Macroprudential and Other Regulation and Networks

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Systemic Risk and Macroprudential Regulation: Perspectives from Network Analysis Conference
Bank of England
13 October 2014

Introduction

- Before the crisis there was widespread agreement that the central bank should target inflation with some such as the Federal Reserve also focusing on unemployment
- Financial stability was regarded as secondary – it was required to ensure efficient transmission of monetary policy but could be made the responsibility of the central bank or a separate Financial Services Authority
- Central bank independence was seen as crucial to the primary role of targeting inflation
- Fiscal policy was controlled separately by the Finance Ministry or Treasury

What went wrong with banking regulation?

- The focus of banking regulators was on microprudential regulation that involves ensuring no individual bank or institution takes large risks
- The idea is that if banks and financial institutions do not take excessive risk the financial system will be safe and the real economy will not suffer from a financial crisis
- This failed to prevent a financial crisis because it ignored systemic risk
- What are the causes of systemic risk?

Some causes of systemic risk

1. Panics – banking crises due to multiple equilibria
2. Banking crises due to asset price falls
3. Contagion
4. Financial architecture
5. Foreign exchange mismatches in the banking system

Is systemic risk exogenous or endogenous?

- The traditional view of financial risk is that it is exogenous in the sense that as long as financial institutions and firms are responsible in their choice of (exogenously) risky investments the financial system will be stable

- However, while some causes of systemic risk are exogenous such as natural disasters or wars many are endogenous in the sense that they depend on central bank and government policies

- For example, there is extensive evidence that monetary policy in the form of low interest rates leads to bank risk taking (e.g., Jimenez, Ongena, Peydro and Saurina (2014) and potentially systemic risk

- This is just one example – there are many others as we shall see
- Systemic risk and financial stability are tied to a whole array of central bank and government policies
- This implies that systemic risk and financial stability cannot be dealt with by bank regulation alone
- Financial stability requires that many central bank and government policies be targeted at controlling systemic risk
- The traditional separation of responsibilities between central banks, FSAs and finance ministries may no longer be appropriate

Creating financial stability through the control of systemic risk

- The traditional view was that financial stability could be created through bank regulation
- We turn next to one of the prime sources of systemic risk and focus on the kinds of policies that are necessary to control it
- In fact much more than traditional banking regulation is required for financial stability

2. Banking crises due to asset price falls

- Possible reasons for asset price falls
  a. Bursting of real estate bubbles
  b. Bursting of other asset price bubbles
  c. Rise in interest rates
  d. Sovereign default
  e. Mispricing due to limits to arbitrage
  f. Business cycle
  g. Mispricing due to “flash crashes”
  h. Politics

2a. Bursting of real estate bubbles

- Herring and Wachter (1999), Reinhart and Rogoff (2009), and Crowe, Dell'Ariccia, Igan, and Rabanal (2011) have provided evidence that the most important source of systemic risk is the collapse of real estate prices

- Herring and Wachter (1999) emphasize both commercial and residential real estate booms

