

THE FUTURE OF THE MONETARY SYSTEM

2023 SDA Bocconi Lecture Series

Alberto Gallo



1. MACROECONOMICS IN ONE LESSON

The Debt Supercycle: Post War Economics

A Brief History of Capitalism: From the Pursuit of Happiness to Greed Is Good

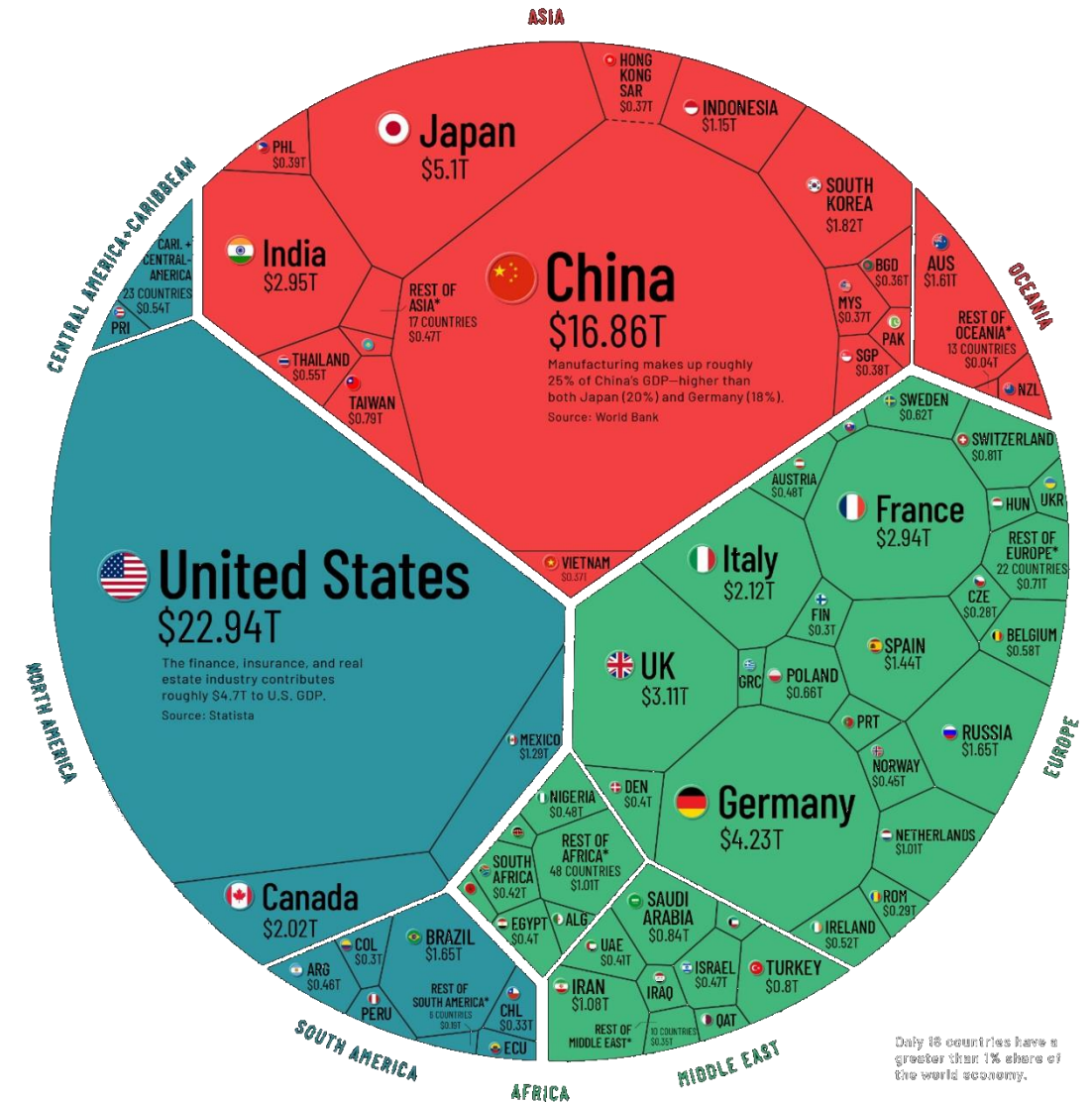
<p>Economic Theory</p>	<p>Adam Smith</p> 	<p>John M. Keynes</p> <p><i>“Capitalism is the astounding belief that the most wickedest of men will do the most wickedest of things for the greatest good of everyone.”</i></p>	<p>Milton Friedman</p> <p><i>“A society that puts equality before freedom will get neither. A society that puts freedom before equality will get a high degree of both.”</i></p>	<p>----- Globalisation -----></p> <p>Central Banks Masters of the Universe</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="1337 396 1719 571"> <p>Alan Greenspan (Jackson Hole, 2005) <i>“History has not dealt kindly with the aftermath of protracted periods of low risk premiums.”</i></p> </div> <div data-bbox="1745 396 2102 571"> <p>Yellen/Draghi/ Kuroda/Carney/ Powell/Lagarde</p> </div> </div>	<p>Future of Capitalism</p> 
<p>Policy Expressions & Events</p>	<ul style="list-style-type: none"> - Industrial Revolution - Great Depression - World War 2  	<ul style="list-style-type: none"> - Bretton Woods - Mixed economies/ Managed capitalism - Stagflation  	<ul style="list-style-type: none"> - Bretton Woods breaks down - Freddie/Fannie - Laissez-faire revival - Ronald Reagan’s “trickle down” 	<ul style="list-style-type: none"> - WTO founding - Introduction of the Euro - Greenspan put (moral hazard) - Financial Crisis - Saved by QE - Market bubbles/ Inequality stress    	<ul style="list-style-type: none"> - Universal Basic Income - Bail-inable Debt - “QE for the people” - Protectionism - Debt Cancellation - Covid - Lockdowns - Stimulus - Inflation
<p>Reflection in Society</p>	<p>Thomas Jefferson (U.S. Constitution, 1776) <i>“We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.”</i></p>	<p>Ayn Rand (<i>Atlas Shrugged</i>, 1957)</p> <p><i>“I refuse to apologize for my ability – I refuse to apologize for my success – I refuse to apologize for my money. If this is evil, make the most of it.”</i></p>  <p>C.S. Carroll (<i>Alice in Wonderland</i>, 1865) <i>“’tis love, ’tis love that makes the world go round.”</i></p> 	<p>Gordon Gekko (<i>Wall Street</i>, 1987)</p> <p><i>“Greed, for the lack of a better word, is good.”</i></p> 		<ul style="list-style-type: none"> - Bitcoin/Cryptos - E-Money 

How Do We Know Whether the Economy Is Doing Well?

Gross Domestic Product (GDP)

GDP is the market value of all final goods and services produced within a country in a given period of time.

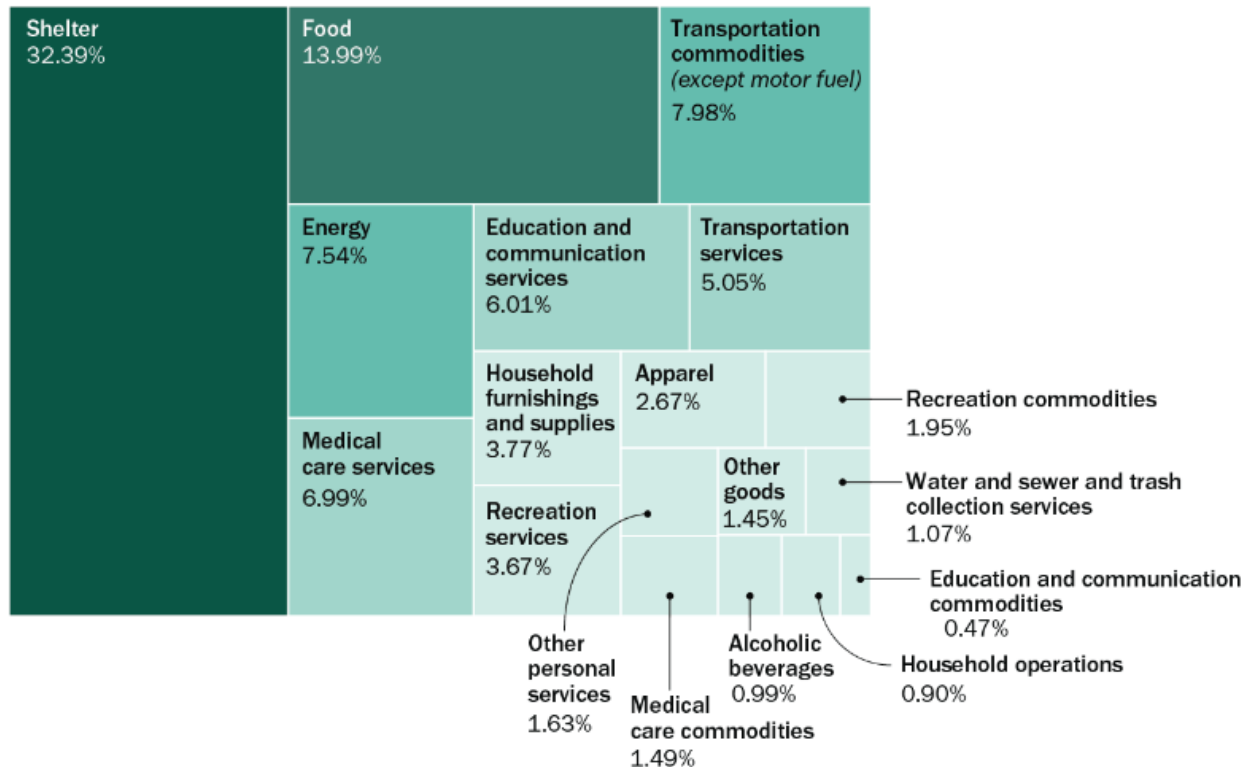
- **“GDP is the market value...”**
 - Production valued at market prices
- **“... of all final goods and services...”**
 - Records the value of final, not intermediate, goods and services (the value of a tyre in a car is counted only once)
 - Includes tangibles (food, semiconductors, cars) and intangibles (haircuts, housecleaning, car dealer’s services)
- **“... produced...”**
 - Includes stuff produced now, not transactions involving goods produced in the past (second-hand sales excluded)
- **“... within a country in a given period of time.”**
 - Measures the value of things produced within the borders of country in a specific interval of time (year or quarter)



Inflation

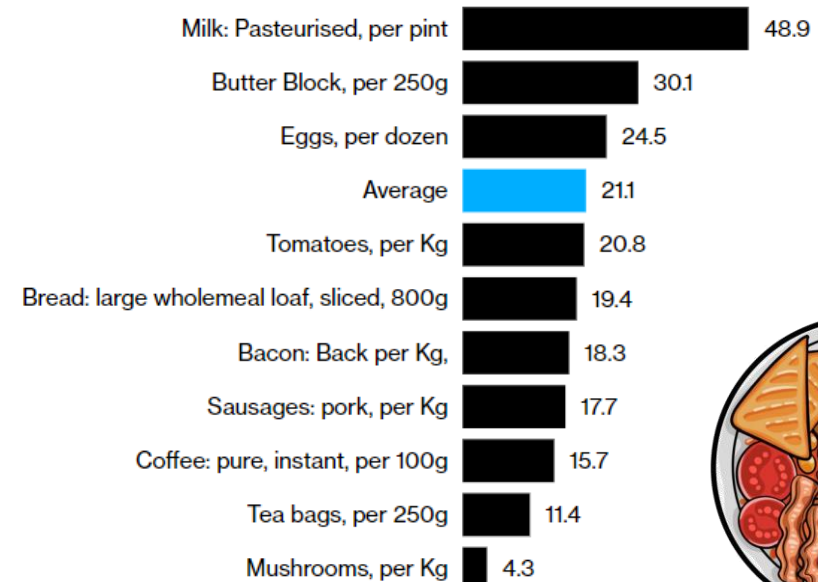
Inflation is the rate of increase in prices over a given period of time. Consumers' cost of living depends on the prices of many goods and services and the share of each in the household budget. To measure the average consumer's cost of living, government agencies conduct household surveys to identify a **basket of commonly purchased items** and track over time the cost of purchasing this basket. The cost of this basket at a given time expressed relative to a base year is the **consumer price index (CPI)**, and the percentage change in the CPI over a certain period is **consumer price inflation**, the most widely used measure of inflation.

US CPI Category Weights



Bloomberg English Breakfast Index

Nov 2022 YoY Price Change %



How Do We Know Whether the Economy Is Doing Well?

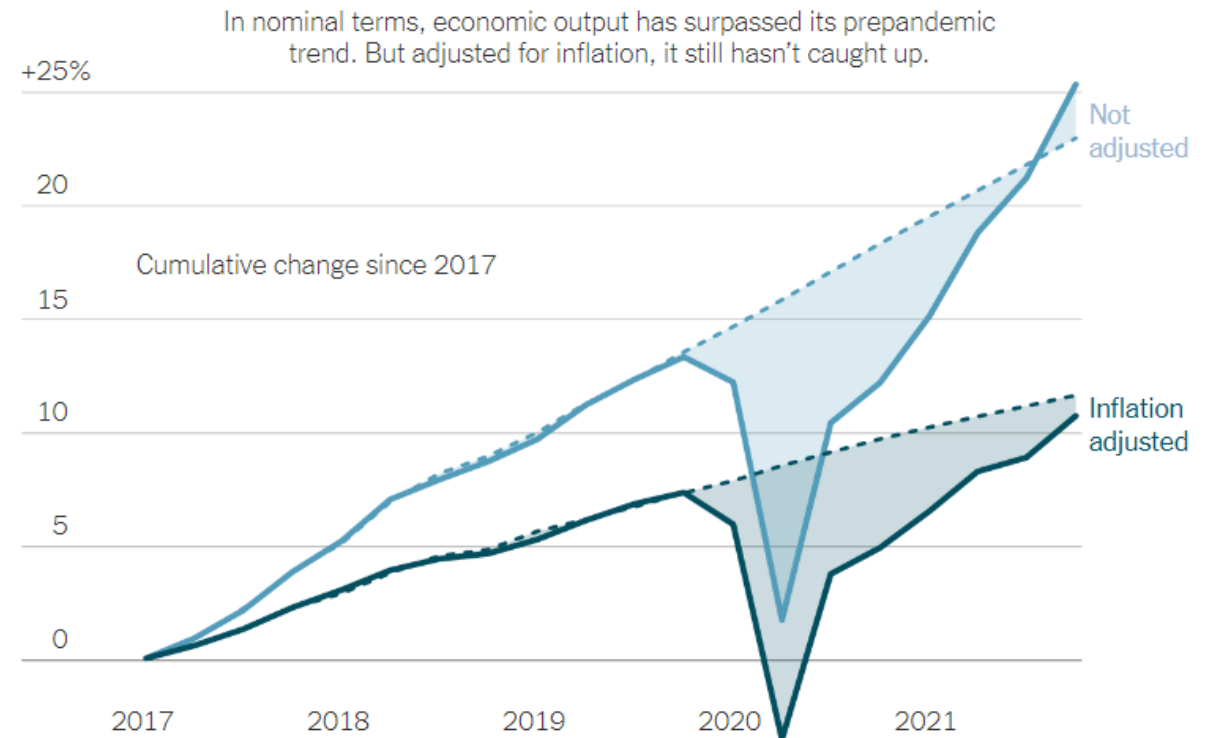
GDP and Inflation: Nominal vs Real GDP

GDP is the market value of all final goods and services produced within a country in a given period of time.

- **Nominal GDP** measures these values using current prices
- **Real GDP** measures these values using the prices of a base year

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}}$$

US Nominal and Real GDP vs Pre-pandemic Trend
Jan 2022 data



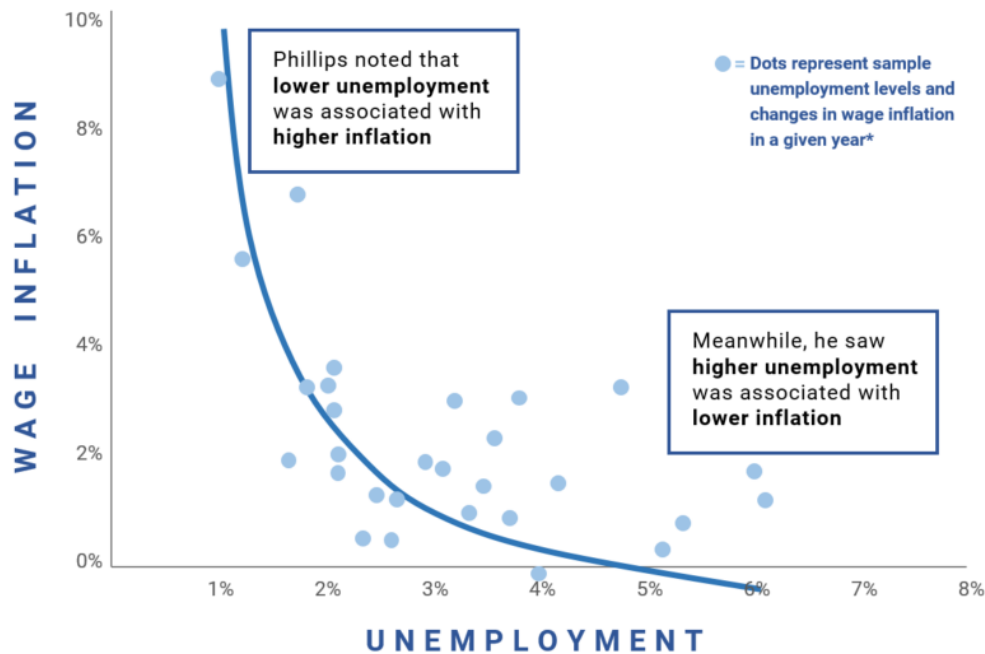
How Do We Know Whether the Economy Is Doing Well?

Unemployment

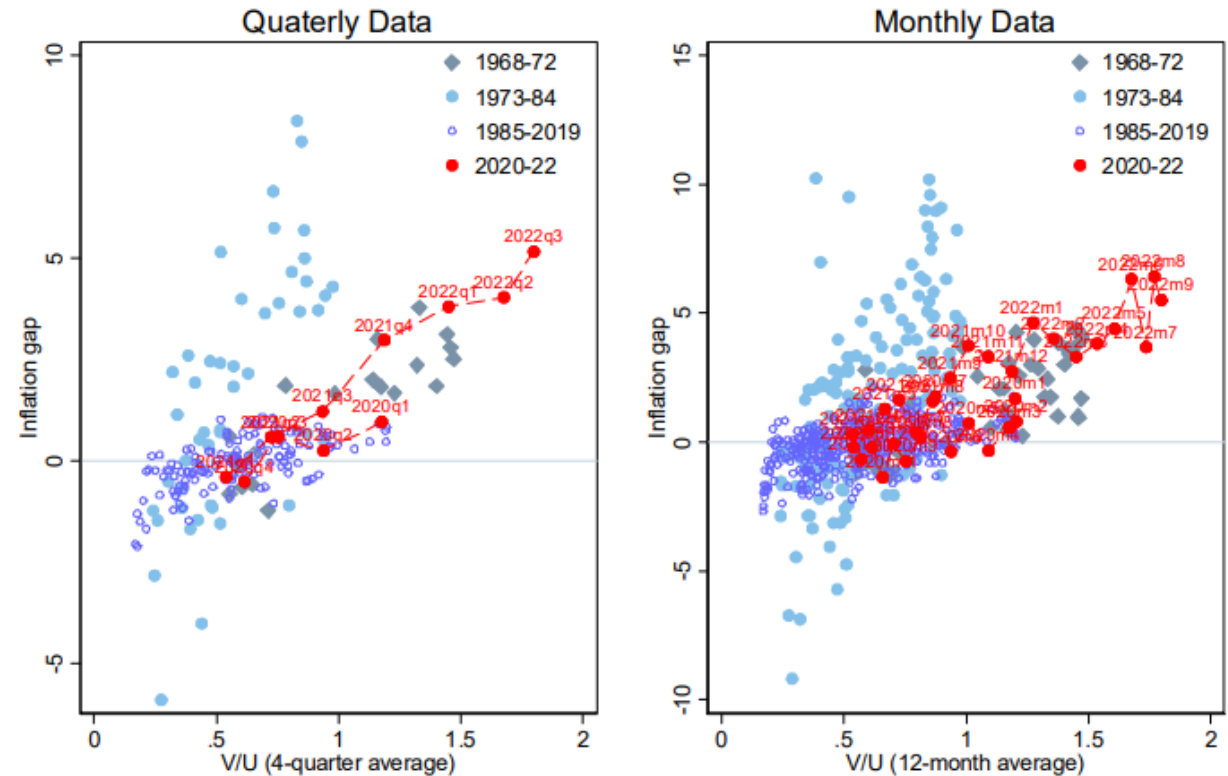
The **unemployment rate** is the **percentage of the labour force that is looking for a job**. The labour force is only a portion of the total population. The ratio of the labour force to the working-age population is called the **labour force participation rate**.

UNDERSTANDING THE PHILLIPS CURVE

In the 1950s, A.W. Phillips plotted decades' worth of data on wage inflation and unemployment. He noticed an inverse relationship between these two indicators.

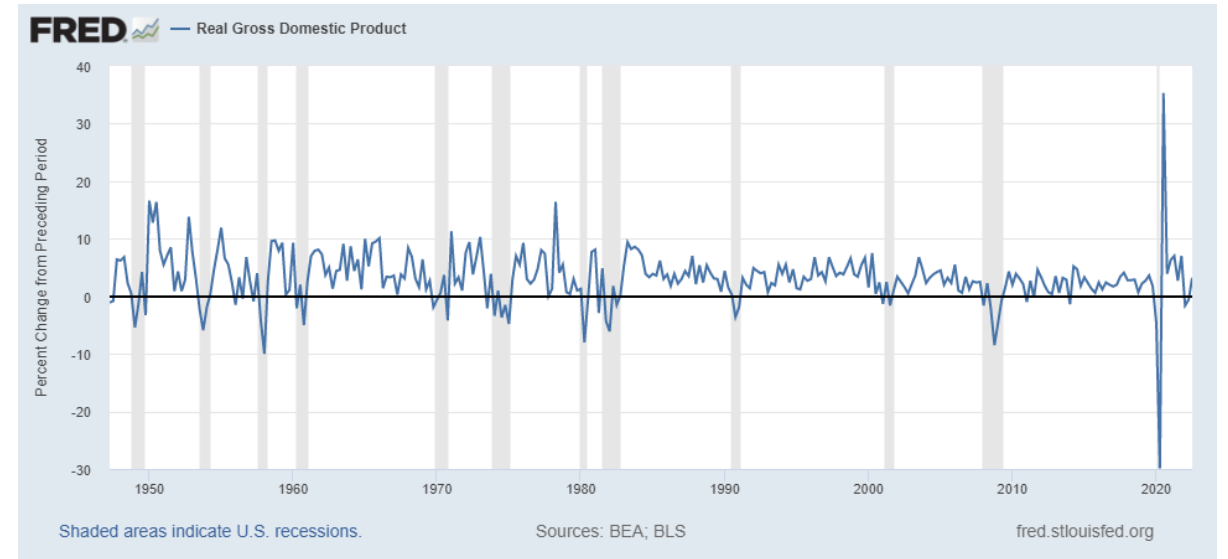
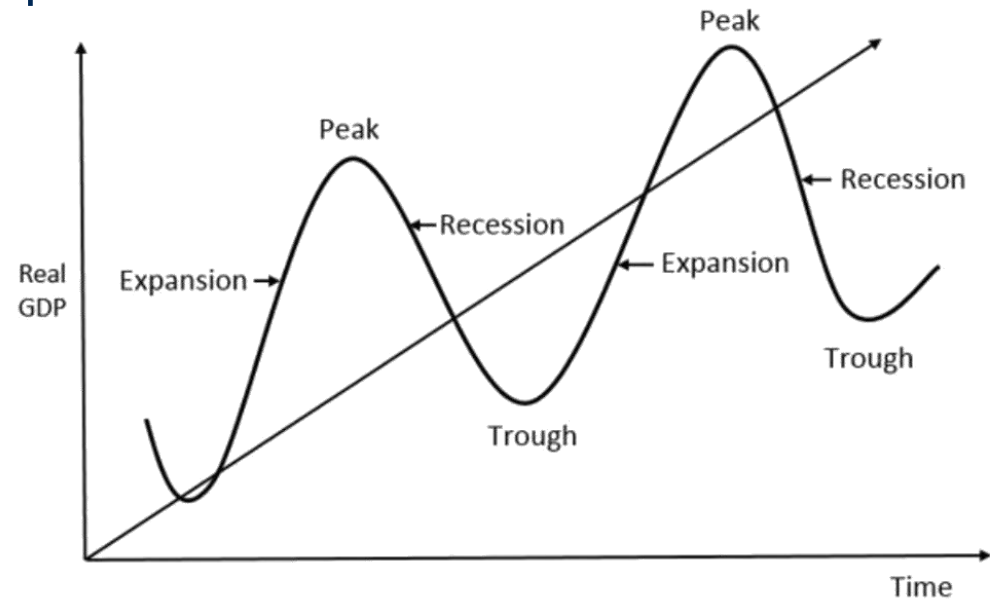


Is The Phillips Curve Re-steepening? US Inflation Gap vs Ratio of Vacancies to Unemployed



The Business Cycle

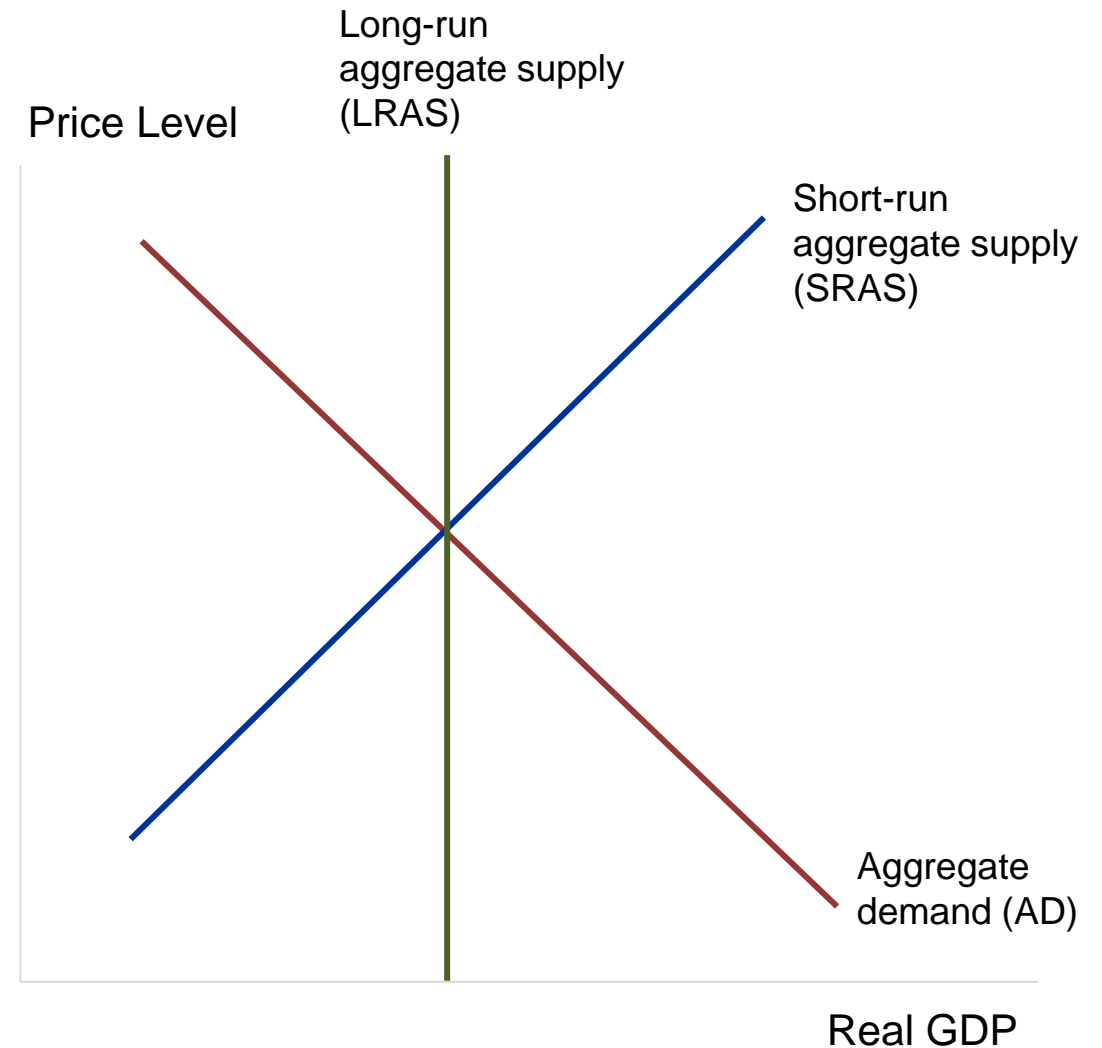
Expansion and Recession



How Are GDP Growth, Inflation and Unemployment Related?

The AD-AS Model

- **Aggregate demand** is the total demand for goods and services in an economy at any given price level in a given period
 - $\text{Aggregate Demand (AD)} = \text{Consumption (C)} + \text{Investment (I)} + \text{Government Spending (G)} + \text{Export (X)} - \text{Import (M)}$
- **Aggregate supply** is the total amount of goods and services available in an economy at a given price level in a given period
 - **Short-run aggregate supply (SRAS):** Quantity supplied increases as prices rise
 - **Long-run aggregate supply (LRAS):** Fixed value; shift in LRAS requires changes in factors of production

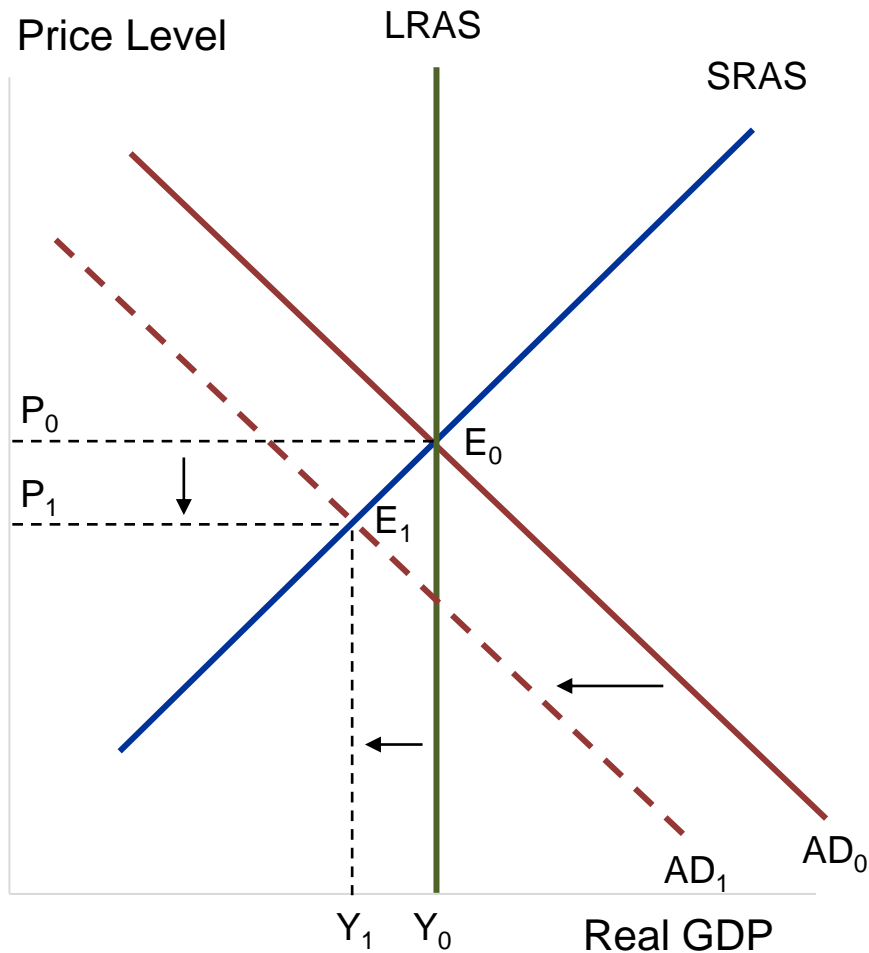


How Are GDP Growth, Inflation and Unemployment Related?

The AD-AS Model

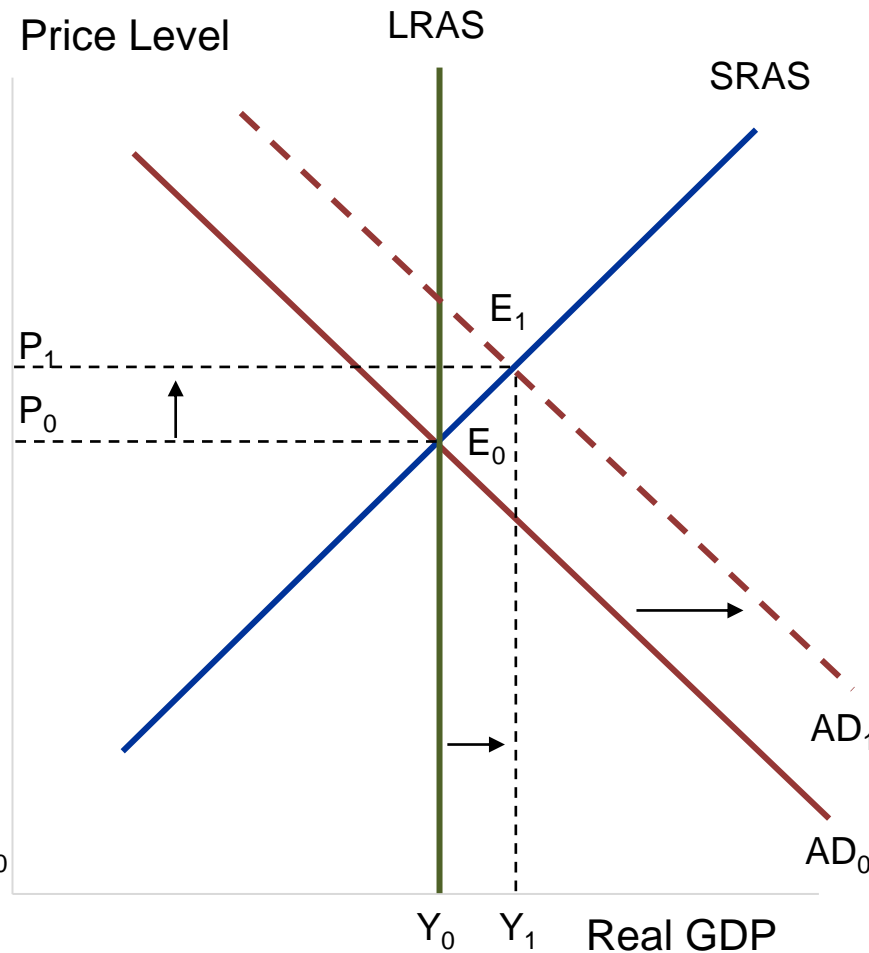
Recessionary Gap

AD and AS intersect at a short-run equilibrium below potential GDP



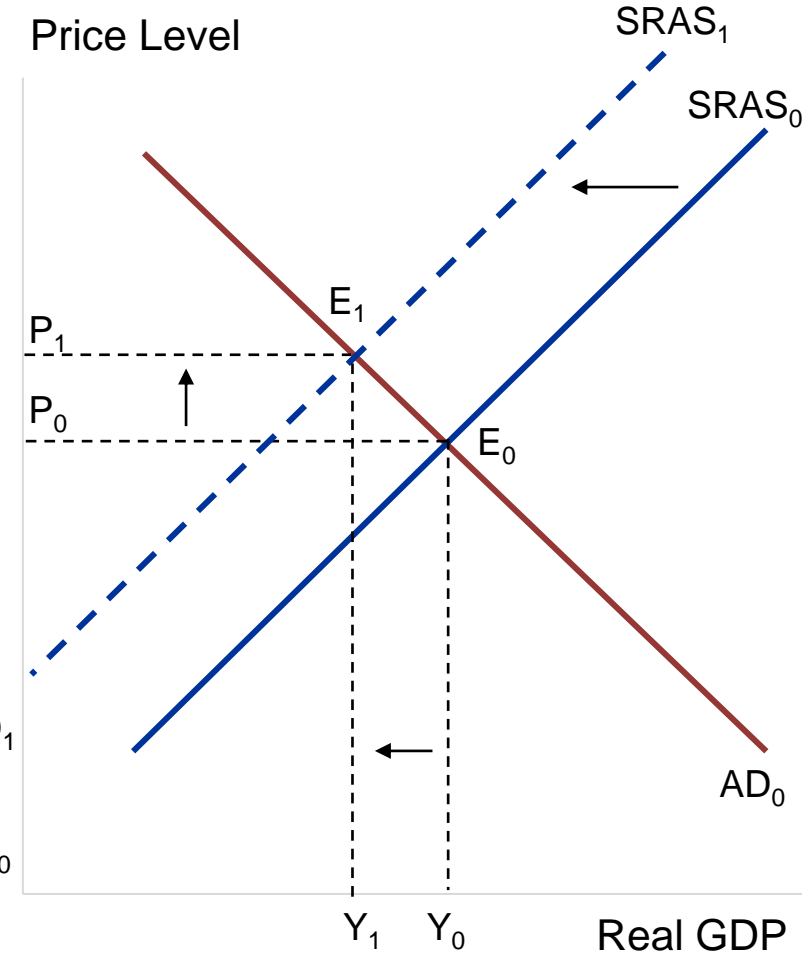
Inflationary Gap

Short-run equilibrium is above potential GDP, putting upward pressure on prices



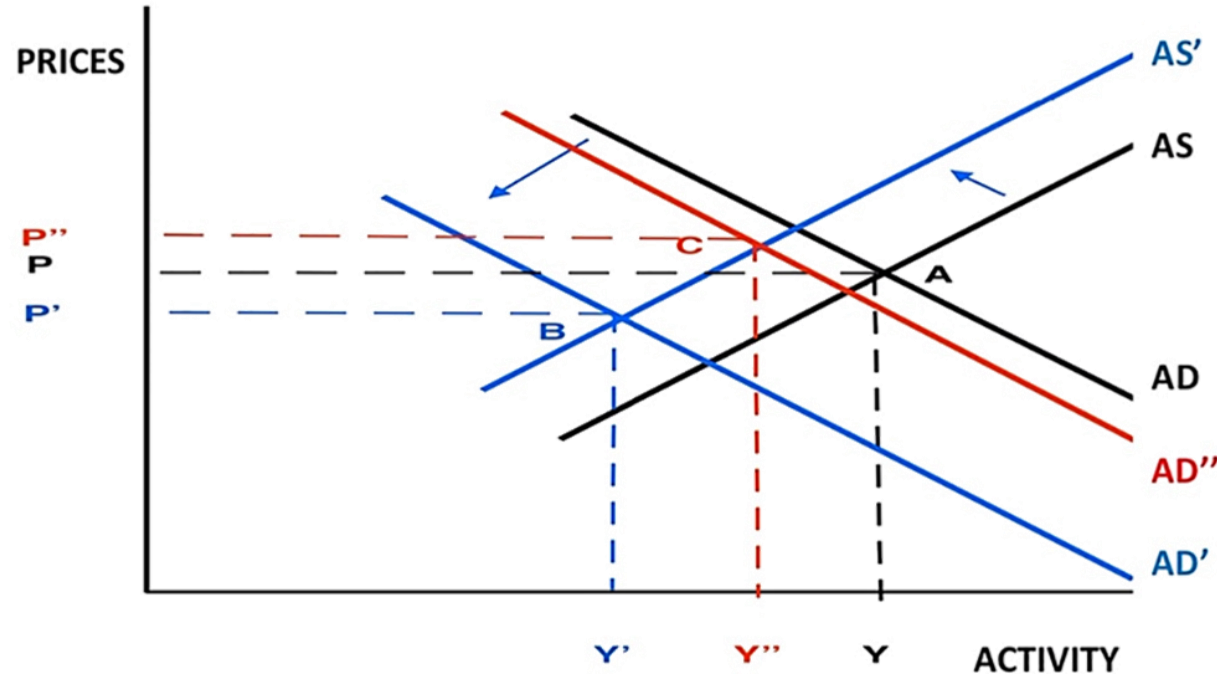
Stagflation

High inflation, slow economic growth and high unemployment as AS contracts



Covid Shocks Explained in the AD-AS Framework

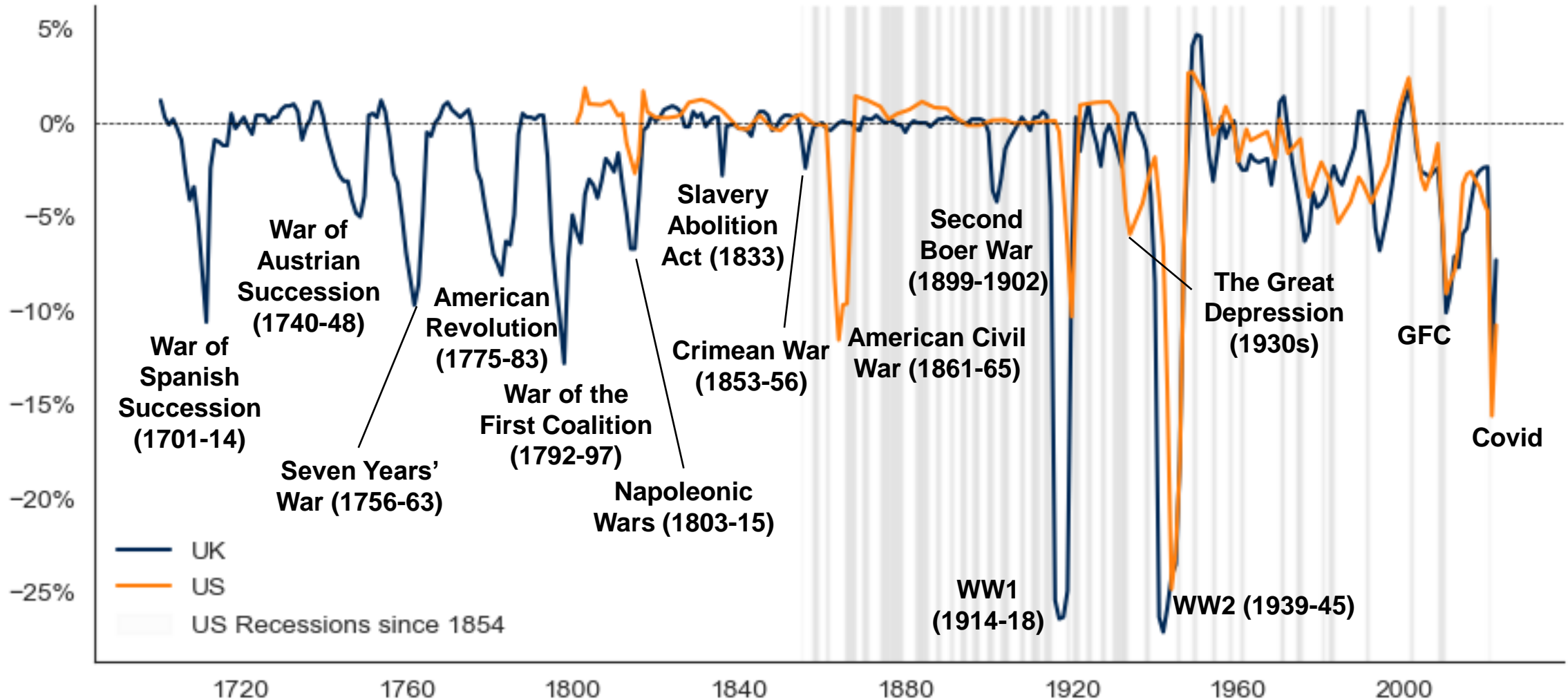
Shocks to Supply/Demand and Support Measures to Sustain Demand



The upward line AS and downward line AD (in black) trace the aggregate supply and aggregate demand before the crisis with A as equilibrium between Y (production level) and P (prices). The supply shock shifts the AS line to AS' , and the subsequent demand moves the AD line to AD' (both in blue) with a new equilibrium B and drops in production ($Y-Y'$) and prices ($P-P'$). Policy support brings back the demand to line AD'' (in red) closer to AD (and C closer to A) with a smaller recession ($Y-Y''$) while the drop in prices ($P-P''$) reflects first a deflationary effect and a subsequent reflation, depending on the speed of policy reactions with a rather inelastic supply

What Governments Do

Budget Deficits for US and UK 1700-2021



What Governments Do

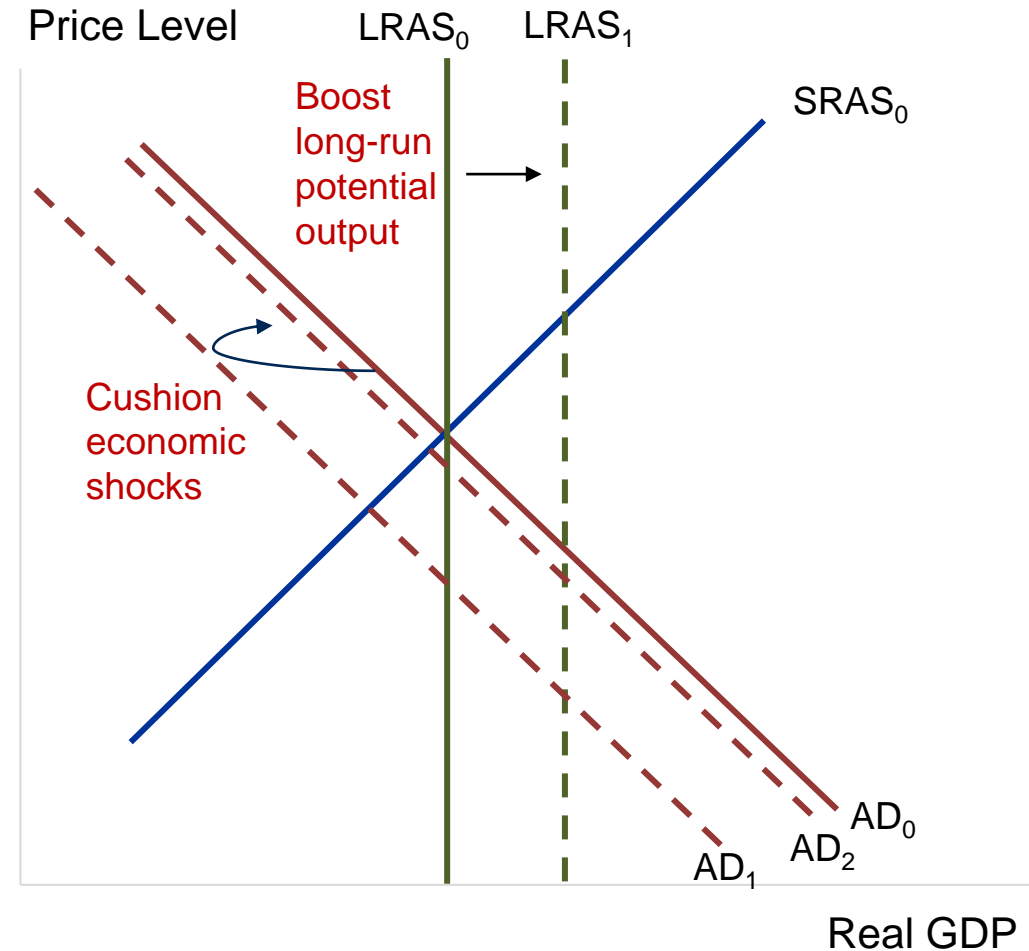
Government and GDP

1. Stabilise GDP around its normal trend

- Covid stimulus
 - Direct cash payout
 - Furlough scheme
 - Debt moratoriums
- Energy crisis:
 - Fuel subsidies
 - Retail/wholesale price caps

2. Boost long-run potential GDP growth

- Infrastructure plans
- Subsidies for R&D
- Funding for education



More Government Spending, More Growth

What's the Catch?

