What is Systemic Risk and What Should We Do About It?

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What went wrong with banking regulation?

- The focus of regulators was on microprudential regulation that involves ensuring no individual bank takes large risks

- This failed to prevent a financial crisis because it ignored systemic risk

- What are the sources of systemic risk?

Sources of systemic risk

1. Panics – banking crises due to multiple equilibria

2. Banking crises due to asset price falls

3. Contagion

4. Foreign exchange mismatches in the banking system

1. Banking panics

- Two equilibria:
  - If everybody thinks the banking system is sound then only the people who need money will withdraw
  - If everybody thinks others will withdraw then it is optimal to withdraw and the panic equilibrium is self-fulfilling
- This was economists' traditional view of financial crises, e.g. Friedman and Schwarz (1963)

- Formal model: Diamond and Dybvig (1983)
  - Solution: Deposit insurance eliminates the bad equilibrium and is costless

- Deposit insurance for retail deposits no longer effective in preventing panics
  - Growing importance of wholesale funding

- Guarantee all short term debt? – If there are other types of systemic risk may be very costly, e.g. Ireland

2. Banking crises due to asset price falls

- If the prices of assets held by banks and other financial institutions fall then there can also be a banking crisis

- Possible reasons for asset price falls
  a. Business cycle
  b. Bursting of real estate bubbles
  c. Mispricing due to limits to arbitrage
  d. Mispricing due to "flash crashes"
  e. Sovereign default
  f. Rises in interest rates

2a. Business cycle

- Between 1836 and 1914 the US had no central bank and during this time it had many crises

- Gorton (1988) found that panics in the U.S. in the late 19th Century were systematic events: whenever the leading economic indicator represented by the liabilities of failed businesses reached a certain threshold, a panic ensued

- See also Calomiris and Gorton (1991) and Calomiris and Mason (2003)

