COMPARING FINANCIAL SYSTEMS

Lesson 25
Financial Crises
Financial Systems and Risk

- Financial markets are excessively volatile and expose investors to market risk, especially when investors are subject to liquidity shocks.

- Banks and other financial intermediaries may be able to smooth returns over time in two ways:
  1. because their assets are not marked-to-market, they can eliminate market risk;
  2. they may engage in intertemporal smoothing by accumulating reserves.

One of the possible advantage of a financial system that relies heavily on banks and other institutions rather than markets (bank-oriented systems).

- However, there are some ways in which banks and other financial institutions may increase risk in the financial system.
Financial Systems and Risk

- In particular, like any investor with debt liabilities, banks have an incentive to engage in risk-shifting behavior when they are close to the waterline.

- Furthermore, there are other ways in which an intermediary-based financial system is prone to risk.

- Because banks have a mismatch between the maturities of liquid liabilities on the one hand and illiquid assets on the other, they are vulnerable to liquidity shocks.

- In particular, they are prone to bank runs, in which the bank's depositors attempt to withdraw their funds simultaneously.

- When this happens to several banks simultaneously, there is a banking panic or banking crisis.

- However, a banking crisis is only one possible financial crisis.
The term financial crisis is applied to a variety of situations in which some financial assets suddenly lose a large part of their nominal value.

In the 19th and early 20th centuries, many financial crises were associated with banking panics, and many recessions coincided with these panics.

Other financial crises include stock market crashes and the bursting of other financial bubbles, currency crises, and sovereign defaults.

Financial crises directly result in a loss of paper wealth but do not necessarily result in significant changes in the real economy.

Many economists have offered theories about how financial crises develop and how they could be prevented.

However, there is no consensus, and financial crises continue to occur from time to time.
The collapse of stock market indices in 2008
Financial Crises

- The main *triggers* of financial crises are:
  1. budgetary imbalances of one or more financial intermediaries (*banking crisis*);
  2. balance of payments imbalances (*currency crisis*);
  3. imbalances in Public Sector Budgets (*public debt crisis*);
  4. speculative *bubbles* and *crashes*.
Banking crisis

- A banking crisis can be defined as a situation when a bank suffers a sudden rush of withdrawals by depositors (*bank run*).

- Since banks lend out most of the cash they receive in, it is difficult for them to quickly pay back all deposits if these are suddenly demanded,

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  a *run* renders the bank insolvent, causing customers to lose their deposits, to the extent that they are not covered by *deposit insurance*.

- An event in which bank runs are widespread is called a *systemic banking crisis* or *banking panic*.
Currency crisis

- A currency crisis can be defined as a situation when the participants in an exchange market come to recognize that a pegged exchange rate is about to fail, causing speculation against the peg that hastens the failure and forces a devaluation or appreciation of the currency.

- However, there is no widely accepted definition of a currency crisis.

- Kaminsky et al. (1998) define currency crises as when a weighted average of monthly percentage depreciations in the exchange rate and monthly percentage declines in exchange reserves exceeds its mean by more than three standard deviations.

- Frankel and Rose (1996) define a currency crisis as a nominal depreciation of a currency of at least 25% but it is also defined at least 10% increase in the rate of depreciation.
Speculative bubbles and crashes

- A speculative bubble exists in the event of large, sustained *overpricing* of some class of assets.

- One factor that frequently contributes to a bubble is the presence of buyers who purchase an asset based solely on the *adaptive expectation* that they can later resell it at a higher price, rather than calculating the income it will generate in the future (*fundamentals*).

- If there is a bubble, there is also a *risk of a crash in asset prices*: market participants will go on buying only as long as they expect others to buy, and when many decide to sell, the price will fall.

- However, it is *difficult to predict* whether an asset's price actually equals its fundamental value,

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  it is *hard to detect bubbles reliably*. 
The 2000s sparked a real estate bubble where housing prices were increasing significantly as an asset good.

The big ten financial bubbles

1. The Dutch Tulip Bulb Bubble 1636
2. The South Sea Bubble 1720
3. The Mississippi Bubble 1720
4. The late 1920s stock price bubble 1927–1929
5. The surge in bank loans to Mexico and other developing countries in the 1970s
6. The bubble in real estate and stocks in Japan 1985–1989
7. The 1985–1989 bubble in real estate and stocks in Finland, Norway and Sweden
8. The bubble in real estate and stocks in Thailand, Malaysia, Indonesia and several other Asian countries 1992–1997
Currency crisis and Sovereign default

- When a country fails to pay back its sovereign debt, this is called a **sovereign default**.

