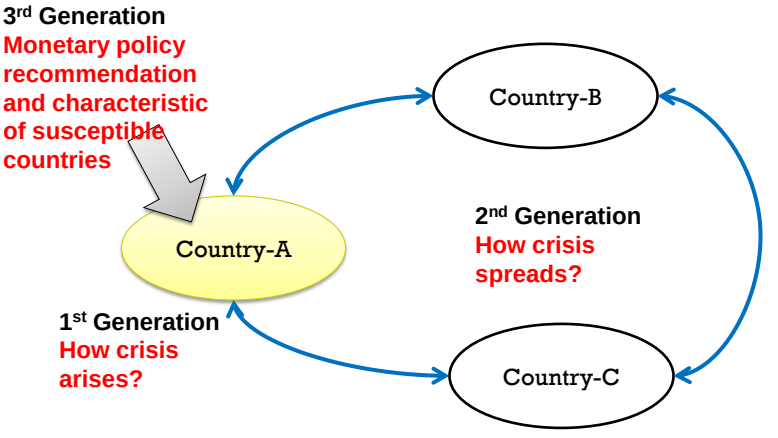
Agenda

- East Asian Crisis (1997 – 1999)
- Sub-Prime Mortgage Crisis (2007 - 2009)
- Sovereign Debt Crisis (2009 - …)

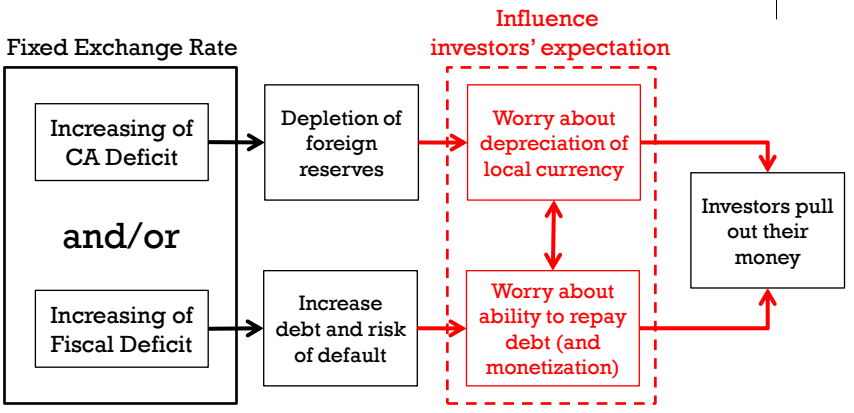
Currency Crisis

- Currency crisis is a speculative attack on a country's currency that can result in a forced devaluation and possible debt default
  - Attacks occur due to investors' worry about the changes of fundamental economy of a country
  - Investors sell that country's currency
- Currency crisis model
  - First-generation models
  - Second-generation models
  - Third-generation models

Currency Crisis Model



First Generation Model



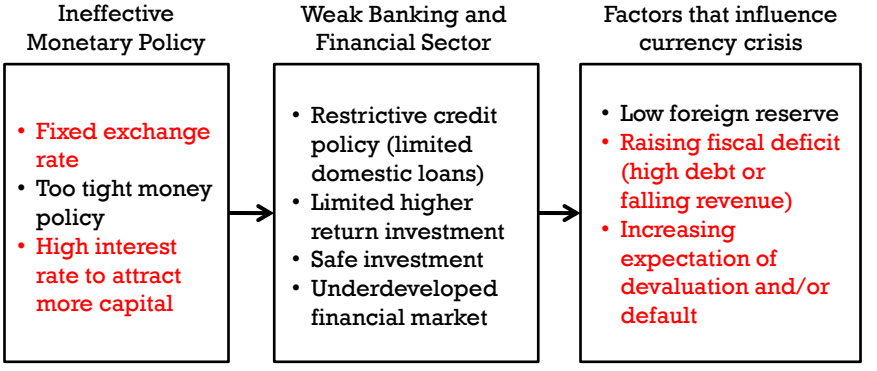
Insight:
Crises arise as a result of an inconsistency between an excessive fiscal deficit and the exchange rate system

Second Generation Model

Scenario-1:	**Scenario-2:**	**Scenario-3:**
Crisis spreads via goods market	Crisis spreads via financial market	Crisis spreads through investors' psychology (raising expectation of crisis in other countries)
• Devaluation makes demand of goods in a country falls • It reduces imports from trading partner countries • Trading partners countries may suffer CA deficit	• Devaluation makes risk of holding a currency rises, or financial assets value falls • Countries that hold many financial assets denominated in that currencies are susceptible to suffers similar pressure	• Sudden devaluation creates worry to other susceptible countries • They may be neighbor trading partners of have similar macroeconomic conditions

Insight:
Crisis in a country may rise the odds of a crisis elsewhere. It is more likely a signal of occurrence of next crises in other countries

Third Generation Model



Insight:
Four major factors influence the onset of crisis: (1) **currency pegging**, (2) **raising of fiscal deficit** (low revenue and high debt), (3) **high interest rate**, and (4) **expectation of devaluation rises**.

Part-I

East Asian Crisis (1997 - 1999)

Current Account Balance

- High economic (GDP) growth since 1960s until 1990s.

