Deams
Dipartimento di
Scienze Economiche, Aziendali,
Matematiche e Statistiche "Bruno de Finetti"

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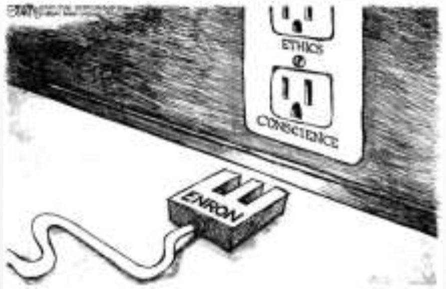
B9. FINANCIAL CRISES

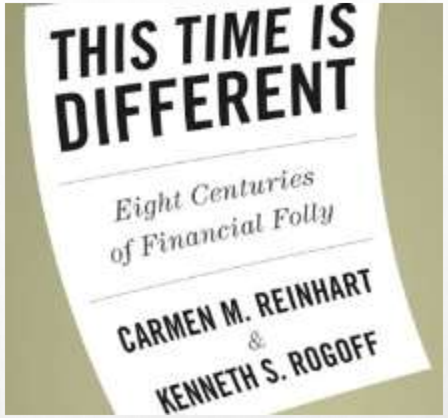
- WHY FINANCIAL CRISES? ARE THEY SIMILAR? ARE THEY AVOIDABLE?
- KEY STORIES:
  - THE GREAT DEPRESSION
  - THE 2007-09 GLOBAL FINANCIAL CRISES
- WHAT ABOUT EMERGING MARKETS?

WHY FINANCIAL CRISES?



WHY FINANCIAL CRISES?

- A **shock** triggers the quick correction of an **imbalance** accumulated over time
- Increase of **asymmetric information** issues
- Inefficient allocation of capital: **financial crisis**
- **Credit crunch and recession**: bubbles, market crashes, bank runs, country defaults…

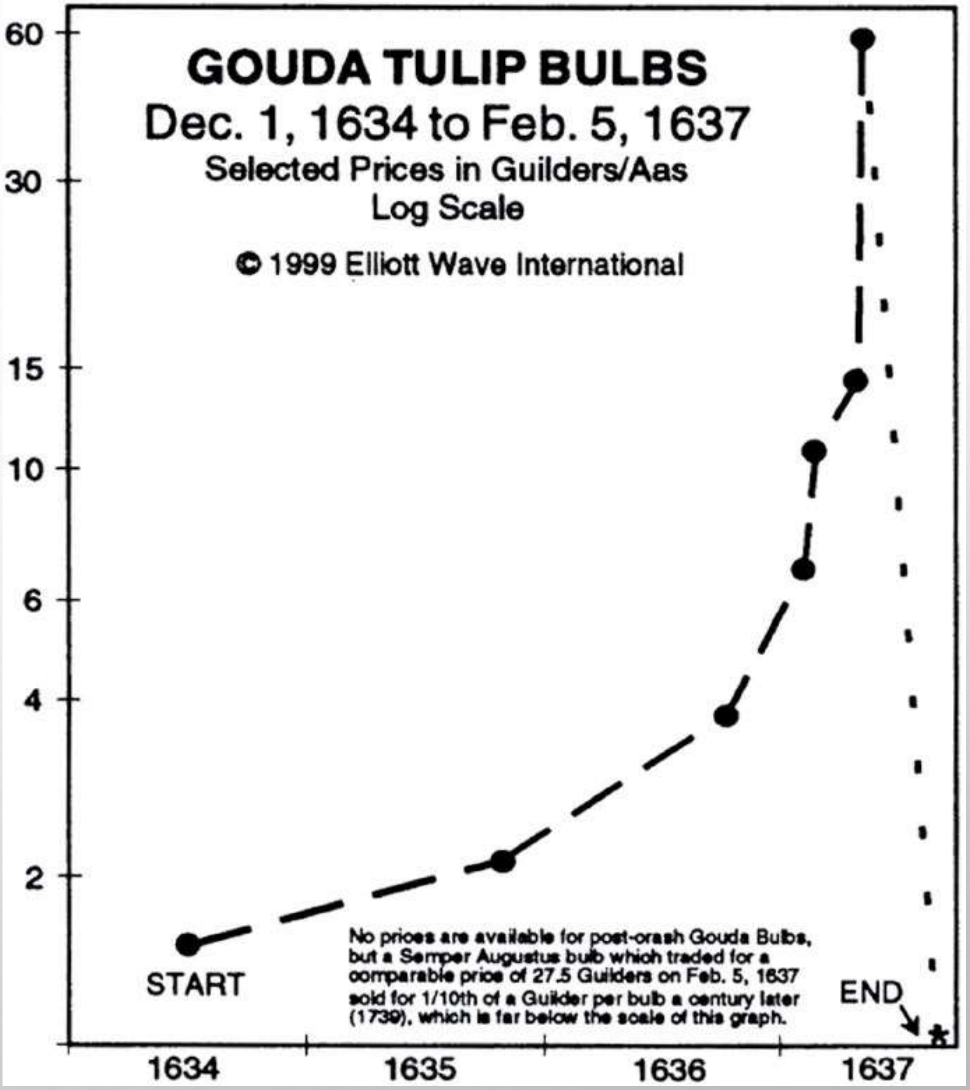


*"Throughout history, **rich and poor countries alike** have been lending, borrowing, crashing -- and recovering - their way through an **extraordinary range of financial crises**. Each time, the experts have chimed, **'this time is different'**, claiming that the **old rules of valuation no longer apply** and that the new situation bears little similarity to past disasters."*

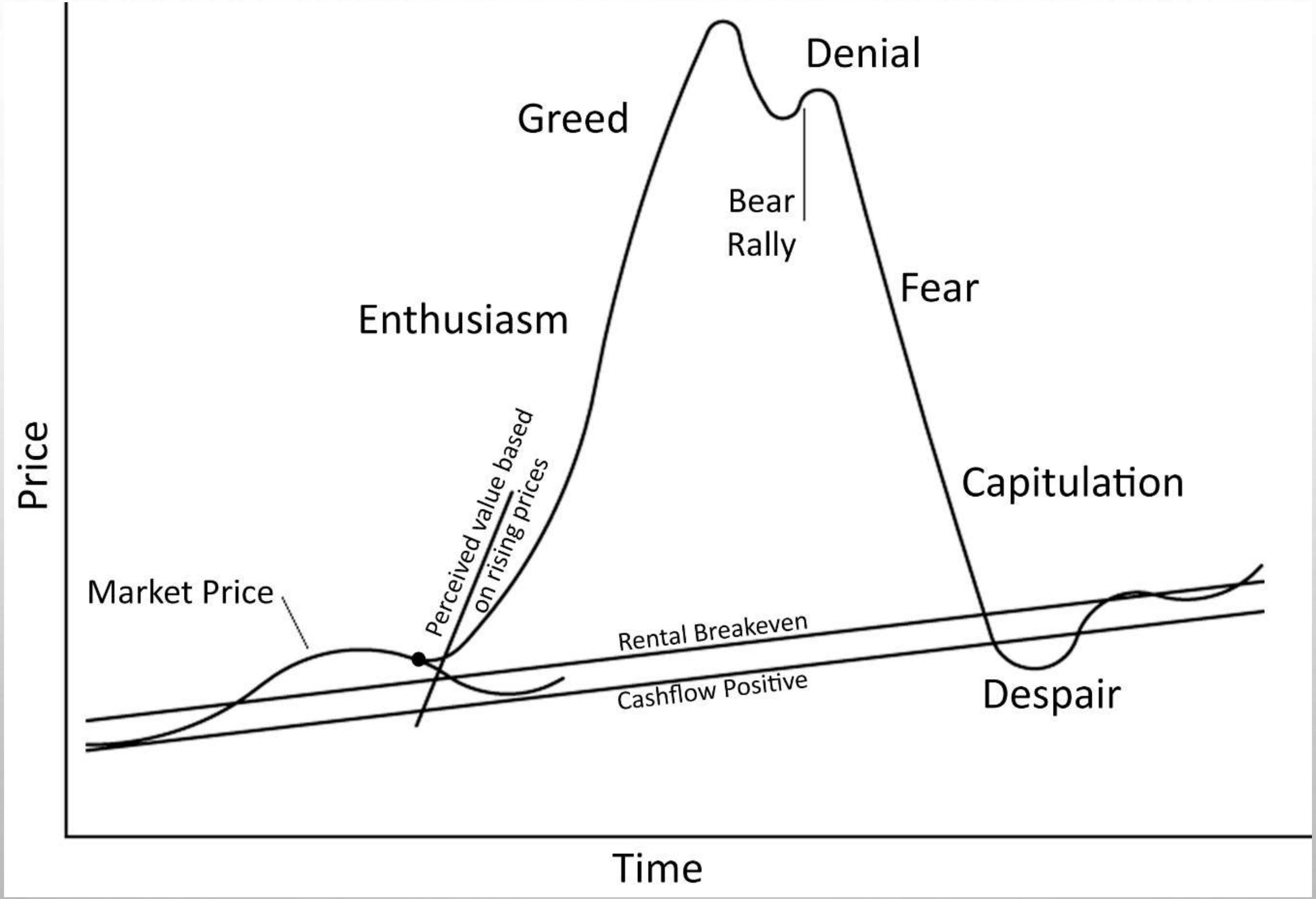
WHY?

