

# **SOURCES OF INSTABILITY IN FINANCIAL SYSTEMS**

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# Introduction

- In this lecture we provide an overview of the nature of financial instability in theory, and the types of turbulence which might pose particular systemic dangers
- We use these to develop a framework for identifying sources of financial instability
- Systemic risk, financial instability or disorder can be defined as entailing heightened risk of a financial crisis - “a major collapse of the financial system, entailing inability to provide payments services or to allocate credit”.

- Definition excludes asset price volatility and misalignment – only relevant as affect liquidity or solvency of institutions
- We see financial instability as a process which includes not just the crisis itself but the build-up of vulnerability in favourable economic conditions which precedes it
- By identifying sources of instability our analysis aids macroprudential surveillance - monitoring of conjunctural and structural trends in financial markets so as to give warning of the approach and potential impact of financial instability
- Macroprudential analysis is of immense importance given the costs of crises - as much as 15% of GDP

# Structure of lecture

## Introduction

- 1 Theories of financial instability
- 2 Three principal types of financial instability
- 3 Subcategories of financial turbulence
- 4 Archetypal examples of crises
- 5 Generic sources of crises
- 6 A cross check from econometric studies

## Conclusion

# 1 Theories of financial instability

- Selective synthesis required of different theories
  - Financial fragility: financial crises follow a “credit cycle”, triggered by an exogenous event (“displacement”), leading to rising debt, underpricing of risk and asset bubbles followed by negative shock and banking crisis;
  - Monetarist: bank failures impact on the economy via a reduction in the supply of money, while policy regime shifts are hard to allow for in risk management;

- Uncertainty: as opposed to risk as a key feature of financial instability, linked closely to confidence, and helps explain the at times disproportionate responses of financial markets in times of stress and difficulties with innovations;
- Disaster myopia: that competitive, incentive-based and psychological mechanisms lead financial institutions and regulators to underestimate the risk of financial instability in presence of uncertainty;
- Asymmetric information and agency costs: well-known market failures of the debt contract help to explain the nature of financial instability e.g. credit tightening as interest rates rise and asset prices fall;

- Herding:
  - among banks to lend at excessively low interest rate margins;
  - among institutional investors as a potential cause for price volatility in asset markets, driven e.g. by peer-group performance comparisons, that may affect banks and other leveraged institutions;
- Industrial: effects of changes in entry conditions in financial markets can both encompass and provide a supplementary set of underlying factors and transmission mechanism to those noted above, e.g. new entry leading to heightened uncertainty on market dynamics

- Inadequacies in regulation:
  - mispriced safety net (deposit insurance and lender of last resort) generates moral hazard leading to risk taking, especially if deregulation cuts franchise value of banks, unless supervision is strict
  - Quasi fiscal lending which banks are forced to undertake to finance insolvent state enterprises
- International aspects of financial instability:
  - Exchange rate policy – resistance of authorities to exchange rate pressure leading to unsustainable interest rate rises for domestic economy
  - Institutional investors (including hedge funds) and herding
  - Foreign currency financing – risk of mismatch and crisis when exchange rate depreciates



- Key risks incurred as a consequence of the above –
  - Credit risk - risk that a party to contract fails to fully discharge terms of the contract
  - Liquidity risk - risk that asset owner unable to recover full value of asset when sale desired (or for borrower, that credit is not rolled over)
  - Market risk (interest rate risk) - risk deriving from variation of market prices (owing to interest rate change)
- Manifestations of instability
  - bank runs: panic runs on banks (which may follow the various stimuli identified by the above theories) link to the maturity transformation they undertake, and the relatively lesser liquidity of their assets; such theory can also be applied to securities market liquidity;
  - contagion: failure of one institution or market affects others either via direct counterparty/investor links or more general uncertainty about solvency in presence of asymmetric information
  - generalised failure of institutions due to exposure to common shock

## 2 Three principal types of financial instability

- Crises seem diverse in specific details but broad generic types can be distinguished:
  1. bank failures following loan or trading losses
  2. systemic consequences of asset price volatility after a shift in expectations
  3. collapse of market liquidity and issuance

# Selected episodes of financial instability 1970-98

<b>Date</b>	<b>Event</b>	<b>Main feature</b>
1970	US Penn Central Bankruptcy	Collapse of market liquidity and issuance
1973	UK secondary banking	Bank failures following loan losses
1974	Herstatt (Germany)	Bank failure following trading losses
1982	Ldc debt crisis	Bank failures following loan losses
1984	Continental Illinois (US)	Bank failure following loan losses
1985	Canadian Regional Banks	Bank failures following loan losses
1986	FRN market	Collapse of market liquidity and issuance
1986	US thrifts	Bank failures following loan losses
1987	Stock market crash	Price volatility after shift in expectations
1989	Collapse of US junk bonds	Collapse of market liquidity and issuance
1989	Australian banking problems	Bank failures following loan losses
1990	Swedish commercial paper	Collapse of market liquidity and issuance
1990-1	Norwegian banking crisis	Bank failures following loan losses
1991-2	Finnish banking crisis	Bank failures following loan losses
1991-2	Swedish banking crisis	Bank failures following loan losses
1992-6	Japanese banking crisis	Bank failures following loan losses
1992	ECU bond market collapse	Collapse of market liquidity and issuance
1992-3	ERM crisis	Price volatility after shift in expectations
1994	Bond market reversal	Price volatility after shift in expectations
1995	Mexican crisis	Price volatility after shift in expectations
1997	Asian crisis	Price volatility following shift in expectations and bank failures following loan losses.
1998	Russian default and LTCM	Collapse of market liquidity and issuance