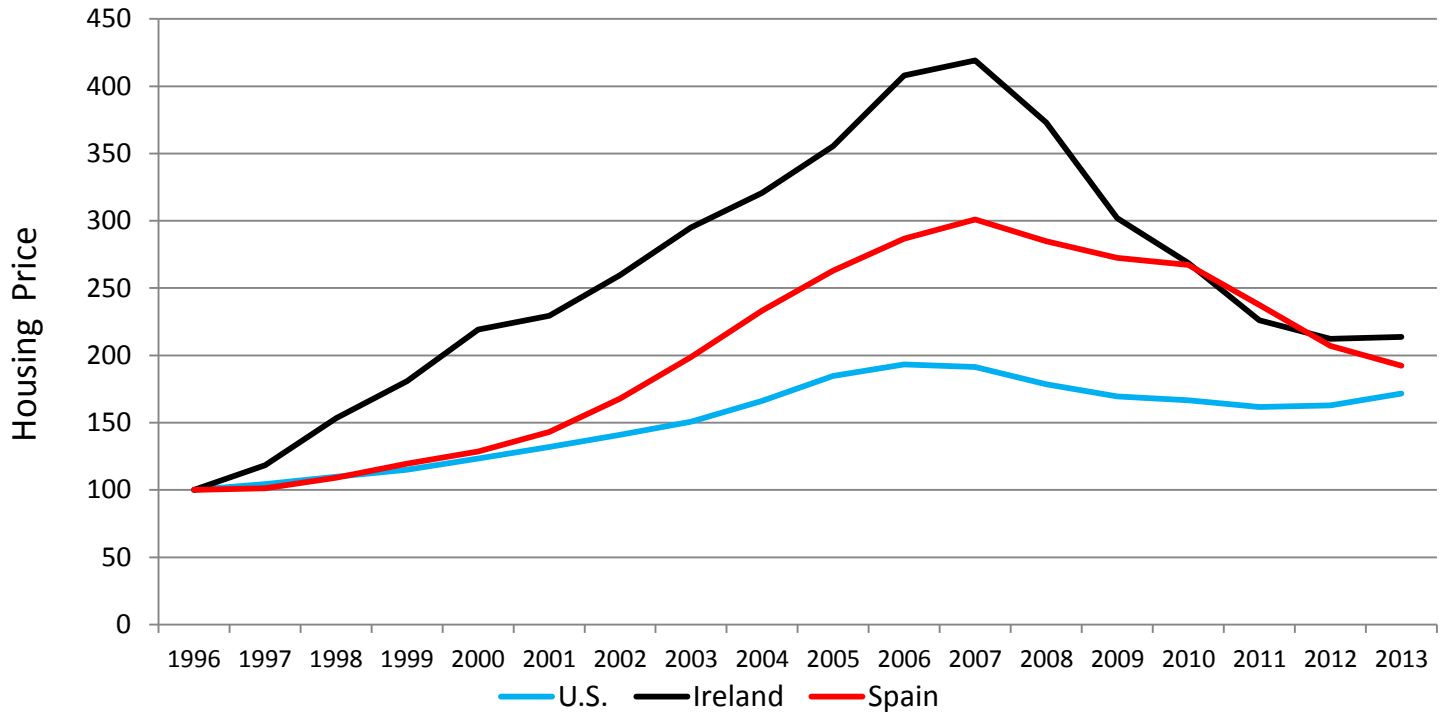
Real Housing Price Cycles and Banking Crises

Country	Crisis date	Peak	Trough	Duration of downturn	Magnitude of decline (in percent)
		Advanced economies: The Big 5			
Finland	1991	1989:Q2	1995:Q4	6 years	–50.4
Japan	1992	1991:Q1	Ongoing	Ongoing	–40.2
Norway	1987	1987:Q2	1993:Q1	5 years	–41.5
Spain	1977	1978	1982	4 years	–33.3
Sweden	1991	1990:Q2	1994:Q4	4 years	–31.7
		Asian Crisis: The Big 6			
Hong Kong	1997	1997:Q2	2003:Q2	6 years	–58.9
Indonesia	1997	1994:Q1	1999:Q1	5 years	–49.9
Malaysia	1997	1996	1999	3 years	–19.0
Philippines	1997	1997:Q1	2004:Q3	7 years	–53.0
South Korea	1997		2001:Q2	4 years	–20.4
Thailand	1997	1995:Q3	1999:Q4	4 years	–19.9
		Other emerging			
Argentina	2001	1999	2003	4 years	–25.5
Colombia	1998	1997:Q1	2003:Q2	6 years	–51.2
Historical episodes					
Norway	1898	1899	1905	6 years	–25.5
US	1929	1925	1932	7 years	–12.6

