Session 3: Why do you need central banks?

Stabilization functions, Price and Financial stability

Economics

Milei Vows to Shutter Argentina's Central Bank 'Sooner or Later'

- President reiterates one of his controversial campaign pledges
- Libertarian has taken pragmatic turn since inauguration

Question to ChatGPT: Why do you really need central banks? Answer (1/2)

Despite CB functions already listed in Session 1

- **Against Central Banks**: the necessity of a central bank is a topic of debate among economists and policymakers. While some argue that central banks are essential for maintaining monetary stability and overseeing the financial system, others question their role and effectiveness.

Question to ChatGPT: Why do you really need central banks? Answer (2/2)

- **Market Discipline:** Some argue that a fully market-based monetary system without a central bank could lead to greater market discipline and efficiency. In this view, central banks may distort market signals and incentivize excessive risk-taking by financial institutions.
- **Government Interference**: Critics of central banks argue that they can be subject to political influence and may prioritize short-term political considerations over long-term economic stability. This could undermine the independence and credibility of monetary policy.
- **Innovation and Competition**: Without a central bank, there may be more room for innovation and competition in the provision of monetary and financial services. Decentralized systems or alternative forms of currency could emerge, potentially offering more flexibility and diversity in monetary arrangements.
- **Historical Precedents**: Some historical examples suggest that economies have functioned without central banks, relying instead on alternative monetary arrangements such as commodity money or free banking systems.

S 3 Outline Why do you need Central Banks?

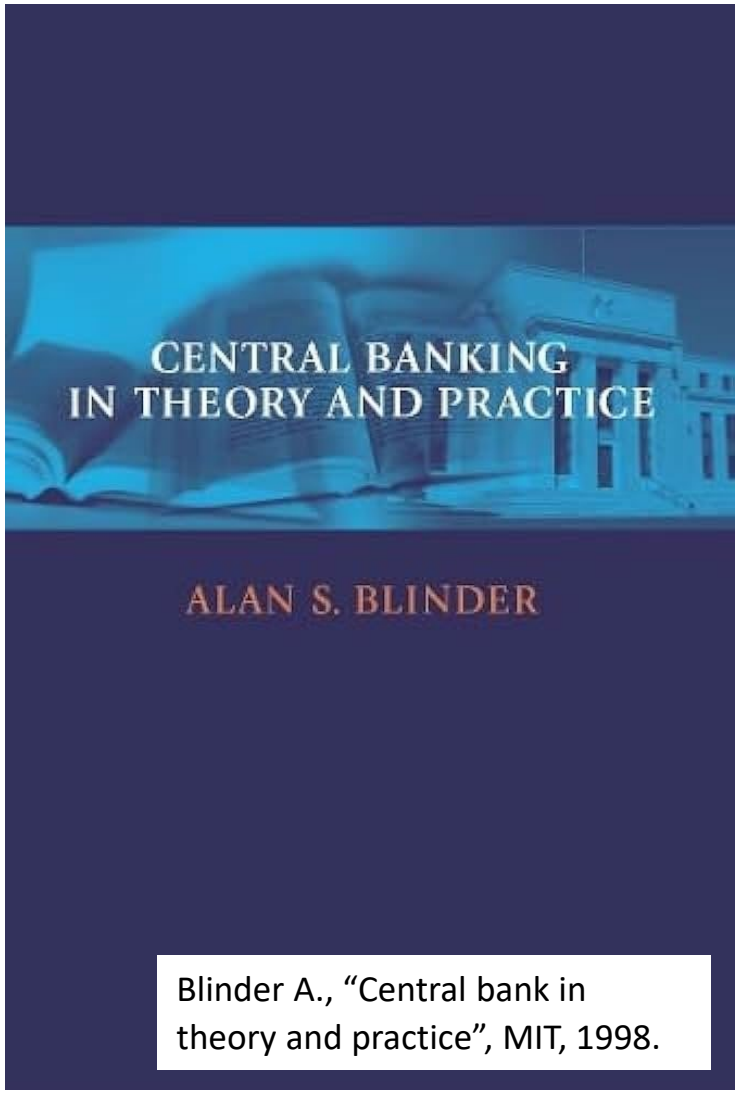
- S 3.1. Nature and functions of monetary policy
- S 3.2. A short History of central banks and its evolution
- S 3.3. Objectives of monetary policy
- S 3.4. A different paradigm for monetary policy
- S 3.5. The Global Financial Crisis (2008) under different lenses

S 3.1. Nature and functions of monetary policy

- S 3.1.1. Lender of liquidity in last resort
- S 3.1.2. Regulator, stabilizer of financial cycles
- S 3.1.3. Preservation of the purchasing power of money
- S 3.1.4. Enhancing and ensuring stability of payments systems

S 3.1. Nature and functions of money and monetary policy

- Good summary of the role and challenges for CB in Advanced Economies by Alan Blinder
- Need CB to ensure faith and stability in “Money”, especially “Fiat Money” with basic functions: a unit of account, a store of value, a medium of exchange
- Fiat money based on social agreement on its value and trust that it will be accepted by people as a means of payment for liabilities.
- Fiat money is an alternative to commodity money: no intrinsic value because it contains a precious metal such as gold or silver which is embedded in the coin or backed by a “commodity”. It is issued by government to be legal tender
- Government-issued fiat money banknotes were used first during the 13th century in China. Fiat money started to predominate during the 20th century. Since President Richard Nixon's decision to suspend US dollar convertibility to gold in 1971, a system of national fiat currencies has been used globally.

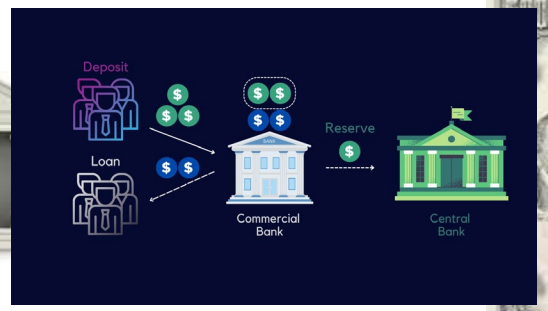


Blinder A., “Central bank in theory and practice”, MIT, 1998.

Various forms of Money, all confidence-based and all are IOUs

- Fiat money, IOU from a Government to you, as currency in circulation, coins
- Bank deposits (various forms and maturities), IOU from a commercial bank (cb) to you
- Central bank reserves, IOU from a Government through the CB to a commercial bank (cb), only cb can hold, at CB accounts
- Government securities (debt), IOU from the Gov to the holder (anyone)
- All forms freely (instantly?) convertible into each other, at any time, then is all is well

Type of Money	Who Issues It?	Who Can Hold It?	Size in the USA
Fiat currency	Government	Everyone	USD 2 trillion
Bank deposits	Commercial banks	Everyone	USD 15 trillion
Central Bank reserves	Government	Commercial banks	USD 3 trillion
Treasury Securities	Government	Everyone	USD 20 trillion
Sources: Federal Reserve and US Treasury, June 2020			



Central Banks Reserves (CBR)

- CBR created only by CB when CB buys financial assets and makes loans
- When a commercial bank (cb) sells gov securities to the CB
- When a corporation sells gov securities to the CB through its commercial bank (cb) account

Commercial Bank Sells Treasuries to FED

Commercial Bank's balance sheet

Assets	Liabilities
- USD 1 billion Treasuries	
+ USD 1 billion Reserves	

Corporation Sells Treasuries to FED

Commercial Bank's balance sheet

Assets	Liabilities
- USD 1 billion Treasuries	+ USD 1 billion Reserve

Corporation's balance sheet

Assets	Liabilities
- USD 1 billion Treasuries	
+ USD 1 billion Bank deposits	

Definitions of Money

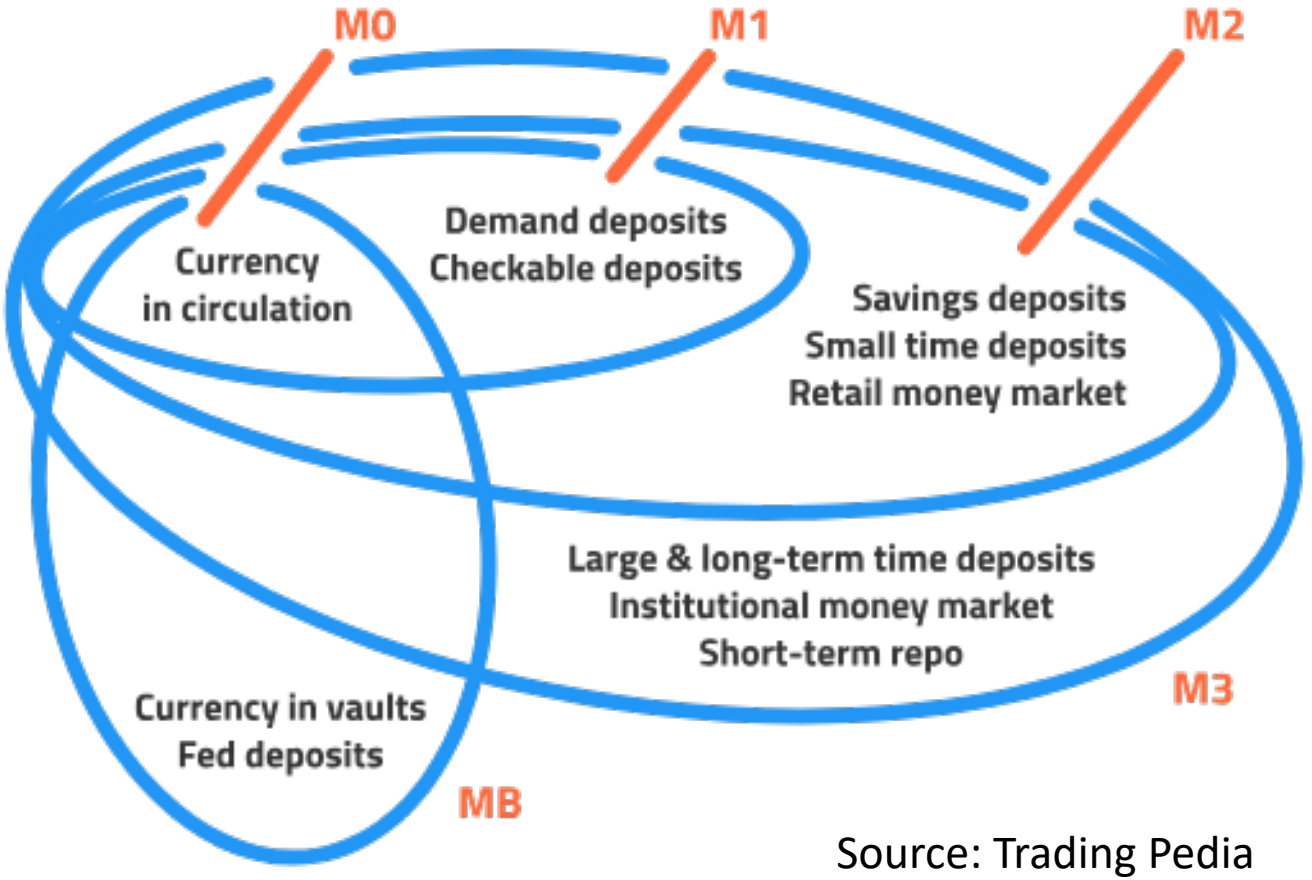
- Legal tender, or **narrow money** (M0) is the cash created by a Central Bank by minting coins and printing banknotes.
- **Base money** consists of both the total banknotes and coins in circulation and sight deposits held at central banks on behalf of commercial banks
- Bank money, or **broad money** (M1/M2) is the money created by private banks through the recording of loans as deposits of borrowing clients. Currently, bank money is created as electronic money.
- Bank money, whose value exists on the books of financial institutions and can be converted into physical notes or used for cashless payment, forms by far the largest part of broad money in developed countries.

Sum of M0 and clients deposits at cb is M1

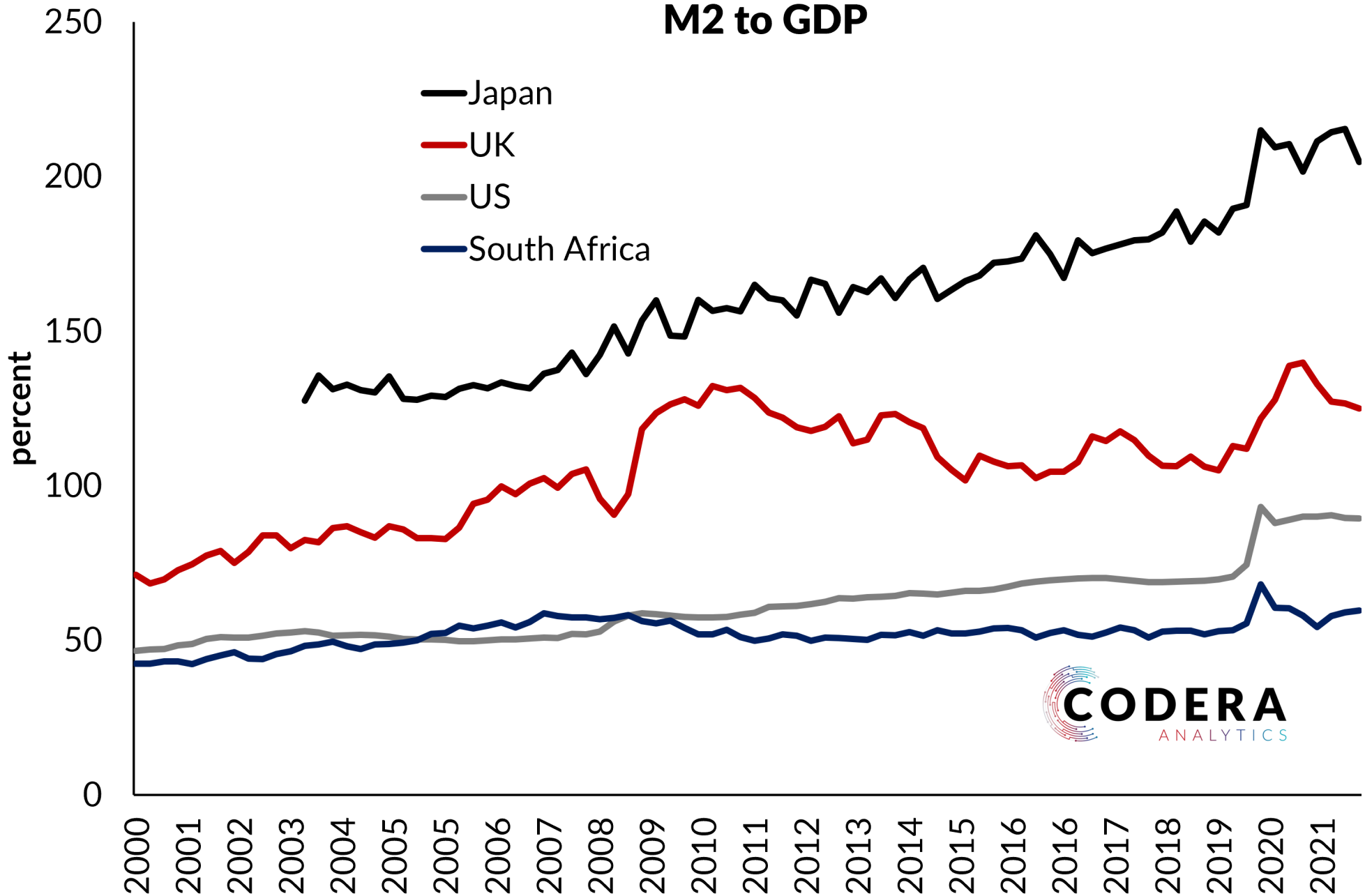
Other assets that can be converted into money (definitions vary US, EU,..)

M2 (M1 + deposits with longer maturities 2 years)

M3 (broad money) (M2 + other money market instruments)

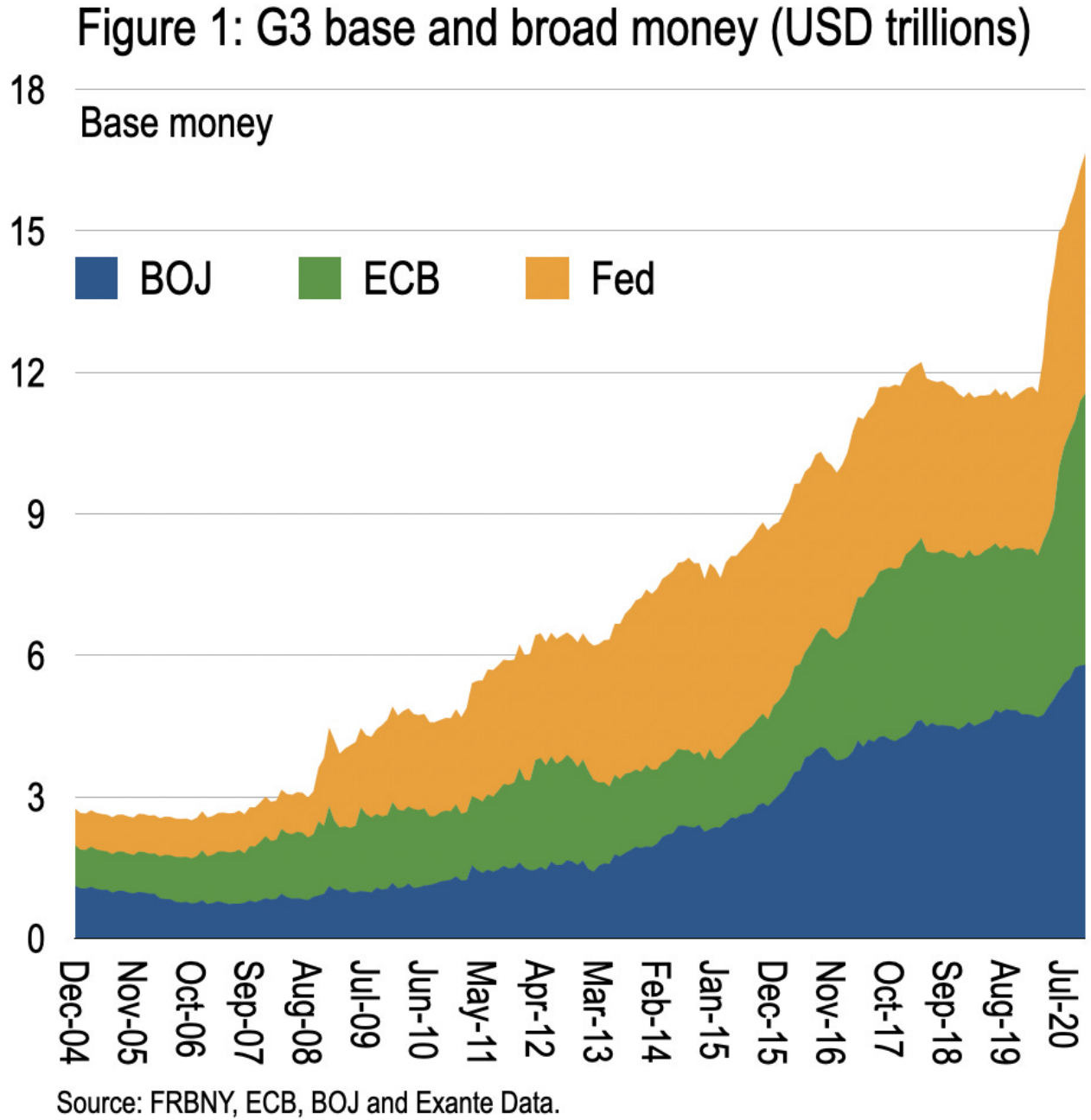


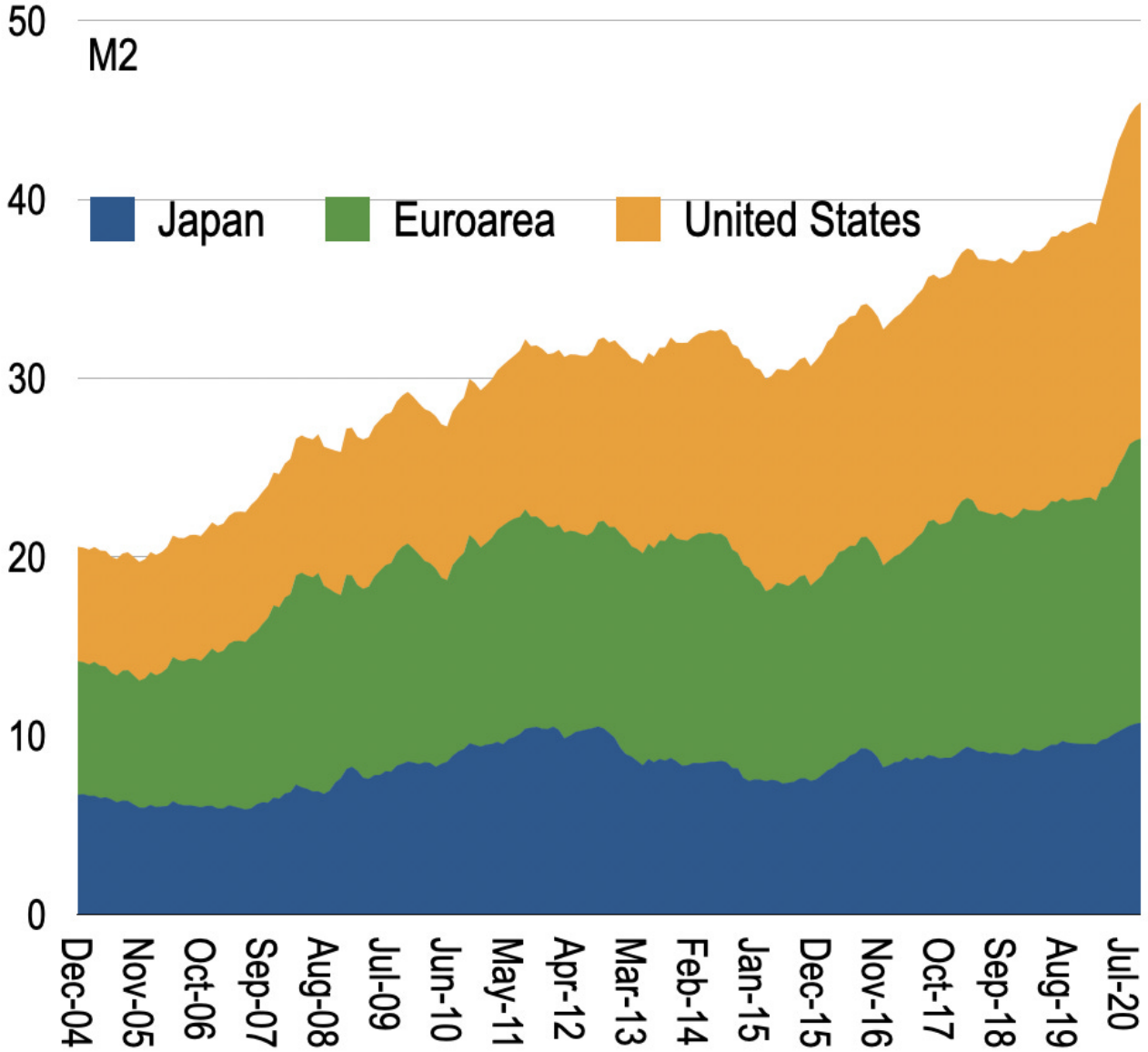
Source: Trading Pedia



Source: Bloomberg.

