CH 8
FINANCIAL CRISES

FINANCIAL MARKETS &
INSTITUTIONS
MISHKIN AND EAKINS

KRIST DACHARUX
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FINANCIAL CRISIS

OUTLINE

Definition of Financial Crisis

Dynamics of Financial Crises in Advanced Economies

Cases of Crises

- Great Depression (1929-1933)
- Global Financial Crisis (GFC) (2007-2009)
- European Sovereign Debt Crisis (2009)
- Asian Financial Crisis (AFC) (1997-1998)

Roles of Central Banks

DEFINITION

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

Information flows in financial markets experience a particularly large disruption. Financial markets may stop functioning completely.

During a crisis, Financial Frictions rise sharply:

- Asymmetric information creates barriers between savers and firms with productive investment opportunities.
- Uncertainty/Risks/Sentiments
- Trust evaporates
- Suspicion rises

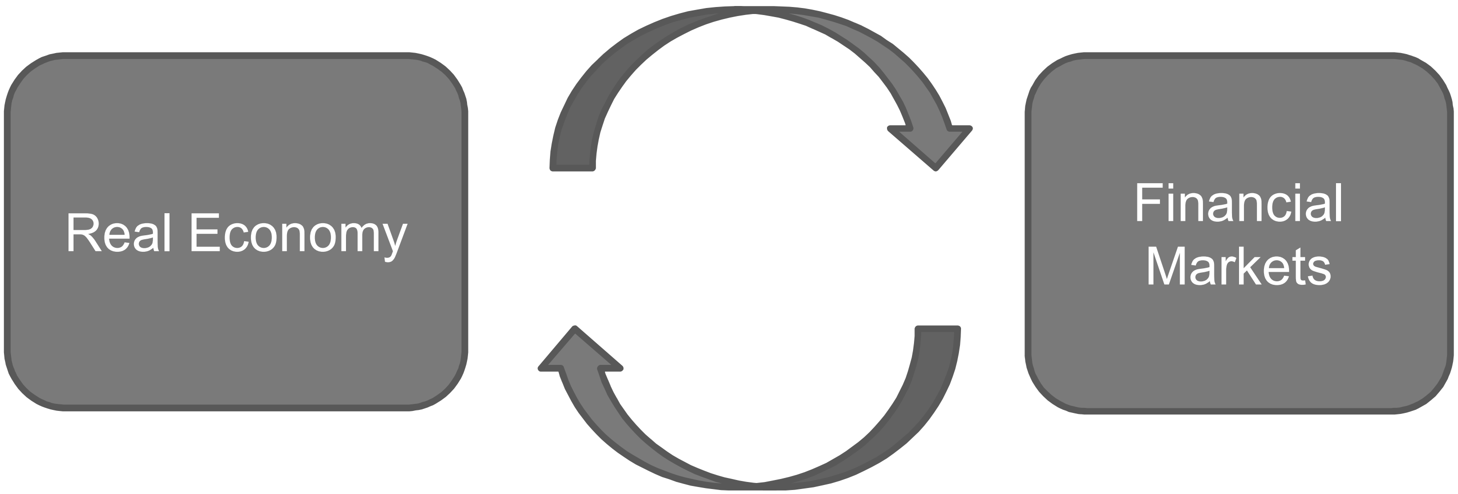
ROOT CAUSES OF CRISES

Financial markets are imperfect.

- Market imperfections lead to market failures.
- Market imperfections:
    - Information asymmetry
        - Moral hazard
        - Adverse selection
    - Mispricing of risks, mispricing of everything
    - Excessive risk taking that leads to asset price bubbles
    - Irrational exuberance
    - Self-fulfilling prophesy
    - Mismatches in maturity and currency
    - Overleverage, Over-indebtedness
- Bubble bursts and the fin. mkts stop functioning properly
- Financial market crashes
- Credits and money don’t flow where they should be
- Real economy suffers

MACRO-FINANCIAL LINKAGE

Borrow/Invest



Lend/Return

- Households
- Firms/Producers
- Government

- Banks
- Stock Markets
- Bond Markets
- Other FIs

EVERYTHING COMES IN CYCLES

Business cycles (2-8 yrs)

- Output/Production/Economic Activities Boom-Bust
- Expansion-Contraction

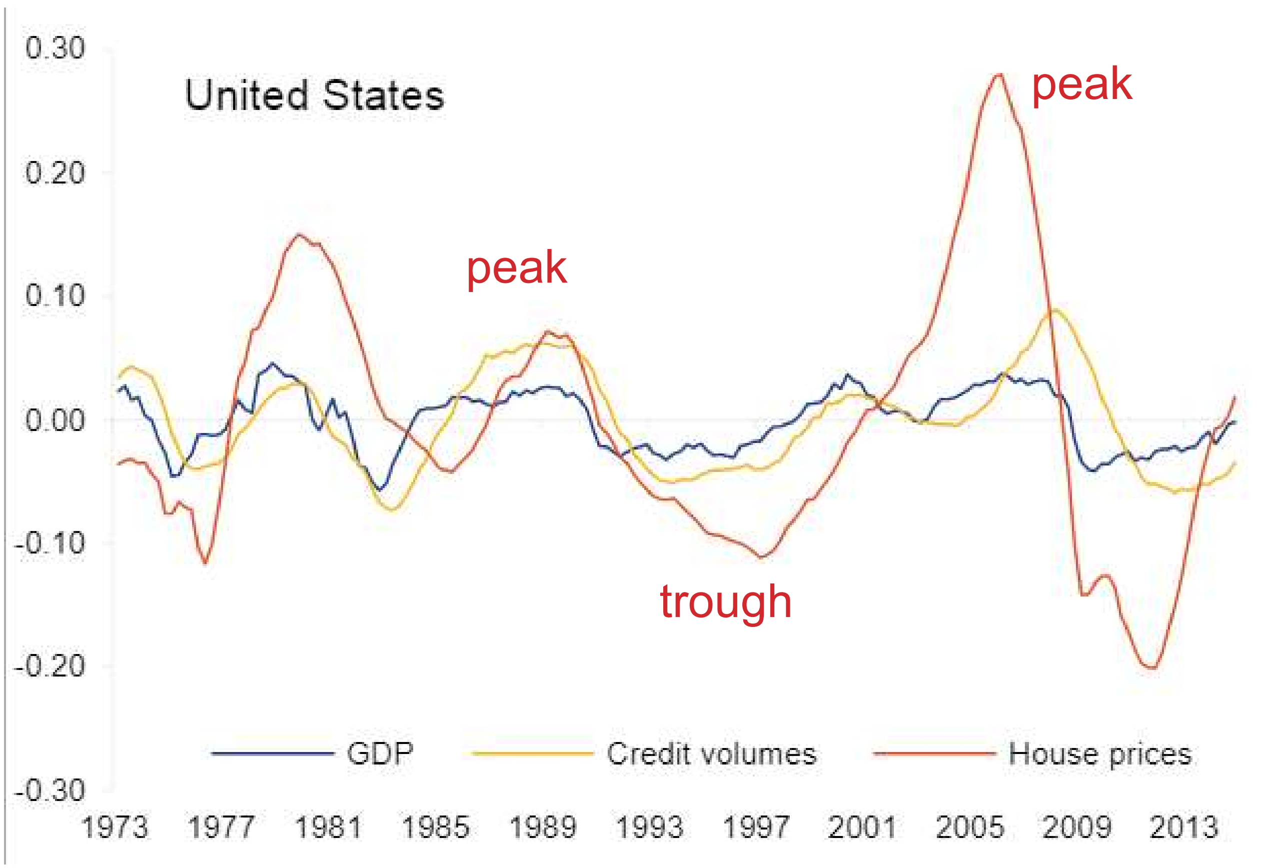
Financial cycles (10-20 yrs)

- Asset-price Boom-Bust
  - House prices
  - Equity prices
- Credit Boom-Bust
  - Bank lending
  - Non-bank lending

Drehmann et al. (2012) "Characterising the financial cycle: don't lose sight of the medium term!", *BIS Working Papers*, No 380.