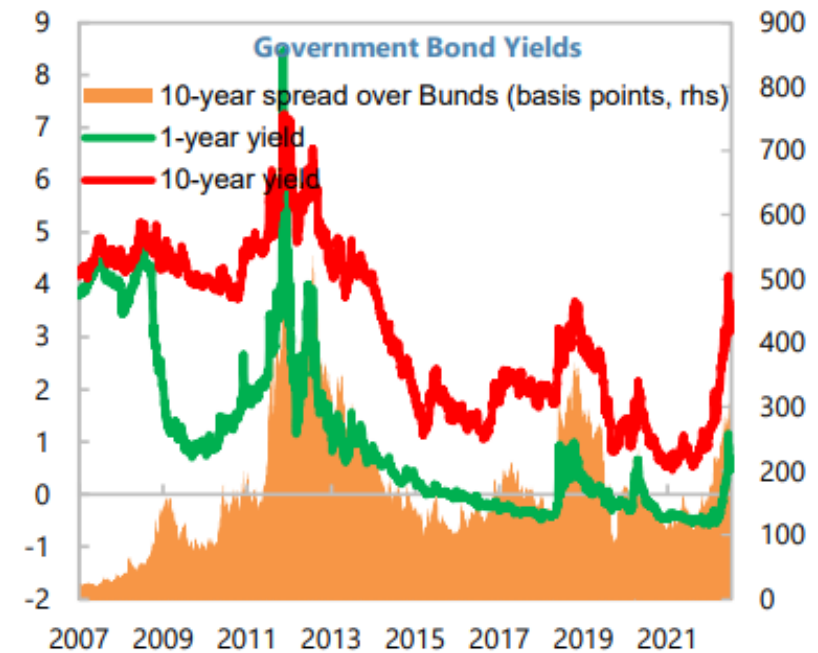
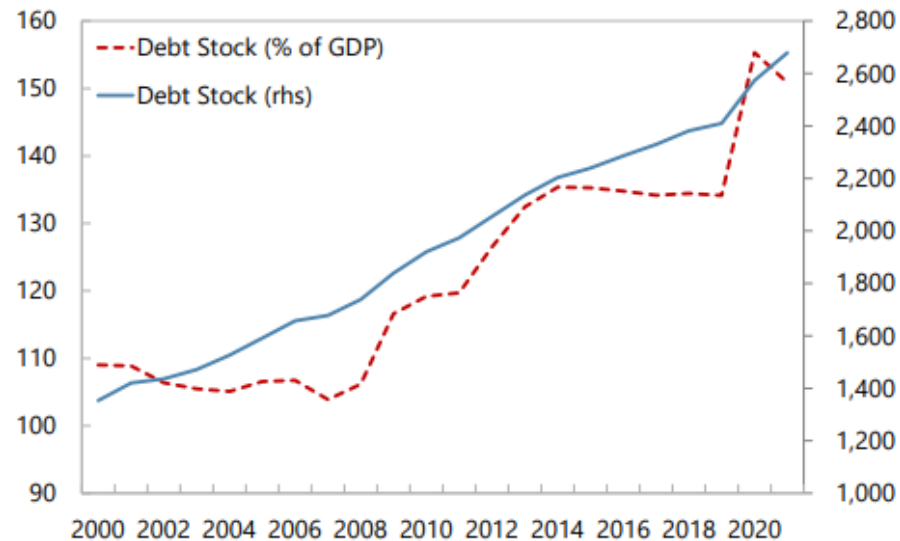
Figure All.1. Italy: Public DSA Risk Assessment

Heat Map

Debt level ^{1/}	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Gross financing needs ^{2/}	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Debt profile ^{3/}	Market Perception	External Financing Requirements	Change in the Share of Short-Term Debt	Public Debt Held by Non-Residents	Foreign Currency Debt

Debt Stock

(€ Billion and in percent of GDP)



2. MONETARY POLICY AND CENTRAL BANKS

What Is Money?

The Use of Money and Its Evolution

The functions of money:

- Medium of exchange for buying things
- Unit of account for pricing
- Store of value for saving



Commodity Money

An object made of something that had a market value, such as seashells or gold coins



Representative Money

Banknotes that could be swapped against a certain amount of gold or silver



Fiat Money

Money that is declared legal tender and issued by a central bank, which cannot be converted into, for example, a fixed weight of gold



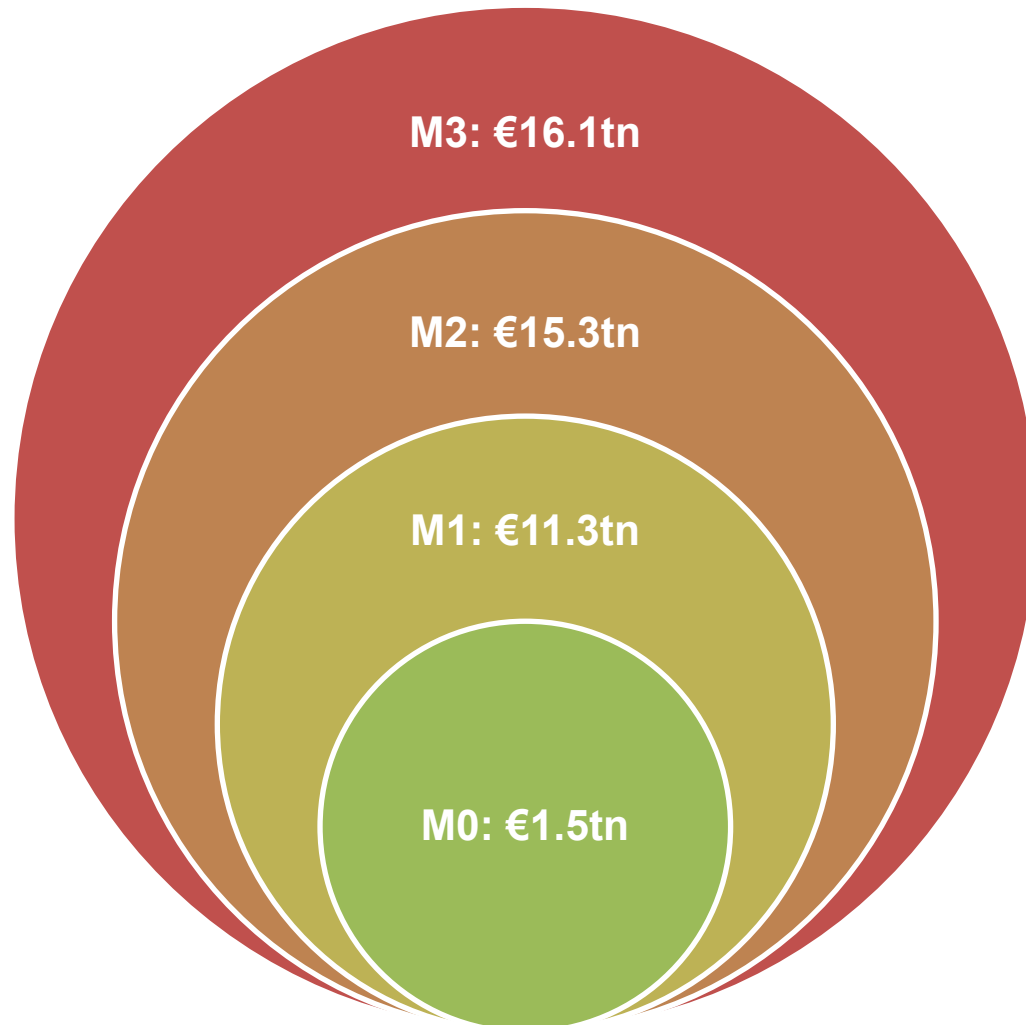
Digital Money

- Broad: money existing in an electronic form
- Narrow: virtual currency operating with a decentralized authority

How Much Money Is There?

Different Types of Monetary Aggregates

Eurozone Aggregate, Dec 2022



M0: Notes and coins in circulation

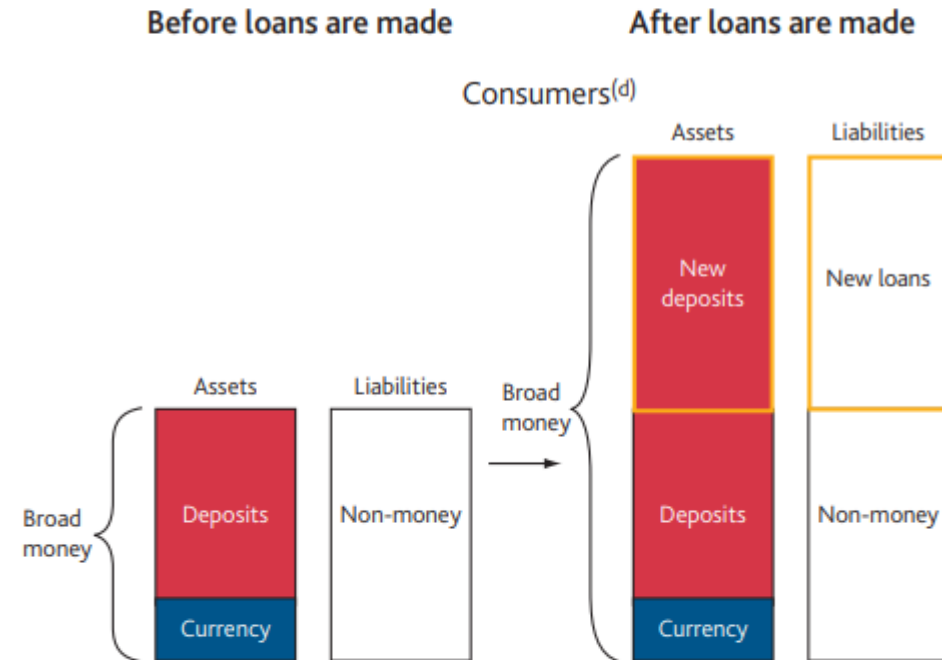
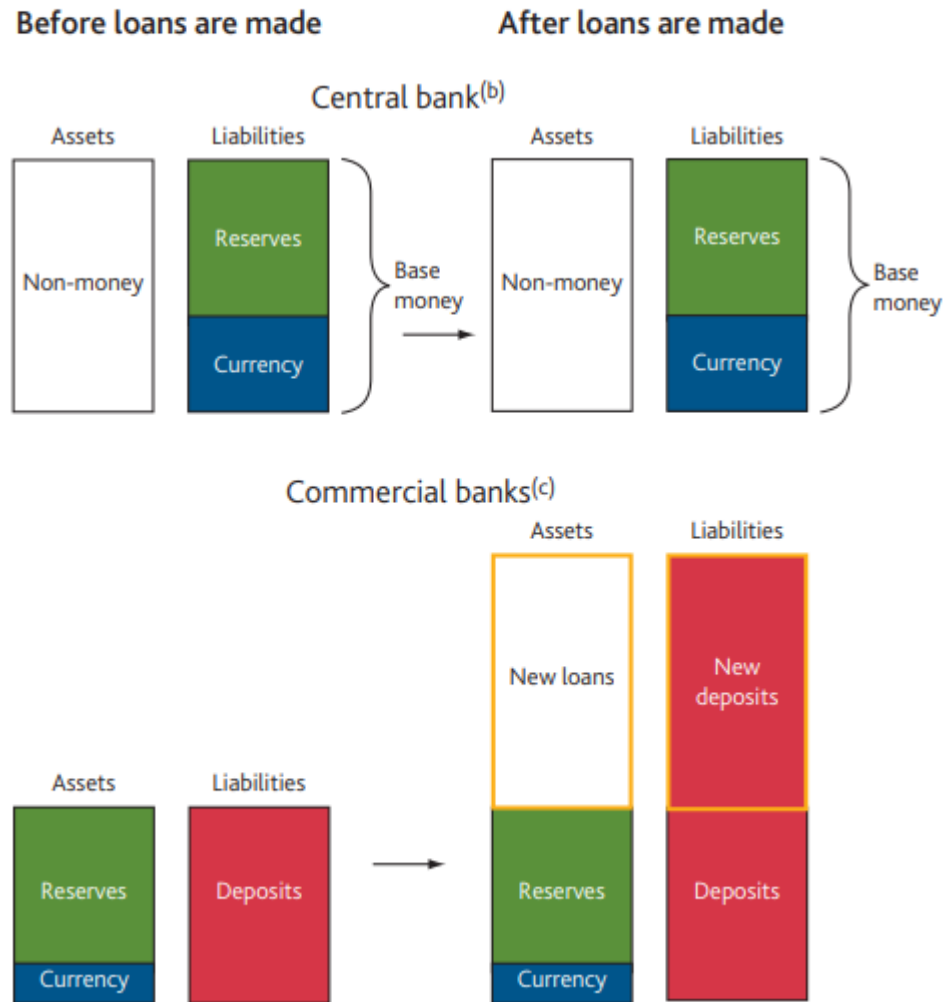
M1: The sum of currency in circulation and overnight deposits

M2: The sum of M1, deposits with an agreed maturity of up to two years, and deposits redeemable at notice of up to three months

M3: The sum of M2, repurchase agreements, money market fund shares/units and debt securities with a maturity of up to two years

Money Creation in the 21st Century

Banks Issue Loans to Firms, Firms Make Deposits, and Banks Create More Money

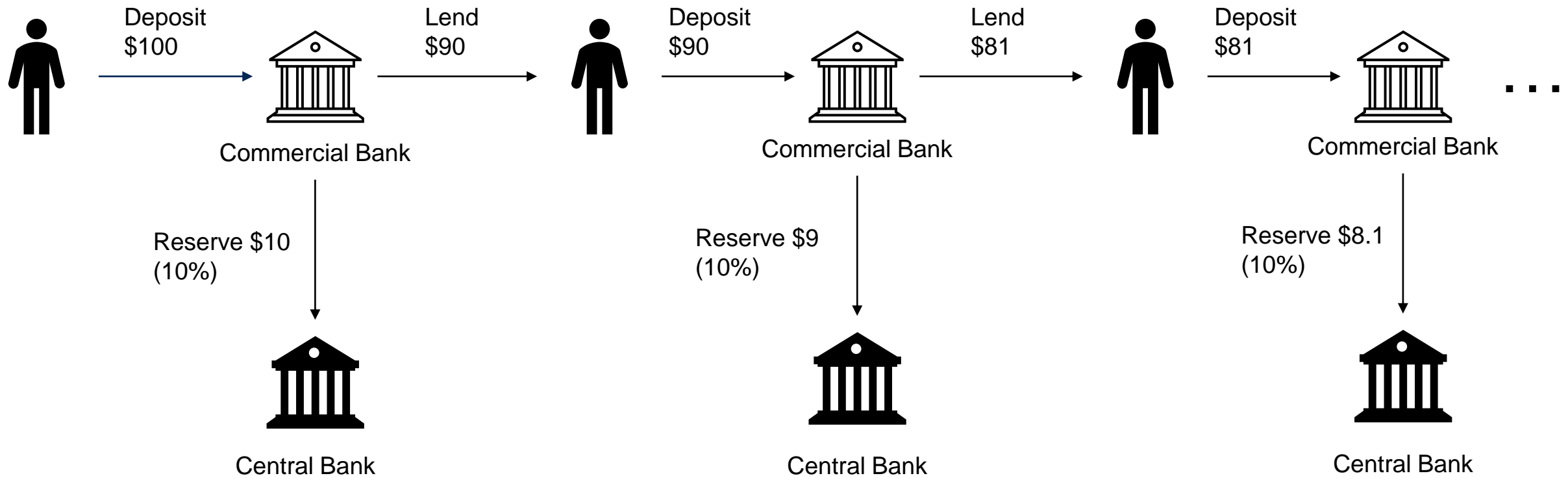


- (a) Balance sheets are highly stylised for ease of exposition: the quantities of each type of money shown do not correspond to the quantities actually held on each sector's balance sheet.
- (b) Central bank balance sheet only shows base money liabilities and the corresponding assets. In practice the central bank holds other non-money liabilities. Its non-monetary assets are mostly made up of government debt. Although that government debt is actually held by the Bank of England Asset Purchase Facility, so does not appear directly on the balance sheet.
- (c) Commercial banks' balance sheets only show money assets and liabilities before any loans are made.
- (d) Consumers represent the private sector of households and companies. Balance sheet only shows broad money assets and corresponding liabilities — real assets such as the house being transacted are not shown. Consumers' non-money liabilities include existing secured and unsecured loans.

Fractional Reserve Banking

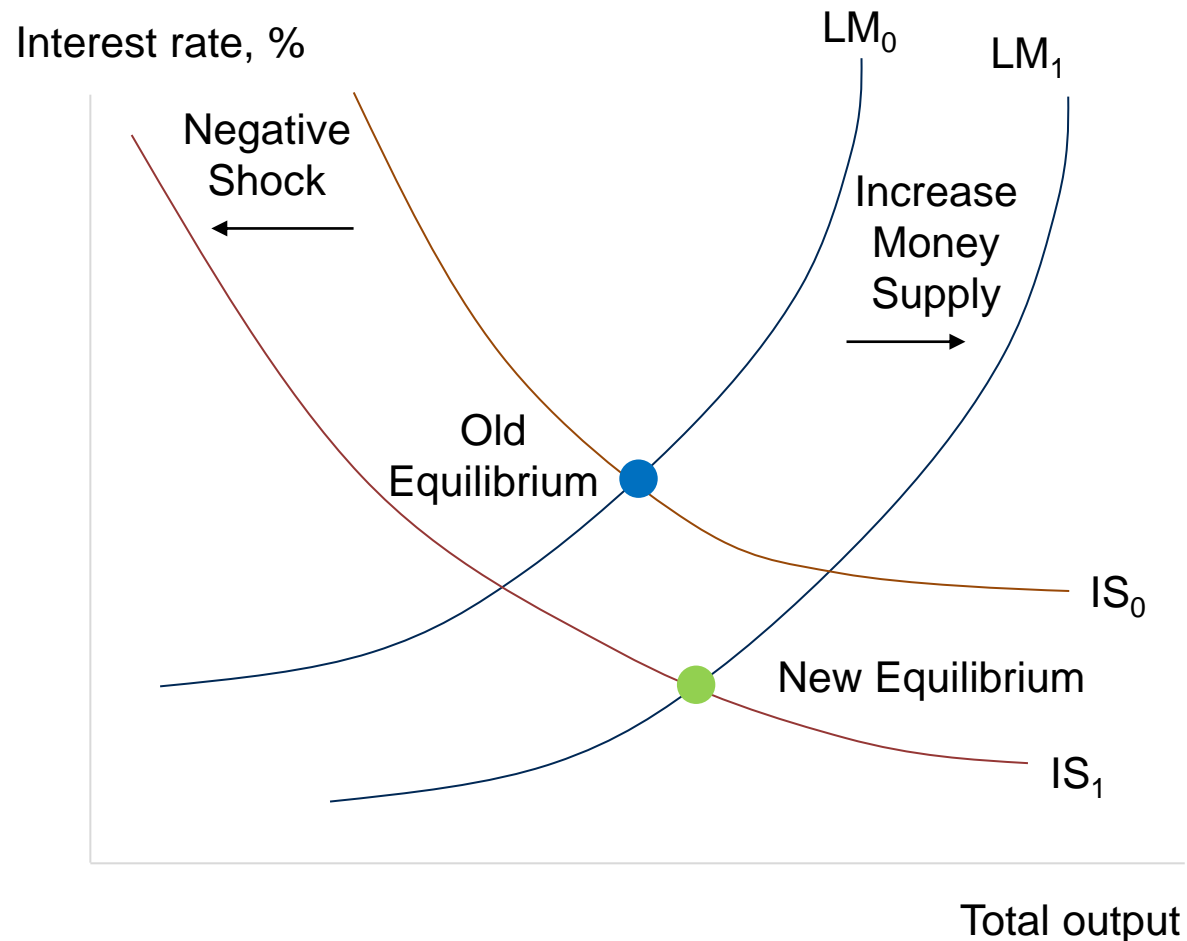
The Money Multiplier

$$\text{Money Multiplier} = \frac{1}{\text{Required Reserve Ratio}}$$



The Keynesian IS-LM Model

Central banks use monetary policy to manage economic fluctuations and achieve price stability, which means that inflation is low and stable. Central banks conduct monetary policy by adjusting the supply of money.



The IS Curve:

- IS stands for “investment-savings”
- The curve shows the set of interest rates and output levels at which total investment (I) equals total savings (S)

The LM Curve:

- LM stands for “liquidity preference-money supply”
- The curve shows the set of interest rates and output levels at which money supply (M) equals money/liquidity (L) demand

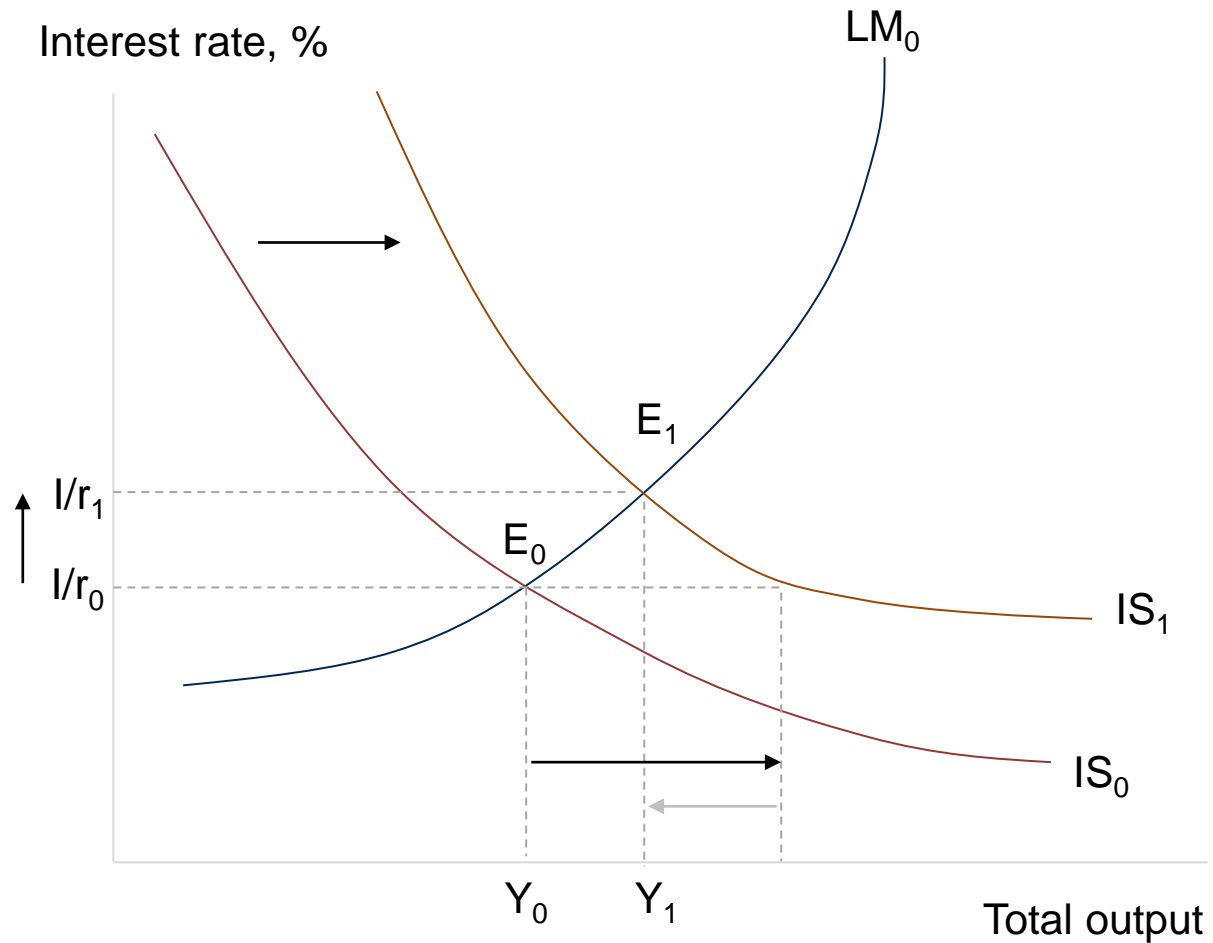
Equilibrium

- The intersection of the IS and LM curves represent the set of interest rates and output levels that balance both the real economy and the money markets

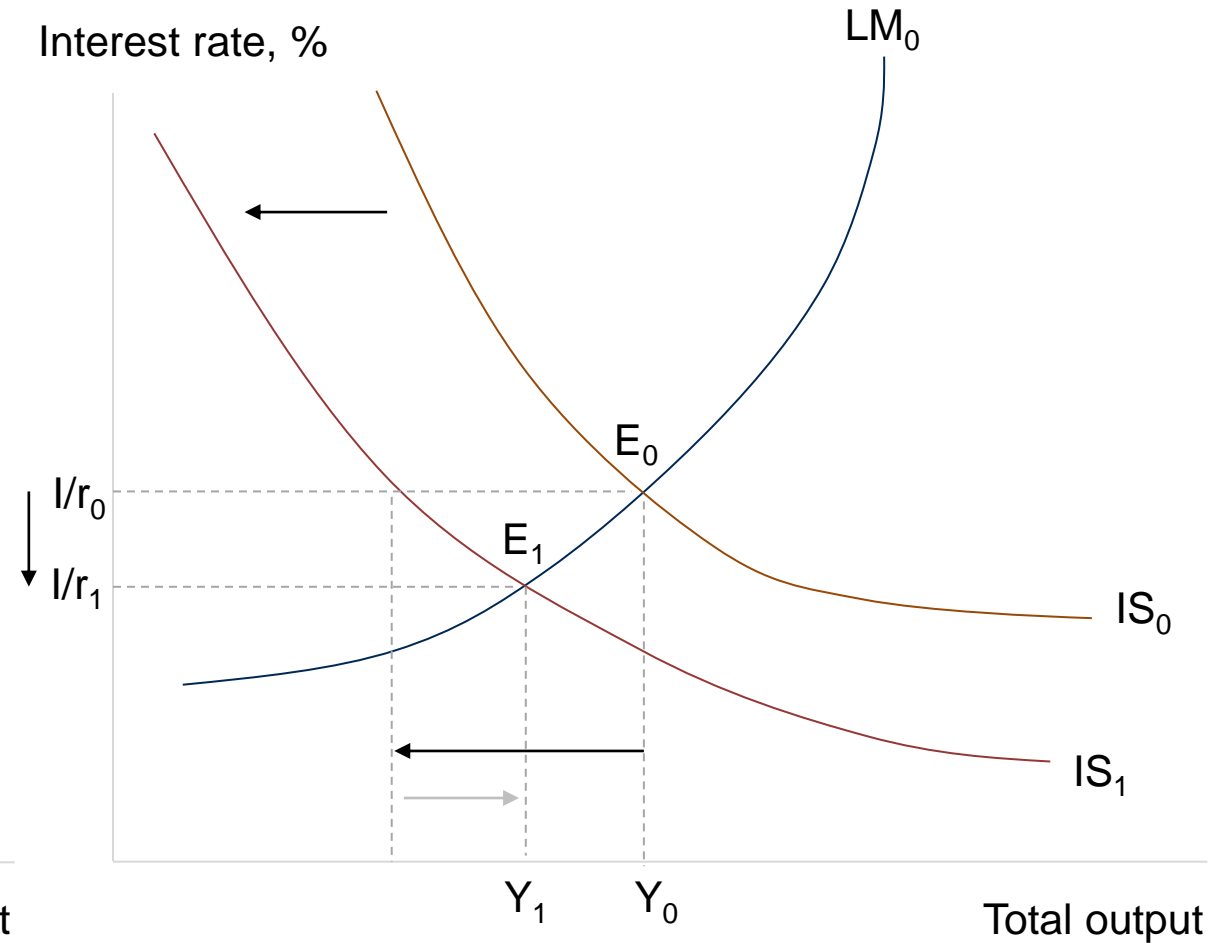
Monetary Policy and Central Banking

The Keynesian IS-LM Model: Fiscal Policy vs Monetary Policy

Fiscal Expansion



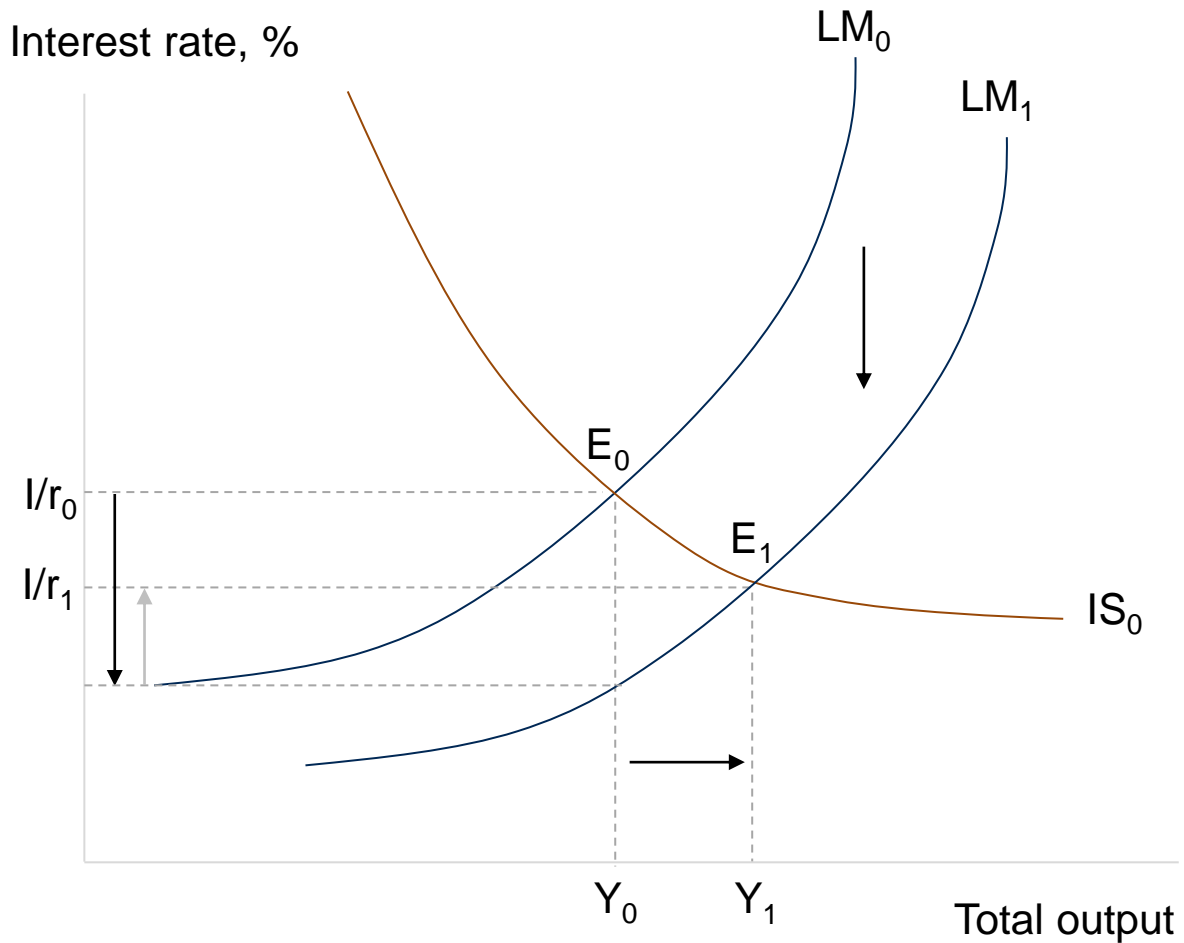
Fiscal Contraction



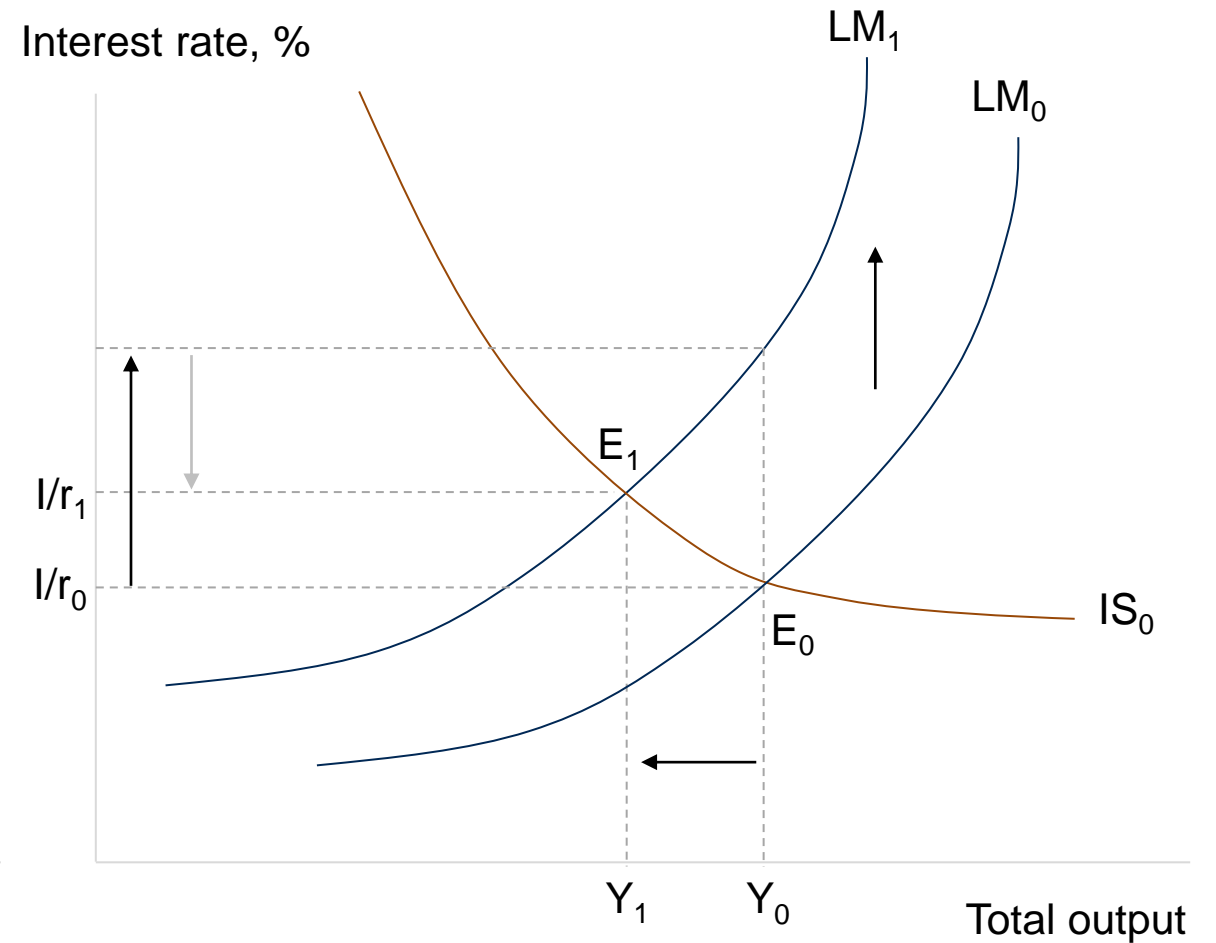
Monetary Policy and Central Banking

The Keynesian IS-LM Model: Fiscal Policy vs Monetary Policy

Monetary Expansion



Monetary Contraction



Rising Popularity of Inflation Targeting as a Monetary Policy Framework

A key role of central banks is to conduct monetary policy to **achieve price stability (low and stable inflation)** and to **help manage economic fluctuations**.

Country	Adoption Date	Inflation Target, %
New Zealand	1990	1-3
Canada	1991	2 (+/-1)
UK	1992	2 (+/-1)
Australia	1993	2-3
Poland	1998	2.5 (+/-1)
Brazil	1999	4.5 (+/-2)
Eurozone	1999	2
South Africa	2000	3-6
Mexico	2001	3 (+/-1)
US	2012	2



Taylor's Rule

$$r = p + .5y + .5(p - 2) + 2 \quad (1)$$

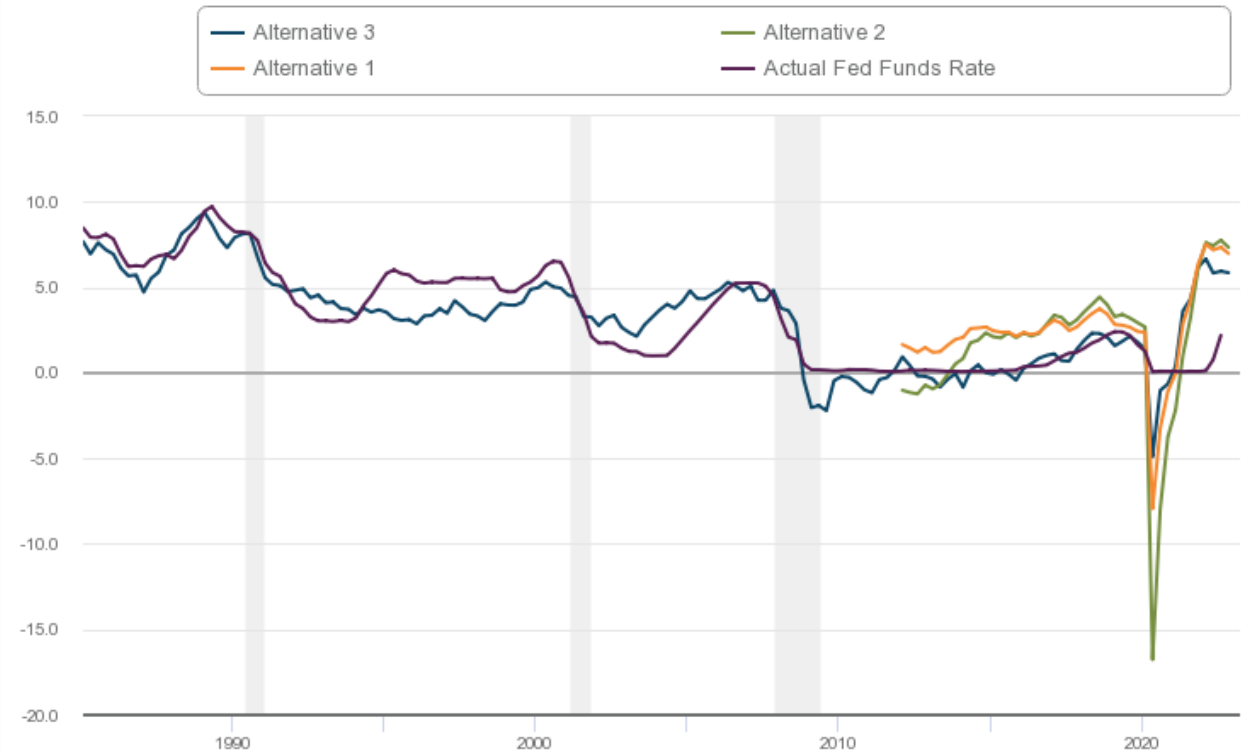
where

- r is the federal funds rate,
- p is the rate of inflation over the previous four quarters
- y is the percent deviation of real GDP from a target.