- Imagine a **new luxury asset** is available
- It requires time to be produced
- Trading soon goes 20x the average annual salary
- Demand is strong:
    - purchased before production
    - soaring investments during planning

- What if someone notices the imbalance between the potential supply and the skyrocketing demand?



WHY?


Denial
Greed
Bear
Rally
Fear
Enthusiasm
Capitulation
Perceived value based
on rising prices
Market Price
Rental Breakeven
Cashflow Positive
Despair
Price
Time

CCC - CoinMarketCap • USD

Bitcoin USD (BTC-USD)

☆ Follow

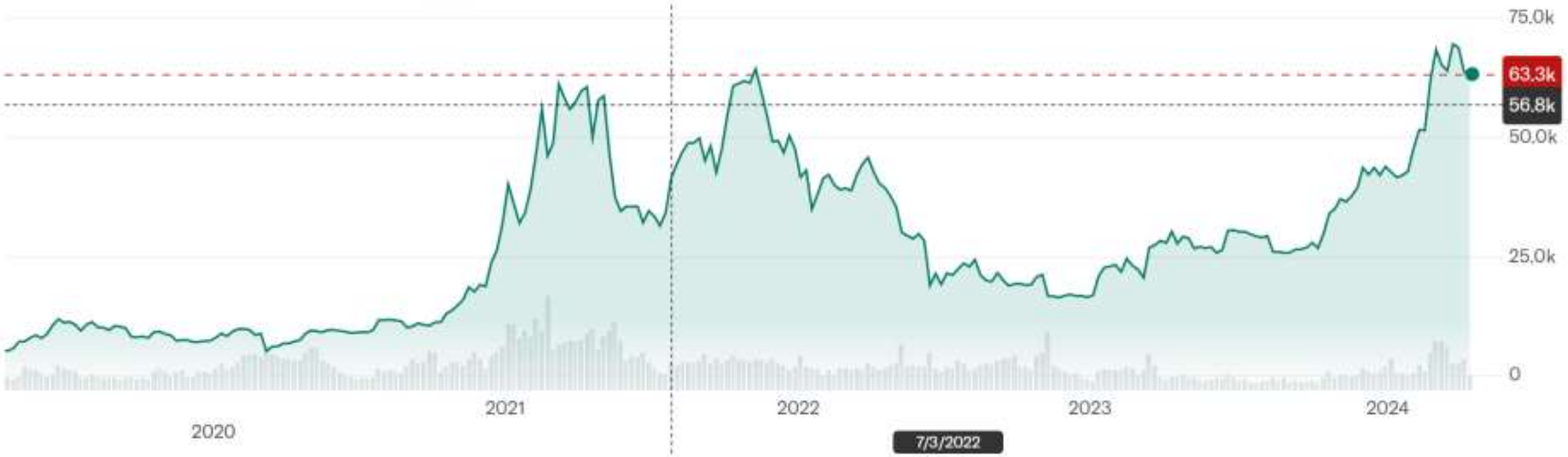
63,312.25 -3,001.10 (-4.53%)

As of 8:54 AM UTC. Market Open.

