Mishkin Chapter 9

Financial Crises and the Subprime Meltdown (pp. 193-218)

Modified/Extended Mishkin Notes

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Key In-Class Discussion Questions

- Distinguishing between **economic growth** and **economic development**
- Economic growth/development**, financial repression,** and **financial crises**
- According to Mishkin, what are the **typical causes and subsequent flow of events** characterizing recent financial crises in the U.S.? In emerging market countries?
- ***Illustrative Case Studies:*** The U.S. Great Depression (1929-1939); the US Subprime Financial Crisis (2007-2011) the Mexican Financial Crisis (1994-1995); the East Asian Crisis (1997-9); the Argentina Financial Crisis (2001-2002)

Economic Growth vs. Economic Development

- **Economic Growth:**

  Changes in the **size** of an economy, typically measured by GDP

- **Economic Development:**

  Changes in the **structure** of an economy (infrastructure, organization, and governance)

Effects of Financial System on Economic Growth and Development

- **Underdeveloped Financial System**
  - A situation referred to as ***financial repression*** *(Mishkin, p. 187)*
  - Poor legal system;
  - Weak accounting standards;
  - Too much political control (government directs credit, financial institutions are nationalized,…)
  - Inadequate government regulation
- **Can Retard Economic Growth and Economic Development**

Financial Crises

- **Financial Crisis Defined**
  - A major disruption in financial markets characterized by a ***sharp decline in asset prices*** and the ***failures of many financial and nonfinancial firms*** *(Mishkin, p. 193)*
- **Countries characterized by financial repression are more at risk:**
  - Fewer safeguards against trigger events happening.
  - Inadequate or inappropriate response to trigger events when they do happen.

Financial Crises Worldwide

(Mishkin, Chapter 11, Fig. 2, p. 268)