That is,

- y = $100(Y - Y^*)/Y^*$ where
- Y is real GDP, and
- Y* is trend real GDP (equals 2.2 percent per year from 1984.1 through 1992.3).

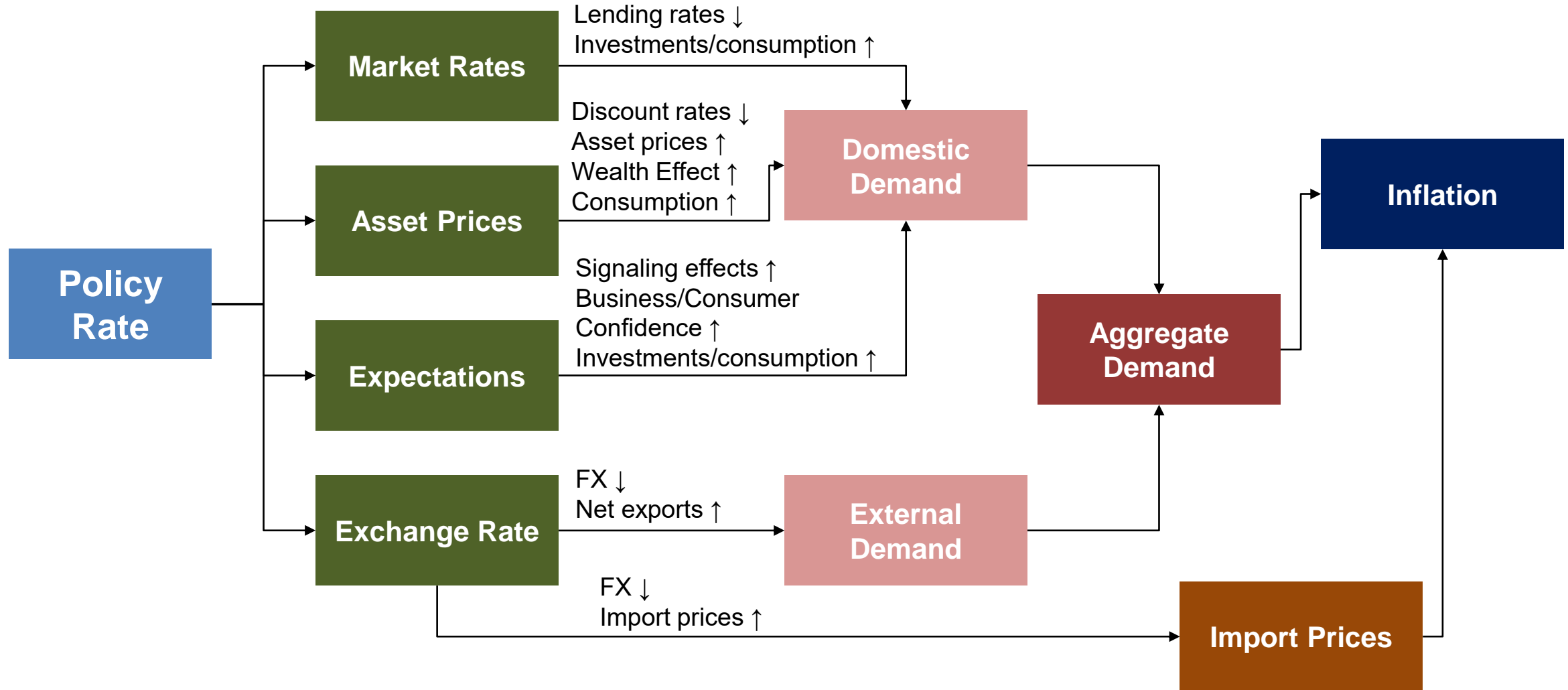
Actual Fed Funds Rate and Taylor Rule Prescriptions



	Alternative 1	Alternative 2	Alternative 3
Inflation Target Measures:	2PercentInflation	2PercentInflation	2PercentInflation
Natural Real Interest Rate Measures:	RstarFOMCMedian	RstarFOMCMedian	LWRstar1side
Resource Gap Measures:	U3gapFOMC	U3gapFOMC	CBOGDPgap
Inflation Measures:	CorePCEInflation	CorePCEInflation	CorePCEInflation
Weight on Gap:	0.5	1	0.5
Interest Rate Smoothing:	0	0	0

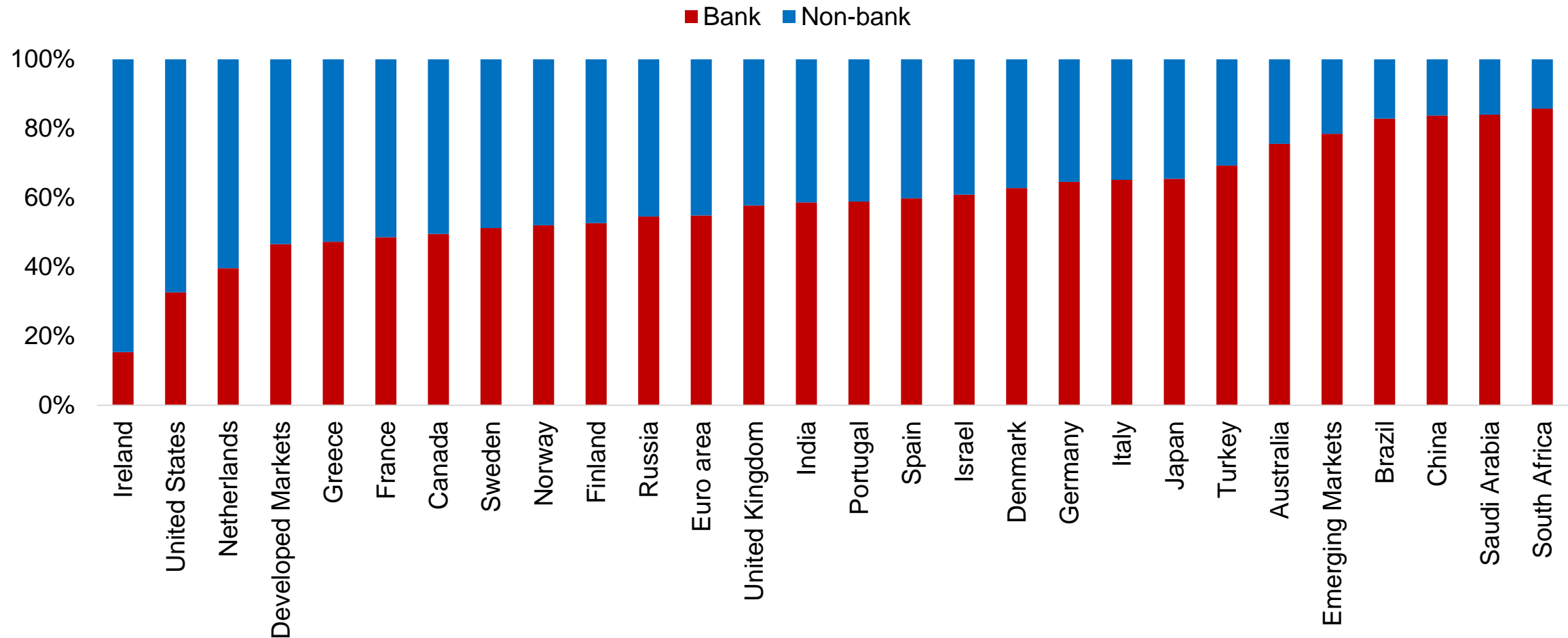
Monetary Policy Transmission Mechanism

How Policy Rates Affect Output and Prices



Europe Relies on Banks for Credit Intermediation

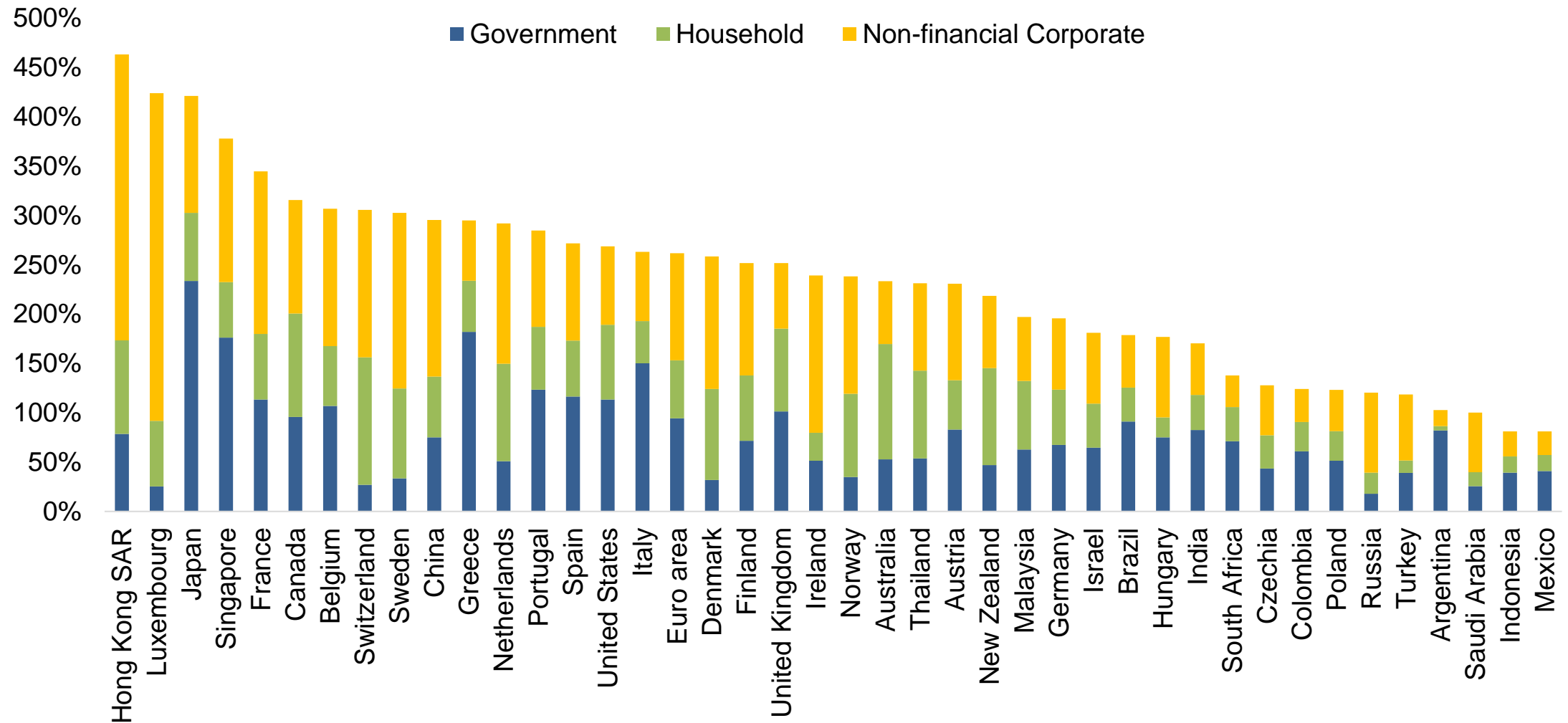
Share of Credit to the Private Non-financial Sector



Impaired Monetary Policy Transmission Channels

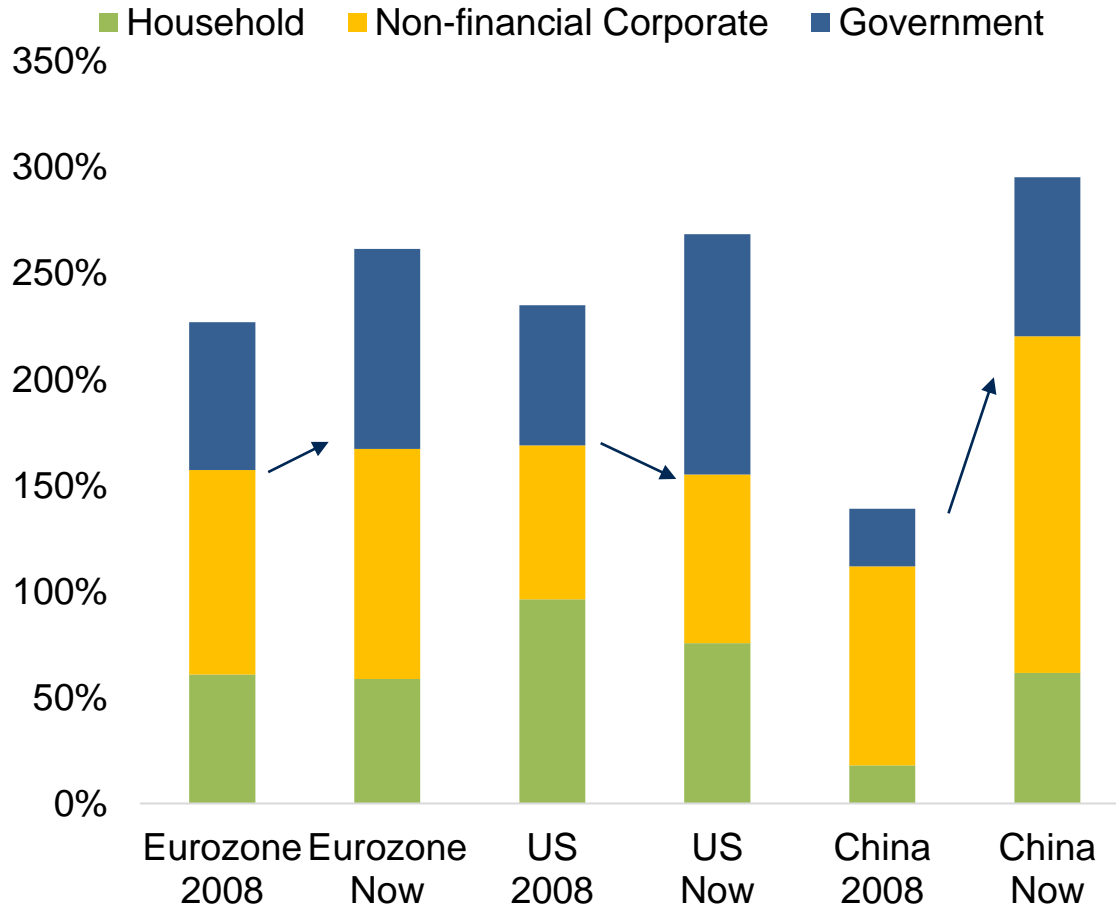
Public and Private Debt Overhangs

Total Non-financial Debt by Segment of the Economy, % GDP

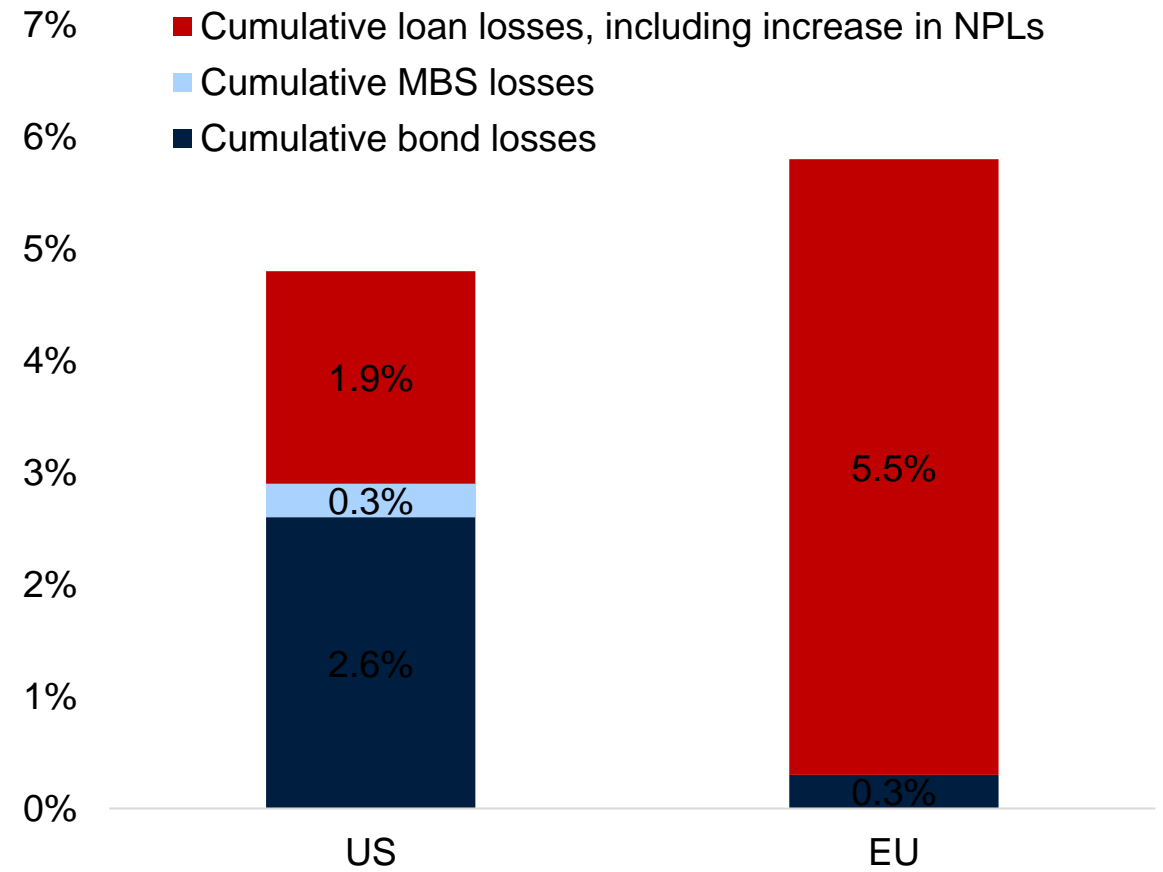


Debt Overhangs Have Only Declined Where Capital Markets Allowed Defaults

US Private Sector Delevered, Unlike Europe and China
Debt as % of GDP



US Took Losses in Capital Markets, Europe in Banks
Default Losses since the Crisis till 2016, as % of GDP

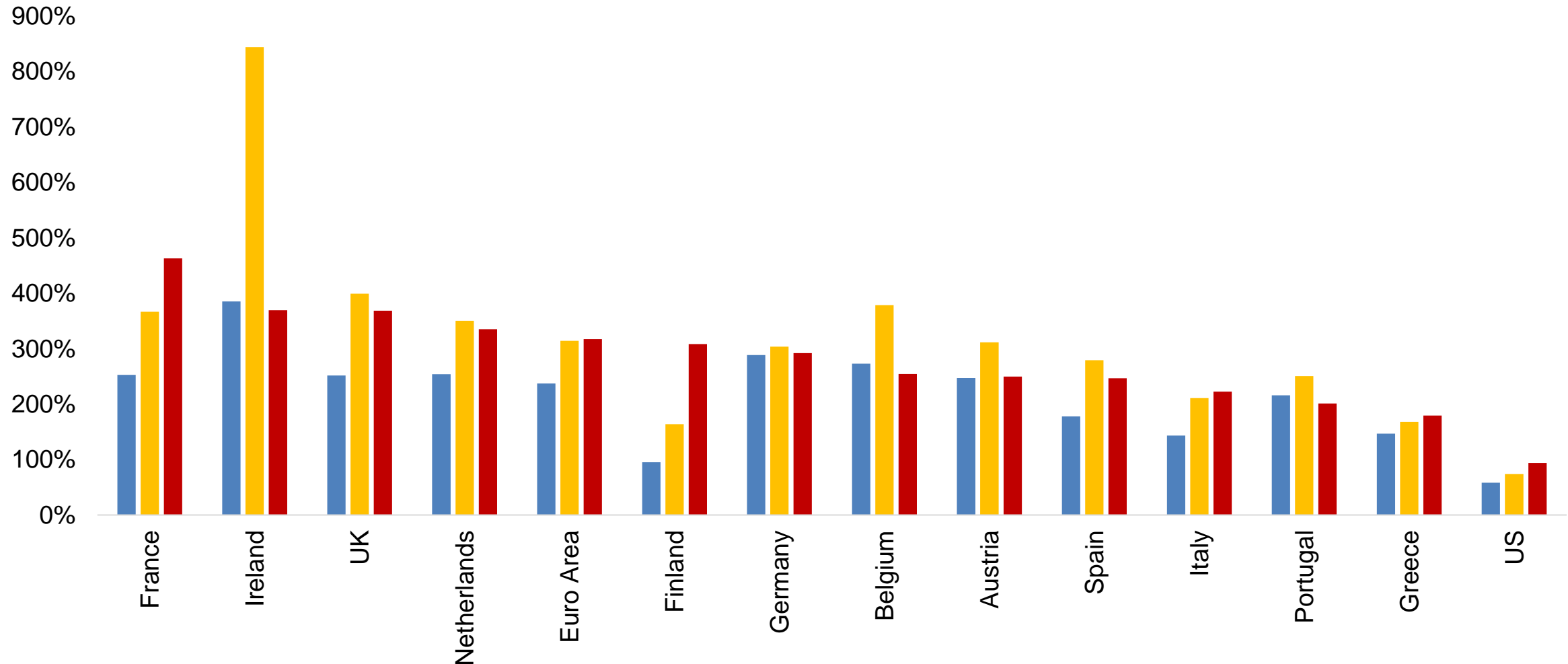


Monetary Policy and the Banking System

But Banks Are Too Large...

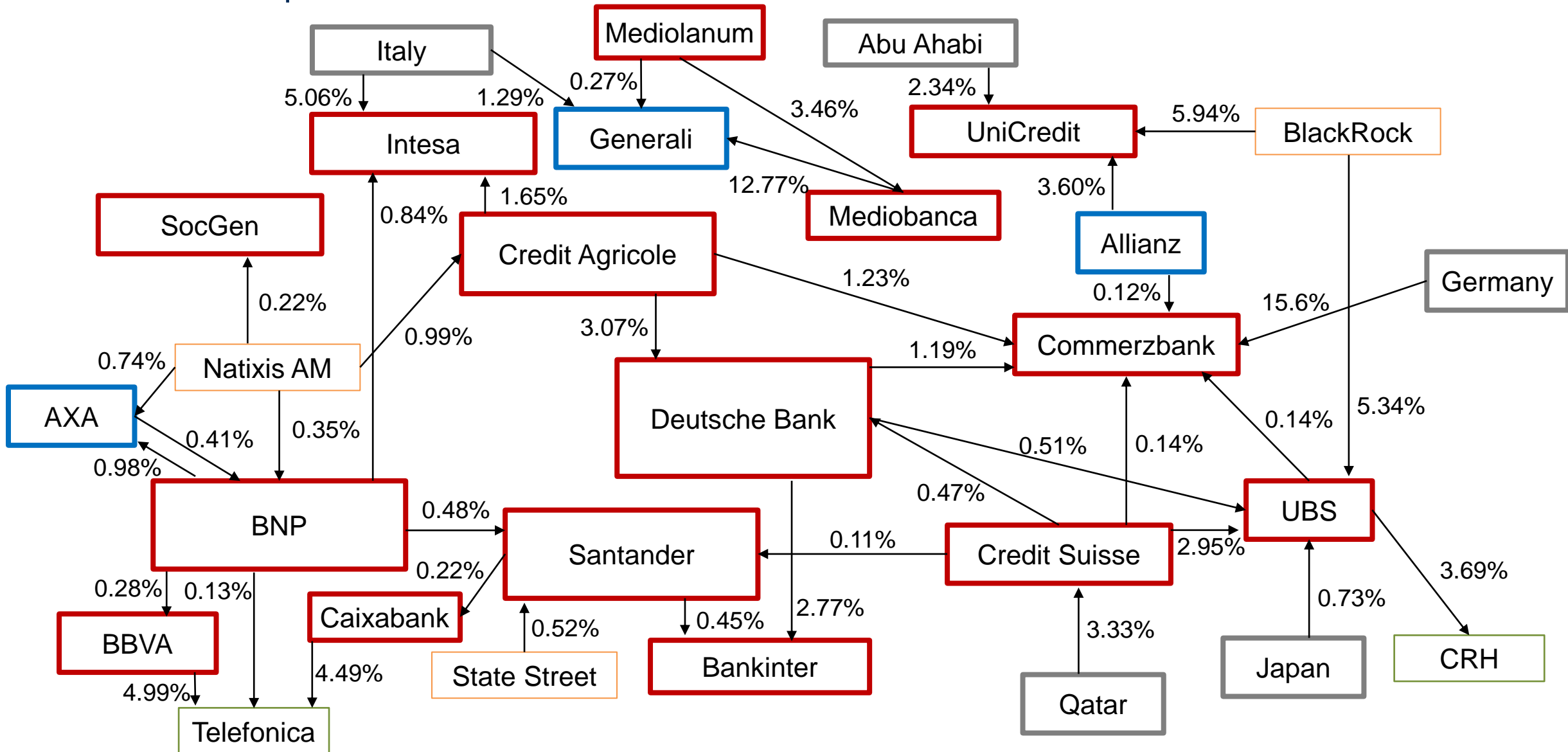
Bank Asset Size/GDP

■ 2000 ■ 2007 ■ 2022



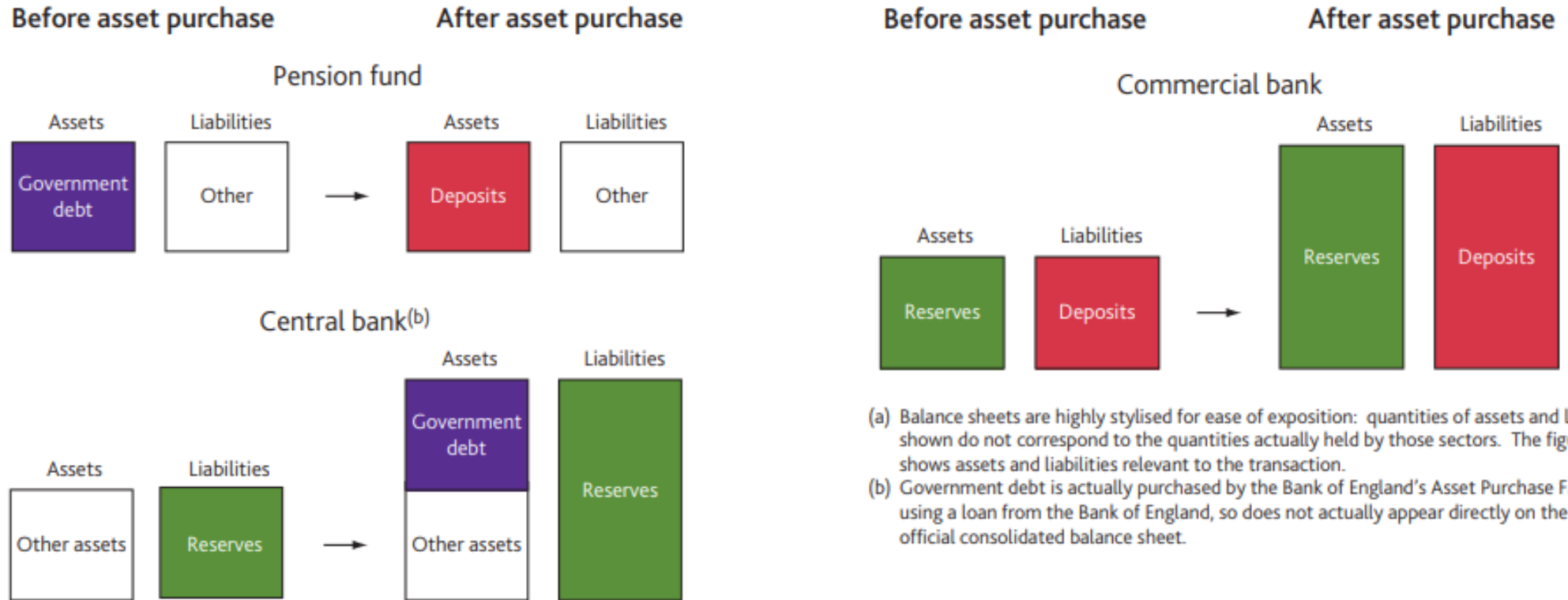
Monetary Policy and the Banking System

... And Overcomplex



Unconventional Monetary Policy: Quantitative Easing

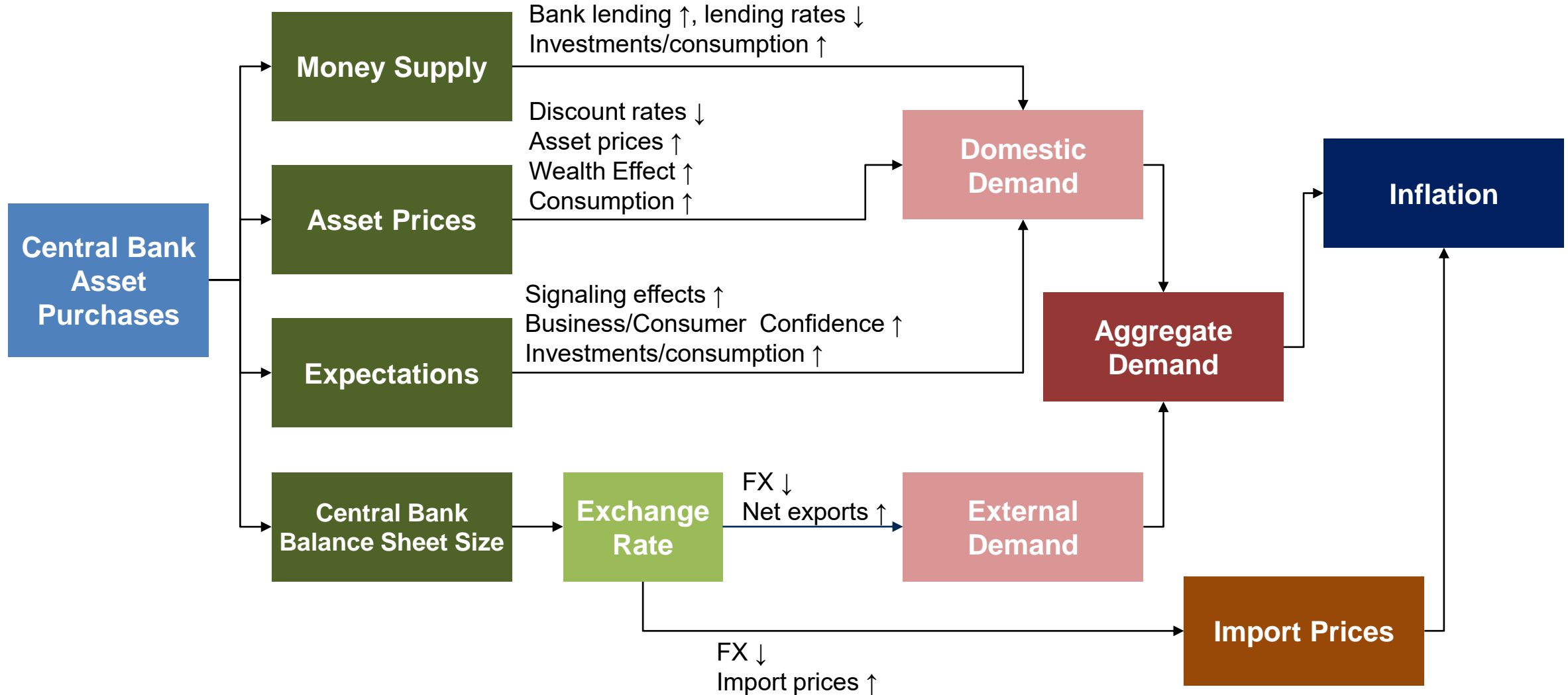
When Interest Rates Are at Their Effective Lower Bound



- (a) Balance sheets are highly stylised for ease of exposition: quantities of assets and liabilities shown do not correspond to the quantities actually held by those sectors. The figure only shows assets and liabilities relevant to the transaction.
- (b) Government debt is actually purchased by the Bank of England's Asset Purchase Facility using a loan from the Bank of England, so does not actually appear directly on the Bank's official consolidated balance sheet.

Monetary Policy Transmission Mechanism

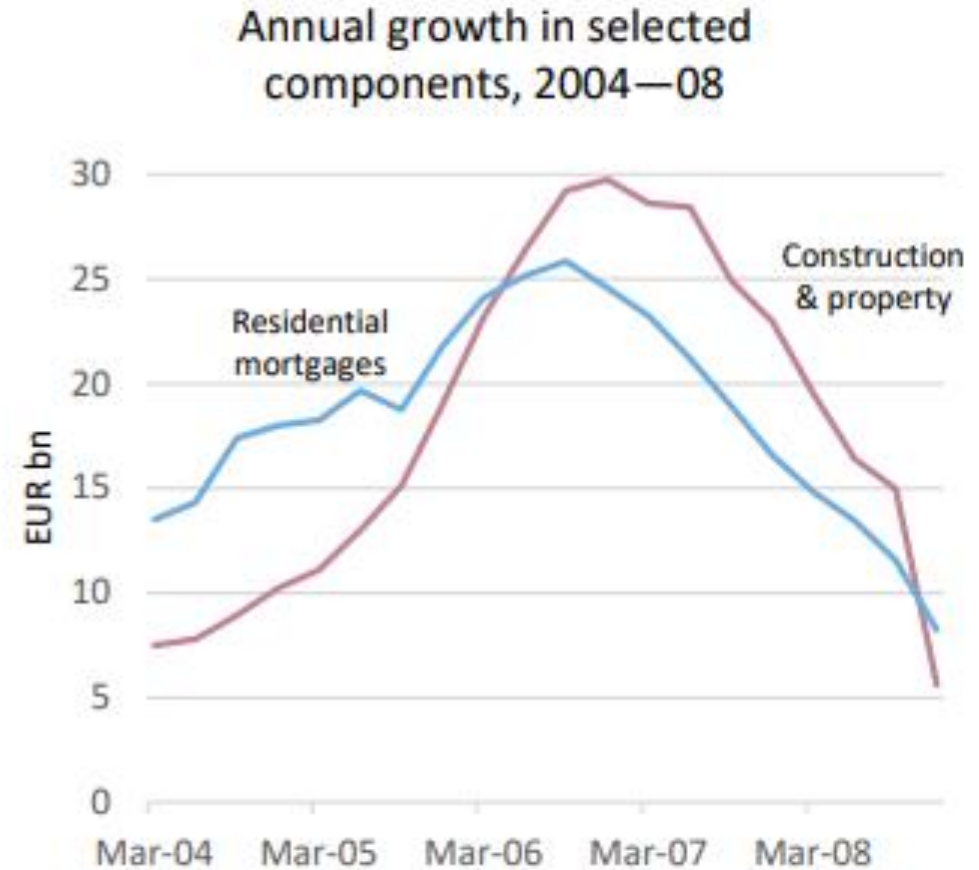
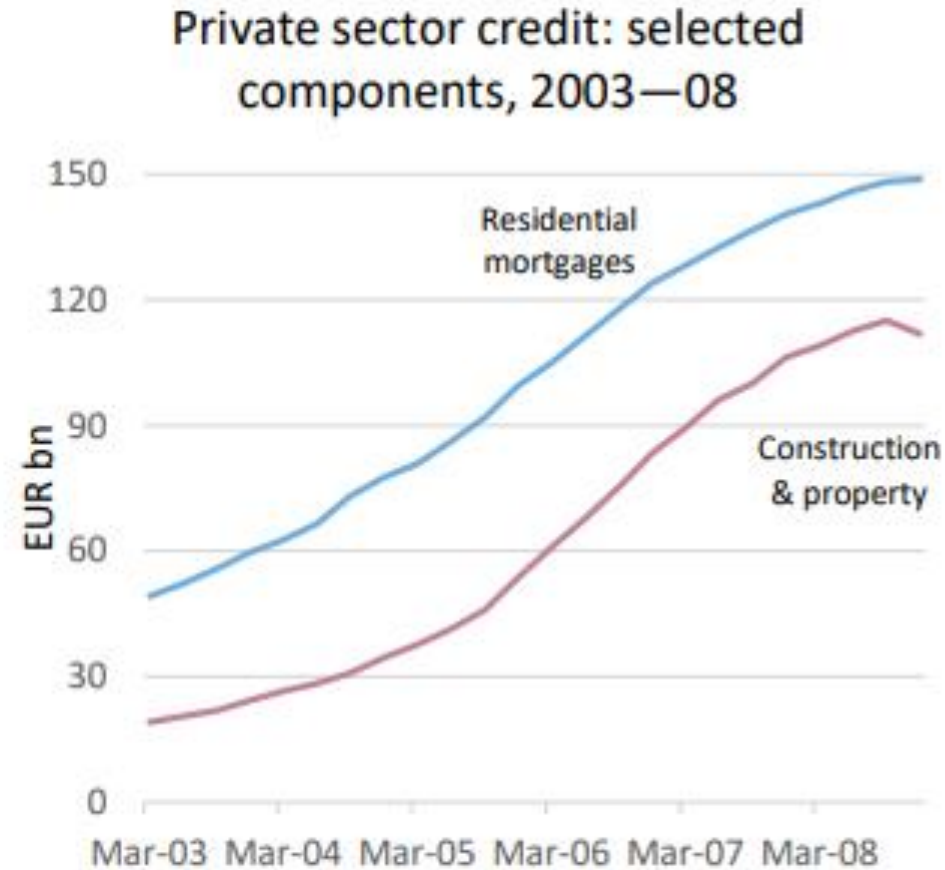
How QE Affect Output and Prices



Credit Expansion and Banking Crisis

A Case Study of Ireland

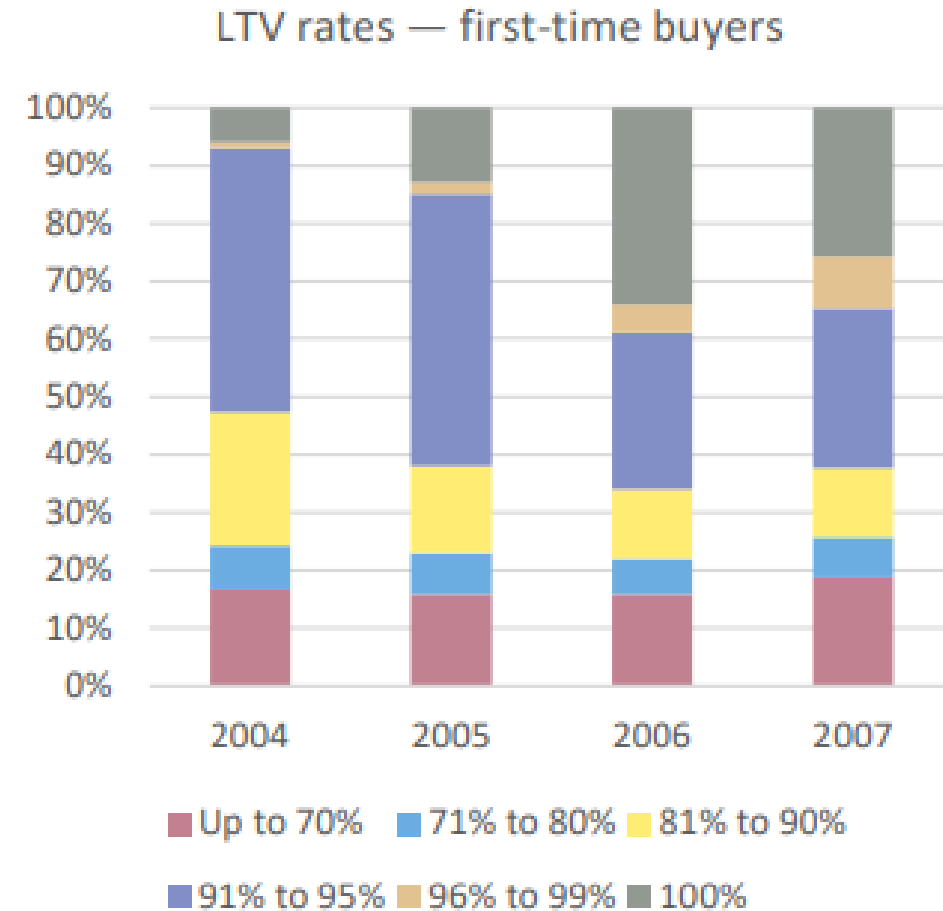
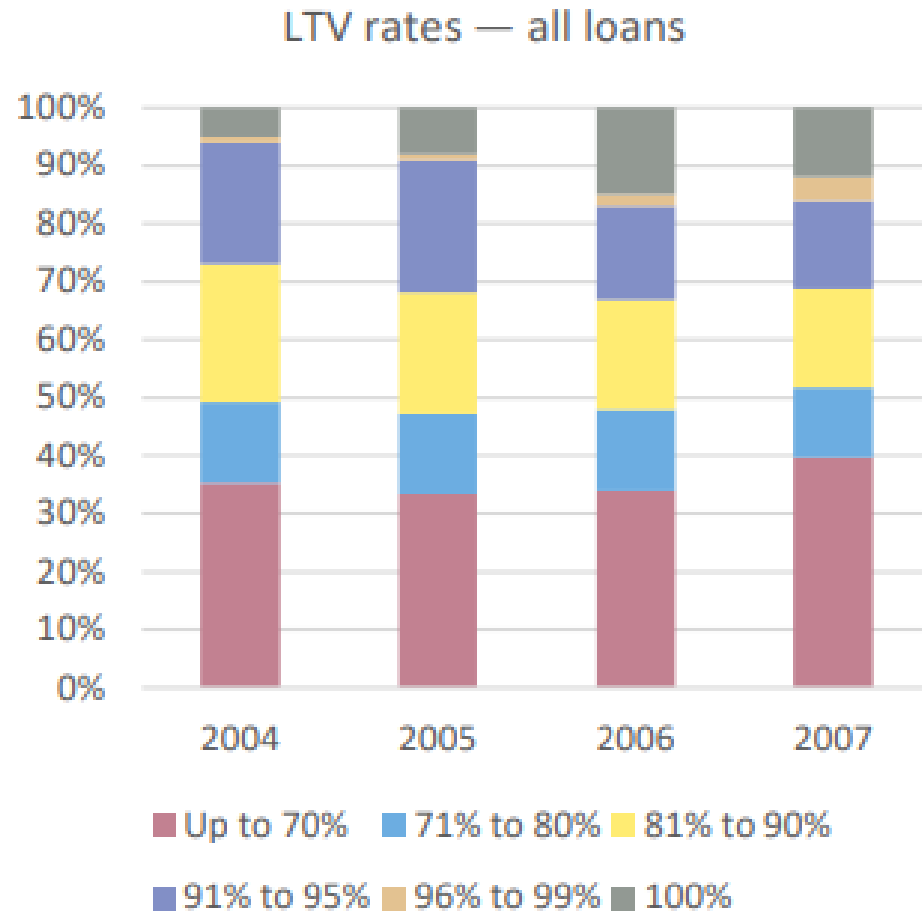
Rapid Credit Expansion Driven by a Housing Boom



Credit Expansion and Banking Crisis

A Case Study of Ireland

Aggressive Lending Led to a Built-up of Financial Stability Risks



A Case Study of Ireland

Bank Recapitalisation Costs

Public and market-based recapitalisations of the domestic banks*						Table 1
EUR bn	AIB/EBS	BOI	IL&P	Anglo/INBS	Total	
<i>Pre-PCAR 2011</i>						
LMEs (market)	3.35	2.47	–	4.09	9.91	
Preference shares (NPRF)**	3.50	3.50	–	–	7.00	
Promissory notes (Exchequer)	0.25	–	–	30.60	30.85	
Special investment shares (Exchequer)***	0.63	–	–	0.1	0.73	
Ordinary shares (Exchequer)	–	–	–	4.0	4.00	
Ordinary shares (NPRF)	3.70	–	–	–	3.70	
<i>Subtotal</i>	<i>11.43</i>	<i>5.97</i>	<i>–</i>	<i>38.79</i>	<i>56.19</i>	
<i>PCAR 2011</i>						
Equity-raising (market)****	–	2.30	–	–	2.30	
LMEs/other (market)	2.10	1.70	1.30	–	5.10	
Ordinary shares (Exchequer)	–	–	2.30	–	2.30	
Ordinary shares (NPRF)	5.00	–	–	–	5.00	
Other (Exchequer & NPRF)*****	6.10	0.20	–	–	6.30	
Contingent capital notes (Exchequer)	1.60	1.00	0.40	–	3.00	
<i>Subtotal</i>	<i>14.80</i>	<i>5.20</i>	<i>4.00</i>	<i>–</i>	<i>24.00</i>	
Total	26.23	11.17	4.00	38.79	80.19	

* Position as at 2012. Excludes asset/business line disposals by banks, while figures are subject to rounding.