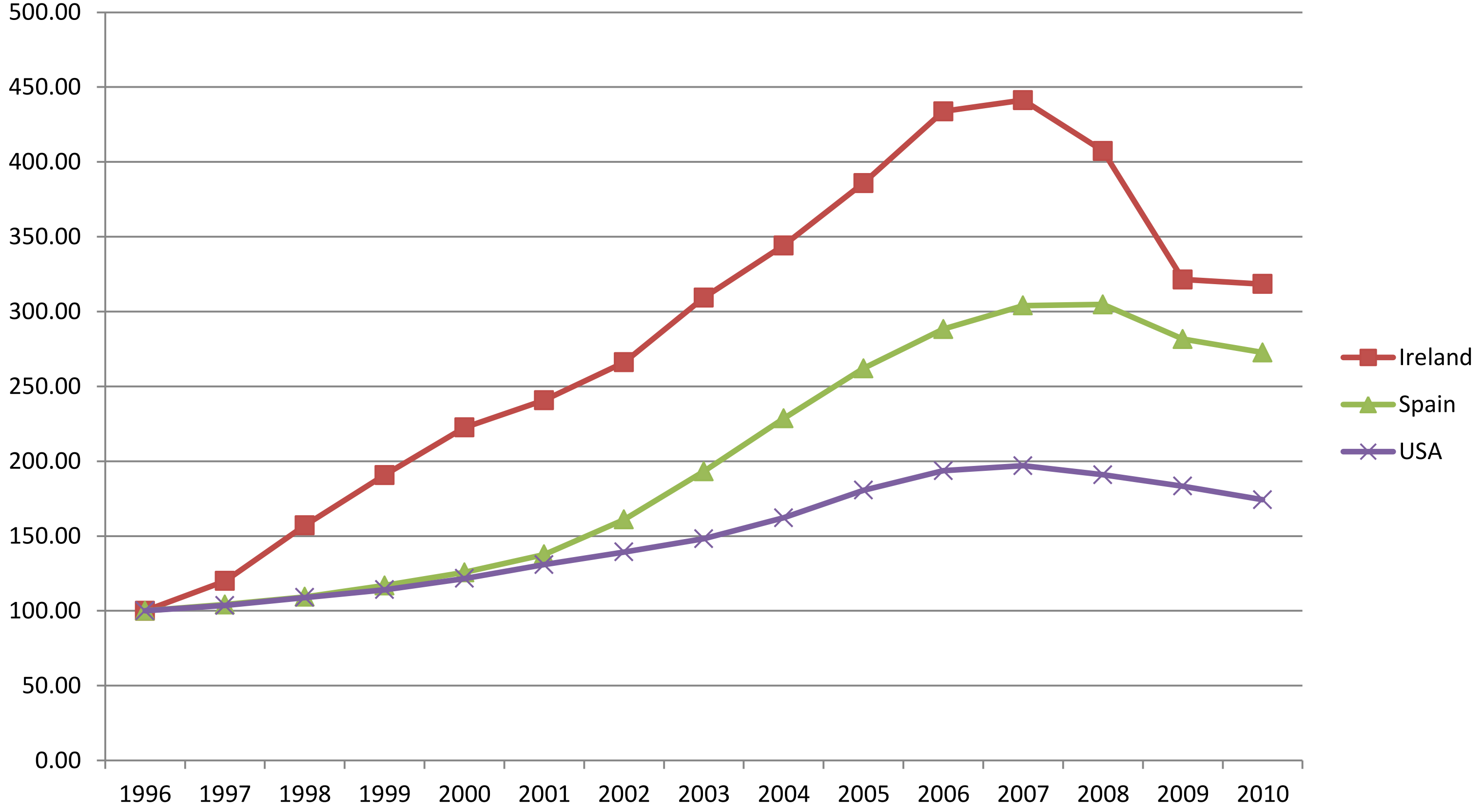
2b. Bursting of real estate bubbles

- Evidence from Reinhart and Rogoff (2009) and Crowe et al. (2011) suggests that historically this has been the most common cause of crises

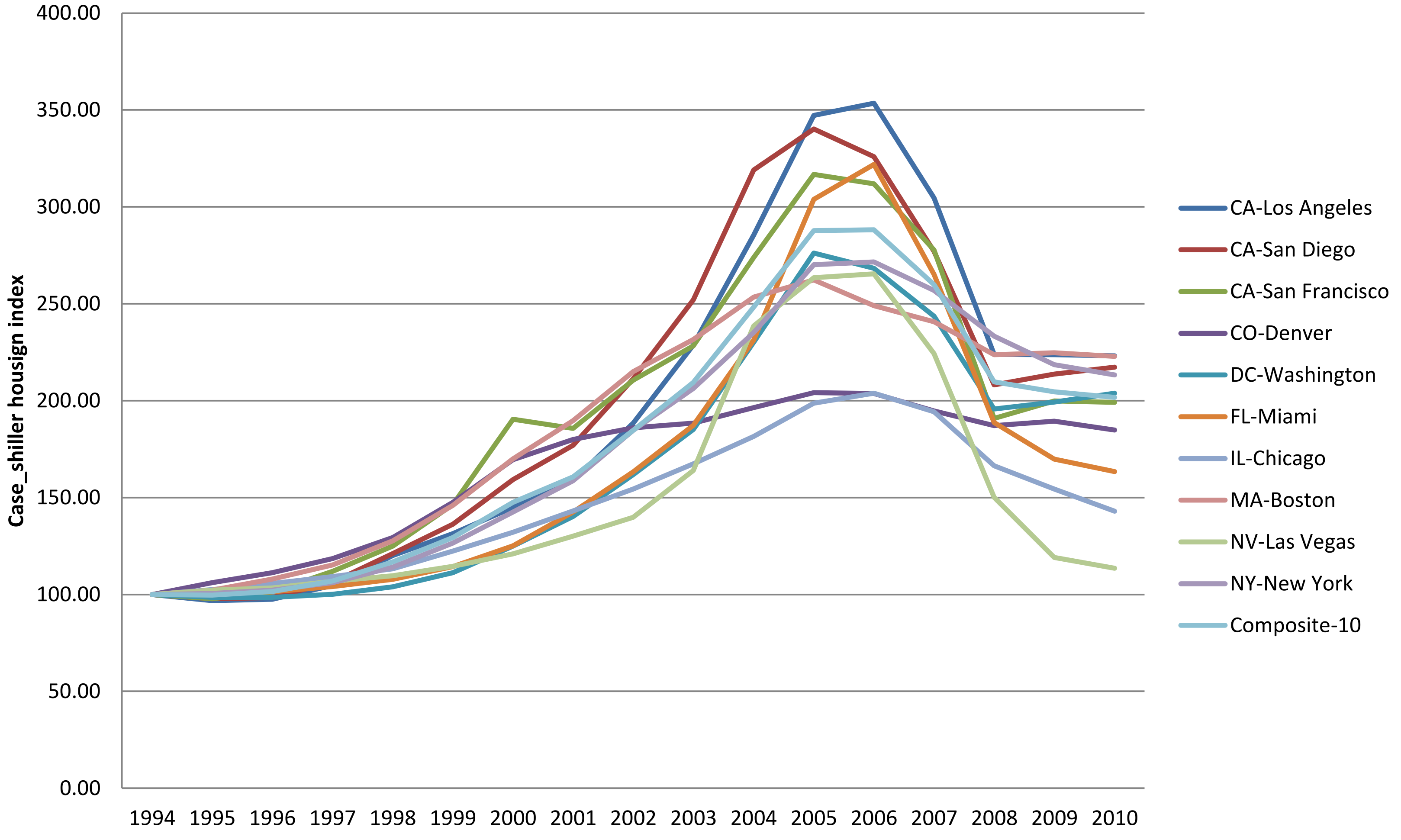
- Current crisis is a good example of the effects of a collapse in real estate prices

- Apparent bubbles in real estate prices in Ireland, Spain, and the U.S.