Increase in Base Money during Covid





Definition of Money

Money Supply

Type of Money	M0	MB	M1	M2	M3	MZM
Notes and coins in circulation (outside Federal Reserve Banks and the vaults of depository institutions) (currency)	✓	✓	✓	✓	✓	✓
Notes and coins in bank vaults (Vault Cash)		✓				
Federal Reserve Bank credit (required reserves and excess reserves not physically present in banks)		✓				
Traveler's checks of non-bank issuers			✓	✓	✓	✓
Demand deposits			✓	✓	✓	✓
Other checkable deposits (OCDs), which consist primarily of Negotiable Order of Withdrawal (NOW) accounts at depository institutions and credit union share draft accounts.			✓	✓	✓	✓
Savings deposits				✓	✓	✓
Time deposits less than $100,000 and money-market deposit accounts for individuals				✓	✓	
Large time deposits, institutional money market funds, short-term repurchase and other larger liquid assets					✓	✓
All money market funds						✓

Money of zero maturity (MZM), which represents all money that is readily available, is a measure of the liquid money supply within an economy.

S 3.1.1. CB lender of liquidity in last resort

- cb can leave CBR at CB, convert into cash for client, or make loans to HH, firms, etc

- Most money created by commercial banks (cb)
  - cb extend $1000 loan to client: $1000 loan cb asset / $1000 deposit cb liability
  - cb “created” $1000 of liquidity for client to spend

- In most countries, the majority of money is mostly created as M1/M2 by commercial banks making loans. Contrary to popular beliefs, banks do not act simply as intermediaries, lending out deposits that savers place with them, and do not depend on central bank money (M0) to create new loans and deposits

S 3.1.1. CB lender of liquidity in last resort

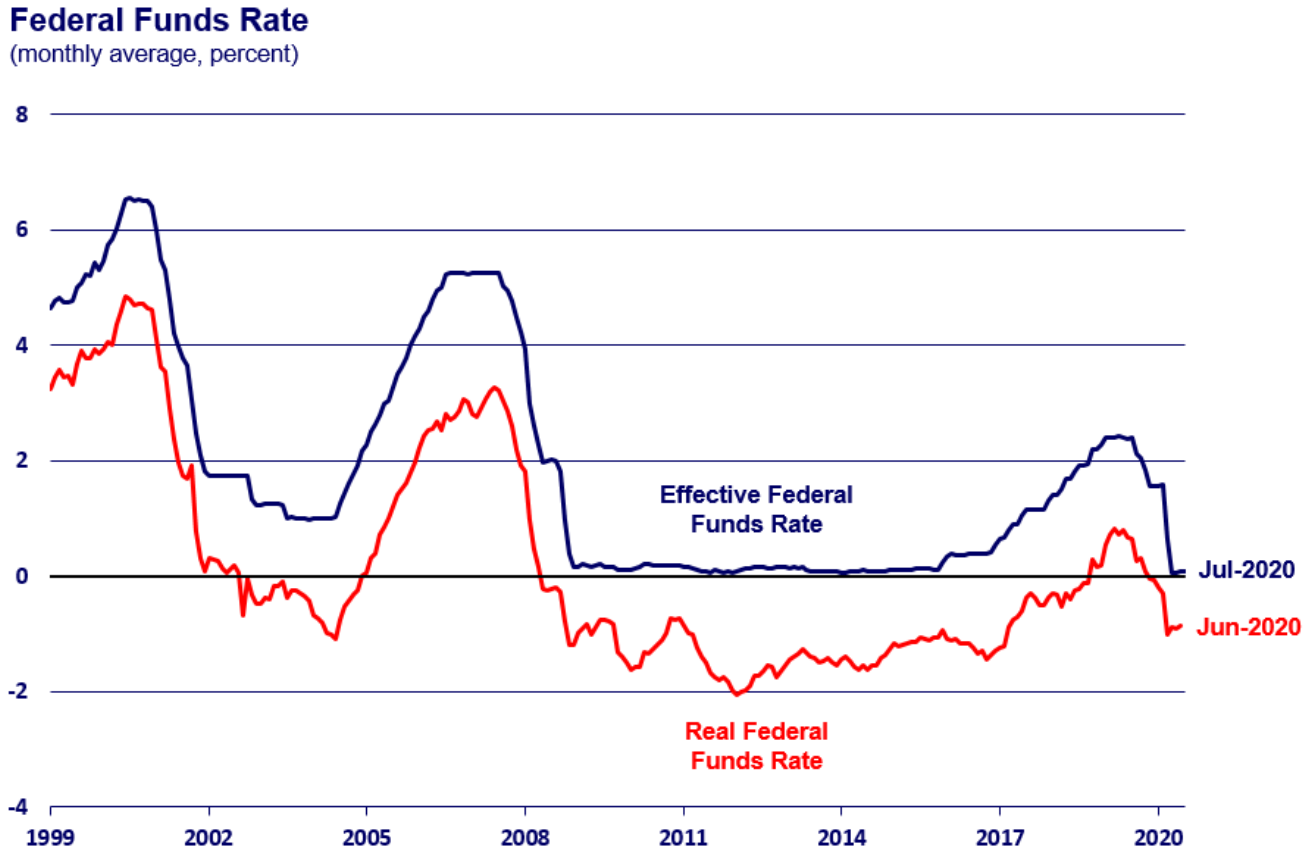
- Commercial banks (cb) extend credit to HH, corporations, receive payments and deposits; imbalances is “natural” between credit, deposits
- cb balance their liquidity in the interbank market with other cb (part of money market include non bank corporations, money market funds);
- CB role to balance overall liquidity, ensure stable price for liquidity and smooth payments system; Liquidity provision = open market operation by CB (all cb can access)
- CB use cb accounts with CB to provide liquidity (increase CBR), this is not free:
  - Outright purchase (buying a financial instrument from cb, increases CBR)
  - Collateralized loan (pledge a collateral with an haircut –risk factor) or refinancing operation (eg., repurchase agreement or repo)

S 3.1.1. CB as lender of liquidity in last resort

- CB unique creator of base money out of confidence, “thin air”
- No “limit” for money creation except confidence (eg., macroeconomic populism)
- cb use refinancing “window” at CB but not free: pay refinancing rate
  - High (low) refinancing rate, lower (higher) demand for funds – liquidity
  - Refinancing rate is policy or price for liquidity service of CB
  - Policy rate affects all ST interest rates and influences LT interest rate
- Setting (communicating) policy rate (now, future) major MP action:
  - Expansionary MP, supporting liquidity demand with low rate
  - Restrictive MP, contracting liquidity demand with high rate

S 3.1.1. FED as lender of liquidity in last resort

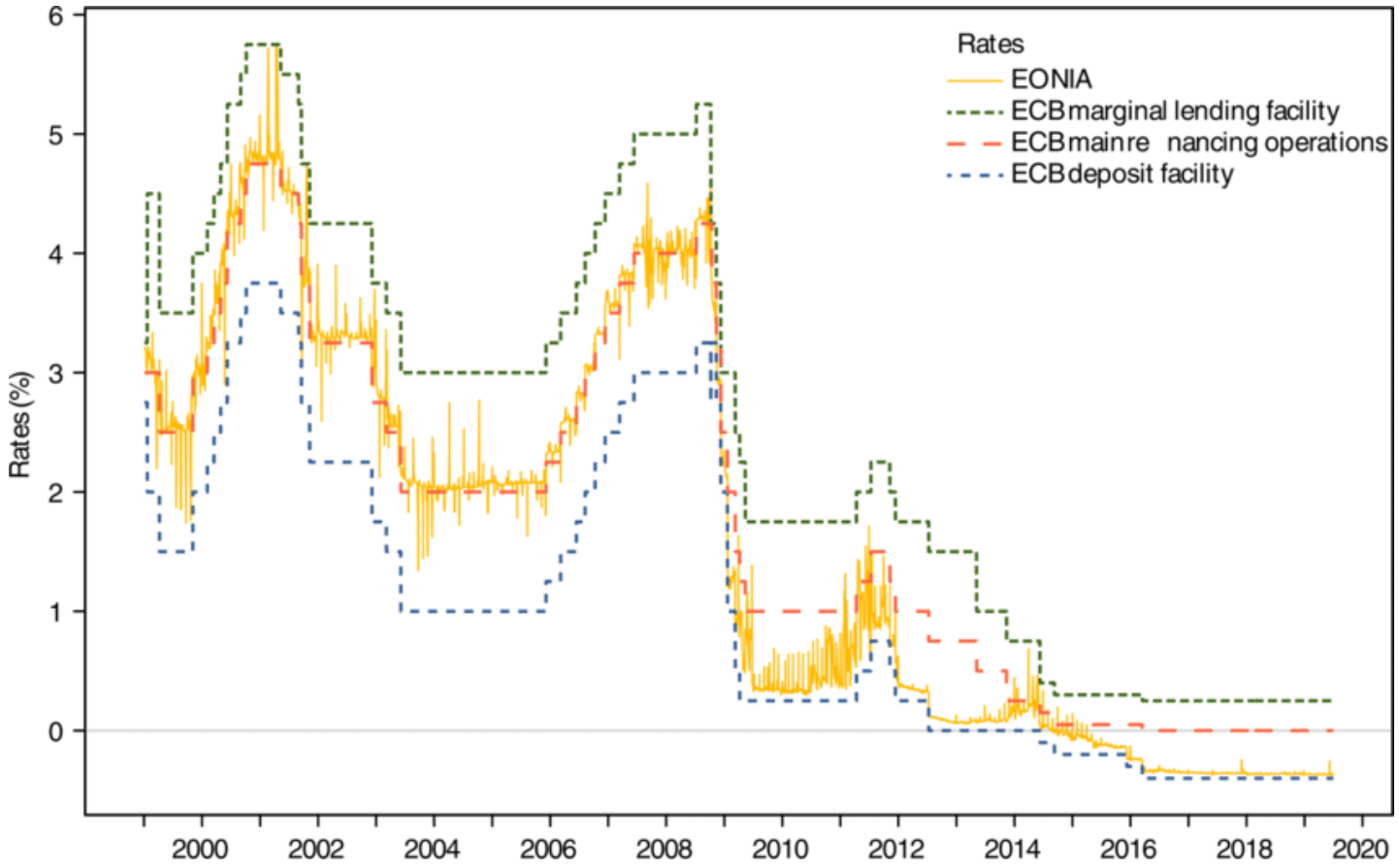
- FED provide liquidity through outright purchase of securities and repos to influence ST interbank rate at the effective FedFunds rate
- FED buys (sells) securities / credit from cb increasing (decreasing) liquidity thus reducing (augmenting) its market price



Repos are a common secured money market transaction where the CB trading desk purchases securities from a counterparty subject to an agreement to resell the securities at a later date. Each repo transaction is economically similar to a loan collateralized by securities, and temporarily increases the supply of reserve balances in the banking system.
Conversely, in a reverse repo transaction, the CB trading desk sells securities to a counterparty subject to an agreement to repurchase the securities at a later date. Reverse repo transactions temporarily reduce the supply of reserve balances in the banking system.

S 3.1.1. ECB as lender of liquidity in last resort

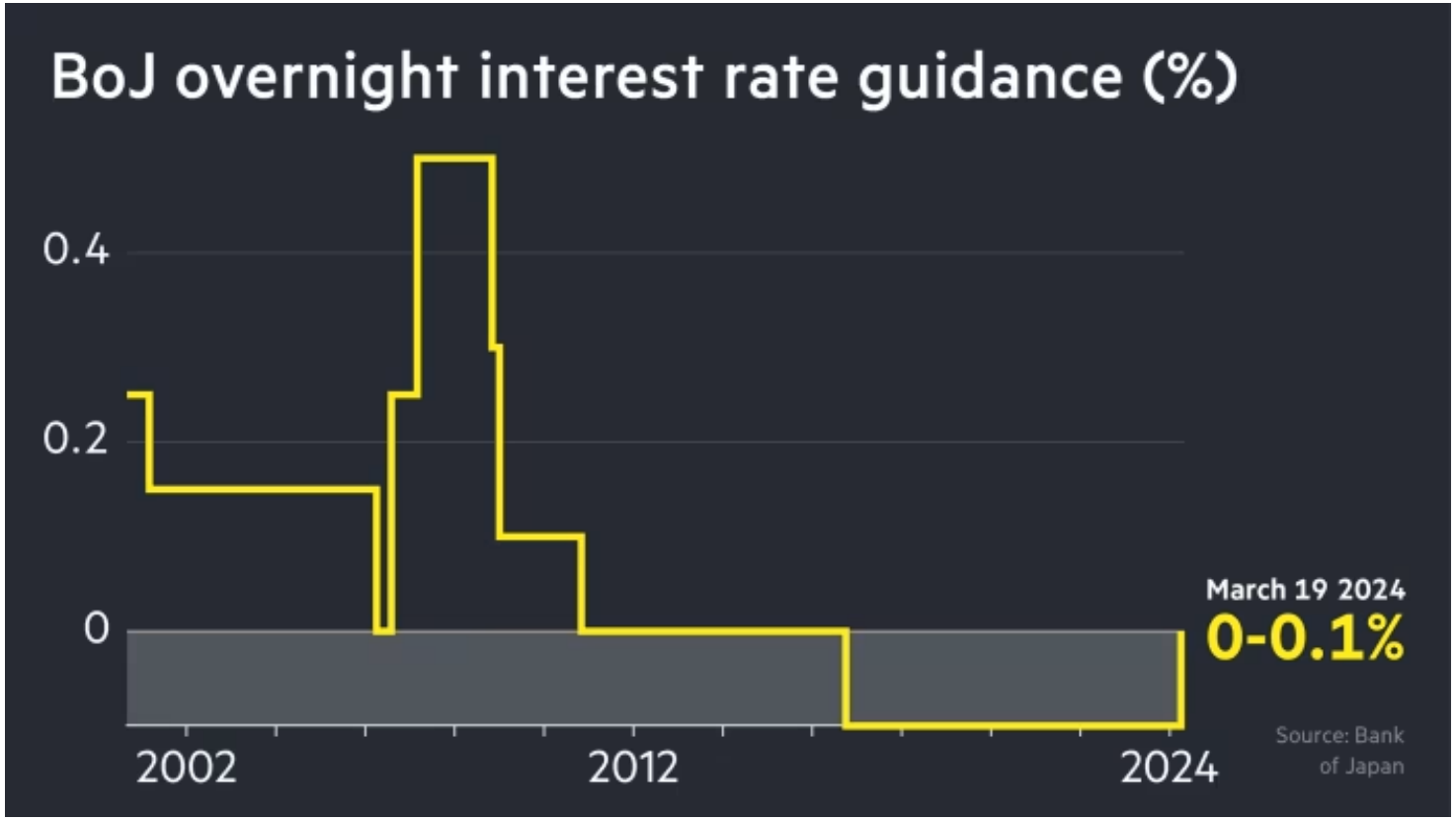
- ECB liquidity through main refinancing operation rate (MRO)
- Two marginal refinancing rates
- The 3 rates “lead” market
- Market result rate is Euro Overnight Interest Average (EONIA)



Source: ResearchGate

S 3.1.1. BOJ as lender of liquidity in last resort

- BOJ used negative rates in 2016 to stimulate banks and limits risks of global recession
- Ended era of very low rates, first raise since 2007

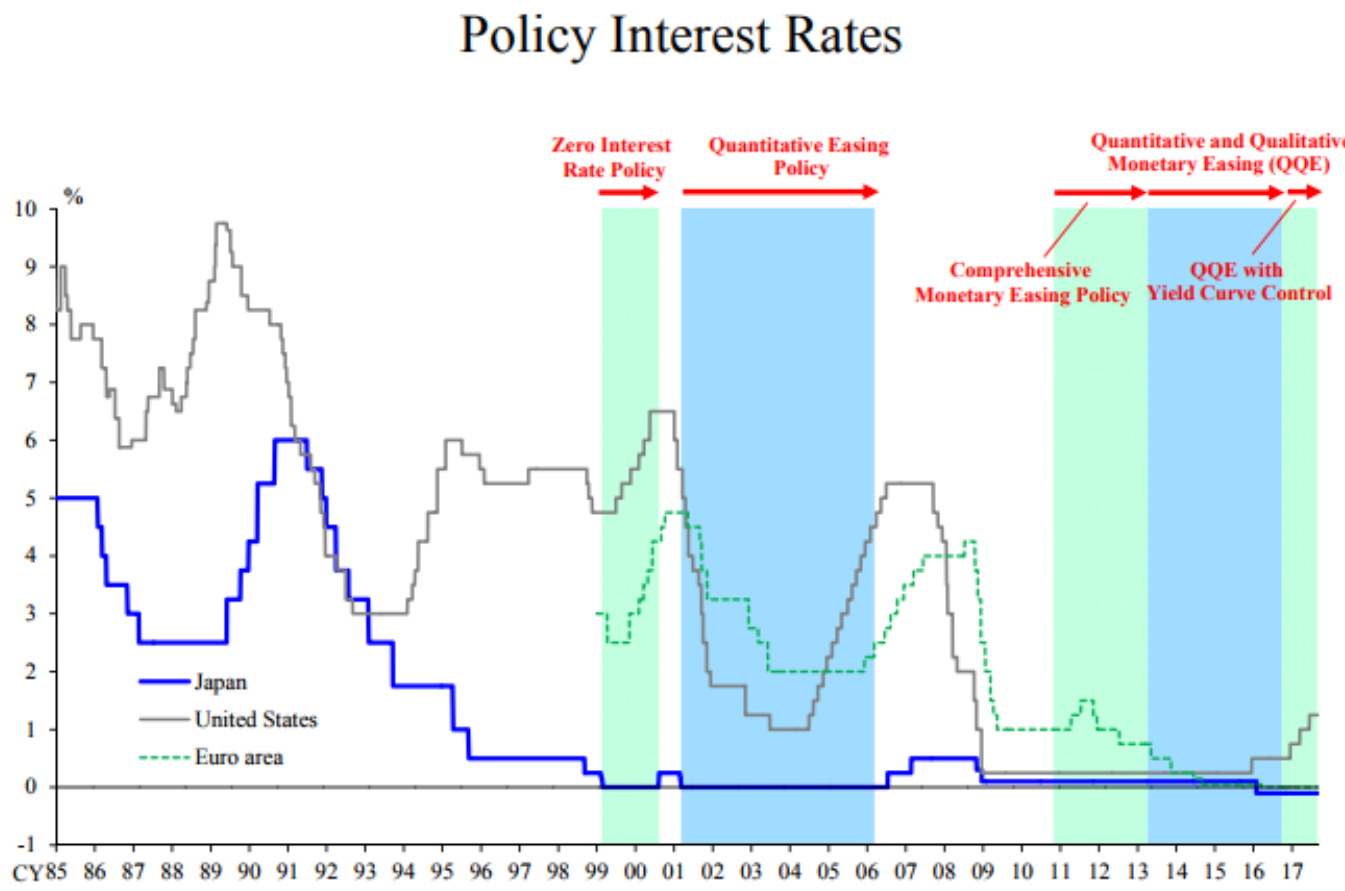


Source : FT

Policy rates, major CBs

- Declining trend since the 1980s
- Cycles of MP (up and down) common to all countries
- MP stance can remain unchanged for some time
- Japan experimented unconventional MP before others
- In addition to policy rate, liquidity can also be controlled by Reserve Requirements (RR), setting minimum level (floor) of mandatory holdings of reserves (not used by all CB, PBoC yes)

Chart 2

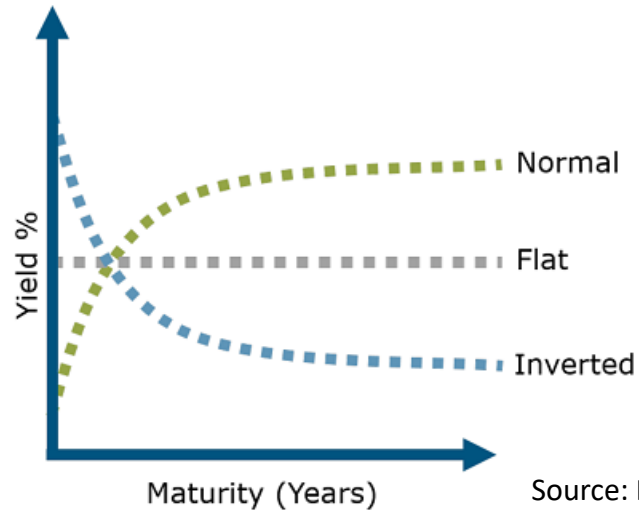


Note: For Japan, for the period when no target interest rate was adopted, figures for the policy rate are the interest rate applied on excess reserves.
Sources: Bank of Japan; Federal Reserve; European Central Bank; Haver; Bloomberg.