** Approximately EUR 1.6 billion of preference shares in BOI were converted into ordinary shares in 2010. The state also received EUR 500 million from the warrants relating to BOI's preference shares which are excluded from this table.

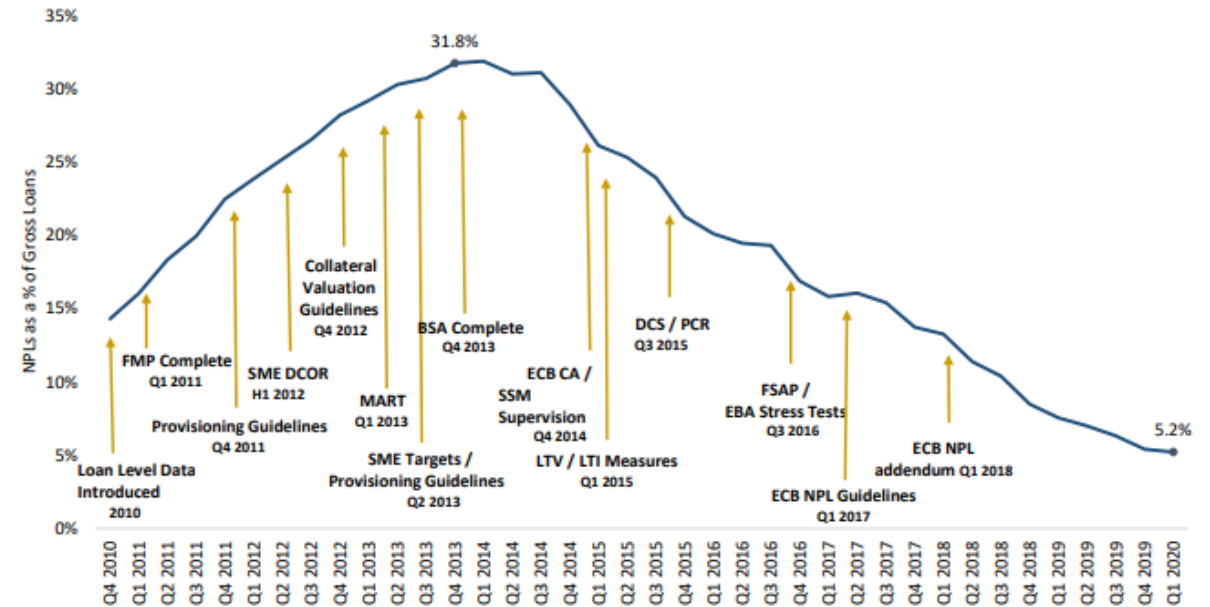
*** Special investment shares were holdings that would be converted into ordinary shares should EBS and/or INBS be converted to a limited company. In the case of EBS this occurred on 1 July 2011, when EBS was demutualised and acquired by AIB.

**** Includes debt for equity swaps.

***** Made by the Exchequer (EUR 2.30 billion) and the NPRF (EUR 3.80 billion). BOI figure represents net cost to the state following sale of shares to private investors.

Source: Authors' estimates based on data presented in Central Bank of Ireland (2012), Joint Committee (2016d, pp 33–36) and Office of the Comptroller and Auditor General (2012). The description of special investment shares is that provided in EBS (2013).

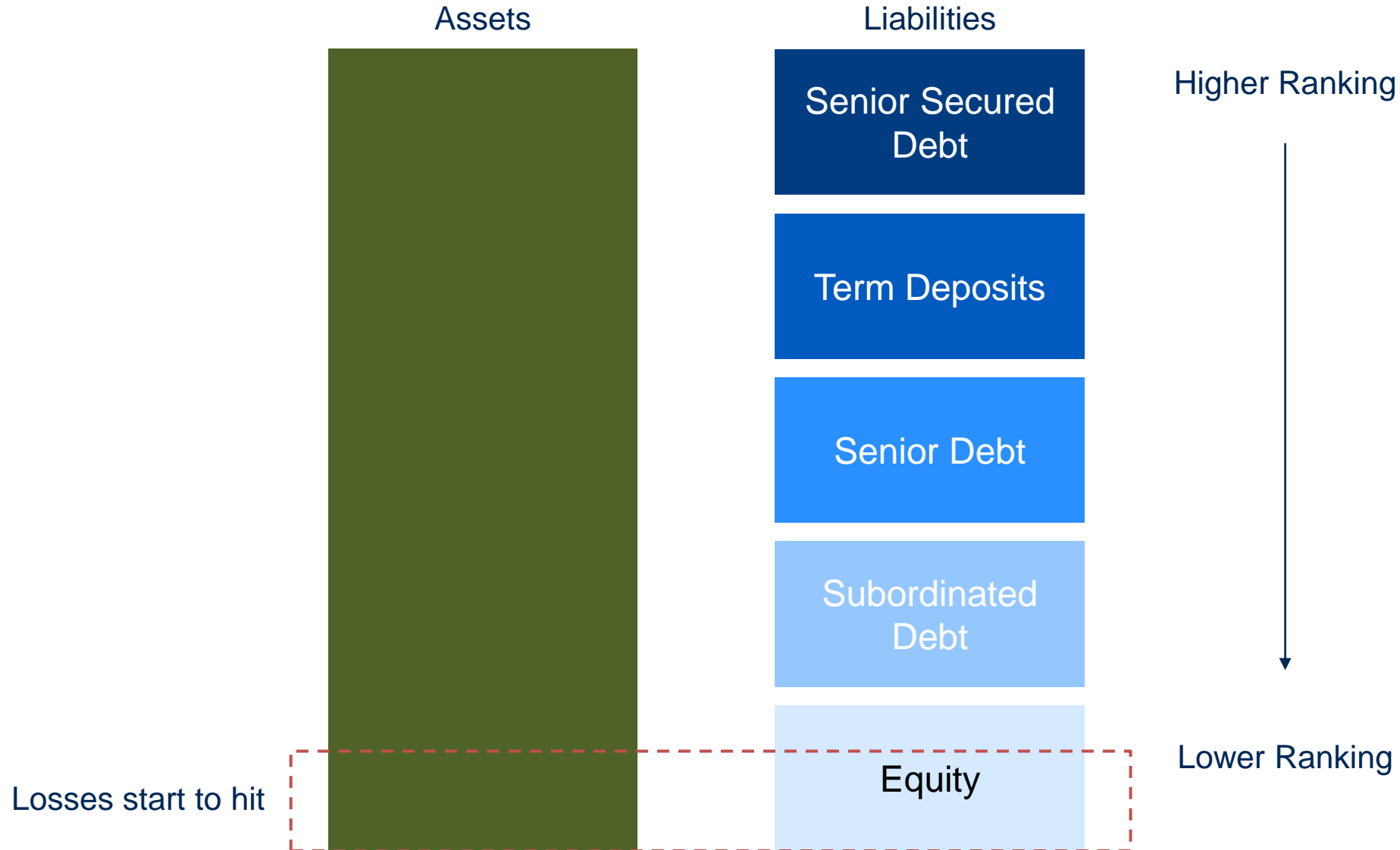
Retail Banks' NPL Ratio and Milestones in NPL Resolution



The definition of "non-performing" used by the European Banking Authority (EBA) introduced in Q3 2014. Prior to this date an internal definition was used, equivalent to impaired loans and/or arrears > 90 days.

Banking Crisis and Too Big to Fail

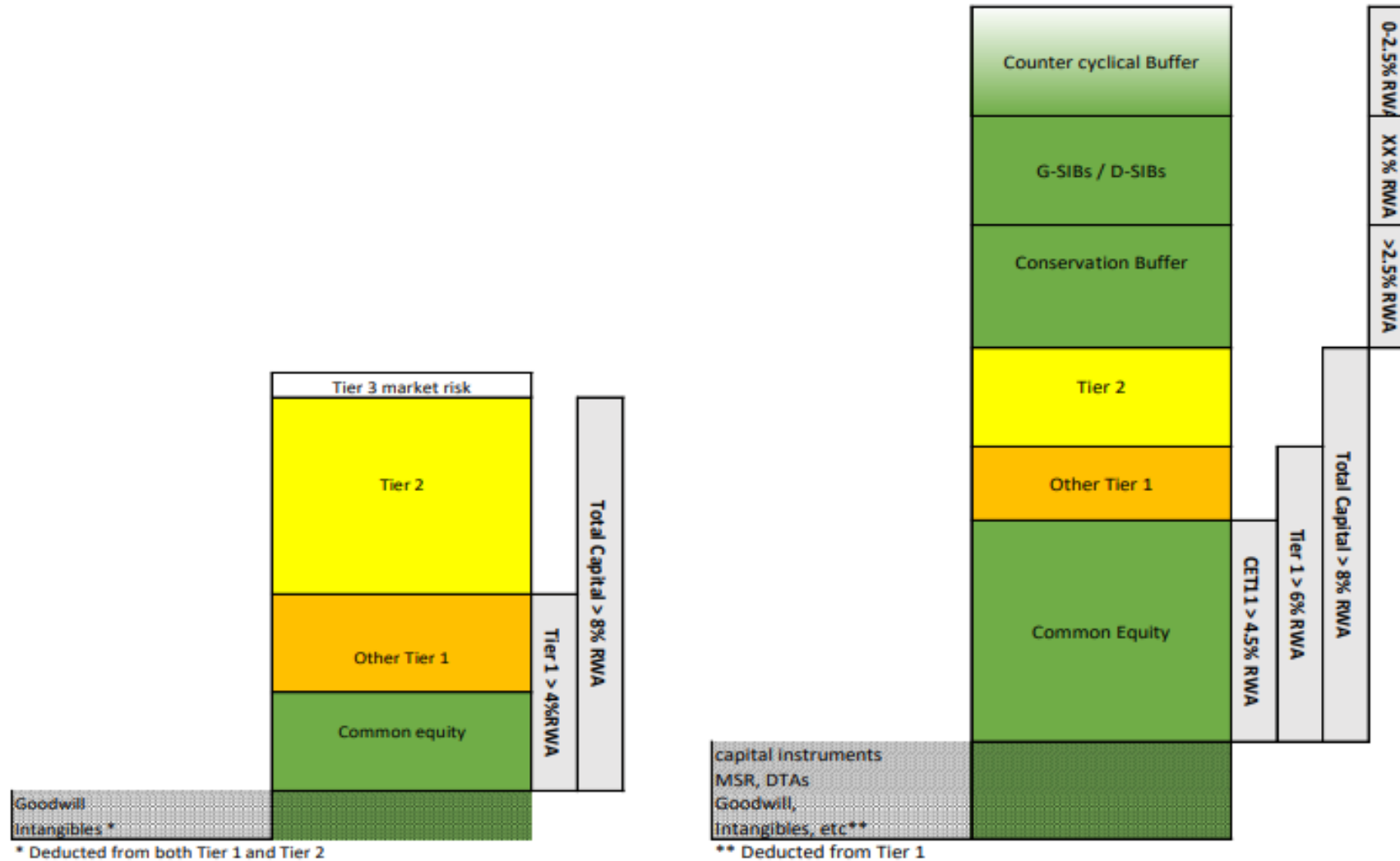
Bank Capital Structure



Tackling Too Big to Fail: The Basel Reform

Bail-in-able Capital Buffers

Comparison of Basel II and Basel III Capital Requirements



Tackling Too Big to Fail: The Basel Reform

Impact of the Basel III Reforms on Banks' Capital Ratios

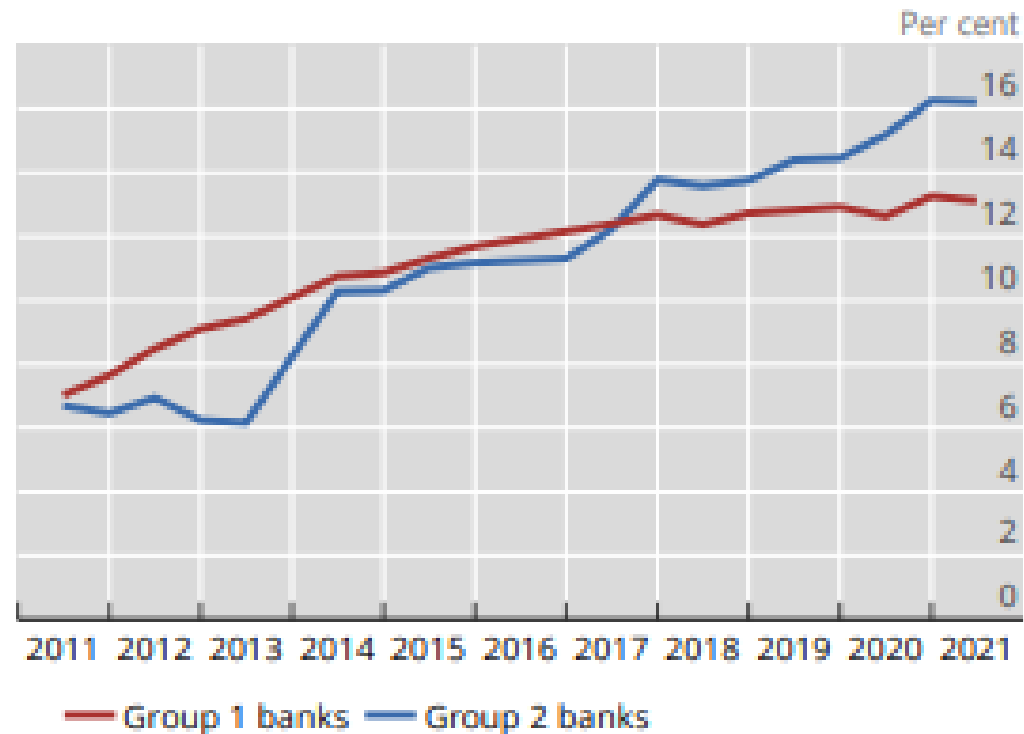
Bank Capital Ratio Evolution

Weighted average capital ratios

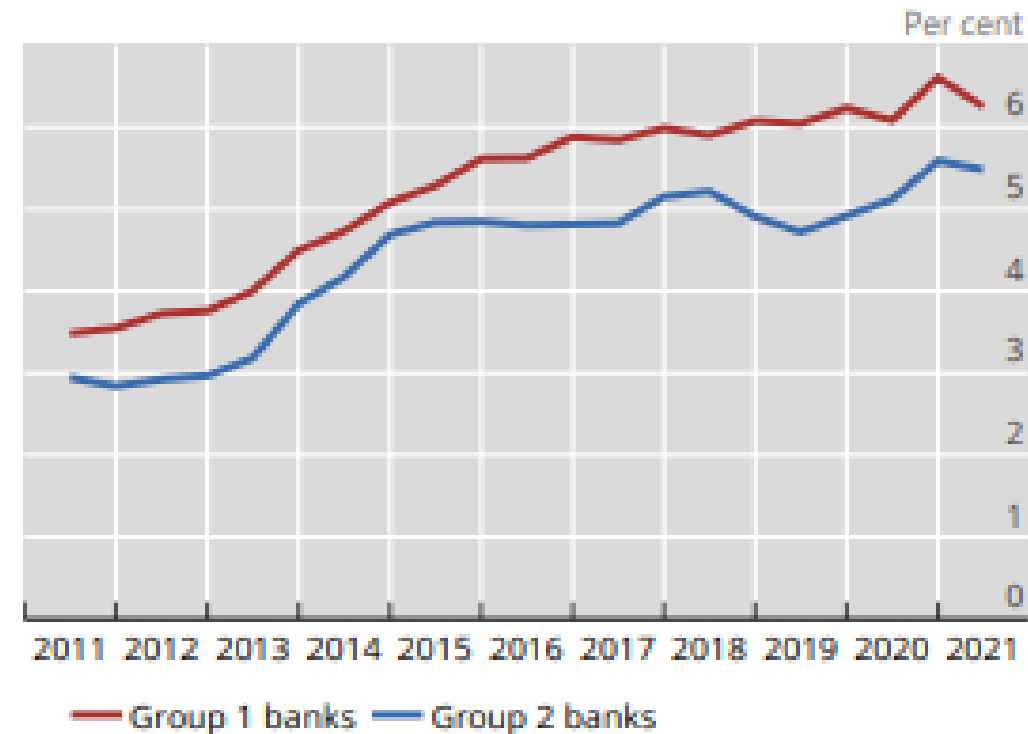
Balanced data set

Graph 1.1

CET1 ratio



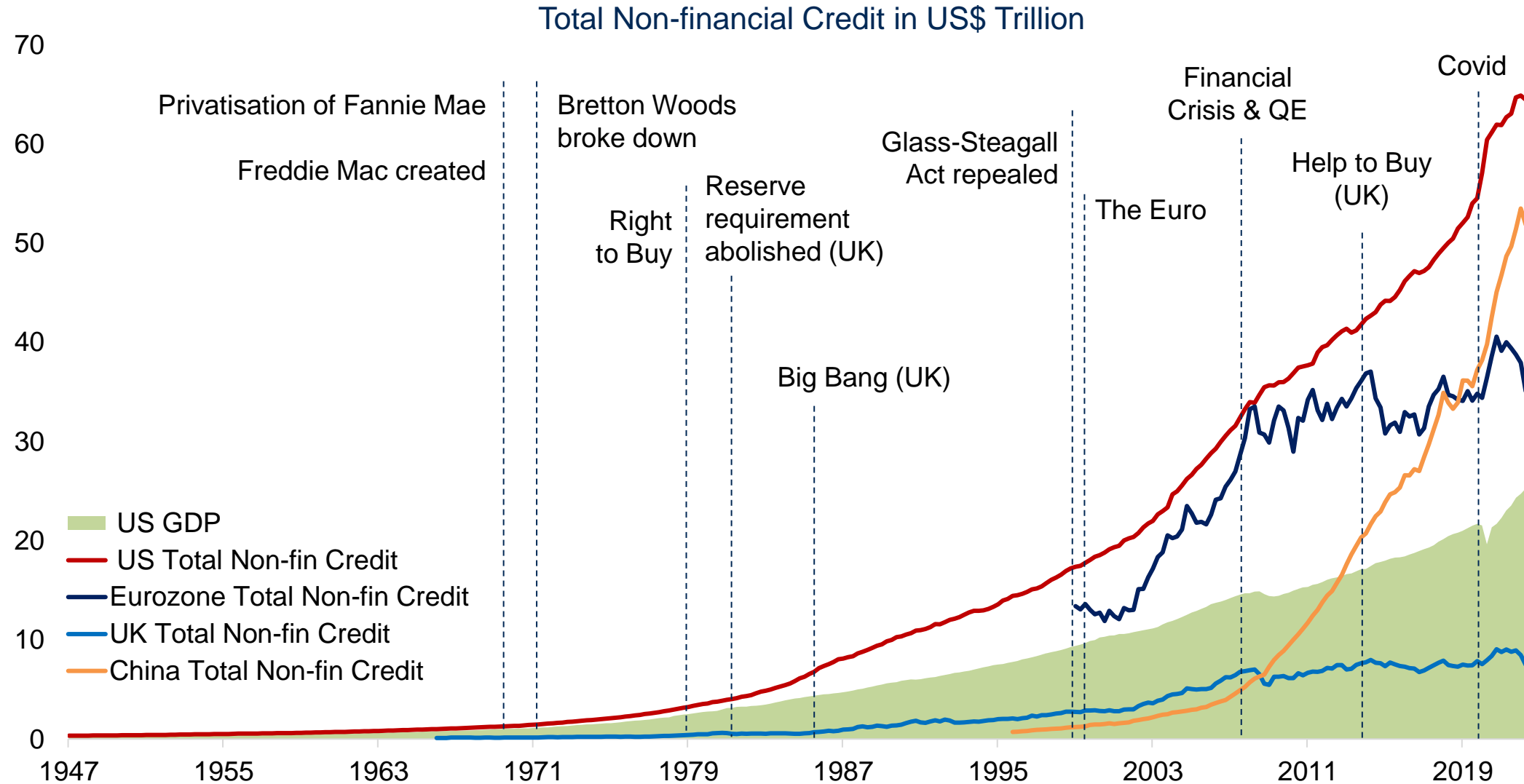
Leverage ratio



3. THE DEBT SUPERCYCLE AND QE INFINITY

The Debt Supercycle

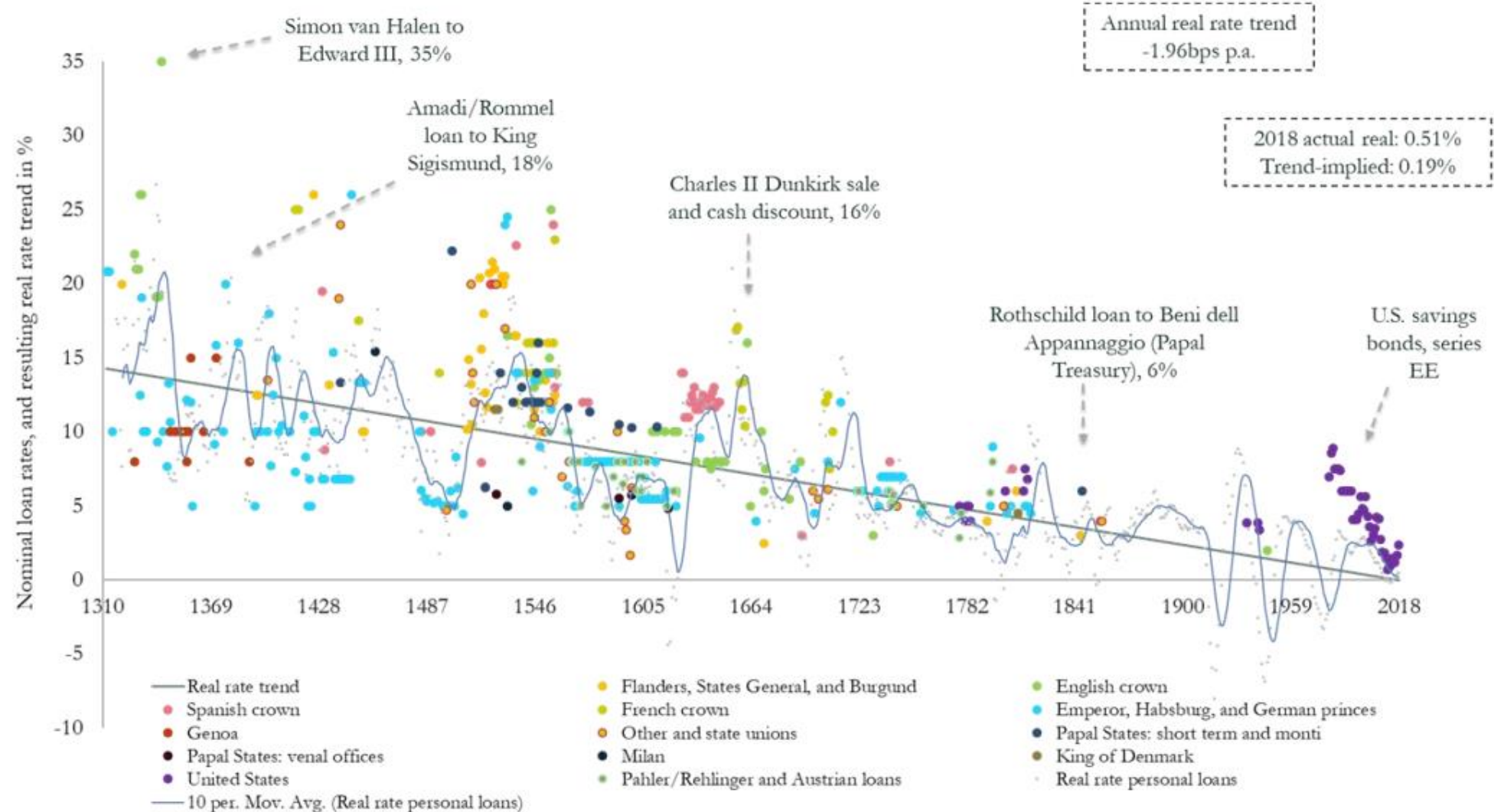
From Fiat Money to Fiat Credit



The QE Infinity Trap

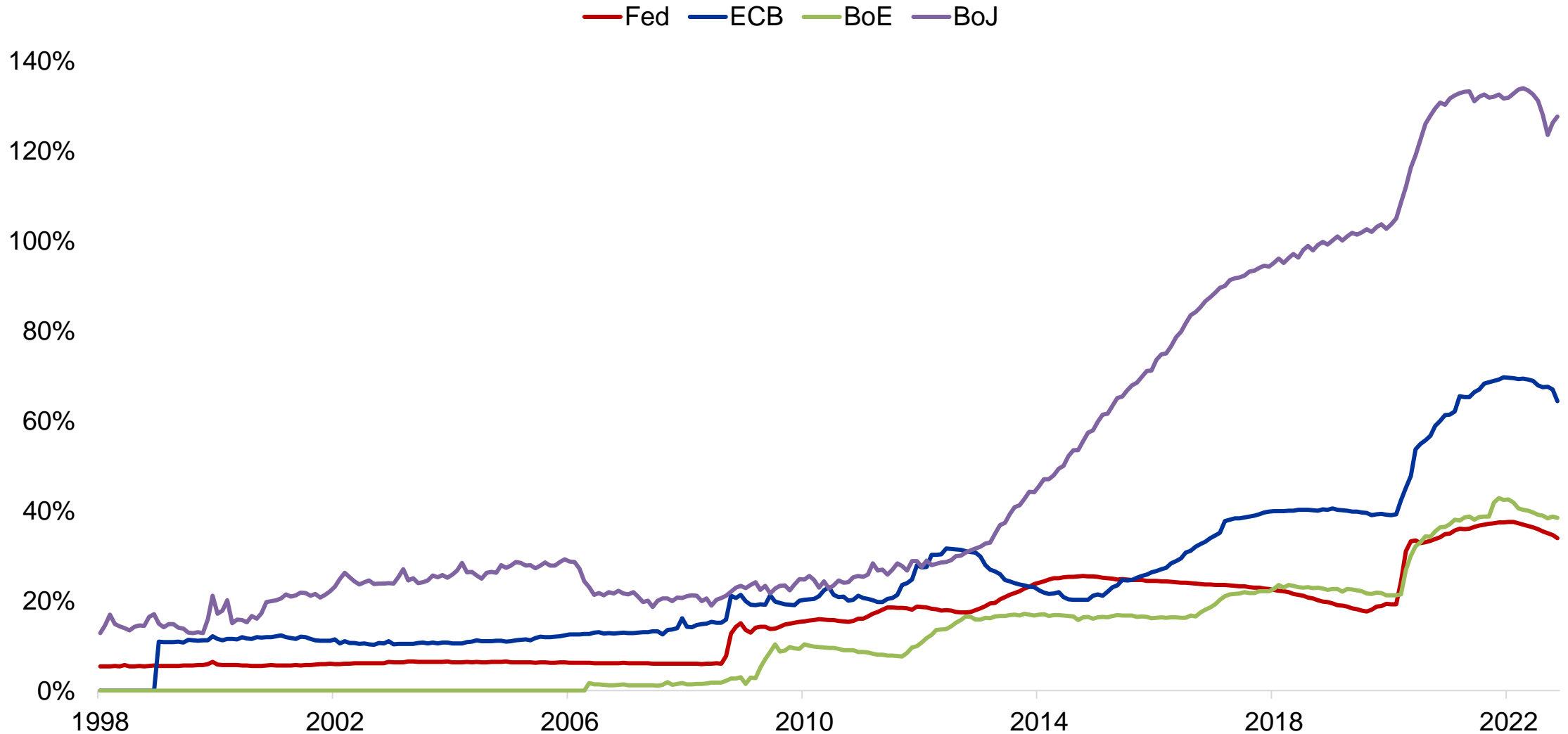
Interest Rates Were at All-time Low

454 personal/non-marketable loans to sovereigns, 1310-1946, and U.S. savings Bonds – plus resulting real rate trend



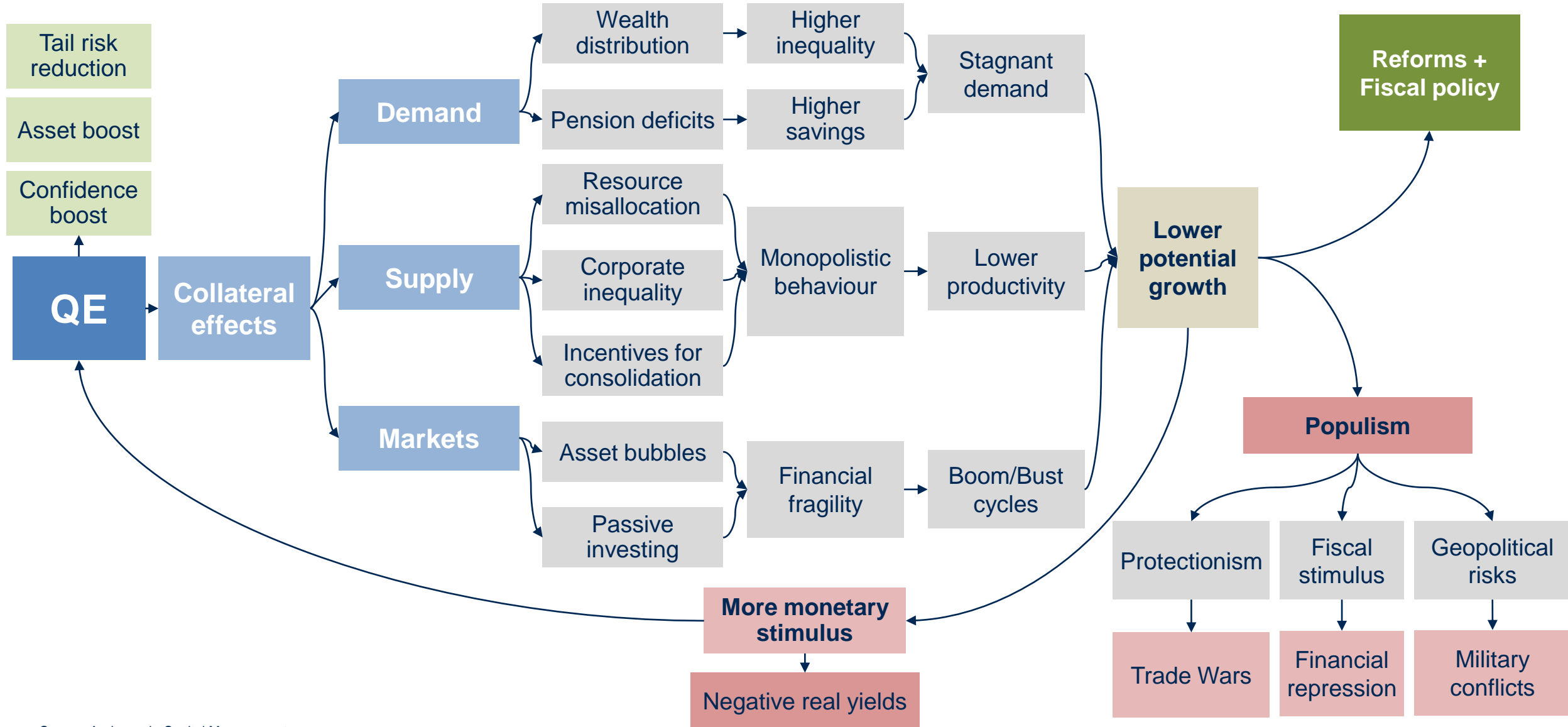
The QE Infinity Trap

Central Bank Balance Sheets, % GDP



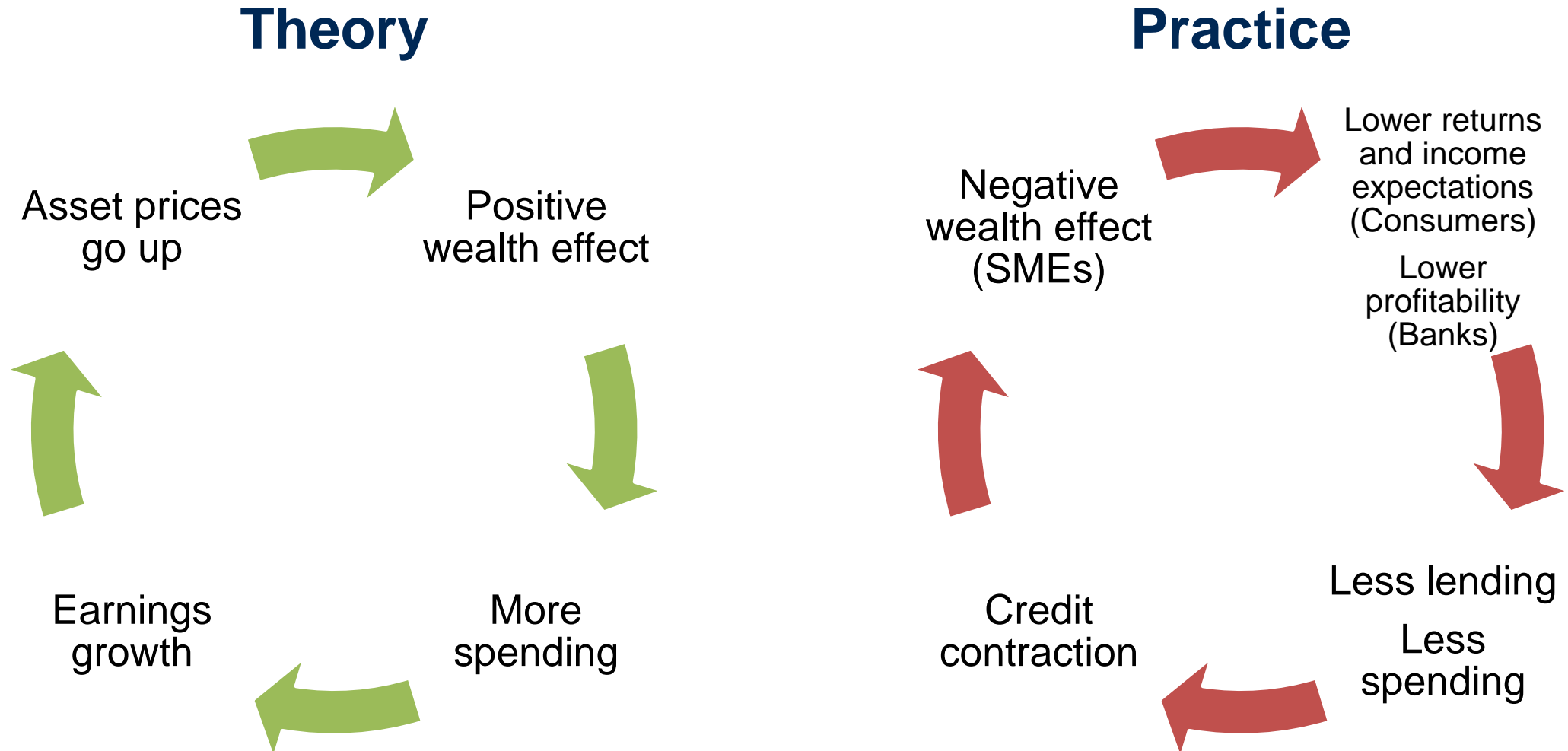
The QE Infinity Trap

Where Are We in the Cycle



The QE Infinity Trap

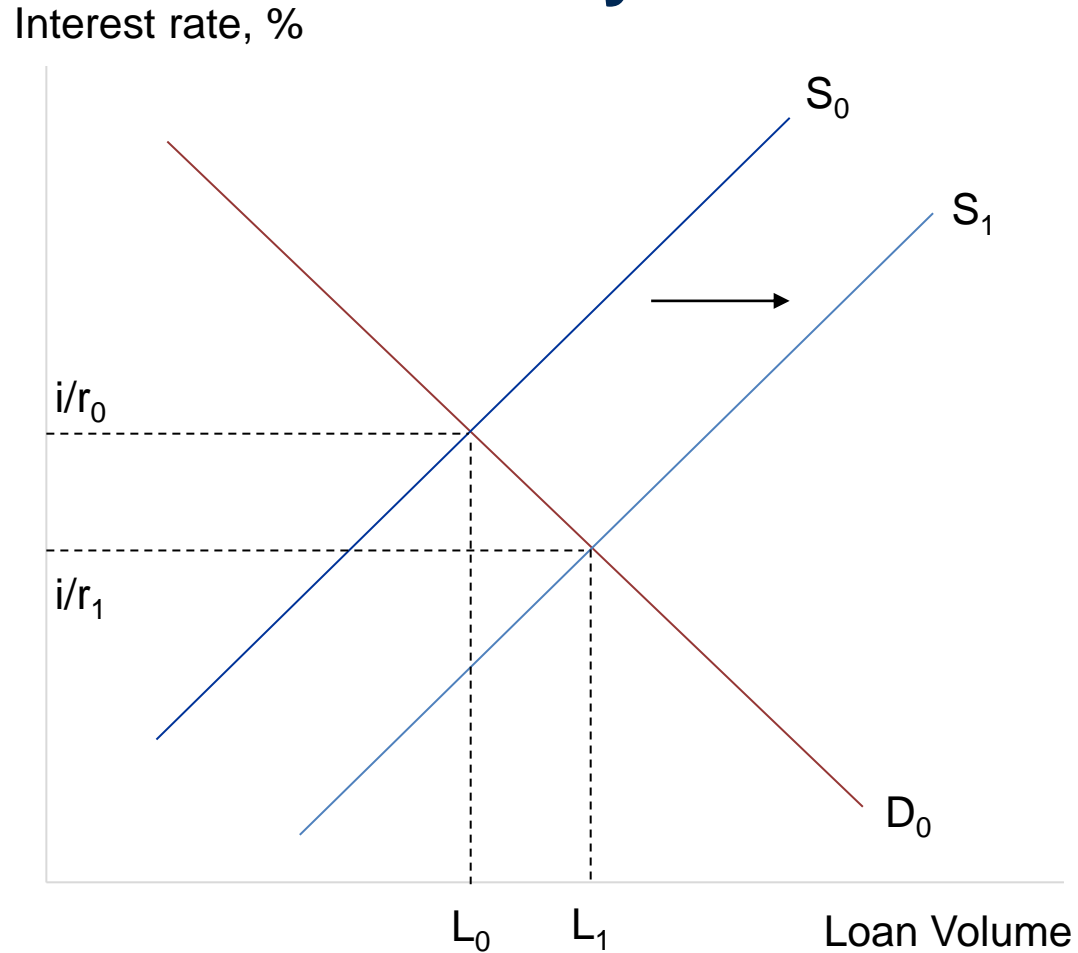
NIRP: Theory vs Practice (Adaptive Expectations)