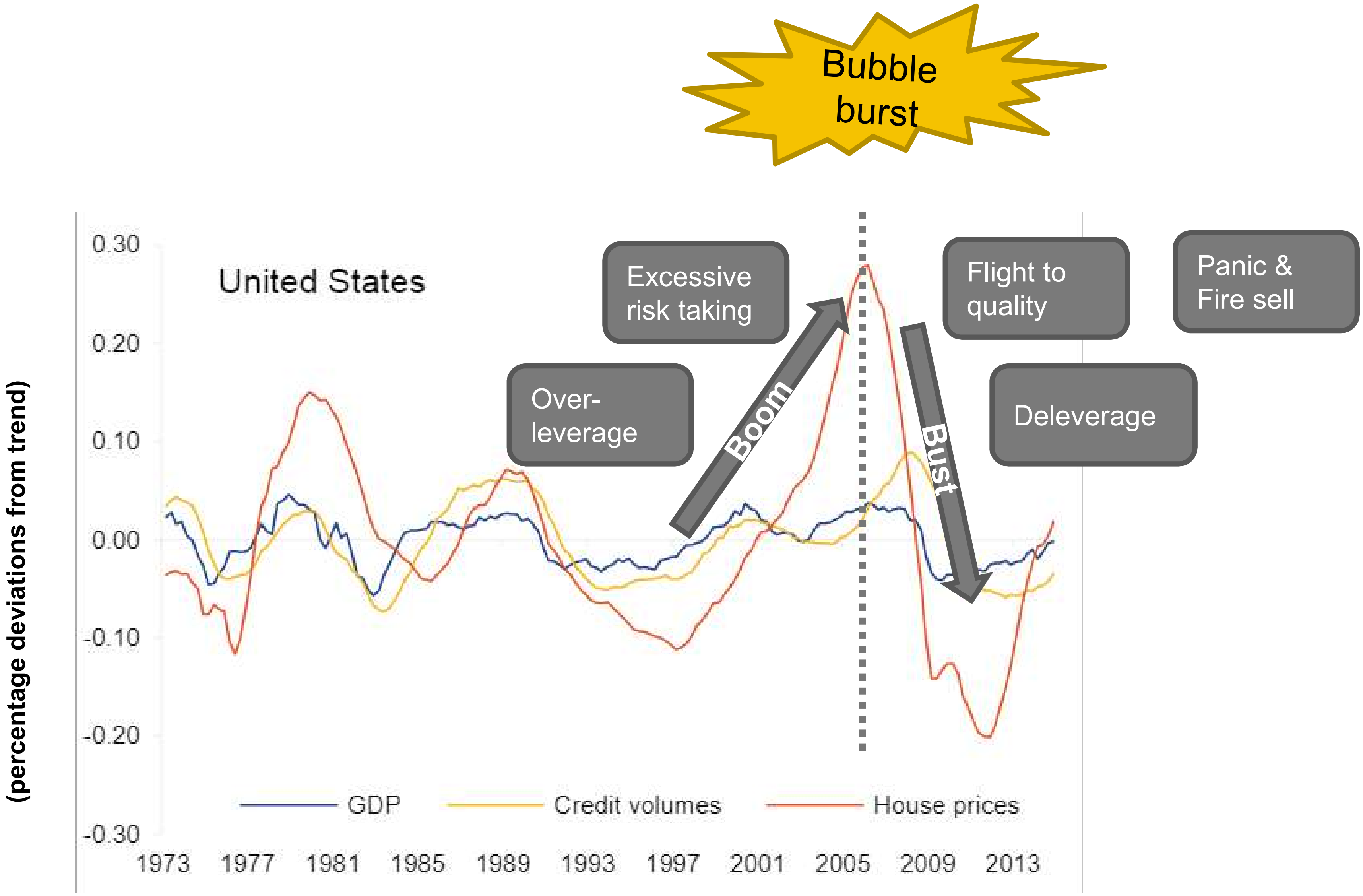
BUSINESS VS FINANCIAL CYCLES

Estimates of GDP and financial cycles (percentage deviations from trend)



Gerhard Rünstler, 2016, ECB Research Bulletin No.26

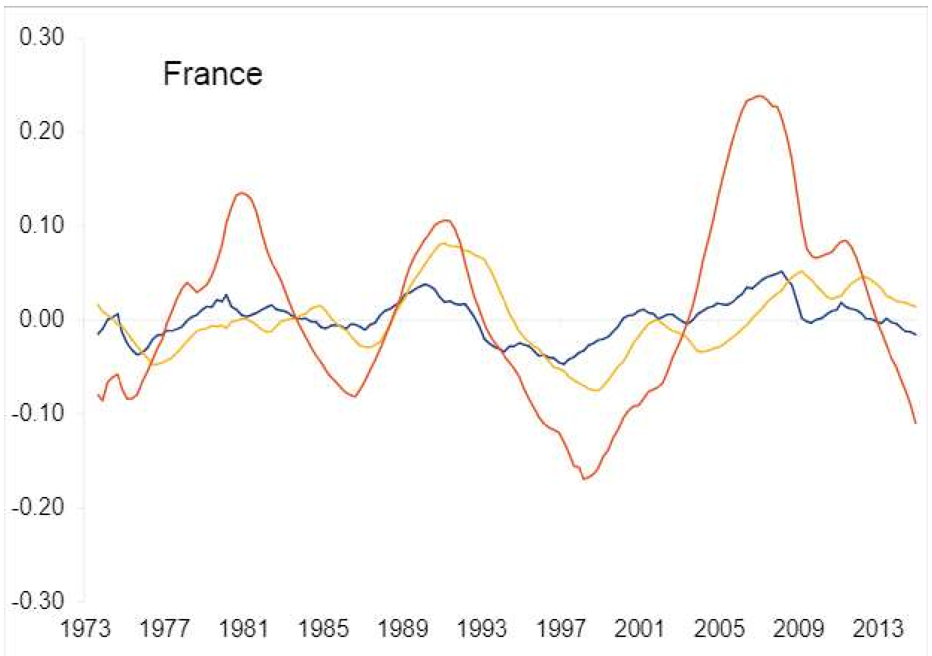
FINANCIAL CYCLES

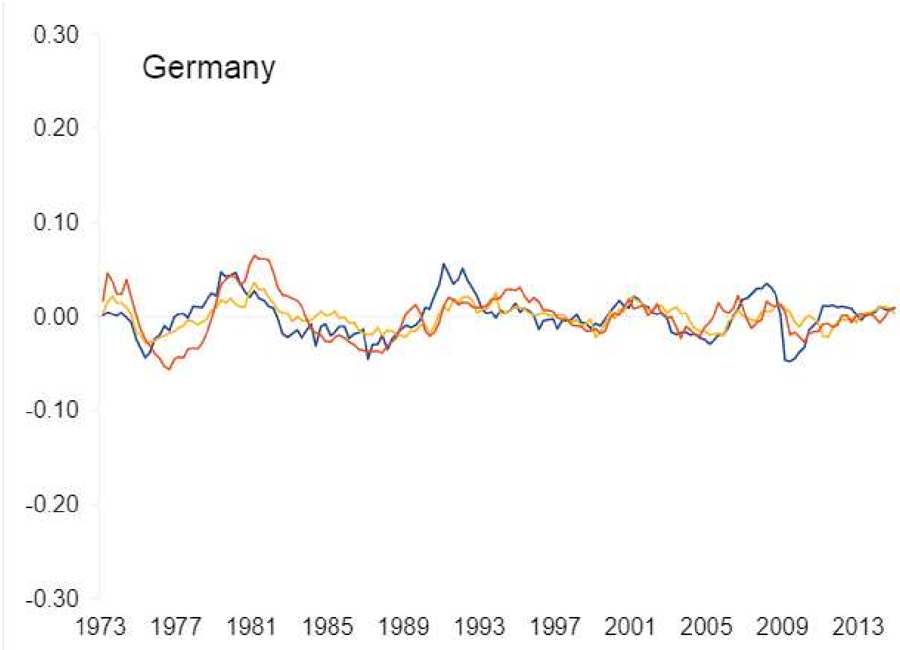


Gerhard Rünstler, 2016, ECB Research Bulletin No.26

FINANCIAL CYCLES DIFFER ACROSS COUNTRIES

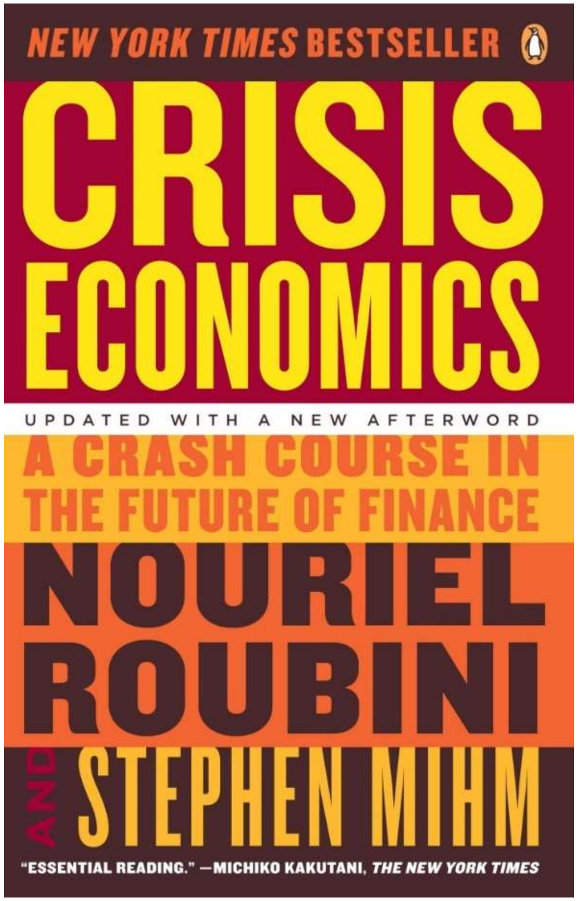
Estimates of GDP and financial cycles (percentage deviations from trend)





Gerhard Rünstler, 2016, ECB Research Bulletin No.26

DYNAMICS OF FINANCIAL CRISES



"Though crises are commonplace, they are also creatures of habit. They're a bit like hurricanes; they operate in a relatively predictable fashion but can change directions, subside, and even spring back to life with little warning."