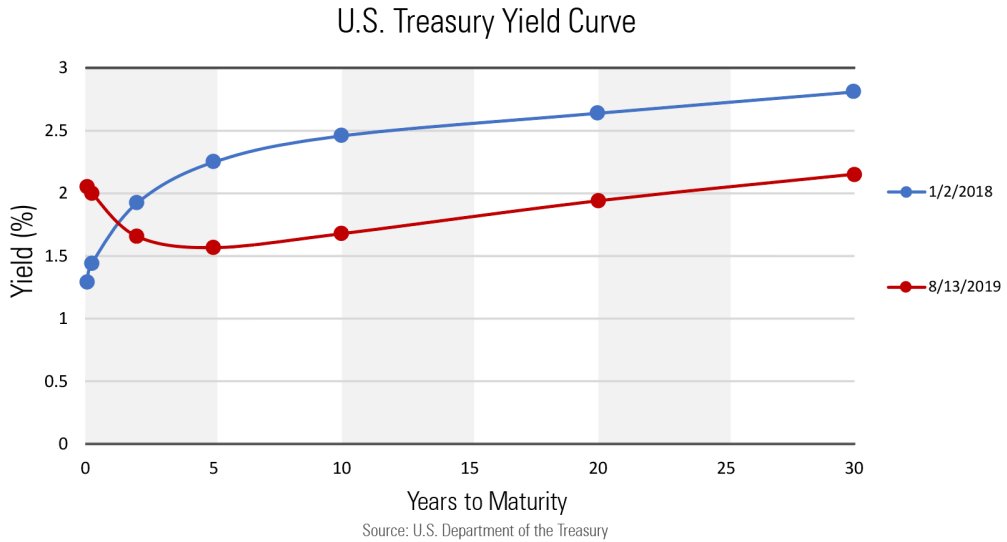
2

Policy rate, from ST to LT interest rates

- Arbitrage (demand/supply) between cb make ST rates always close to CB policy rate (including with CB interventions in interbank market)
- CB policy rate influence LT rates, not mechanical (risks, expectations)
  - LT rate is compounded of ST rates, actual and expected
  - LT rate = ST rate + term premium (uncertainty, risk) + liquidity premium
- Yield curve: picture of yields of Gov bonds at one time, for different maturities (market determined)
- Normal times, yield curve slope up (LT risks higher); when markets expect future lower ST rates (eg., downturns, recessions with lower CB policy rate) yield curve slope can be “inverted” (precursor of a possible recession?)



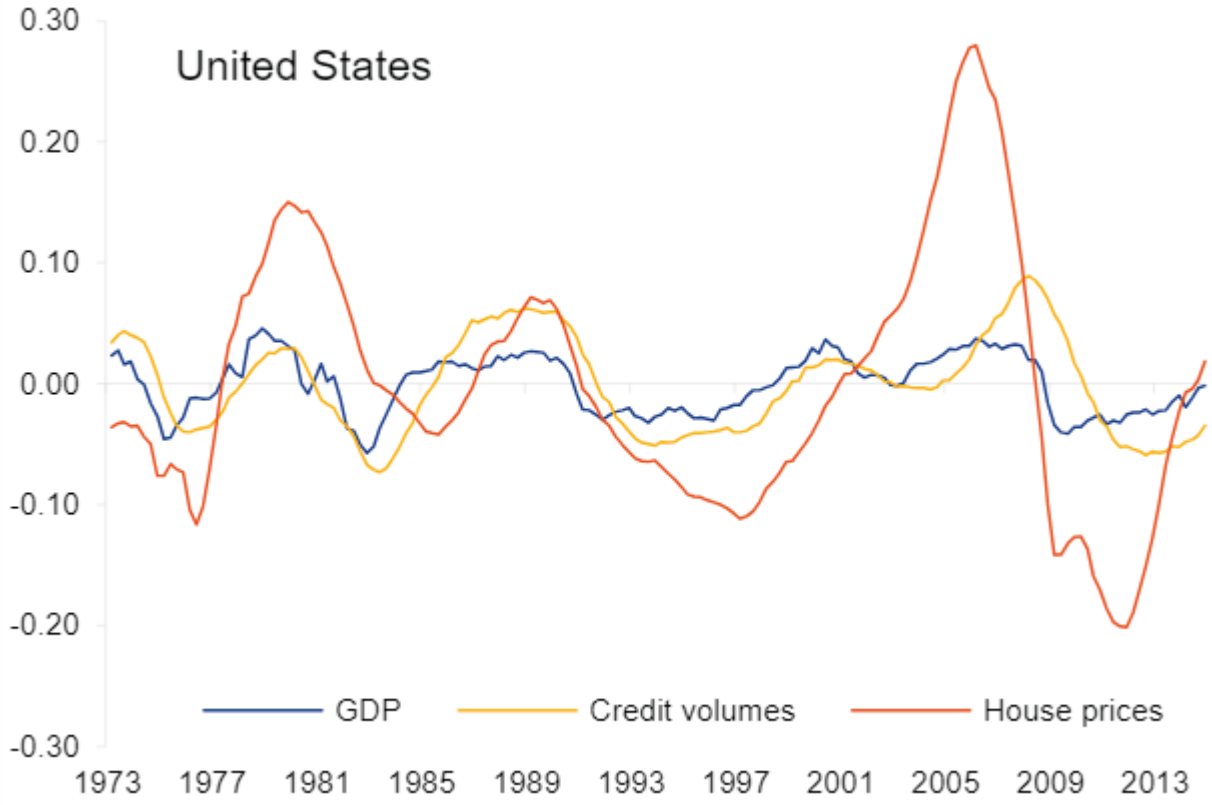
Source: NY Class



Source: U.S. Department of the Treasury

S 3.1.2. CB as regulator, stabilizer of financial cycles

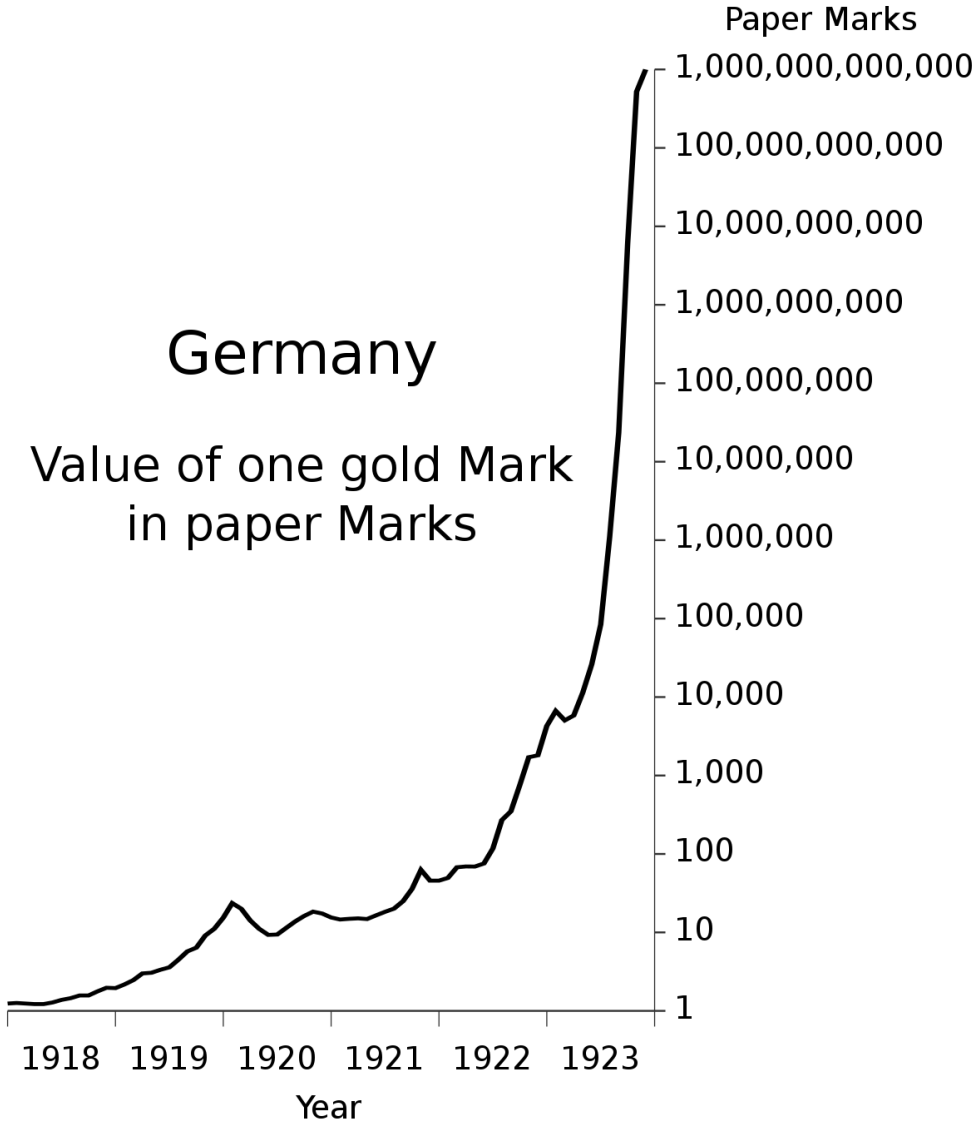
- Financial markets prone to cycles of euphoria and gloom, influenced by many factors including MP, liquidity, rumors, etc
- Financial cycles can lead to booms and busts and affect real economy (more later)
- Regulatory framework for financial markets is important to moderate these episodes
- CB and/or specific agency in charge of policies and instruments (financial regulation, macroprudential) to regulate, moderate and stabilize (more later)



Source: ECB

S 3.1.3. CB as preserving the purchasing power of money

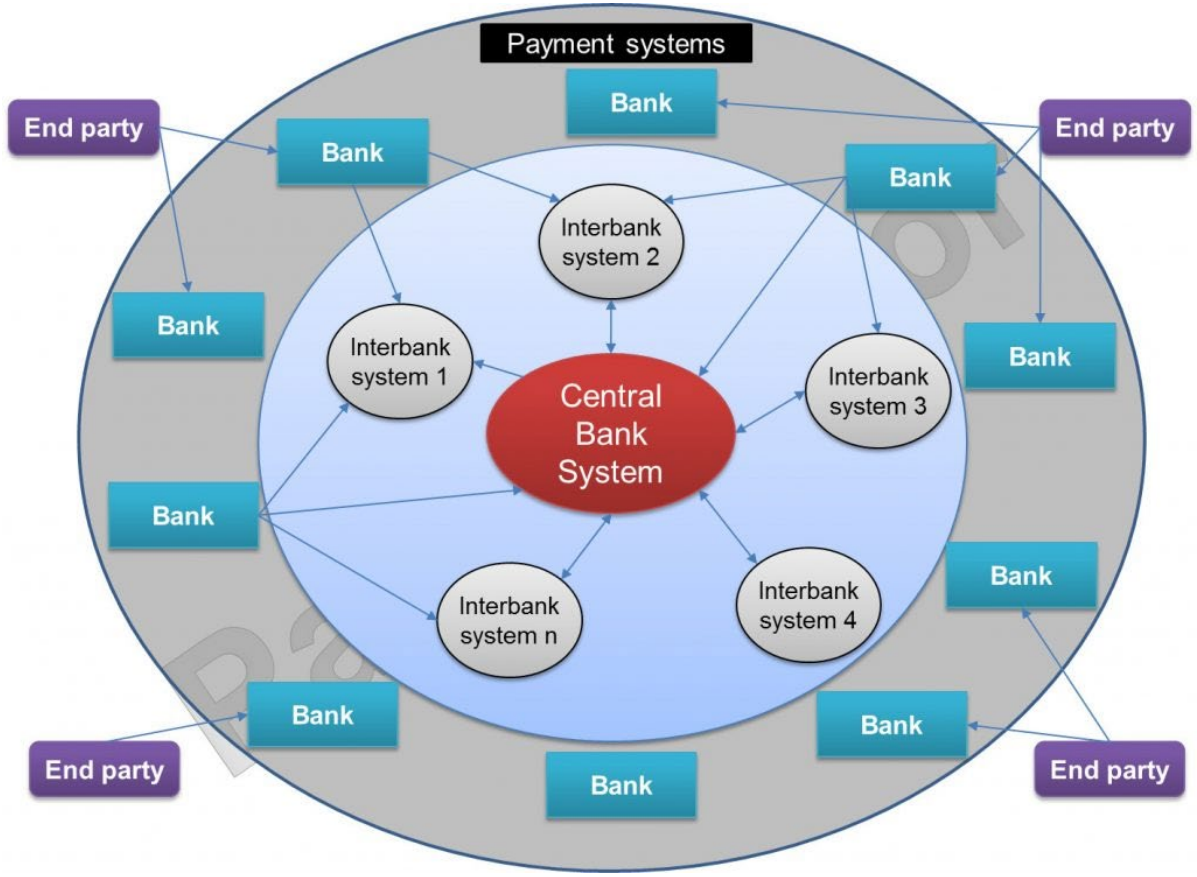
- Macroeconomic populism might lead to high or even hyperinflation (rate > 50% per month)
- Hyperinflation is not only in developing countries (eg., Germany 1923, Hungary 1946, Zimbabwe 2008, etc)
- Rapid (prices double in few hours) loss of trust and value of money
- CB has responsibility for price stability (more later)



Source: Wikipedia

S 3.1.4. CB as ensuring security, smooth functioning and stability of payments systems

- CB in charge of payments infrastructure between all agents (CB, cb, non-banks, corporates, HH, etc)
- Convertibility of all forms of money and financial assets
- Need to be reliable, efficient, secure, inclusive, etc
- More later on 21st century fundamental changes (speed, forms, instruments, agents, etc)



Source: Paiemenfor

S 3.2. A short History of central banks and its evolution

- S 3.2.1. CBs as an institutional response to payment needs: from private to public authorities

- S 3.2.2. Periods of central banking

- S 3.2.3. Bubbles, manias and panics

S 3.2.1. CBs as an institutional response to payment needs: from private to public authorities

- First CB RiksBank (Sweden 1668), earlier Amsterdam, Hamburg banks also provide reliable payments to merchants; Bank of England (1694)
- Reputable private cies, loans to Govs, banking activities; all other smaller banks had accounts, “bank of banks” to clear payments and be lender of last resort; no monopoly of issuing “bank notes” (IOUs)
- Banque de France (1800), Bank of Japan (1882)
- Most CBs in Europe in 19th century
- US Federal Reserve FED (1913) with other CBs in America

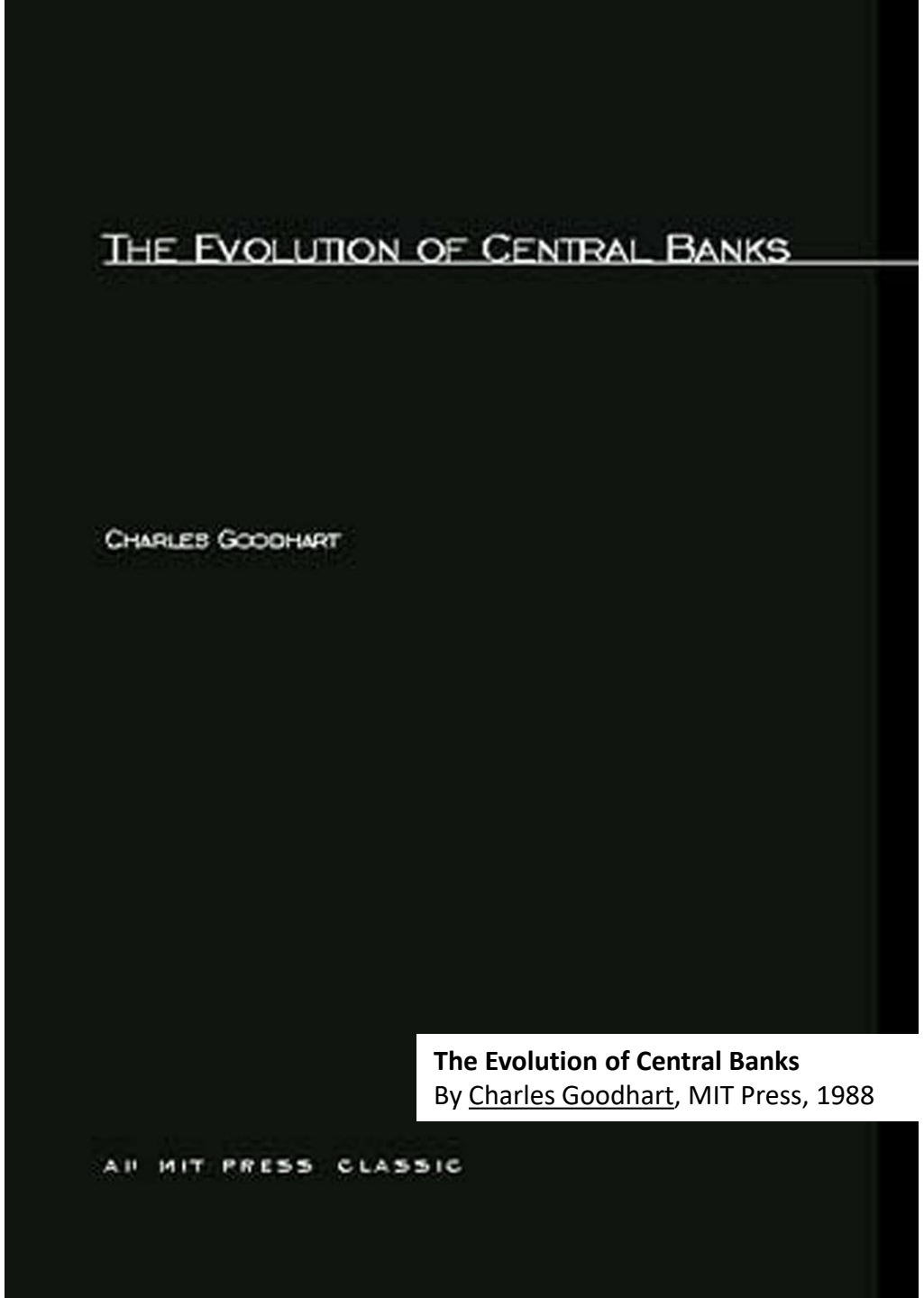
S 3.2.2. Periods of central banking

- **“Golden Age” (1870-1914):** CB abiding to “gold standard”, fixed convertibility of money into gold; financial stability consisted in only provide liquidity to “real economy bills” (trade, real products) not to “speculative bills” (finance)

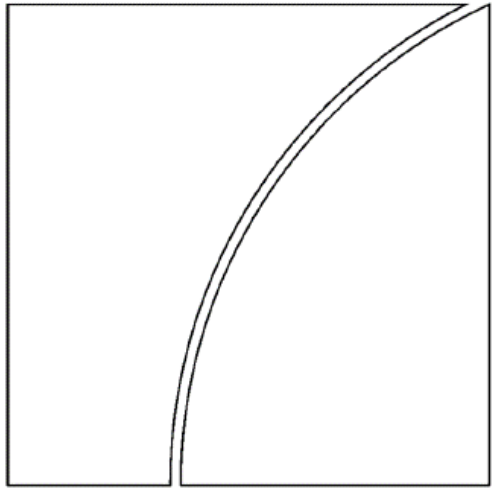
- **“Great Depression” (1920s-1930):** hyperinflation, bankruptcies, inability of gold standard to deal with a) different exchange rates; b) need to increase money supply to address recessions (fixed parity of notes backed by gold); FED failed lender of last resort (Friedman and Schwarz)

- **Domination by Treasuries (post WWII-1970s):** regulation of banks; CBs tasked to manage directed credit to economy, finance Govs, enforce capital controls (fixed ER); Treasury set interest rates; failure of BW system in 1971 after Vietnam War inflation, US expansion of monetary base and US gold redemption by Europe, all led to floating ER (1973)

- **Modern age and Great Moderation (1980s-?):** Volcker moment (1979) to tame inflation; CB independence with mandates for price and financial stability; “triumph of markets” and stardom for CBs; inflation stable and low 90s-2000s



