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2021 ReCapNet Conference

19 November 2021

Keynote Lecture

“The Resilient Society”

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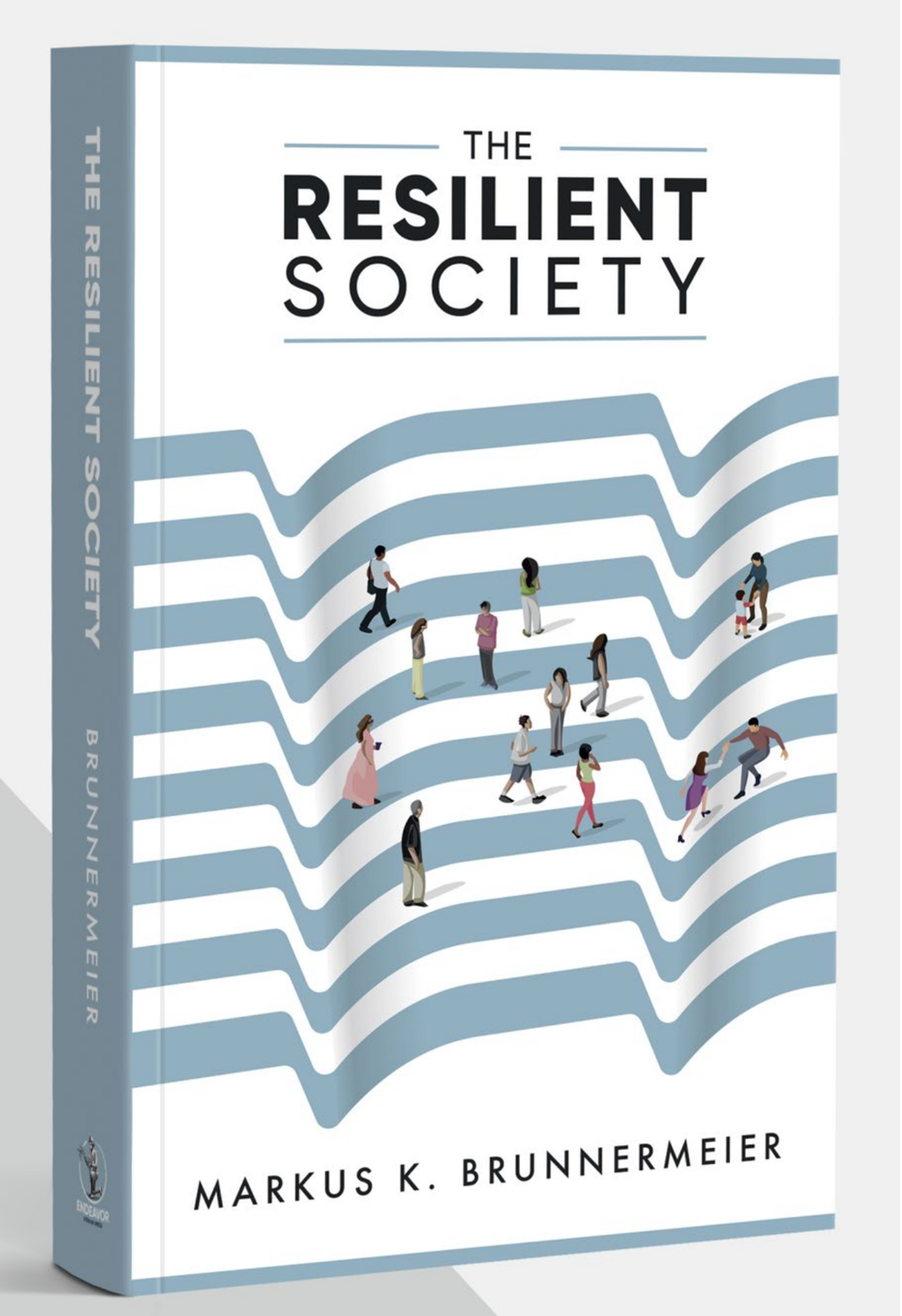
Princeton University

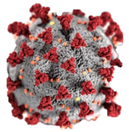


ReCapNet

2021

19. Nov. 2021

Living in a World with Recurrent Shocks

- Health: Pandemic – Covid-19 
- Antibiotic resistance
- Financial Crises
- Cyberattacks
- Natural disaster … better building of infrastructure
- Uncertainty with new technologies

Crises come typically in pairs/triplets ...