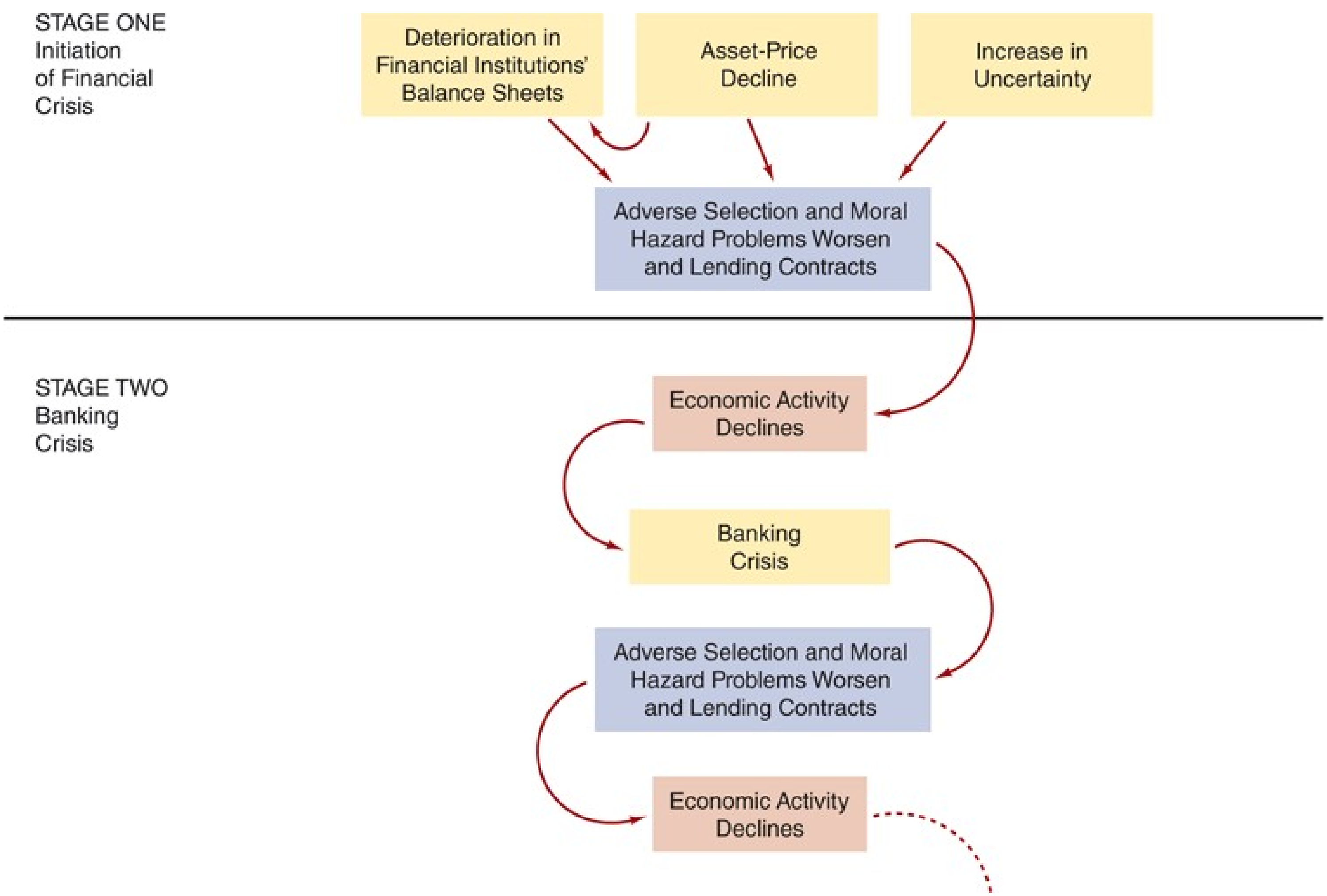
DYNAMICS OF FINANCIAL CRISES IN ADVANCED ECONOMIES

Financial crises usually proceed in 2 or 3 stages:

- **Initiation**: Asset prices decline and uncertainty rises
- **Banking crisis**: Banks' B/S deteriorate, banks cut lending, real economy suffers
- **Debt deflation**: If deflation, debt burden rises in real term

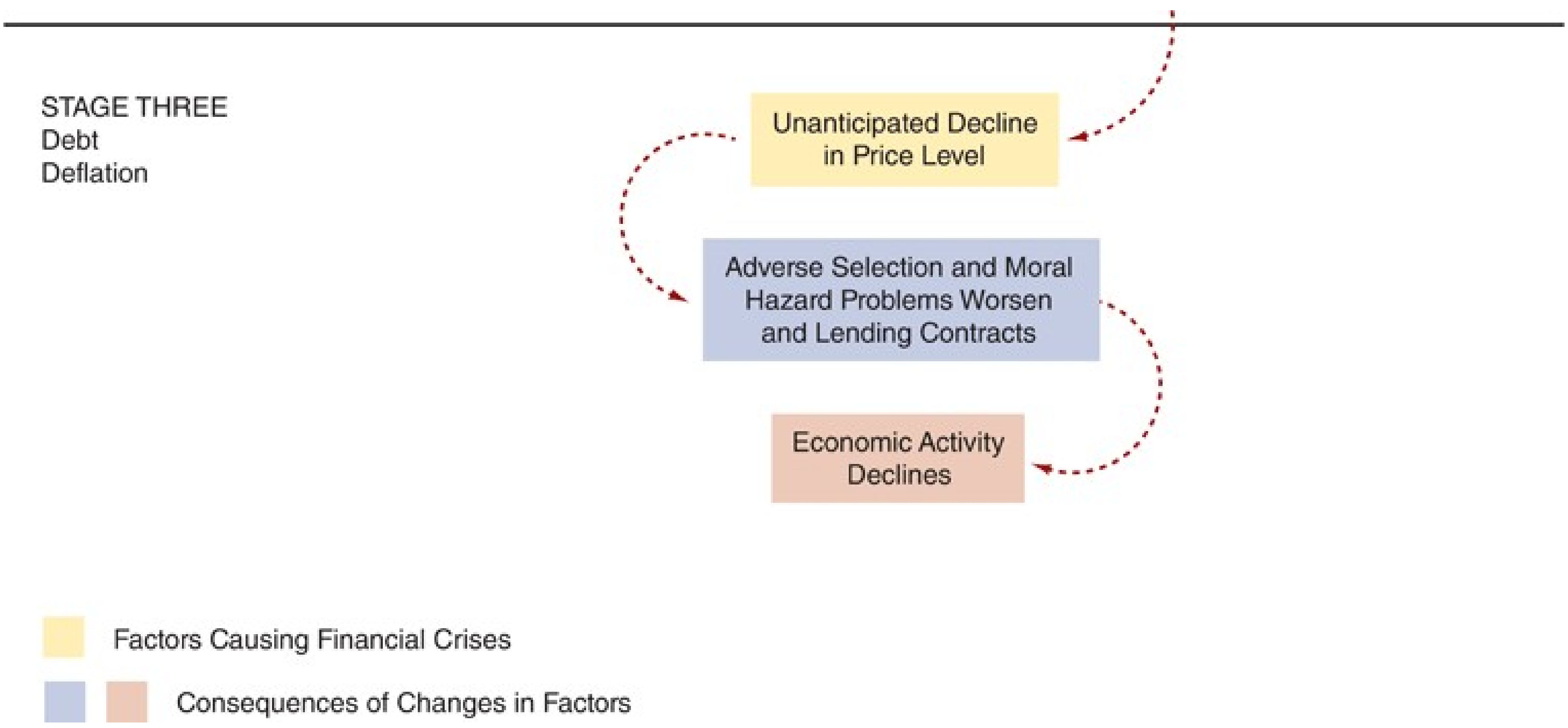
SEQUENCE OF EVENTS IN U.S. FINANCIAL CRISES (A)

Figure 8.1 Sequence of Events in Financial Crises in Advanced Economies



SEQUENCE OF EVENTS IN U.S. FINANCIAL CRISES (B)

Figure 8.1 Sequence of Events in Financial Crises in Advanced Economies



STAGE ONE: INITIATION

Financial crisis can begin in several ways:

- Credit boom and bust
- Asset-price boom and bust
- Increase in uncertainty

STAGE ONE: INITIATION

Credit Boom and Bust:

The seeds of a financial crisis can begin with mismanagement of financial liberalization or innovation:

- Elimination of restrictions
- Introduction of new types of loans or other financial products

Eventually, loan losses accrue, and asset values fall, leading to a reduction in capital.