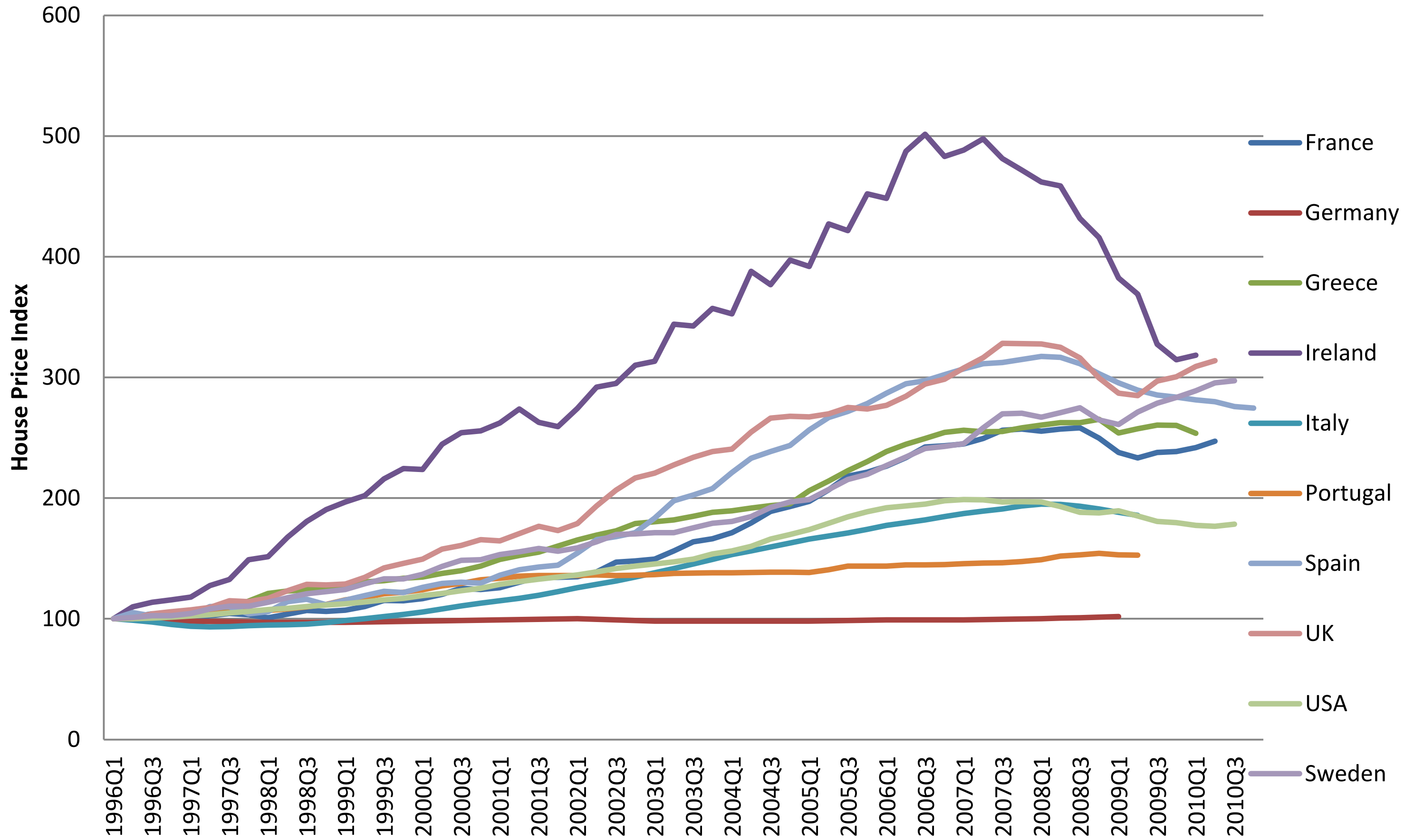
Nominal Housing Prices in Ireland, Spain and the U.S.