- **Resistance** is futile – resilience will help
- **Resilience** discussed everywhere
  - robustness, risk avoidance, …, redundancies

Robustness ≠ Resilience

- **Robustness** vs. **Resilience**
  - withstand, fault tolerant
    - block most (known/unknow) shocks
  - Impact, but bounce back
    - React to shocks

the oak

the reed

- **Robustness barrier**
  Tipping point

"I bend, I bow, but I do not break"
La Fontaine

- Volatility Paradox
  - Learning to be resilient via small risk exposure (human immune system)
- **Redundancies:** many fewer, but re-deployable

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Re-deployable redundancies

the reed

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- **Rules** vs. **Discretion**/Flexibility
  - Rigidity is not stability
  - Rules allow to commit and make reaction more credible powerful
    [Time-inconsistency problem]

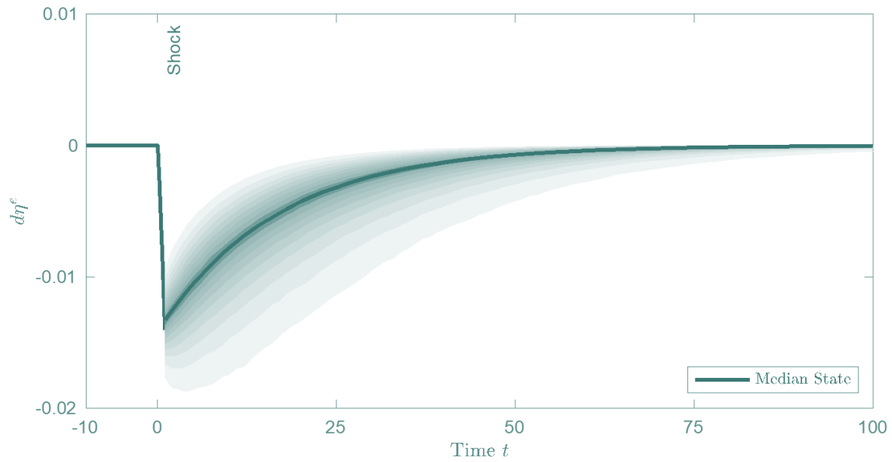
Flexibility response to react/adapt

Risk avoidance ≠ **Resilience**

- **Risk** management - *static*
  - Variance

- **Resilience** management - *dynamic*
  - Mean-reversion

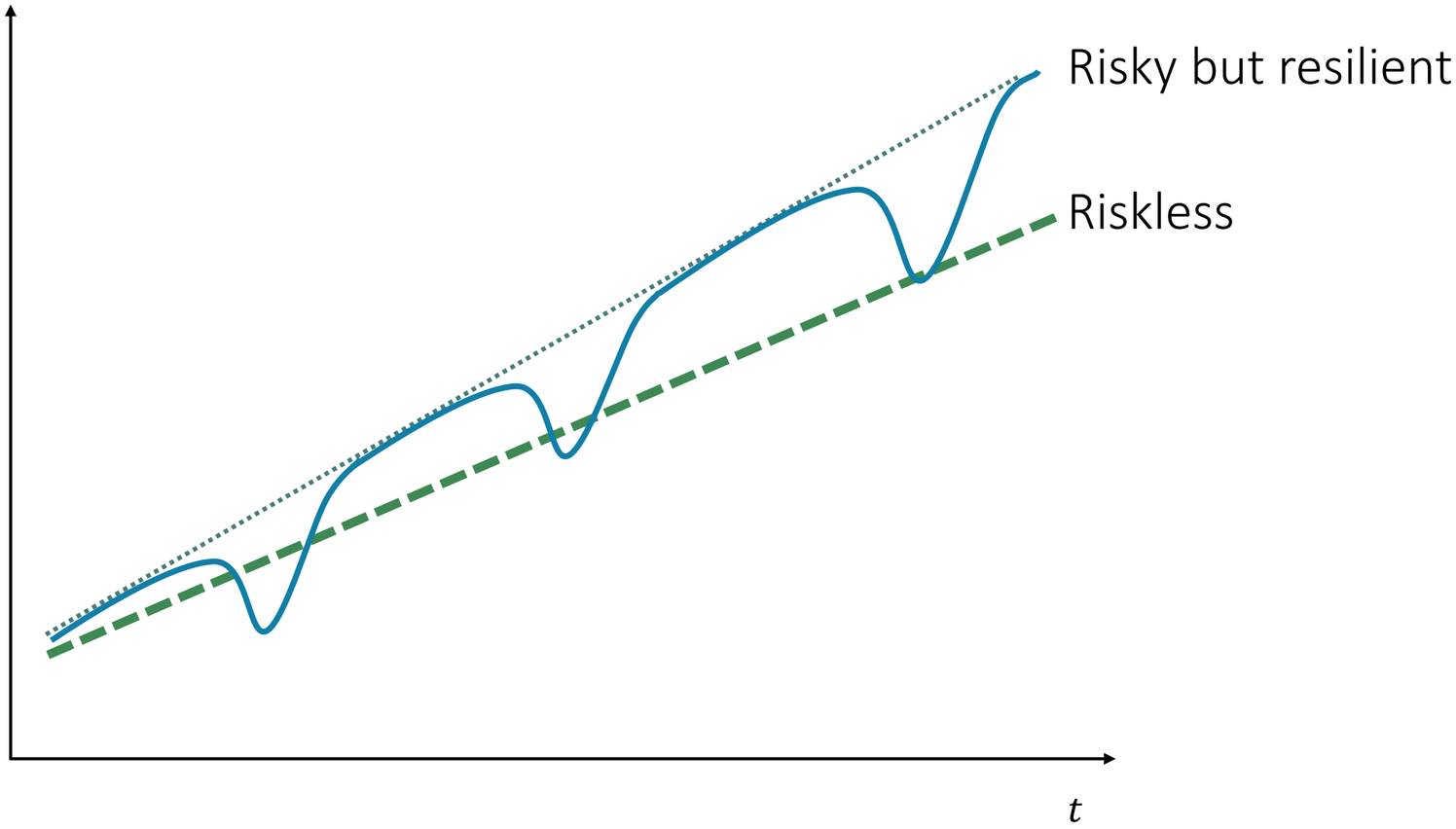
    bounce “back” to new normal



Distributional impulse response (Fanchart)

Ability to Rebound Allows to take Risk ⇒ **Growth**

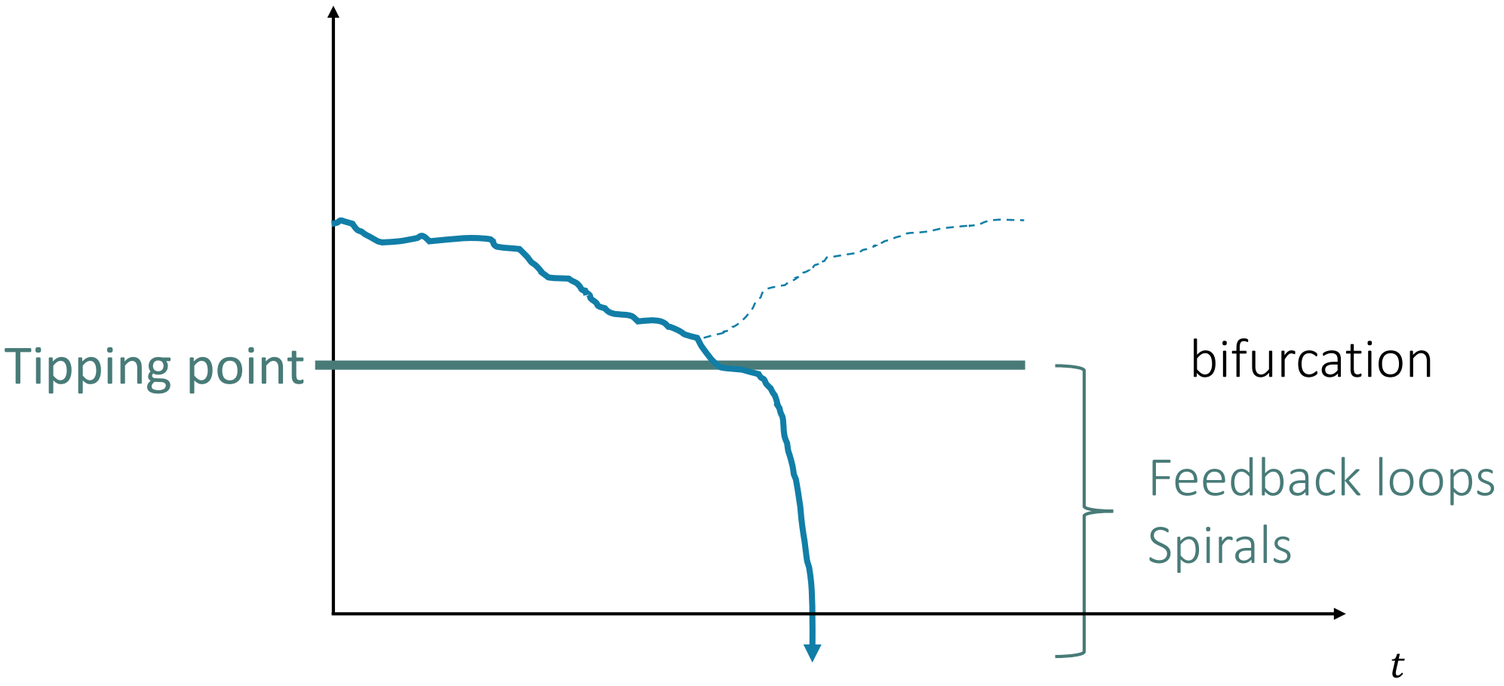
- Resilient path vs. risk avoidance path