# 3 Subcategories of financial turbulence

- Financial deregulation: inexperienced institutions and regulators allow build up of debt leading to vulnerability (Sweden)
- Disintermediation and reintermediation: when securities markets develop top quality credits shift from banks leading to risk taking to maintain profits (Japan)
- Failure of a single large institution: if at core of system and major counterparty links (Continental Illinois)

- Commodities (Latin America), and property related lending and speculation (Finland): heavy demands for external finance and cyclically volatile prices
- Crises linked to international debt (Latin America, Mexico): impact of foreign currency liabilities on balance sheets and volatility of capital flows (notably in international interbank market), often currency and banking crises occur together, contagion between countries (Asia)
- Crises with an equity market linkage (1987 crash): volatility of prices and leveraged institutions holding shares

# 4 Archetypal examples of crises

- Banking: The Japanese banking crisis
  - Long term excellent performance of Japanese economy
  - Strong credit expansion in 1980s, backed by strong household saving directed to banks directly or indirectly
  - Loans directed largely to real estate, banks disintermediated since large companies no longer required bank finance (internal finance and securities markets). Lending also via nonbanks financed but not controlled by banks
  - Further impetus from cut in interest rates in wake of Louvre Accord
  - Banks found it hard to adjust to low growth rates since early 1970s, moral hazard from safety net and herding (management risk reduced if emulate competition), lack of credit culture

- Tightening of monetary policy in 1989 as asset price inflation spread to real economy, followed by quantitative restrictions on real estate financing
- Sharp falls in equity prices and real estate prices
- Sharp rise in non performing loans and fall in capital ratios (also due to equity prices)
- Authorities took very long time to react – still not fully resolved
- Failures also of investment banks and insurance companies
- Sluggish economic development in the wake of this
  - credit constraints
  - fiscal crisis
  - persistent high household saving
  - bankrupt firms kept operating

- Securities prices: the stock market crash of 1987
  - Buoyant investor expectations, leading to suspicion of a bubble – herding by institutional investors
  - Impression/illusion of high liquidity, link to portfolio insurance
  - “News” was not commensurate with outcome
  - Portfolio insurance and index arbitrage interaction
    - Sell orders of insurers drove down market sharply
    - Backwardation futures discount to market
    - Arbitrageurs bought stock and sold futures – “cascade”
  - Institutional investors heavily involved in selling, especially of cross border holdings
  - Particular concern about lending to brokers and dealers, caught with depreciating inventory
  - Challenge for monetary policy – emergency liquidity assistance to market as a whole but later inflation



- Securities liquidity: the Russia/LTCM crisis
  - Long bull period preceded crisis, rising share prices and contracting credit spreads
  - Apparent lack of effect of Asia on US securities markets
  - Prices peaked in July 1998, spreads widened
  - Turbulence followed Russia moratorium and LTCM rescue – loss of confidence in emerging markets and fear of unwinding of LTCM/other hedge fund positions
  - Flight to quality, collapse of issuance and liquidity by lower quality borrowers - even in the deepest of markets
  - Evidence of “herding” among investors and traders – lack of “macro portfolio diversification”
  - Simultaneous price and liquidity shifts in markets previously uncorrelated
  - Feedback from Value-at-Risk may have been damaging
  - Policy action brokering rescue of LTCM and interest rate cuts

# 5 Generic sources of crises

- Regime shift to laxity or other favourable shock
- New entry to financial markets
- Debt accumulation
- Asset price booms
- Innovation in financial markets
- Underpricing of risk, risk concentration and lower capital adequacy for banks
- Regime shift to rigour – possibly as previous policy unsustainable - or other adverse shock
- Heightened rationing of credit
- Operation of safety net and/or severe economic crisis

