BANK RUNS, FINANCIAL CRISSES AND THE 2008 MELTDOWN

Cesar E. Tamayo
Money and Banking
Rutgers University
August 3rd, 2011
BANK RUNS
MECHANICS OF BANK RUNS (DIAMOND-DYBVIG)

- During a *bank run*, depositors rush to withdraw their deposits because they expect the bank to fail.
- In fact, the sudden withdrawals can force the bank to liquidate many of its assets at a loss and to fail.
- During a panic with many bank failures, there is a disruption of the monetary system and a reduction in production.
MECHANICS OF BANK RUNS (DIAMOND-DYBVIG)

• Uninsured demand deposit contracts are able to provide liquidity, but leave banks vulnerable to runs.

• This vulnerability occurs because there are multiple equilibria with differing levels of confidence:
  • High level of confidence ➔ no run (“good” equilibrium)
  • Low level of confidence ➔ bank run (“bad” equilibrium)
TYPES OF BANK RUNS

• There are mainly three types of bank runs, depending on what depositors do with the withdrawn funds.

• Type 1: depositors *redeposit* their funds in banks that they perceive as safe(r).

• Type 2: depositors buy safer assets like US Treasury bills ("flight to quality") and whoever sells the T-bills deposits this money in the financial system.

• Types 1 and 2 pose a risk to individual institutions but limited economy-wide risks.

• Type 3: depositors keep their money outside the financial system.
BANK FAILURES

Bank and S&L Failures

Number

BANK FAILURES AND WELFARE

The Five Big Five Crises: Spain (1977), Norway (1987), Finland (1991), Sweden (1991) and Japan (1992), where the starting year is in parenthesis.
FINANCIAL CRISES: BEYOND BANKING CRISES

• Financial crises are major disruptions in financial markets characterized by sharp declines in asset prices and firm failures.

• They usually result in major credit contractions and a drop in investment rates.

• Severe financial crises have economy-wide negative effects, output drops and substantial welfare losses.
FACTORS CAUSING FINANCIAL CRISES

Asset Markets Effects on Balance Sheets

- Stock market decline → net worth of corporations falls (equity)
  - Financial accelerator, asset write-downs (via other financial inst.)
  - rise in default rates

- Housing market decline → net worth of people falls
  - rise in default rates

DECLINE IN LENDING
FACTORS CAUSING FINANCIAL CRISSES

Figure 1: Real Housing Prices and Banking Crises

- US, 2003=100
- Average for banking crises in advanced economies
- Average for the "Big 5" Crises
FACTORS CAUSING FINANCIAL CRISES

Banking Crisis

- Loss of information production and disintermediation.

Deterioration in Financial Institutions’ Balance Sheets

- Since assets are sold at big losses ➔ DECLINE IN LENDING

Increases in Uncertainty

- Not only some corporations and financial institutions fail to meet their obligations but it becomes uncertain which ones will follow suit.

DECLINE IN LENDING
FACTORS CAUSING FINANCIAL CRISES

Unanticipated decline in the value of the domestic currency
  • Currency mismatch
  • Increases debt denominated in foreign currencies and decreases net worth.

Increases in Interest Rates
  • Increases adverse selection problem
  • Adjustable-rate loans: Increases need for external funds.

Government Fiscal Imbalances
  • Create fears of default on government debt.
  • Investors might pull their money out of the country.
FACTORS CAUSING FINANCIAL CRISSES

Figure 5: Public Debt and Banking Crises

- Average for banking crises in advanced economies
- Average for the "Big 5" crises
- Index t-10=100
- US, 1997=100
DYNAMICS OF PAST U.S. FINANCIAL CRISES

Stage One: Initiation of Financial Crisis
  • Mismanagement of financial liberalization/innovation: oversight and proper management (and regulation) may not be able to keep up with the pace of innovation.
  • Asset price boom and bust
  • Spikes in interest rates
  • Increase in uncertainty

Stage two: Banking Crisis

Stage three: Debt Deflation
PAST U.S. FINANCIAL CRISES

• Wall street crash of 1929: Led to the Great Depression of the 1930s when industrial production fell 46% and unemployment reached 25%.

• The 1987 Market Crash: the largest one-day percentage decline in stock market history but with limited economy-wide impact.

• The Savings and Loans crisis of the 1980s: 747 out of the 3,234 savings and loan associations in the United States

• The Long-Term Capital Management crisis of the late 1990s

• The dot-com boom-bust of the early 2000s (?)

• The subprime-financial crisis of the late 2000s
PAST U.S. FINANCIAL CRISES

- Bank failures up to the recent crises:
FIGURE 1  SEQUENCE OF EVENTS IN U.S. FINANCIAL CRISES

STAGE ONE  Initiation of Financial Crisis

- Deterioration in Financial Institutions' Balance Sheets
- Asset Price Decline
- Increase in Interest Rates
- Increase in Uncertainty

Adverse Selection and Moral Hazard Problems Worsen

STAGE TWO  Banking Crisis

Economic Activity Declines

Banking Crisis

Adverse Selection and Moral Hazard Problems Worsen

Economic Activity Declines

STAGE THREE  Debt Deflation

Unanticipated Decline in Price Level

Adverse Selection and Moral Hazard Problems Worsen

Economic Activity Declines

Legend:
- Factors Causing Financial Crises
- Consequences of Changes in Factors
The Subprime Financial Crisis of 2007 - 2008

Financial innovations emerge in the mortgage markets:

- Subprime and Alt-A mortgages
- Mortgage-backed securities
- Collateralized debt obligations (CDOs)

Housing price bubble forms

- Increase in liquidity from cash flows surging to the United States
Housing price bubble forms (cont’d)

• Development of subprime mortgage market fueled housing demand and housing prices.