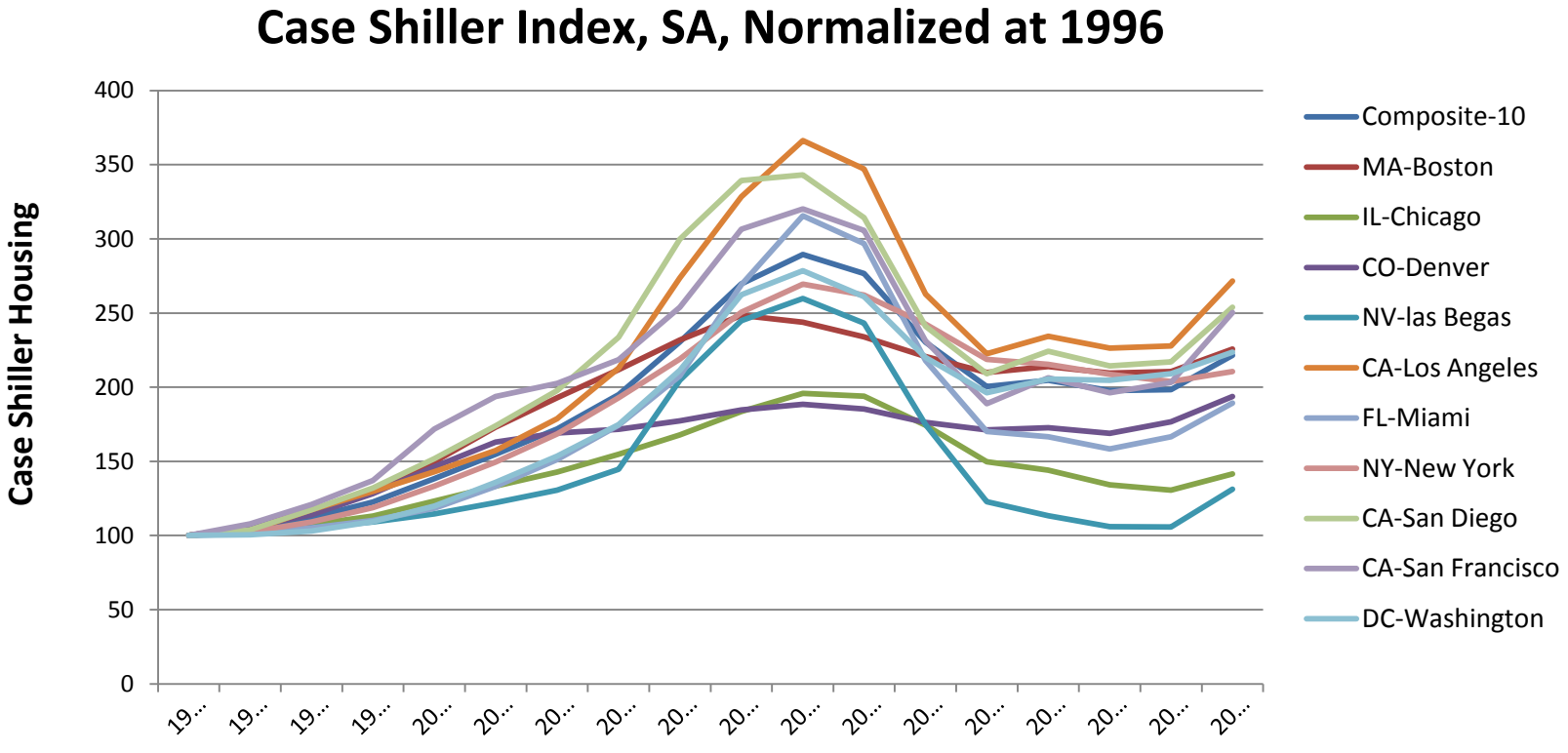
Source: Reinhart and Rogoff (2009)

- In the recent crisis Ireland, Spain and some regions of the U.S. had sharp run ups and then collapses in property prices that have had a severe effect on these countries' banking systems and real economies