Financial institutions cut back in lending, a process called deleveraging. Banking funding falls as well.

As FIs cut back on lending, no one is left to evaluate firms. The financial system losses its primary institution to address adverse selection and moral hazard.

Economic spending contracts as loans become scarce.

STAGE ONE: INITIATION

Asset- price boom and bust:

A pricing bubble starts, where asset values exceed their fundamental values.

When the bubble bursts and prices fall, corporate net worth falls as well. Moral hazard increases as firms have little to lose.

FIs also see a fall in their assets, leading again to deleveraging.

STAGE ONE: INITIATION

An increase in uncertainty:

Periods of high uncertainty can lead to crises, such as stock market crashes or the failure of a major financial institution.

With information hard to come by, moral hazard and adverse selection problems increase.

Reduced lending and economic activity

STAGE TWO: BANKING CRISIS

Deteriorating balance sheets lead financial institutions into insolvency. If severe enough, these factors can lead to a bank panic.

Panics occur when depositors are unsure which banks are insolvent, causing all depositors to withdraw all funds immediately

As cash balances fall, FIs must sell assets quickly, further deteriorating their balance sheet. Fire-sell.

STAGE THREE: DEBT DEFLATION

If the crisis also leads to a sharp decline in prices, debt deflation can occur, where asset prices fall, but debt levels do not adjust, increasing debt burdens.

This leads to an increase in adverse selection and moral hazard, which is followed by decreased lending

Depressed economic activity for a long time

STAGE THREE: DEBT DEFLATION

Deflation will lead to a reduction in net worth.

HOW?

Consider a firm in 2015 with assets of $100 million (in 2015 dollars), $90 million of long-term liabilities, and so $10 million in net worth.

Price levels fall by 10% in 2016. Real value of assets (in 2015 dollars) remains the same.

Real value of liabilities rise to $99 million (in 2015 dollars), and so net worth falls to just $1 million!

CASES

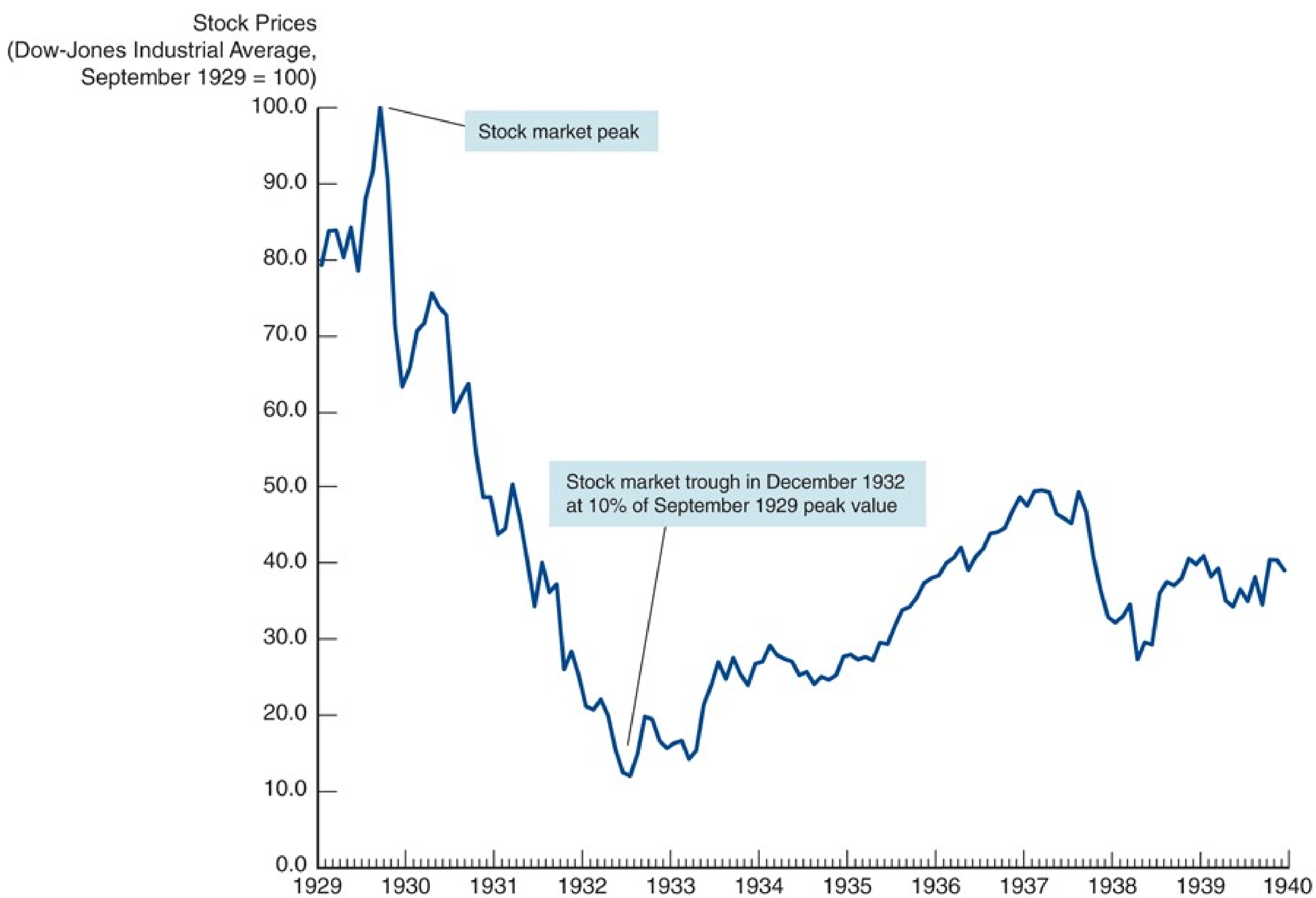
1. The Great Depression of 1928-1933
2. The Global Financial Crisis of 2007-2009
3. The European Soveregin Debt Crisis of 2009-2012
4. The Asian Financial Crisis of 1997-1998

CASE1: THE GREAT DEPRESSION (1928-1933)

In 1928 and 1929, stock prices doubled in the U.S. The Fed tried to curb this period of excessive speculation with a tight monetary policy. But this lead to a stock market collapse of more than 20% in October of 1929, and losing an additional 20% by the end of 1929.

As the next slide shows, the decline continued for several years.

STOCK MARKET PRICES DURING THE GREAT DEPRESSION



Source: Dow-Jones Industrial Average (DJIA). Global Financial Data. www.globalfinancialdata.com/index_tabs.php?action=detailedinfo&id=1165.

CASE1: THE GREAT DEPRESSION

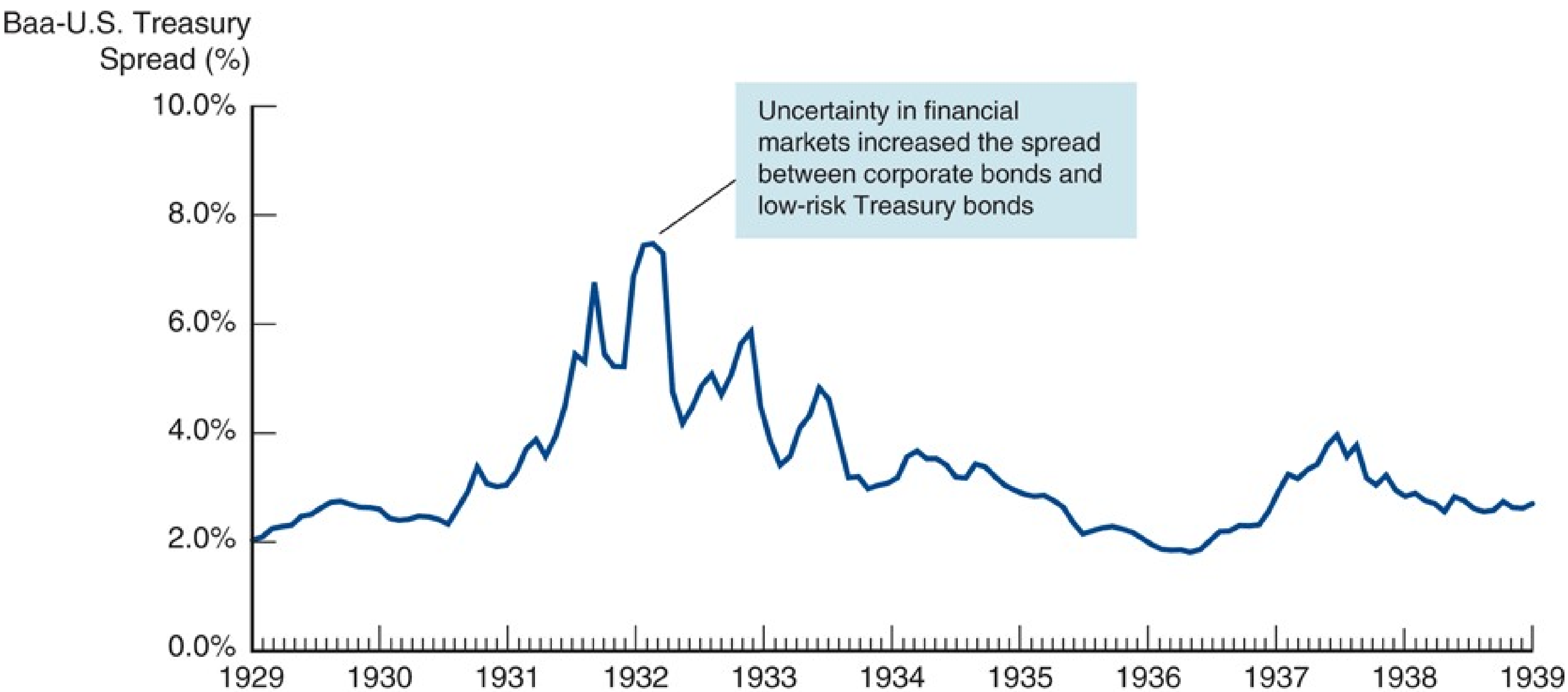
What might have been a normal recession turned into something far worse, when severe droughts in 1930 in the Midwest led to a sharp decline in agricultural production.