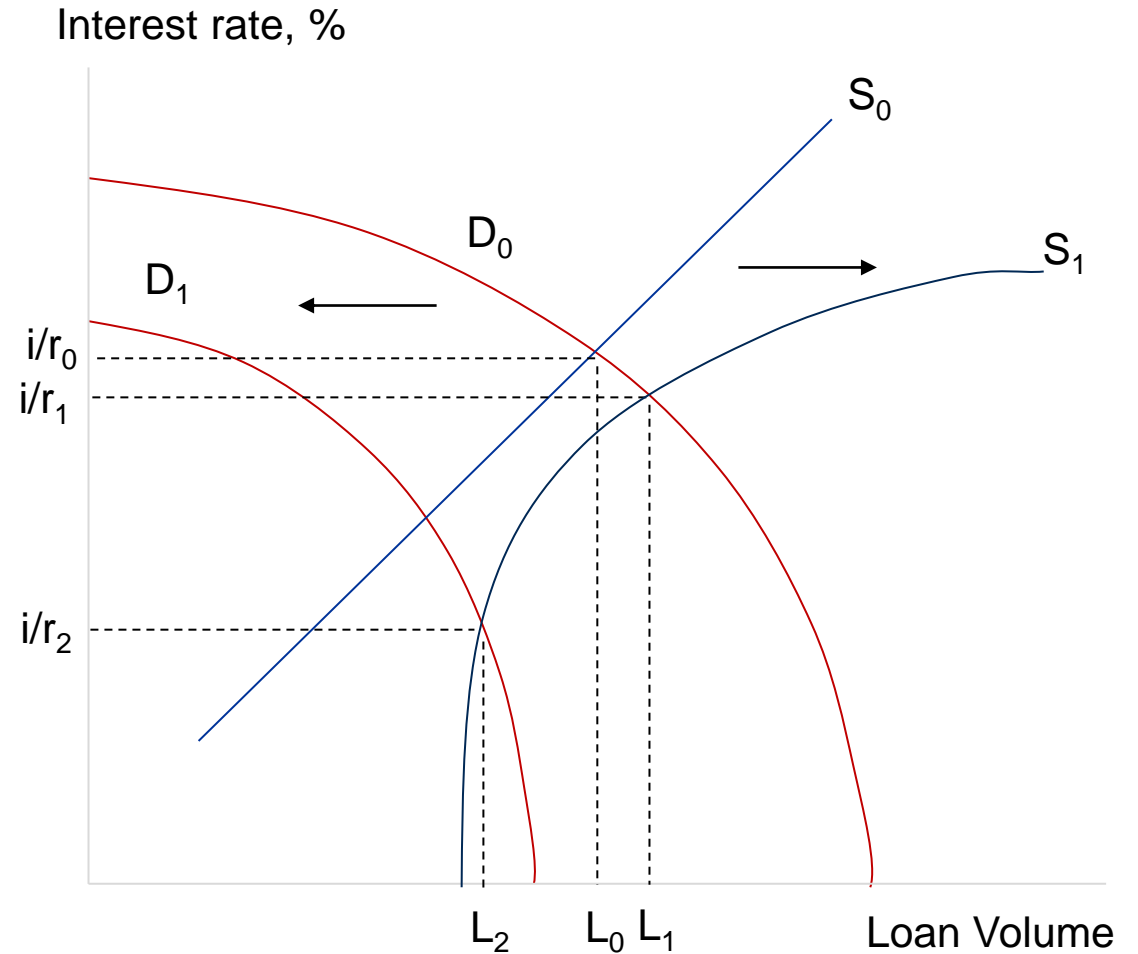
The QE Infinity Trap

Loan Demand vs Supply with Demand Shocks and Supply Constraints

Theory

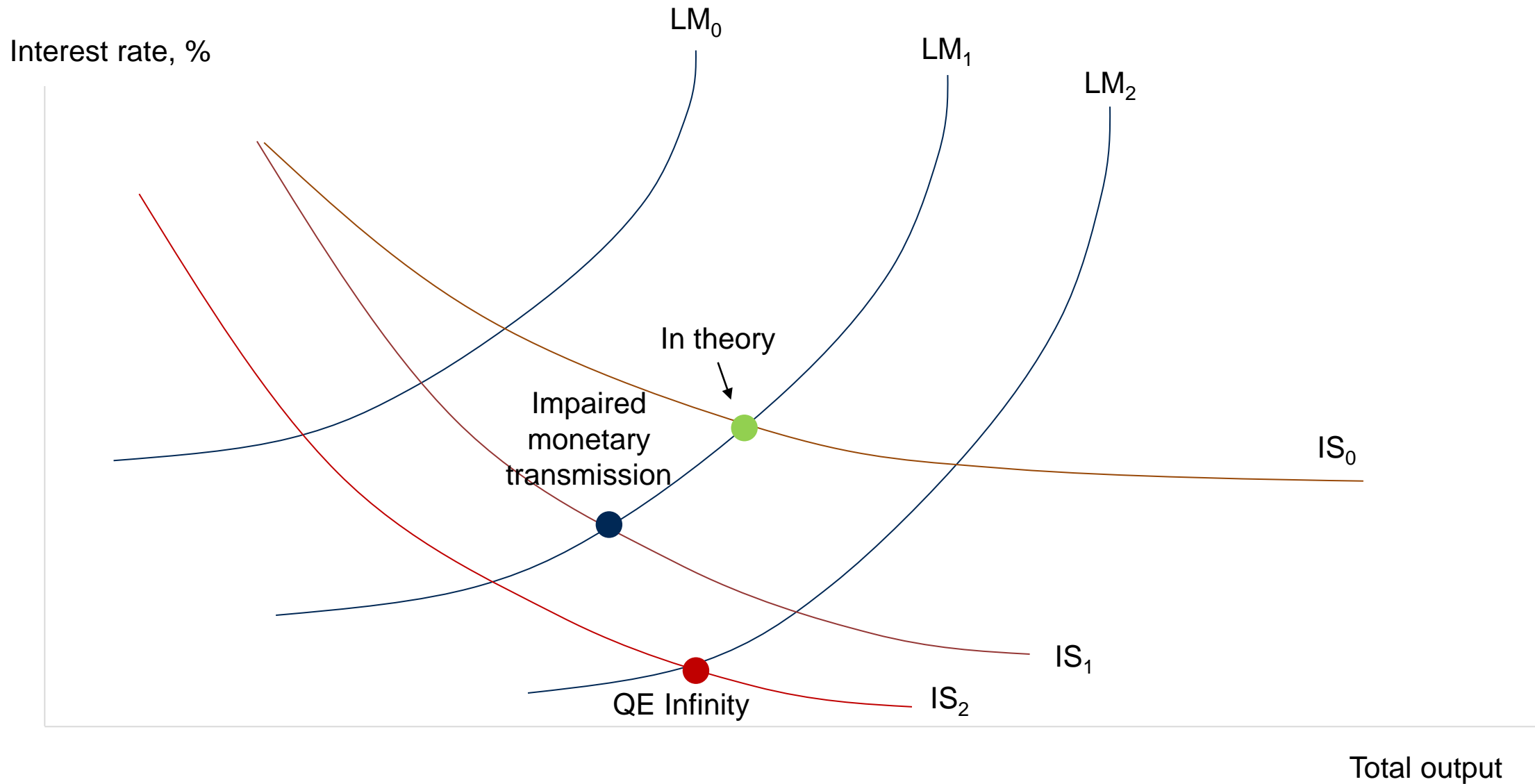


Practice



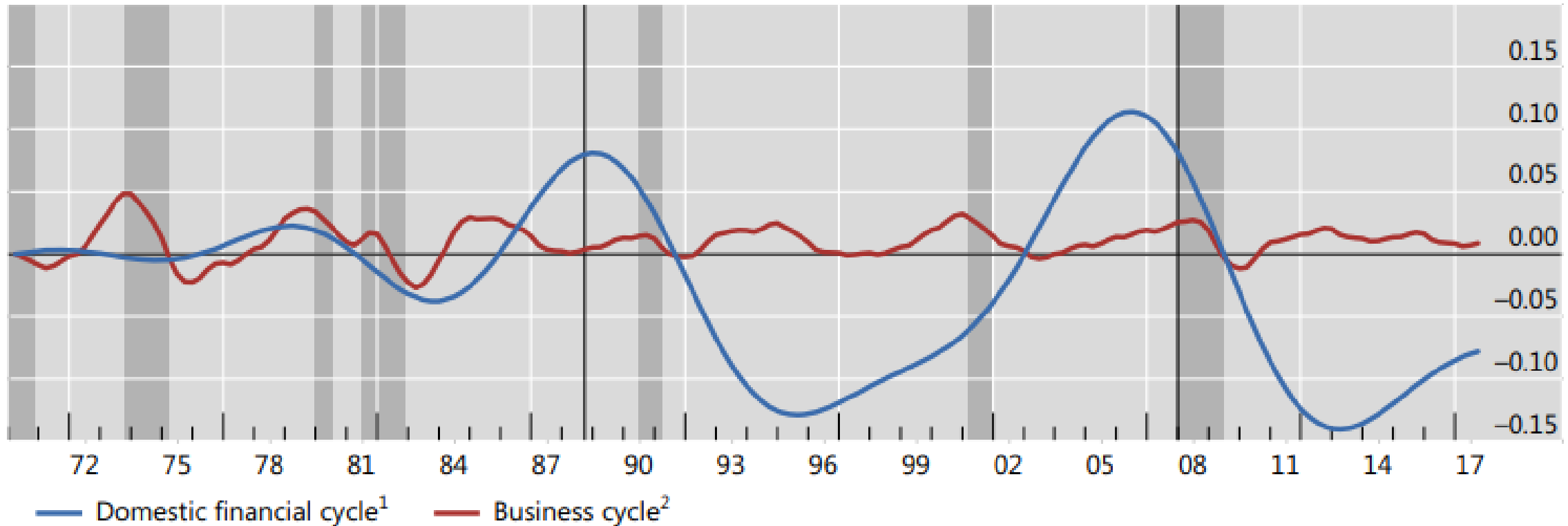
The QE Infinity Trap

IS-LM in QE Infinity



The Financial Cycle: No Machine of Perpetual Motion

Financial Cycles and Crises Are Becoming Longer and Deeper

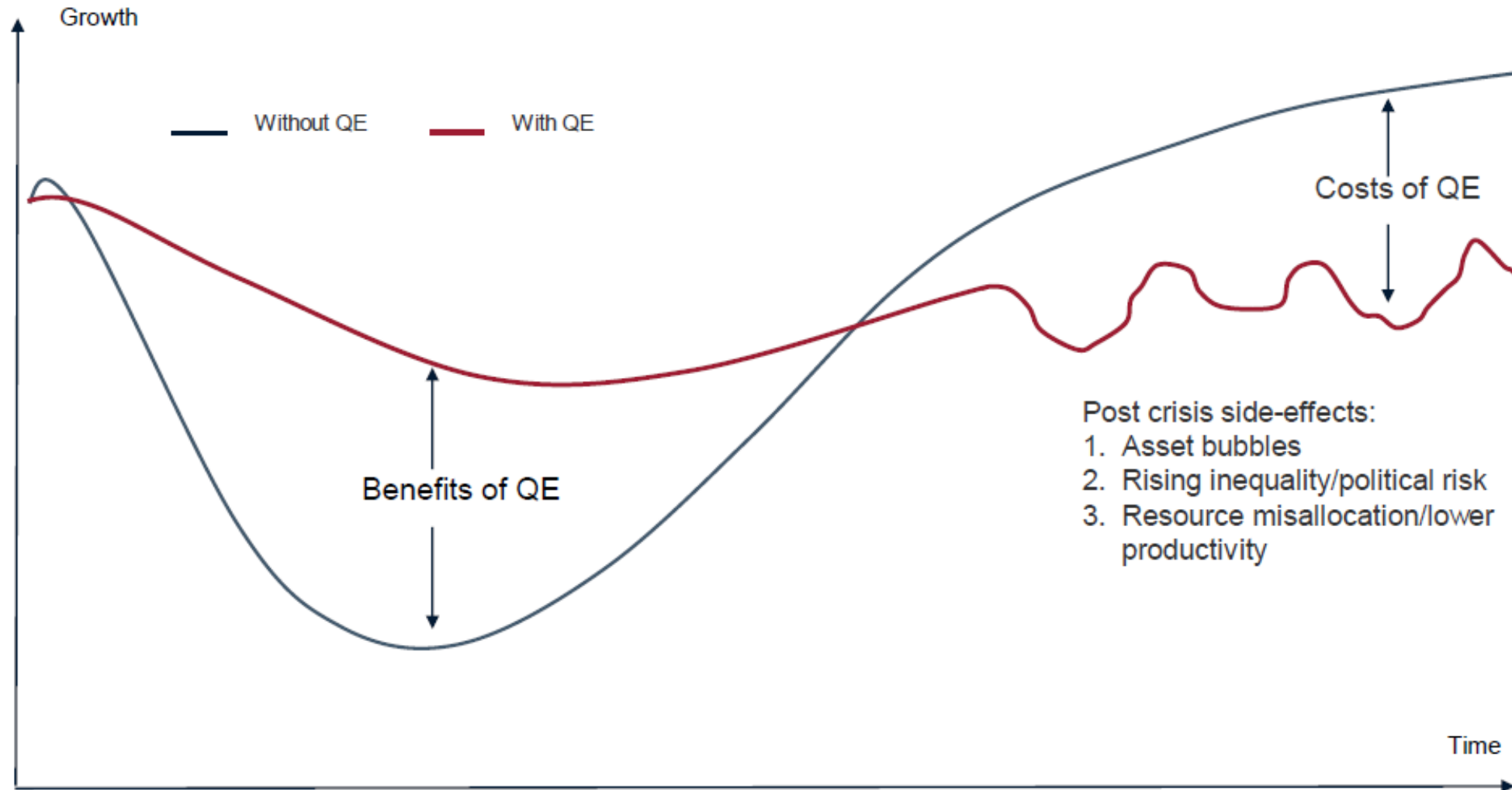


The shaded areas indicate recessions; the solid black lines indicate the start of a banking crisis as defined by Laeven and Valencia (2018).

¹ The financial cycle as measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices. ² The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years.

The QE Infinity Trap

Payback Time – Prepare to Pay for QE

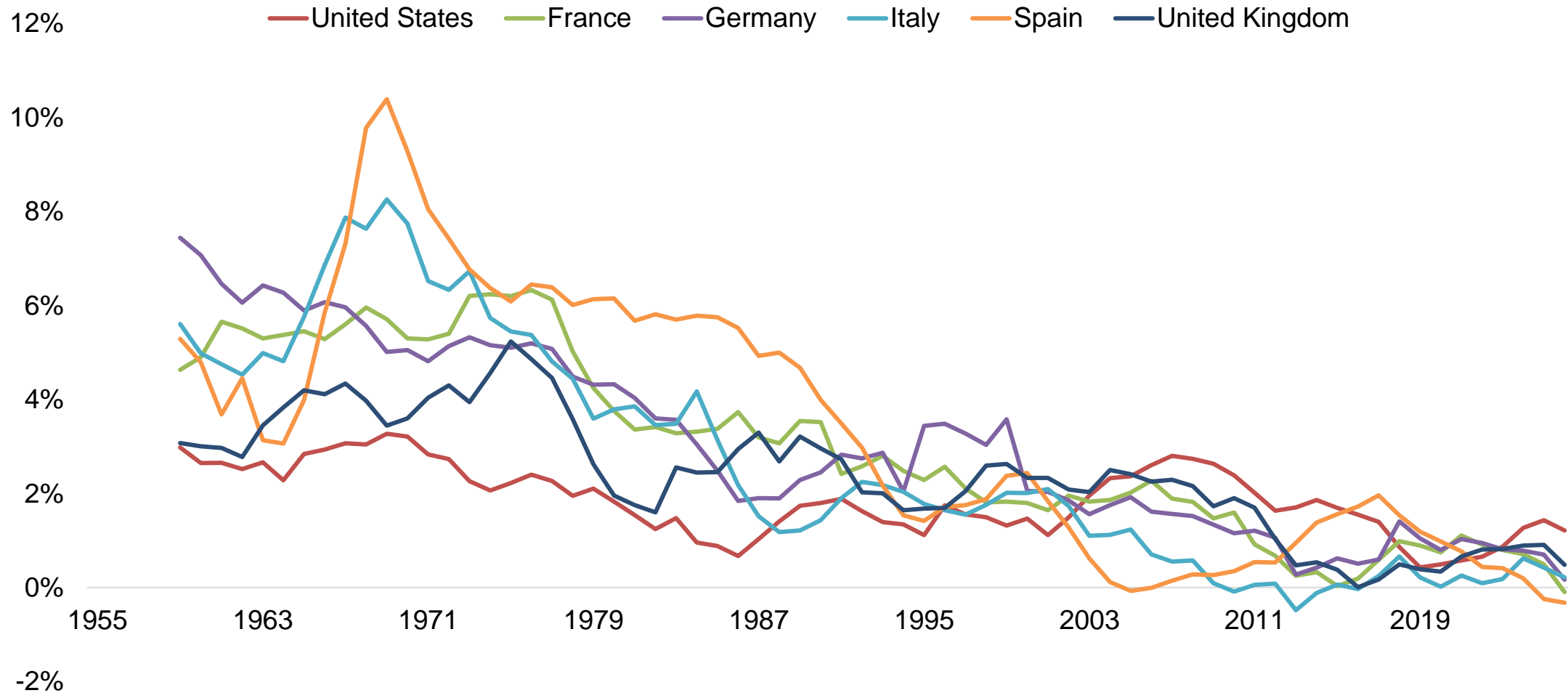


4. COLLATERAL EFFECTS OF QE

Secular Stagnation

Productivity Growth Has Hit a Wall

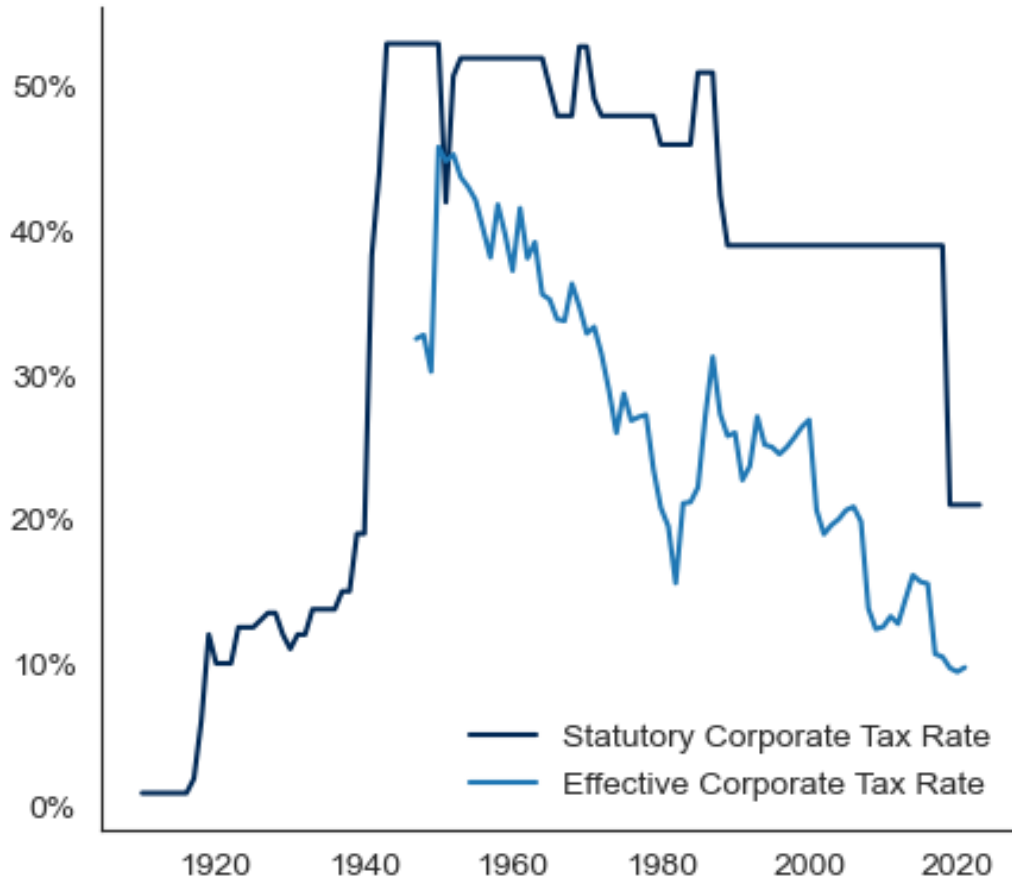
Growth of Labor Productivity per Hour Worked, 5-Year Moving Average



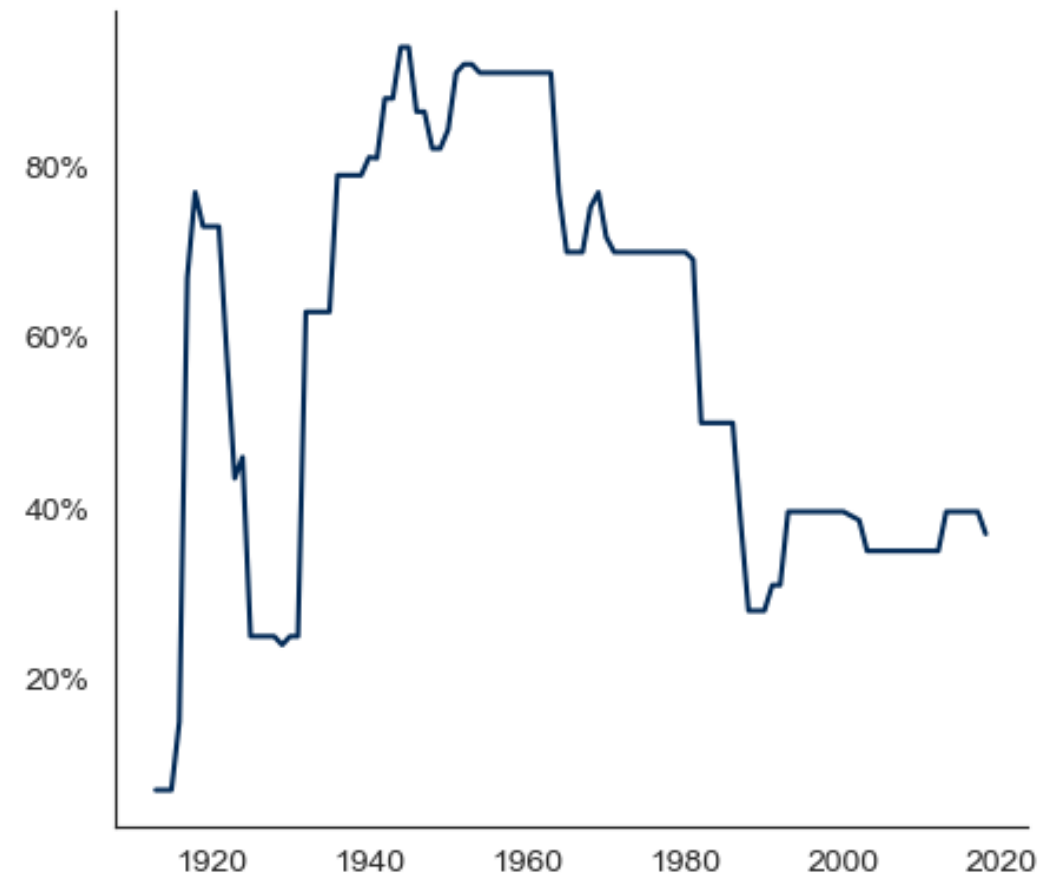
Secular Stagnation

US Corporate and Personal Marginal Tax Rates for the Highest Buckets

US Corporate Tax Rate: Top Bracket

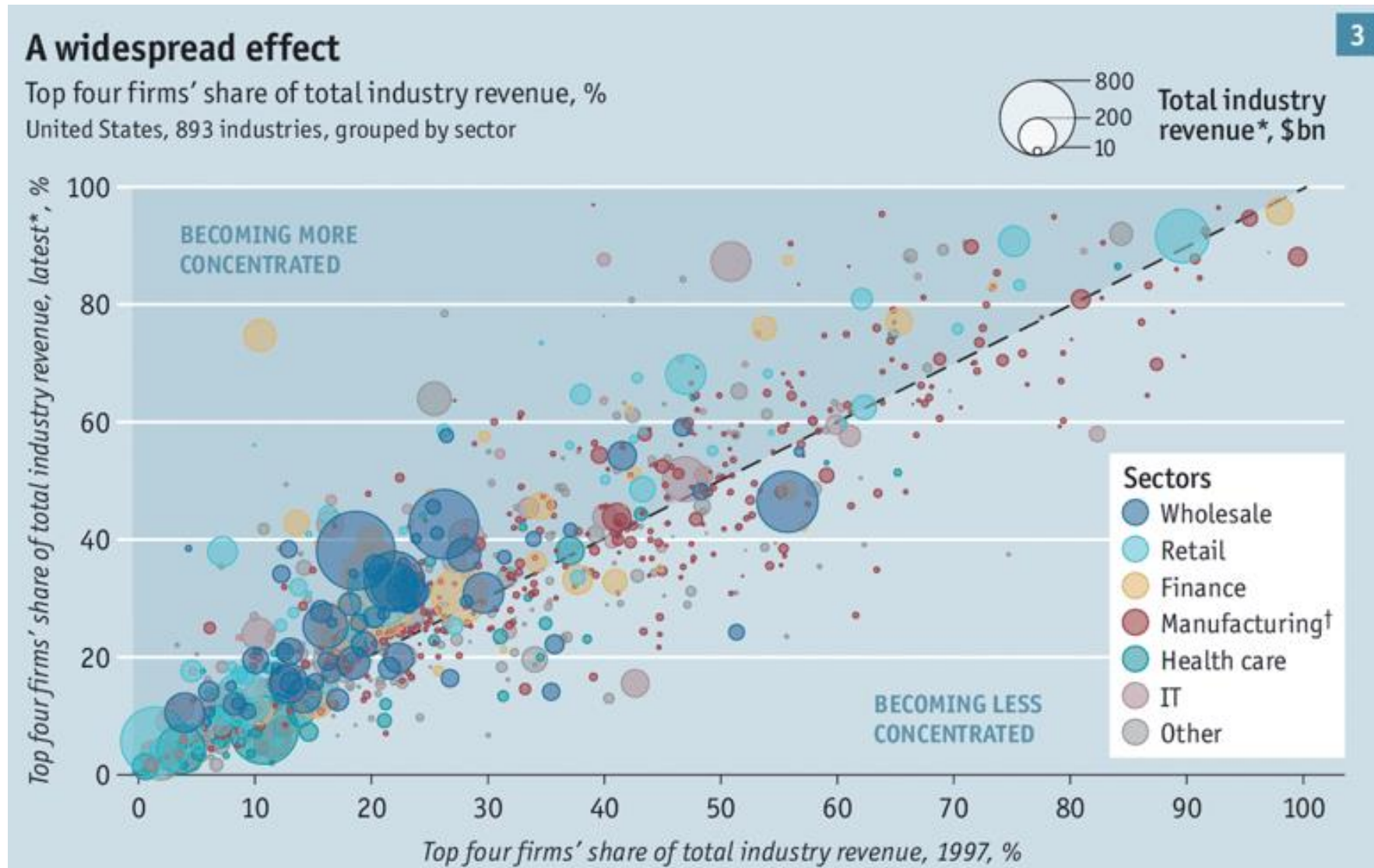


US Personal Income Tax: Top Bracket



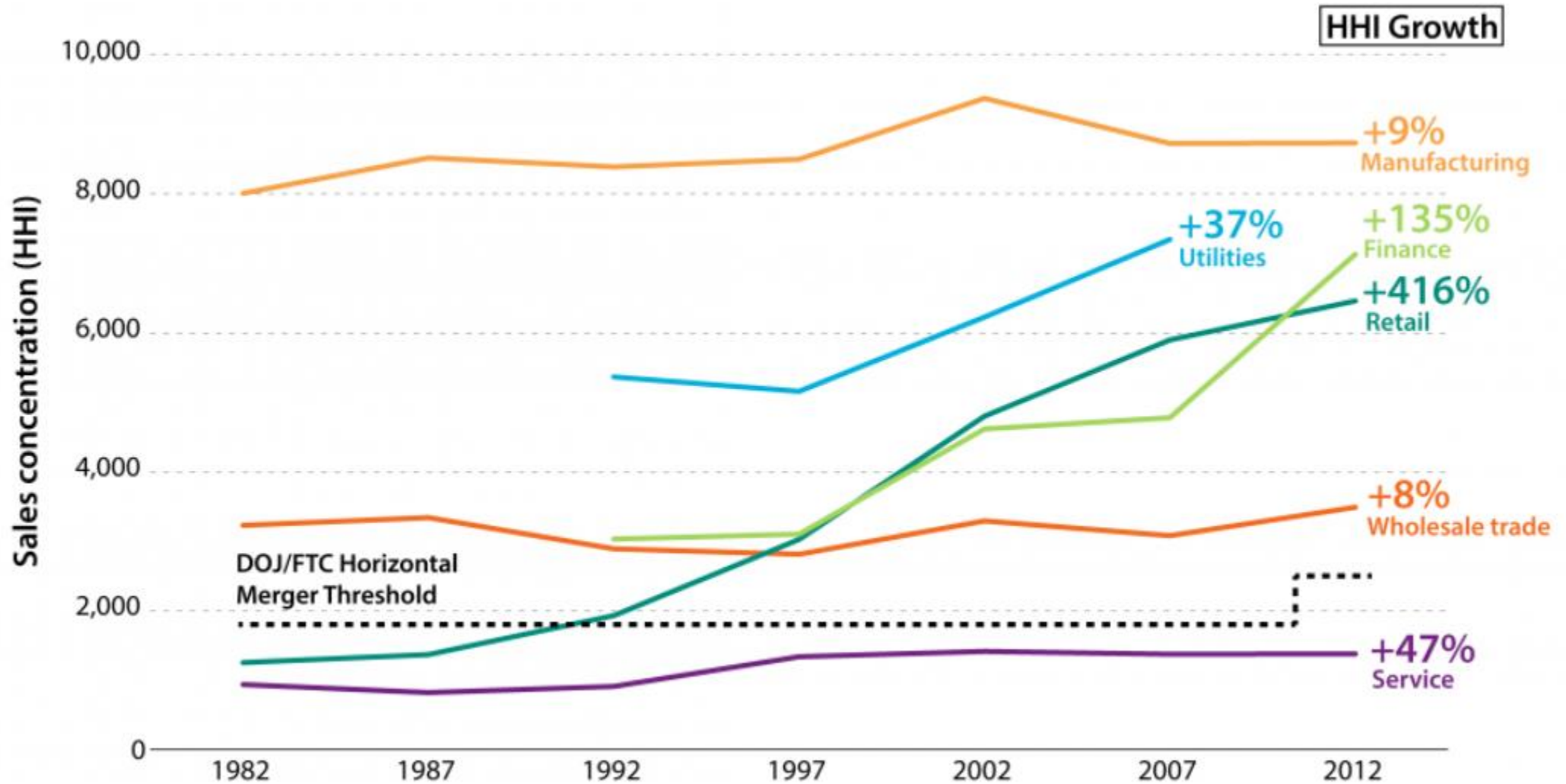
Secular Stagnation

Market Concentration and Monopolistic Behaviour



Secular Stagnation

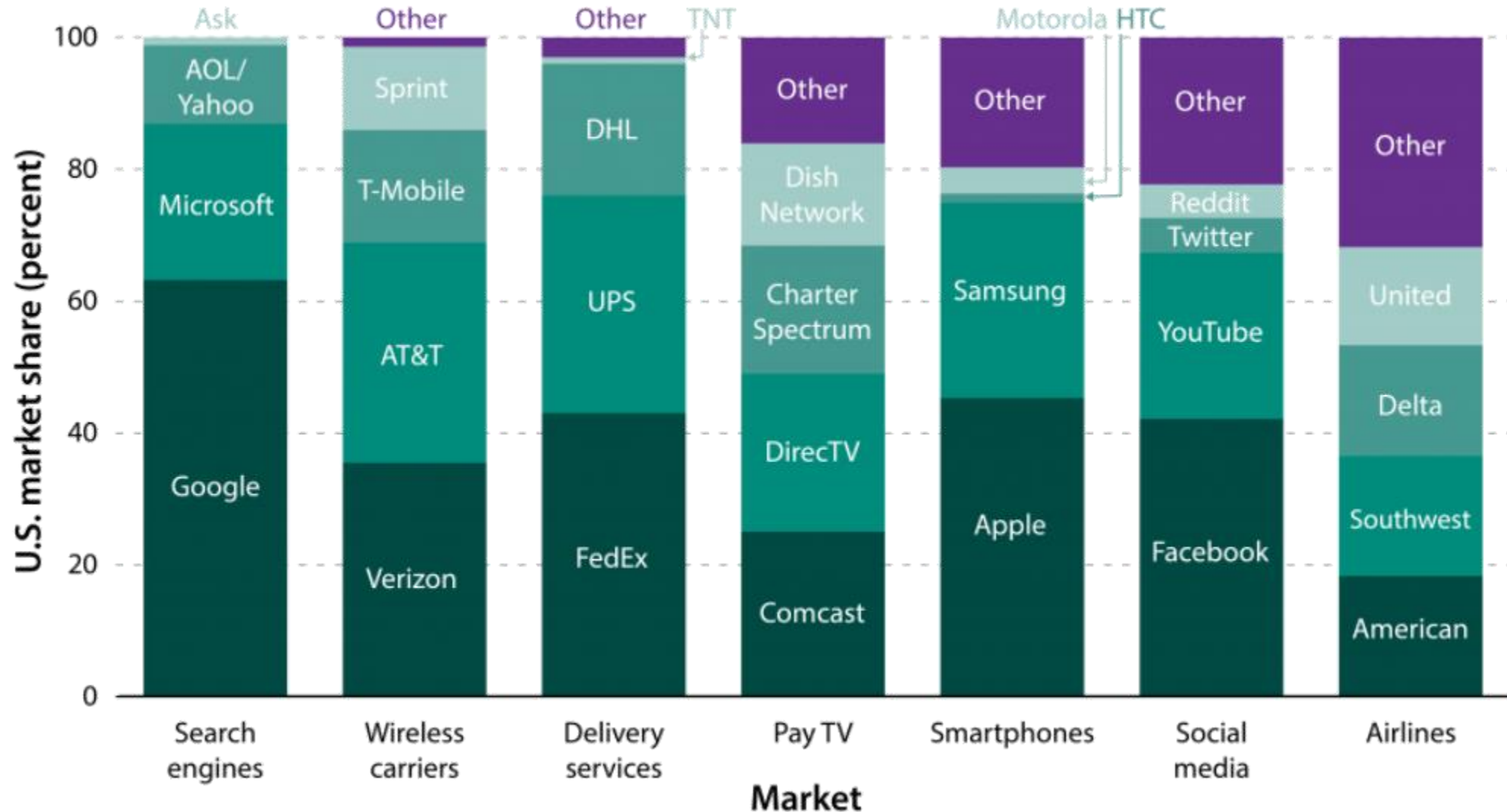
Market Concentration and Growth by Industry



Source: The Hamilton Project, Autor et al. 2017. Note: Market concentration refers to the Herfindahl Hirschman Index (HHI; sales). After defining the boundaries of a market and calculating each firm's share (e.g. of total sales), HHI is calculated by summing the squared market shares of all firms, then multiplying the sum by 10,000. HHI growth is for the date range available (1982-2012 for all series except Utilities and Finance). The dashed line indicates the threshold market concentration established by the US department of Justice and Federal Trade Commission's Horizontal Merger Guidelines above which a proposed merger would trigger enhanced scrutiny.

Secular Stagnation

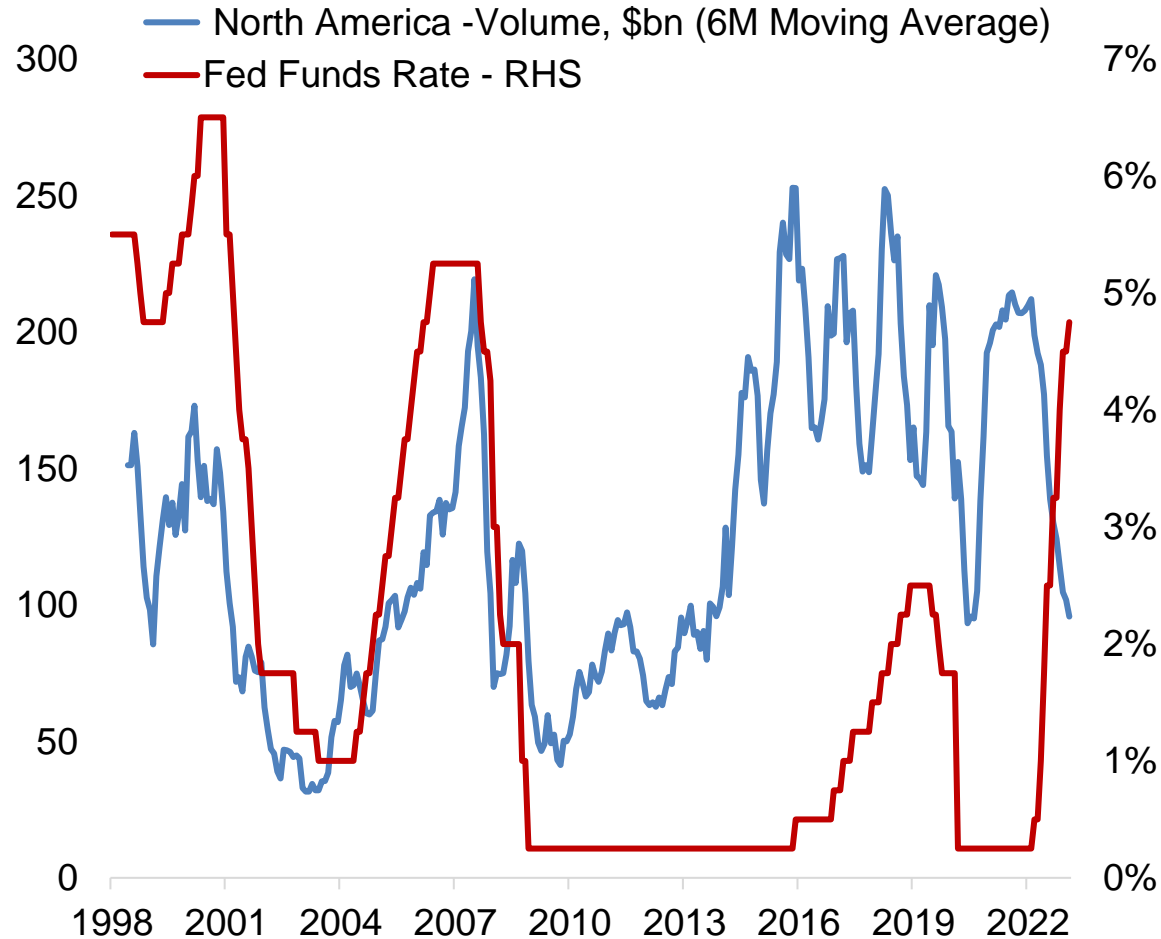
US Market Concentration by Firm and Industry



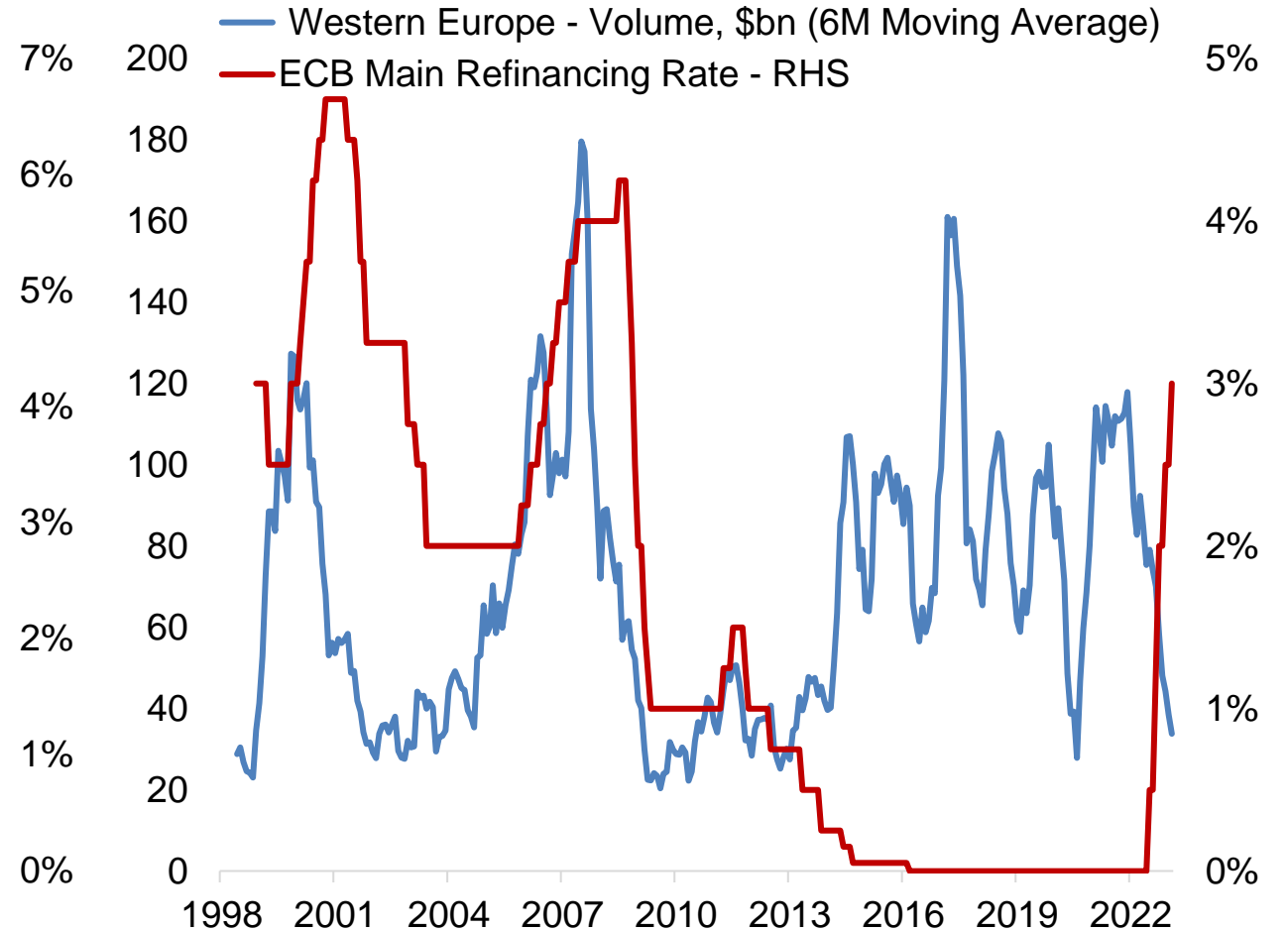
Source: The Hamilton Project, comScore 2018a, 2018b (search engines and smartphones), FierceWireless 2018 (wireless carriers), DHL 2018 (delivery services), Informity 2018 (Pay TV), MarketingCharts 2016 (social media), Bureau of Transportation Statistics 2018a (airlines). Note: Social media shows the share of all visits, smartphones and wireless carriers show the share of subscribers, airlines show the share of domestic revenue passenger miles. Data for social media are for November 2016, data for search engines, wireless carriers, and pay TV are for December 2017, data for delivery services are for 2017 for both North and South America, data for smartphones and airlines are for January 2018. The delivery firm TNT is a subsidiary of FedEx