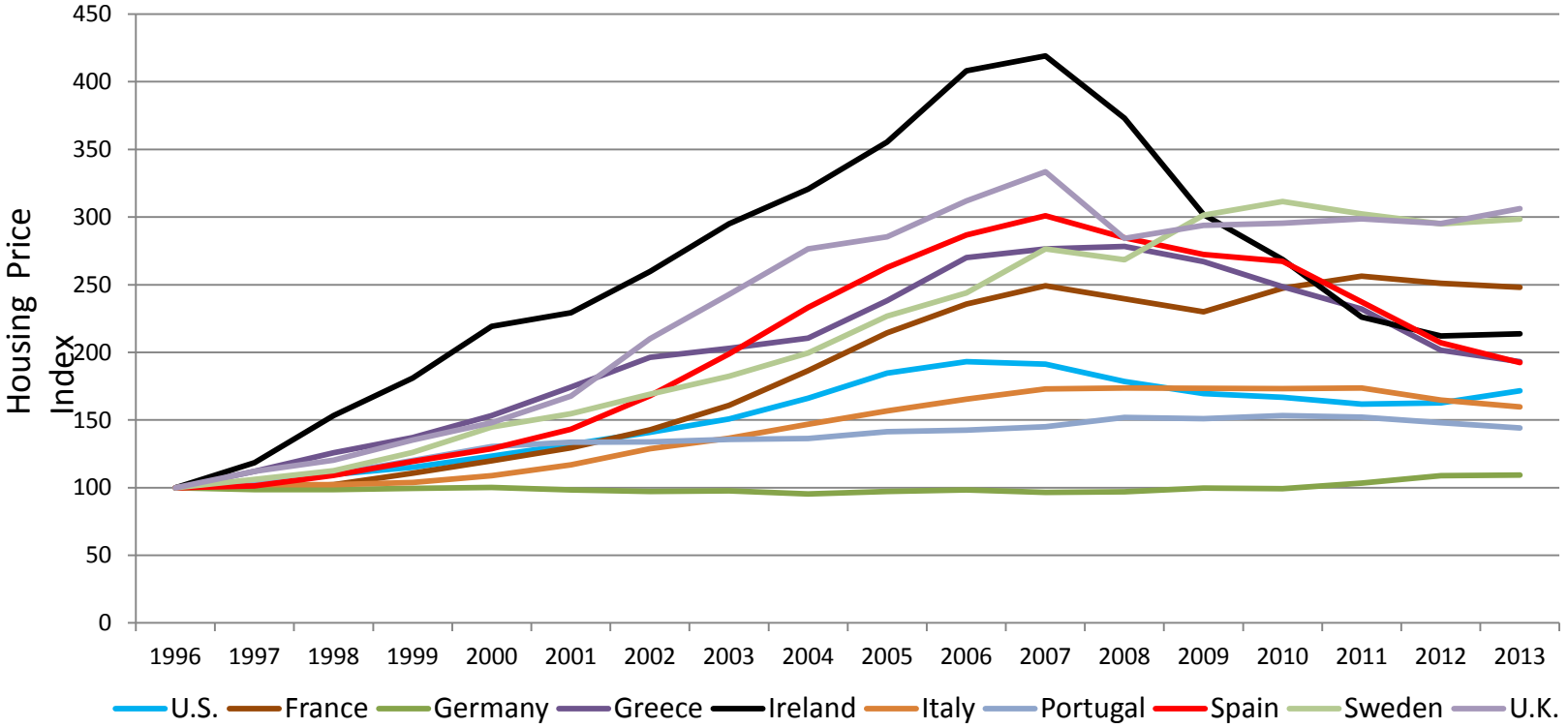
Nominal Housing Prices in Ireland, Spain and the U.S.



Nominal Housing Prices in Different U.S. Cities



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



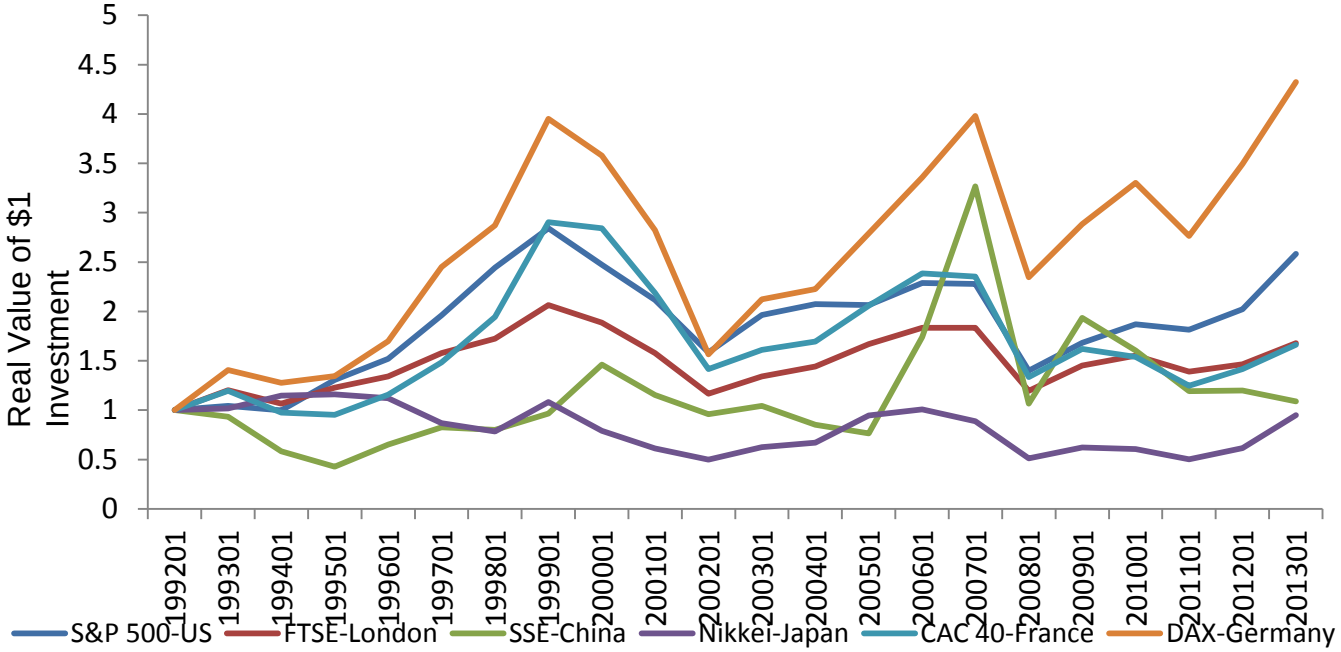
- What caused the real estate bubbles that led to financial instability?
- Returns on housing are positively serially correlated so in contrast to stocks the market is inefficient
- Network analysis is potentially very important in understanding this serial correlation and the pricing of real estate
- 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 and other central banks also seems a factor