Data provided by CoinMarketCap

1D 5D 3M 6M YTD 1Y 5Y All

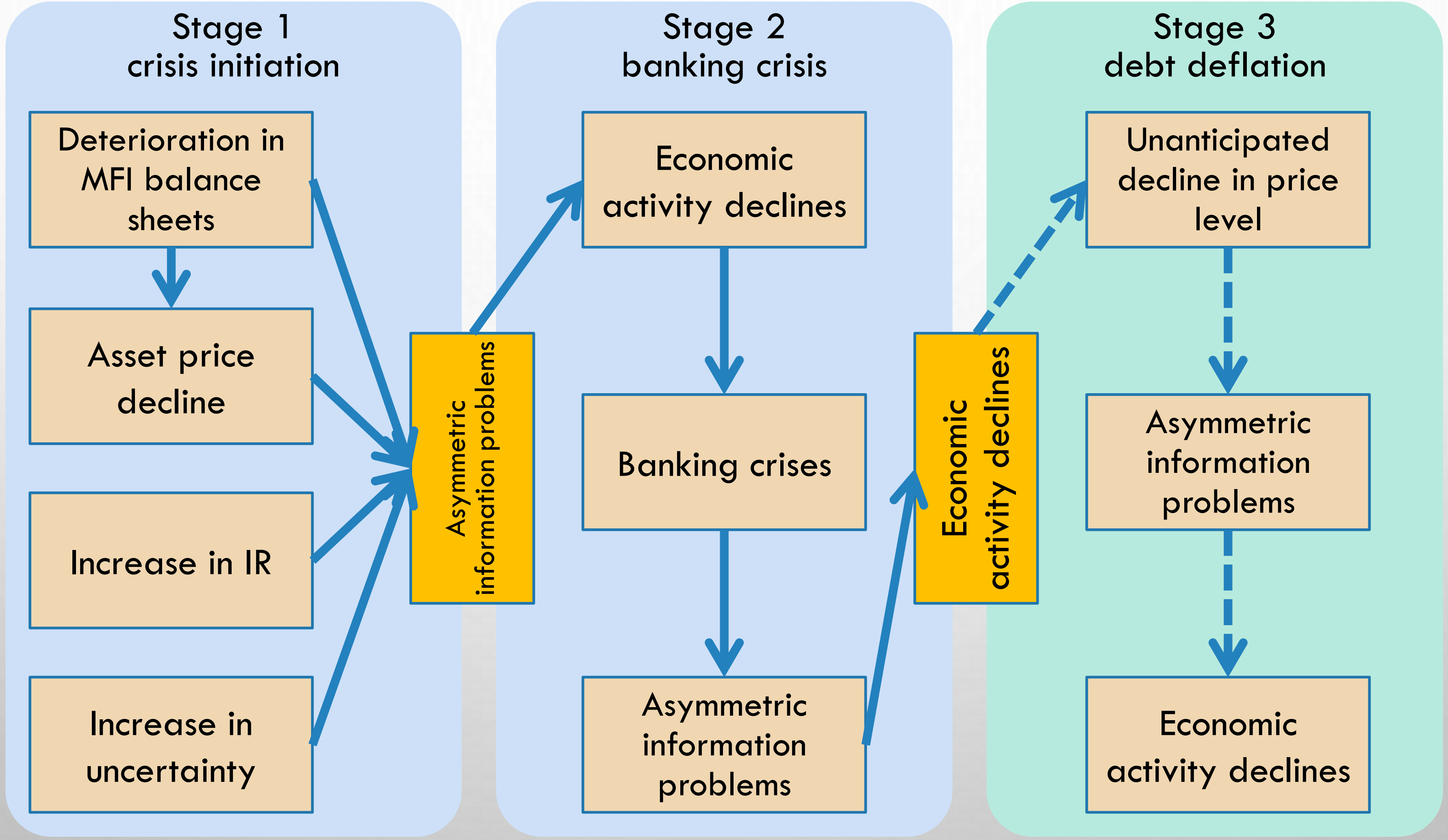
Mountain | Advanced Chart



Previous Close	63,441.96	52 Week Range	24,797.17 - 73,750.07	Market Cap	1.246T	Volume	43,901,779,968
Open	63,441.96	Start Date	2010-07-13	Circulating Supply	19.68M	Volume (24hr)	43.90B
Day's Range	62,096.45 - 63,825.55	Algorithm	--	Max Supply	--	Volume (24hr) All Currencies	43.90B

EXAMPLES

THE COMMON PATH

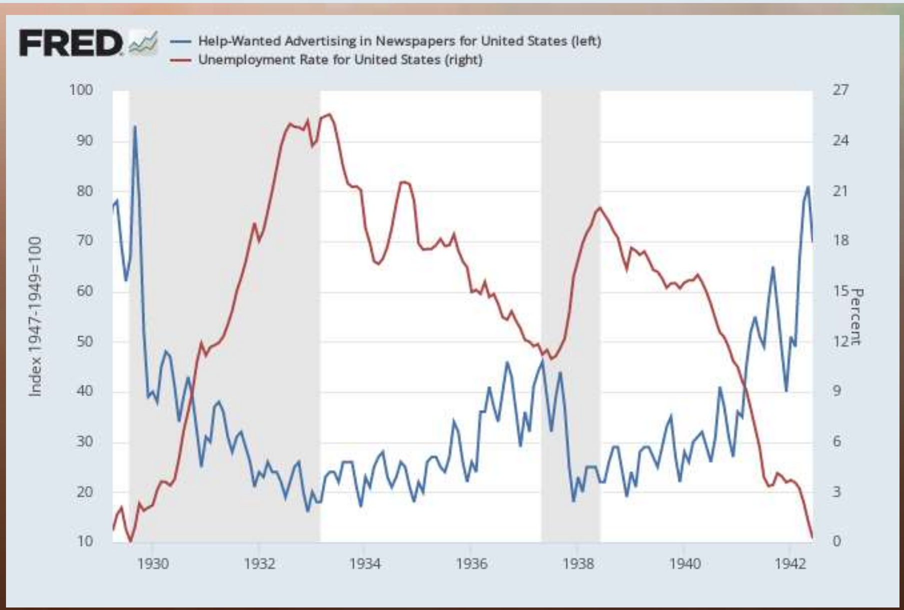


GREAT DEPRESSION: KEY FACTS

Longest (1929-39), largest (global), deepest (MLNs unemployed, 50% banks collapsed) :

- Following the "**Roaring Twenties**"
- **Farming crises** (drought, …) impacted regional banks (defaults), mild recession
- **Stock crash** of 1929: unsold goods, stocks fueled by credit (BlackThu/Tue: fire sales)
- CB **increases IR → spiral**: lower consumption and investments, failures, unemployment
- **Gold Standard** worsens contagion, but stocks **halve losses** in 1 year
- **1930-31**: 5mln unemployed in US, **production -50%**
- **Bank failures** (thousands by 1933), and unemployed are 15mln (20% rate)
- **Hoover**: bank loans… with empty Treasury
- **Roosevelt: New Deal**
  - Reforms: banking, industrial, farming (f.i. deposit insurance, access to exchange)
  - Public spending in infrastructure, unemployment insurance and welfare (1935)
  - Recovery strong since 1933 (+9% real GDP), recession in 1937 (increase of bank reserves)
- **1/9/1939**

Dollars per Share
400
360
320
280
240
200
160
120
80
40
1916
1918
1920
1922
1924
1926
1928
1930
1932
1934
1936
1938
1940
1942



FRED
Help-Wanted Advertising in Newspapers for United States (left)
Unemployment Rate for United States (right)
Index 1947-1949=100
Percent
100
90
80
70
60
50
40
30
20
10
27
24
21
18
15
12
9
6
3
0
1930
1932
1934
1936
1938
1940
1942

EXAMPLES

THE GFC: KEY FACTS

A recipe for the perfect storm:

1. **Low IR** → credit easy, **growing IR** → risky lending
2. **House bubble** (peak in 2004-05):
   - **easy credit** from foreign capital inflows
   - **financial innovation**: MBS, CDO, … on a "new" segment
   - **OTD**
3. **Deregulation** and **lax lending** standards, **shadow banking**
4. **Burst**: capital flows stop, losses arise, foreclosures explode
5. **Banks hit** from all sides (assets, liabilities, equity)
6. **Intervention of CBs** (facilitating lending and improving access to credit) **and governments** (bailing out troubled institutions and spending beyond tax inflows) transform private into **public debt issues**
7. Future expectations do not improve, recovery lags: **deleveraging**

THE GFC: SOME ANECDOTES

- **2007:** in September, Northern Rock (UK) faces liquidity crisis from securitizations (first strong signal)

- **2008**
  - MAR: Bear Stearns bought by JP Morgan to avoid bankruptcy
  - **MAY: US Treasury says "the worst is over"**
  - SEP: bailouts/distress involves Freddie Mac, Fannie Mae, Lehman Brothers, HBOS, Washington Mutual, Wachovia, Ireland promises bailout of whole banking system
  - OCT: US government project for "toxic" assets, collapse of Iceland's 3 biggest banks, joint cut of IR by BoE/ECB/FED/other 5, bailouts continue in the UK (RBoS, Lloyds TBS, HBOS)
  - NOV: 1m unemployment for US +240,000, cash injections in US banks, G20 summit**) "we saved the world"**

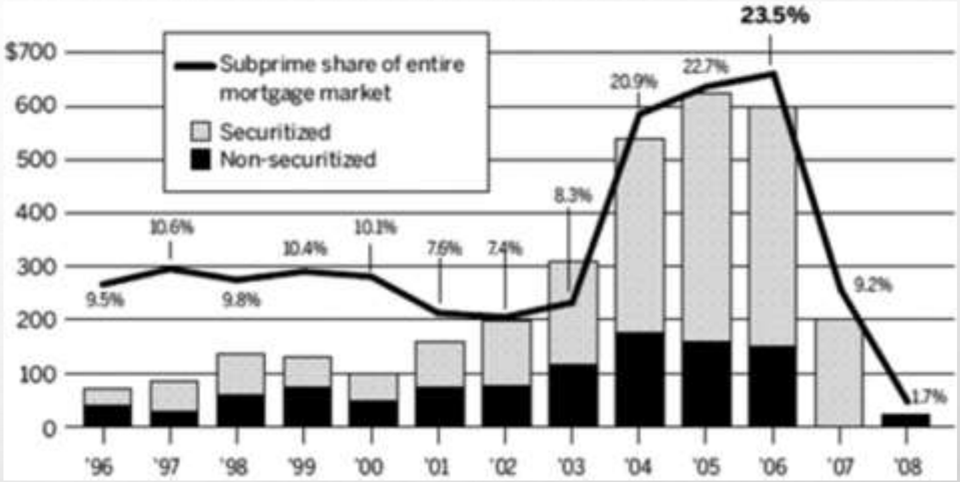
- **2009-11:** eruption of the EU's sovereign debt crisis (GRE, IRL, POR, ESP, CYP, LVA, HUN, ROM - bailouts)