# Generic patterns of financial instability

<b>Phase of crisis</b>	<b>Nature</b>	<b>Example of features</b>
Primary (favourable) shock	Diverse	Deregulation, monetary or fiscal easing, invention, change in market sentiment
Propagation - buildup of vulnerability	Common – main subject of macroprudential surveillance	New entry to financial markets, Debt accumulation, Asset price booms, Innovation in financial markets, Underpricing of risk, risk concentration and lower capital adequacy for banks, Unsustainable macro policy
Secondary (adverse) shock	Diverse	Monetary, fiscal or regulatory tightening, asymmetric trade shock
Propagation - crisis	Common	Failure of institution or market leading to failure of others via direct links or uncertainty in presence of asymmetric information – or generalised failure due to common shock
Policy action	Common – main subject of crisis resolution	Deposit insurance, lender of last resort, general monetary easing
Economic consequences	Common – scope depends on severity and policy action	Credit rationing leading to fall in GDP, notably investment

# Example - Japan

<b>Phase of crisis</b>	<b>Japan</b>
Primary (favourable) shock	Deregulation of securities markets, monetary easing
Propagation - buildup of Vulnerability	New entry to financial markets (non banks, bond issue), Debt accumulation by property companies, Asset price boom in commercial property booms, Underpricing of risk and risk concentration by banks. Inflation necessitating monetary tightening
Secondary (adverse) shock	Monetary and regulatory tightening
Propagation - crisis	Property and equity price collapse, widespread failure of borrowers, Insolvency of institutions
Policy action	Deposit insurance and lender of last resort, some recapitalisation much later
Economic consequences	Prolonged recession

**Table 2A: Features of selected episodes of financial instability (1933-85)**

	USA Great Depressio n (1933)	USA Penn Central (1970)	UK Secondary Banks (1973)	Germany Herstatt (1974)	LDC debt crisis (1982)	USA Contl Illinois (1984)	Canada regional banks (1985)
Debt accumulation	●	●	●	●	●	●	●
Asset price boom	●		●				
Concentration of risk	●		●	●	●	●	●
Regime shift	●		●	●	●		
New entry of intermediaries	●		●	●	●		
Innovation	●	●	●				
Monetary tightening	●	●	●	●	●		
Declining capital adequacy of financial institutions	●		●	●	●	●	●
Credit rationing/liquidity failure/bank runs	●	●	●	●	●	●	●
Contagion between markets	●			●	●		
International transmission	●			●	●		
Action by the authorities		●	●	●	●	●	●
Severe macroeconomic impact	●				●		
Dysfunction of financial system/economic collapse	●						



**Table 2C: Features of selected episodes of financial instability (1991-98)**

	Swedish banking crisis (1991)	Japanese banking crisis (1992)	ECU bond market collapse (1992)	ERM crisis (1992)	Bond market reversal (1994)	Mexican crisis (1994)	Asian crisis (1997)	Russia and LTCM (1998)
Debt accumulation	●	●	●		●	●	●	●
Asset price boom	●	●			●		●	●
Concentration of risk	●	●			●		●	●
Regime shift	●	●	●	●	●	●	●	●
New entry of intermediaries	●	●	●				●	●
Innovation			●	●	●			●
Monetary tightening	●	●		●	●	●	●	
Declining capital adequacy of financial institutions	●	●					●	●
Credit rationing/liquidity failure/bank runs	●	●	●				●	●
Contagion between markets					●		●	●
International transmission			●	●	●	●	●	●
Action by the authorities	●	●				●	●	●
Severe macroeconomic impact	●	●		●	●	●	●	
Dysfunction of financial system/economic collapse		?					?	

# Points to note

- Causes of financial instability are not confined to crisis itself but earlier boom period
- Vulnerability phase implies risk is partly endogenous to financial system – and focus needs to be on assets of financial institutions not just liabilities
- Role of asymmetric information and incentives in this process (later lecture)
- Crisis may link not only to contagion but also common shocks (e.g. asset price collapse)



# 6 A cross check from econometric studies

- Banking crises often accompany currency crises
- Deregulation and generous deposit insurance may heighten risks of crises
- Studies highlight indicators such as real exchange rate appreciation, credit expansion, high real interest rates, recession and stock market declines
- Generally highlight short term, quantitative indicators of the crisis itself rather than the preceding build up of vulnerability - most useful when give “early warning indicators”
- One promising exception is recent BIS work (credit growth relative to trend as crisis predictor)

# Conclusions

- We see financial instability as a process which includes not just the crisis itself but the build-up of vulnerability in favourable economic conditions which precedes it
- In this context, we have identified sources of crises of major assistance in macroprudential surveillance
- A synthesis of theory provides a set of economic factors and developments common to crises
- Experience of crisis suggests there are three archetypes of crises, but a number of subcategories

- While banking crises are most relevant to Emerging Market Economies, rapid development of securities markets and international transmission implies securities prices and liquidity can also become important
- Assessment of actual crises underlines the importance of the theory mechanisms and allows us to derive generic features of crises – in sequence, positive shock, vulnerability, negative shock, crisis, policy action and/or adverse economic consequences

- Econometric studies, however, tend to only highlight developments late in the development of crises
- In a later lecture we shall examine how actual macroprudential assessment can be undertaken
- An important complementary study is of the incentives underlying financial instability (see later lecture)

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