Between 1930 and 1933, one-third of U.S. banks went out of business as these agricultural shocks led to bank failures.

For more than two years, the Fed sat idly by through one bank panic after another.

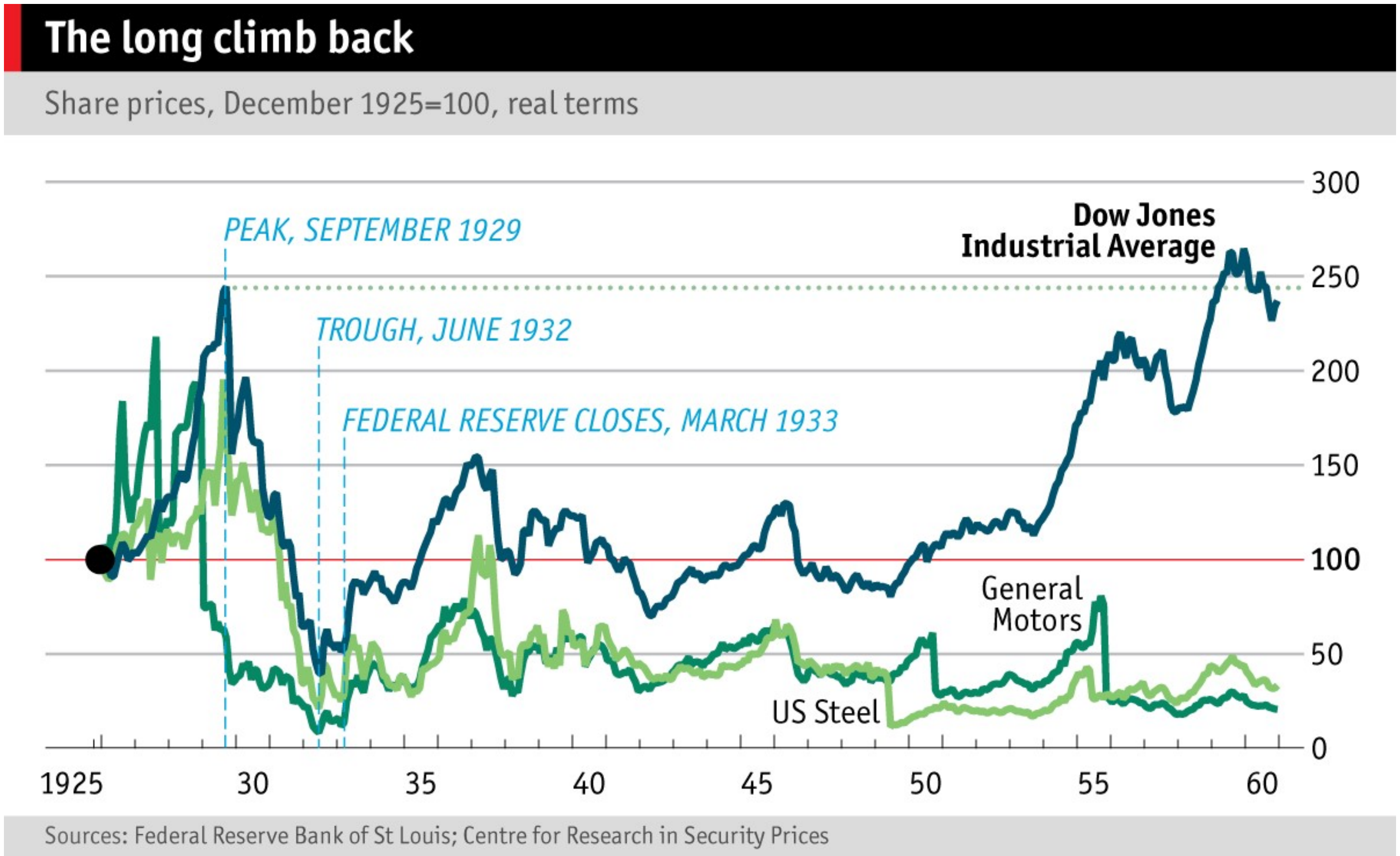
CREDIT SPREADS DURING THE GREAT DEPRESSION

Adverse selection and moral hazard in credit markets became severe. Firms with productive uses of funds were unable to get financing. Credit spreads increased from 2% to nearly 8% during the height of the Depression in 1932.



Source: Federal Reserve Bank of St. Louis FRED database, http://research.stlouisfed.org/fred2/categories/22.

THE GREAT DEPRESSION & IMPACTS ON REAL ECONOMY



Source: The Economist

CASE1: THE GREAT DEPRESSION

The deflation during the period lead to a 25% decline in price levels.

The prolonged economic contraction lead to an unemployment rate around 25%.

The Depression was the worst financial crisis ever in the U.S. It explains why the economic contraction was also the most severe ever experienced by the nation.

International spillovers and political-economic consequences (the rise of fascism and WWII).

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Three central factors leading to the 2007–2009 Hamburger financial crisis:

1. financial innovation in mortgage markets
2. agency problems in mortgage markets
3. asymmetric information in the credit rating process

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Financial innovation in mortgage markets developed along a few lines:

Less-than-credit worthy borrowers found the ability to purchase homes through subprime lending, a practice almost nonexistent until the 2000s

Financial engineering developed new financial products to further enhance and distribute risk from mortgage lending

- Mortgage-backed security (MBS)

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Agency problems in mortgage markets also reached new levels:

Mortgage originators did not hold the actual mortgage, but sold the note in the secondary market

Mortgage originators earned fees from the volume of the loans produced, not the quality

In the extreme, unqualified borrowers bought houses they could not afford through either creative mortgage products or outright fraud (such as inflated income)

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Finally, the rating agencies didn’t help:

Agencies consulted with firms on structuring products to achieve the highest rating, creating a clear conflict

Further, the rating system was hardly designed to address the complex nature of the structured debt designs

The result was meaningless ratings that investors had relied on to assess the quality of their investments

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Many suffered as a result of the 2007–2009 financial crisis.