As % of GDP

Country	1990	1991	1992	1993	1994	1995	1996
South Korea	(1.2)	(3.2)	(1.7)	(0.2)	(1.4)	(1.9)	(4.9)
Indonesia	(4.4)	(4.4)	(2.5)	(0.8)	(1.5)	(4.2)	(3.4)
Malaysia	(2.3)	(9.1)	(4.1)	(10.1)	(11.5)	(13.5)	(5.6)
Philippines	(6.3)	(2.5)	(3.2)	(6.7)	(3.7)	(5.1)	(5.9)
Thailand	(8.7)	(8.6)	(6.3)	(6.5)	(7.2)	(9.0)	(9.2)
Hong Kong	8.4	6.6	5.3	8.1	2.0	(2.2)	(0.6)
China	3.0	3.1	1.1	(2.2)	1.2	1.0	(0.3)
Singapore	9.5	12.4	12.4	8.5	18.1	17.9	16.3

Exchange Rate Fluctuation

- Many East Asian countries tended to fix their currencies to USD, i.e. strictly peg or tightly managed float with active central bank interventions.

Country	Currency	Fluctuation
South Korea	KRW	Peg at 770 – 800 per USD
Indonesia	IDR	Move in medium range: 2.100 – 2.250 per USD
Malaysia	MYR	Move in 10% range: 2.5 – 2.7 per USD
Philippines	PHP	Peg (tend to fixe) at 26.2 per USD
Thailand	THB	Move in narrow band: 25.2 – 25.6 per USD

- These countries allowed the capital to move freely, so that there are no room for autonomous monetary policy

Huge Capital Inflow

- High economic growth and free capital mobility attracted foreign capital to come.
  - FDI increase: many foreign company started to set up plant, create subsidiary, and buy local companies.
  - Portfolio investment: huge capital inflow came from foreign investment companies
  - Foreign loans: foreign creditors lent large amount of money to local companies and government (high economic growth in this area was better than in Latin America and Africa). Many commercial building and sky scrapers were constructed
- Given high growth performance, these countries had no problem financing CA deficits using capital inflows.

Problem in Banking Sector

- Banking problems:
  - Weak control in banking system (e.g. legal lending limit)
  - Use foreign short-term loan to finance domestic long-term credit
  - In Indonesia, deregulation in banking sector
- The company and banks were believed that government will bail out them as long as they are big enough → they continued to borrow.
- Japan, as a prime buyer of East Asian goods, suffered slow economic growth, from 2.7% (1996) to 0.1% (1997).
- This was accompanied by the global economic slowdown (e.g. in Europe and China)

Huge Capital Outflow

- Investors and speculators are worried about this condition:
  - Investors began to move out their money from stock market, and followed by waves of capital outflows.
  - To maintain the exchange rate, governments must use their foreign reserve. If not, the their currencies will depreciate
  - Speculators believed that, at some point, governments had no ability to continue the interventions (due to not enough foreign reserves)
  - Speculators started to borrow local currencies, and convert them to USD. If local currencies depreciate, they will enjoy huge profit.
  - To prevent speculators, government may increase interest rate, but it resulted the more panic in stock market.

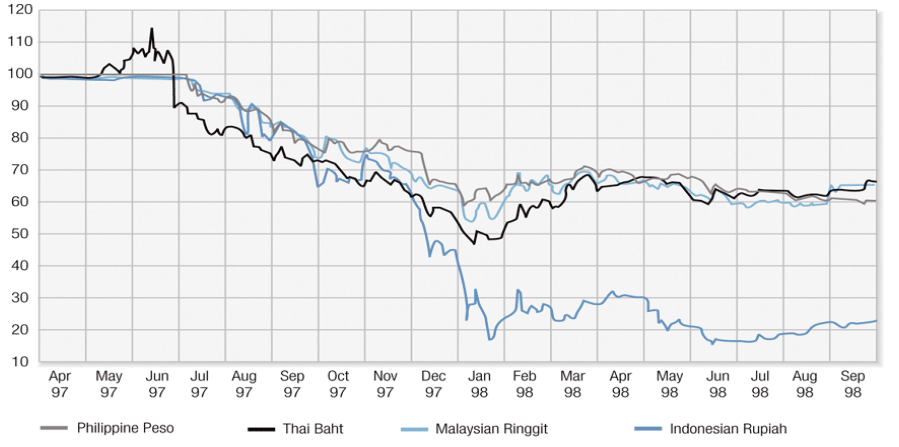
The Crisis

- Capital outflow and speculators' attack made more higher pressure to local currencies.
- As long as foreign investors put their money in these countries, governments had enough national reserve to maintain their exchange rate.
- When capital inflow stopped, government started to relax the "quite fixed exchange rate regime"
- Start in Thailand on June 1997, Thai stock market was going down rapidly, and the Bath suffered strong depreciation. It then rapidly spread to other neighbor countries.

Changes in Stock Market, Exchange Rate, Foreign Reserve

Country	Change in Stock Market	Currency Depreciation	Change in Foreign Reserve
South Korea	-55%	58%	-49%
Indonesia	-46%	47%	-11%
Malaysia	-73%	33%	-27%
Philippines	-54%	30%	-50%
Thailand	-80%	41%	-23%
Hong Kong	-22%	1%	-32%
Singapore	-37%	13%	

Exchange Rate Depreciation
(Relative to USD)



Source: Pacific Exchange Rate Service, http://fx.sauder.ubc.ca ©1999 by Prof. Werner Antweiler, Sauder School of Business, University of British Columbia, Vancouver, BC, Canada. Time period shown in diagram: April 1, 1997 September 30, 1998.