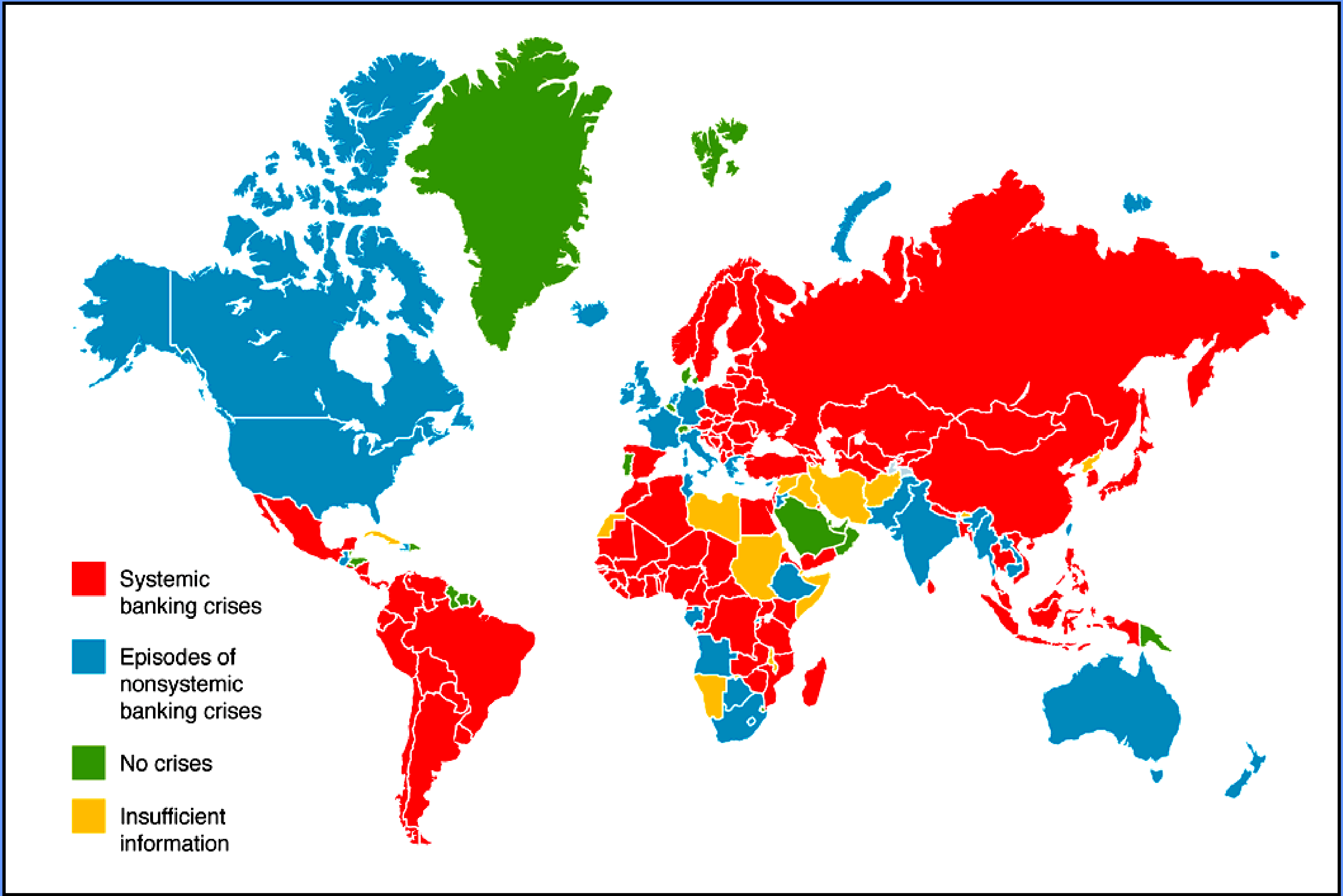


TABLE 2 The Cost of Rescuing Banks in Several Countries

Date	Country	Cost as a Percentage of GDP
1980–1982	Argentina	55
1997–2002	Indonesia	55
1990s–ongoing	China	47
1996–2000	Jamaica	44
1981–1983	Chile	42
1997–2002	Thailand	35
1993–1994	Macedonia	32
2000–ongoing	Turkey	31
1977–1983	Israel	30
1997–2002	South Korea	28
1988–1991	Cote d'Ivoire	25
1991–ongoing	Japan	24
1994–1995	Venezuela	22
1998–2001	Ecuador	20
1994–2000	Mexico	19
1997–2001	Malaysia	16
1992–1994	Slovenia	15
1998–ongoing	Philippines	13
1994–1999	Brazil	13
1995–2000	Paraguay	13
1989–1991	Czech Republic	12
1997–1998	Taiwan	12
1991–1994	Finland	11
1989–1990	Jordan	10
1991–1995	Hungary	10
1990–1993	Norway	8
1991–1994	Sweden	4
1988–1991	United States	3

Source: Gerard Caprio, Daniela Klingebiel, Luc Laeven, and Guillermo Noguera, *Banking Crises Database* (updated October 2003), http://www1.worldbank.org/finance/html/database_sfd.html.

Mishkin Chapter 11 (page 269)

Key Puzzle About Many Observed Financial Crises

- How can a country shift so dramatically from a path of reasonable growth **before** a financial crisis to a sharp decline in economic activity **after** a crisis occurs?

- **Apparent Explanation:** Role of ***positive feedback (reinforcement)*** in which an initial shock (trigger event) leads to subsequent events that ***amplify*** the original shock.

Key Puzzle… Continued

- **Apparent Explanation:** Role of ***positive feedback (reinforcement)*** in which an initial shock (trigger event) leads to subsequent events that ***amplify*** the original shock.

- ***Example:*** Falling prices (debt deflation) halts borrowing for new spending; and prices ***keep*** falling because of no new spending (***shock amplification***).

Mishkin's Theory of Financial Crises

- Financial crises occur when some kind of **disruption ("trigger event")** in financial markets causes a **sharp increase in adverse selection (AS) and moral hazard (MH) problems.**
- In consequence, **financial markets are no longer able to channel funds efficiently from savers (lenders) to investors (borrowers)** who have productive investment opportunities.