U.S. residential housing

FIs balance sheets

The “shadow” banking system

Global financial markets

The failure of major financial firms

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

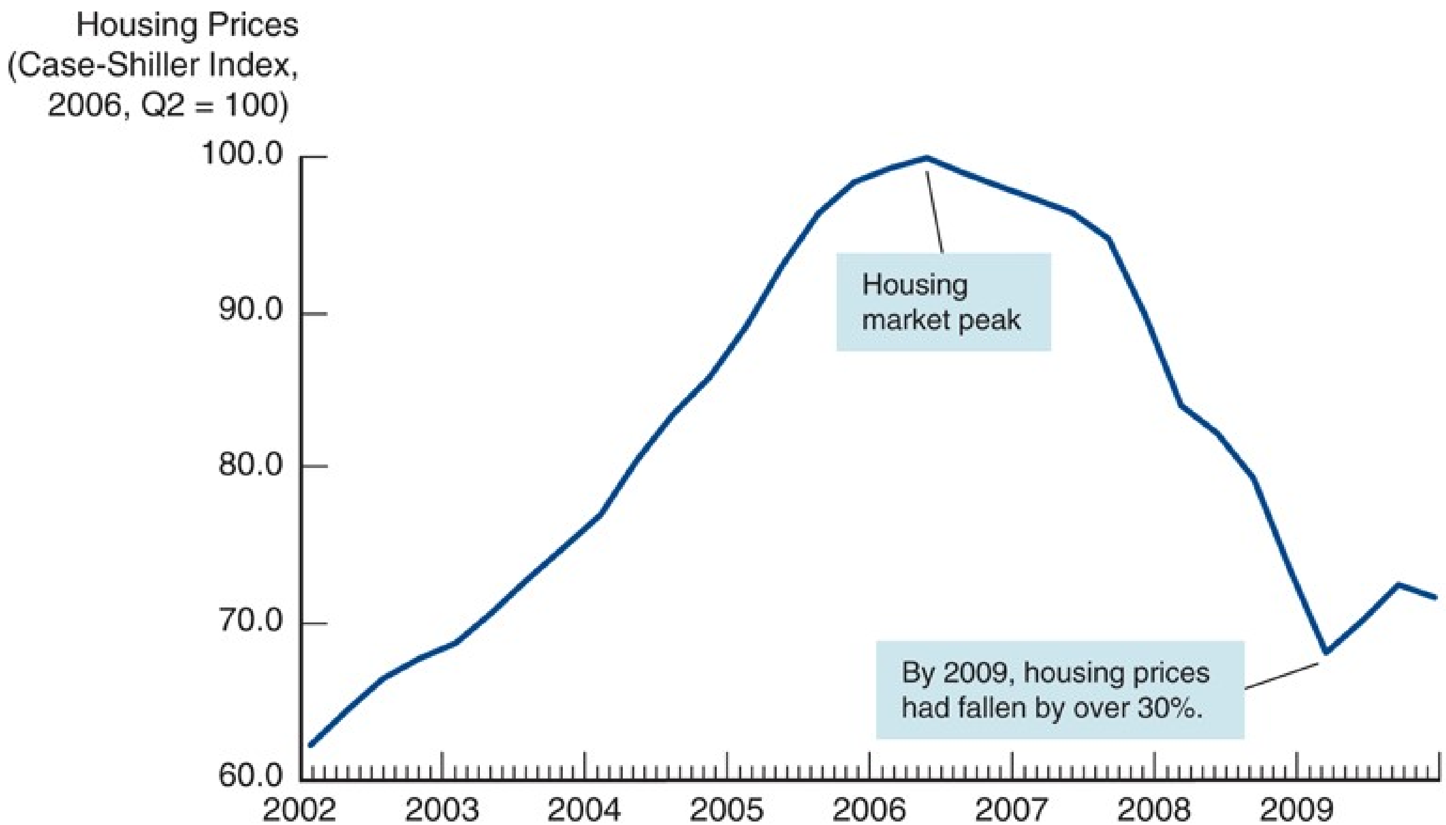
Initially, the housing boom was lauded by economics and politicians. The housing boom helped stimulate growth in the subprime market as well.

However, underwriting standard fell. People were clearly buying houses they could not afford, except for the ability to sell the house for a higher price.

Lending standards also allowed for near 100% financing, so owners had little to lose by defaulting when the housing bubble burst.

The next slide shows the rise and fall of housing prices in the U.S. The number of defaults continues to plague the U.S. banking system.

HOUSING PRICES: 2002–2010



Source: Case-Shiller 20-City Home Price Index in Federal Reserve Bank of St. Louis, FRED Database. http://research.stlouisfed.org/fred2/ .

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

As mortgage defaults rose, banks and other FIs saw the value of their assets fall. This was further complicated by the complexity of mortgages, CDOs, defaults swaps, and other difficult-to-value assets.

Banks began the deleveraging process, selling assets and restricting credit, further depressing the struggling economy.

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

The shadow banking system also experienced a run. These are the hedge funds, investment banks, and other liquidity providers in our financial system. When the short-term debt markets seized, so did the availability of credit to this system. This lead to further "fire" sales of assets to meet higher credit standards.

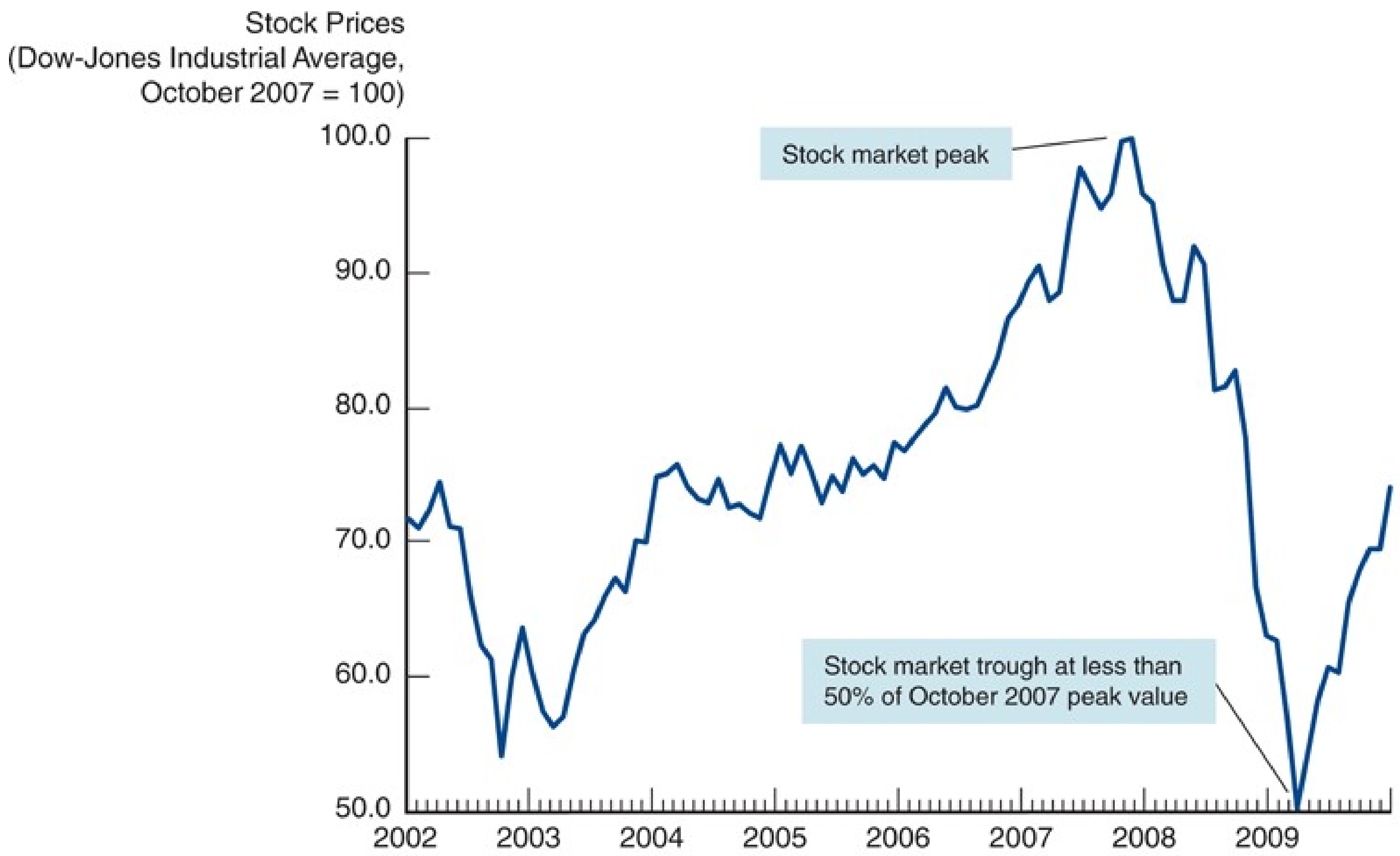
CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

As seen on the next two slides, the fall in the stock market and the rise in credit spreads further weakened both firm and household balance sheets.

Both consumption and real investment fell, causing a sharp contraction in the economy.