Domestic Problems

- After the exchange rate was relaxed, many domestic problems appeared:
  - Company's debts boosted
  - Banking system collapsed
  - Fiscal deficit
  - Hyper inflation
- Hong Kong was more confidence to prevent speculator attacks and capital outflow:
  - Raising short-term interest rate to ward speculators (this made the decreasing of stock market index)
  - Backed by China foreign reserve to maintain the fixed exchange rate

Post Crisis

- IMF came with substantial loan packages (Philippines $1 bn in July, Thailand $16 bn in August, Indonesia $23 bn in October, Korea $57 bn in November)
- Most of the loans used to reduce government deficit, restructure short term USD denomination loans, reform financial sectors (including the tighter control in banking system)
- As part of the loan agreement, these countries allowed to devalue their currencies or allow them to float, and reduce protections in some sectors.
- Malaysia was going to more rigid system by strictly controlling capital mobility
- In Indonesia, the crisis was acted as the catalyst of the national succession.

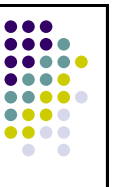
East Asian Crisis (1997)

- **1st Generation Model**
  - Increasing current account deficit
  - Pegging currency → depletion of FX reserve
  - Tension to maintain currency or monetization to finance debt
- **2nd Generation Model**
  - Starting from Thailand, then it spreads to Indonesia, especially through goods market
- **3rd Generation Model**
  - Recommendation: 1) relax pegging exchange rate system, 2) overcome high inflation by increasing temporary interest rate, 3) cut off subsidy to reduce fiscal deficit, 4) IMF help to repair banking and government debt payment

Part-II

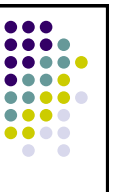
Sub-Prime Mortgage Crisis (2007 – 2009)

Seeds of Crisis



- Background:
  - Post East Asian Crisis 1997
  - Bubble Dotcom 2001
- Capital flows toward US's real estate sectors
  - Mortgage lending was high profitable
  - It was a rapidly expanding market
  - Real estate prices tend to increase
- Increasing investment and speculation enforced house price rose rapidly

US's Mortgage Market



- US's Mortgage loans:
  - Prime (or A-paper)
  - Alt-A (Alternative A-paper)
  - Sub-prime
- Alt-A category

  It reflects borrowers who make a good income, have a good enough credit score, however have a hard time proving their income (less documentation than A-paper)
- The sub-prime category

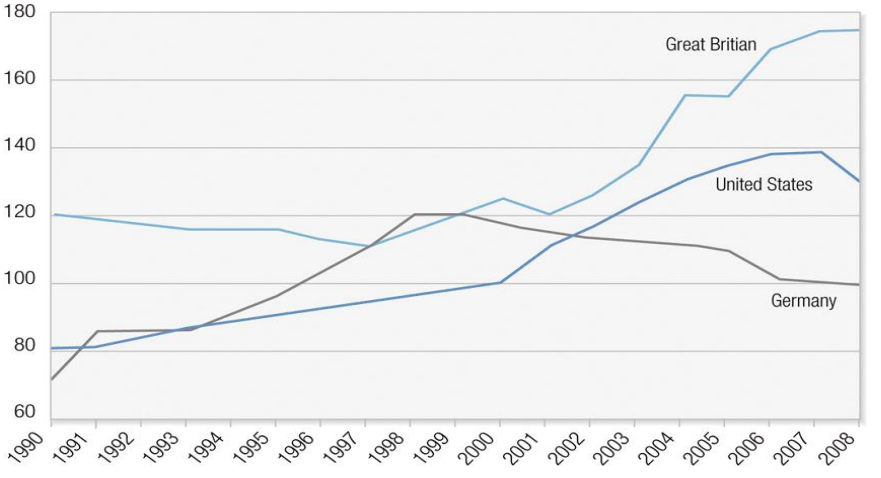
  It reflects borrowers who do not meet underwriting criteria and have a higher perceived risk of default normally as a result of credit history

Sub-Prime Mortgage

- Sub-prime loans became a rapid growing segment of the market by the 2003-2005 period
- The increased values were used as collateral in re-financings or second mortgages
- Many mortgage holders became more indebted and participants in more aggressively constructed loan agreements
- Mortgage brokers and loan originators, driven by additional fee income, pushed for continued refinancing

Household Debt (1990 – 2008)

As % of disposable income



Source: Deutsche Bundesbank, UK Statistics Authority, U.S. Federal Reserve, *The Economist*.

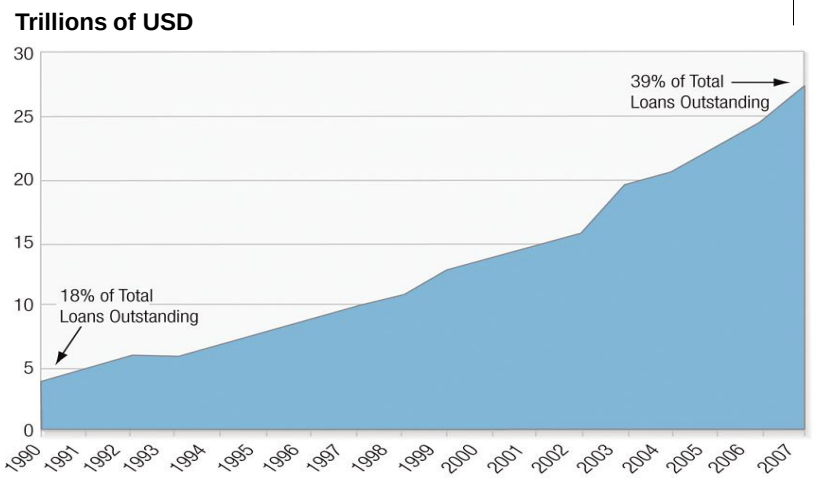
Transmission Mechanism

- Securitization
  - The process of grouping illiquid assets, through financial engineering, bundling them into a security
  - Example: Mortgage-Backed Securities (MBS)
- Repacking
  - The process of grouping some assets or securities into another new securities (derivative instruments)
  - Example: Collateralized Debt Obligation (CDO), Credit Default Swaps (CDS)