Nominal Housing Prices in Different U.S. Cities



Nominal Housing Prices in U.S. and Various European Countries



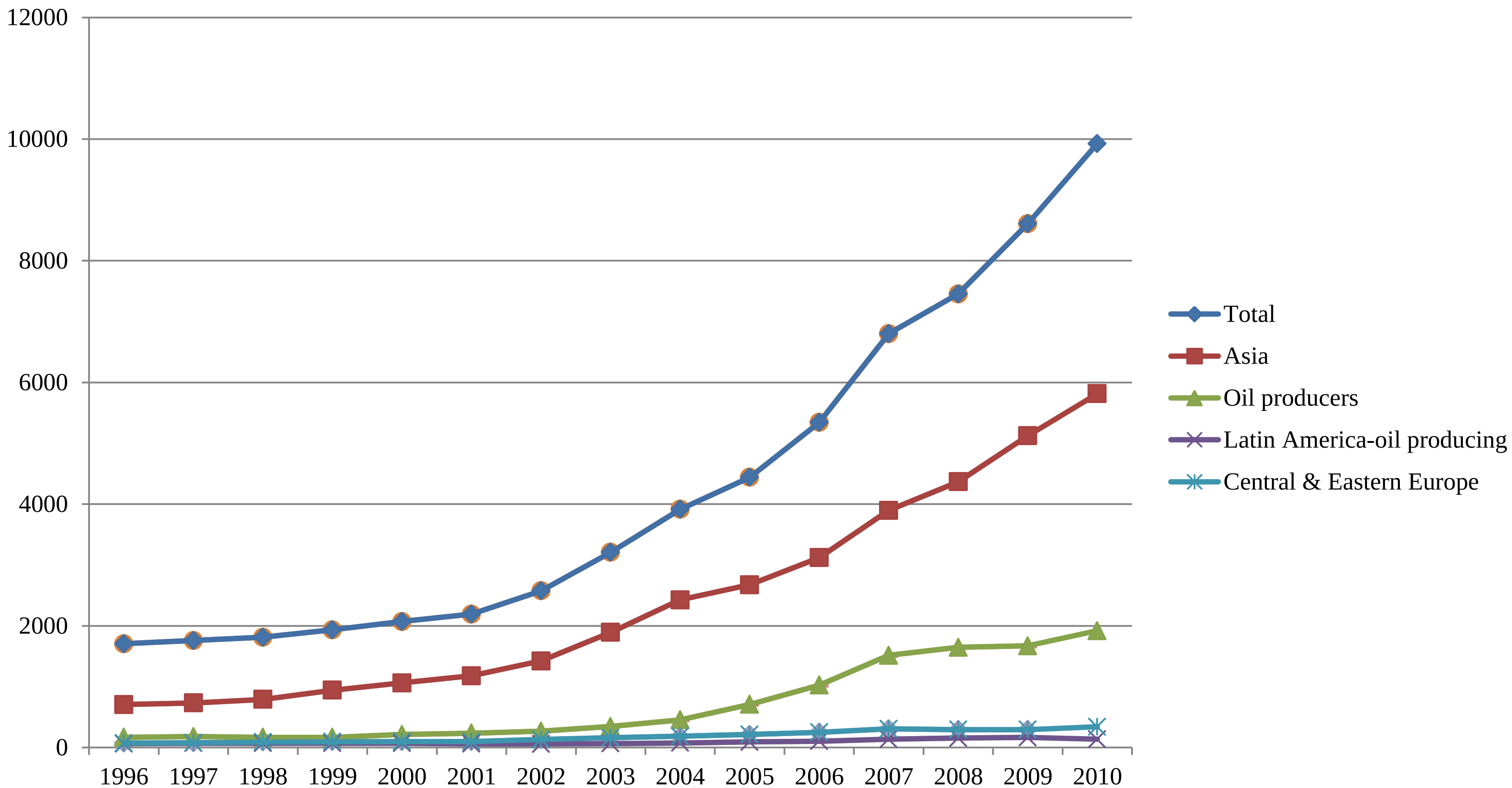
- What caused these bubbles?

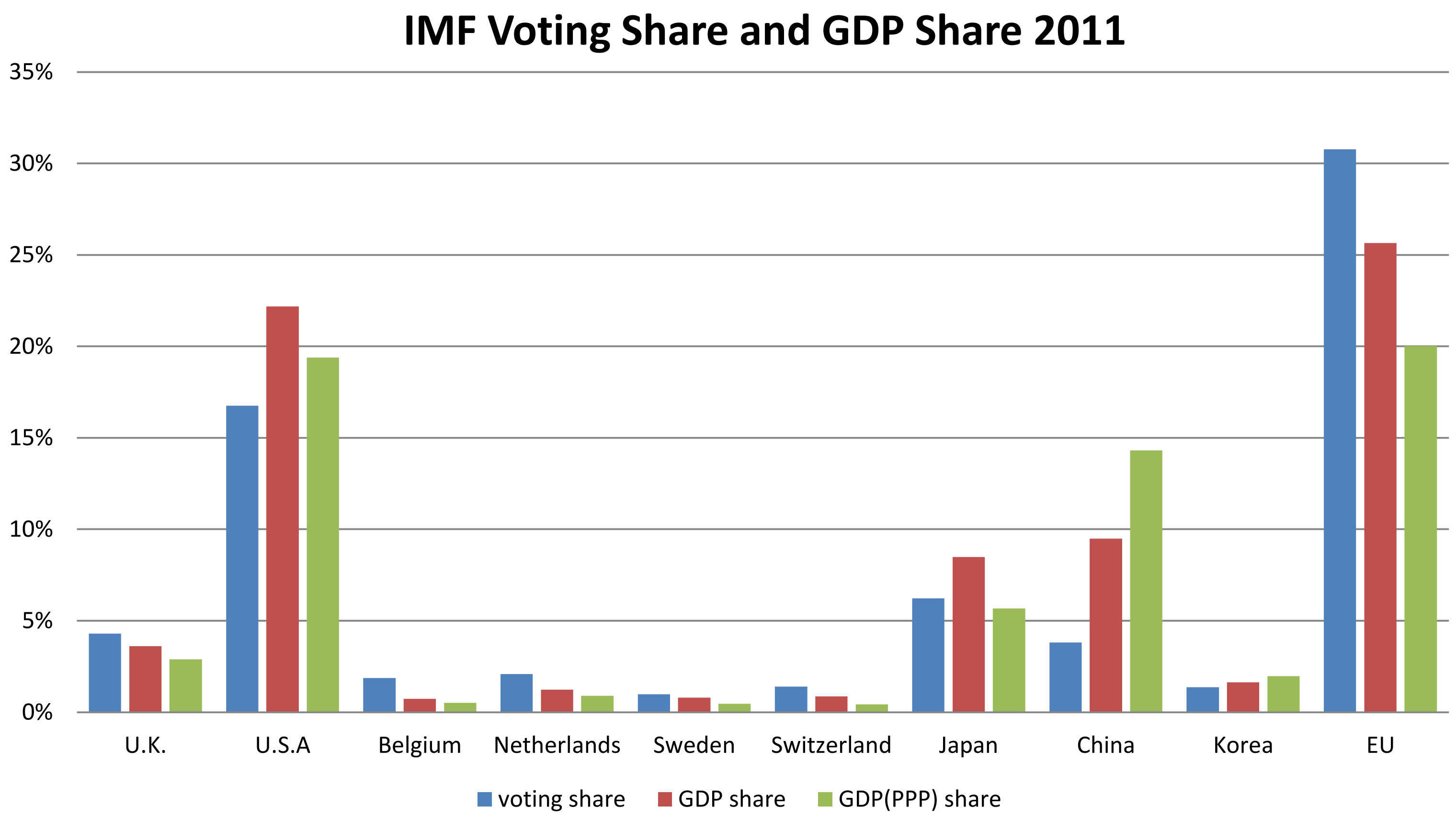
- Returns on housing are positively serially correlated so in contrast to stocks the market is inefficient