Mishkin's Theory of Financial Crises… Continued

KEY POINT:

- Financial collapse is ***more*** than just a ***symptom*** of a prior drop in aggregate output and a general economic decline.
- Financial collapse ***precipitates*** the drop in aggregate output and ***deepens and prolongs*** the crisis by hampering the efficient allocation of savings to investors.

Mishkin's Theory of Financial Crises … Cont'd

- For business cycles, economists have developed ***leading indicators***, ***coincident indicators***, and ***lagging indicators.***
- Mishkin attempts to do something similar for financial crises.
- He identifies Stage 1 ***trigger events*** for financial crises (leading indicators), and ***Stage 2 and Stage 3 events*** that then subsequently tend to occur *during* a financial crisis (coincident indicators).

Possible Trigger Events for Financial Crises

1) **Asset Market Effects on Balance Sheets of Borrowing Firms** **(net worth ↓)**

- *Drop in stock market prices*
- *Unanticipated deflation*
- *Unanticipated decline in domestic currency exchange rate E*

2) **Deteriorating Fin. Inst. Balance Sheets**

- Bank Panics and Failures → AS & MH ↑

3) **Increased lender uncertainty** → AS ↑

4) **Interest rate increases** → AS & MH ↑

5) **Government fiscal imbalances** (emerging market countries) → capital outflow → E ↓

Trigger Events … More Details

1) **Asset Market Effects on Borrower Balance Sheets**

- **Stock market decline**
  - Decreases net worth of borrowing corporations.
- **Unanticipated decline in the price level**
  - Nominal debt payment obligations increase in real terms, with no change in real value of assets, hence real net worth decreases.
- **Unanticipated ↓ in domestic currency exchange rate E**
  - Increases domestic currency value of debt payments denominated in foreign currencies (liabilities ↑), hence decreases net worth.

Trigger Events … More Details

2) Deterioration in Financial Institutions' Balance Sheets

- Net worth reductions result in declines in lending
- Banking panics lead to
  - AS ↑ for depositors (lenders to banks) because they are more uncertain about bank default
  - MH ↑ for lenders due to **disintermediation** (reduction of intermediaries due to bank failures) resulting in need to depend more on securities markets with less info about issuers (borrowers)

Trigger Events … More Details

3) **Increased lender uncertainty** (e.g., unexpected failure of well-known firms) results in AS ↑

4) **Increases in Interest Rates**

   – AS ↑ (“lemons problem”)