- **2012: "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough."**

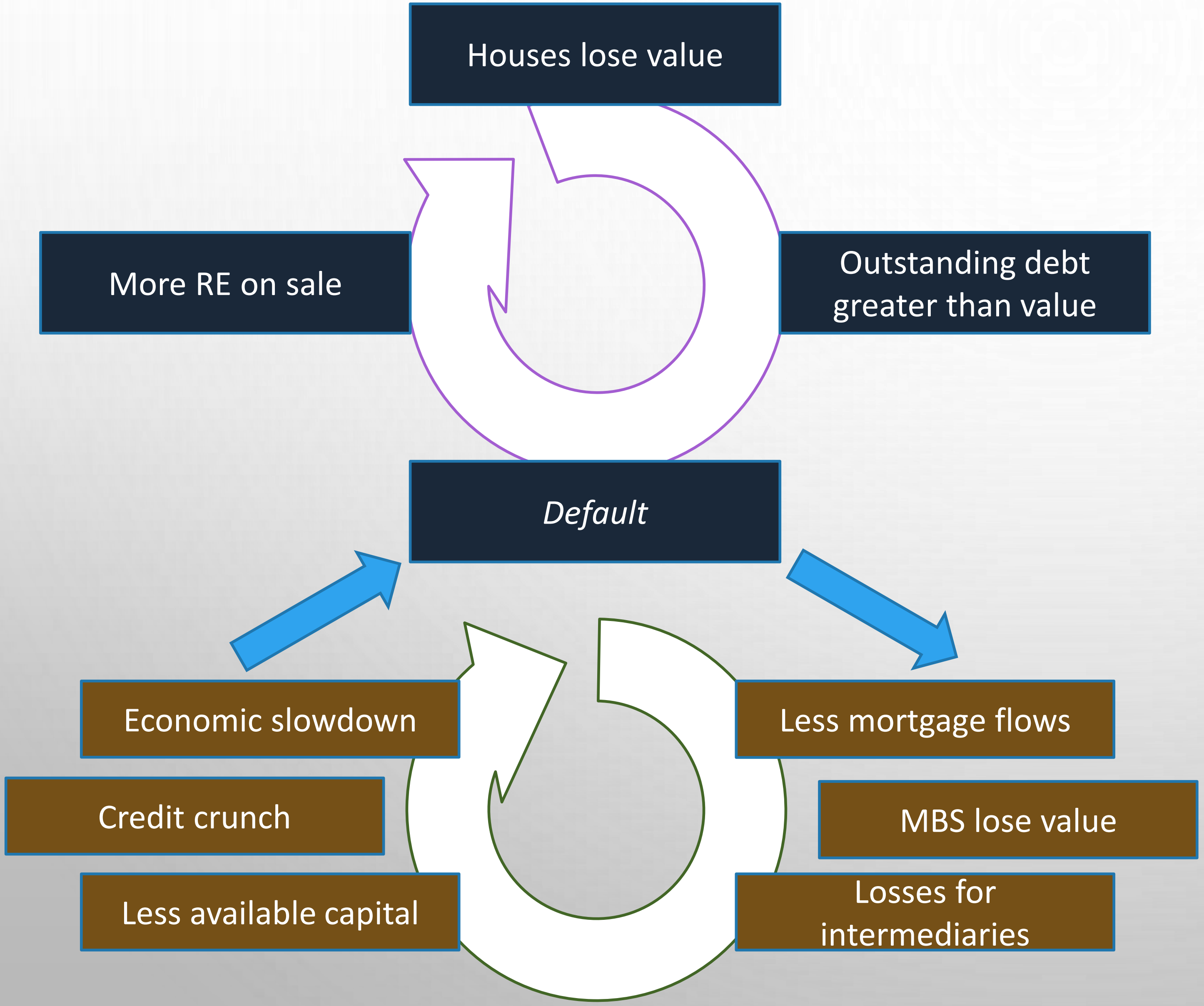
WHO DID IT?

Subprime mortgages:

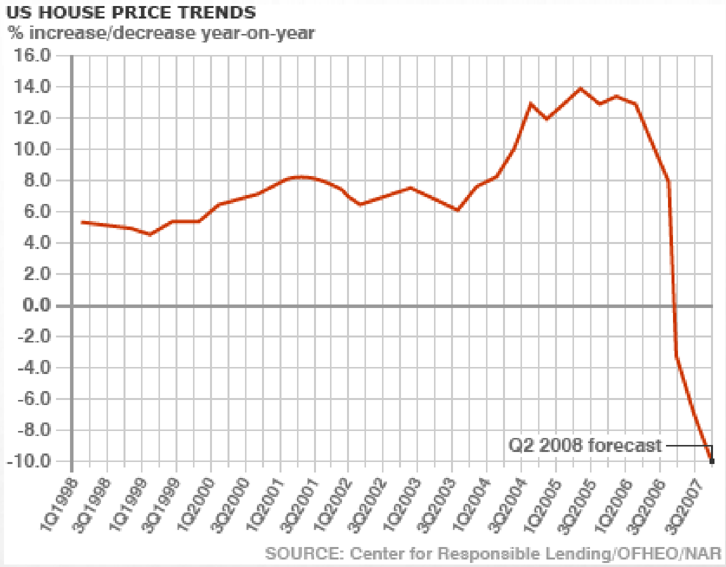
- Many lenders (flow of foreign capital), few good borrowers: lax standards → riskier loans
- Minority (23,5% max) of a relatively small market, only partly not securitized
- Government-sponsored institutions & conflicts of interest
- House values "always grow" and "who does not pay his mortgage?": multiple refinancing on appreciation
- Demand for higher and "safe" returns: credit ratings conflicts, aggressive tranching, …
- OTD: agency issues and asymmetric information problems



WHO DID IT?



Houses lose value
More RE on sale
Outstanding debt greater than value
Default
Economic slowdown
Credit crunch
Less available capital
Less mortgage flows
MBS lose value
Losses for intermediaries