The Evolution of Central Banks
By Charles Goodhart, MIT Press, 1988



BIS Working Papers
No 326

The changing role of central banks

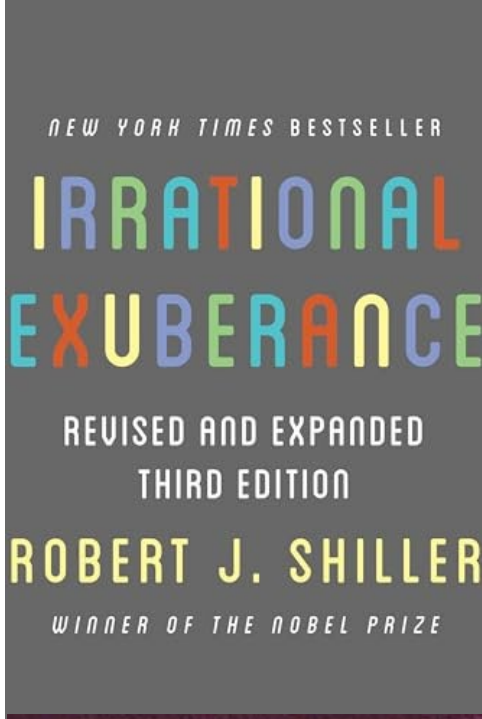
by C A E Goodhart

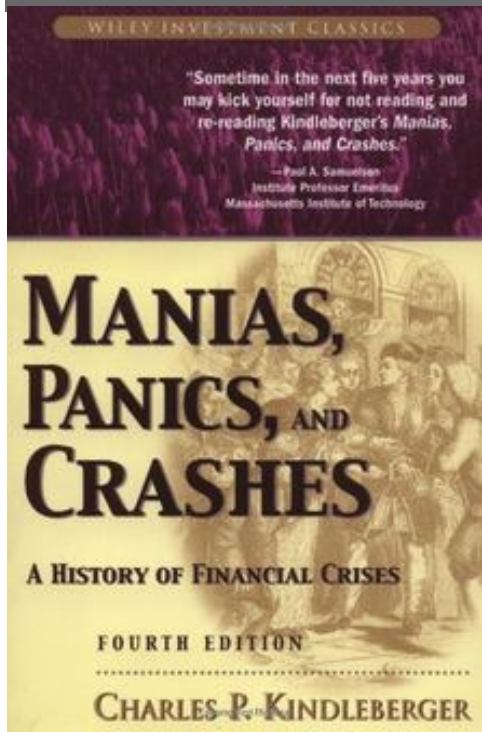
Monetary and Economic Department

November 2010

S 3.2.3. CB and bubbles manias and panics

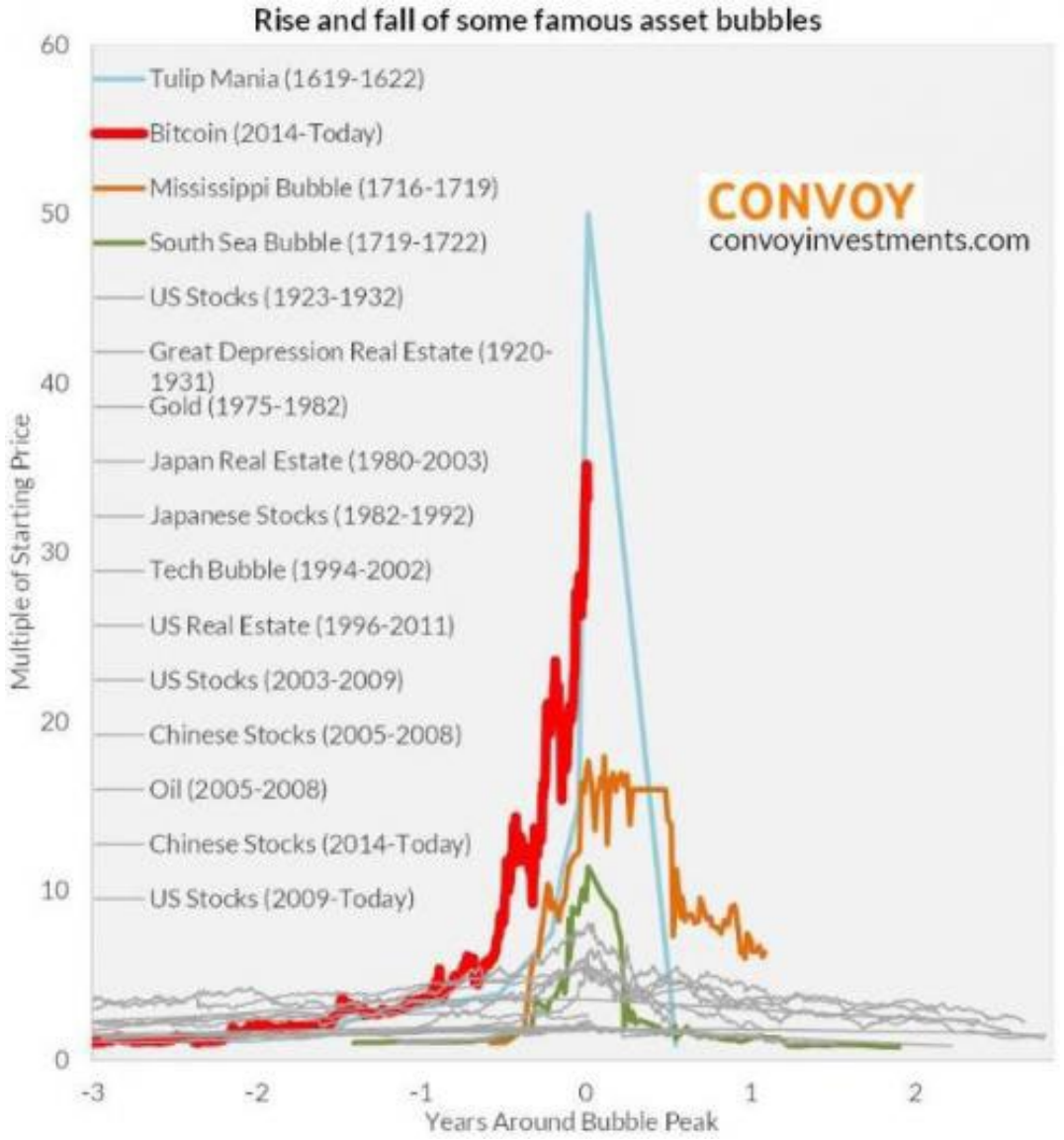
- Focus on goods & services inflation during Modern age and Great Moderation neglected asset (financial) prices
- Deregulation of financial markets, “perfect” information, self-correcting markets led to financial bubbles (dot-com, housing, stocks, GFC)
- Asset bubbles not new: ancient phenomenon since 17th century (eg., Tulip bubble, Mississippi bubble, etc); manias followed by panics
- Asset prices can exacerbate financial cycle since they are used as collateral in credit

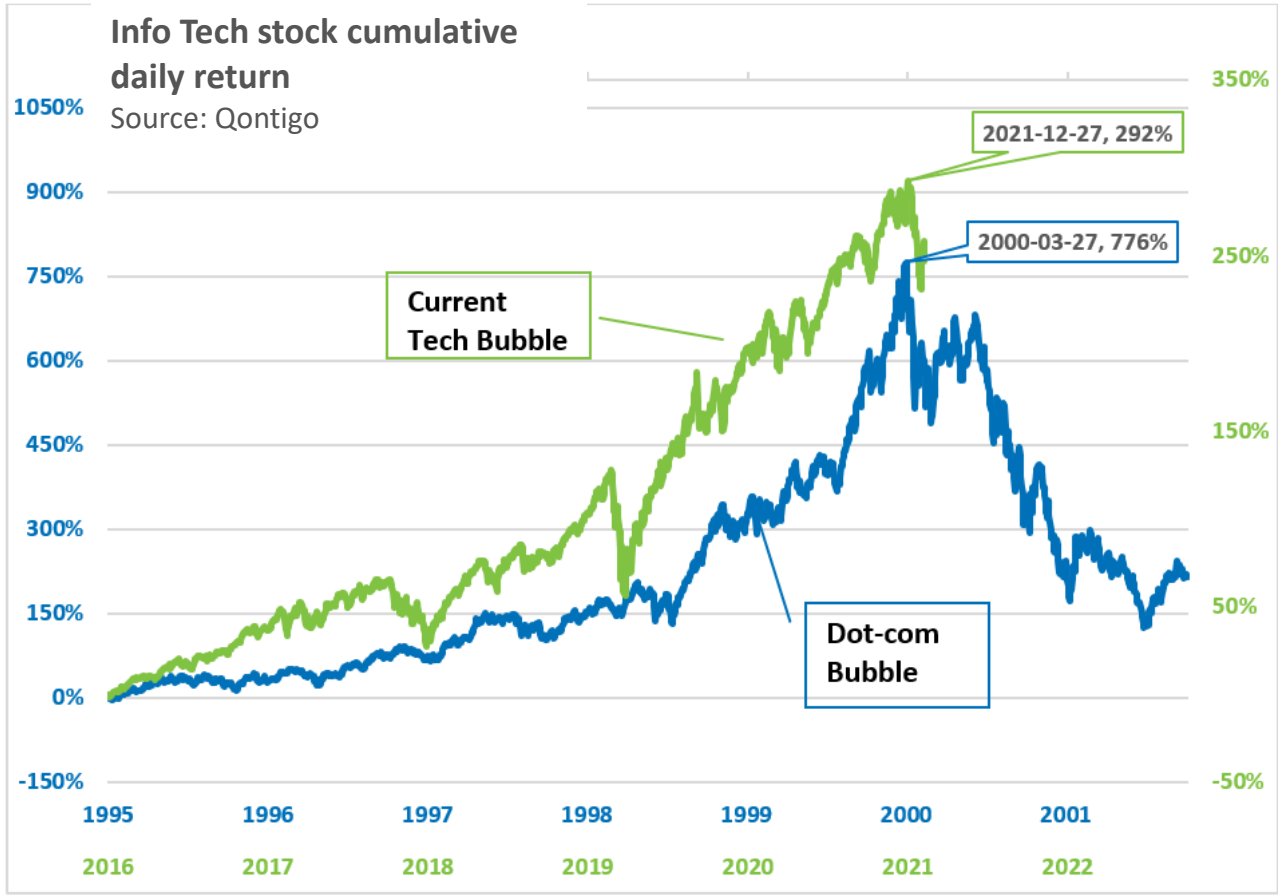




Bubbles

- A financial asset bubble is characterized by rapidly increasing prices of an asset to a point that is unsustainable, causing the asset price to burst or contract in value
- Financial bubbles follow five stages: displacement, boom, euphoria, profit taking and bust





S 3.2. A short History of central banks and its evolution: evolution of central bank functions

- S 3.2.6. Mandates (evolution, lessons from 1970s-1980s: CBs need more specific mandates)

- S 3.2.7. Institutional arrangements

- S 3.2.8. Governance structures and accountability

S 3.2.6. CBs : who provides what types of mandates

- High Public authority (Congress) provides mandate through a Law usually amended afterwards
  - Federal Reserve Act (United States) in 1913
  - Bank of England Act (United Kingdom) in 1694
  - Treaty on the Functioning of the European Union (European Central Bank) in 1993 not a national law, legal basis for the European Central Bank (ECB) in 1998
  - Bank of Japan Act (Japan) in 1882
- Narrow, dual mandate and hierarchical mandate
  - Ex Section 2A of the Federal Reserve Act, directs the Federal Reserve to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.
  - Ex Article 2: The Bank of Japan, in accordance with the provisions of this Act, shall contribute to the sound development of the national economy by pursuing monetary policy conducive to the maintenance of price stability, thereby aiming at the maintenance of the currency's stability and the fostering and maintenance of economic activity.
  - Ex: Article 127(1) the ECB single hierarchical mandate; first price stability as principal objective then other objectives only after price stability

S 3.2.7. CBs : types of institutional arrangements

- Despite broad formulation in CB Laws, most common reading:
  - Mandate to ensure **price stability** (low, stable, predictable inflation)
  - Mandate to ensure **financial stability** (avoid financial crises, well-functioning resilient, competitive banking (financial?) sector, efficient payments system
- Recent trends granting CB legal independence:
  - With more or less presence of Government in MP decisions
  - Full autonomy to decide / interpret what is its mandate and how to reach it (its inflation objective: 2%? 3% and its policy rate setting)
  - Operational autonomy to decide / interpret just how to achieve its mandate (policy rate setting)
- Recent reviews (2022) of ECB and FED mandates

JP, EA →

US →

Central bank mandates and targets

Table 1

Category	Description	Examples
	Nature of mandate/policy objective	
Narrow mandate	Sole focus on monetary stability (often price stability)	CA, DK, ZA
Hierarchical	Primary objective (monetary stability), plus secondary macroeconomic or other objectives	BR, CZ, EA, IL, JP, KW, MX, NO, PL, RO, SA, SE, CH, UK
Dual or multiple mandate	Price stability objective and other objective(s), without prioritisation	AU, CL, CO, HK, IS, MY, NZ, SG, TH, US
	Who interprets the mandate, defines price stability or sets the inflation (or exchange rate) target?	
Government	Done by Minister of Finance or government	HK, IL, JP, NZ, NO, UK
Joint setting	Done jointly by political authorities and central bank	AU, BR, CA, DK, IS, RO, TH, ZA
Central bank	Done by the central bank alone	CL, CO, CZ, EA, KW, MY, MX, PL, SA, SG[1], SE[2], CH, US
	Nature of target	
Range	Mandate specifies a target range for inflation	AU, IL, CH[3], TH, ZA
Tolerance range	Mandate specifies point target, within a "tolerance" range	BR, CA, CO, IS, MX, NZ, PL, RO, SE[4]
Point	Mandate specifies point target only (with or without flexible average)	CL, CZ, EA, JP, NO, UK, US
Addendum: Exchange rate target of some form		DK, HK, KW, SA, SG
Scheduled mandate reviews	Periodic reviews of monetary policy framework, operational target, and other elements of central bank toolkit	CA, EA, NZ, US

Notes: 1 The MAS implements monetary policy by keeping the nominal effective exchange rate within a policy band consistent with ensuring price stability.
2 The Riksbank currently has full discretion, but its new law to come into force in January 2023 will give the Riksdag authority to approve its proposed target.
3 The SNB's mandate equates price stability with CPI inflation below 2%.
4 "Variation band".
Sources: BIS analysis of central bank laws, central bank websites and interviews with central banks.

BR

Final responsibility for monetary policy: selected examples

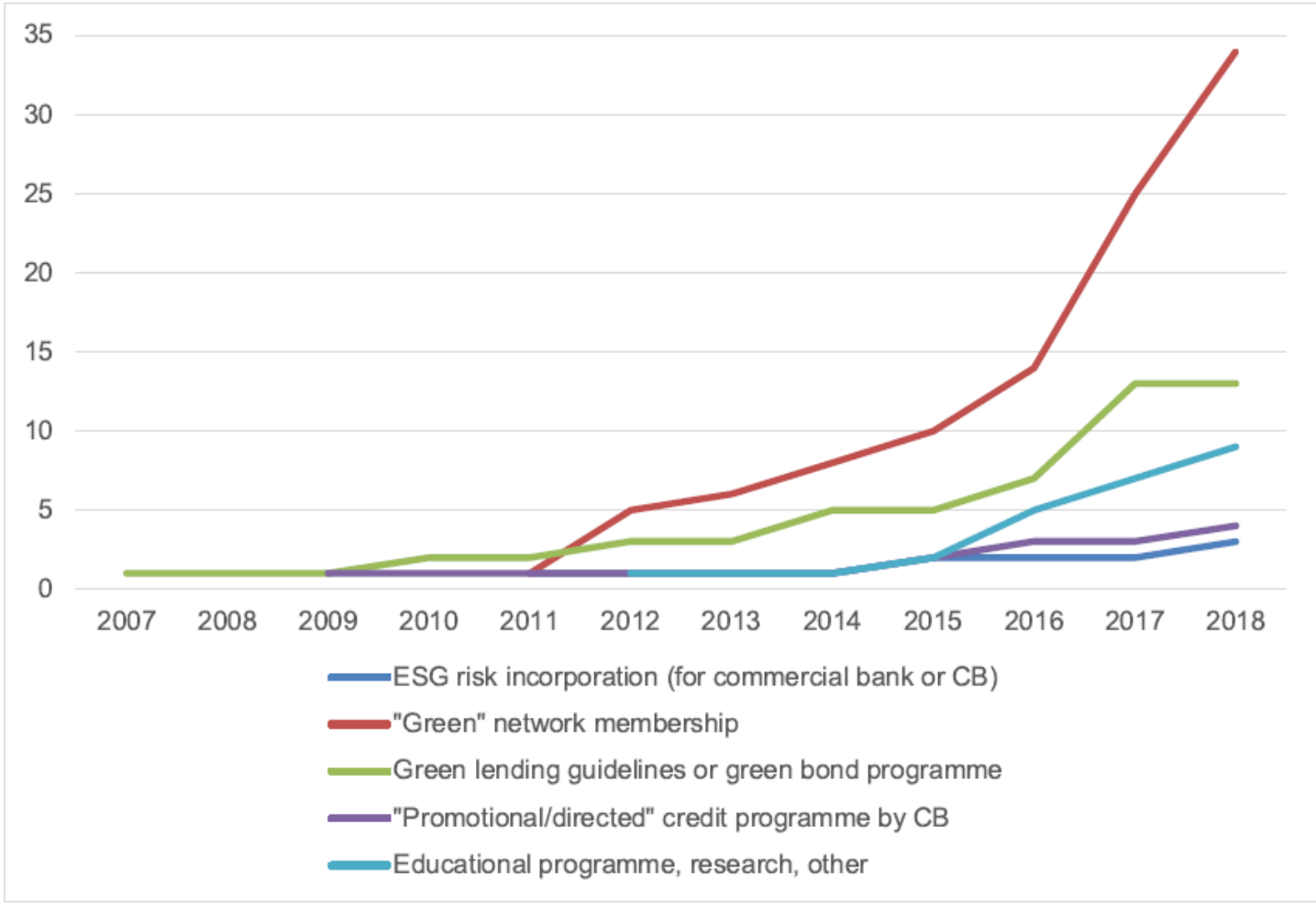
Table 3

Category	Description	Cases
	Reporting requirements	
Explanation requirement	If inflation deviates from target for a specified period and/or by a specified amount, the central bank must explain the reason for the deviation and how it will return to the inflation target.	BR, IS, IL, TH, UK
Assessment	Board of Directors must prepare annual report assessing whether the Monetary Policy Committee formulated monetary policy consistent with operational objectives.	NZ
	Decisions	
Decision suspension	The Minister of Finance participates in Board meetings with right to speak and has the authority to suspend the implementation of a Board decision for up to 15 days unless all Board members insist on proceeding.	CL, [JP][1]
Directives	If the Central Bank and Minister of Finance disagree on monetary policy, the Minister of Finance (with the approval of government) may give the Bank a written directive that the Bank must follow. This is not predicated on missing goals and must be presented to Parliament.	AU, CA, MY[2], NO[3]
	Dismissal of Governor	
Minimum of two decision layers	The Board may advise the Minister to advise the government, or the Minister may advise the government on his or her own, to dismiss the Governor; the government decides. Possible reasons for dismissal include the Bank not carrying out its functions (other than functions of the MPC), the Governor not adequately discharging the responsibilities of office, or the Governor having obstructed, hindered or prevented the Board or the MPC from discharging their responsibilities.	NZ
	Cabinet may dismiss, upon recommendation by Minister or by proposal by Minister upon recommendation by BOT Board, in case of gross incompetence in the performance of duties. Explicit reasons must be specified.	TH
Three or more decision layers	In case of proven and recurring failure to perform as necessary to achieve the Bank's objectives, the National Monetary Council shall submit proposal to dismiss to head of state, subject to prior approval by absolute majority in Senate.	BR
	Head of state may dismiss, upon justified request by at least three Board members on the grounds of non-compliance with policies or regulations of the Board, subject to prior approval by Senate.	CL[4]

Notes: 1 At monetary policy meetings of the Board of the Bank of Japan, the Minister of Finance and the Minister of State for Economic and Fiscal Policy (or their delegates) may attend and may request that the Board postpone a monetary policy decision until the next meeting. The Board uses its normal voting procedure to decide on whether to accept or reject such a request.
2 In Malaysia, the tabling of information on the directive in Parliament is contingent on the Bank's Board submitting its objections and reasons to the Minister.
3 In Norway, the Cabinet may adopt general rules or instructions in individual cases, concerning the operations of the Bank.
4 A proposed constitution in Chile to be voted on in September includes some changes to these requirements.
Sources: BIS analysis of central bank laws, central bank websites and interviews.

Evolution of mandates “green” other mandates

- With many social-political issues emerging, pressure to revise mandates and adopt new goals (eg., “sustainability, climate change, etc)
- Many CBs took action in engaging in Green agenda (from MP operations to research)
- CBs created Network for Greening the Financial System (NGFS) (more later)



S 3.2.8. CBs : Governance and accountability

- Governor of CB usually nominated by Executive, approved by Legislative
- MP now mostly conducted by Committee (Blinder)
  - Multiple views, diversity
  - Explicit communication (votes public and/or “dots”)
- Multiple committees covering different functions

Frequency of board structures among 62 BIS member central banks — Table 1

Combinations of central bank functions			Principal Board	Multi-function Board	Specialised boards			Executive
Indep-endent monetary policy	Micro-prudential supervi-sion	Financial stability			Monetary policy	Micropru-dential	Financial stability*	
yes	yes	yes	8	5	6	5	4	3
		no	1	1	2	2		–
	no	yes	5	5	–		–	4
		no	4	–	–			–
Sub-total			*18*	*11*	*8*	*7*	*4*	*7*
no	yes	yes	12	1		1	–	1
		no	2	–		–		–
	no	yes	8	1			–	1
		no	–	–				–
Sub-total			*22*	*2*		*1*	–	*2*
Total			40	13	8	8	4	9

*This table covers only financial stability boards at the central bank – interagency financial stability boards are excluded (please see full note in table in Annex).

Empty cells = not applicable; – = zero entry. Cells covering specialised boards that are not “not applicable” by definition but contain zero entries mean that the specialised function is assigned to the principal or multi-function board in all cases.