CDO and CDS

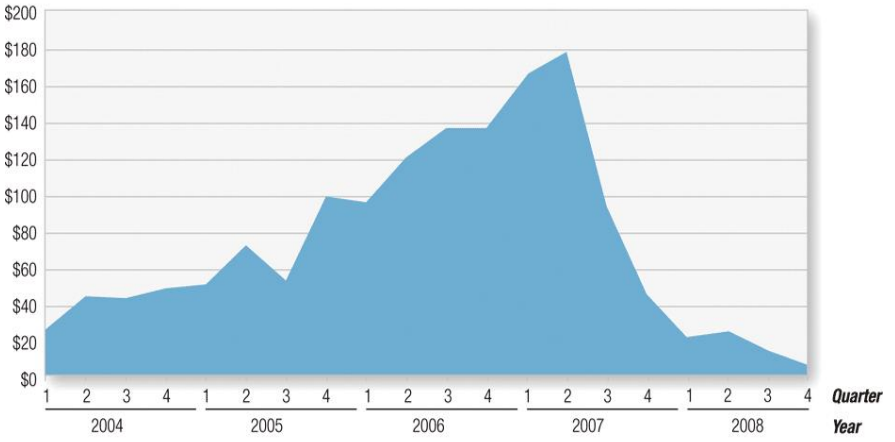
- CDO (collateralized debt obligation)
  - Financial product that pools together several assets into a portfolio that can be sold to the market (via investment banking)
  - Example of assets: mortgage, bank loan, bond, etc
  - As like bond, CDO has to be evaluated by credit rater before it is sold
- CDS (credit default swap)
  - A contract which derived its value from the credit quality and performance of any specified asset (e.g. mortgage loans)
  - Invented in 1997, the CDS may be used for protection (hedging) or speculation (investment)

Securitized Loans Outstanding



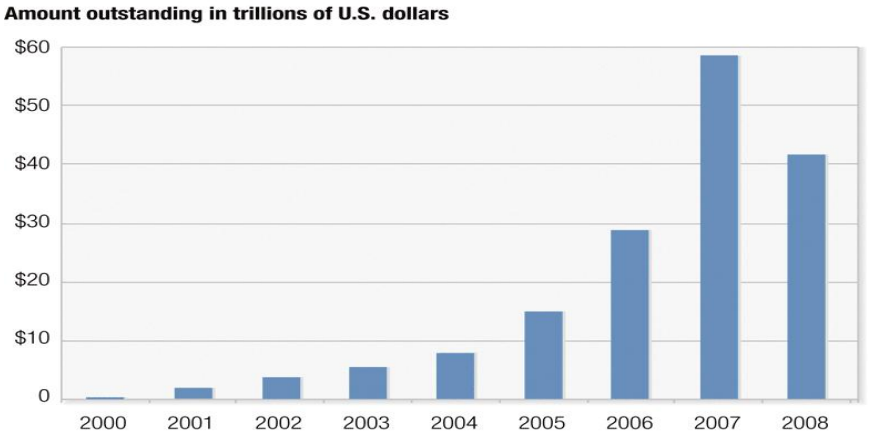
Source: U.S. Federal Reserve, NERA Economic Consulting as quoted in "Securitisation: Fear and Loathing and A Hint of Hope," *The Economist*, February14, 2008.

Global CDO Issuance



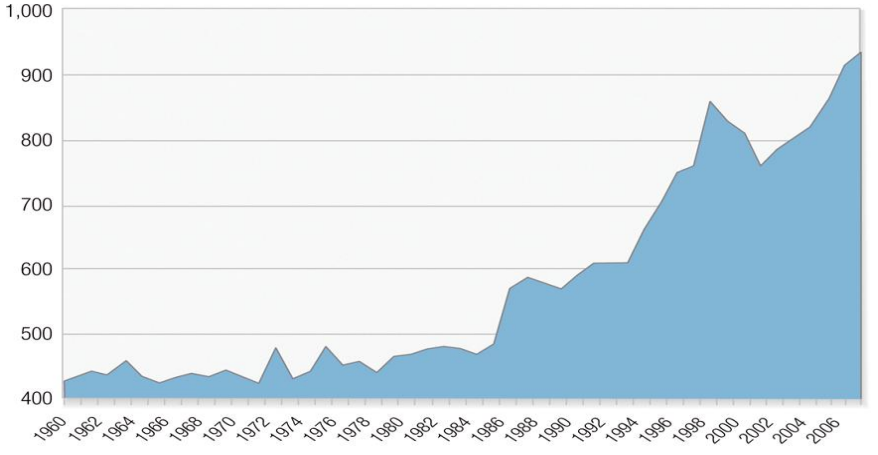
Source: Data drawn from "Global CDO Market Issuance Data," Securities Industry and Financial Markets Association (SIFMA), sigma.org.