US HOUSE PRICE TRENDS
% increase/decrease year-on-year
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
Q2 2008 forecast
1Q1998
3Q1998
1Q1999
3Q1999
1Q2000
3Q2000
1Q2001
3Q2001
1Q2002
3Q2002
1Q2003
3Q2003
1Q2004
3Q2004
1Q2005
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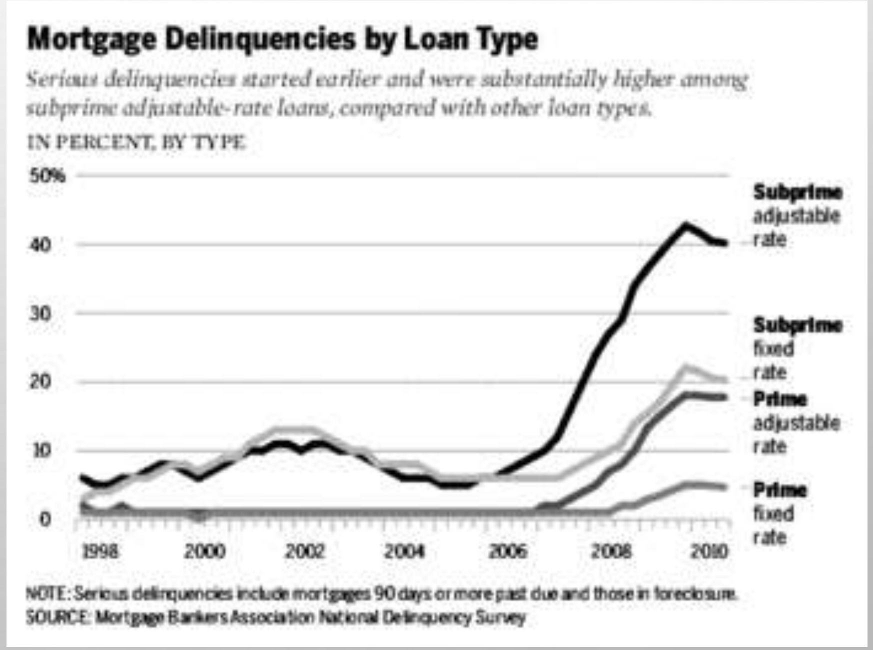
3Q2006
3Q2007
SOURCE: Center for Responsible Lending/OFHEO/NAR

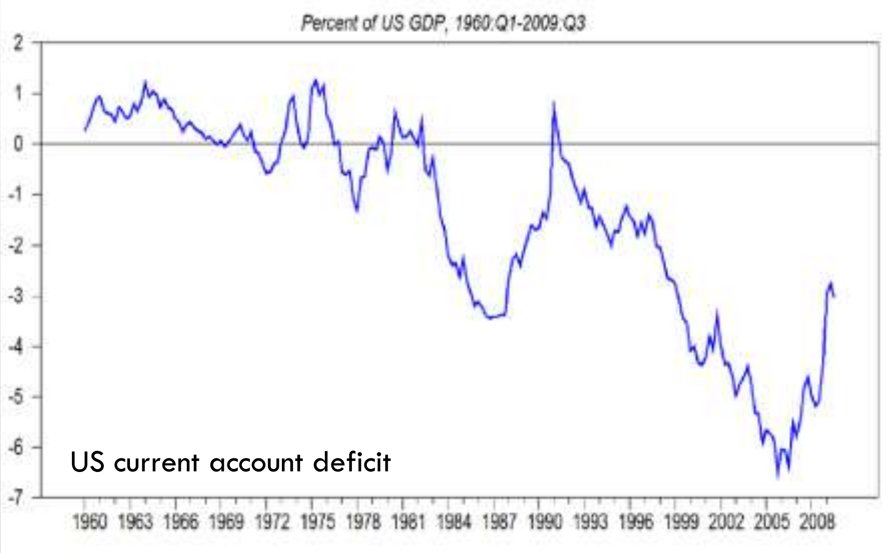


Mortgage Delinquencies by Loan Type
Serious delinquencies started earlier and were substantially higher among subprime adjustable-rate loans, compared with other loan types.
IN PERCENT, BY TYPE
50%
40
30
20
10
0
1998
2000
2002
2004
2006
2008
2010
Subprime adjustable rate
Subprime fixed rate
Prime adjustable rate
Prime fixed rate
NOTE: Serious delinquencies include mortgages 90 days or more past due and those in foreclosure.
SOURCE: Mortgage Bankers Association National Delinquency Survey

WHO DID IT?

<u>Easy credit and predatory lending:</u>

- Low IR, after "dot-com" and 9/11 shocks
- US current account deficit → inflow of foreign funds (EM, oil)
- Fast growing IR until the peak of the crisis: more risk-taking (denial?)
- Higher costs/risks than advertised (f.i. ARM with very low initial interest-only payments and negative amortization), forgery of documents
- Conflicts of interests: in rating agencies, in originators, in servicing securitizations

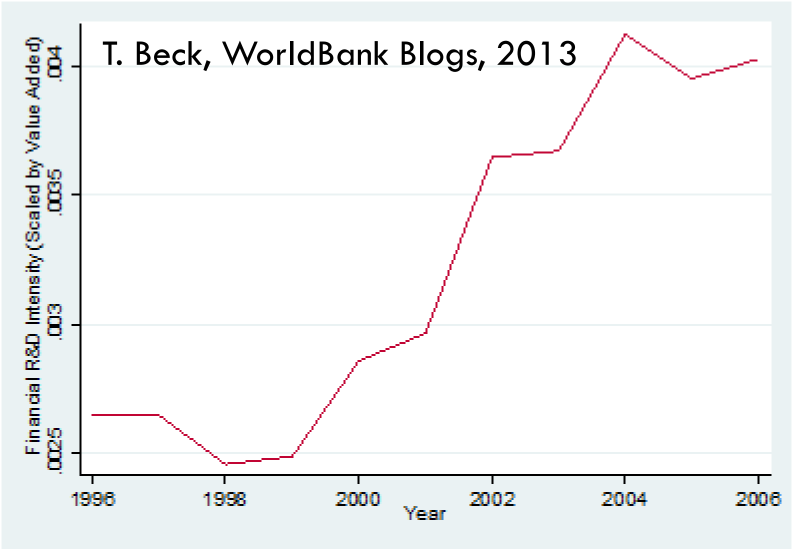


WHO DID IT?

<u>Financial innovation</u>

- Complexity VS accountability: ARM (adjustable rate mortgages), MBS (mortgage backed securities, CDO (collateralized debt obligations), CMO (collateralized mortgage obligations), CDS (credit default swaps), …
- Securitization may spread and accumulate risks, increasing the chances of contagion
- Multiple layers add to concentration again
- Innovation sometimes seeked/used to circumvent regulation
- Unknown/underestimated risks are not priced

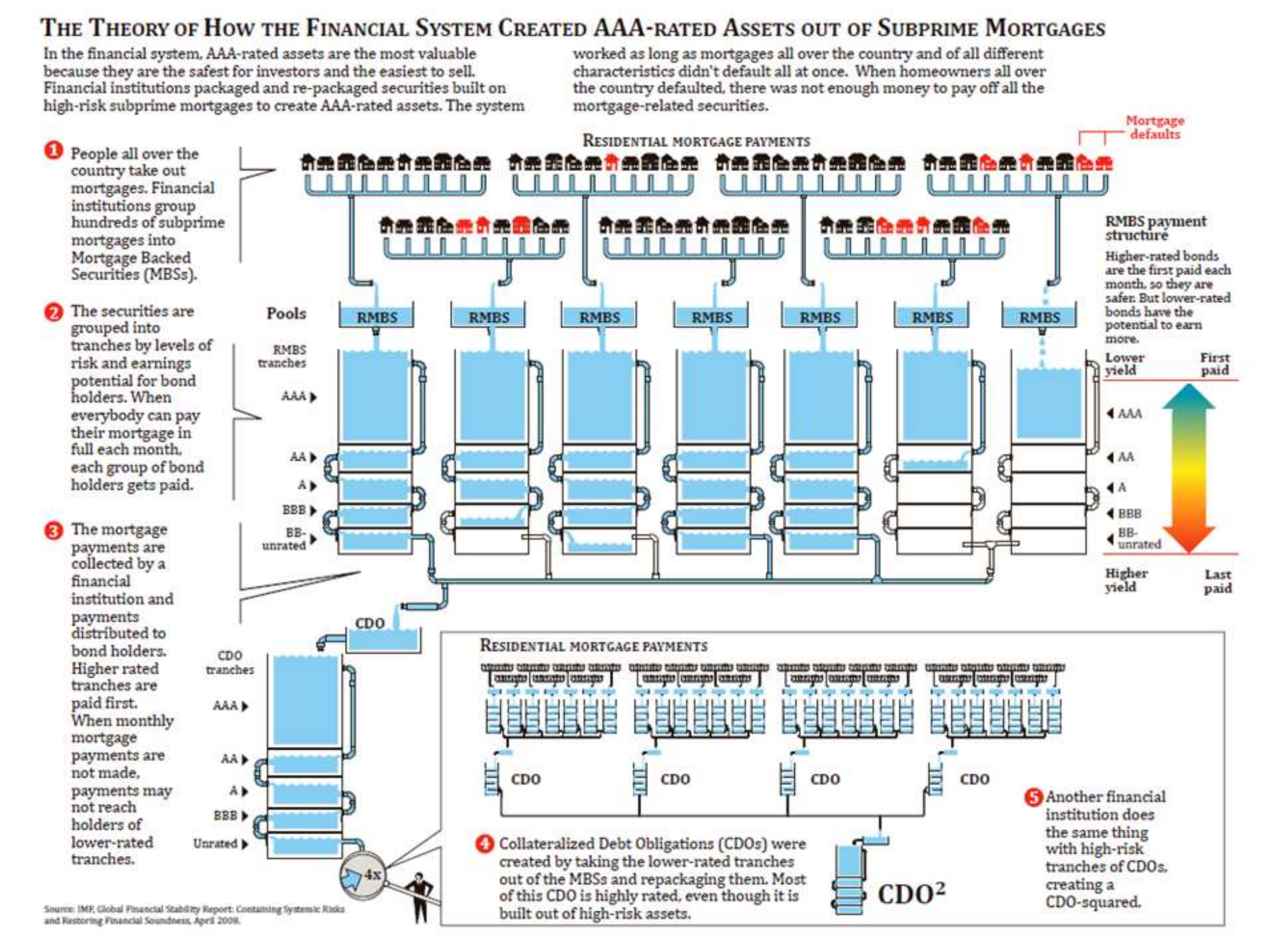
Figure 2: Average financial innovation, 1996 to 2006