STOCK PRICES: 2002–2009

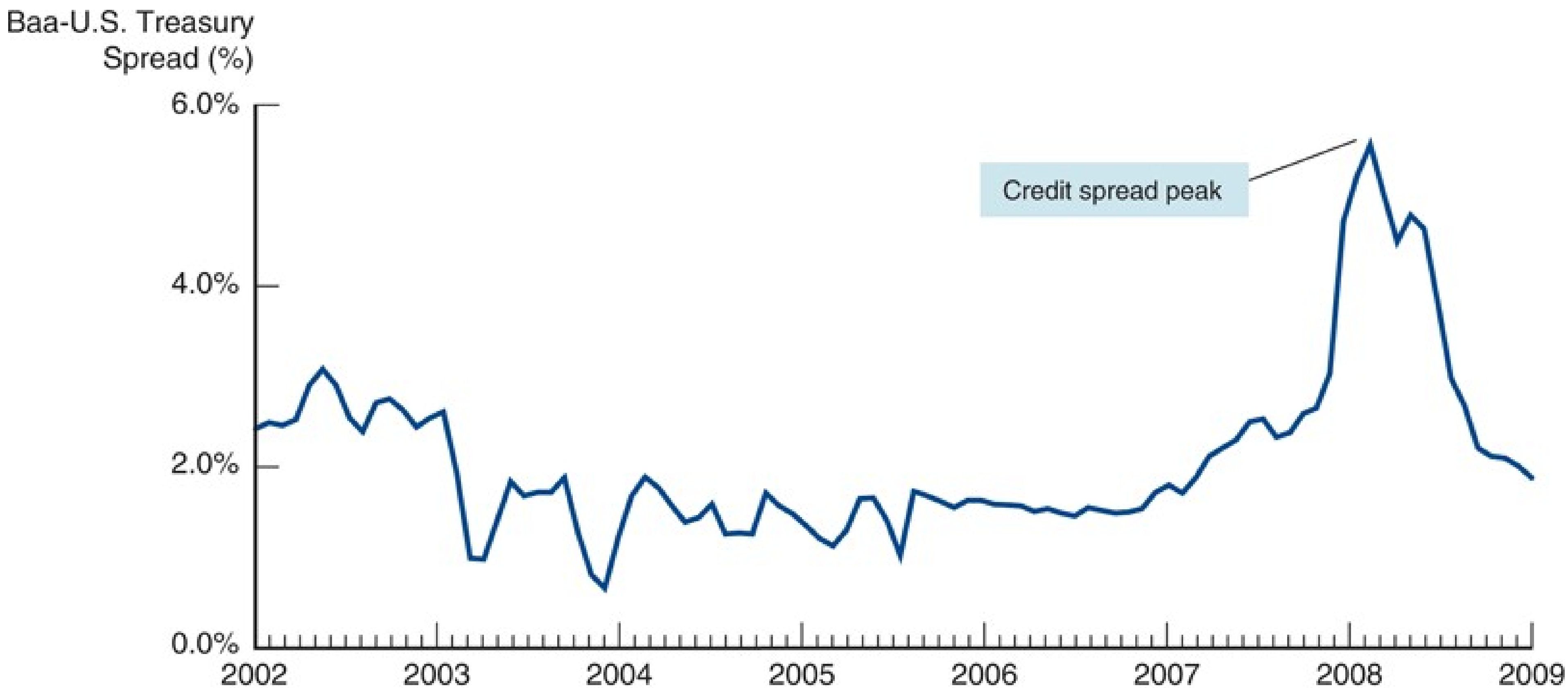
Figure 8.5 Stock Prices and the Financial Crisis of 2007–2009



Source: Dow-Jones Industrial Average (DJIA). Global Financial Data, www.globalfinancialdata.com/index_tabs.php?action=detailedinfo&id=1165.

CREDIT SPREADS: 2002–2009

Figure 8.6 Credit Spreads and the 2007–2009 Financial Crisis



Source: Federal Reserve Bank of St. Louis FRED database, http://research.stlouisfed.org/fred2/.

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Finally, the collapse of several high-profile U.S. investment firms only further deteriorated confidence in the U.S.

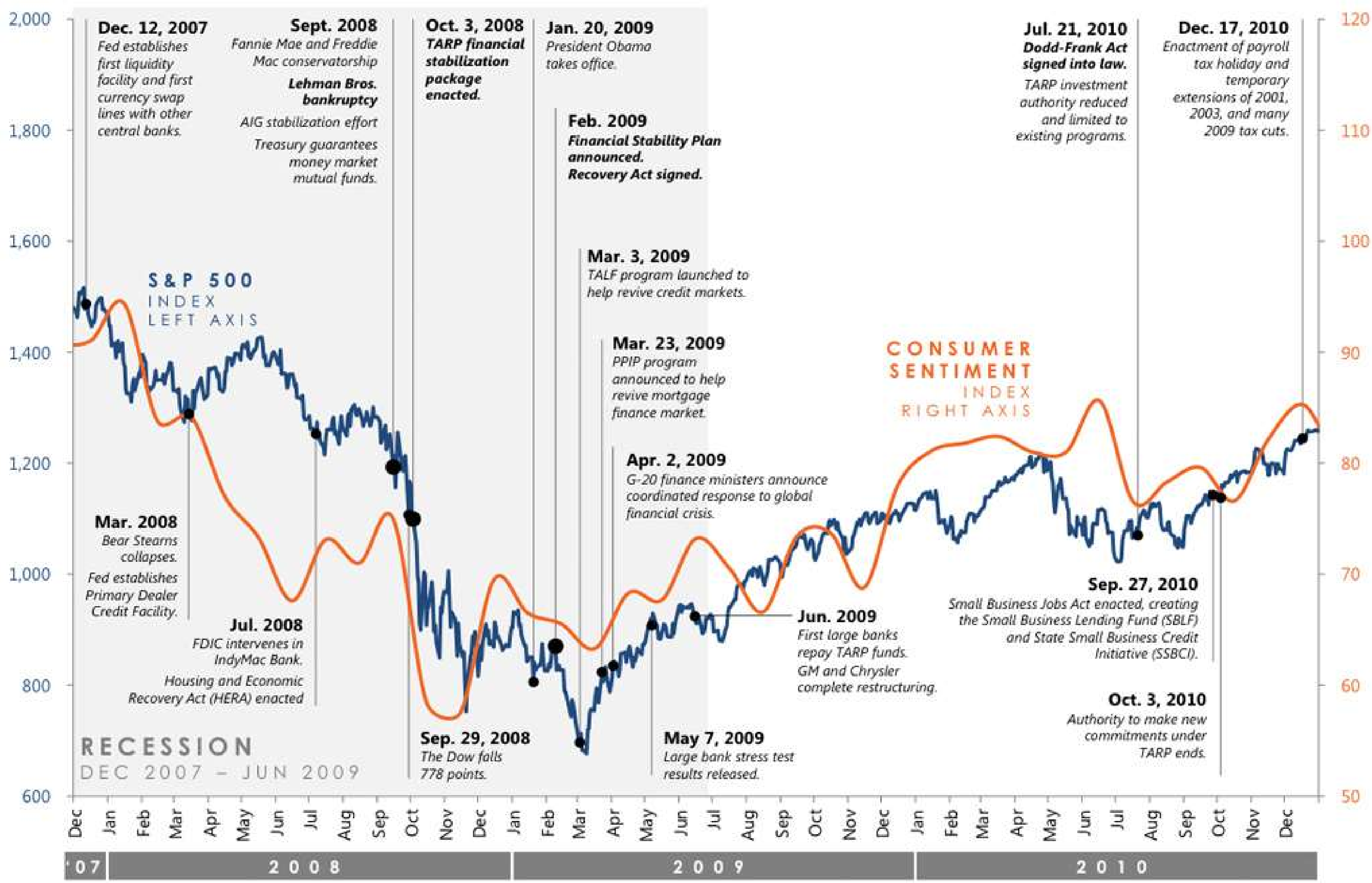
March 2008: Bear Sterns fails and is sold to JP Morgan for 5% of its value only 1 year ago

September 2008: both Freddie and Fannie put into conservatorship after heaving subprime losses.

September 2008: Lehman Brothers files for bankruptcy. Merrill Lynch sold to Bank of America at “fire” sale prices. AIG also experiences a liquidity crisis.

Markets Chart of the Day

History of the Financial Crisis: **Mid-2007 to 2010**



SOURCE: BLS, BEA, U. MICH.

BUSINESS INSIDER

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

The crisis and impaired credit markets have caused the worst economic contraction since World War II.

The crisis peaked in September of 2008.

Congress passed a bailout package, but the stock market continued to decline, and credit spreads reached over 500 bps.

CASE2: THE GLOBAL FINANCIAL CRISIS OF 2007-2009

Starting in March 2009, a bull market in stocks got under way and credit spreads began to fall.

Unfortunately, the pace of the recovery has been slow.

The fall in real GDP and increase in unemployment to over 10% in 2009 impacted almost everyone.

The recession that started in December 2007 became the worst economic contraction in the United States since World War II, and is now called the Great Recession.

CASE3: THE EUROPEAN SOVEREIGN DEBT CRISIS

Up until 2007, all the countries that had adopted the euro found their interest rates converging to very low levels.

At the same time, several of these countries were hit very hard:

- Lower tax revenue from economic contraction
- High outlays for FI bailouts
- Fear of gov't default cause rates to surge

CASE3: THE EUROPEAN SOVEREIGN DEBT CRISIS

Greece was the first domino to fall

- In September 2008, gov't projected a 6% deficit and debt-to-GDP of 100%
- In October, with newly elected officials, numbers were shown to be far worse
- Fear of default caused rates on Greek debt to peak near 40%
- Debt-to-GDP rose to 160% in 2012

Greece was forced to write-down its debt (partial default)

Civil unrest broke out as unemployment rates climbed

The prime minister was eventually forced to resign

CASE3: THE EUROPEAN SOVEREIGN DEBT CRISIS

Ireland, Portugal, Spain, and Italy followed

- —Governments forced to embrace **austerity** measures to shore up their public finances
- —Interest rates climbed to double-digit levels
- —**Severe recessions** resulted, despite assurances from the ECB to help
- —**Unemployment** rates rose to double-digits (25% in Spain)

Will the euro survive?