- If it maintains a fixed exchange rate is suddenly forced to **devalue its currency** due to accruing an **unsustainable balance of payments deficit**

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  *currency crisis* or *balance of payments crisis*.

- While devaluation and default could both be **voluntary decisions** of the government, they are often perceived to be the **involuntary results of a change in investor sentiment** that leads to a **sudden stop in capital inflows** or a **sudden increase in capital flight**.
Financial Crises (according to Tirole)

- No two crises are identical. At best we can identify a set of features common to most if not all episodes.
- The new breed of crises was preceded by financial liberalization and very large capital inflows as consequence of the removal of controls of capital outflows.
- These removals have enhanced the appeal of borrowing countries to foreign investors.
- Net capital flows to developing countries exceeded $240 bn in 1996, six times the number at the beginning of the decade.
- This growth in foreign investment has been accompanied by a shift in its nature, in lender composition and in recipients.
- Before the 1980s medium-term loans issued by syndicates of commercial banks to sovereign states accounted for a large part of private capital flows.
- Official flows to developing countries were commensurate with private flows.
- Today private capital flows dwarf official flows.
- International Bank lending has evolved toward short term, foreign currency denominated debt.

Banking fragility
Economic crises

- An economic crisis is a situation in which the economy of a country experiences a sudden downturn.
- An economy facing an economic crisis will most likely experience a falling GDP, a drying up of liquidity and falling prices due to deflation.
- An economic crisis can take the form of a recession or a depression.
- Economists call recession negative GDP growth lasting two or more quarters.
- An especially prolonged or severe recession is called a depression.
- A long period of slow but not necessarily negative growth is sometimes called economic stagnation.
Recessions and business cycles

- Some economists argue that *many recessions have been caused by financial crises*.

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  1. The Great Depression was preceded in many countries by bank runs and stock market crashes.
  2. The subprime mortgage crisis and the bursting of other real estate bubbles around the world also led to recession in the U.S. and a number of other countries in late 2008 and 2009.

- However, other economists argue that *financial crises are caused by recessions*.

- In modern macroeconomics, crises are viewed as *exogenous shocks*, produced from time to time by more or less unforeseeable events, such as natural catastrophes, political disturbances, terrorist attacks, breaches in the international order, wars, and even the fraudulent, opportunistic behaviours of greedy and unscrupulous financial operators.

- *Business cycles* are viewed as the *subsequent adjustment processes*. 
Business cycles

The Business Cycle

GDP

TIME

Growth → Peak → Recession → Trough or Depression
## Business cycles

<table>
<thead>
<tr>
<th>BUSINESS CYCLE</th>
<th>DURATION IN MONTHS</th>
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<tbody>
<tr>
<td></td>
<td>Contraction</td>
<td>Expansion</td>
<td>Cycle</td>
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<td></td>
<td>Peak to Trough</td>
<td>Previous trough to this peak</td>
<td>Trough from Previous Trough</td>
<td>Peak from Previous Peak</td>
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<tr>
<td>1854-2001 (32 cycles)</td>
<td>17</td>
<td>38</td>
<td>55</td>
<td>56*</td>
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<tr>
<td>1854-1919 (16 cycles)</td>
<td>22</td>
<td>27</td>
<td>48</td>
<td>49**</td>
<td></td>
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<tr>
<td>1919-1945 (6 cycles)</td>
<td>18</td>
<td>35</td>
<td>53</td>
<td>53</td>
<td></td>
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<tr>
<td>1945-2001 (10 cycles)</td>
<td>10</td>
<td>57</td>
<td>67</td>
<td>67</td>
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</tr>
</tbody>
</table>

* 31 cycles
** 15 cycles

Source: NBER
Crises and business cycles

- Until the 1920’s most economists believed business crises were phases of industrial and commercial cycles.

- Yet a rapid dismantling of the business cycle paradigm took place after the Great Depression.

- According to Hillinger (1987):

- “It was J. M. Keynes who made the decisive contribution in this direction. In his book, General Theory (1936), there was no mention to be found of the business cycle in the traditional sense, which had been still maintained in Treatise of Money (1930). Keynes’ central message was that the business cycle phenomenon was no longer essential to capitalistic development. He introduced a completely different theory by which the system tends towards an equilibrium with unemployment that does not change endogenously.”
Crises and business cycles

- According to Bernanke, Gertler and Gilchrist (1999):
  - “The canonical real business cycle model and the textbook Keynesian IS-LM model differ in many fundamental ways. However, these two standard frameworks for macroeconomics analysis do share one strong implication: Except for the term structure of real interest rates, which, together with expectations of future payouts, determines real asset prices, in these models conditions in financial and credit markets do not affect the real economy”.