Financial innovation →

- GDP per capita growth
- innovative firms, externally funded grow faster but with more volatility
- more fragile banks (smaller market share, growing fast, less traditional) due to profit volatility
- greater reductions in profit after crisis

WHO DID IT?


The Theory of How the Financial System Created AAA-rated Assets out of Subprime Mortgages
In the financial system, AAA-rated assets are the most valuable because they are the safest for investors and the easiest to sell. Financial institutions packaged and re-packaged securities built on high-risk subprime mortgages to create AAA-rated assets. The system worked as long as mortgages all over the country and of all different characteristics didn't default all at once. When homeowners all over the country defaulted, there was not enough money to pay off all the mortgage-related securities.
1 People all over the country take out mortgages. Financial institutions group hundreds of subprime mortgages into Mortgage Backed Securities (MBSs).
2 The securities are grouped into tranches by levels of risk and earnings potential for bond holders. When everybody can pay their mortgage in full each month, each group of bond holders gets paid.
3 The mortgage payments are collected by a financial institution and payments distributed to bond holders. Higher rated tranches are paid first. When monthly mortgage payments are not made, payments may not reach holders of lower-rated tranches.
Residential mortgage payments
Mortgage defaults
Pools
RMBS
RMBS tranches
AAA
AA
A
BBB
BB-unrated
RMBS payment structure
Higher-rated bonds are the first paid each month, so they are safer. But lower-rated bonds have the potential to earn more.
Lower yield
First paid
Higher yield
Last paid
CDO
CDO tranches
Unrated
4x
Residential mortgage payments
CDO
4 Collateralized Debt Obligations (CDOs) were created by taking the lower-rated tranches out of the MBSs and repackaging them. Most of this CDO is highly rated, even though it is built out of high-risk assets.
CDO^2
5 Another financial institution does the same thing with high-risk tranches of CDOs, creating a CDO-squared.
Source: IMF, Global Financial Stability Report: Containing Systemic Risks and Restoring Financial Soundness, April 2008.

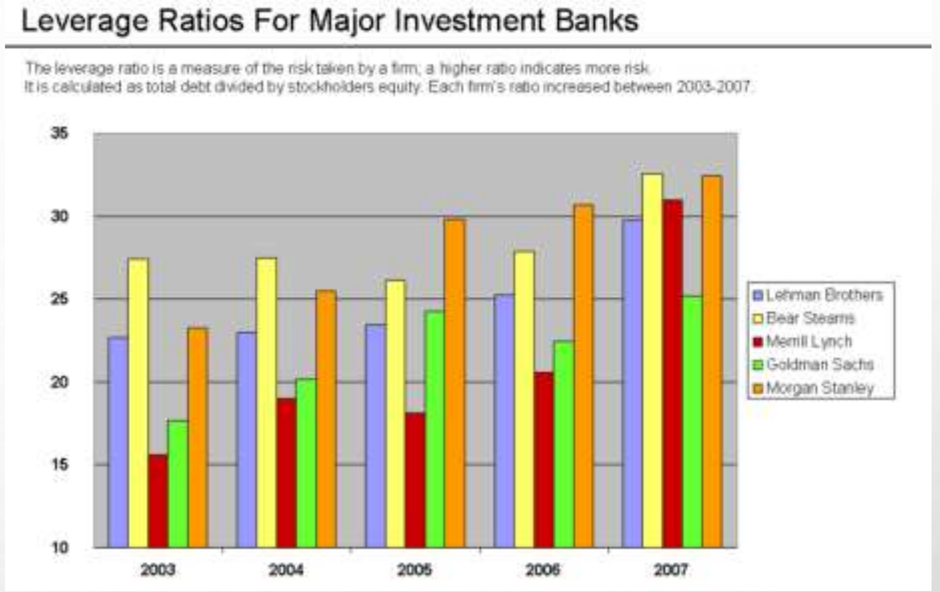
WHO DID IT?

<u>Deregulation and leveraging:</u>

- Waived separation between investment-commercial banks
- Increased deposit insurance: less monitoring
- Weak transparency of derivatives
- Poor accountability of under-the-line leveraging
- Excess leverage of financial institutions, but also households and firms

<u>Shadow banking</u>

- Unregulated (legal) entities compete with banks in providing lending opportunities
- Fragile during run to withdraw funds and to cope with securitizations' breakdown