- It appears that lowering interest rates at a time when property prices are rising rapidly can lead to a bubble

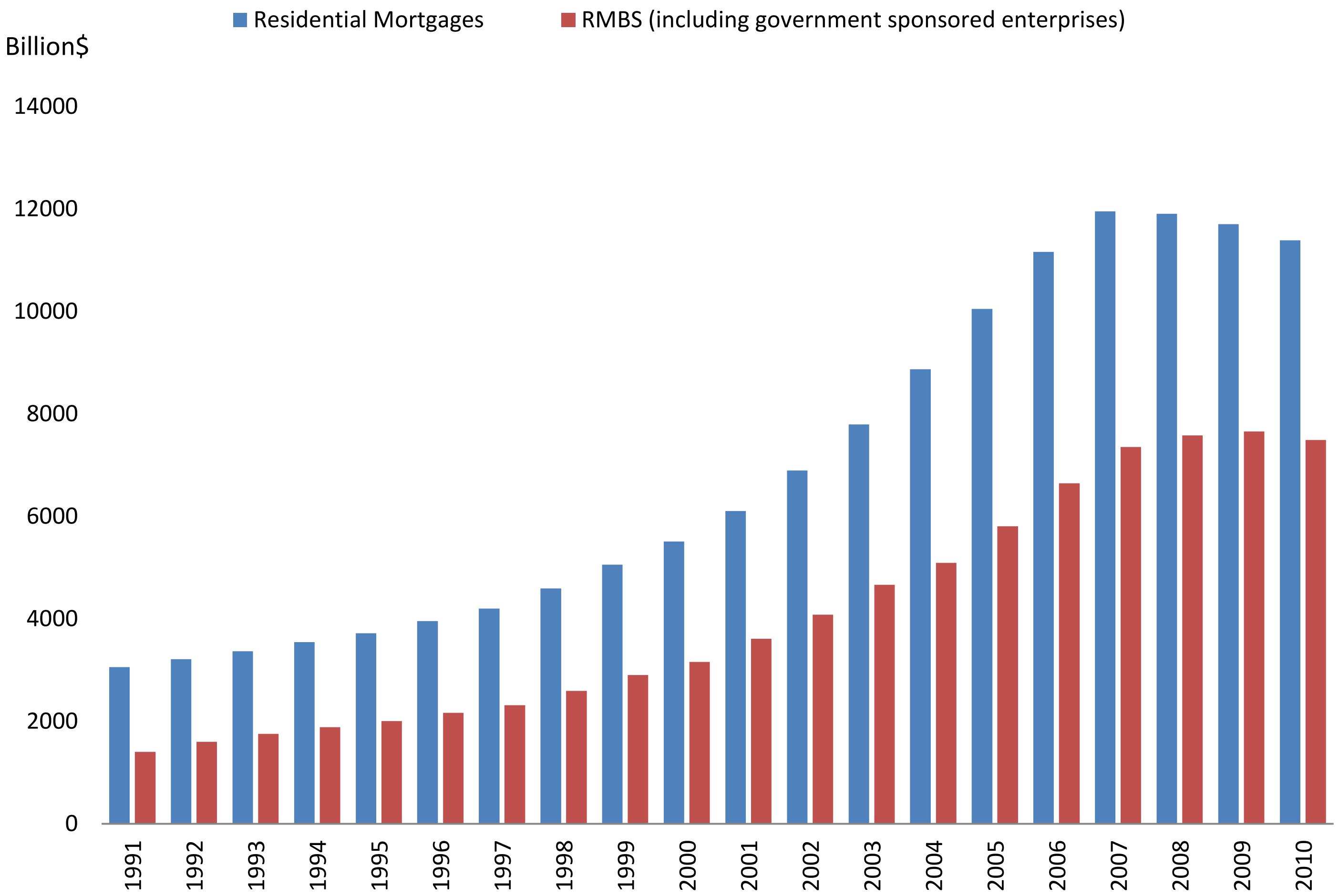
- Easy availability of credit due to large foreign exchange reserves of Asian central banks that resulted from IMF policies enacted during the 1997 Asian Crisis