CDS Market Growth



Source: Data drawn from Table 19: Amounts Outstanding of Over-the-Counter-Derivatives, by Risk Category and Instrument, *BIS Quarterly Review*, June 2009, bis.org.

US Financial Assets

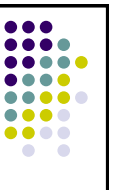


Source: Thomson Datastream and U.S. Federal Reserve, as quoted in "The Financial System What Went Wrong," *The Economist*, March 19, 2008.

The Crisis

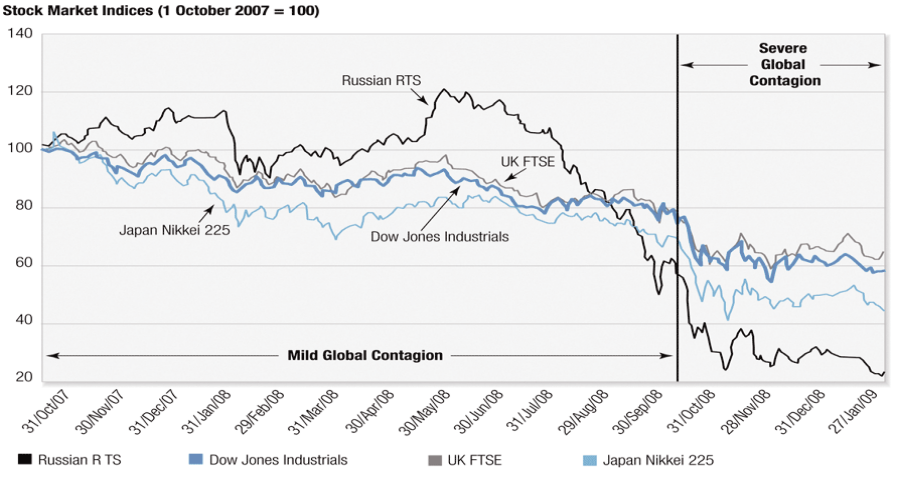
- The housing market began to falter in late 2005, with the bubble finally bursting in 2007.
- A domino effect ensued with collapsing loans and securities being followed by the funds and institutions which were their holders.
- Starting with Bear Stearns and Northern Rock, the global financial markets slid toward near panic.
- 2008 proved even more volatile, with oil and commodity prices peaking, then plummeting.
- It was then followed by Fannie Mae and Freddie Mac (Sept), and finally Lehman Brother

The Crisis



- The following day, equity markets plunged and US dollar LIBOR rates shot skywards as a result of the growing international perception of financial collapse by US banking institutions.
- American International Group (AIG), who had extensive CDS exposure, received an $85 billion injection from the US Federal Reserve in exchange for an 80% equity interest.
- Periods of collapse and calm followed with the credit crisis beginning in full force as the worlds credit markets – lending of all kinds – nearly stopped.

Stock Market Crash



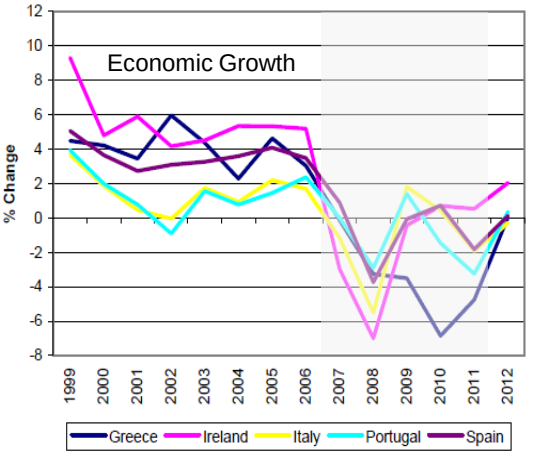
Source: "The U.S. Financial Crisis: The Global Dimension with Implacations for U.S. Policy," Dick K. Nanto, Congressional Research Service, Wahington D.C., January 29, 2009, p.11.

Part-III

Sovereign Debt Crisis (2009 - …)

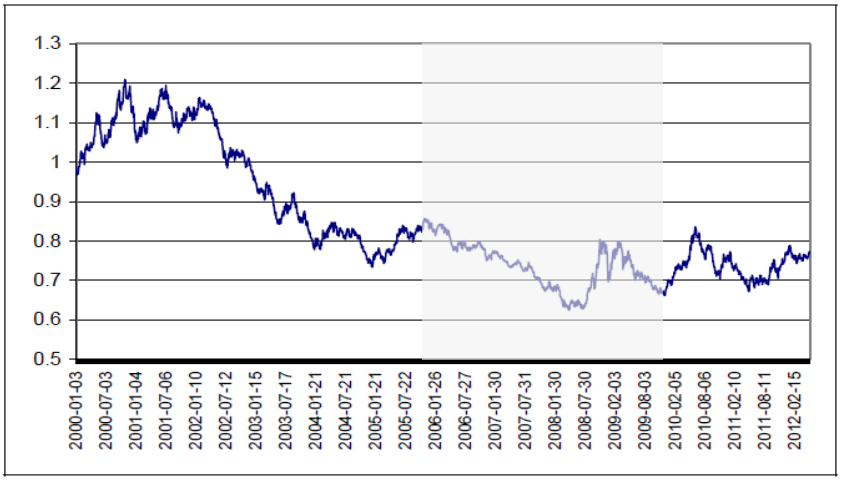
Seeds of Crisis: Global Recession

- Global recession post subprime mortgage crisis
- PIIGS countries suffered the most decreasing economic growth
- It reduced demand, real income, investments, capital outflow, and finally weakened the EUR