Agency problems arise

• “Originate to distribute” model is subject to principal (investor) agent (mortgage broker) problem.
• Borrowers had little incentive to disclose information about their ability to pay
• Commercial and investment banks (as well as rating agencies) had weak incentives to assess the quality of securities
THE SUBPRIME FINANCIAL CRISIS OF 2007 - 2008 (CONT’D)

Information problems surface
Housing price bubble bursts

Figure 1: A Bursting Bubble in U.S. Housing Prices?

Note: After rising sharply in the years up to 2006, housing prices have since fallen dramatically. Source: The S&P/Case-Shiller U.S. 10-City monthly index of housing prices (nominal).
THE SUBPRIME FINANCIAL CRISIS OF 2007 - 2008 (CONT’D)

Crisis spreads globally

• Sign of the globalization of financial markets
• TED spread (3 months interest rate on Eurodollar minus 3 months Treasury bills interest rate) increased from 40 basis points to almost 240 in August 2007.
Banks’ balance sheets deteriorate

- Write downs
- Sell of assets and credit restriction

High-profile firms fail

- Bear Stearns (March 2008)
- Fannie Mae and Freddie Mac (July 2008)
- Lehman Brothers, Merrill Lynch, AIG, Reserve Primary Fund (mutual fund) and Washington Mutual (September 2008).
THE SUBPRIME FINANCIAL CRISIS OF 2007 - 2008 (CONT’D)

Bailout package debated

• House of Representatives voted down the $700 billion bailout package on September 29, 2008.
• It passed on October 3.

Recovery in sight?

• Congress approved a $787 billion economic stimulus plan on February 13, 2009.
DYNAMICS OF FINANCIAL CRISES IN EMERGING MARKET ECONOMIES

Stage one: Initiation of Financial Crisis.

• Path one: mismanagement of financial liberalization/globalization:
  • Weak supervision and lack of expertise leads to a lending boom.
  • Domestic banks borrow from foreign banks.
  • Fixed exchange rates give a sense of lower risk.
  • Banks play a more important role in emerging market economies, since securities markets are not well developed yet.
DYNAMICS OF FINANCIAL CRISES IN EMERGING MARKET ECONOMIES

• Path two: severe fiscal imbalances:
  • Governments in need of funds sometimes force banks to buy government debt.
  • When government debt loses value, banks lose and their net worth decreases.

• Additional factors:
  • Increase in interest rates (from abroad)
  • Asset price decrease
  • Uncertainty linked to unstable political systems
Stage two: currency crisis

- Deterioration of bank balance sheets triggers currency crises:
  - Government cannot raise interest rates (doing so forces banks into insolvency)…
  - … and speculators expect a devaluation.
- How severe fiscal imbalances triggers currency crises:
  - Foreign and domestic investors sell the domestic currency.
DYNAMICS OF FINANCIAL CRISES IN EMERGING MARKET ECONOMIES

Stage three: Full-Fledged Financial Crisis:

- The debt burden in terms of domestic currency increases (net worth decreases).
- Increase in expected and actual inflation reduces firms’ cash flow.
- Banks are more likely to fail:
  - Individuals are less able to pay off their debts (value of assets fall).
  - Debt denominated in foreign currency increases (value of liabilities increase).
FINANCIAL CRISES: MEXICO 1994-1995

Financial liberalization in the early 1990s:

- Lending boom, coupled with weak supervision and lack of expertise.
- Banks accumulated losses and their net worth declined.

Rise in interest rates abroad.

Uncertainty increased (political instability).

Domestic currency devaluated on December 20, 1994.

Rise in actual and expected inflation.
FINANCIAL CRISES: EAST ASIA 1997-1998

Financial liberalization in the early 1990s:

• Lending boom, coupled with weak supervision and 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.
FINANCIAL CRISES: ARGENTINA 2001-2002

Government coerced banks to absorb large amounts of debt due to fiscal imbalances.

Rise in interest rates abroad.

Uncertainty increased (ongoing recession).

Domestic currency devaluated on January 6, 2002

Rise in actual and expected inflation.
FIGURE 3 SEQUENCE OF EVENTS IN EMERGING MARKET FINANCIAL CRISSES

STAGE ONE
Initiation of Financial Crisis
- Deterioration in Financial Institutions’ Balance Sheets
- Asset Price Decline
- Increase in Interest Rates
- Increase in Uncertainty
- Adverse Selection and Moral Hazard Problems Worsen

STAGE TWO
Currency Crisis
- Foreign Exchange Crisis
- Adverse Selection and Moral Hazard Problems Worsen

STAGE THREE
Full-Fledged Financial Crisis
- Economic Activity Declines
- Banking Crisis
- Adverse Selection and Moral Hazard Problems Worsen
- Economic Activity Declines

Factors Causing Financial Crises

Consequences of Changes in Factors
FIGURE 2  TREASURY BILL–TO–EURODOLLAR RATE (TED) SPREAD

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