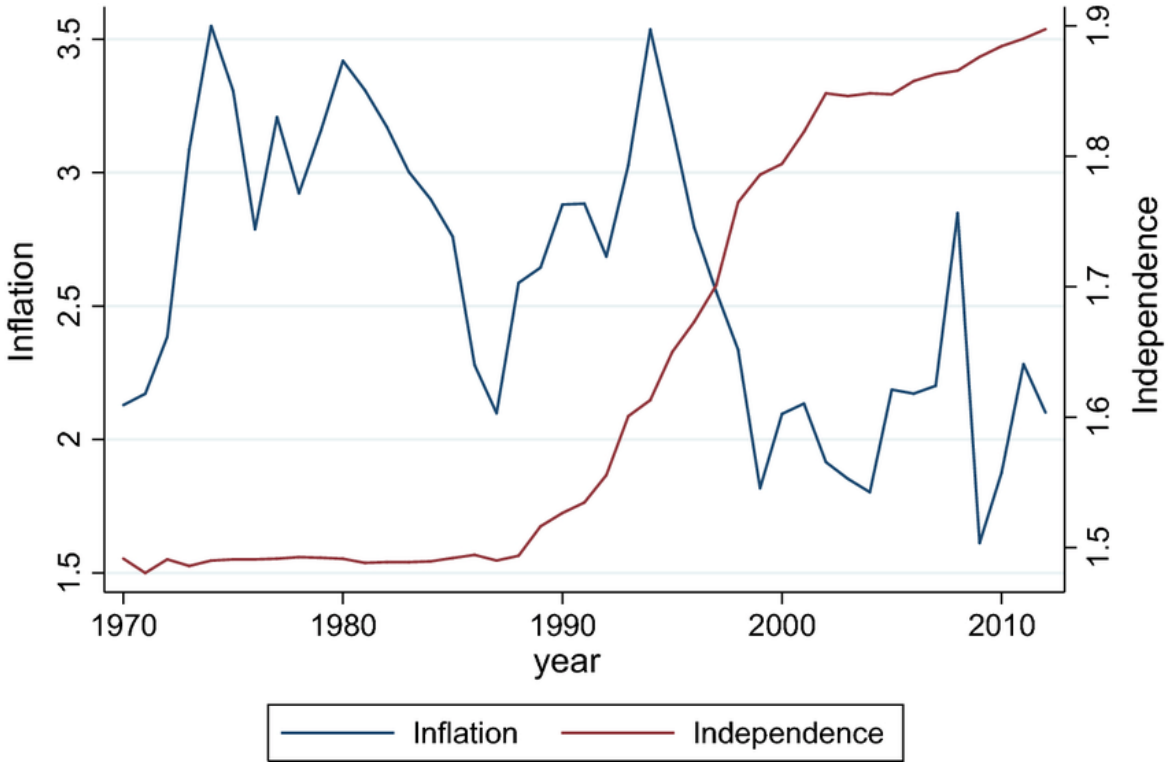
Disclosure and reporting on monetary policy

Table 2

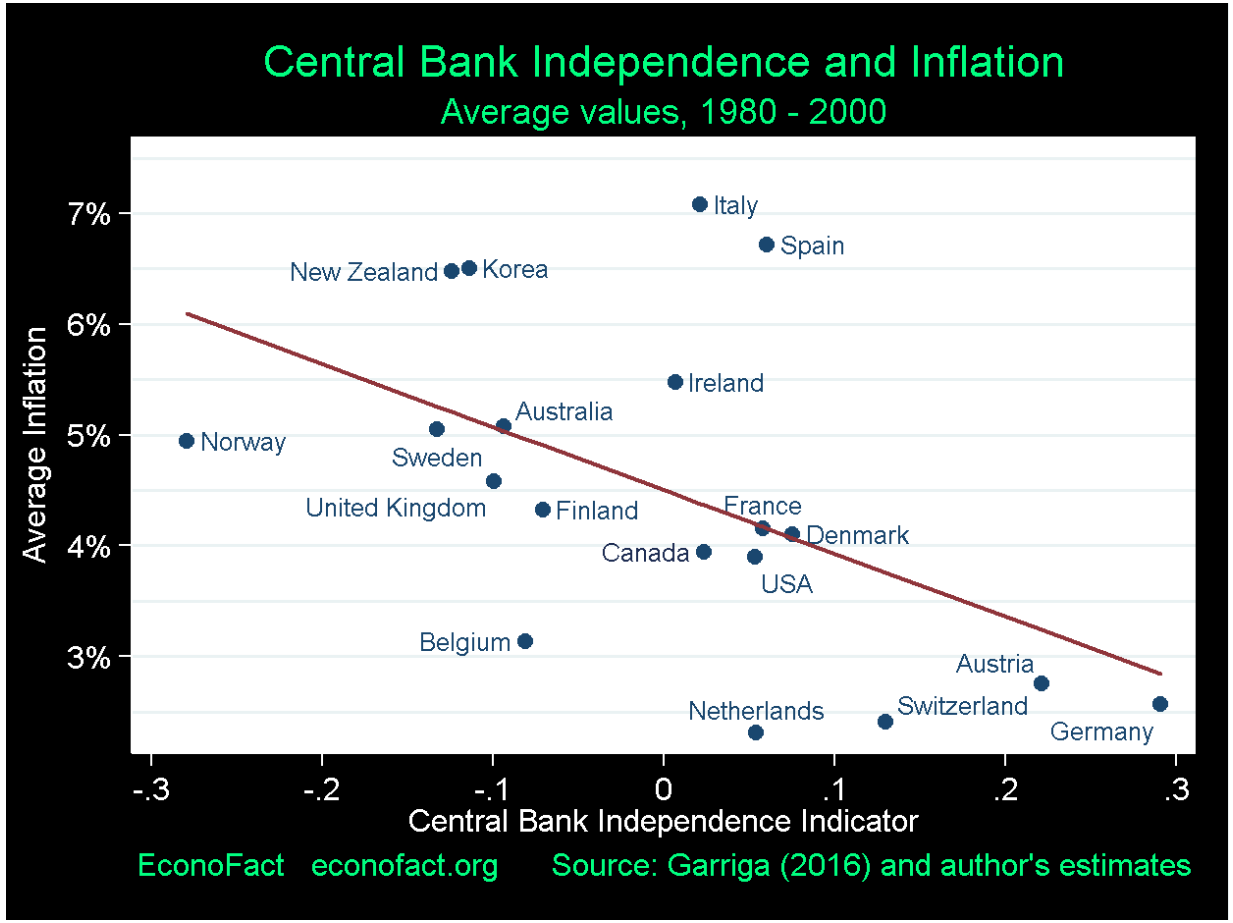
Category	Examples
Scheduled appearances before parliament[1]	
No scheduled appearance	IL, TH
Annual	MX, NZ, NO, ZA, CH
Twice per year	AU, CO, CZ, IS, JP, PL, US
Three times per year	HK, SE
Four or more times per year	BR, CA, CL, EA, UK
Monetary policy documents	
Decision press releases	AU, BR, CA, CL, CO, CZ, DK, EA, HK, IS, IL, JP, KW, MY, MX, NZ, NO, PL, RO, SA, SG, ZA, SE, CH, TH, UK, US
Decision press conferences[2]	BR, CA, CL, CO, CZ, EA, IS, IL, JP, NZ, NO, PL, RO, ZA, SE, CH, UK, US
Minutes[3]	AU, BR, CL, CO, CZ, IL, IS, JP, MX, NZ, PL, RO, SE, TH, UK, US
Voting record showing individual member votes	BR, CL, CZ, IS, JP, MX, PL, SE, UK, US

Notes: 1 Separate hearings in camera and in public, or in front of upper and lower house are counted separately. No information is available for DK, KW, MY, RO, SA, SG.
2 Where a press conference is held after each policy decision, the ID is underlined.
3 Only considers separate documents that summarise deliberations (and potentially votes); does not include instances where deliberations are discussed in press releases or press conferences.
Sources: BIS analysis of central bank laws, central bank websites.

Central Bank Independence (index) x Inflation



Source: Research Gate



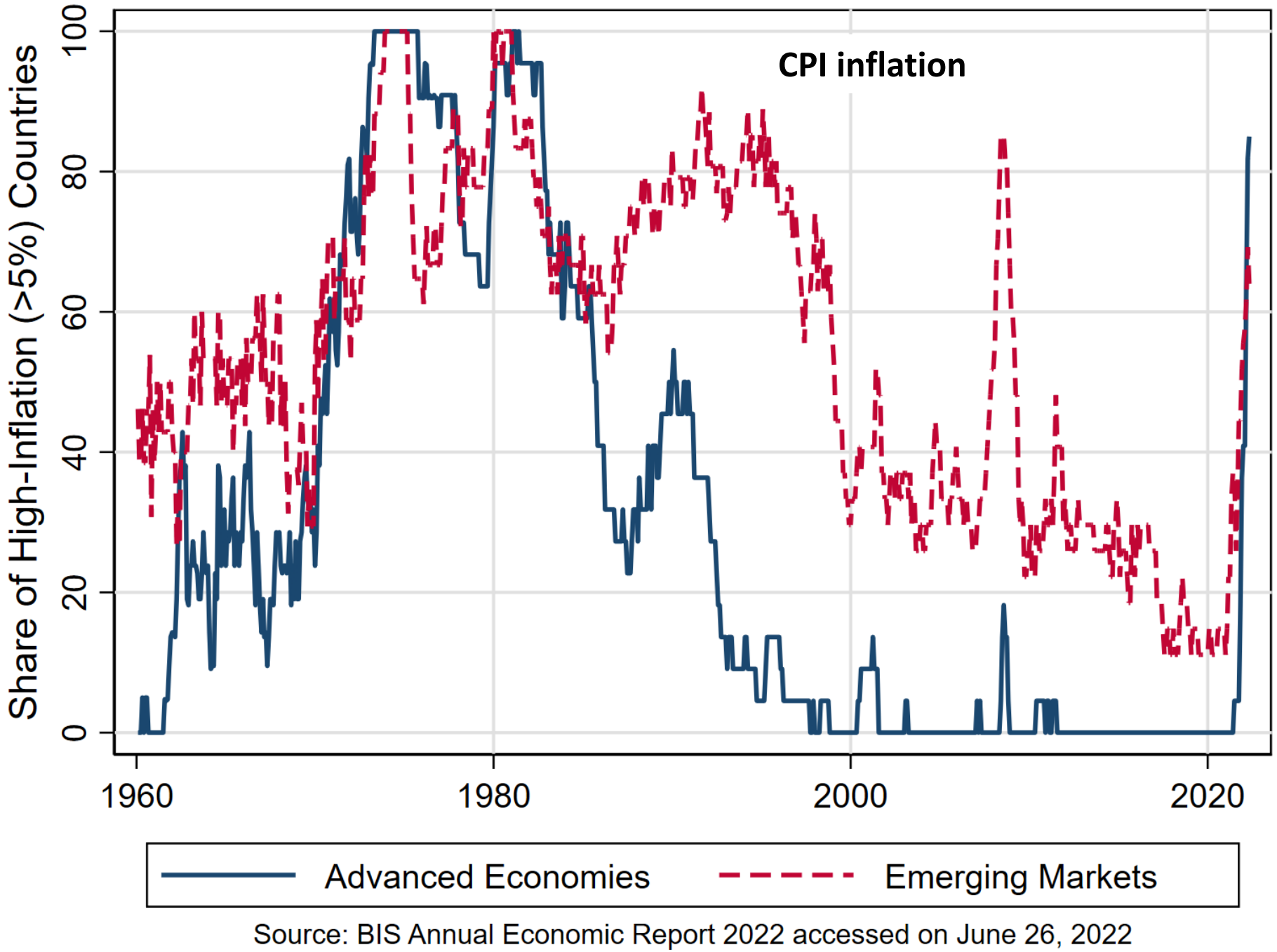
S 3.3. Objectives of monetary policy

- S 3.3.1. Price stability
- S 3.3.2. Stabilization of activity
- S 3.3.3. Exchange rate stability
- S 3.3.4. Financial stability

S 3.3.1. CB as guarantors of Price Stability

- Why? Inflation affects economic decisions (regressive tax, blurred relative prices, taxation on nominal values, etc)
- Why the CB? Monetarist (Friedman) view: inflation linked to money in circulation (simple policy, control Money), not necessarily by CB
- CB key role to ensure low (?), stable and predictable inflation:
  - Economic reason: LT money neutrality (no LT link between nominal values and real variables (GDP); CB MP action has no cost over LT; in ST, CB well placed to stabilize aggregate demand to match potential output
  - Legal, institutional reason: independent CB not subject to political influence, more capable and credible to take the necessary “technical” decisions on MP

- Success of CB after 80s: from almost no country with inflation lower than 5%, 2020, 90%of countries
- Late 1990-20: Great Moderation, inflation disappeared, role of successful MP but also other factors (globalization brings China, India as new producers, lower costs, etc)



Source: BIS Annual Economic Report 2022 accessed on June 26, 2022

S 3.3.2. CB as stabilizing economic activity

- Even with narrow (price) mandate, CBs pay attention to output and its gap with potential; Taylor rule as "average" policy reaction behavior (function) of the FED and implicitly many other CBs
- Can use headline or core (excl volatile items food, energy) inflation; some measure of potential output and some defined CB inflation "target"
- 2 is considered the "neutral real interest rate" or r* (more later)
- (a) and (b) positive weights (original same equal weights of 0.5)
- Not normative but useful to assess MP stance (accommodative or restrictive)

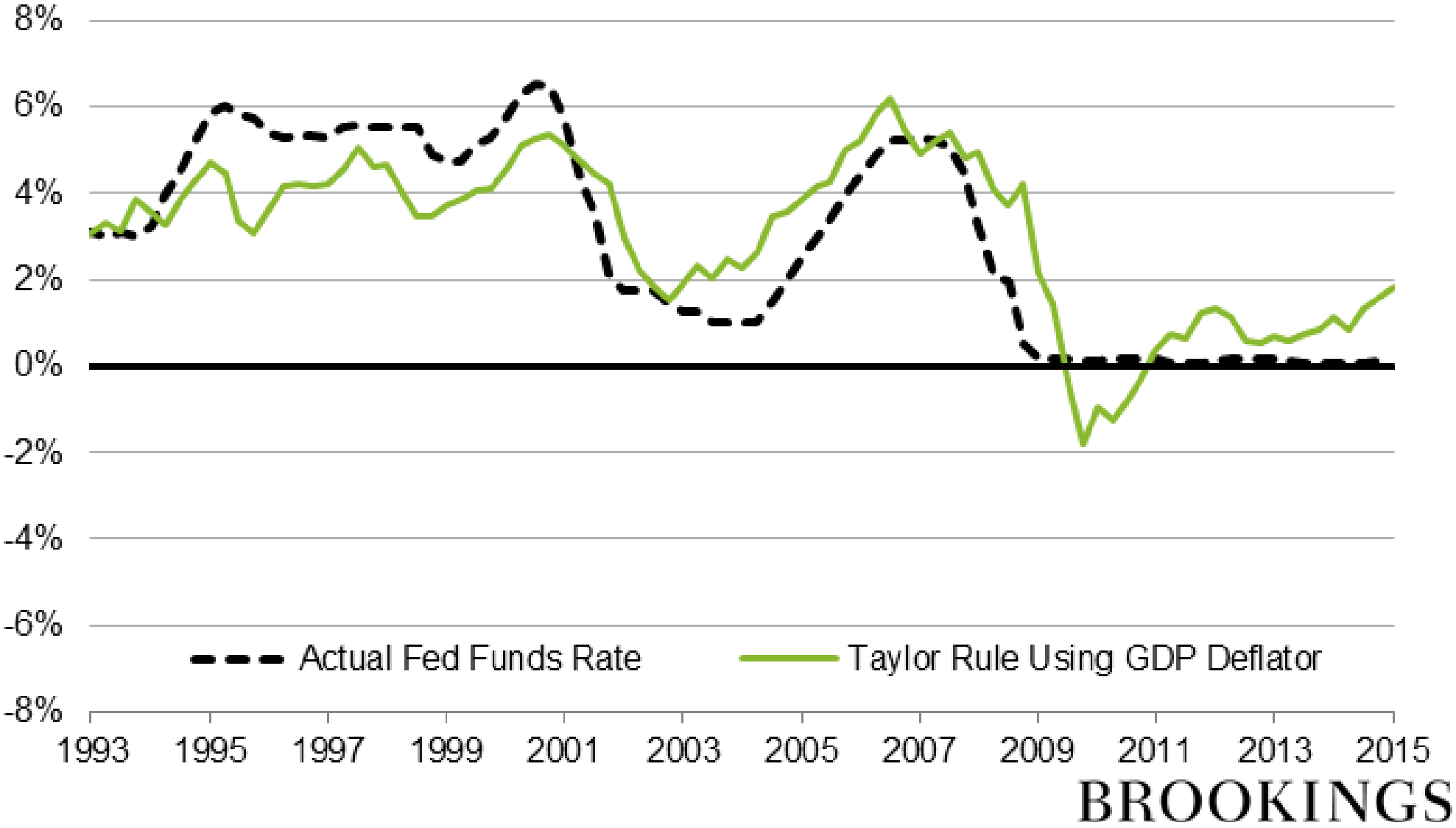
General form of the Taylor rule:

$$i_t = 2 + \pi_t + a(\pi_t - \pi^*) + b(y_t - y_t^*)$$

where

- i_t is the prescribed value of the policy interest rate in a given period t;
- $\pi_t - \pi^*$ is the deviation of the actual inflation rate π_t from its target π^* in period t;
- $y_t - y_t^*$, the "output gap," is the deviation of actual real output y_t from potential output y_t^* in period t; and
- a and b are positive numbers.

Figure 1: The Original Taylor Rule, 1993-Present



S 3.3.3. CB as ensuring exchange rate stability

- ER considered intermediate objective of MP, especially in EMEs (CB not very credible, larger pass-through into domestic prices with more expensive $ imports; ER-based stabilization programs, pegged ER, etc)
- If ERR fixed; FX intervention smooth pass-thru into wages to control inflation expectations; easier for CB to pursue price stability objective
- But also some advanced economies do FX interventions to smooth excessive appreciation or depreciation v-a-v major trade currencies (USD, Euro) (Switzerland, Japan); this is done buying/selling foreign/domestic currency and increasing/decreasing international reserves

S 3.3.4. CB as guarantor of financial stability

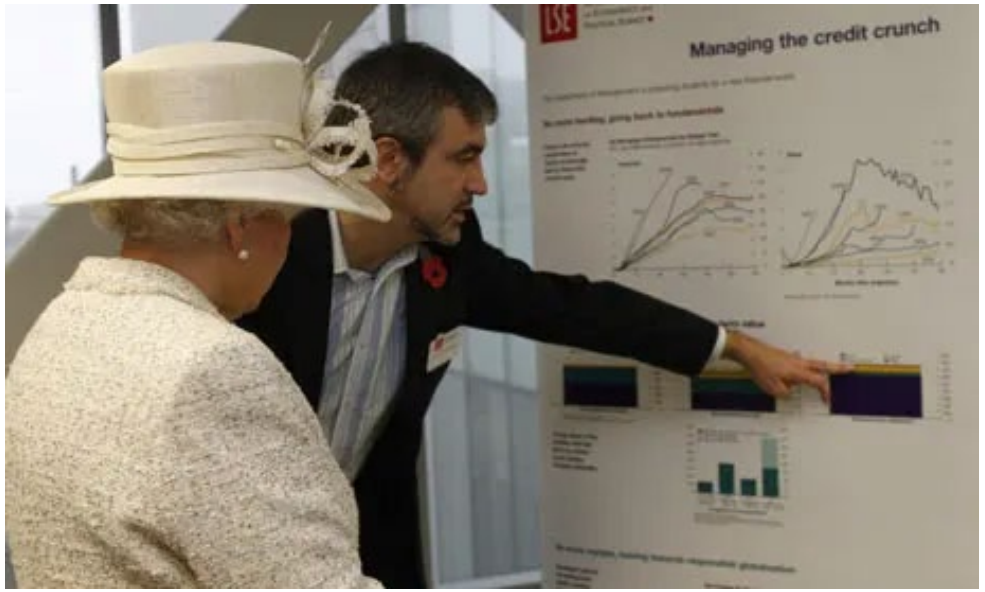
- Responsibility for financial stability (eg., financial crisis, bank runs, loss of confidence in money, notes, etc) at the origin of creating CBs (more later)
- Problems exacerbated with financial deregulation in the 1980s-1990s leading to the GFC
- CB usually have this mandate/objective, critical for function of “lender of last resort”
- MP interacts with financial stability: low interest rates affect asset prices; even worse when lax regulation allow banks to take excessive risks
- Enforcement can be shared with regulators/supervisors as different agencies and also Treasuries

An example of interaction MP & financial stability: the Global Financial Crisis 2008 (next)

- More later on Financial Stability
- For CBs the policy question is:
- Lean Against the Wind?
  - Hike policy rate before and preventively to limit financial exuberance?
  - But then, sacrifice to output, price stability
- Clean-up After?
  - Once excesses materialize, selecting liquidity from insolvency
  - But then losses to be absorbed, by whom? Taxpayer? Investors? Both?