Global Imbalances
Total Reserves in Billions of US $ 1996-2010




IMF Voting Share and GDP Share 2011
35%
30%
25%
20%
15%
10%
5%
0%
U.K.
U.S.A
Belgium
Netherlands
Sweden
Switzerland
Japan
China
Korea
EU
voting share
GDP share
GDP(PPP) share

U.S. Residential Mortgages



- Objective of policy should be to prevent bubbles occurring in the first place
- Use interest rate policy to prevent them?
  - Politically difficult?
  - Perhaps possible and desirable in homogenous economic areas/countries (e.g., Sweden, maybe U.K.) but problem of capital inflows if interest rates are raised
  - In large heterogeneous economies like China, the Eurozone and the U.S. raising interest rates will damage areas without bubbles and macro-prudential policies need to be relied upon to a greater extent

Macro-prudential policies 1

- First objective it to eliminate real estate bubbles by targeted intervention in property markets

1. Reductions in loan-to-value ratios for hot real estate markets
2. Increases in taxes on real estate transfers
3. Increases in annual real estate taxes
4. Direct restrictions on real estate lending

- Evidence from Korea, Hong Kong, Singapore suggest they work in the short run but not in the long run

Macro-prudential policies 2

- Second objective is to increase resilience of banking sector through countercyclical policies

1. Capital requirements should be raised during booms so they can be relaxed in busts
2. Similarly for reserve ratios particularly on real estate related loans
3. Differentiated capital requirements and higher risk weights for real estate loans

- Some evidence these can kinds of measures can help increase the resilience of the banking sector, e.g. Spain

- Global imbalances need to be reduced
  - Self-insurance by Asian countries through large reserves is optimal for them but very inefficient globally
- Reform governance structure of the IMF
  - Reduce European representation
  - End system of European Managing Director/US First Deputy
  - Increase East Asian influence
- Concerning Chinese reserve accumulation
  - Rmb as a reserve currency

2c. Asset mispricing due to limits to arbitrage

- Evidence was that not only did prices of securitized products seem very low but correlations between residential mortgage-backed assets, commercial mortgage-backed assets, and corporate credit securitizations markedly increased

- "Cash-in-the-market" pricing and limits to arbitrage

- The apparent mispricing contributed significantly to banks' problems because of mark-to-market accounting

Possible solutions to mispricing due to limits to arbitrage

- TARP-type programs can help restore market functioning and correct pricing
  - Difficult to implement and uncertain effects
  - Should the Treasury or the central banks implement them?

- Mark-to-market may need to be suspended when markets are not efficient
  - For example, when there is significant divergence between market prices and model based prices (more than 2%)

2d. Asset mispricing due to “flash crashes”

- Around 60% of trading volume in the U.S. is by high frequency traders

- On May 6, 2010 over 20,000 trades across more than 300 securities were executed at prices more than 60% away from their values just moments before. Many were executed at prices of a $0.01 or less, or as high as $100,000, before prices of those securities returned to their “pre-crash” levels.

- Should high frequency trading be regulated?

2e. Sovereign Default

- Problems in Greece in the first part of 2010 and since then show the difficulties associated with sovereign default within the Eurozone
- Subsequent problems in Ireland and Portugal and now in Italy and Spain have underlined the importance of this issue
- Political economy factors in Germany and other Northern European countries are key and quite uncertain

Five possible scenarios for Eurozone problem countries

1. Official scenario
2. IMF and EFSF/ESM end up with the debt and hold it for many years
3. Default and stay in the Eurozone
4. Leaving the Eurozone and regaining monetary policy
5. An accident

2f. Rise in Interest Rates

- Interest rates are at historic lows
- It is quite likely that in the coming years both short and long term rates will rise
- This will cut the value of many assets including sovereign debt held by banks and could cause a significant systemic problem

3. Contagion

- A very important systemic risk

- At least three different types:
  - Domino effects through the payments system or interbank markets
  - Common asset exposure
  - Uncertainty about how events will play out because of a lack of precedent

- Solution: High bank capital requirements?