- The standard response to stopping real estate booms is that macroprudential policies such as control of loan-to-value-ratios, taxation of real estate and so forth can be used to prevent them
- This is not clear since there is some evidence that these have not worked very well in countries where they have been tried such as South Korea and Singapore (see, e.g., Crowe, C., G. Dell'Ariccia, D. Igan, and P. Rabanal (2011))
- It is a difficult question whether interest rates should be raised to burst bubbles – a more effective approach is perhaps not to lower them in the first place
- Real estate bubbles are only one part of the problem

2b. Bursting of other asset price bubbles

- Through changing interest rates and quantitative easing, central banks have the ability to affect a wide range of asset prices in addition to real estate
- Low interest rates have led to record prices for many assets
- Stock markets have risen in many countries and an important question is the extent this was due to monetary policy and in particular quantitative easing
- Central banks need to worry more about the effects of their policies on asset prices if they are to control systemic risk and create financial stability

Stock market prices in different countries



2c. Rise in interest rates

- Interest rates are at historic lows
- It is quite likely that going forward they will revert to long run historical levels
- When this happens the value of debt, including sovereign debt and particularly long term debt, will fall
- This poses an important systemic risk in the future

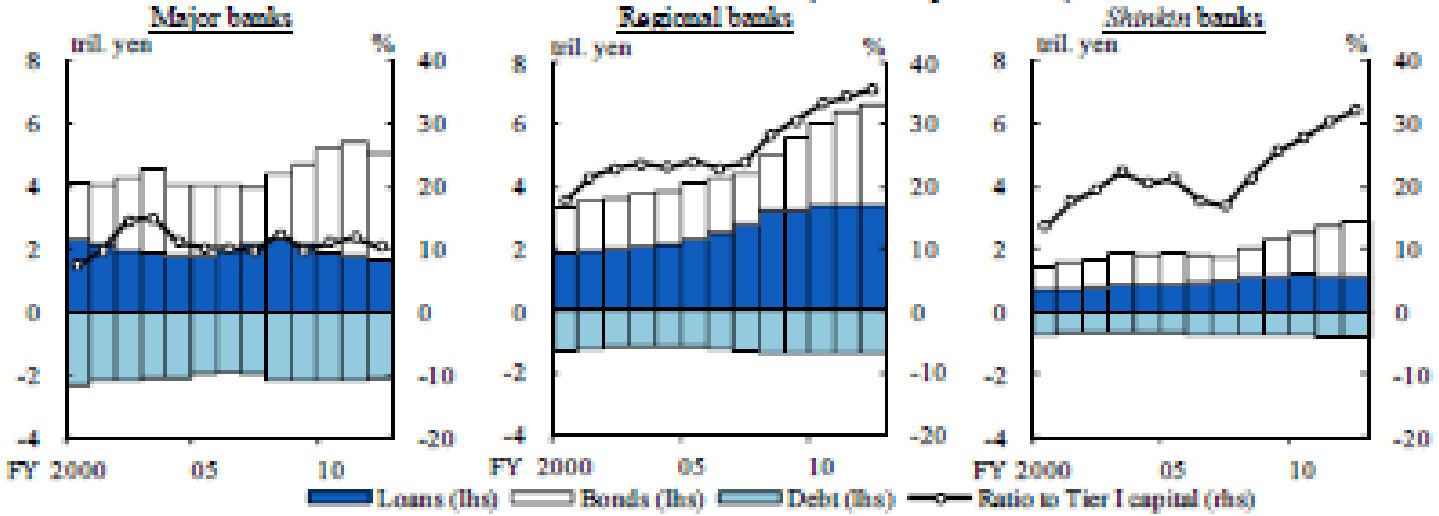
- Japan provides an illustration of the financial stability risks of higher interest rates