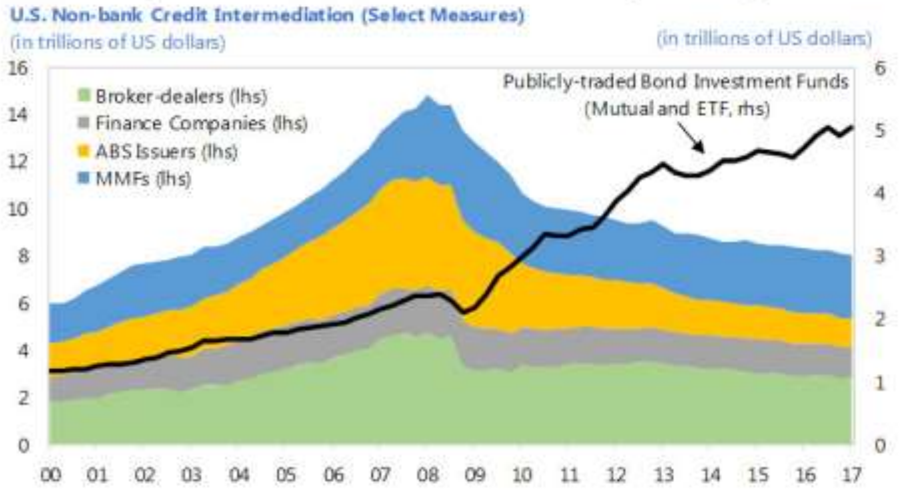


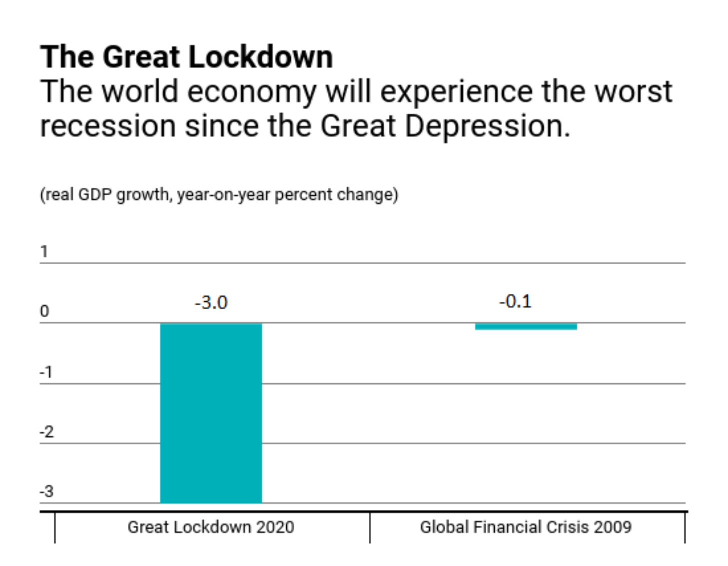
Figure 2. U.S. Non-Bank Credit Intermediation, by Vehicle Type

Source: Federal Reserve Board. Flow of Funds.

WHAT FOLLOWED?

Main consequences:

- **Real estate bubble, extending to bonds/stocks and outside financial institutions**
- **Deterioration of financial institutions**
- **Run on shadow-banks**
- **Liquidity crisis: injections insufficient**
- **Contagion to public sector**
- **Recession, unemployment**
- **Innovations:**
    - **TBTF paradigm** under scrutiny
    - Re-regulation
    - end of **pure investment bank paradigm** (in the US)

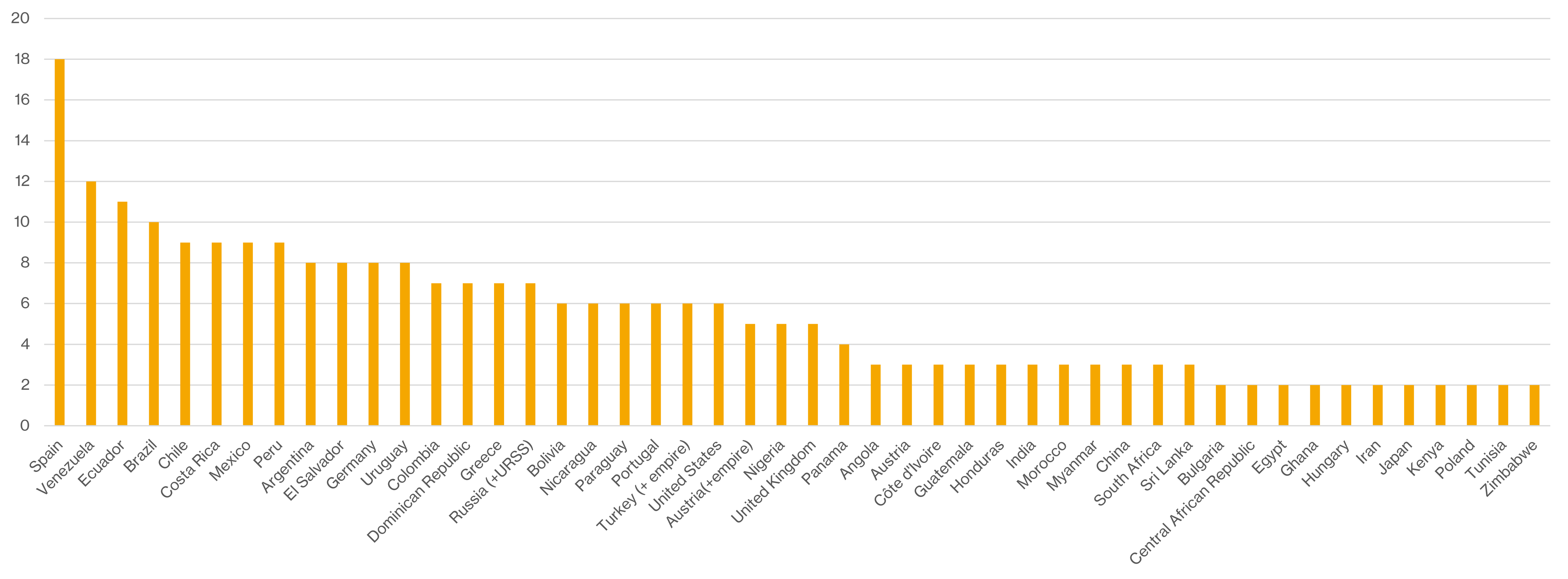


EMERGING MARKETS?

Similar steps, although with some differentiations:

- **Regulation/supervision weaker, riskier lending**
- **Fiscal imbalances**, central banks not independent
- **Less collateral** available
- **Foreign monetary policies can increase dependent countries' IR**
- **Instability of political systems**
- Usually a **currency crises** is involved, **hyperinflation**
- To attract capitals **IR are increased**, leading to **issues for highly leveraged institutions**
- Banks and debtors **default**
- **Whole countries default** or call for debt restructuring

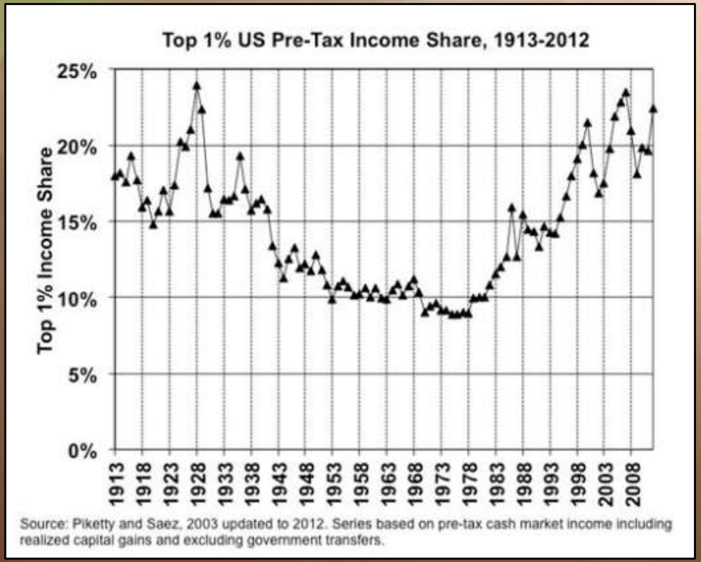
Country defaults in 500 years:



Other 37 countries with at least one default (incl. FRA, SWE, DEN, CRO)

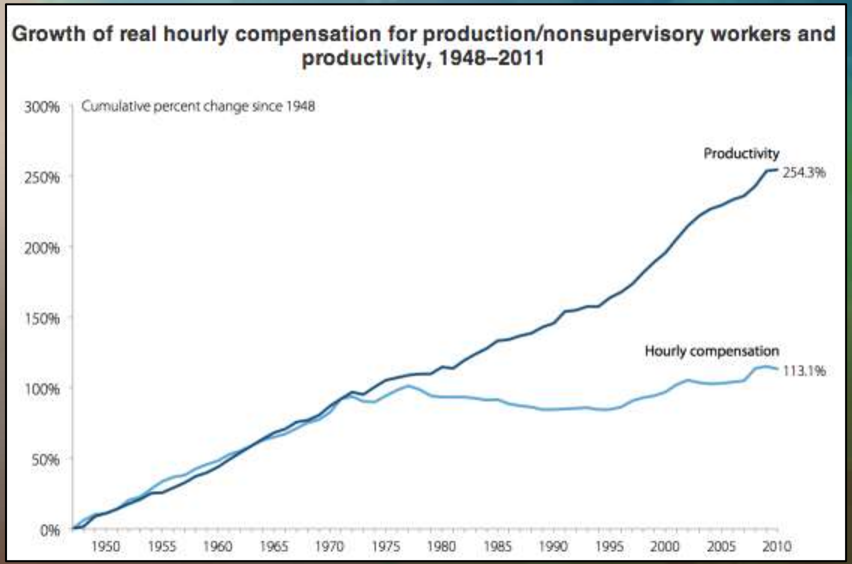
EXAMPLES

Other views?