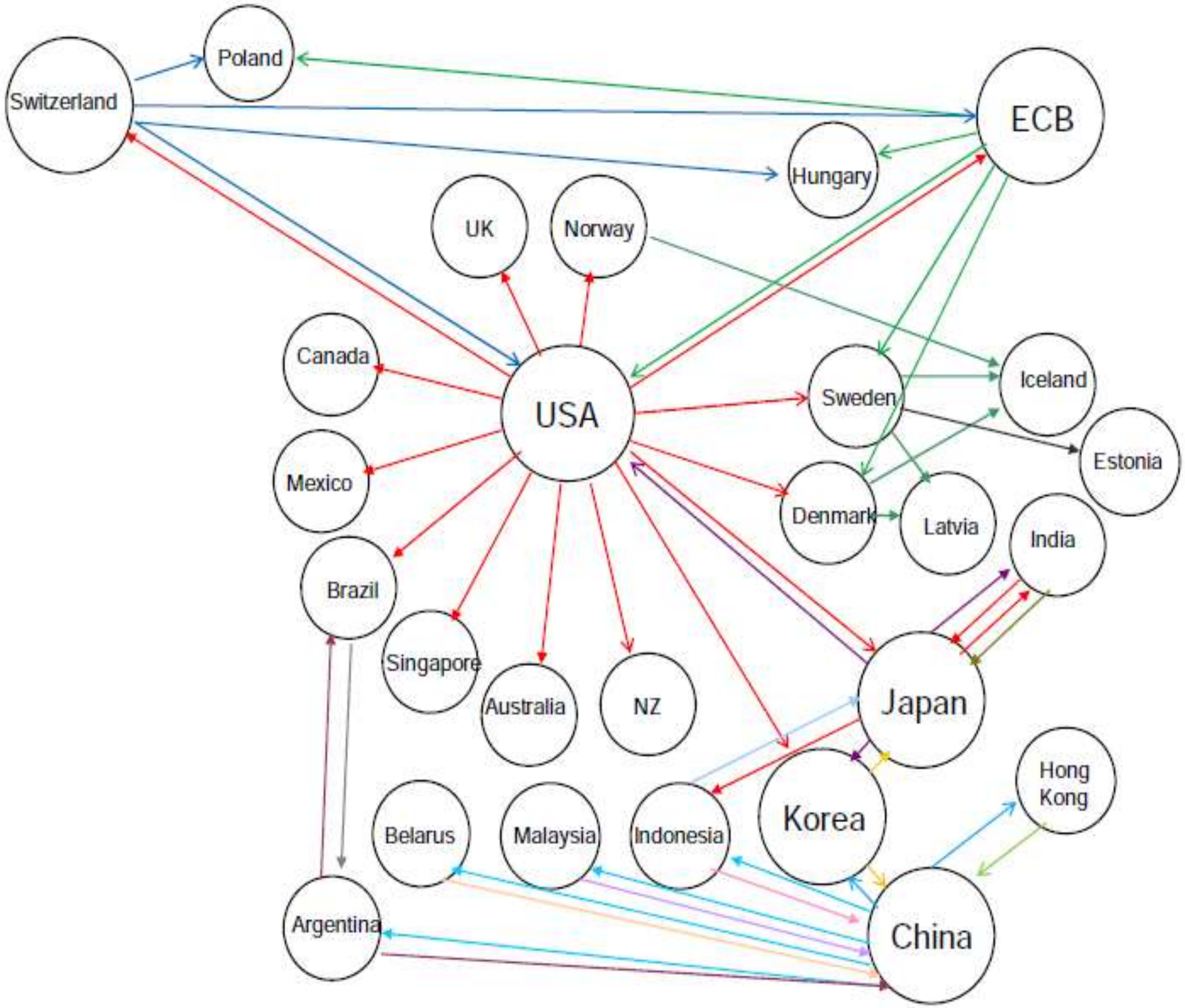
Resolution mechanism

- Large institutions are saved to avoid contagion at the cost of moral hazard
  – Large institutions hold less capital and are riskier as they internalize that they are "too big to fail"
- "Too big to fail" is not "Too big to liquidate"
- Government should orderly resolve failing institutions
  – Guarantee short term commitments to avoid contagion
  – The top 5 executives should be removed immediately
  – All employee pension claims should be eliminated
  – Over the next few years the bank should be liquidated

4. Foreign exchange mismatches

- A major factor in the 1997 Asian Crisis was the lack of access to foreign exchange by banks and firms in Thailand, Korea, Indonesia and other countries
- Prior to the current crisis many banks within Europe had made foreign currency loans funded by foreign currency deposits – when the crisis struck many deposits were not rolled over
- Largest liquidity shortage was $400 billion dollars in the Eurozone, next was $70 billion worth of euros in the U.S. and then $30 billion of Sfrs in Eurozone

- Not a significant problem in the current crisis because central banks introduced foreign currency swaps
- There were four overlapping networks:
  - The Fed network to supply U.S. dollars
  - The ECB network to supply Euros
  - The Swiss Franc network
  - The Latin American and Asian networks


Switzerland
Poland
ECB
Hungary
UK
Norway
Canada
USA
Sweden
Iceland
Estonia
Mexico
Denmark
Latvia
India
Brazil
Singapore
Australia
NZ
Japan
Hong
Kong
Belarus
Malaysia
Indonesia
Korea
Argentina
China

Solutions to foreign exchange mismatches

- IMF liquidity facility
  - Will it be like central banks' discount windows with stigma?