Resilience Destroyers

If externality of others' behavior, difficult to avoid

- **Traps**: "points of no return"
- **Feedbacks**:
- **Tipping Points**: path dependency



Climate change: Turning off the Gulf stream

Resilience and **Speed**

- **“Slow” shock** - sequence of small shocks
  - React in time and turn around/bounce back

- **Rapid Shock/Jump**
  - Reaction time is too slow in order to turn around

- Fintech: Race between
  - speed up financial crises
  - speed up reaction time,
    e.g. by government via programable money

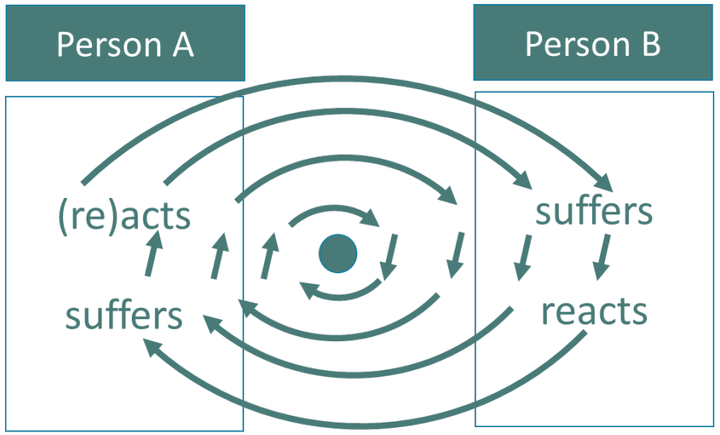
The “Term Structure of Resilience”

- Dynamic trade-off
  - Bounce back more quickly in the short-run at the expense of
  - Being more vulnerable to the next shock and to future
    - Traps
    - Feedback loops
    - Tipping point (move closer)

- Flexibility vs. better communication through commitment
  - Build the right institutions

Resilience: Individual, System, Society

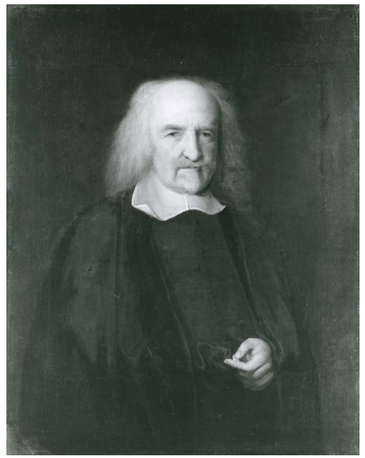
- Individual: Training, human capital, freedom,
- System: Redundancies (networks, global value chains)
  Buffers (bank capital, …)
- Society:
  - Interaction btw individual's *externalities* and *responses*
  - Key: Endogenous reaction of others



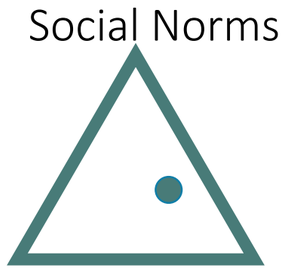
"Feedback Externalities"

Social Contract

- Thomas Hobbes, *(Leviathan, 1651),*
  John Locke,
  Jean-Jacques Rousseau
  - An externality interpretation