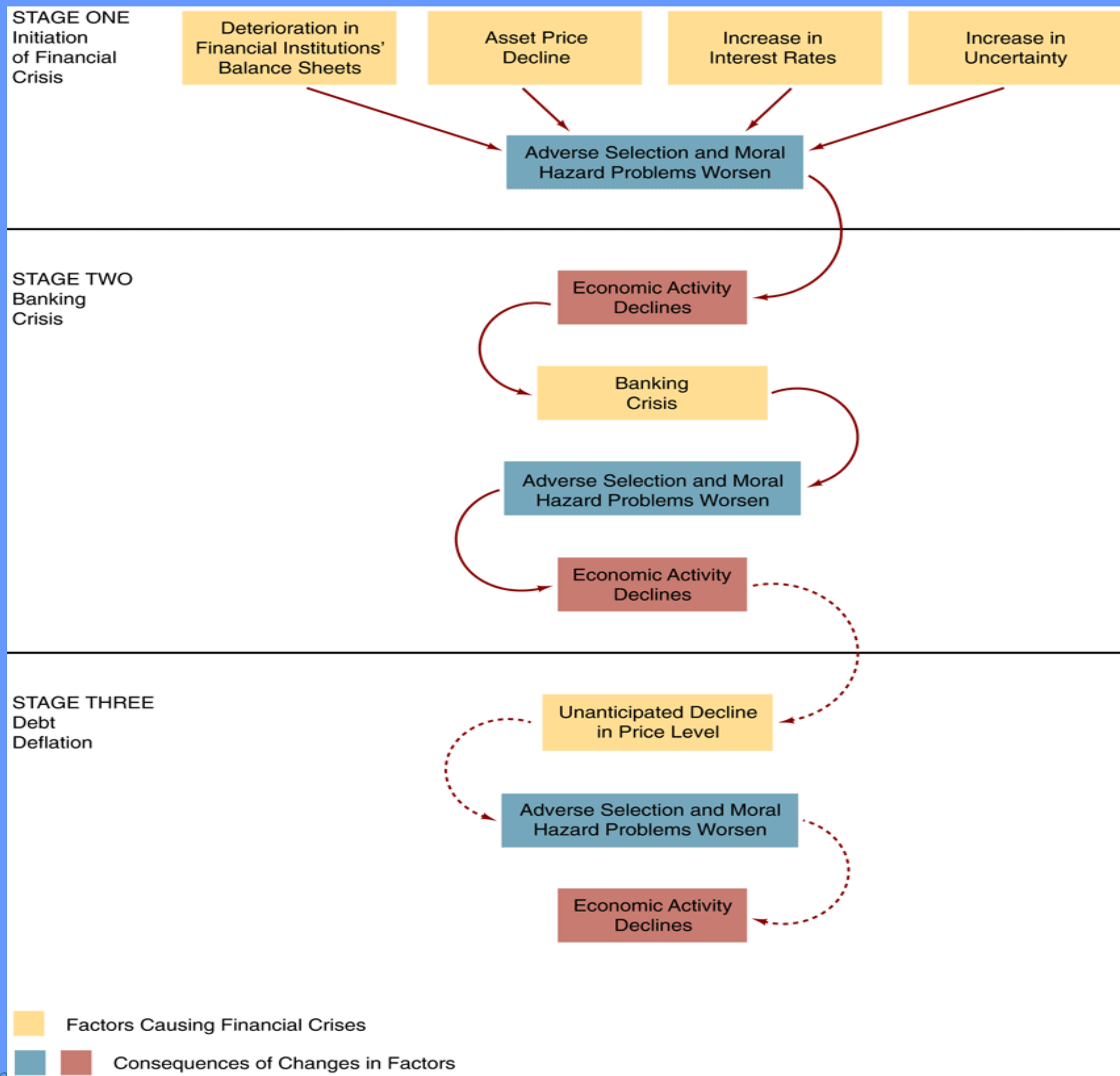
   – Cash flow ↓ increases need for external funds, resulting in AS ↑ & MH↑ for lenders not familiar with borrowers

5) **Government Fiscal Imbalances** (Emerging Markets)

   – Create fears of default on government debt, which results in debt price ↓ hence net worth ↓ for debt holders.

   – Foreign investors might pull their money out of the country, resulting in domestic exchange rate E ↓.

Fig.1 Event Sequence in U.S. Financial Crises



Dynamics of Past U.S. Financial Crises (Mish pp 196-206)

- **Stage One: Initiation of Financial Crisis**
  - **Mismanagement of financial liberalization/innovation**
  - **Asset price boom and bust**
  - **Spikes in interest rates**
  - **Increase in uncertainty**

- **Stage two: Banking Crisis**
  - Sorting out of insolvent banks (negative net worth) from banks with **temporary** liquidity problems

- **Stage three (Not Always Present): Debt Deflation**
  - Substantial unanticipated decline in price level

What Caused the U.S. Great Depression (1929-1939)?

Three Different Theories Proposed:

- Breakdown in the financial system was simply a **response to** (not a cause of) an initial decline in aggregate output. *(not consistent with the empirical evidence)*
- U.S. Great Depression caused by a rapid decline in money supply -- inappropriate monetary policy. *("Monetarists," e.g., Milton Friedman)*
- General disruption occurred in financial markets that adversely affected aggregate output and prolonged the depression. *(Mishkin's view)*

What Caused the U.S. Great Depression (1929-1939)?