The Relationship Between M&A Volume and Interest Rates

US: M&A Volume vs Fed Funds Rate

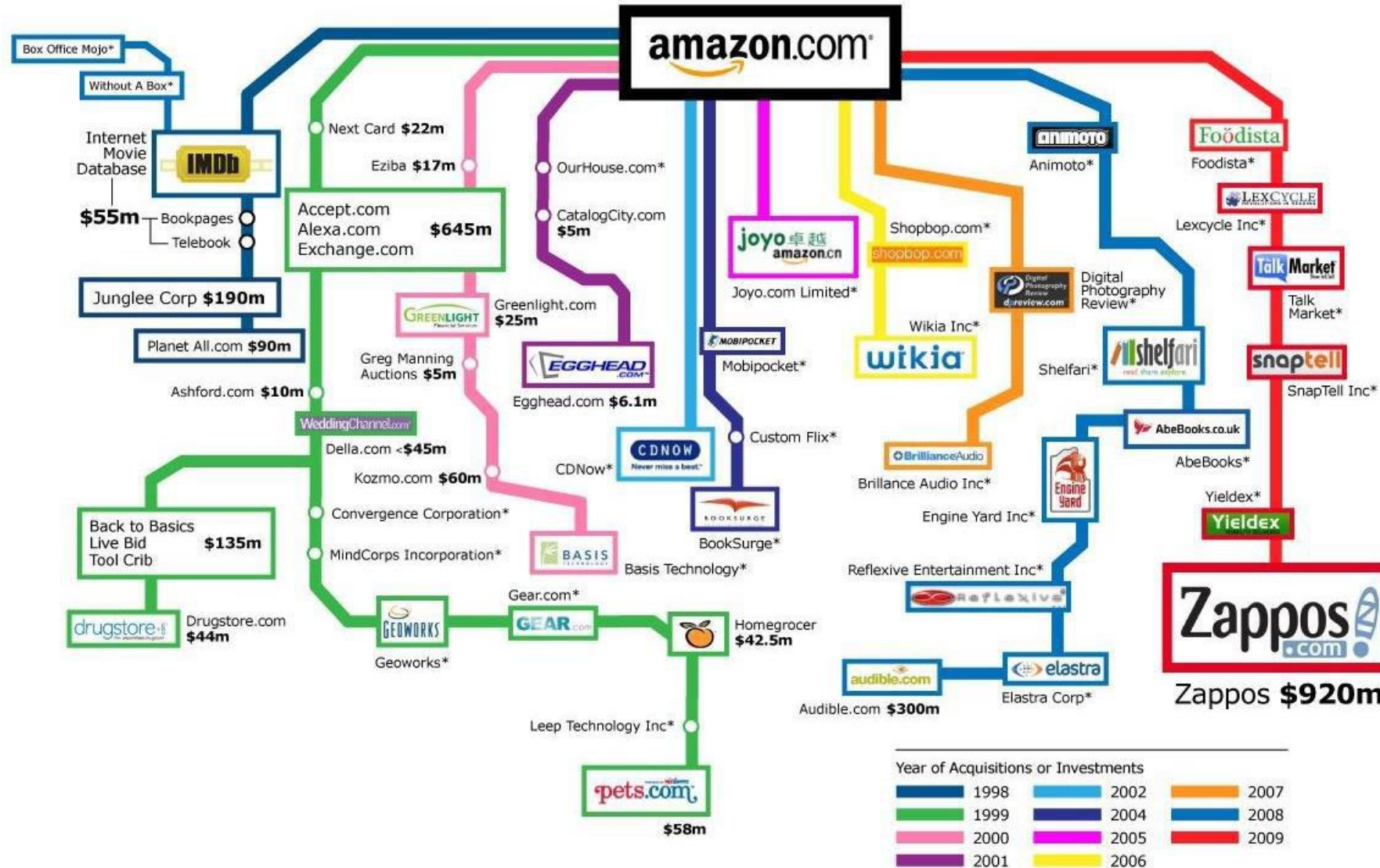


Europe: M&A Volume vs ECB Main Refinancing Rate



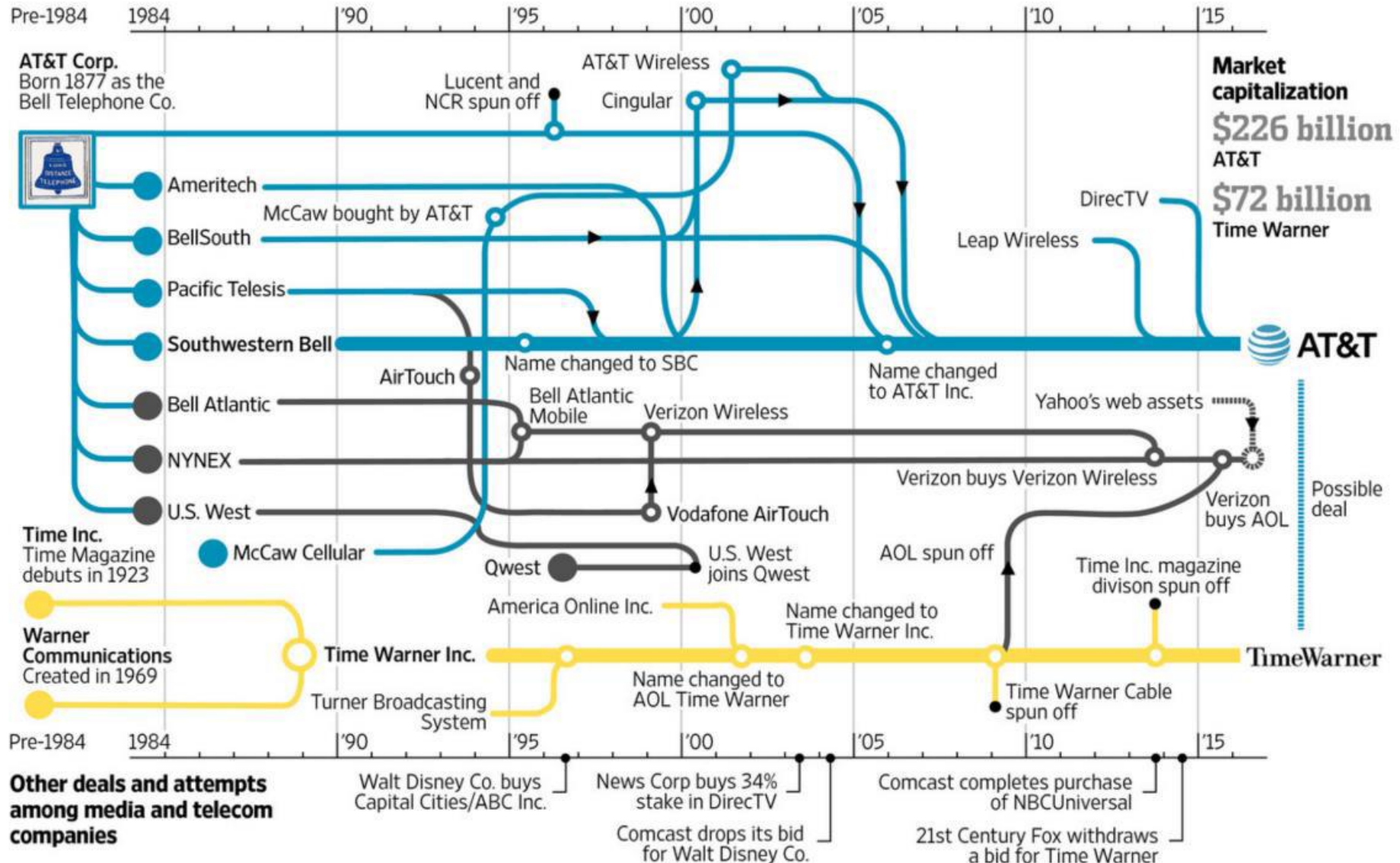
Secular Stagnation

Higher Concentration and Monopolistic Behaviour – Tech Industry



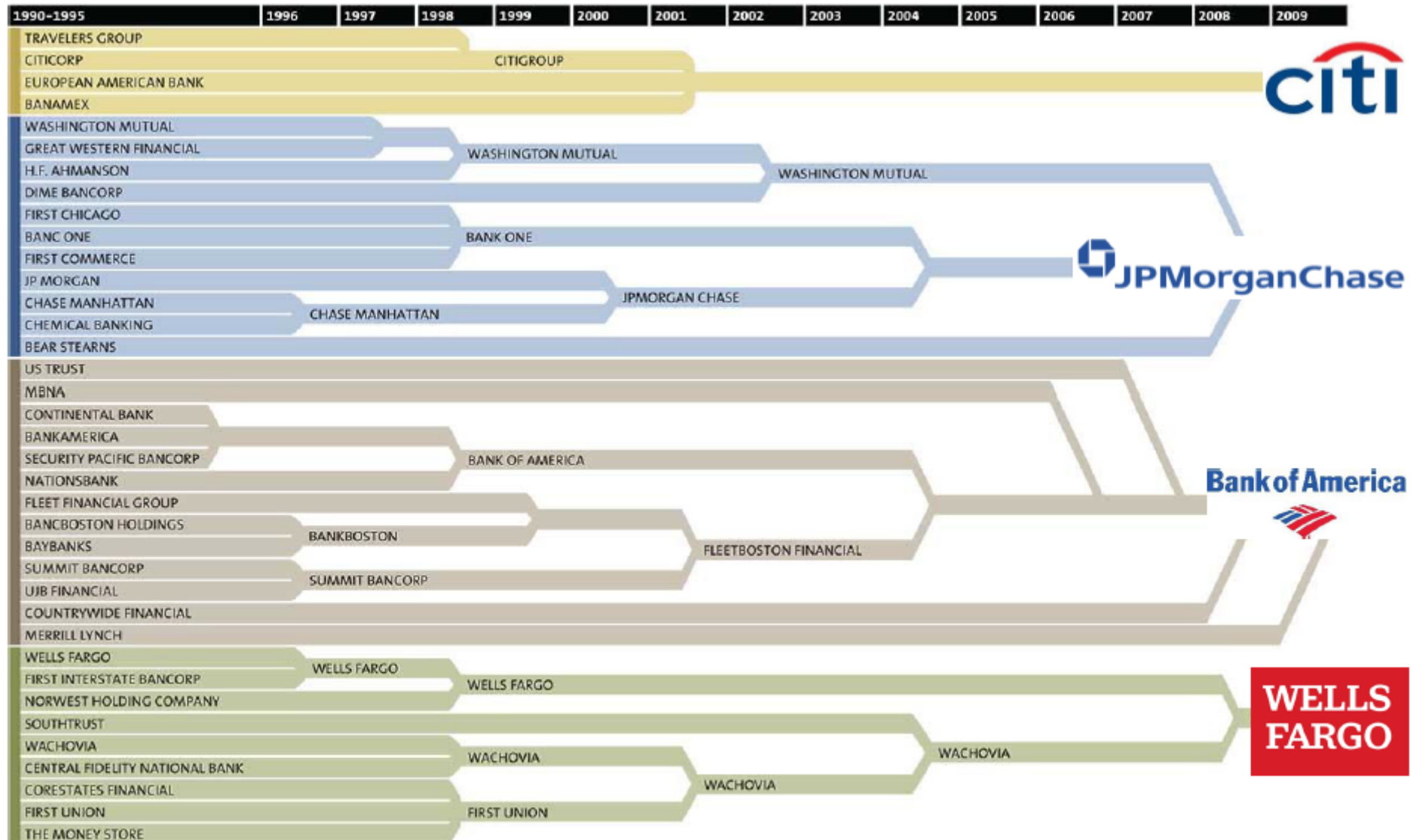
Secular Stagnation

Higher Concentration and Monopolistic Behaviour – Cable Industry

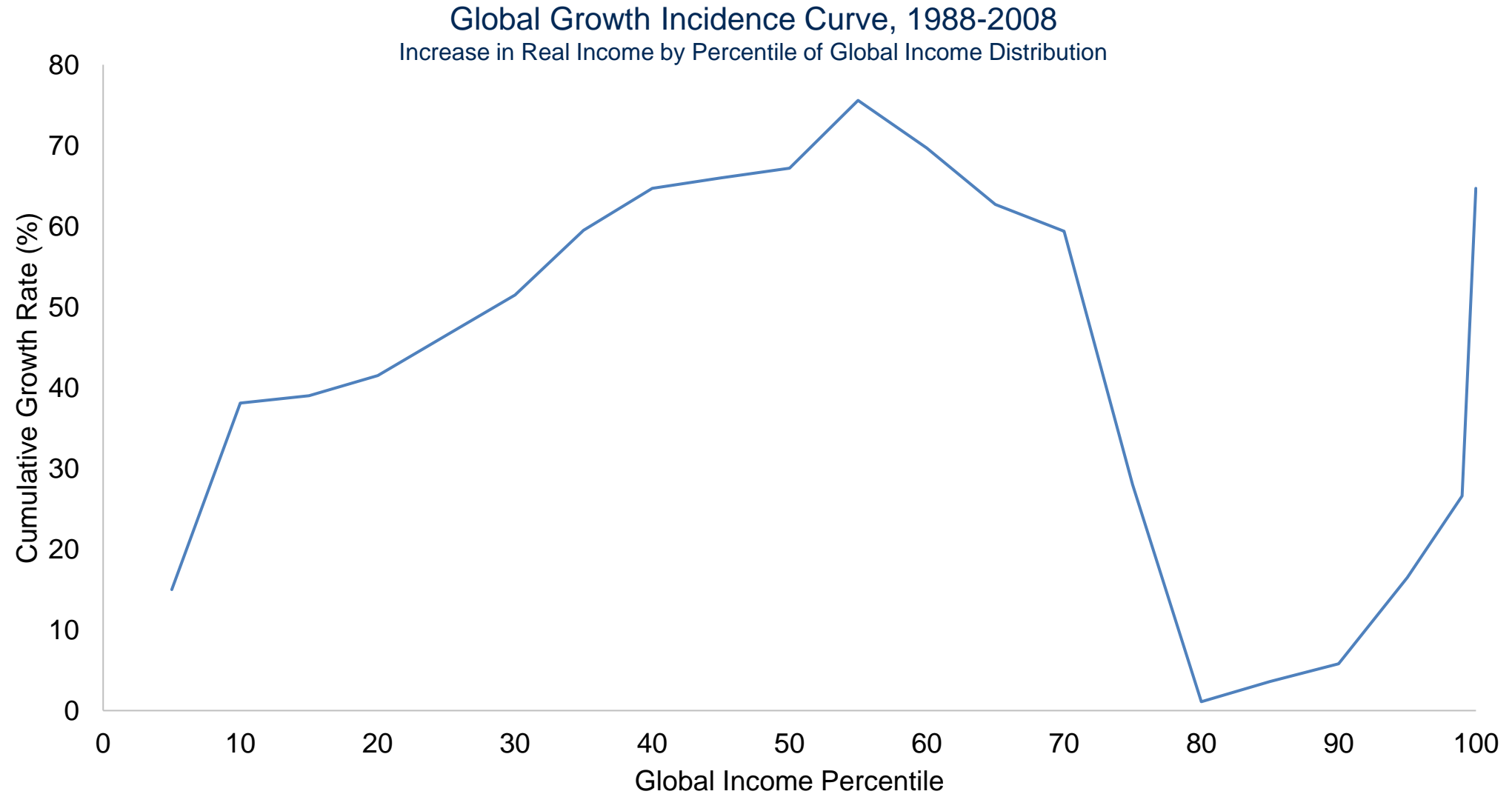


Secular Stagnation

Higher Concentration and Monopolistic Behaviour – Financial Sector



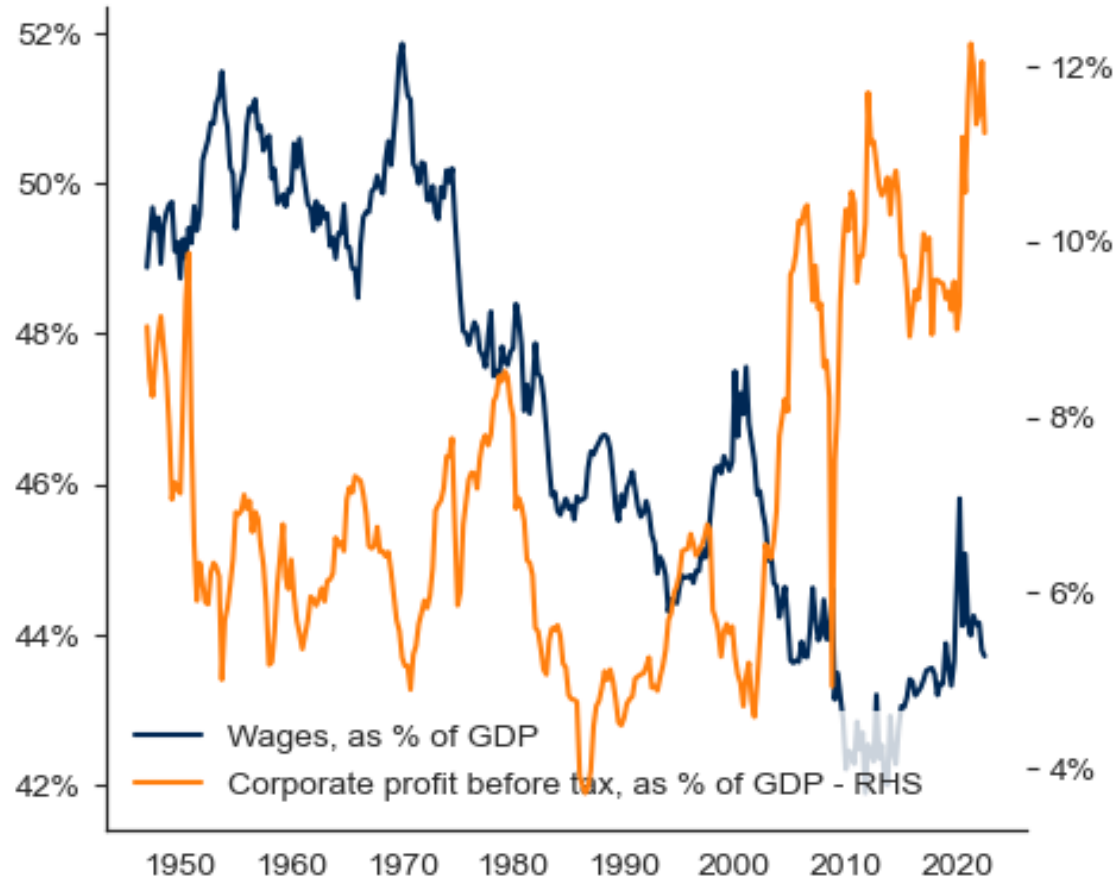
Income Inequality – The Elephant in the Room



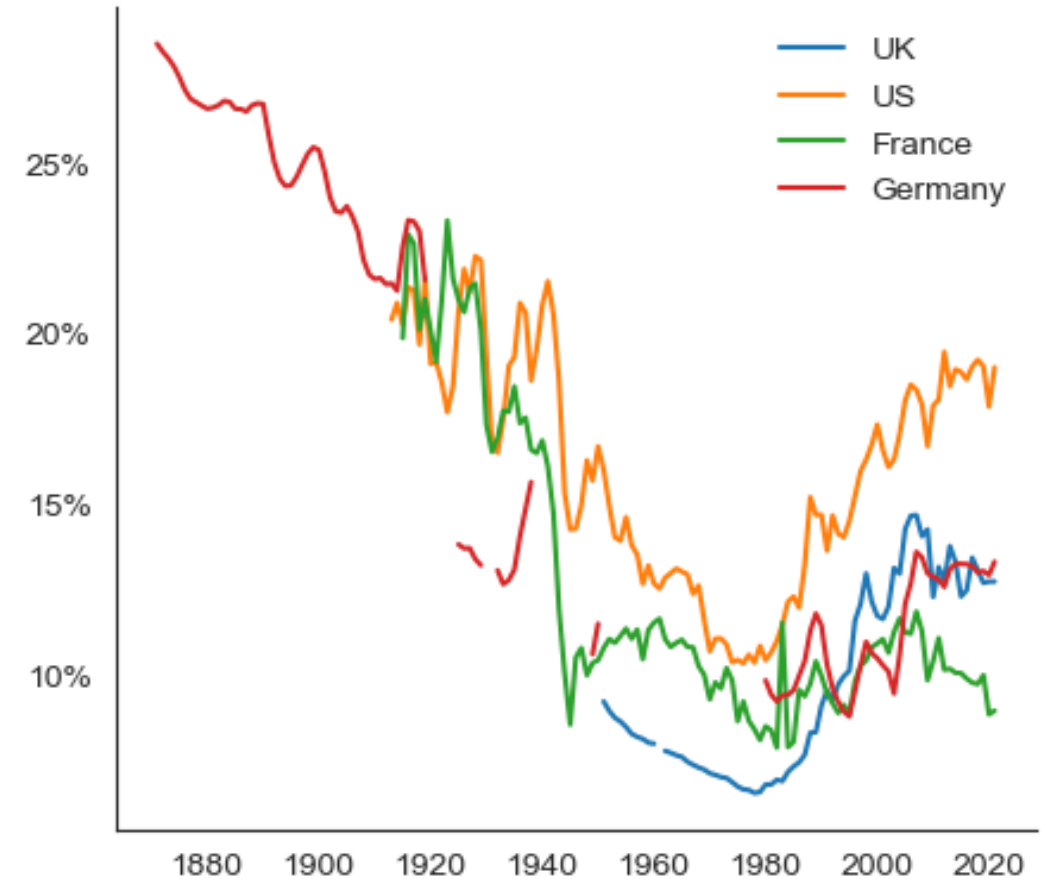
Secular Stagnation

Excess Credit + Easy Monetary Policy = Rising Inequality

Corporate Profits Have Risen, Not Wages
US Corporate Profit and Wages, as % of GDP



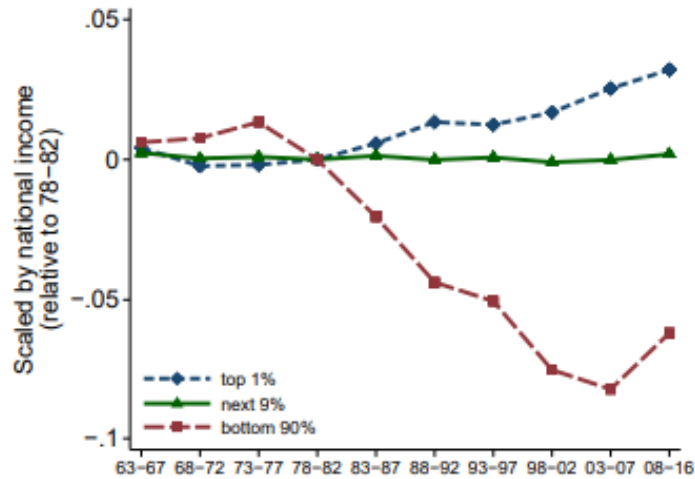
The Top 1%: An Increasing Share of Total Income
% of Total Income for the Top 1% of Earners



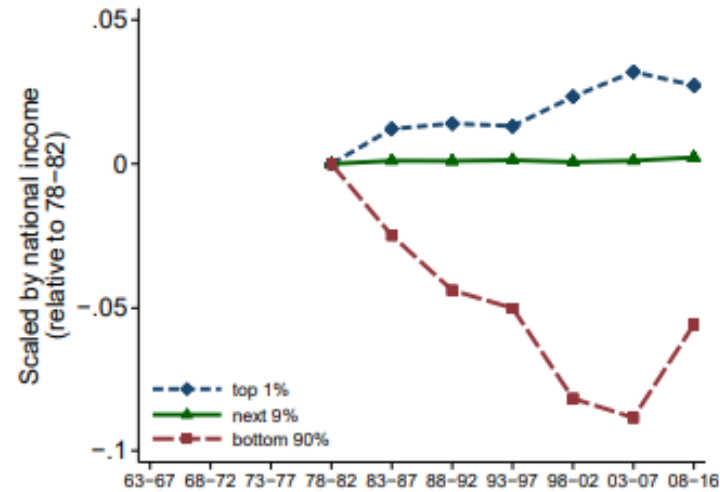
Secular Stagnation

A Saving Glut of the Rich Financed by the Non-rich

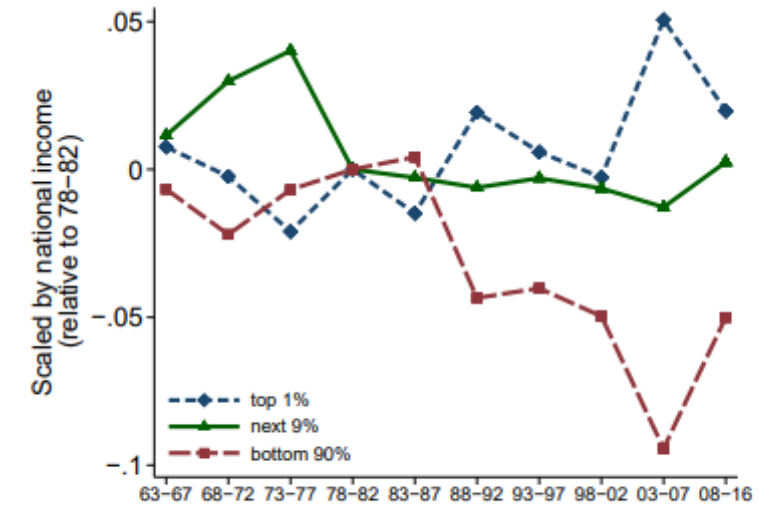
Saving Across the Distribution



(a) Income less consumption. DINA



(b) Income less consumption, CBO

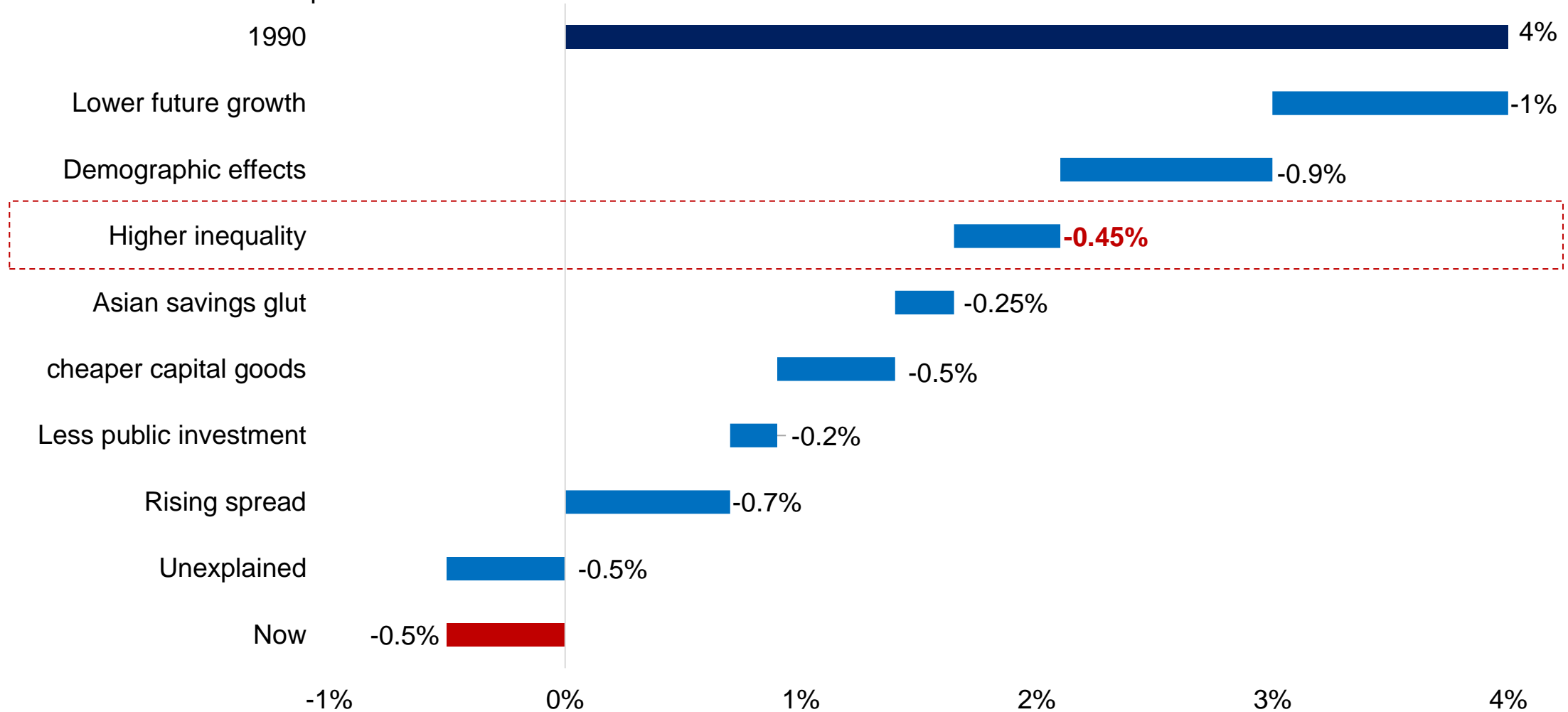


(c) Wealth-based approach

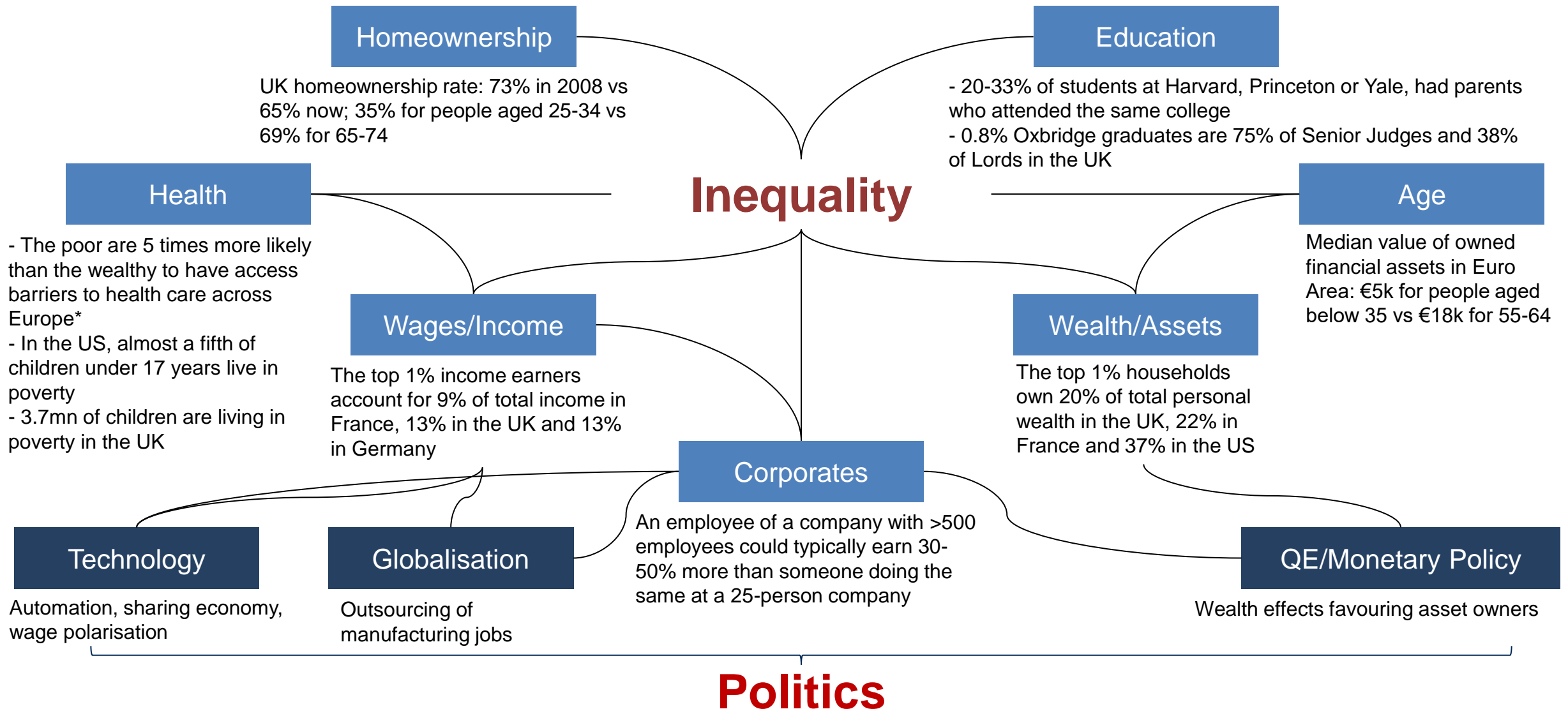
Inequality to Keep Rising, Lowering Growth Potential

Structural factors have lowered the neutral real rate – inequality is poised to keep rising, further lowering growth potential

Neutral Real Rate in Developed Economies



Inequality and the Politics of Rage



The Rise of Populism

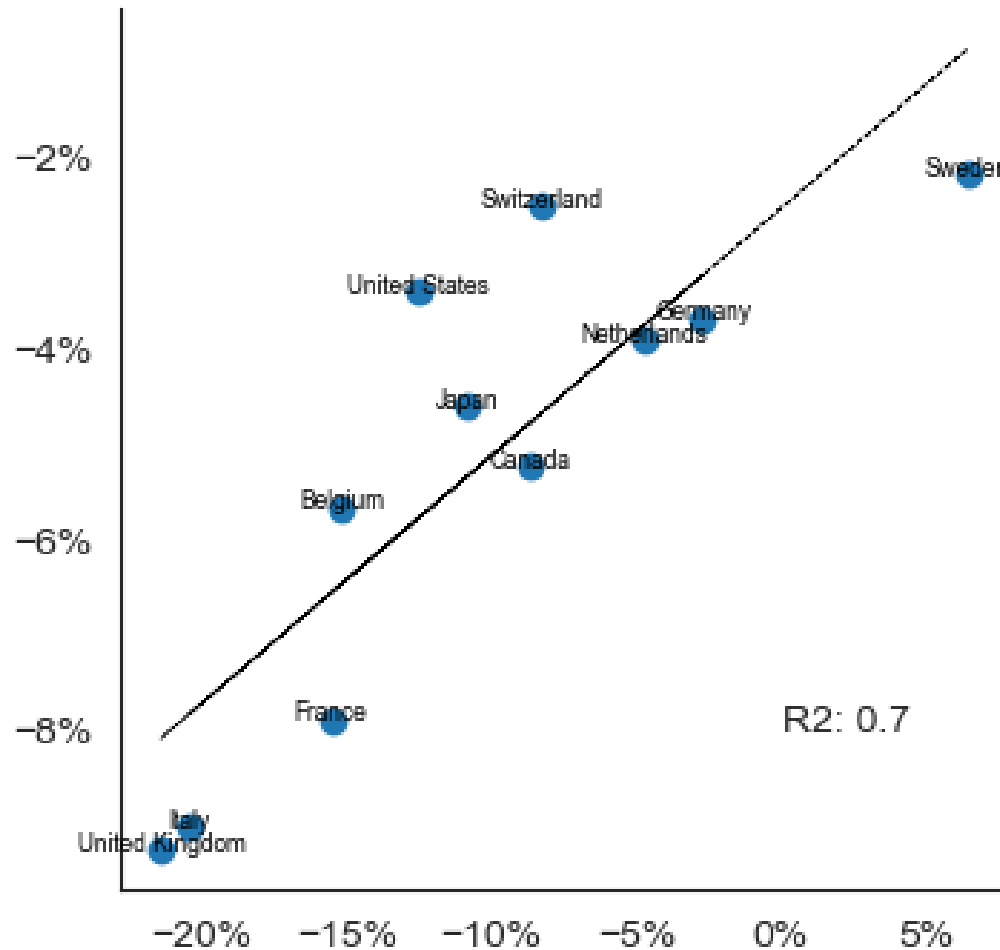
The Populist Playbook

		UK/Brexit	US/Trump	Italy/5S, NL & Fdl
1. Dream	Economic Political	£350mn a week Take back control	Revive manufacturing MAGA	Jobs Contract with Italians
2. Enemy	Foreign Domestic	Europe Immigration	Mexico, China, NK Immigration	EU/ECB Immigration
3. Policies	Militarism Nationalism Protectionism	Spain/Gibraltar/Russia Tax haven Tariffs	Defence spending Wall, Buy American Tariffs	Police spending UBI Flat tax
Results	Large deficits Resource misallocation Rising public debt	Financial Repression (Inflation, Taxes & War)		

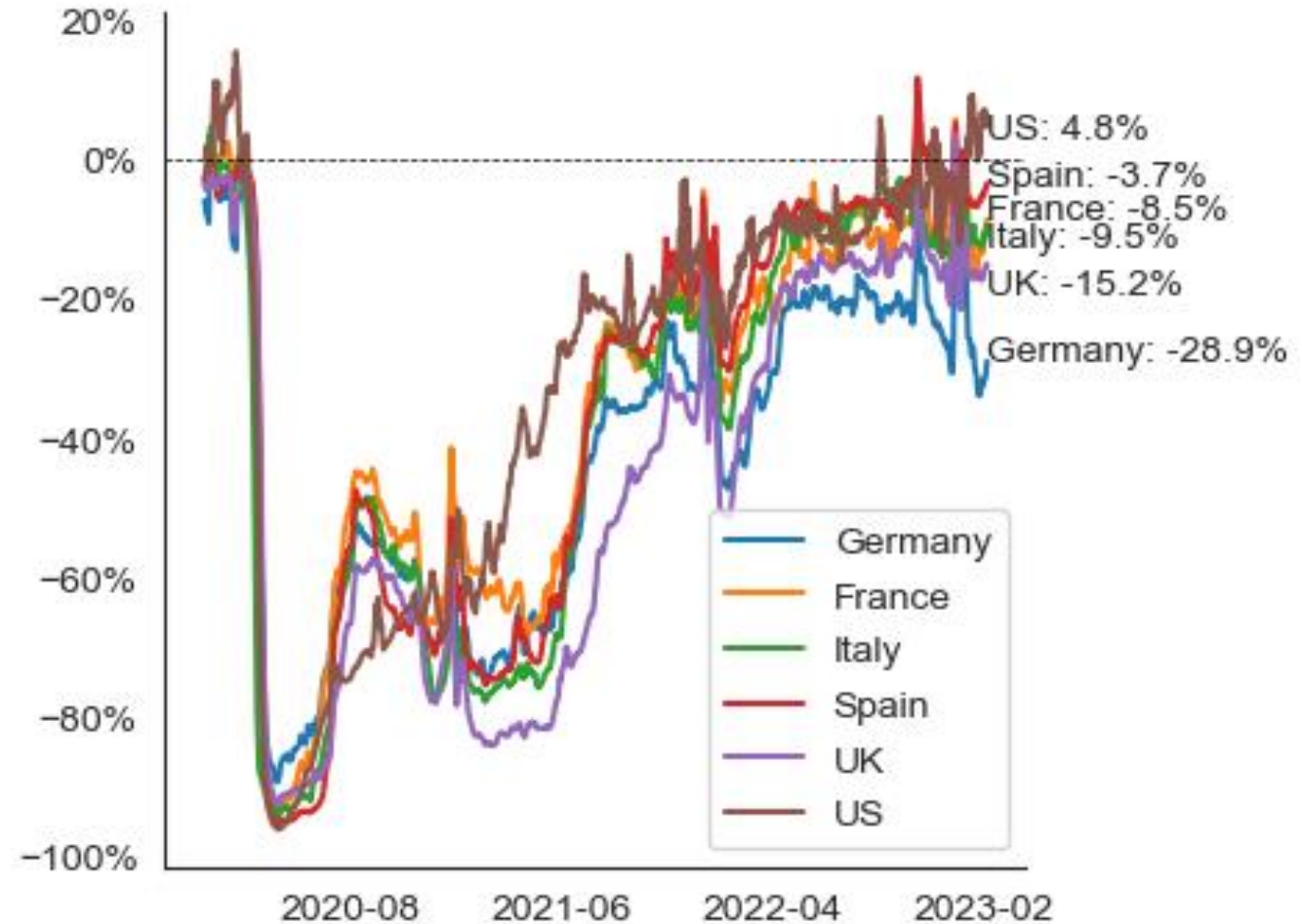
5. THE PANDEMIC SHOCK

Lockdowns Led to Sharp Drops in Activities and Subsequent Rebounds

2020 GDP Growth vs Google Mobility Drops



Flights as % of 2019, 7DMA*



Fiscal Policy to the Rescue

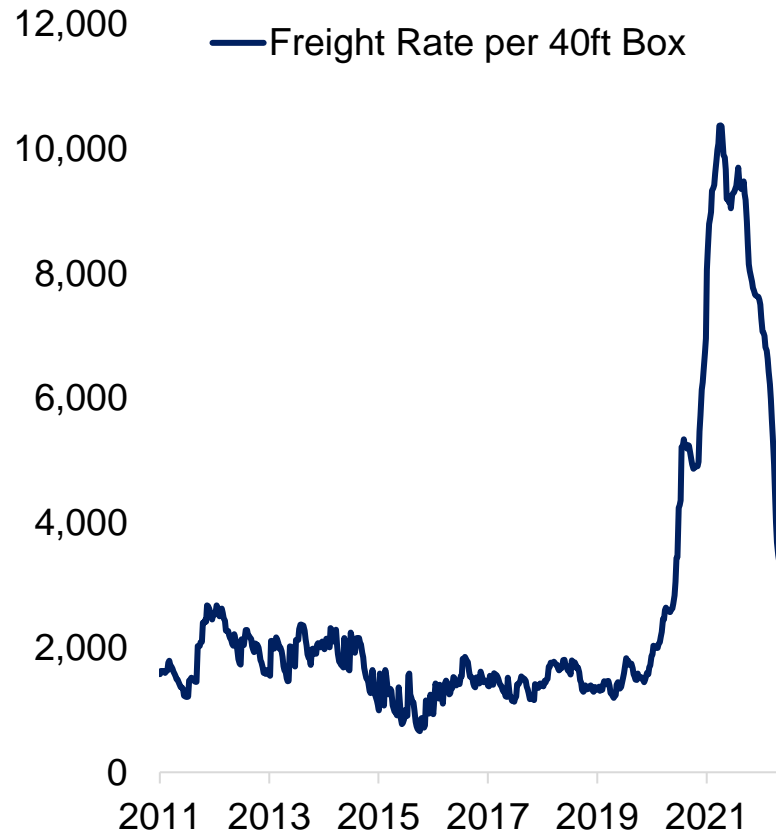
The Biden Administration: Covid-19 Relief and Fiscal Stimulus Proposals

\$Bn	"Phase IV" Proposals				"Phase V" Proposals
	House Democrats (May 2020) "Phase IV"	House Democrats (Oct. 2020) "Phase IV"	Bipartisan Proposal (Dec. 2020)	Enacted Covid Relief Bill (Dec. 2020) "Phase IV"	Biden Proposal (Jan 2021)
State fiscal aid	996	492	160	0	370
Education grants	90	225	82	82	170
Public health	197	198	51	69	160
Stimulus payments, child tax credit	584	360		171	450
Unemployment insurance	440	390	180	180	200
Rental/homeowner assistance	200	89	25	25	35
Child care	10	65	10	10	40
Safety net programs	40	26	13	13	20
Health insurance	99	10			100
Business assistance	268	408	300	350	50
Student loan relief	192	44	4		
Pension relief	53	59			
Transportation	31	48	29	29	20
Air Carriers		27	16	16	
Broadband	6	15	10	7	
Farm subsidies			13	13	
Eliminate SALT limitation for 2020	137	65			
Reverse CARES tax loss provision	-254	-254			
Other	356	131	15		285
Total cost (\$bn/10yrs)	3445	2398	908	c.950	1900
Total cost (% 2020 GDP)	16.5	11.5	4.3	4.5	8.6