Source: IMF, World Economic Outlook, April 2012

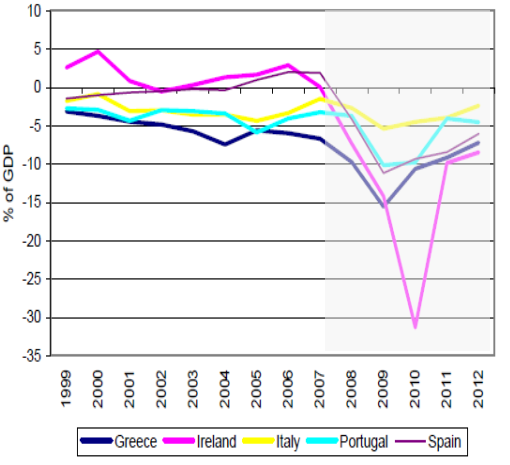
EUR/USD Exchange Rate



Source: US Federal Reserve

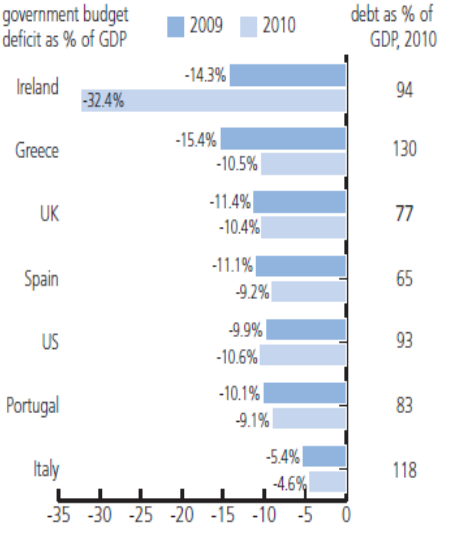
Seeds of Crisis: Fiscal Deficit

- Fiscal deficits were worse sharply
- Fiscal deficit: 0.6% of GDP (<= 2007) to 7% in Euro area
- Most PIIGS countries had suffered fiscal deficit larger than limit since 2000s
- Slow economic growth and EUR depreciation made fiscal deficit worse



Source: IMF, World Economic Outlook, April 2012

Fiscal Deficit

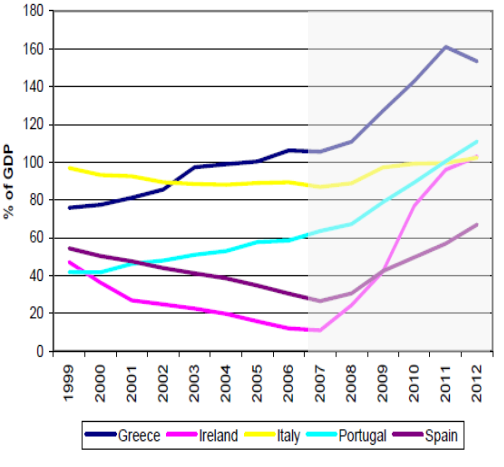


Seeds of Crisis: Fundamental Weakness

- Strong economic countries (e.g. Germany, France) are combined with weaker economic countries (e.g. Greece)
  - Weaker economic countries suffered EUR appreciation due to current account surplus in strong economic countries (it will reduce competitiveness of weaker economic countries)
- Euro area applies monetary policy union (by ECB), but maintain fiscal and economic structure policy as prerogative of its members
  - Many countries mask their debts (to finance deficit) through combination of techniques

Sovereign Debt Crisis

- The increasing of government debt
- Household debt: 39% of income (<= 2007) to 139% (2008-2009) in Euro area
- Government debt: 66% of GDP (<=2007) to 84% in Euro area
- Some financial institutions were bailed out by governments