Mishkin's View: (Pages 200-201)

- ***Multiple*** trigger events (including a deliberate contraction of the money supply to curb stock market speculation) led to sharp increase in adverse selection and moral hazard problems.
- Resulting breakdown of credit channels ***caused*** a sharp contraction in aggregate output and in economic activity in general.
- Fall in price level by 25% (1930-1933) led to severe debt deflation which ***further*** deepened and prolonged the depression.

What Caused the U.S. Great Depression (1929-1939)… Continued

- **1928-1929: Increased Real Interest Rates** (Tight Monetary Policy to curb excessive stock market speculation by raising real interest rates.)
- **1929: Stock Market Crash** (90% loss of value by mid-1932)
- **1930-1933: Bank Panics, Increased Uncertainty, Deteriorating Balance Sheets**
  - One third of all banks went bankrupt
  - Failure of the Bank of the United States in 1930
  - Sharp decline in aggregate price level (25% drop)

The Subprime Financial Crisis of 2007 – 2011 (Mishkin pp. 201-206)

- **Financial innovations in mortgage markets:**
  - Subprime mortgages (highest default risk) & Alt-A mortgages (less default risk but still high default risk)
  - Mortgage-backed securities (MBS) based on risky mortgages
  - Collateralized debt obligations (CDOs) based on MBS

- **Housing price bubble forms (2002-2006)**
  - Increase in liquidity from cash flows surging to U.S.

Subprime Financial Crisis …

- **Housing price bubble forms (cont'd)**
  - Development of subprime mortgage market fueled housing demand and housing price increases.
- **Agency problems arise**
  - **"Originate to distribute" approach** = Mortgage **originated** by mortgage broker is **distributed** to investors as an underlying asset in a security
  - This approach is subject to principal-agent problems with principal = investor and agent = mortgage broker, because mortgage broker has little incentive to ensure mortgage is a good credit risk
  - Also, borrowers obtaining mortgages had little incentive to disclose information about their ability to pay

Subprime Financial Crisis …

- **Agency problems arise (cont'd)**
  - Underwriters of mortgage-backed securities and structured credit products (e.g., Collateralized Debt Obligations) based on cash flows of underlying assets had weak incentives to ensure ultimate security holders would be paid off
  - Credit-rating agencies had conflicts of interest
    - Advised clients how to structure securities
    - Then rated these same securities