CASE4: ASIAN FINANCIAL CRISIS (1997-1998)

Epicenter: Thailand

Others affected: Korea, Indonesia, Malaysia, Philippines

Thailand

Symptoms: Twin Crises

- Balance of Payments Crisis
- Banking Crisis

Causes: Currency and maturity mismatches (from Moral hazard and Adverse selection)

Results: Large current account deficits (7-8% of GDP)

Excessive borrowings in foreign currencies

CASE4: ASIAN FINANCIAL CRISIS (1997-1998)

<u>Crisis Dynamics in Thailand</u>

Strong economic growth during 1993-1996

Attracted short-term capital inflows | Encouraged loans in foreign currencies

Credit booms (D/E ratio over 5) and Housing bubbles

Speculative attacks on Thai Baht (THB)

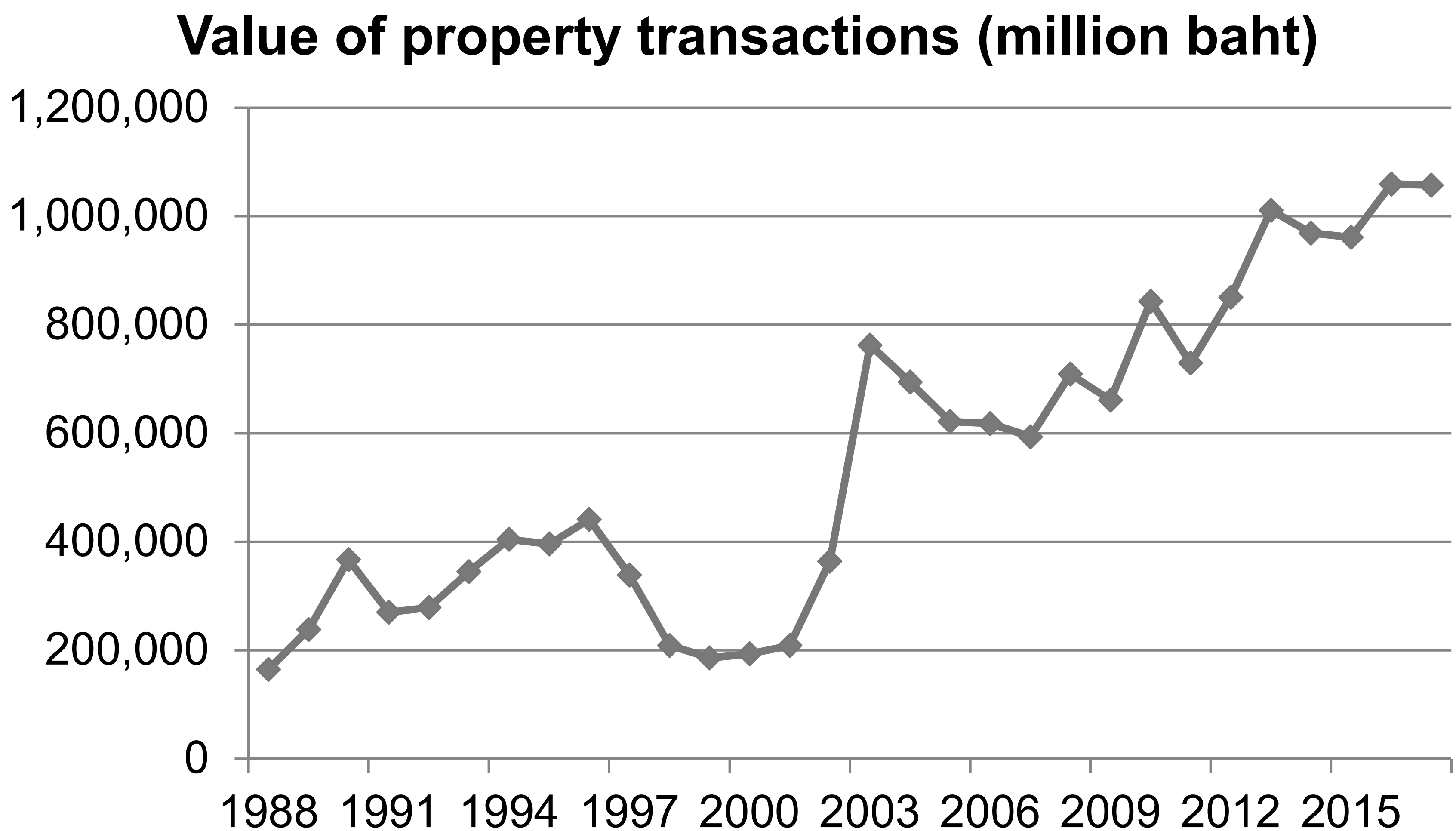
2 July 1997, Thailand abandoned fixed exchange rate regime and shifted to managed float

THB weakened significantly (20% against USD)

NPL rose to 45% of total loans in 1997

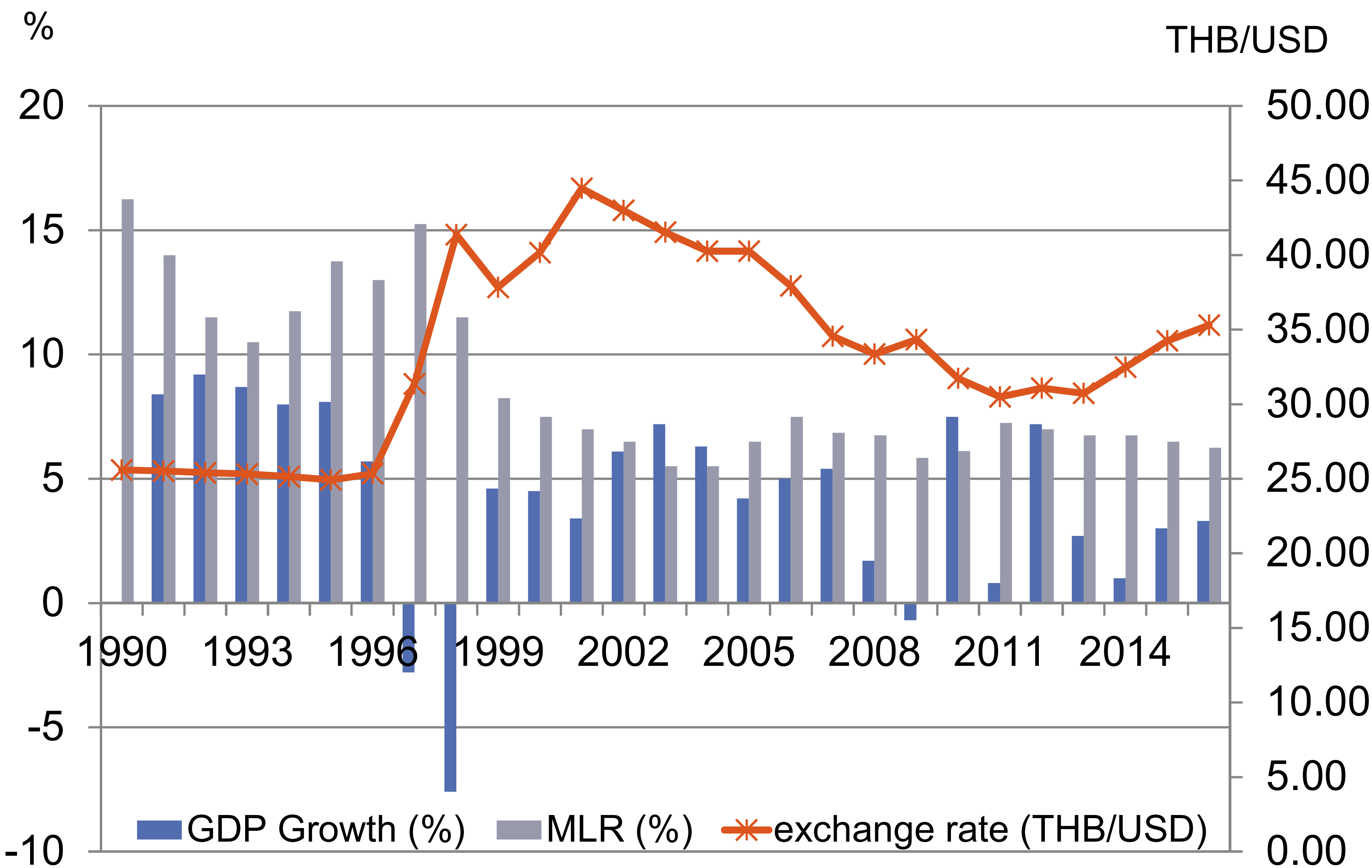
Economic contracted -2.8% and -7.6% in 1997 and 1998, respectively

AFC CAUSED A SLUMP IN PROPERTY SECTOR FOR SEVERAL YEARS



Source: Bank of Thailand

CASE4: AFC & THAILAND



Source: Bank of Thailand

END SLIDE

"[T]he charm of history and its enigmatic lesson consist in the fact that, from age to age, nothing changes and yet everything is completely different."

Aldous Huxley, an English writer

"Capitalism is crisis; it introduced a level of instability and uncertainty that had no precedent in human history."

Roubini and Mihm