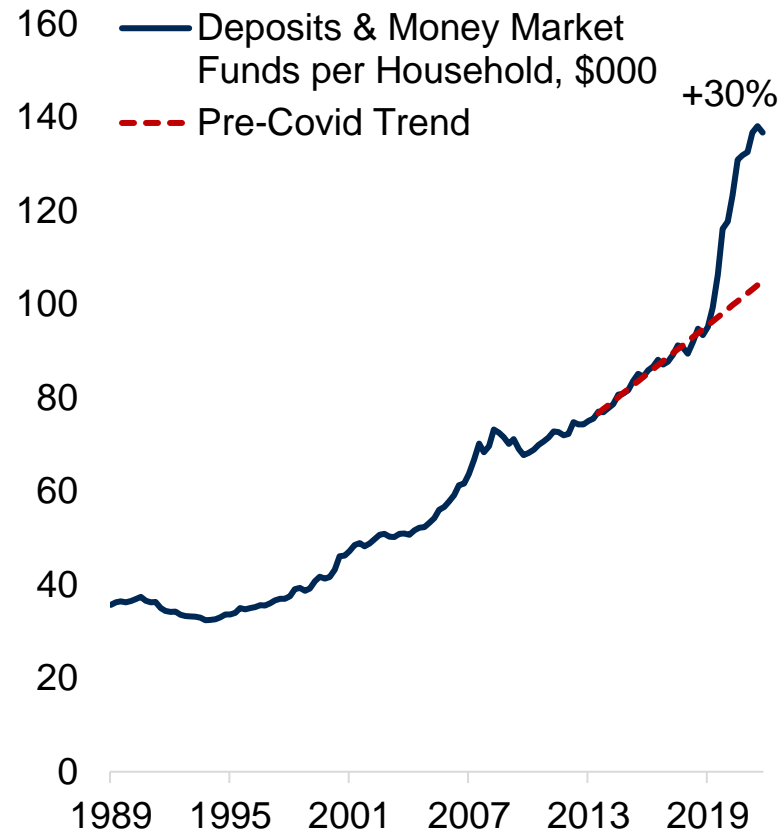
The Return of Inflation

Inflation Drivers: Transitory vs Persistent

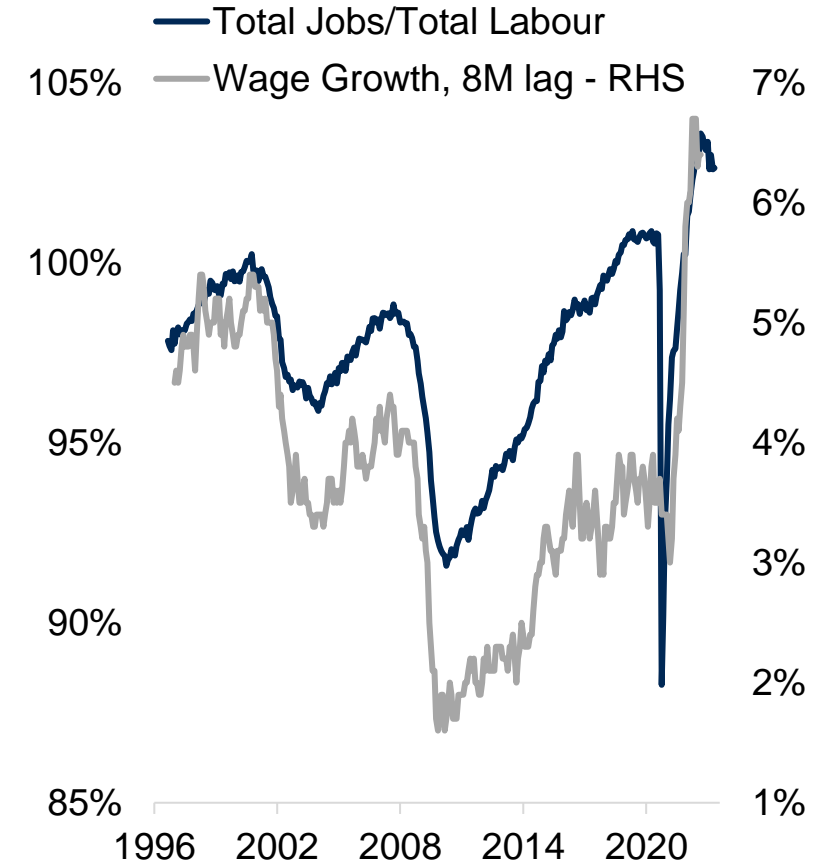
Supply Chain Disruptions



Pandemic Stimulus

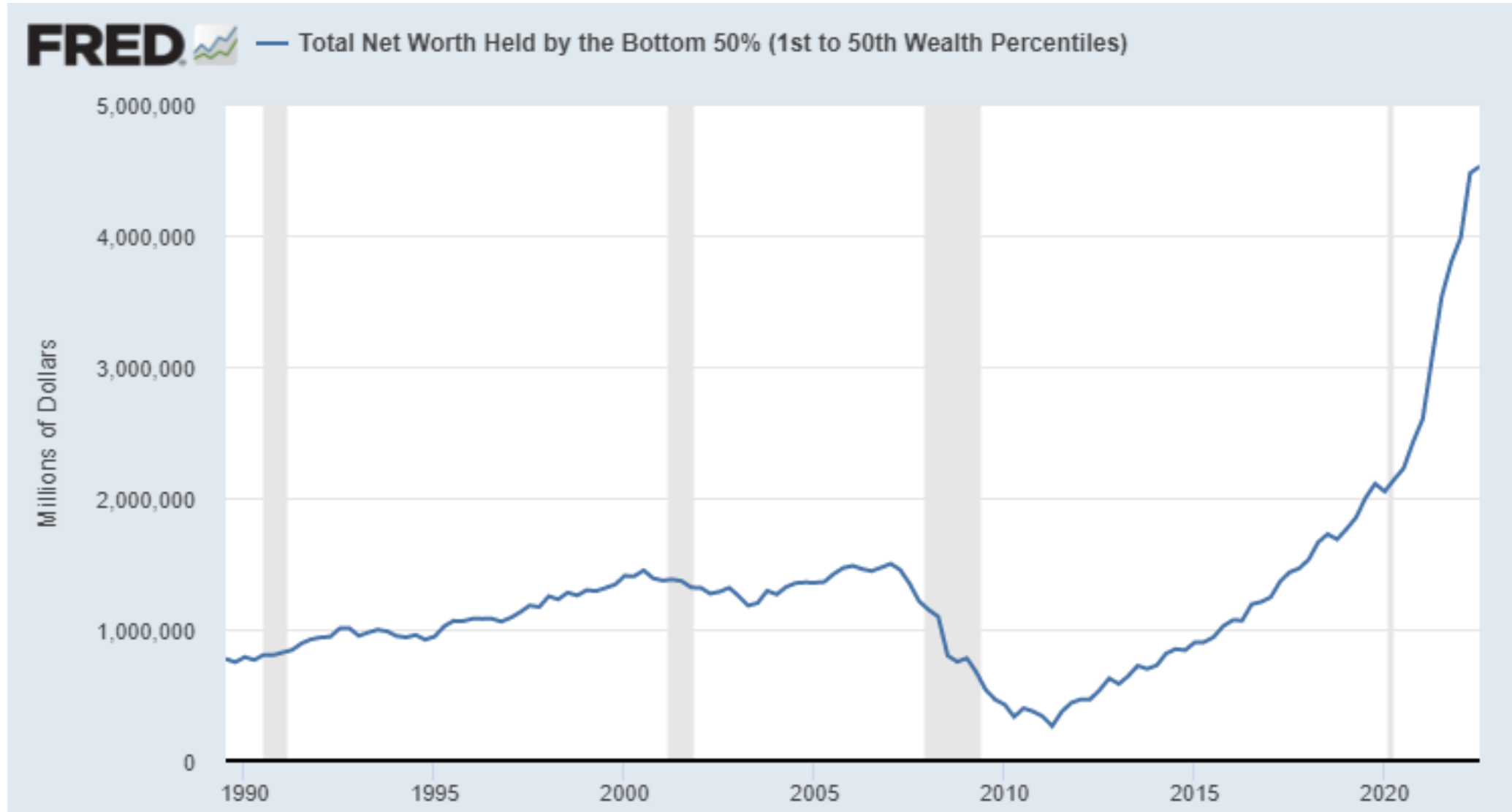


Labour Shortages



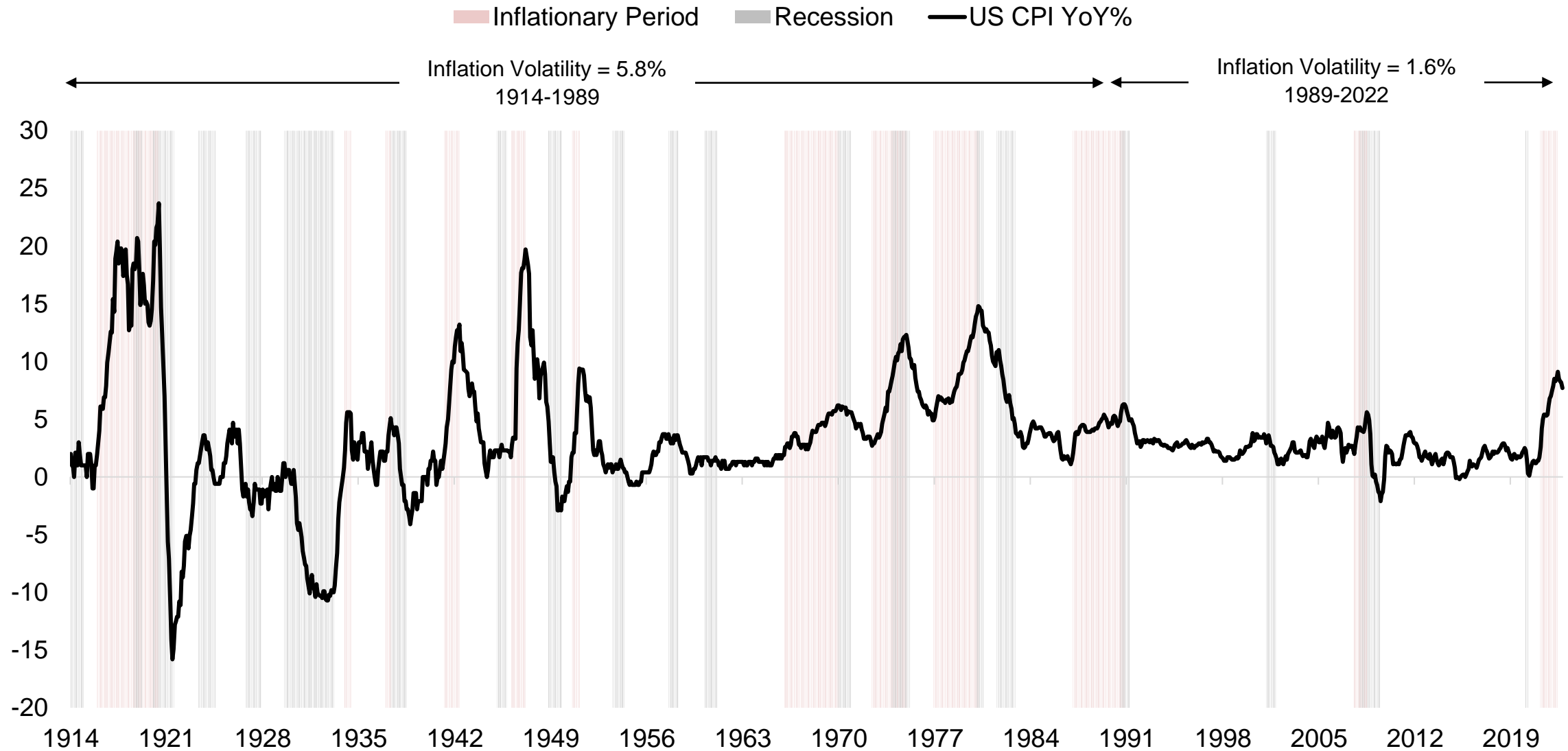
The Return of Inflation

The Bottom 50% of Americans Are Building Wealth



The Return of Inflation

The End of the Great Moderation

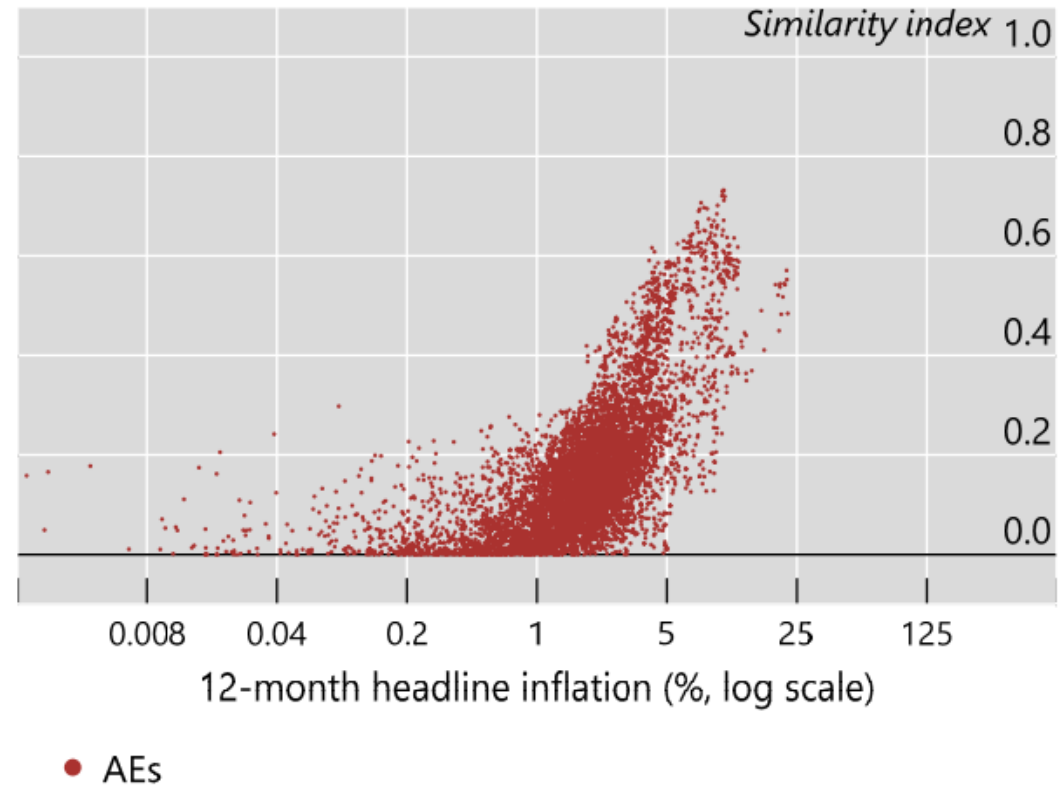


Source: Andromeda Capital Management, FRED. *Inflationary periods are defined as periods with rising inflation reaching above 5% YoY.

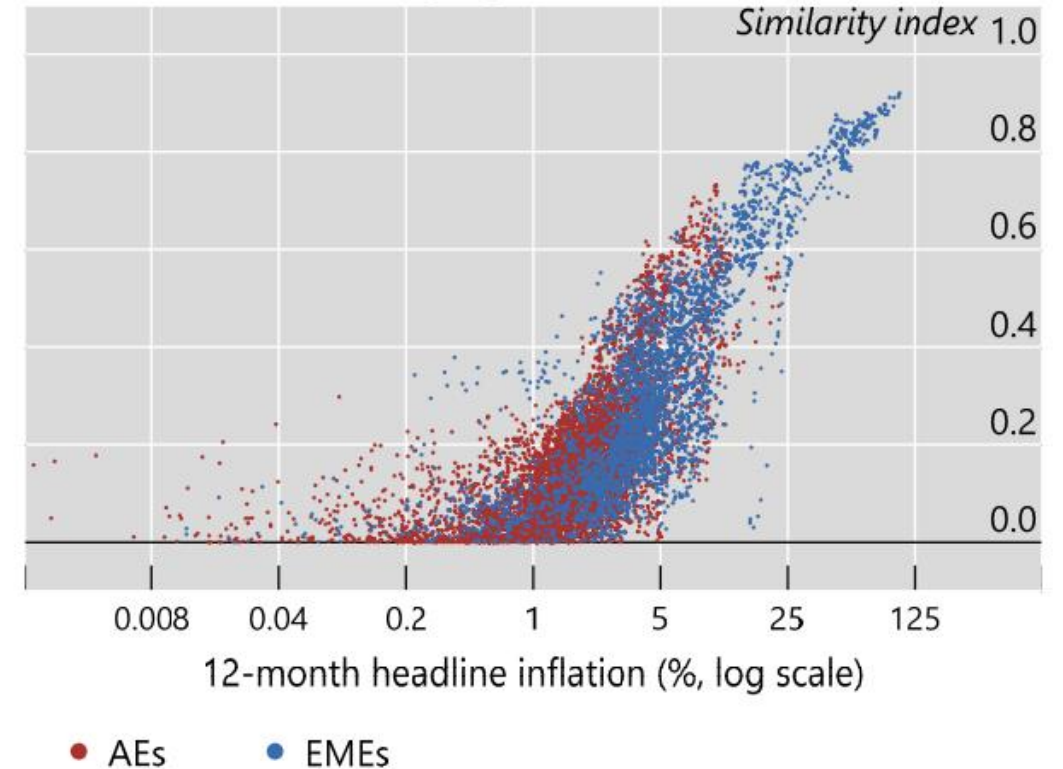
When Inflation Is High

It Becomes a Coordinating Device to Set All Price

Advanced economies



Advanced and emerging market economies

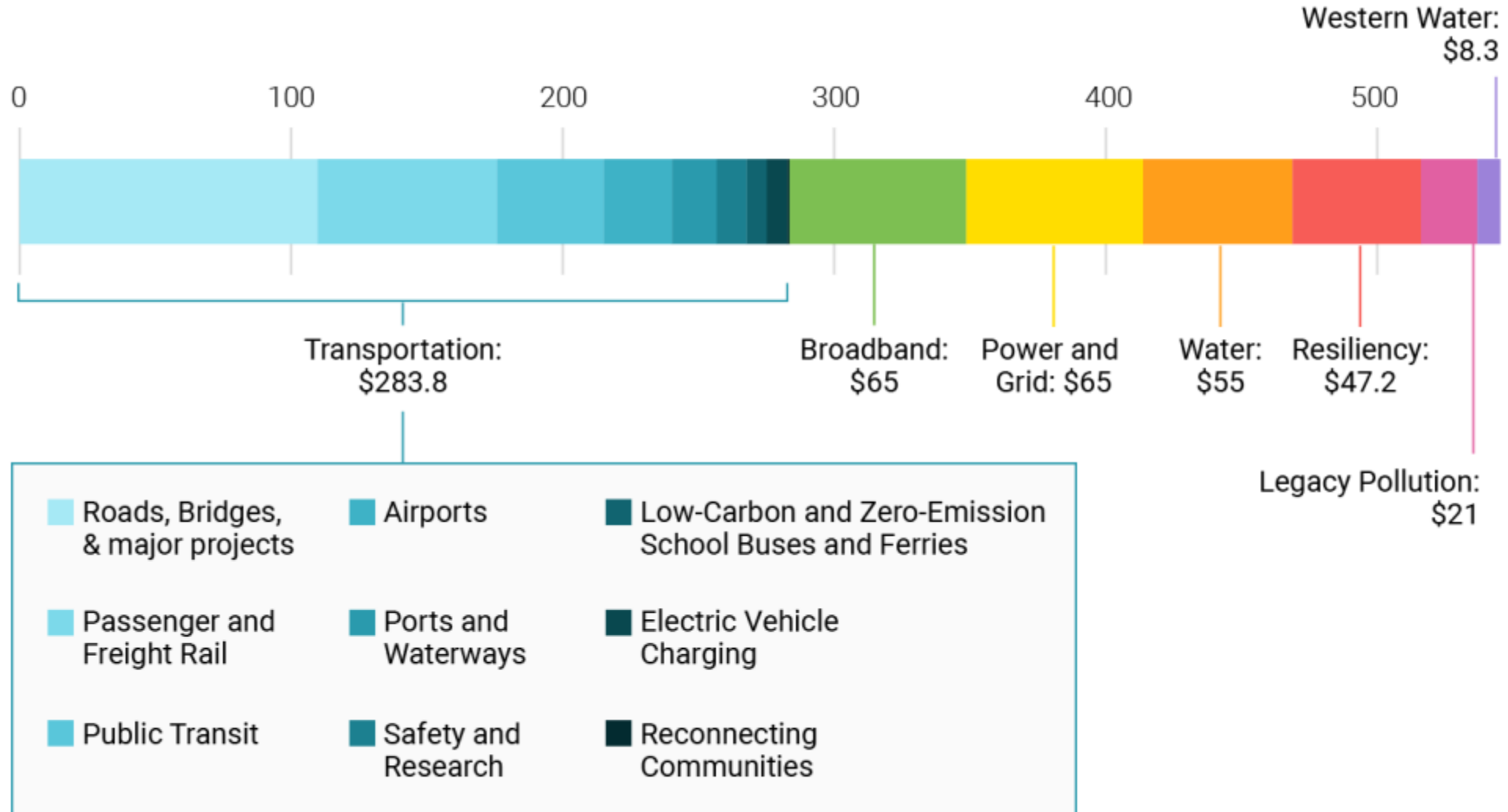


6. POLICY RESPONSES: THE GOOD, THE BAD AND THE UGLY

The Good: Productivity-Enhancing Spending

Fiscal US: Biden's Infrastructure Bill

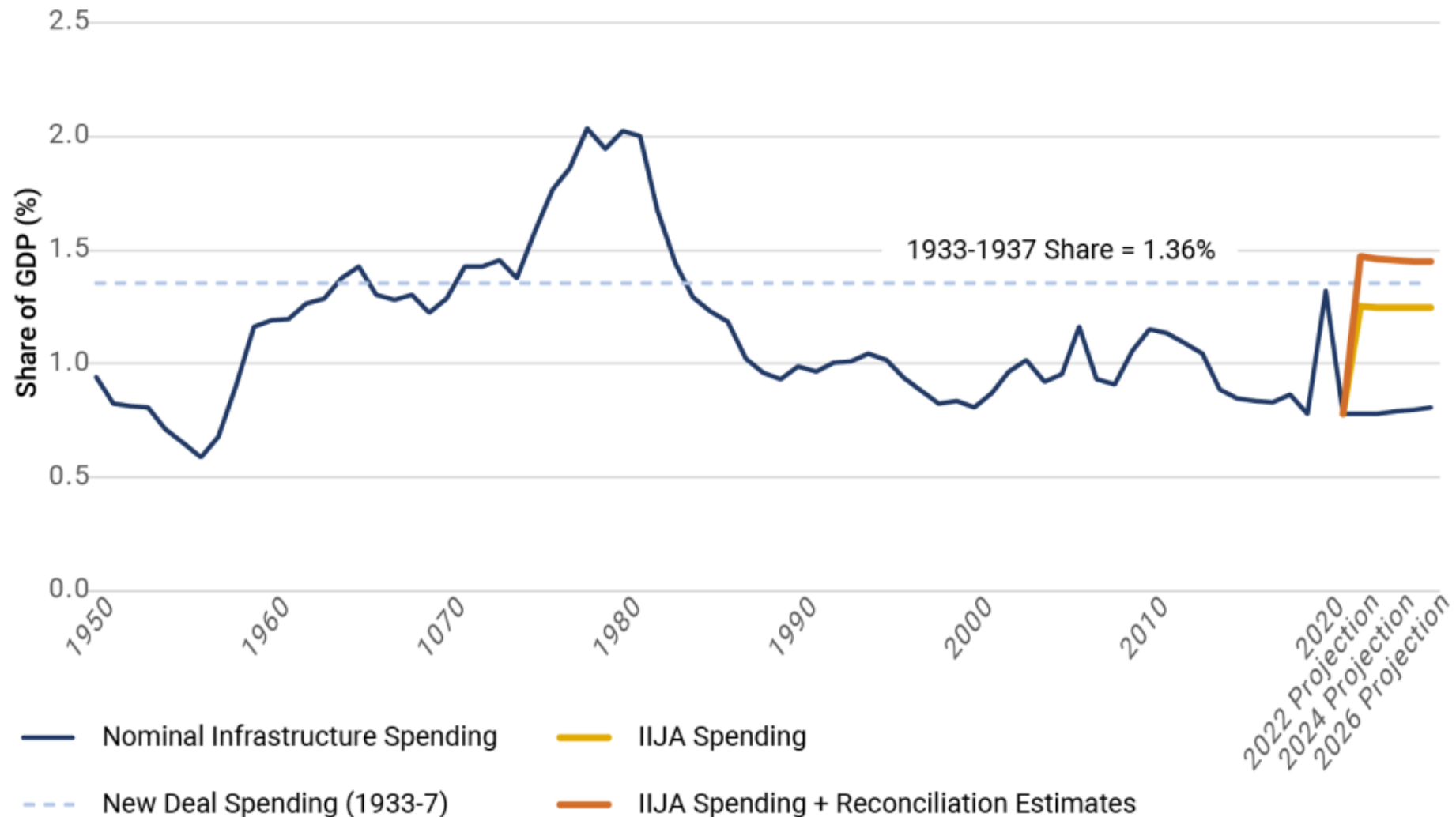
Topline Above-baseline Spending in The Infrastructure Investment and Jobs Act 2021 (IIJA)



The Good: Productivity-Enhancing Spending

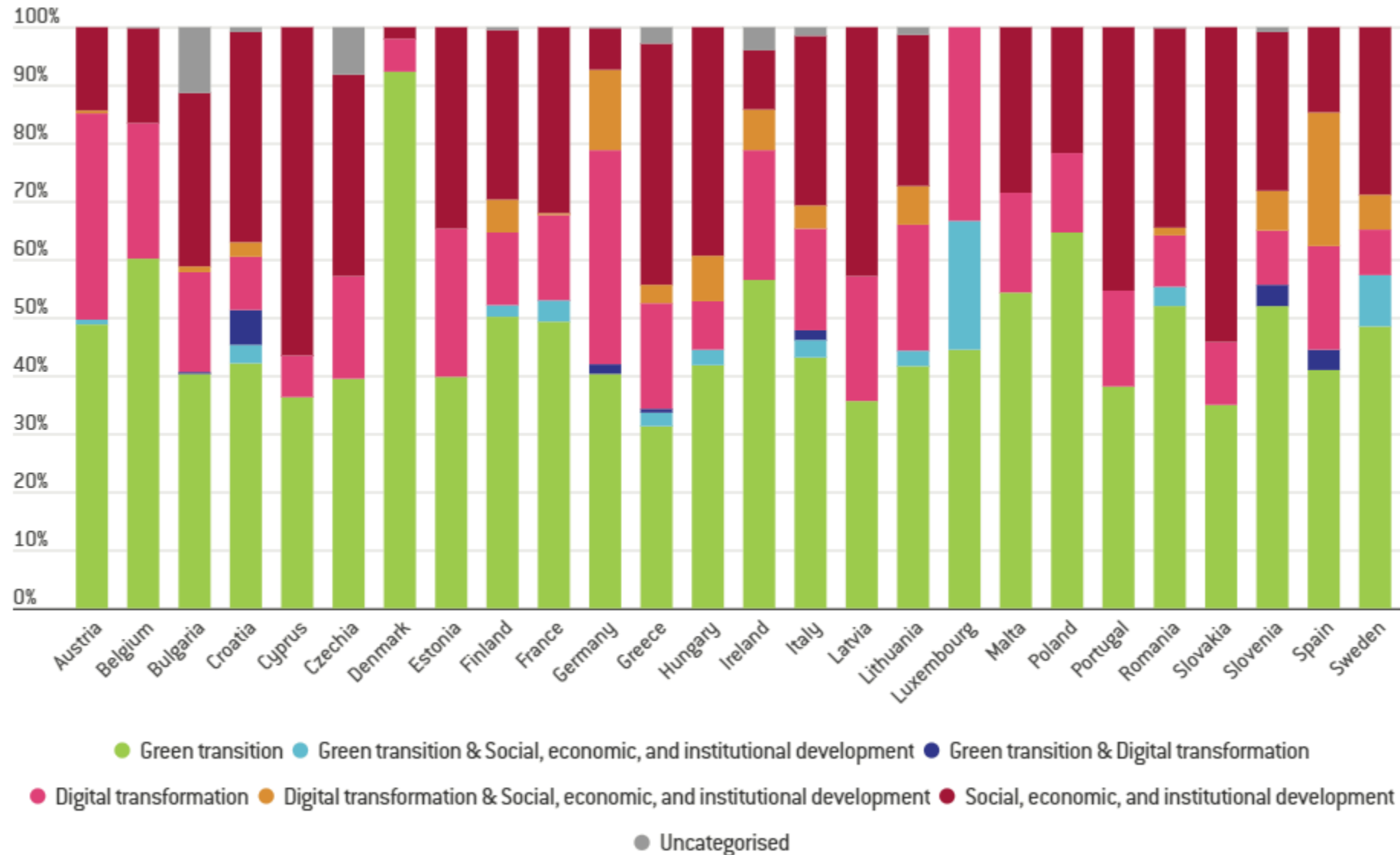
Fiscal US: Biden's Infrastructure Bill

Projected Federal Infrastructure Spending (Nominal), as a Share of GDP, 1950-2026



The Good: Productivity-Enhancing Spending

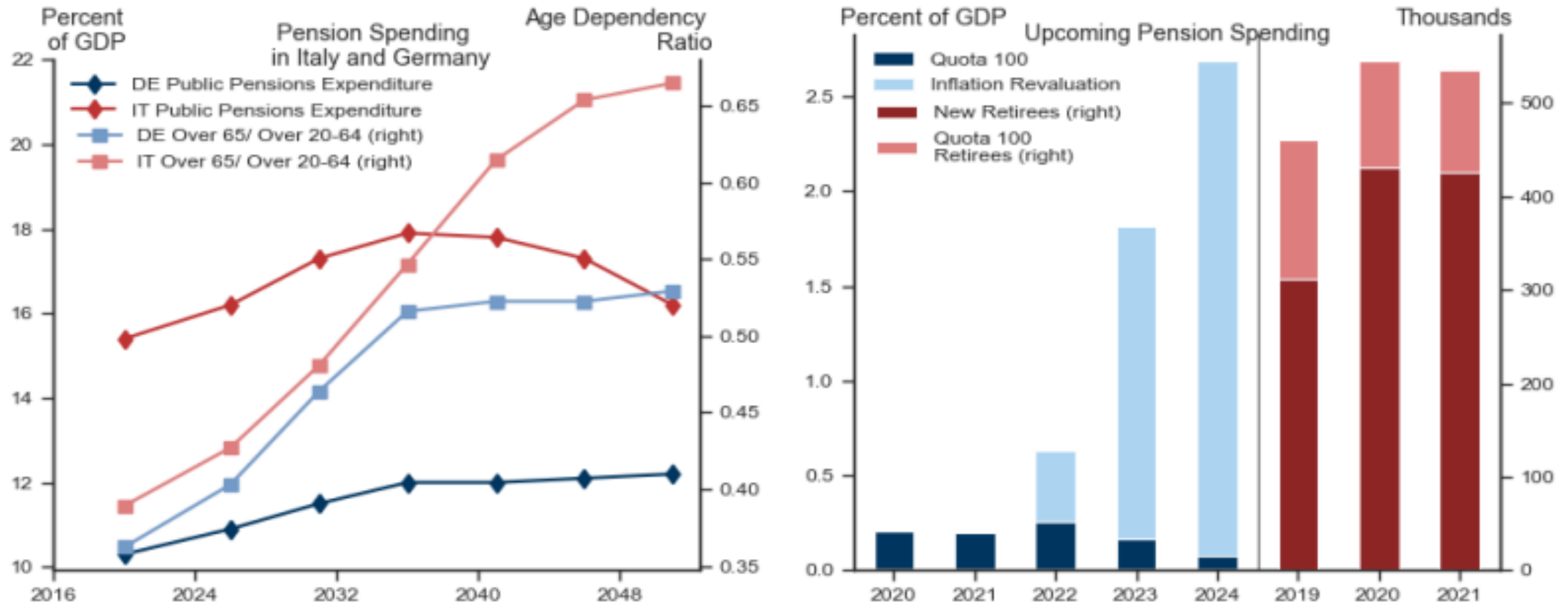
Next Generation EU Recovery Fund Composition



The Bad: Unsustainable Deficit-Financed Spending

Italy 2023 Budget Law: Pension Reform to Increase Retirement Age Flexibility

Retirement Flexibility with Aging Population: A Risky Combination

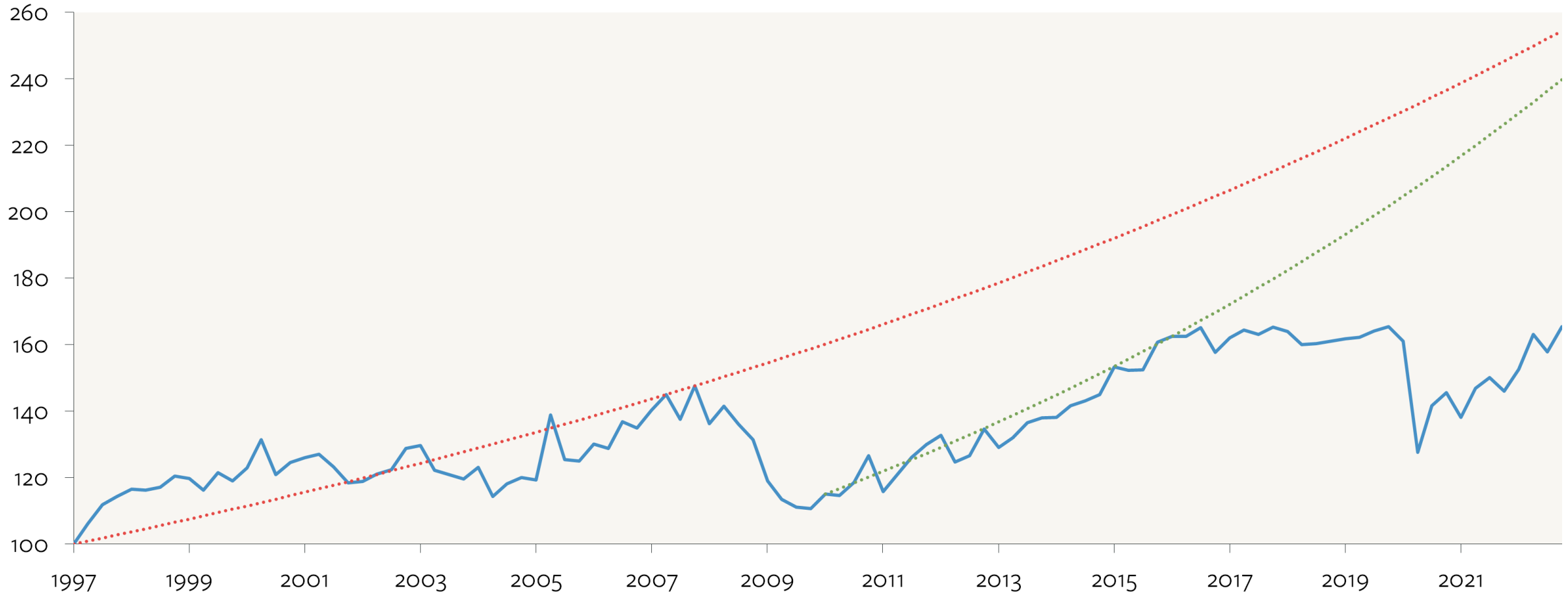


The Ugly: Nationalism and Isolationism

Brexit: The Price of Sovereignty?

After collapsing in 2008-9, U.K. business investment grew at a decent clip in 2010-2015. But progress came to an abrupt halt right after the vote to leave the EU in mid-2016. The prospect of losing access to major markets may have reduced the U.K.'s investment appeal.

Real U.K. business investment excluding exceptional transfers, 1997Q1 = 100 — Actual ··· 1997-2007 trend ··· 2010-2015 trend



The Ugly: Nationalism and Isolationism

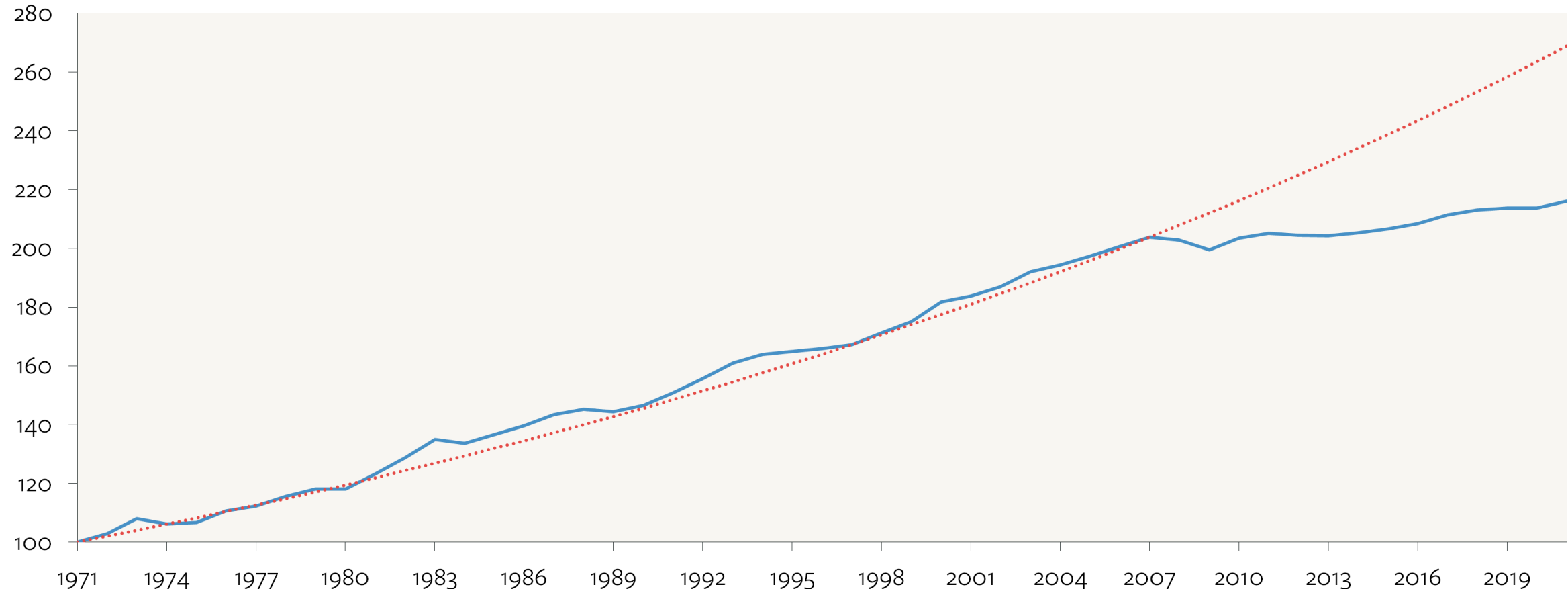
The Big Bust

British workers' productivity rose roughly 2% each year from 1971 through 2007, but has stagnated since. Most of the slowdown can be attributed to manufacturing and finance/insurance, both of which had experienced unusually rapid productivity gains in 1997-2007.

U.K. real output per hour, total economy, 1971 = 100

— Actual

... 1971-2007 trend



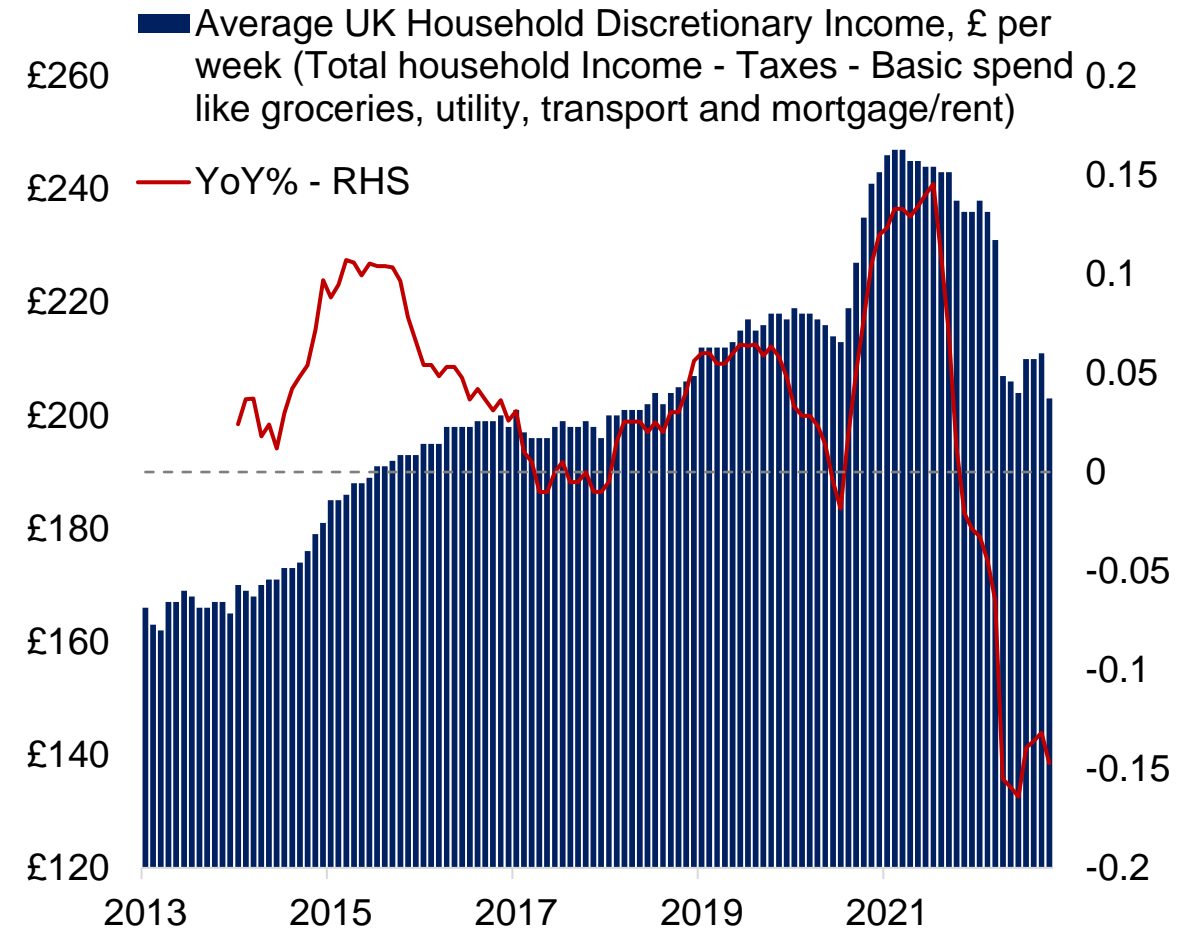
The Ugly: Nationalism and Isolationism

BoE: Deeper into Policy Errors

Stuck in Negative Real Rates



UK Households Face Sharp Income Squeeze



7. THE NEW INVESTMENT ENVIRONMENT

The Anti-Goldilocks Era

Regime Change Across Macro, Policy and Geopolitics



1. Macro

- Credit and macro cycles
- External events: Covid
- Long-term debt cycles

Change Countries

2. Policy

- Central bank reaction functions
- Fiscal policy shifts
- Sector-specific investment

Transform Industries

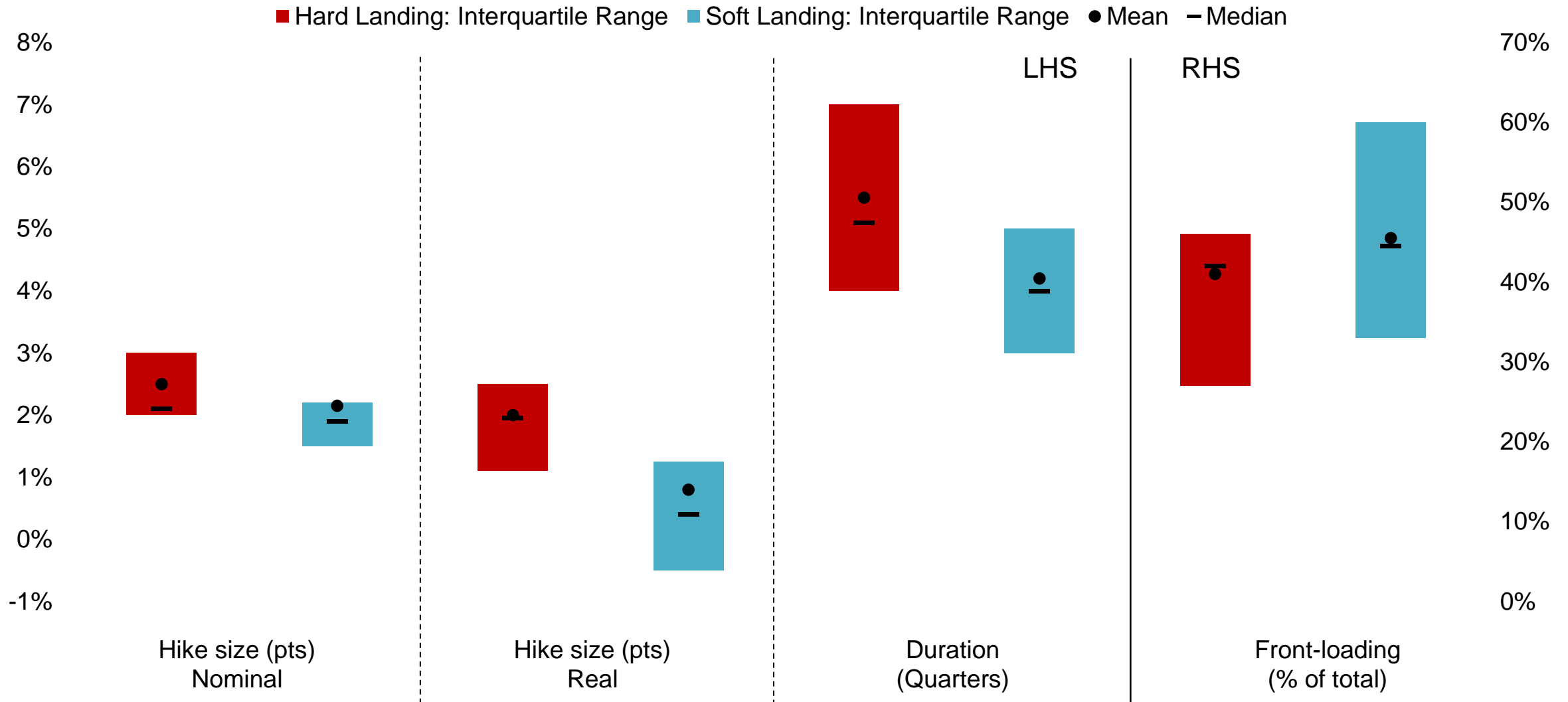
3. Geopolitics

- Government regime change
- Trade policy
- Foreign policy

Disrupt Capital Structures

Hard Landing or Soft Landing?