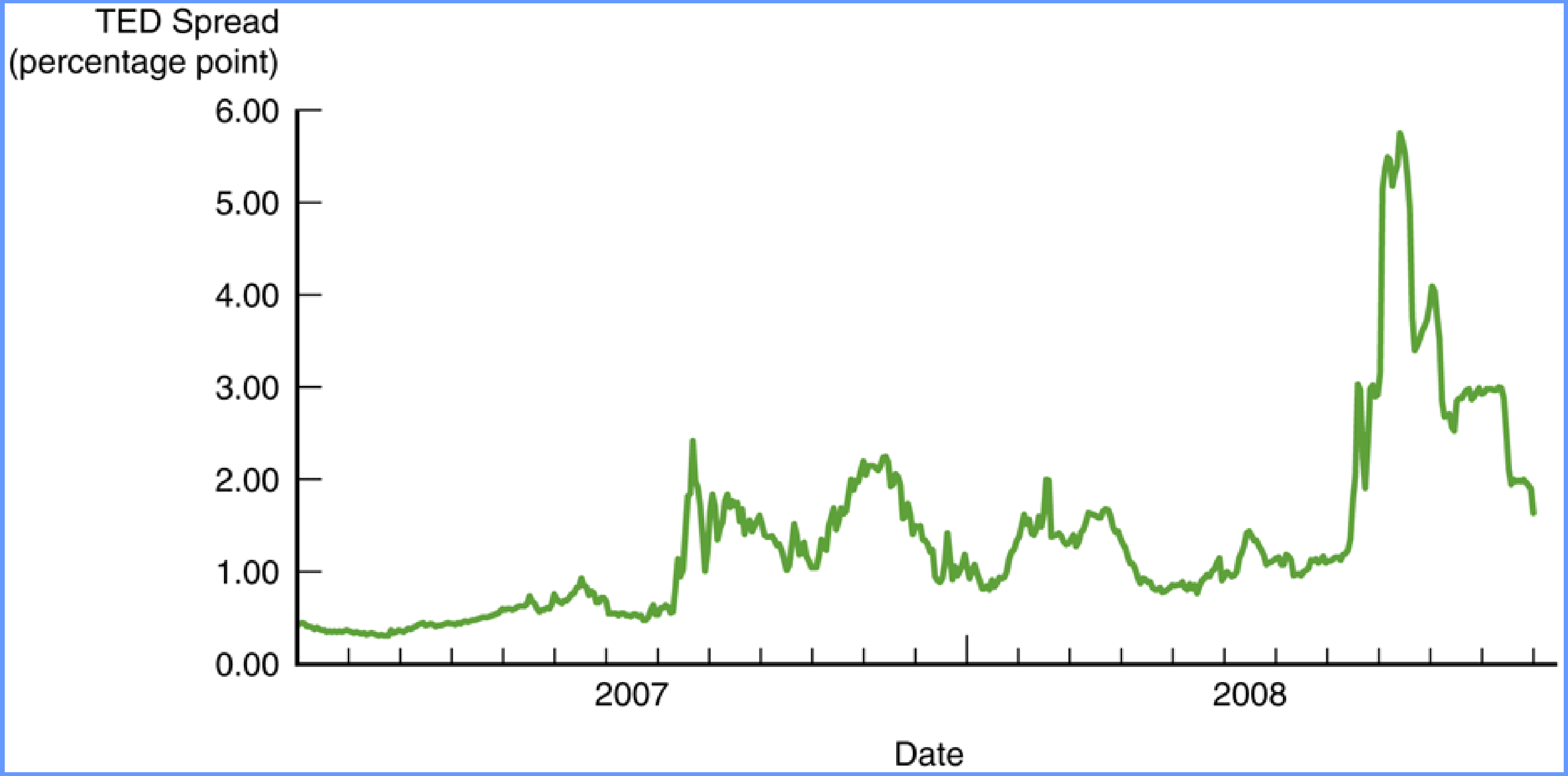
Subprime Financial Crisis …

- **Information problems surface**
  - Hard to place values on complicated securities such as CDOs
  - Difficult to determine who owns assets underlying security cash flows
  - Worsened asymmetric information problems in financial markets
- **Housing price bubble bursts in 2008**

The Subprime Financial Crisis …

- **Crisis spreads globally**
  - Sign of financial market globalization
  - **TED spread (3 mo. interest rate on Eurodollar minus 3 mo. Treasury bills interest rate)** = Interbank market liquidity indicator **(cf. Mishkin Fig. 2, p. 204)**
  - TED spread increased from 40 basis points to almost 240 in August 2007.