S.3.5. the Global Financial Crisis of 2008

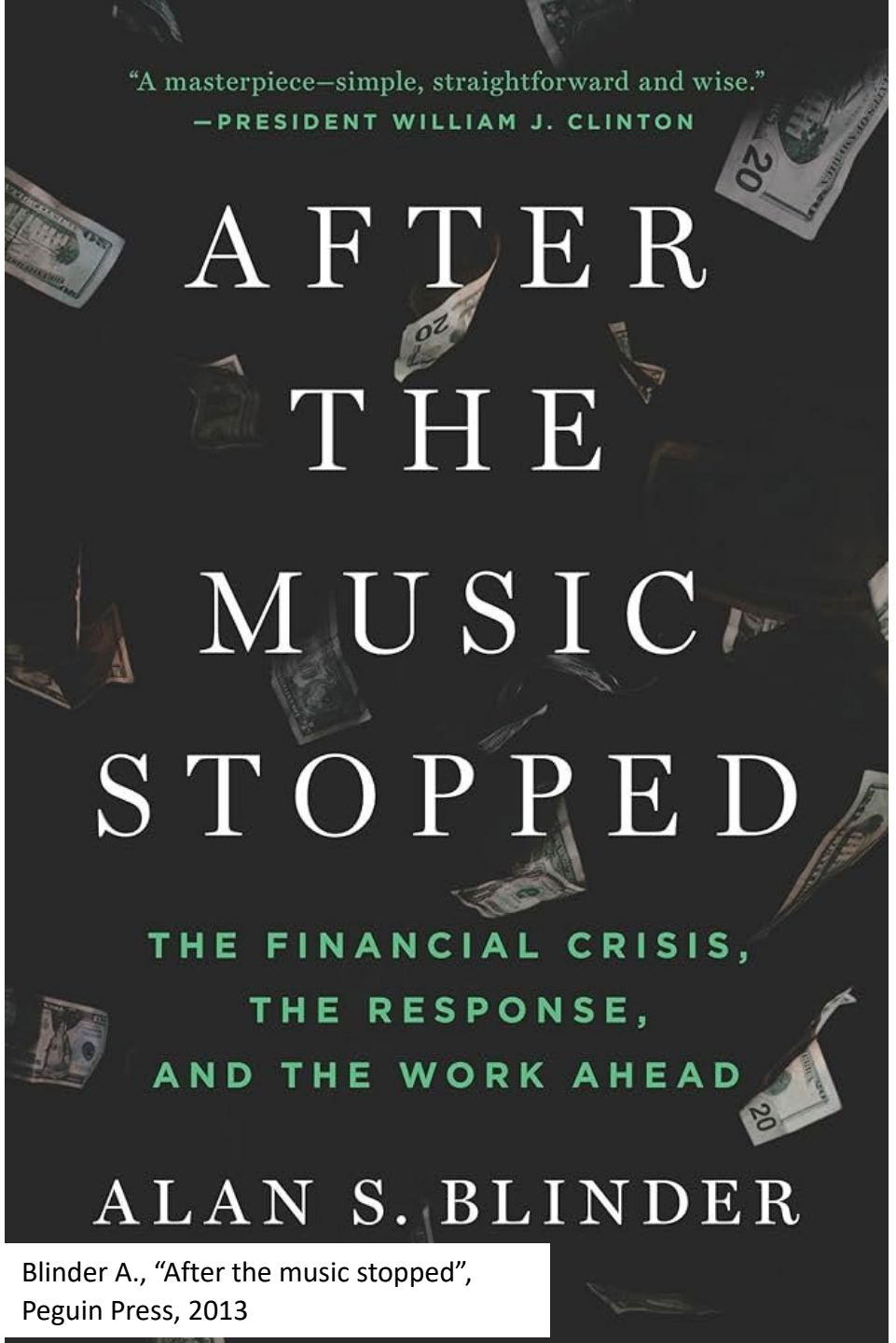
- A perfect illustration of the Stiglitz new paradigm, extensive literature and many excellent books on the crisis, the GFC
- Best question by Queen Elizabeth II to economists
- Causes: financial engineering disguising real risk under complex financial assets (with rating agencies complicity); excessive credit growth led to boom and bubbles (housing and bond markets); burst caused massive credit crunch; interconnectedness of global financial systems spread crisis worldwide
- Responses: ST, classic MP but then coordination with fiscal policy and UMP; LT, rethinking of financial market regulatory framework, new Basel Accords



Queen Elizabeth II, visiting the London School of Economics (LSE) asked professor Luis Garicano, director of research at the LSE's management department: "*It's awful - Why did nobody see it coming?"*
Daily Mail 6 November 2008

Causes of the GFC:

- **Irrational financial exuberance followed de-regulation of financial markets and exacerbated financial globalization**. US financial far too complex (innovation, securitization, sub-prime); de-regulation of the 1990s; perfect storm in 2007; two bubbles burst: housing and bond markets, last one larger and more devastating.
- **The role of Credit**. In addition to Stiglitz's paradigm of central role of credit; credit/finance or liquidity is like the circulatory system of the economic body: if the blood stops flowing, the body goes into cardiac arrest.
- **Contagion and interconnectedness.** Financial globalization had started in the 1990s (Asian Crisis); de-regulation too; all financial systems were interconnected; "toxic assets" in US balance sheets where everywhere, as complex, opaque, and overrated investment products were exported and present in Europe, Asia balance sheets

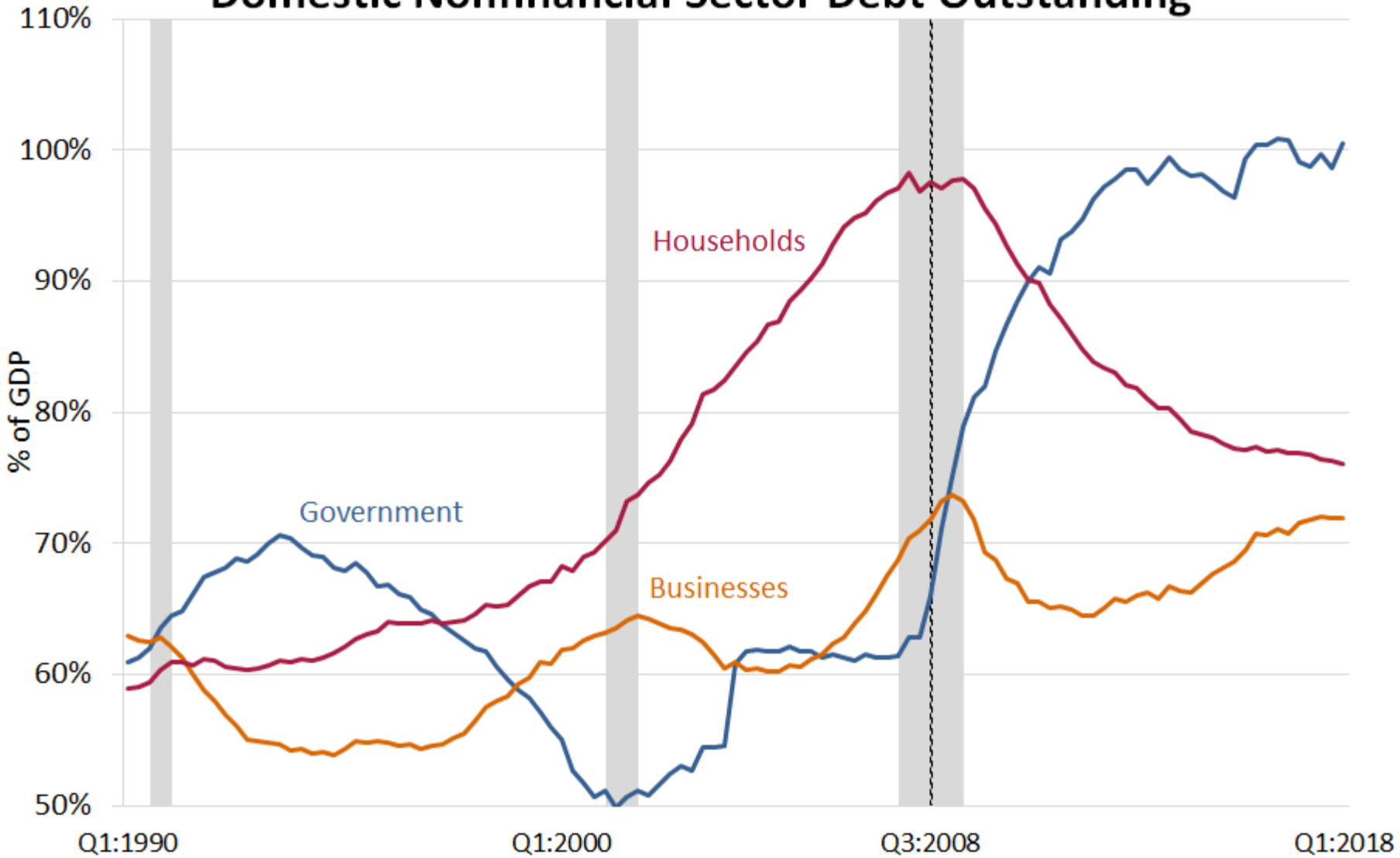


Blinder A., "After the music stopped", Peguin Press, 2013

S 2.3.3 Financial (de) Regulation combined to Financial Innovation and Exuberance

- Almost two decades before the GFC, the US Congress had passed legislation encouraging **financing for affordable housing**. In 1999, parts of the 1933 Glass-Steagall legislation, were repealed, allowing financial institutions to join their commercial (risk-averse) and proprietary trading (risk-taking) operations.
- Led to creation of "**toxic assets**" in re-packaging **subprime mortgages** to low-income homebuyers; and excessive risk-taking by poorly regulated global financial institutions;
- Default rates progressively increase and Mortgage-backed securities (MBS) tied to American real estate, as well as complex derivatives linked to those MBS (CDOs, CDO2s), collapsed in value; less noted but significant: FED tightening cycle started in 2004
- All financial institutions worldwide had invested in the US market and therefore suffered severe damage; climax with the bankruptcy of Lehman Brothers on September 15, 2008, rigger of a global international banking crisis;
- "**Credit populism**" in the 1990s: probably main underlying reason for financial collapse creating "new" financial products which targeted low-income, low-information HH and that were granted credit by risk taking banks (NINJA loans, No Income No Job or Assets)

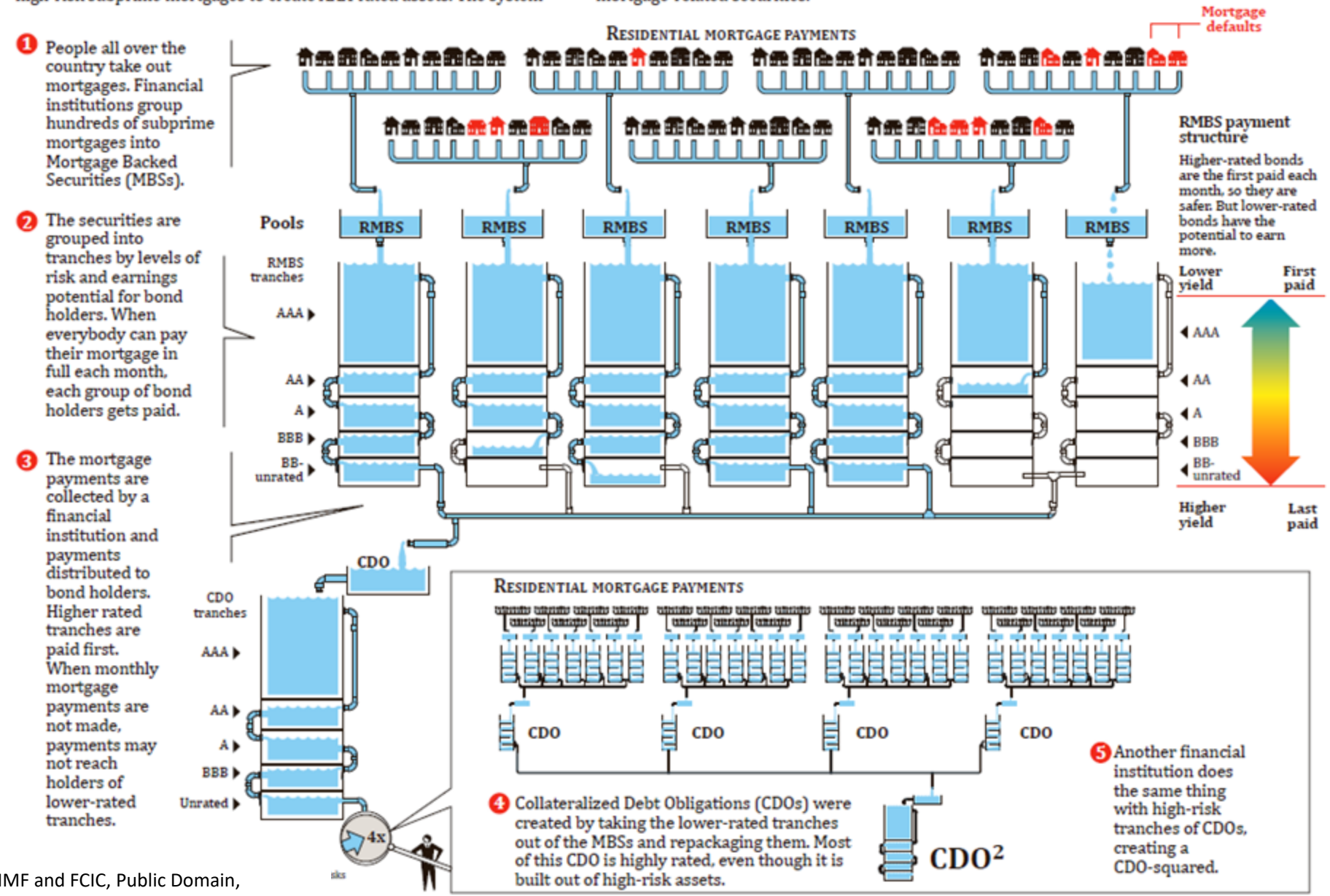
Domestic Nonfinancial Sector Debt Outstanding



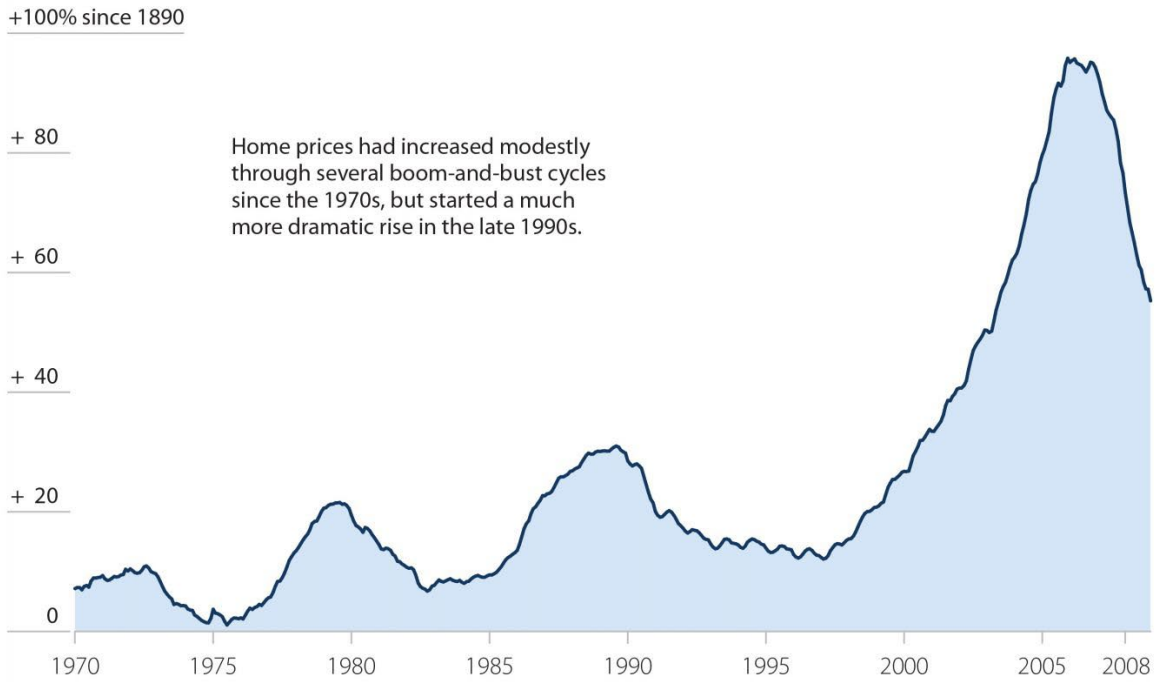
SOURCES: Federal Reserve Board of Governors' Financial Accounts of the United States and FRED (Federal Reserve Economic Data).

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.

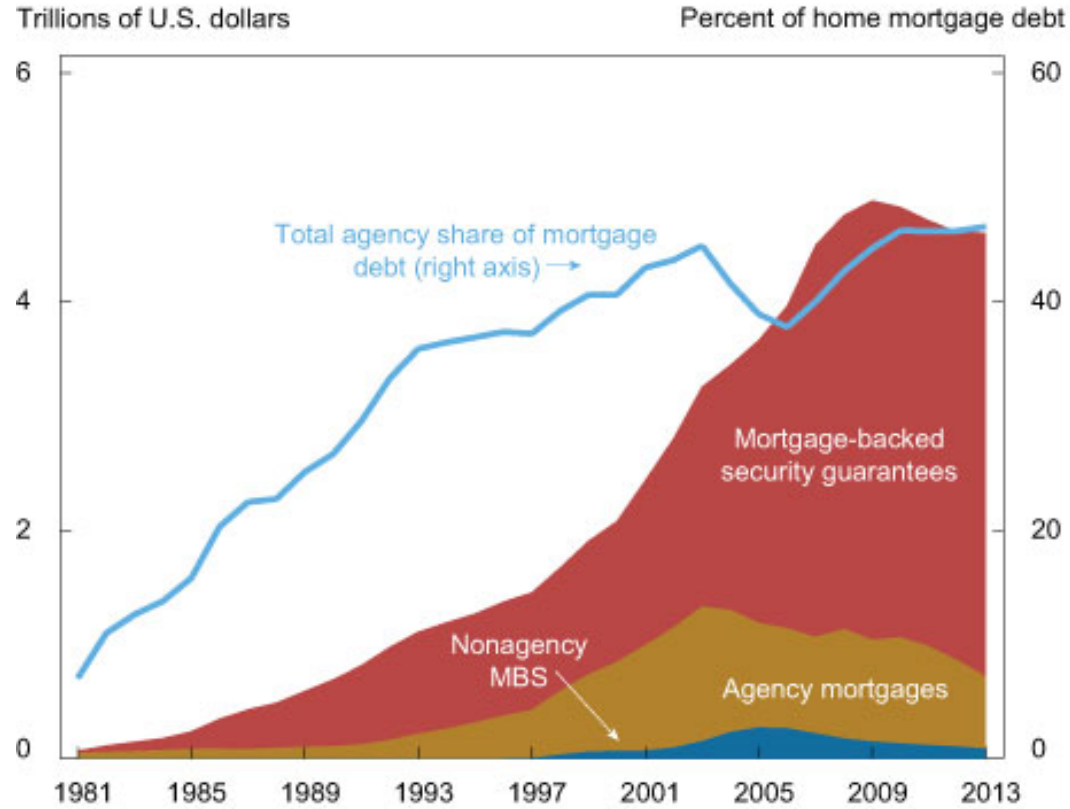


Percentage Change in Real Home Price Index



Source: Based on Figure 3.1, U.S. home price and related data, Robert J. Shiller, *Irrational Exuberance*, 3rd ed. (Princeton, NJ: Princeton University Press, 2015), as updated by the author, www.econ.yale.edu/~shiller/data.htm

The Growing Role of Fannie Mae and Freddie Mac in the U.S. Mortgage Market



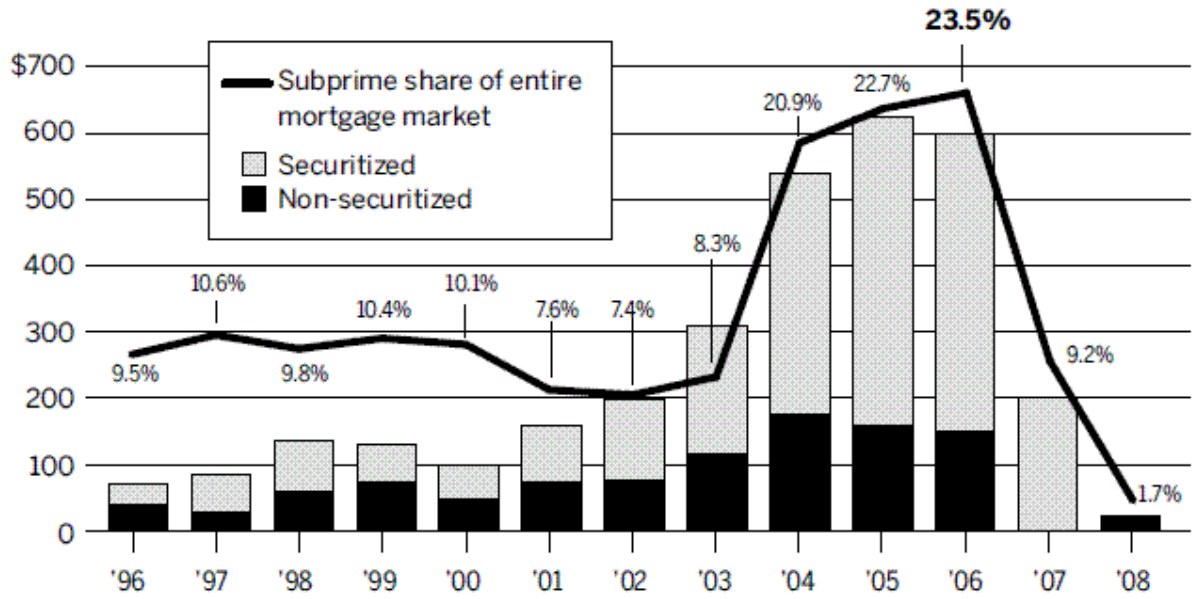
Sources: U.S. Federal Housing Finance Agency (2014) Annual Report to Congress; Federal Reserve Flow of Funds.

Notes: This chart plots the expansion of the two firms' single-family mortgage credit guarantee and investment portfolios. Statistics reflect single-family mortgages only. The category "Mortgage-backed security guarantees" measures agency mortgage-backed securities held by third parties. MBS stands for mortgage-backed securities. To avoid double counting, portfolio holdings exclude cross-holdings (that is, securities issued by either of Fannie Mae or Freddie Mac that are owned by the other). They also exclude government-guaranteed Federal Housing Administration loans. The online Appendix to our *Journal of Economic Perspectives* article at http://e-jep.org contains more details about the chart's construction.

Subprime Mortgage Originations

In 2006, $600 billion of subprime loans were originated, most of which were securitized. That year, subprime lending accounted for 23.5% of all mortgage originations.