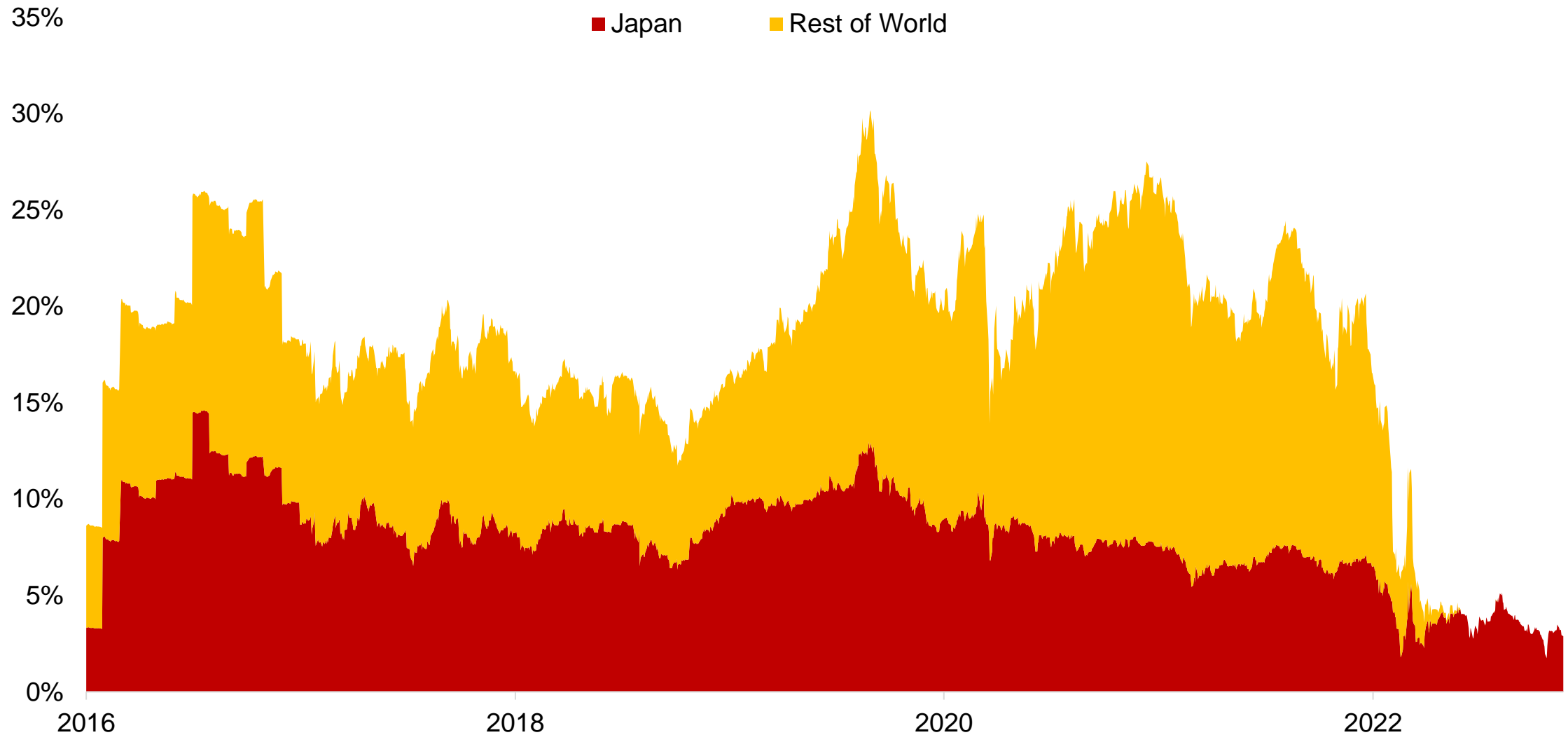
Soft Landings: Smaller, Shorter, and More Front-Loaded Rate Hikes



Source: Andromeda Capital Management, BIS July 2022 Bulletin. Front-loading measured as the percentage of the overall hike that happens within the first two quarters of the tightening cycle.

QE Distorts Bond Markets

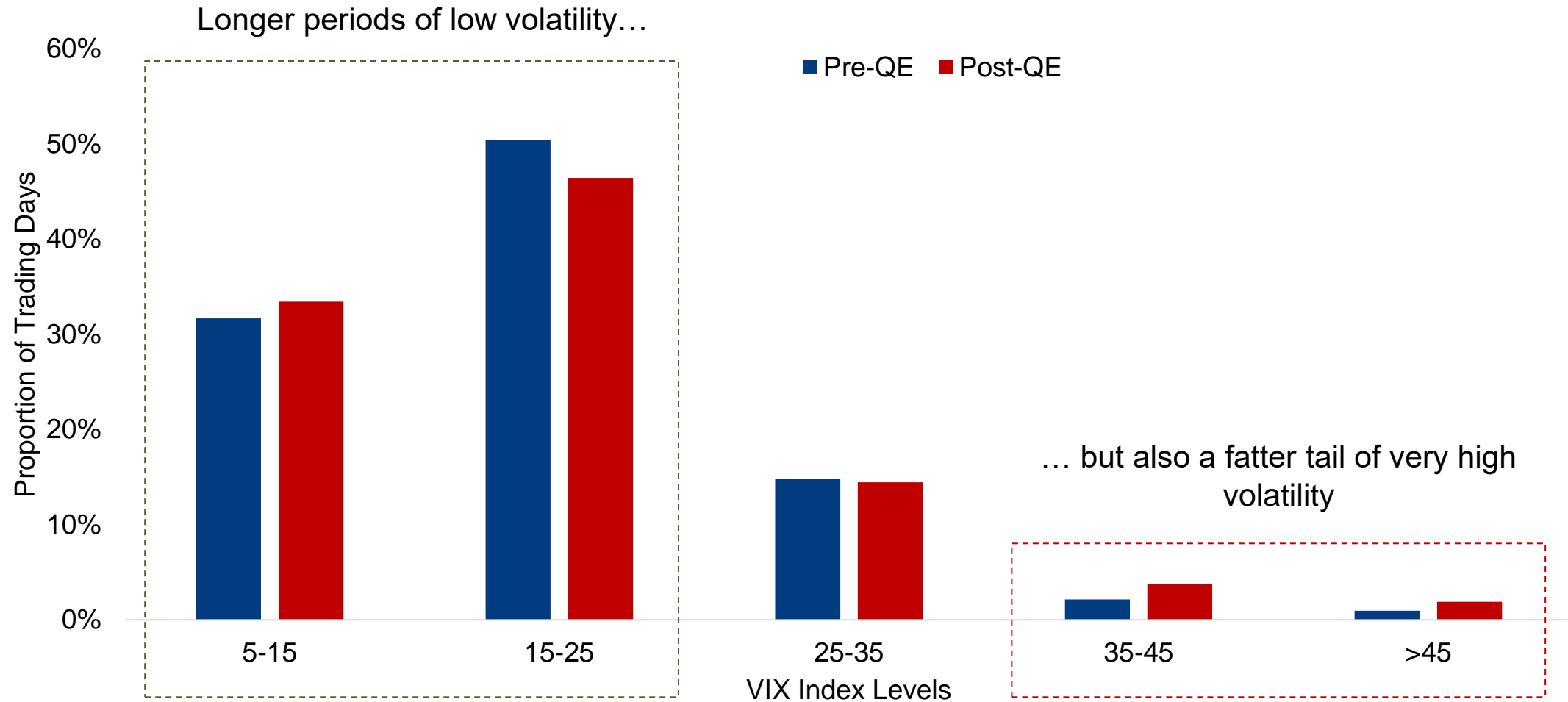
Negative-yielding Debt as % of Total Market Value



Market Fragility Has Increased

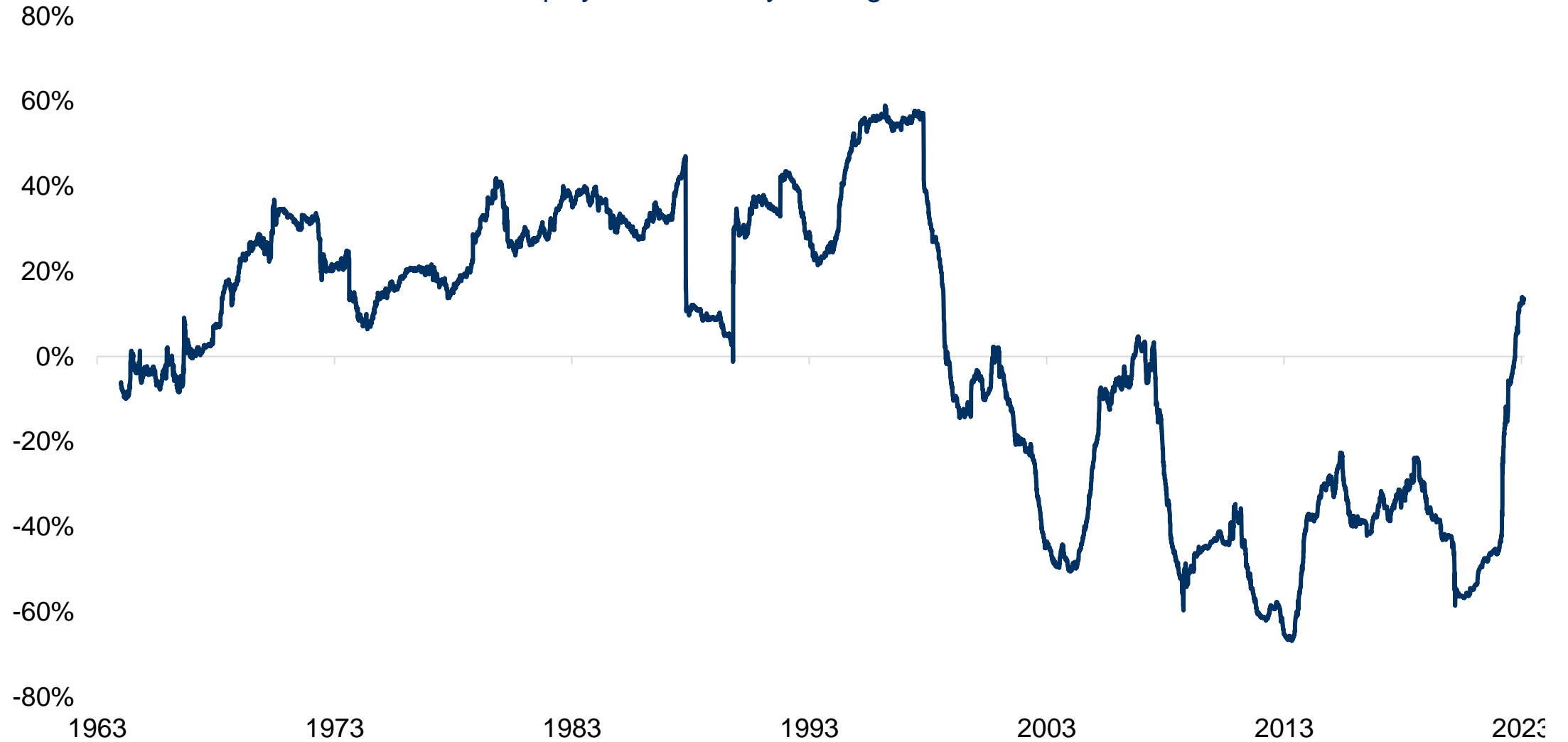
Volatility Pre and Post QE

Proportion of Days When VIX Falls in the Range



Equity-Bond Correlation: Back to Long-Term Normal?

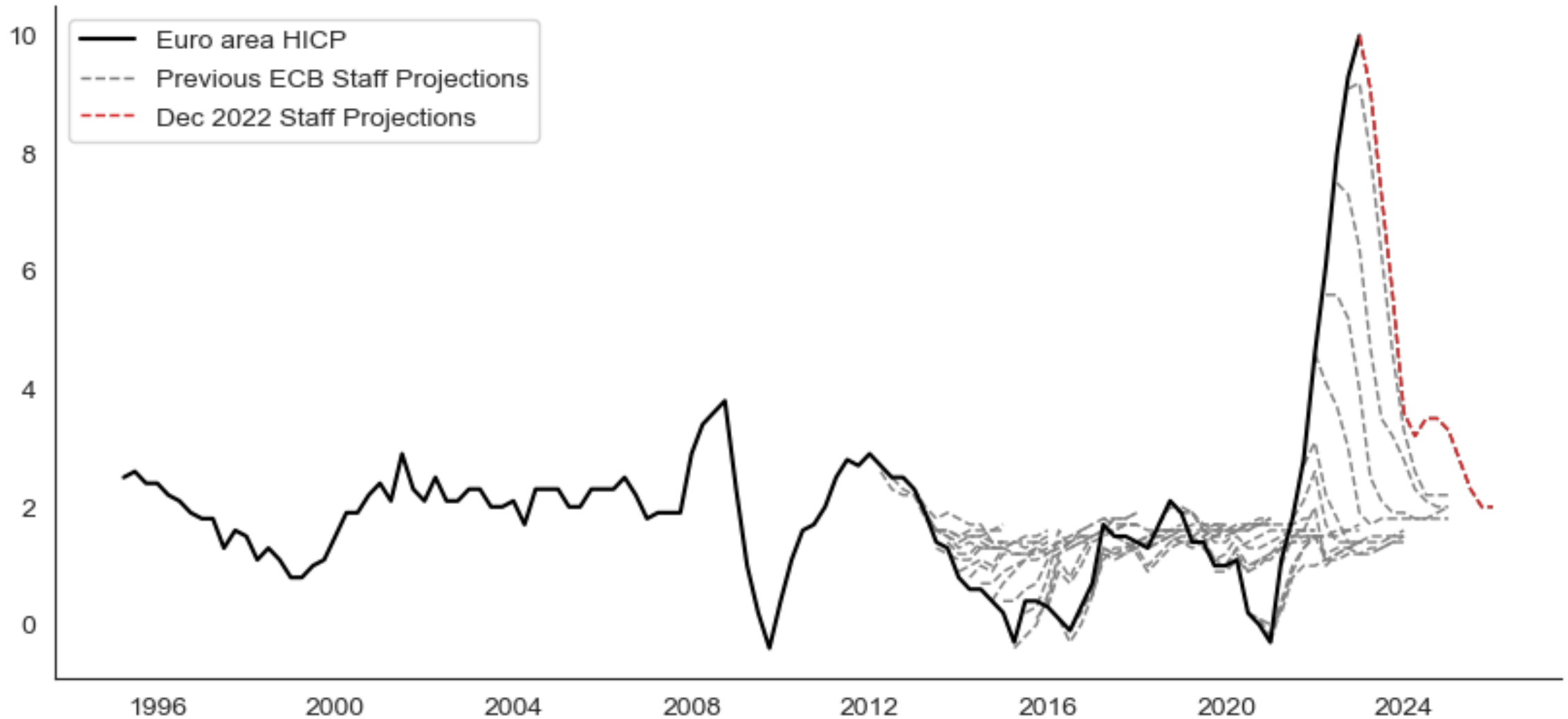
US Equity and Treasury Rolling 2Y Correlation



8. THE FUTURE OF THE MONETARY SYSTEM

Inflation Targeting

Central Banks Historically Wrong on Inflation



An Overview of Central Bank New Policy Instruments



1. Central Bank Policy Reviews

The Fed completed its first every Policy Strategy Review in 2020. The ECB completed its latest Strategy Review in 2021. The aim is to make sure monetary policy strategy is fit for purpose, both today and in the future.



2. Average Inflation Targeting (AIT)

“We are not tying ourselves to a particular mathematical formula that defines the average. Thus, our approach could be viewed as a flexible form of average inflation targeting”

– Jerome Powell, Federal Reserve, 27 August 2020

“From the point of view of economic and social welfare it makes sense to accept a certain period of [inflation] overshooting, while taking into account the history of undershooting”

– Olli Rehn, European Central Bank, 9 May 2021



3. Green QE



4. Yield Curve Controls (YCC)



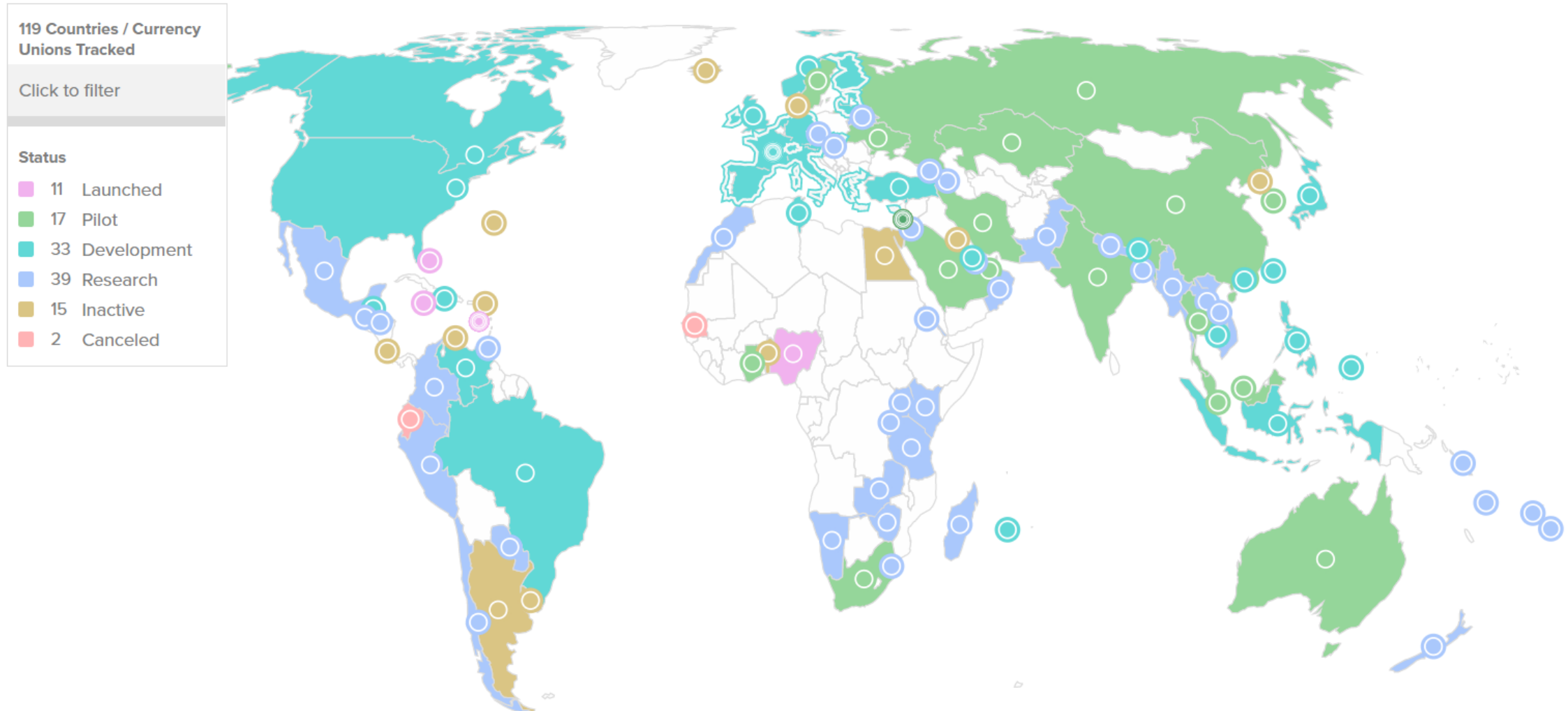
5. Central Bank Digital Currencies

“In this context, GovCoins will be policy dynamite in the central bankers’ toolkit. They will allow for the speeding up of electronic transactions and better track the flow of money across the economy. They may also introduce stimulus more effectively and targeted to individuals and businesses in real need.”

– Bloomberg Opinion, 25 May 2021

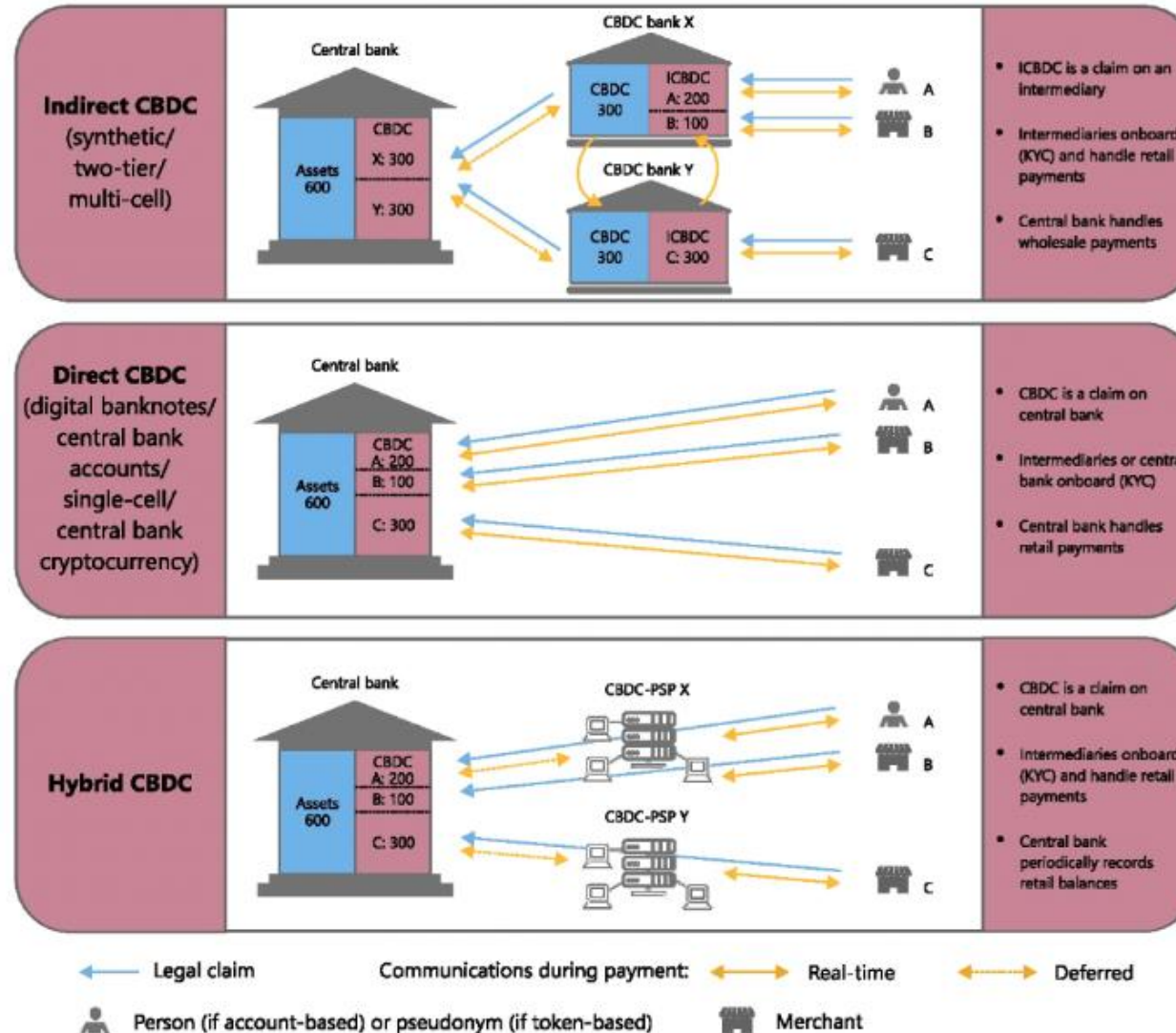
New Policy Instruments

Central Banks Are at Varying Stages of Developing Digital Currencies



New Policy Instruments

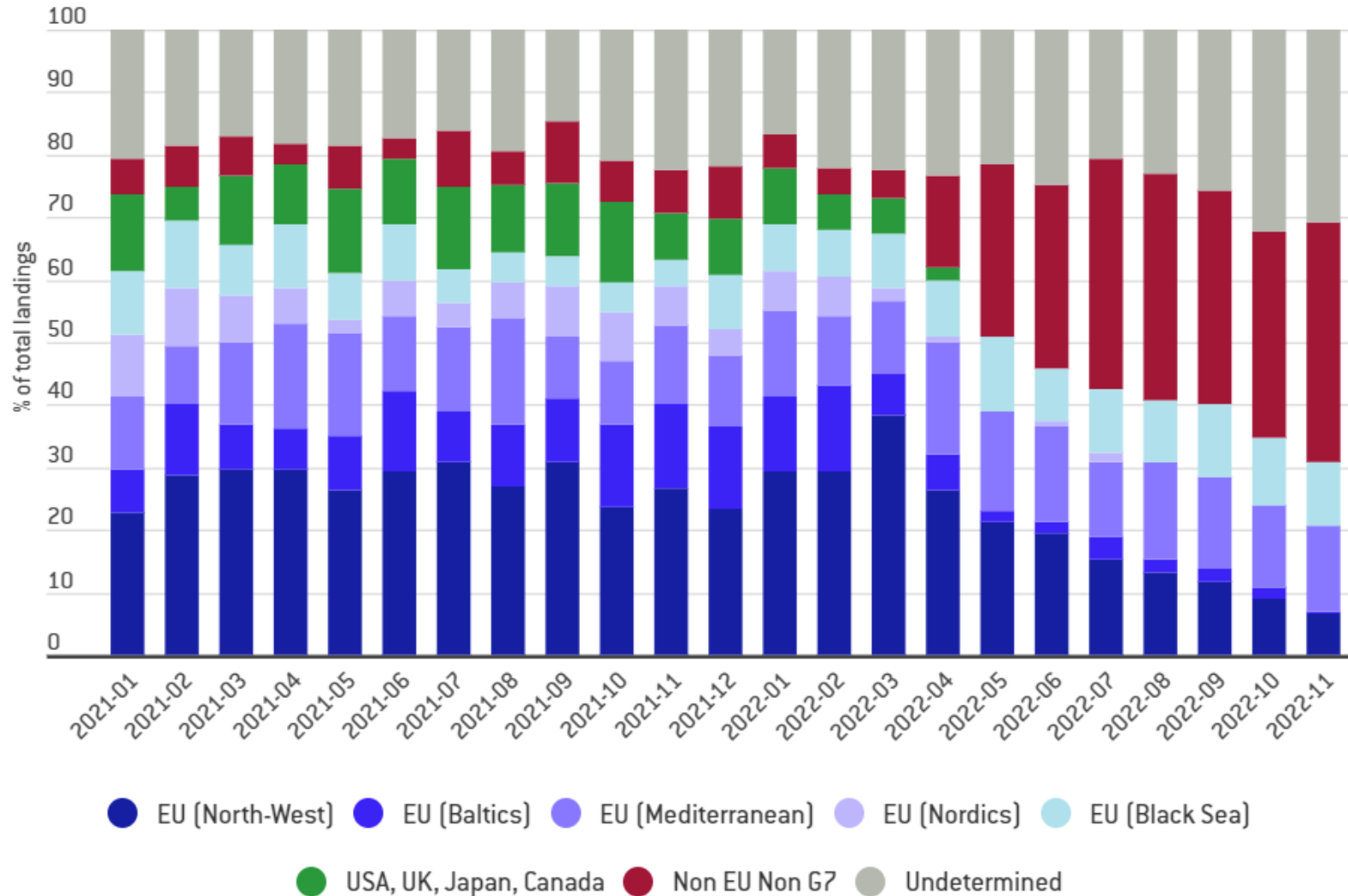
An Overview of Potential Retail CBDC Architectures



Political and Geopolitical Shifts

Bretton Woods 3.0: Commodity-backed Currencies?

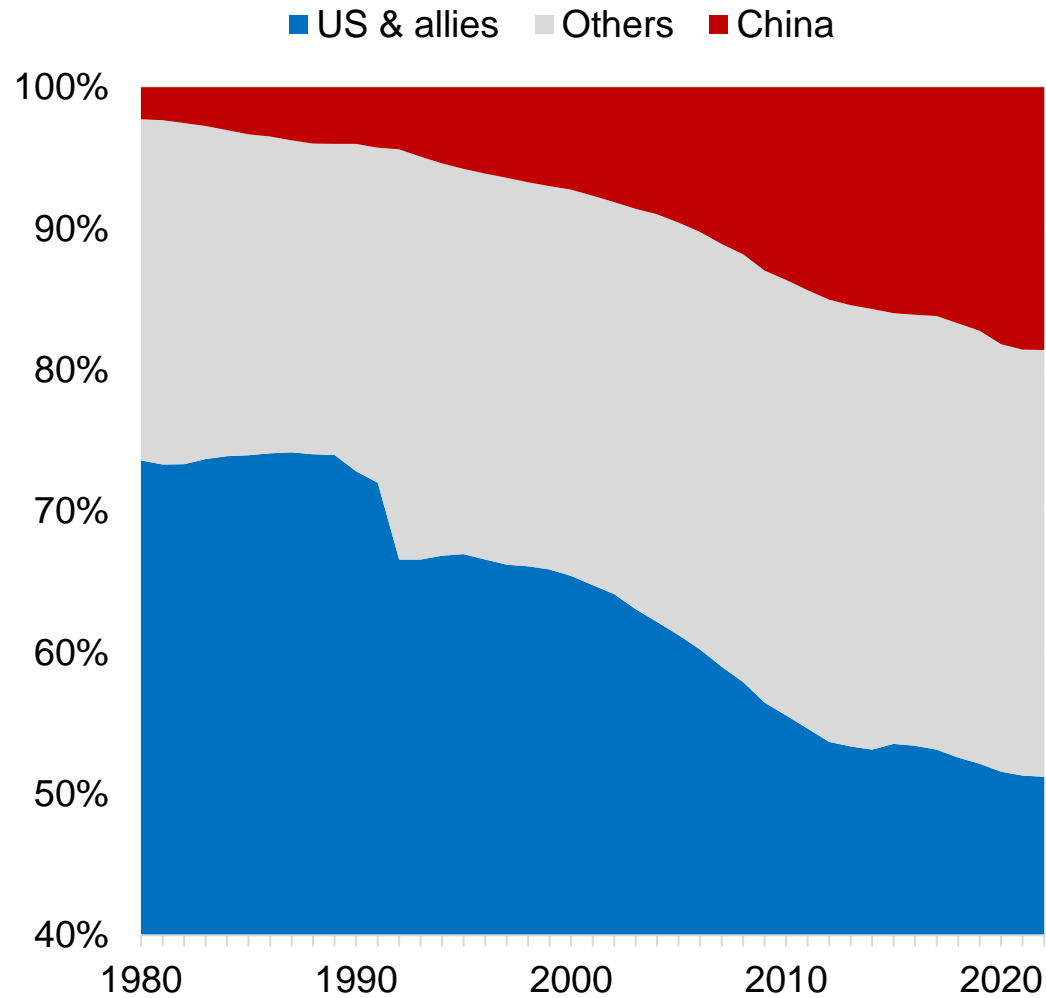
Monthly Landings of Russian Crude Oil by Region



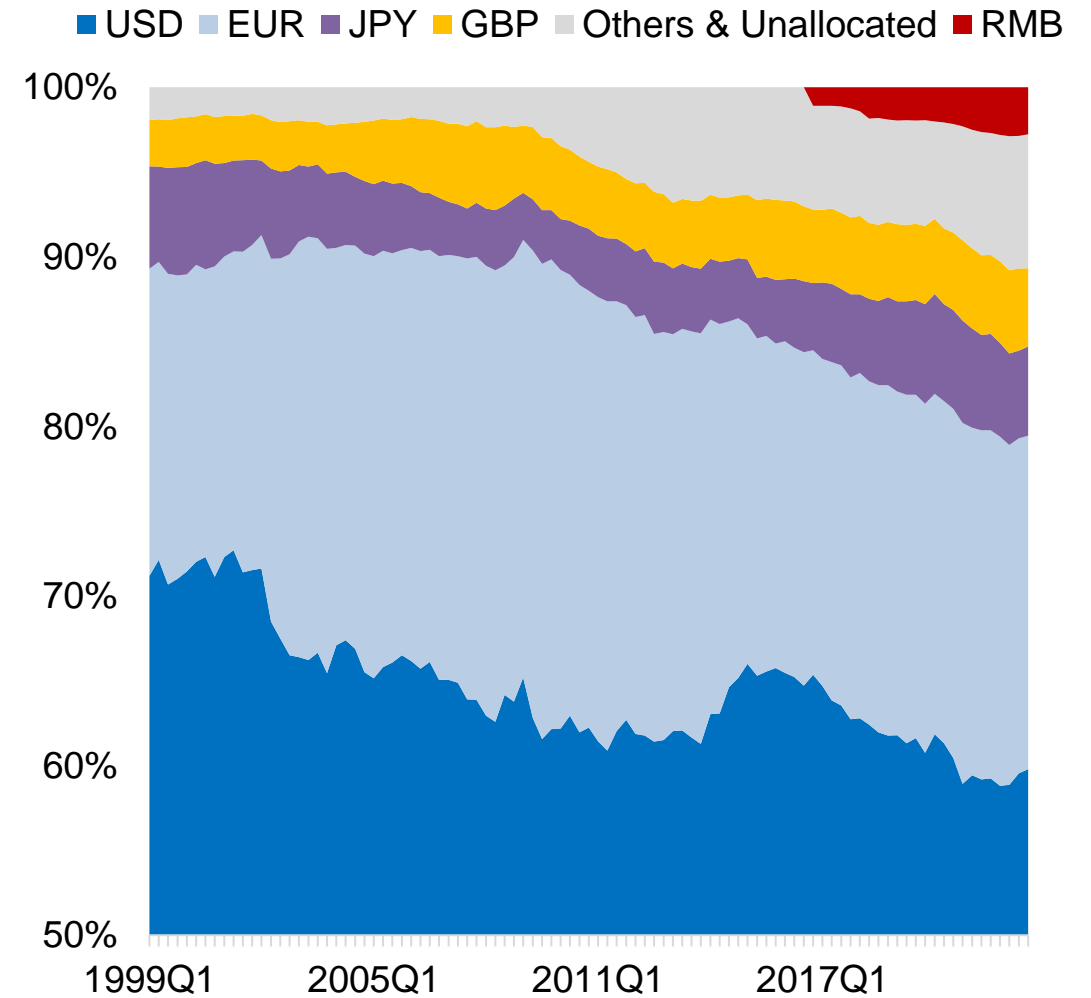
Political and Geopolitical Shifts

Bretton Woods 3.0: The Rise of China

China's Dominance: One-fifth of Global GDP...



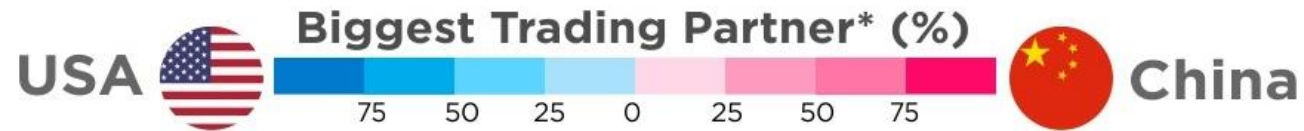
... but RMB Only Accounts of 3% of Global Reserves



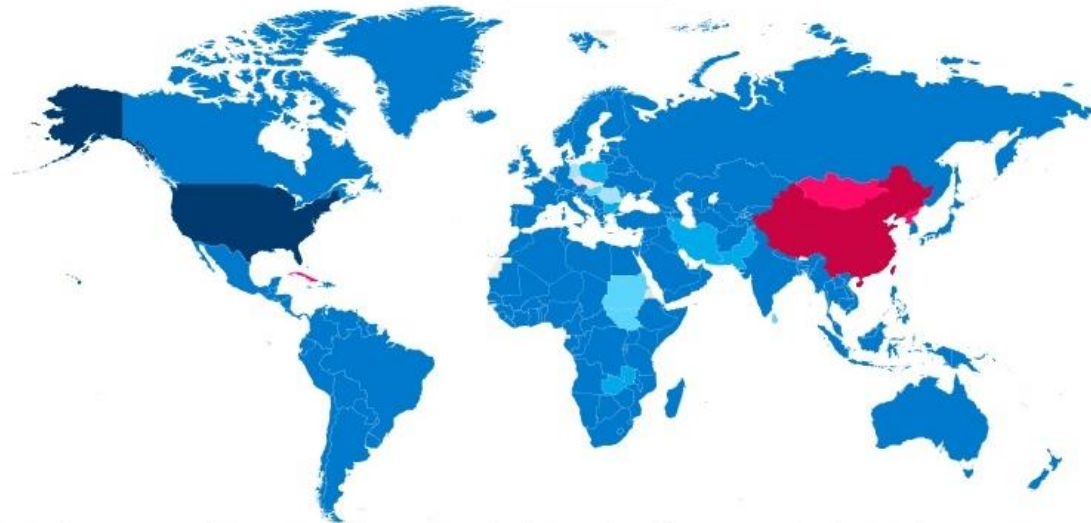
Political and Geopolitical Shifts

Trade Timelapse: US vs China

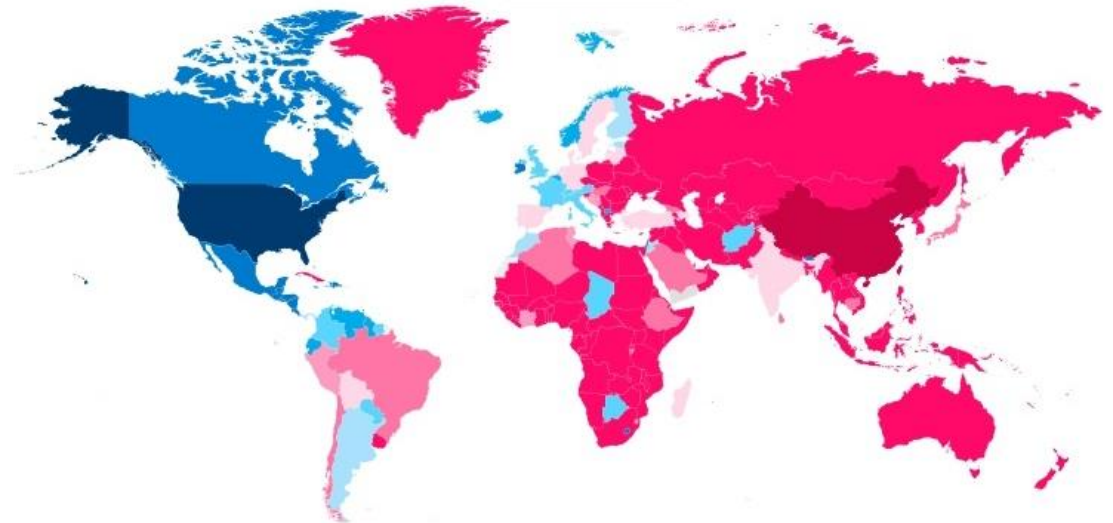
Each Country's Biggest Trading Partner by Year (1980 vs 2018)



1980



2018



* Each country's biggest trading partner is determined by comparing its total amount of merchandise imports and exports with China and the U.S. The percentage represents the total trade ratio between China and the U.S. with each country.

Note: Countries shown must have U.S. or China trade data at minimum. Those in gray lack either.

Article & Sources:

<https://howmuch.net/articles/trade-timelapse-usa-china>
International Monetary Fund - <https://data.imf.org>

Was It Worth It?

Pros and Cons of Strong Monetary and Fiscal Counter-Cyclical Intervention

Pros

- Fewer job losses
- Faster recoveries
- Lower risk of hysteresis
- Maintain basic standard of living

Cons

- Rising inequality
- Misallocation of capital
- Asset bubbles
- Increasing financial market fragility

Ulysses, the Sirens and Long-term Incentives

Skin in the Game vs Time Inconsistency



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Our Views and Insights

The Silver Bullet

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