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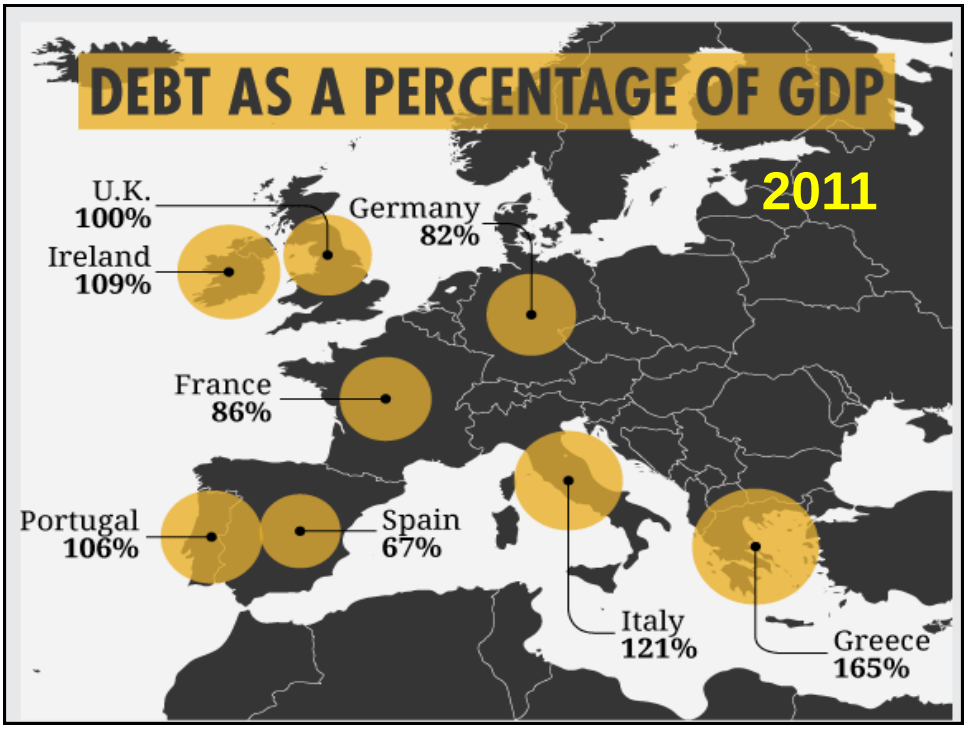
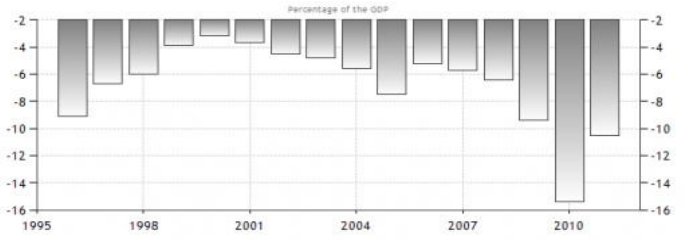


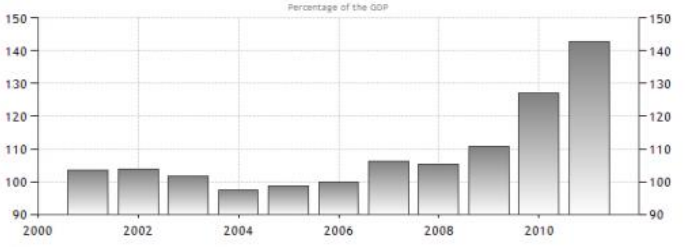
Debt (as % of GDP)

Country	Debt to GDP			Share of foreign currency (%)	
	1999	2007	2011	1999	2007
Austria	67	61	72	23.7	43.1
Belgium	114	84	95	6.8	30.7
Finland	46	35	50	41.5	63.9
France	59	64	87	0.5	2.5
Germany	61	65	83	0.0	0.6
Greece	103	105	166	15.1	47.3
Ireland	48	25	109	13.8	16.2
Italy	114	104	121	0.4	11.3
Netherlands	61	45	66	0.1	2.3
Portugal	50	68	106	20.4	31.5
Spain	62	36	67	7.2	16.2
United Kingdom	44	44	81	1.7	0.5
United States	61	62	100	0.0	0.0
Japan	134	188	233	0.0	0.0

Greece: Fiscal Deficit & Debt



Fiscal Deficit (% of GDP)

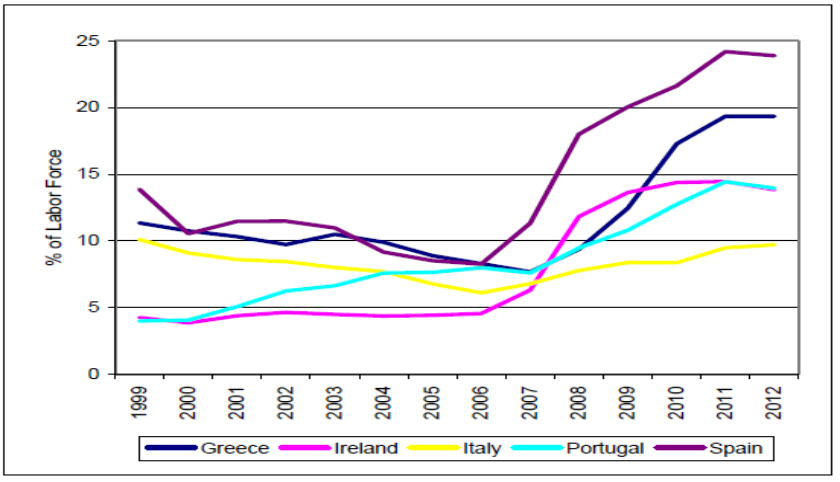


Government Debt (% of GDP)