IN BILLIONS OF DOLLARS



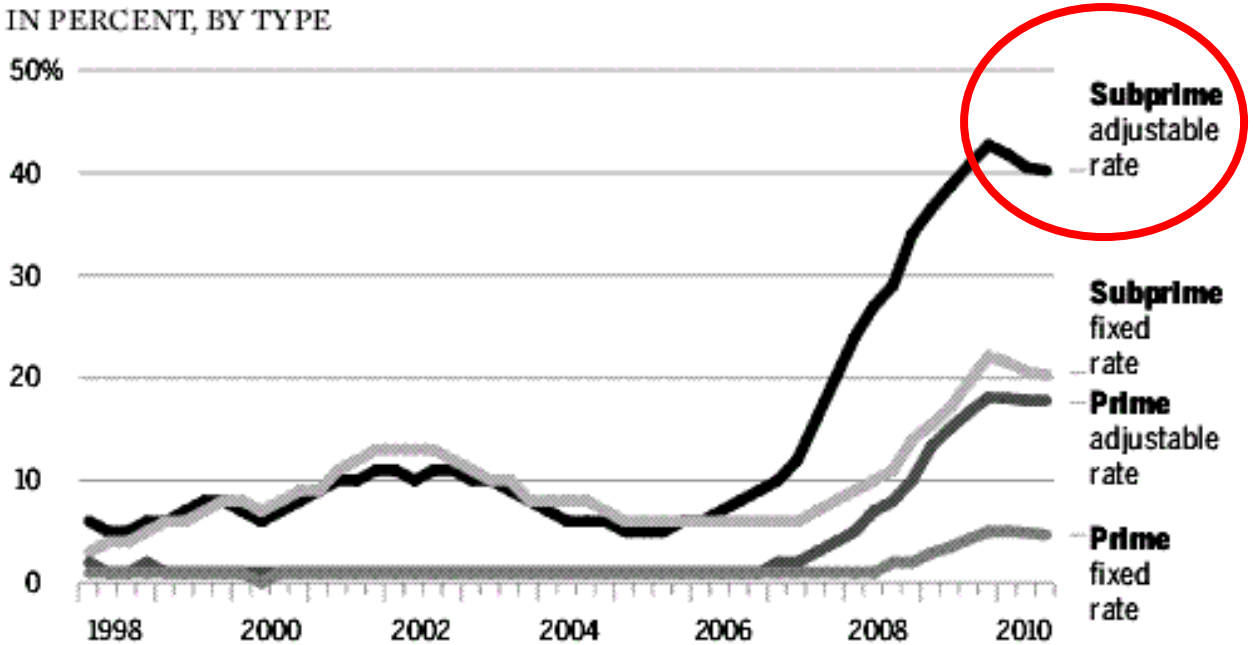
NOTE: Percent securitized is defined as subprime securities issued divided by originations in a given year. In 2007, securities issued exceeded originations.

SOURCE: Inside Mortgage Finance

Mortgage Delinquencies by Loan Type

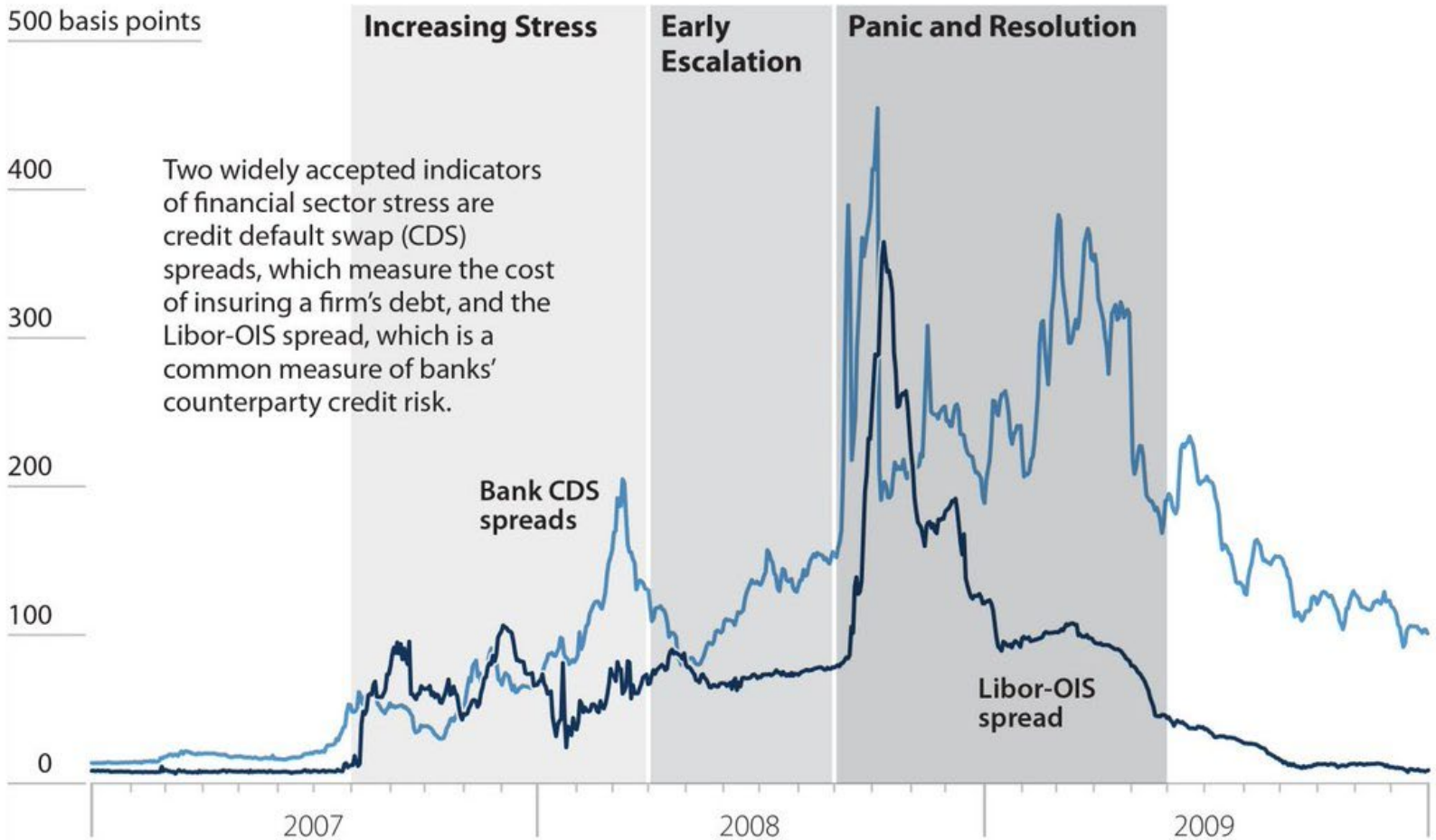
Serious delinquencies started earlier and were substantially higher among subprime adjustable-rate loans, compared with other loan types.

IN PERCENT, BY TYPE



NOTE: Serious delinquencies include mortgages 90 days or more past due and those in foreclosure.
SOURCE: Mortgage Bankers Association National Delinquency Survey

Phases of the 2007–2009 Global Financial Crisis as Reflected in Bank Credit Default Swap Spreads and Libor-OIS Spread

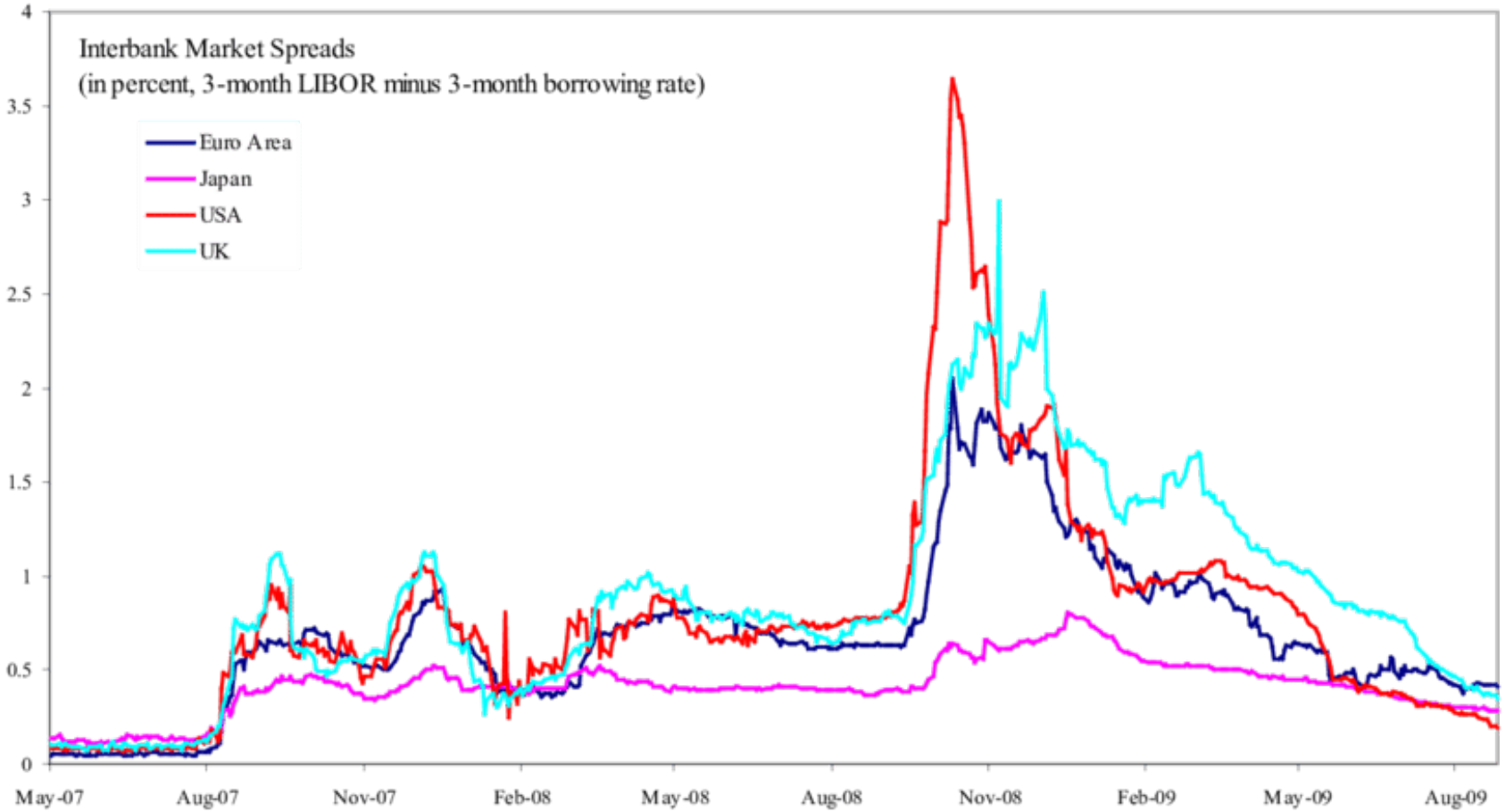


Notes: Credit default swap spreads are equal-weighted averages of JPMorgan Chase, Citigroup, Wells Fargo, Bank of America, Morgan Stanley, and Goldman Sachs. Libor-OIS spread shown is the spread between the 3-month London Interbank Offered Rate and the 3-month USD Overnight Indexed Swap rate.

Sources: Libor-OIS: Bloomberg Finance L.P.; bank CDS spreads: Bloomberg Finance L.P., IHS Markit

S 2.2.4 Contagion and financial panic

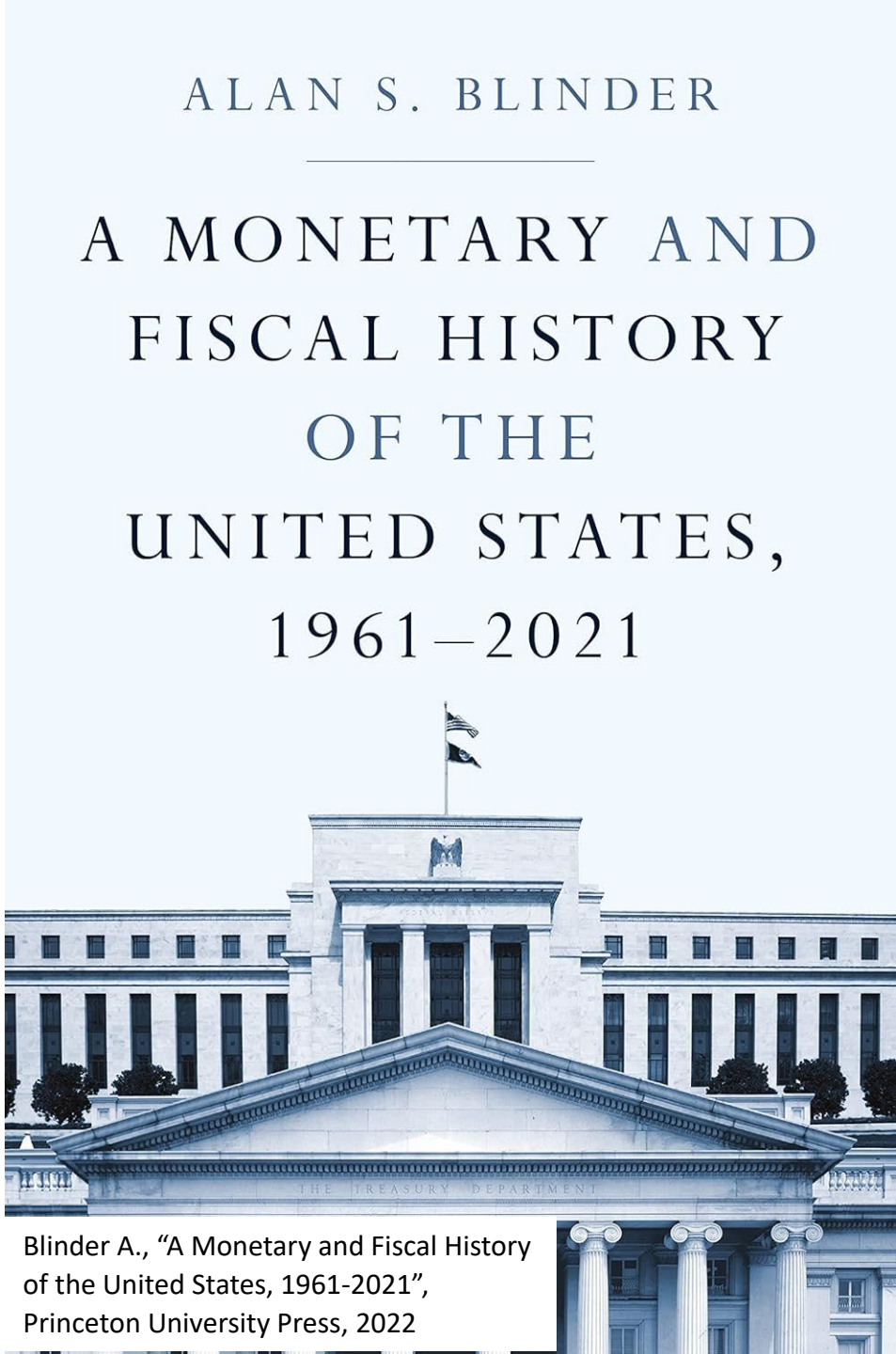
Crises spread quickly, first through lack of liquidity, and then through concerns on solvency and loss of confidence.



Source: Bloomberg.

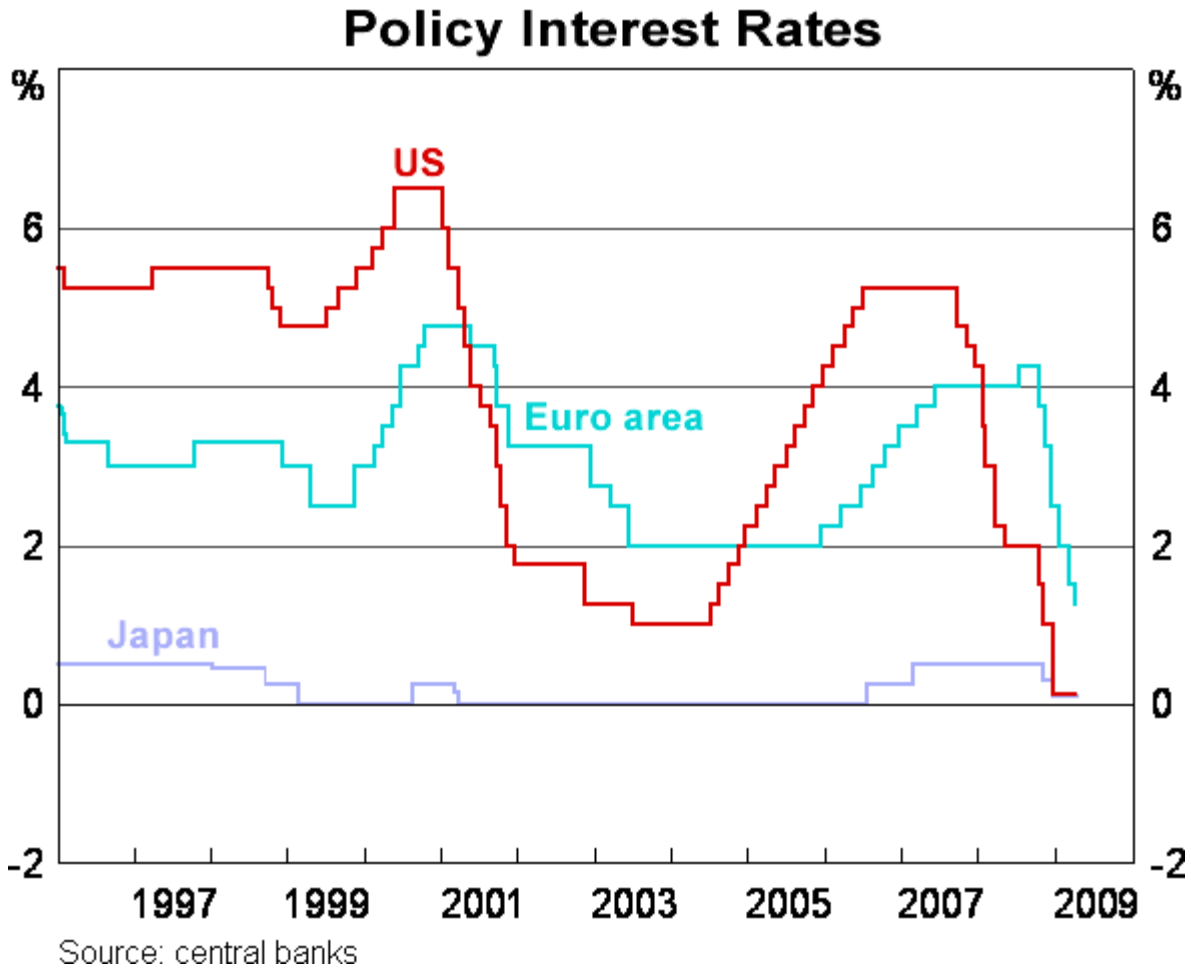
Chapters 13 to 15 - Lively account of the GFC, pointing to:

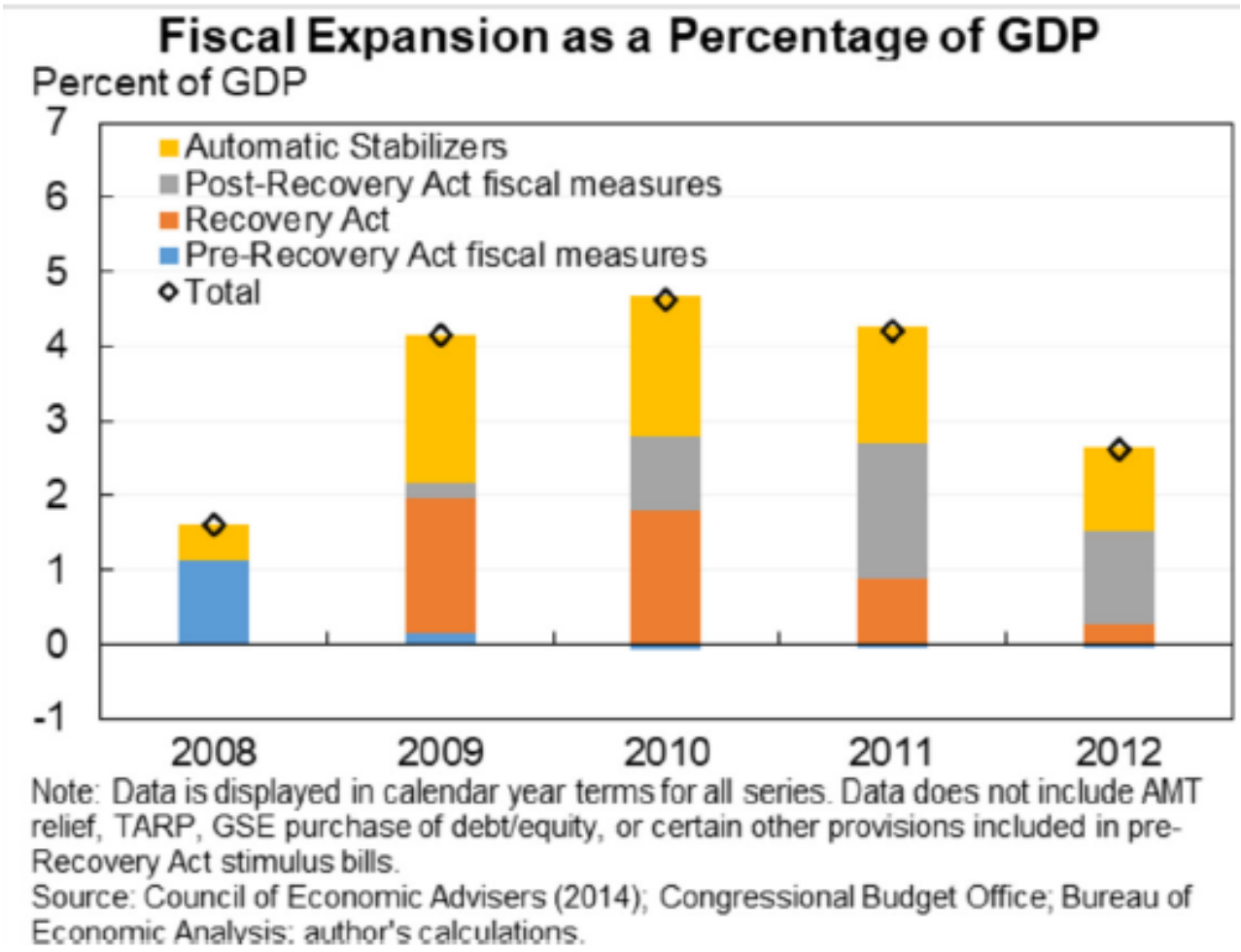
- Need for coordination between MP and fiscal policy (various “alphabet soup” programs
- Improvisation on many fronts (total size of programs, timing, implementation)
- Crossing of red lines (nationalization of banks, insurance cies, as only way to hold confidence)
- At the end, worked better than expected