- In economic literature there are many theories on business cycles, some “endogenous”, others “exogenous”.

- Exogenous theories refer to monetary and financial aspects only as random initial causes.

- Endogenous theories of business cycles make no reference to them at all.

- Minsky made a partial exception to the rule, dealing with a particular kind of relation between real variables (expectations and real interest rates) and financial instability.
Banking Panics

- Banks may be seen as the victims of banking panics, but in other cases the banking system may actually be accused of creating the conditions that make a crisis inevitable.

- For example, when the banking system creates credit, this can lead to excessive borrowing that leads to a bubble in asset prices.

- The collapse of the bubble can then lead to defaults, which exacerbate the fall in prices and cause serious dislocation in the economy.

- Finally, it is often argued that the banking system is financially fragile.

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  A small shock in one part of the system can spread like a contagion to other parts of the system.

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  A cumulative effect that is many times larger than the size of initial shock.
Banking Panics

- From the earliest times, banks have been plagued by bank runs, in which the bank's depositors attempt to withdraw their funds simultaneously.

- A financial crisis or panic occurs when depositors at many or all of the banks in a region or a country attempt to withdraw their funds simultaneously.

- One of the great achievements in the history of banking was the development of central banking techniques to eliminate crises.

- These were discovered in Europe in the nineteenth century.

- But effective central banking was not established in the United States until after the crisis of 1933.

- Many countries have had severe banking problems in recent years.

- In many of these crises, panics in the traditional sense were avoided by either central bank intervention or explicit or implicit government guarantees.
Banking Panics

- This raises the issue of whether such intervention is desirable.
- It is important to understand why they occur and the policies that central banks should implement to deal with them.
- Although there is a large literature on bank runs, there is relatively little on the optimal policy that should be followed to manage runs.
- The history of regulation of the United States and other countries' financial systems seems to be based on the premise that banking crises are bad and should be eliminated.
- However, optimal policy must weigh the costs and benefits of bank runs.
- Eliminating runs completely is unlikely to be optimal.
- An optimal response by the central bank must prevent the deadweight costs of asset liquidation while accommodating the contingent consumption allocation required by optimal risk sharing.
Banking Panics

There are two traditional views of banking panics: the sunspot view and the real business cycle view.

The classical form of the sunspot view suggests that panics are the result of mob psychology or mass hysteria.

The modern version (Diamond and Dybvig, 1983; Bryant, 1980) is that bank runs are self-fulfilling prophecies.

Given the sequential service constraint and costly liquidation of some assets, there are two equilibria.

If depositors believe that a bank run is about to occur, it is optimal for each individual to try to withdraw his funds.

If depositors believe that a run will not occur, then it is optimal for each to leave his funds in the bank.

Which of these two equilibria occurs depends on extraneous variables, or “sunspots”.
Banking Panics

- An alternative to the sunspot view is that banking panics are a natural outgrowth of the business cycle.

- An economic downturn will reduce the value of bank assets, raising the possibility that banks are unable to meet their commitments.

- If depositors receive information about an impending downturn in the cycle, they will anticipate financial difficulties in the banking sector and try to withdraw their funds.

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  This attempt will precipitate the crisis.

- According to this interpretation, panics are not random events but a response to unfolding economic circumstances.
Banking Panics

- A number of authors have developed models of banking panics caused by aggregate risk.
- Some authors extend Diamond and Dybvig model by assuming the fraction of the population requiring liquidity is random.
- Others introduce aggregate uncertainty, which can be interpreted as business cycle risk.
- Chari and Jagannathan (1988) focus on a signal extraction problem where part of the population observes a signal about future returns.
- Other agents must then try to deduce from observed withdrawals whether an unfavorable signal was received by this group or whether liquidity needs happen to be high.
- Chari and Jagannathan are able to show that panics occur not only when the outlook is poor but also when liquidity needs turn out to be high.
Banking Panics

- In 1988 Gorton conducted an empirical study to differentiate between the sunspot view and the business cycle view on banking panics.
- In the so-called national banking era (1863-1914) he found evidence consistent with the view that banking panics are related to the business cycle and difficult to reconcile with the notion of panics as random events.