FIGURE 2 (Mishkin, Page 204):
Treasury Bill–to–Eurodollar (TED) Spread



Source: **www.federalreserve.gov/releases/h15/data.htm**

The Subprime Financial Crisis …

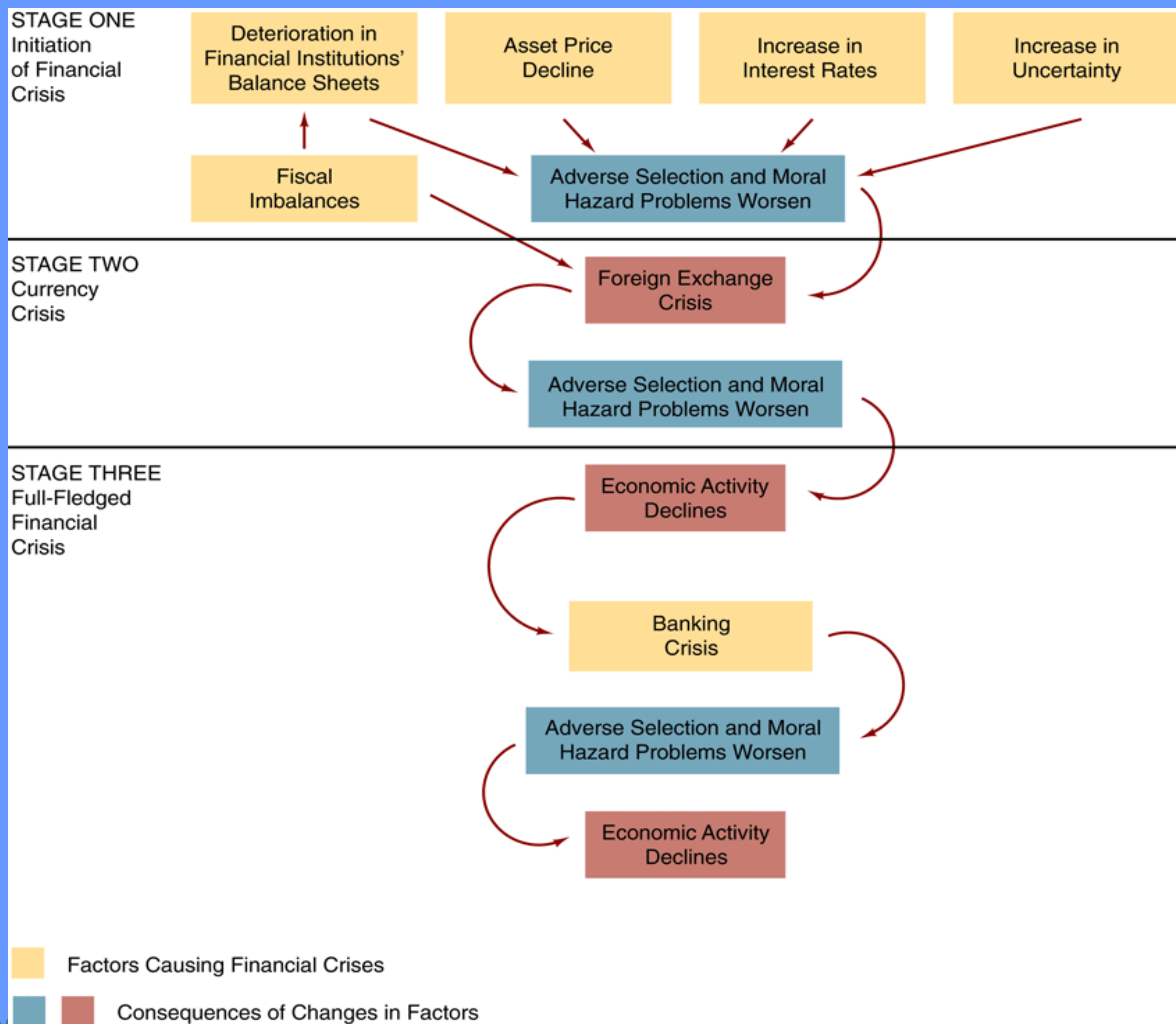
- **Banks' balance sheets deteriorate**
  - Write downs, collapse of CDO values, …
  - Sell-off of assets, credit restrictions, …

- **High-profile firms fail**
  - **Bear Stearns** (March 2008)
  - **Fannie Mae** and **Freddie Mac** (July 2008)
  - **Lehman Brothers**, **Merrill Lynch**, and **AIG** (2008)
  - **Reserve Primary Fund** (a mutual fund, 2008)
  - **Washington Mutual** (September 2008).