- Prime Minister Abe's First Arrow of a very loose monetary policy threatens to raise interest rates

- Bank of Japan has vowed to get inflation up to 2%
  - What will this do to long term interest rates and what effect will this have on the value of banks' assets?
  - Such a rise would cause significant fiscal problems
  - What is the likelihood of capital flight if interest rates don't rise?

- As documented in the BOJ April 2013 Financial Stability Report, a significant rise in interest rates will cause a significant drop in the value of assets held by a number of banks

Chart IV-3-17: Interest rate risk (100 basis point value)[1,2]



Notes: *1.* 100 basis point value in the banking book. Off-balance-sheet transactions are not included.

2. The latest data for interest rate risk are as of end-December 2012. Those for Tier I capital of major banks and regional banks are as of end-September 2012, and those of *shinkin* banks are as of end-March 2012.

Source: BOJ.

• BOJ is relaxed about interest rate risk but are they correct to be so (see Alvarez and Fernando (2014))?

The average remaining maturity of bond investment has been at around 2.5 years at major banks, whereas it has lengthened to around 4 years at regional banks and nearly 5 years at *shinkin* banks. Meanwhile, the average remaining maturity of loan extension has also been longer than in the past due to the increases in housing loans and loans to local governments, whose maturities tend to be long (Chart IV-3-21).

As will be described later, unrealized losses on securities holdings caused by a rise in interest rates will basically not affect the capital adequacy ratios of domestic banks, as the current treatment of exempting these banks from including unrealized losses on securities holdings in their capital will become permanent.[28] However, domestic banks need to continue to manage interest rate risk appropriately, since the effects on their profits of changes in interest rates will be significant if the maturity mismatch is large.

Why might global interest rates rise?

- One of the most important issues for financial stability is the extent to which central banks will be able to keep long term interest rates low
- Forward guidance policies were designed to affect long term interest rates by pledging to keep short term rates low but it remains to be seen how effective they will be
- Interest rates in China that entrepreneurs pay are much higher than policy rates – at the moment financial repression and capital controls ensure these do not spill over into the global economy but this may be about to change

Shanghai Free Trade Zone

- To act as a pilot scheme for many reforms, particularly reforms to the financial system

- Key reforms include
  - Capital account convertibility
  - Interest rate liberalization
  - The cross-border usage of Rmb
  - Foreign exchange management
  - Opening up the financial sector to foreign institutions
  - Allowing eligible Chinese financial institutions to develop offshore businesses

- If interest rates in China rise significantly as the financial system is reformed, the People's Bank of China and the Chinese Government will find it very costly to maintain the vast foreign exchange reserves they currently have - $3.99 trillion as of June 30, 2014 and they are likely to start reducing them

- Thus the reforms in China have the potential to lead to a reduction in global foreign exchange reserves and this could have a significant effect on long term rates irrespective of what the major central banks do

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

- Network analysis is crucial in understanding these (see, e.g., Acemoglu, Ozdaglar and Tahbaz-salehi (2013) and Elliott, Golub and Jackson (2014))

Concluding remarks

- The focus here has been on a few sources of systemic risk but as outlined initially there are many others

- Systemic risk is due in part to the actions of commercial banks and other financial institutions but also to a large degree due to the policies of central banks and governments

- There are a large range of policies pursued by central banks and governments that need to take into account financial stability issues

- The current decentralized architecture of policy responsibilities is not well suited to achieving this – more centralization is probably required

- More international cooperation and coordination of policies will be required given the global nature of the financial system

- Much work remains to be done understanding and controlling systemic risk and the effect it has on financial stability and the real economy - network analysis has a significant role to play in this

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