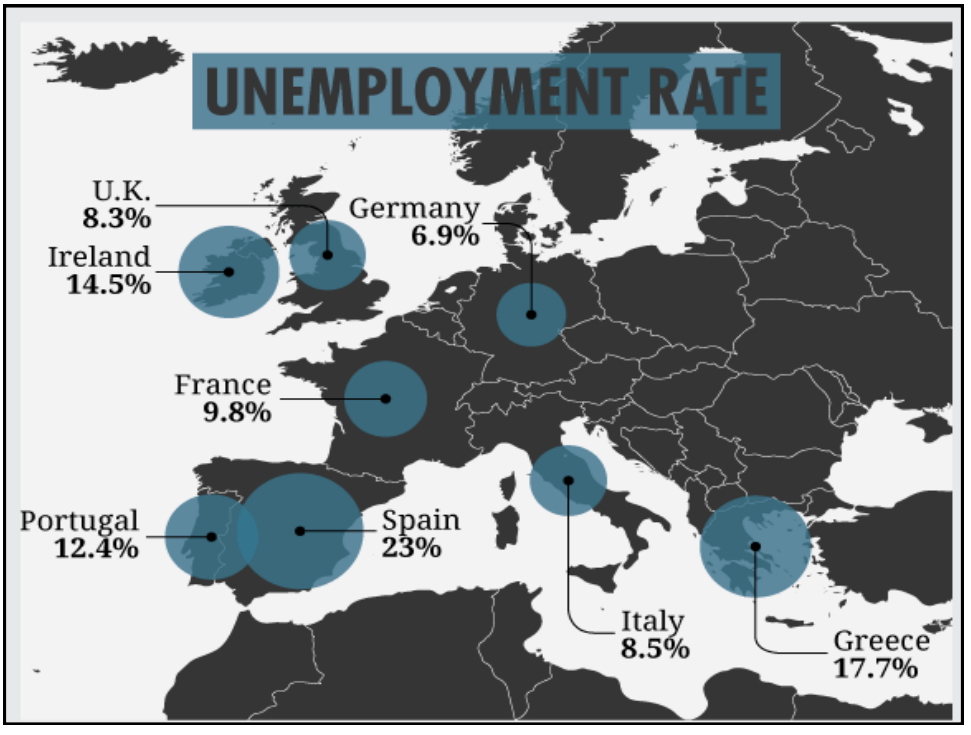
Rating Downgrade

- Greece was the first country failed to meet its obligation of $11 bn on March 2010.
- Other PIIGS countries were then under market scrutiny for unsustainable debt levels.
- Rating agency (e.g. S&P, Moody, Fitch) began to downgrade government bonds (the lower the grade, the higher the cost of borrowing)
- Example:
  - Greece: A (May 2009), A- (Oct 2009), BBB+ (Dec 2009), BBB- (Apr 2009), BB+ (Jan 2011), B+ (May 2011), CCC (Jul 2011)
  - Ireland: AAA (Mar, 2009), AA+ (Apr, 2009), AA- (Nov, 2009), A+ (Oct ,2010), BBB+ (Dec, 2010)

Unemployment in PIIGS



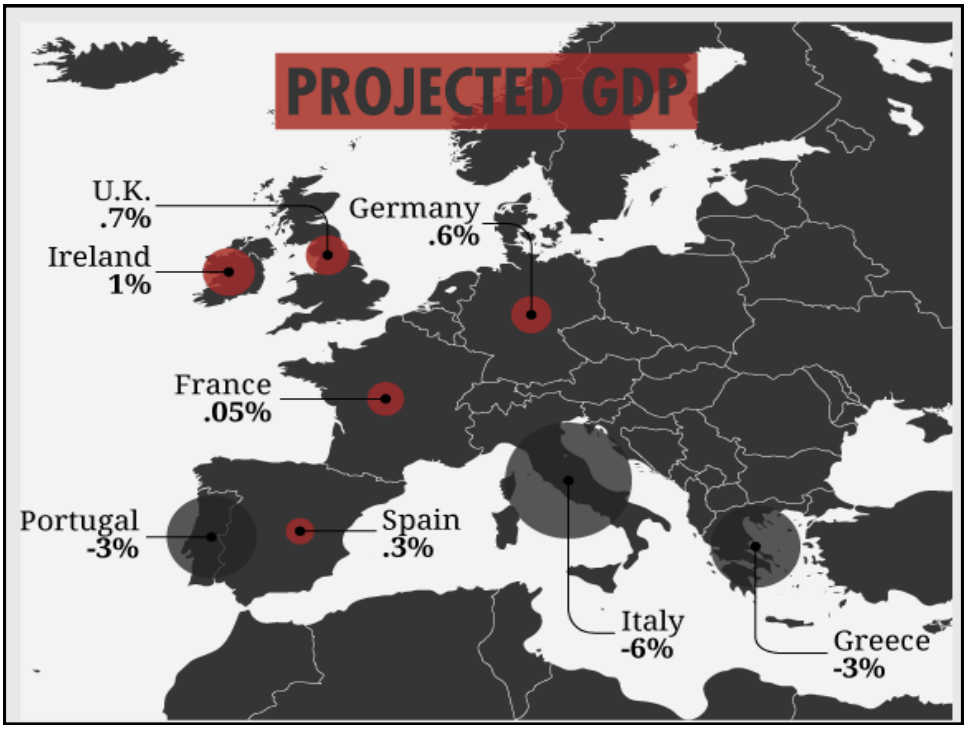
Source: International Monetary Fund (IMF), World Economic Outlook, April 2012



Assistance Package

	Date Agreed	European Financial Assistance	IMF Financial Assistance	Total Financial Assistance	IMF Share
Greece	May 2010	€80 billion (about $100 billion)	€30 billion (about $38 billion)	€110 billion (about $138 billion)	27%
	February / March 2012[a]	€120 billion[b] (about $151 billion)	€18 billion[c] (about $23 billion)	€138 billion (about $173 billion)	13%
Ireland	December 2010	€45 billion (about $57 billion)	€22.5 billion (about $28 billion)	€67.5 billion[d] (about $85 billion)	33%
Portugal	May 2011	€52 billion (about $65 billion)	€26 billion (about $33 billion)	€78 billion (about $98 billion)	33%
Total		**€297 billion (about $373 billion)**	**€97 billion (about $121 billion)**	**€394 billion (about $494 billion)**	**25%**

Source: International Monetary Fund (IMF), European Union




Thank
You