Blinder A., “A Monetary and Fiscal History of the United States, 1961-2021”, Princeton University Press, 2022

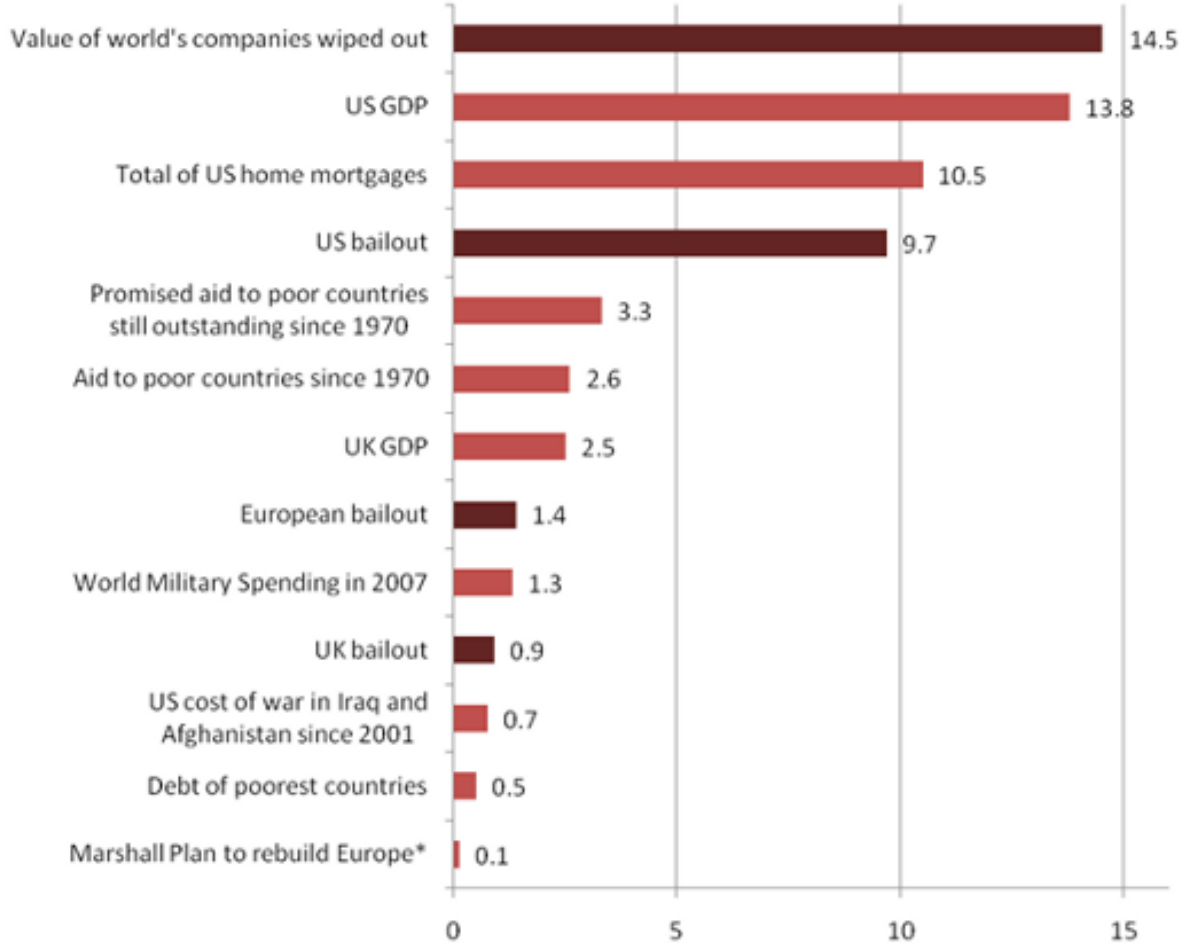
Responses to GFC: MP together with Fiscal P





www.globalissues.org

Global Financial Crisis: Losses and Bailouts for US and European Countries in Context ($ trillion)



* Adjusted for inflation

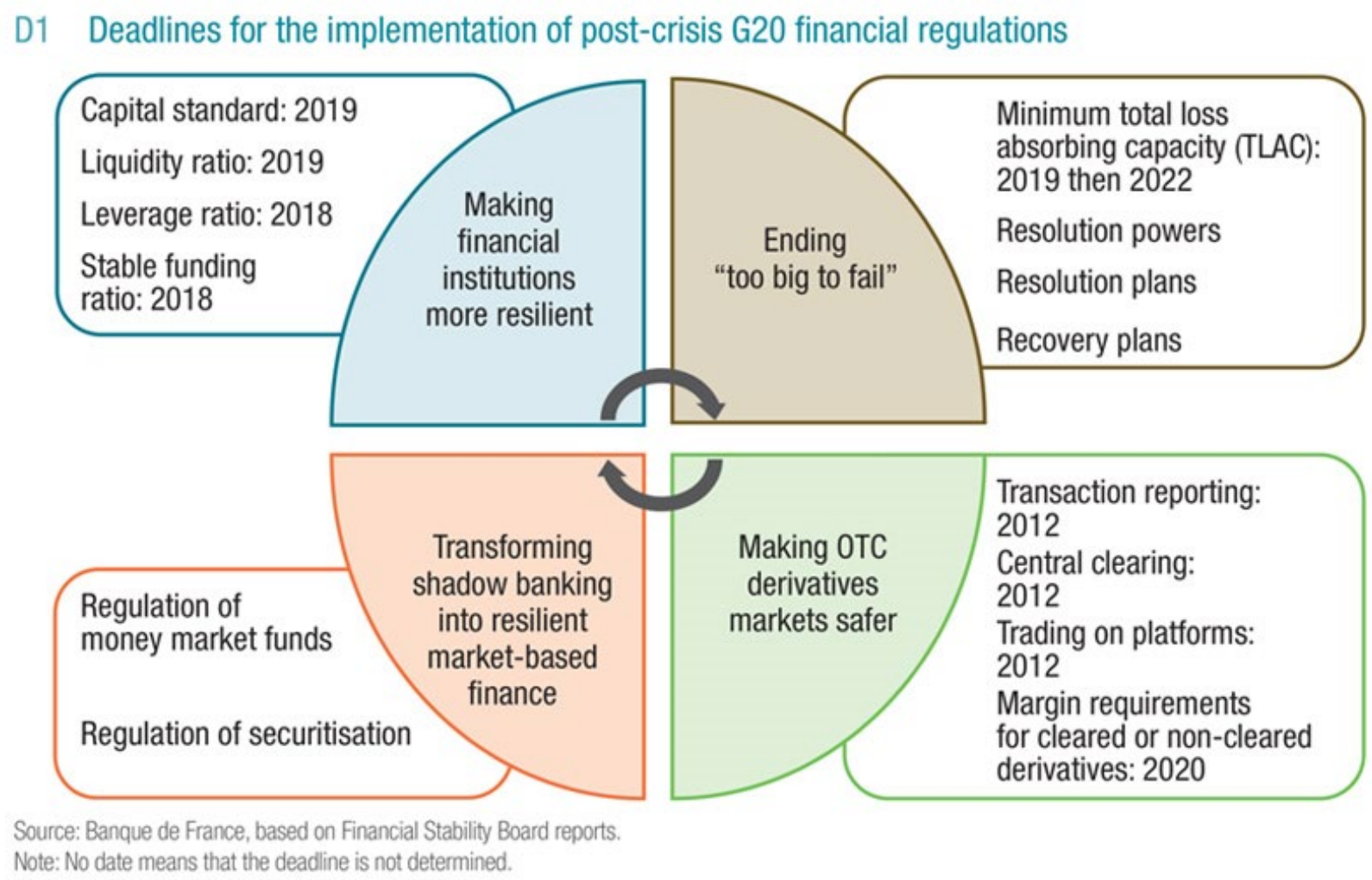
Sources: BBC, Bloomberg, UPI, globalissues.org, Feb 2009

Significant Fiscal Bailout Packages

- **Troubled Asset Relief Program** (TARP): Established by the United States government in 2008, TARP aimed to stabilize the financial system by purchasing troubled assets, particularly mortgage-backed securities, and equity from financial institutions.
- **Emergency Economic Stabilization Act** (EESA): This legislation authorized the implementation of TARP and provided funds for the bailout program. It also empowered the U.S. Treasury to inject capital into banks and other financial institutions.
- **Federal Reserve Emergency Programs**: The Federal Reserve implemented various emergency lending facilities to provide liquidity to financial institutions, stabilize markets, and support credit availability. These programs included the Term Auction Facility (TAF), the Commercial Paper Funding Facility (CPFF), and others.
- **Automotive Industry Bailout**: In 2008 and 2009, the U.S. government provided financial assistance to General Motors (GM), Chrysler, and their financing arms to prevent the collapse of the automotive industry. This assistance included loans, equity investments, and restructuring support.
- **Bank Bailouts in Europe**: Various European governments provided bailout funds to struggling banks to prevent their collapse. For example, the UK government nationalized Northern Rock, and Ireland established the National Asset Management Agency (NAMA) to purchase distressed assets from Irish banks.
- **Quantitative Easing** (QE): Central banks, including the Federal Reserve, the European Central Bank (ECB), and the Bank of England, implemented QE programs to inject liquidity into the financial system and lower long-term interest rates. These programs involved purchasing government bonds and other assets from the market.
- **International Monetary Fund (IMF) Bailouts**: The IMF provided financial assistance to several countries affected by the global financial crisis, including Greece, Ireland, Portugal, and others. These bailout programs aimed to stabilize economies, restore confidence, and implement necessary reforms.
- **Troubled Asset Revolving Facility (TARF):** South Korea implemented TARF in 2008 to provide liquidity support to its financial institutions facing funding difficulties due to the global financial crisis.

Regulatory responses (more later)

- In 2010, the Dodd–Frank Wall Street Reform and Consumer Protection Act was enacted in the US
- The Basel III new accords on capital, liquidity, leverage, TBTF, transparency on derivatives, etc new standards were also worked out at BIS and being adopted by countries around the world



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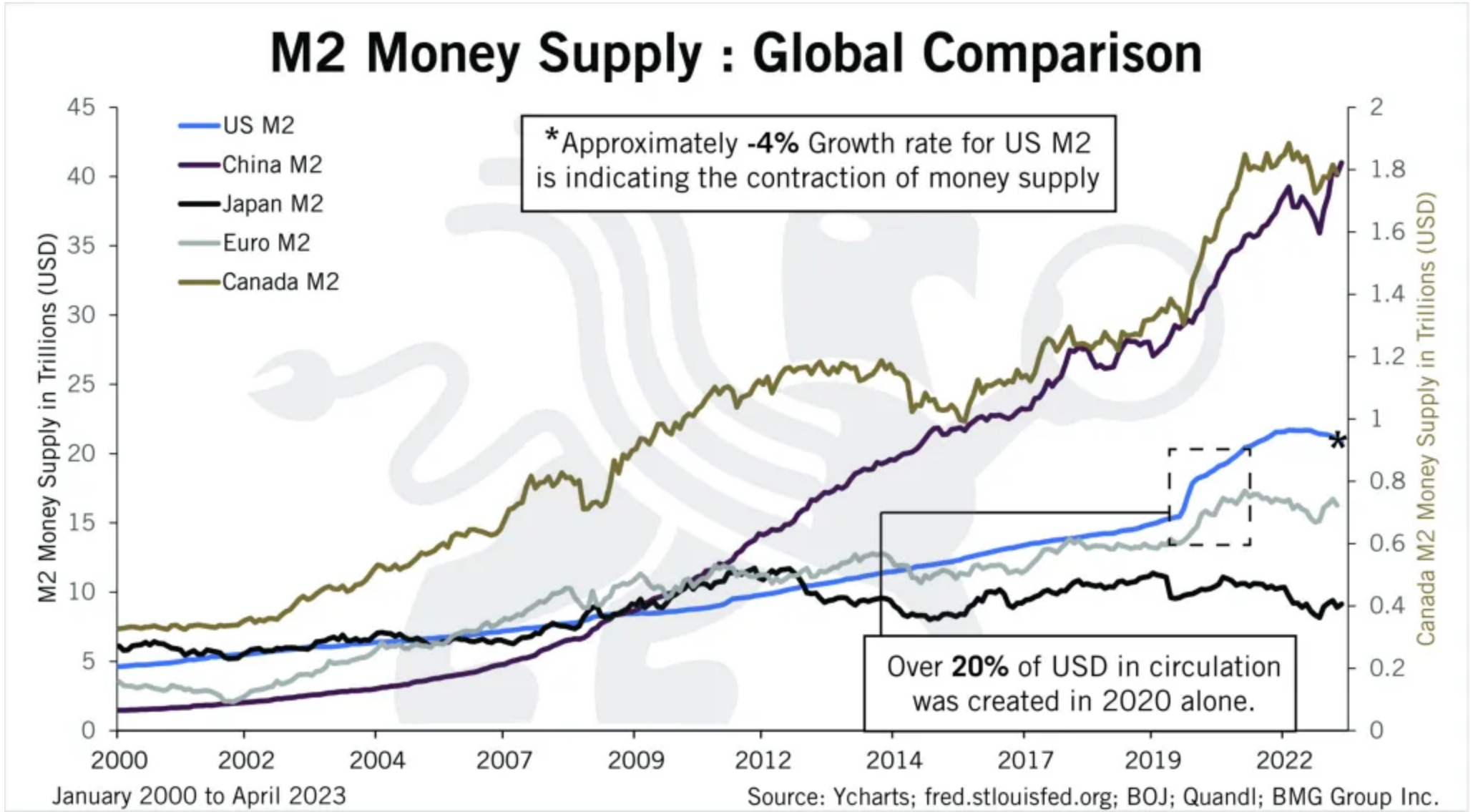
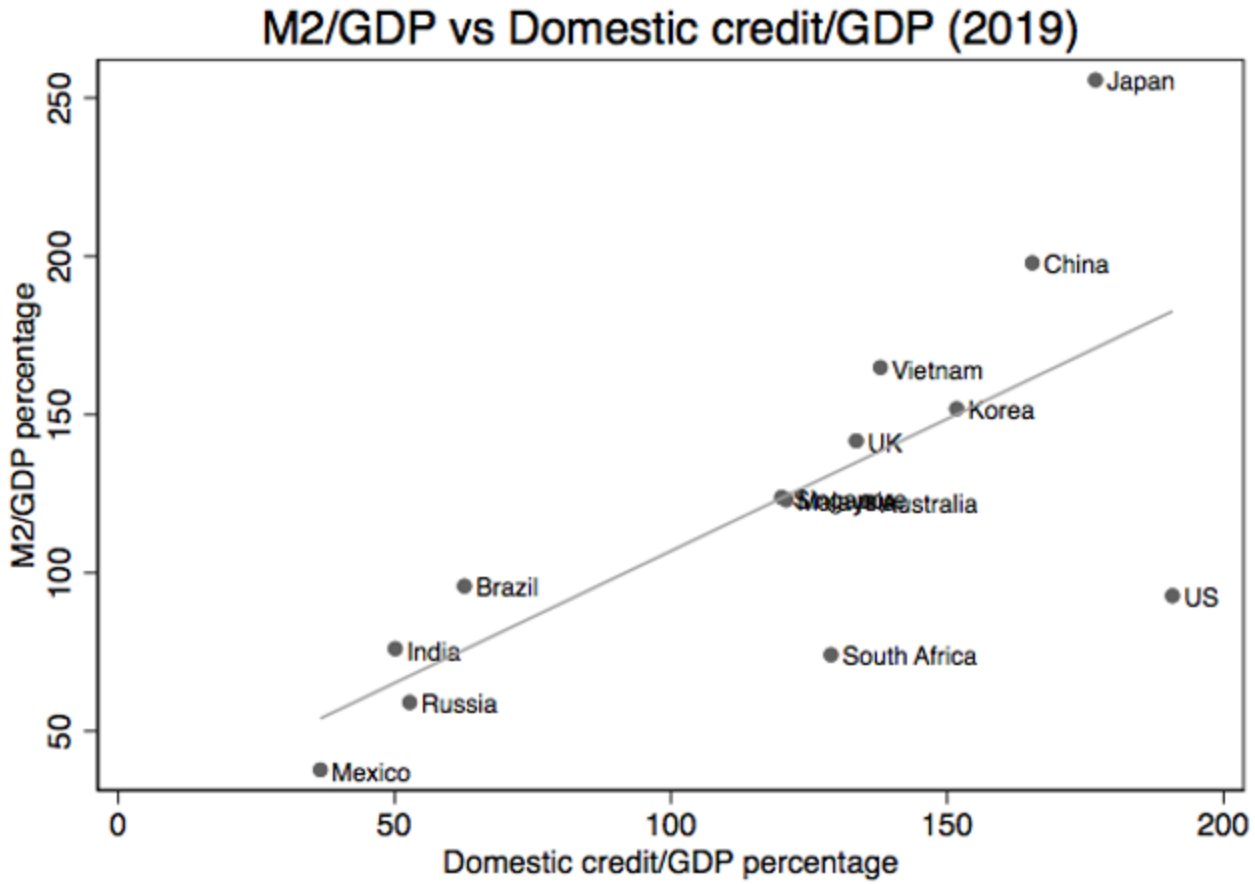
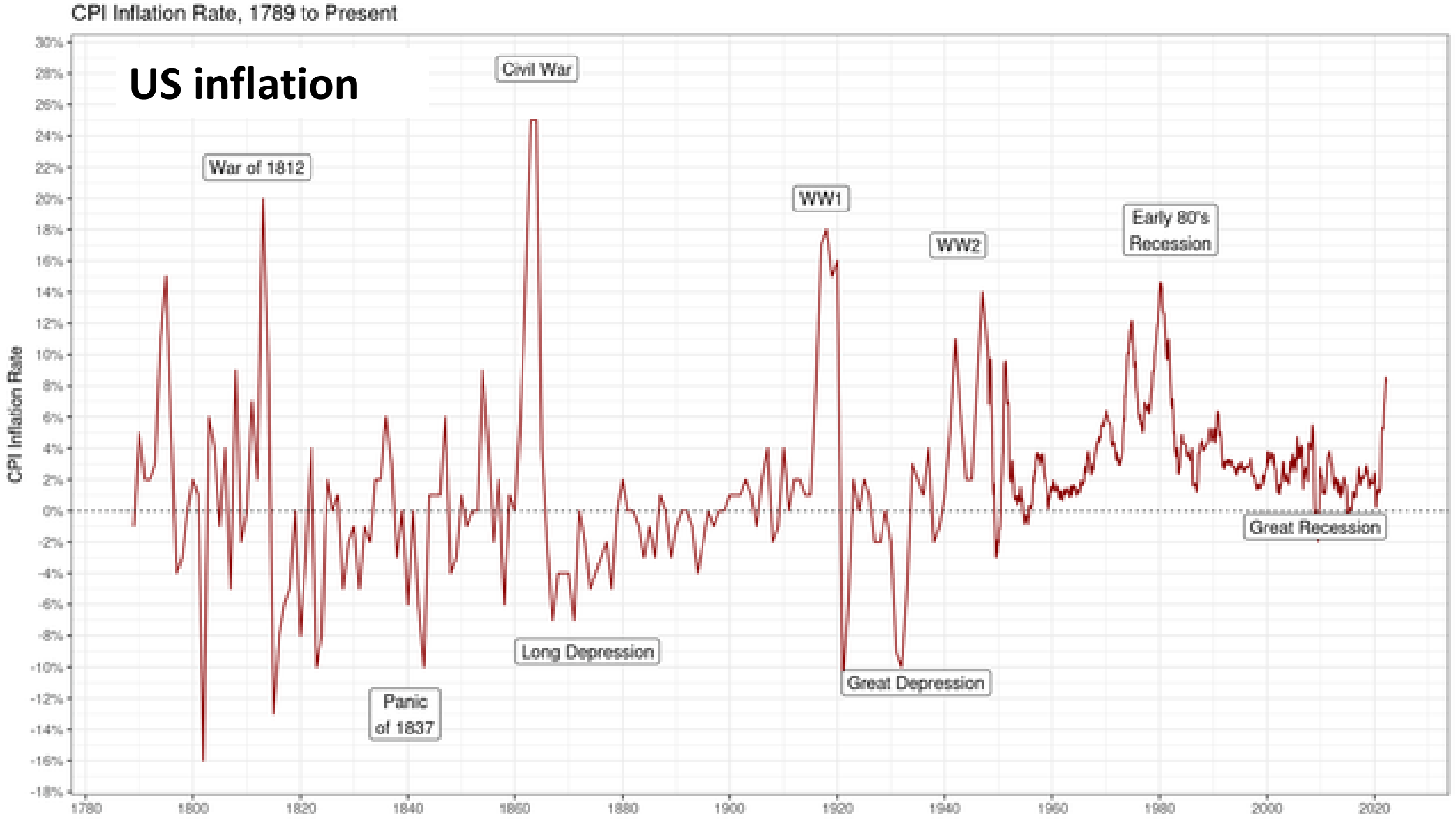

M2 Money Supply : Global Comparison
US M2
China M2
Japan M2
Euro M2
Canada M2
*Approximately -4% Growth rate for US M2 is indicating the contraction of money supply
Over 20% of USD in circulation was created in 2020 alone.
M2 Money Supply in Trillions (USD)
Canada M2 Money Supply in Trillions (USD)
0
5
10
15
20
25
30
35
40
45
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2000
2002
2004
2007
2009
2012
2014
2017
2019
2022
January 2000 to April 2023
Source: Ycharts; fred.stlouisfed.org; BOJ; Quandl; BMG Group Inc.


M2/GDP vs Domestic credit/GDP (2019)
M2/GDP percentage
50
100
150
200
250
Domestic credit/GDP percentage
0
50
100
150
200
Japan
China
Vietnam
Korea
UK
Australia
Brazil
India
Russia
Mexico
South Africa
US

US inflation



Source: Reddit