- Guaranteed swaps going forward is arguably a better solution and the G-20 is pursuing this

Concluding remarks

- Systemic risk is a complex phenomenon and our understanding of it is limited
- Other exacerbating factors
  - High leverage in financial services of firms
  - Compensation policies
- Checks and balances on central banks – how do we deal with divergence of opinion?

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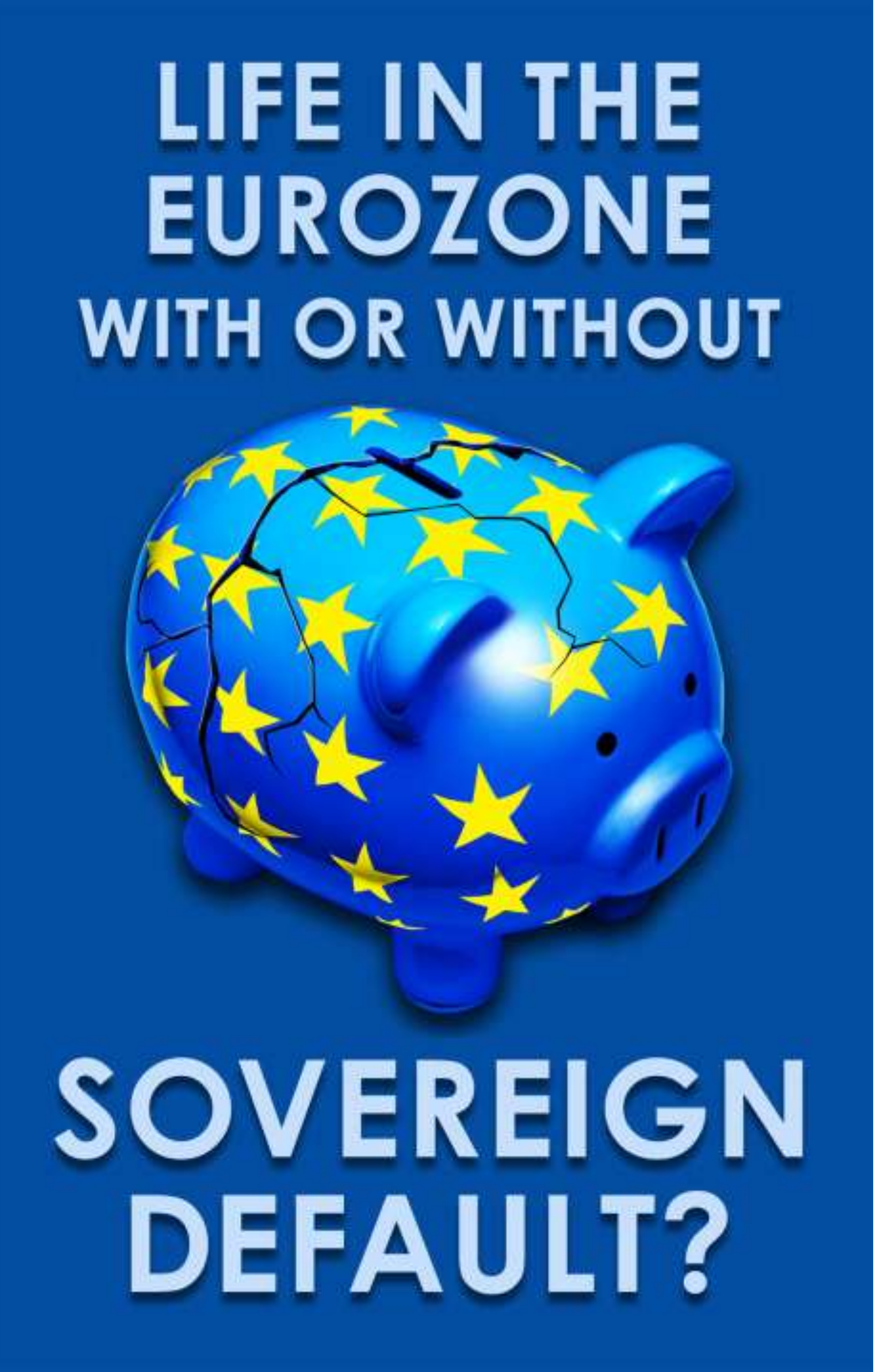

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