Inequality?

Too much finance?



Wages vs productivity?

EXAMPLES

EXAMPLES

Zimbabwe:

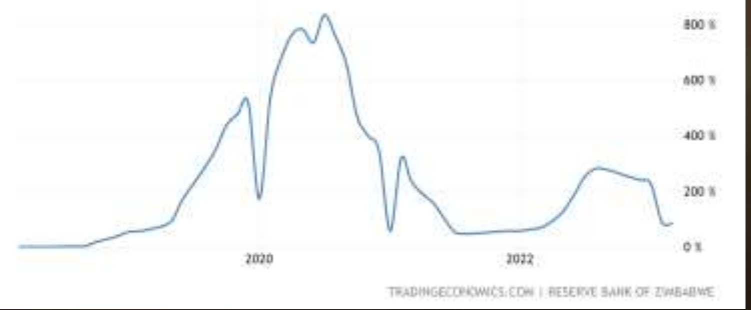
- 1980: independence and strong growth
- Disastrous economic reforms in 1990s (with IMF/WB): weak protection of property, weak entrepreneurship
- High corruption, Congo wars, misreporting, heavy repression of opposition
- Wide printing of ZWD, lack of trust on future
- 2000s: economic/banking collapse (unemployment: 80%)
- Hyperinflation: 7-20% from 1980-1990, 20%-60% from 1991-2000, 100-1,200% from 2001-2006, … up to 80,000,000,000% *per month* in 2008 (luckily the government declared in 2007 inflation "illegal"…): prices adjusted several times *a day*
- Increasing role of foreign currencies, even if restrictions to use only ZWD were present (and just fueled a black market)
- In 2009 the ZWD abandoned, in 2015 switch to USD
- Drained currency reserves + parallel market: in 2019 new ZWL, pegged, multicurrency again in 2020, lost peg again, …

In 1980, 0.68 ZWD per USD…

In 2009, 10^{32} ZWD per USD…

(atoms in human body are around 10^{28})

Inflation



Suriname Stranded in Default as Bondholders Ogle Oil Royalties

- Creditors rejected former Dutch colony's restructuring offer
- South American nation mired in debt crisis for over two years

For the first time, Lebanon defaults on its debts

Restructuring will be a struggle. Fixing the country's rentier economy will be even harder

Belarus defaults on its Eurobond payments

Argentina Avoids Default Event, but Faces Mounting Vulnerability

Wed 01 Feb, 2023 - 10:41 ET

Default-stricken Zambia's debts creep higher

Reuters

LONDON, March 29 (Reuters) - Default-stricken Zambia published figures on Wednesday showing that its total public debt stock climbed to $32.8 billion, including interest arrears at the end of last year, of which $18.6 billion was external.

At the end of June 2022 its total debt including interest arrears was $32.5 billion, with $17.5 billion external.

Zambia has been looking to restructure its debt after becoming the first African country to default during the COVID-19 pandemic in late 2020.

Ukraine spiralling towards default, according to Fitch

Egypt's Crisis Redux Stokes Debt Distress, Devaluation Fears

Will Nigeria Go The Way Of Sri Lanka To Default On Eurobonds?

There is Now a Significant Risk that Ethiopia Will Default on its Sovereign Debt

EL SALVADOR: GOVERNMENT IS FACING DEBT DEFAULT AMID WORSENING RELATIONS WITH THE USA

Ghana on Cusp of Debt Default as Grace Period Winds Down

- Ghana restructuring about $30 billion of its $46 billion debt
- Nation becomes fourth nation in Africa to default on Eurobond

US issues Kenya a default notice for Sh57bn KQ debt

Sri Lanka: Why is the country in an economic crisis?

The International Monetary Fund is lending Sri Lanka $3bn (£2.4bn) to help it deal with its worst economic crisis in its history as an independent nation.

Soaring prices, shortages of essential goods and crippling international debts sparked nationwide protests last year which caused the president to flee the country.

Russia Slips Into Historic Default as Sanctions Muddy Next Steps

- Grace periods on two eurobond coupons expired on Sunday
- Russia's Finance Minister calls the default label a 'farce'

Is Tunisia Heading Toward Debt Default Amid Further Constraints To Economic Growth?

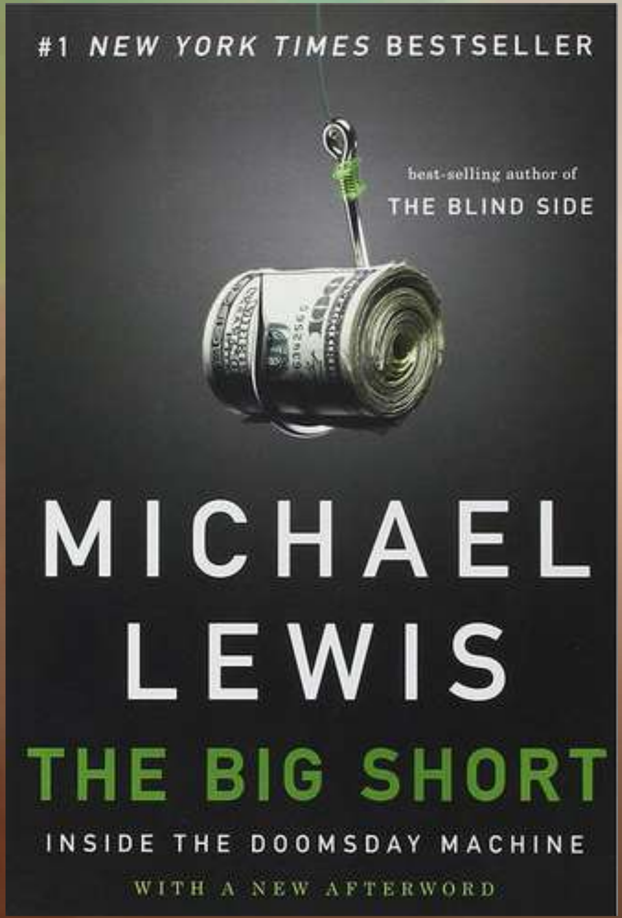
Ecuador Bonds Slump as Protests Revive Memories of 2020 Default

- Nation's bonds are worst performing in world this month
- Spread over US Treasuries has widened to most since April 2021

Pakistan Crisis: Video Shows People Running Behind Wheat Flour Truck; IMF Demands External Financing

As the Pakistani government negotiates financial assistance from global agencies, the country is rolling under an extreme economic crisis as the signs are visible on roads also now.

EXAMPLES



"No one can see a bubble. That's what makes it a bubble."

“People hate to think about bad things happening so they always underestimate their likelihood.”

“It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so”

"I have a feeling, in a few years people are going to be doing what they always do when the economy tanks. They will be blaming immigrants and poor people."

EXAMPLES