<table>
<thead>
<tr>
<th>National banking era panics</th>
<th>NBER cycle</th>
<th>Panic date</th>
<th>%D (currency deposit) a</th>
<th>%D pig iron b</th>
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</thead>
<tbody>
<tr>
<td>October 1873-March 1879</td>
<td>September 1873</td>
<td>14.53</td>
<td>-51.0</td>
<td></td>
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<tr>
<td>March 1882</td>
<td>June 1884</td>
<td>8.80</td>
<td>-14.0</td>
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<tr>
<td>March 1887-April 1888</td>
<td>No panic</td>
<td>3.00</td>
<td>-9.0</td>
<td></td>
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<tr>
<td>July 1890-May 1891</td>
<td>November 1890</td>
<td>9.00</td>
<td>-34.0</td>
<td></td>
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<tr>
<td>January 1893-June 1894</td>
<td>May 1893</td>
<td>16.00</td>
<td>-29.0</td>
<td></td>
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<tr>
<td>December 1895-June 1897</td>
<td>October 1896</td>
<td>14.30</td>
<td>-4.0</td>
<td></td>
</tr>
<tr>
<td>June 1899-December 1900</td>
<td>No panic</td>
<td>2.78</td>
<td>-6.7</td>
<td></td>
</tr>
<tr>
<td>September 1902-August 1904</td>
<td>No panic</td>
<td>-4.13</td>
<td>-8.7</td>
<td></td>
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<tr>
<td>May 1907-June 1908</td>
<td>October 1907</td>
<td>11.45</td>
<td>-46.5</td>
<td></td>
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<tr>
<td>January 1910-January 1912</td>
<td>No panic</td>
<td>-2.64</td>
<td>-21.7</td>
<td></td>
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<tr>
<td>January 1913-December 1914</td>
<td>August 1914</td>
<td>10.39</td>
<td>-47.1</td>
<td></td>
</tr>
</tbody>
</table>

a. Percentage change of ratio at panic date to previous year’s average.
b. Measured from peak to trough.
Banking Panics

- Thus the stylized facts Gorton uncovered suggest that banking panics are intimately related to the state of the business cycle rather than some extraneous random variable.

- In 1991 Calomiris and Gorton considered a still broader range of evidence and concluded that the data do not support the sunspot view that banking panics are random events.

- In 1988 Allen and Gale have described a model in which panics are caused by business cycle fundamentals rather than sunspots and used this model to analyze optimal monetary policy.

- This model of bank runs and crises represents a crisis as part of the real business cycle.

- Crises are endogenous to the extent that their incidence and size depend on equilibrium choices made by the banks.

- The cause of a crisis is a combination of negative information about bank assets and the noncontingent nature of deposit contracts.
Bubbles and Crises

- However, there are other models in which bank lending can distort the asset values and increase the probability of a crisis.

- Financial crises often follow what appear to be bubbles in asset prices.

- Historic examples of this type of crisis are the Dutch tulip mania, the South Sea Bubble in England, the Mississippi Bubble in France, and the Great Crash of 1929 in the United States.

- More recent examples are:
  1. the dramatic rise in real estate and stock prices that occurred in Japan in the late 1980s, with their subsequent collapse in 1990;
  2. the dramatic rise in stock prices that occurred in the US in the late 1990s, with their subsequent collapse in 2001;
  3. the dramatic rise in real estate and stock prices that occurred in US in the early 2000s, with their subsequent collapse in 2007.
Bubbles and Crises

- Norway, Finland, and Sweden had similar experiences in the 1980s and early 1990s.
- In emerging economies, financial crises of this type have been particularly prevalent since 1980.
- Examples include Argentina, Chile, Indonesia, Mexico, and Thailand.
- These bubbles in asset prices typically have three distinct phases.
- The first phase starts with financial liberalization or a conscious decision by the central bank to increase lending or some other similar event.
- The resulting expansion in credit is accompanied by an increase in the prices for assets such as real estate and stocks.
- This rise in prices continues for some time, possibly several years, as the bubble inflates.
Bubbles and Crises

- During the second phase, the bubble bursts and asset prices collapse, often in a short period of time (a few days or months), but sometimes over a longer period.

- The third phase is characterized by the default of many firms and other agents that have borrowed to buy assets at inflated prices.

- Banking and foreign exchange crises may follow this wave of defaults.

- The difficulties associated with the defaults and banking and foreign exchange crises often cause problems in the real sector of the economy that can last for a number of years.
References