The Subprime Financial Crisis …

- **Bailout package debated & passed**
  - House of Representatives voted down a $700 billion "bailout package "on 9/29/2008.
  - **Emergence Economic Stabilization Act of 2008** passed on 10/3/2008 (under Bush 2 Administration). **Includes TARP=Treasury Asset Relief Plan**
- **Stimulus package passed**
  - Congress approved a $787 billion economic stimulus plan on February 13, 2009 (Obama Administration).

FIGURE 3 Sequence of Events in Emerging Market Financial Crises



Stage One: Start of Financial Crises in Emerging Market Economies

- **Trigger Path One: Mismanagement of financial liberalization and/or globalization:**
  - Elimination of restrictions on financial institutions/markets
  - Financial globalization (permitting foreign capital inflow)
  - Domestic banks borrow from foreign banks at high interest.
  - Exchange rates fixed to USD give a sense of lower risk.

Weak supervision & lack of expertise

→ lending boom & bust

Stage One: Start of Financial Crises in Emerging Market Economies …

- **Trigger Path Two: Severe fiscal imbalances**
  - Governments in need of funds sometimes force banks to buy government debt.
  - Investors pull out, government debt loses value, the net worth of banks decreases, bank lending ↓, & **bank panics can arise**.
- **Additional Possible Triggers:**
  - Increase in interest rates abroad that raise home rates
  - Asset price declines (e.g., fall in stock prices)
  - Increased uncertainty arising from instability of political system, prominent firm failures, etc.

Stage 2: Currency Crisis

- Deterioration of bank balance sheets can trigger a currency crisis
  - Government cannot further raise interest rates (doing so forces banks into insolvency)…
  - Speculators sell domestic currency in anticipation of E ↓.
- Severe fiscal imbalance can trigger a currency crisis
  - Foreign and domestic investors sell domestic currency in anticipation of E ↓ in response to higher risk of default on government bonds.

Stage 3: Full-Blown Financial Crisis

- Debt contracts often denominated in foreign currency.
- When E ↓ , debt burden in terms of home currency ↑.
- E ↓ results in higher import prices → higher inflation → higher interest rates (Mish 5) → lower borrower cash flows.
- In consequence, banks are more likely to fail:
  - Borrowers from banks less able to pay off their debts (bank assets fall in value).
  - Burden of bank debts denominated in foreign currency increases (bank liabilities increase).

Emerging Market Economy Financial Crisis: Mexico 1994-1995

- **Trigger Path One:** Financial liberalization early 1990s
  - Lending boom with weak supervision & lack of expertise
  - Banks accumulated losses & their net worth declined.
- Interest rates ↑ in US led to interest rates ↑ in Mexico
- 1994 uncertainty ↑ (assassination → political instability)
- Domestic currency devaluated on December 20, 1994
- Rise in actual and expected inflation

Emerging Market Economy Financial Crisis: East Asia 1997-1998

- **Trigger Path One:** Financial liberalization in early 1990s
  - Lending boom, with weak supervision & lack of expertise.
  - Banks accumulated losses and their net worth declined.
- Uncertainty increased (stock market declines and failure of prominent firms)
- Domestic currencies devaluated by 1997
- Rise in actual and expected inflation

Emerging Market Economy Financial Crisis: Argentina 2001-2002

- **Trigger Path Two:** Government coerced banks to absorb large amounts of debt due to fiscal imbalances.
- Interest rates↑ in US led to interest rates↑ in Argentina
- Uncertainty increased (ongoing recession)
- Domestic currency devaluated on January 6, 2002
- Rise in actual and expected inflation

Connection Between Emerging Market (EM) Crises 1994-2002 and Subprime Financial Crisis 2007-2011 ?

"Global Saving Glut"

- Before 1994, EM economies were investing more than saving, financed by borrowing from rest of the world.
- After 1994-2002 crises, EM countries sharply decreased investment & become net lenders to ROW – esp. to US
  - In 1996 EM economies **net borrowed** $88 billion from ROW.
  - By 2003 EM countries were **net lending** $205 billion to ROW
- Capital markets in developed countries awash in savings
- Contributed to rising stock and housing prices in US