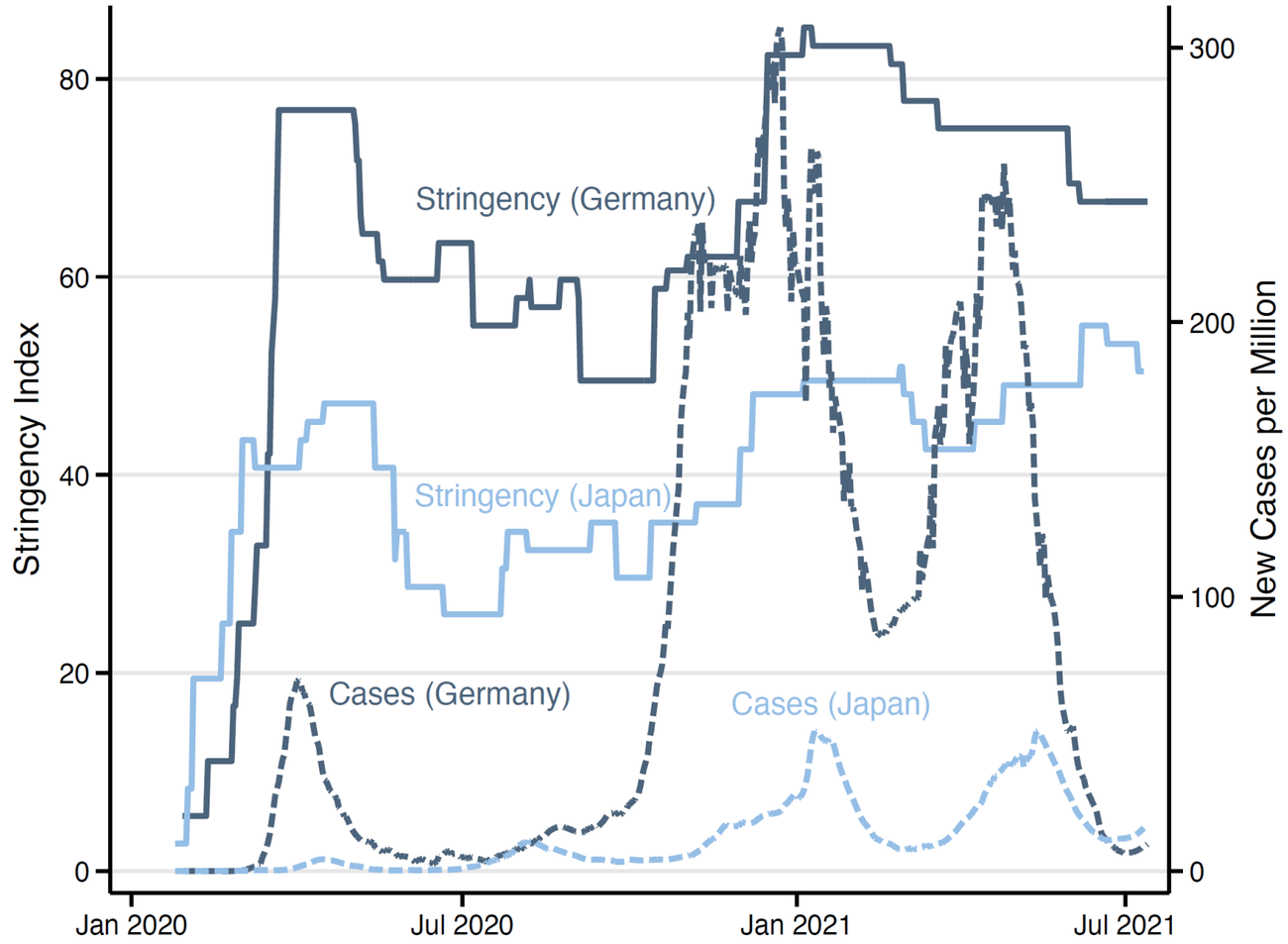


- Social contract *to limit*
  - Externality from others
    - Incl. trap, feedback externalities
    - Robert Nozick
  - Shocks (externalities from mother nature)
    - John Rawls and the “veil of ignorance”
    - Not insure, but provide resilience
    - Diversity vs. homogeneity
- Implementation of social contract



Government Stringency vs. Social Norms

- Germany vs. Japan



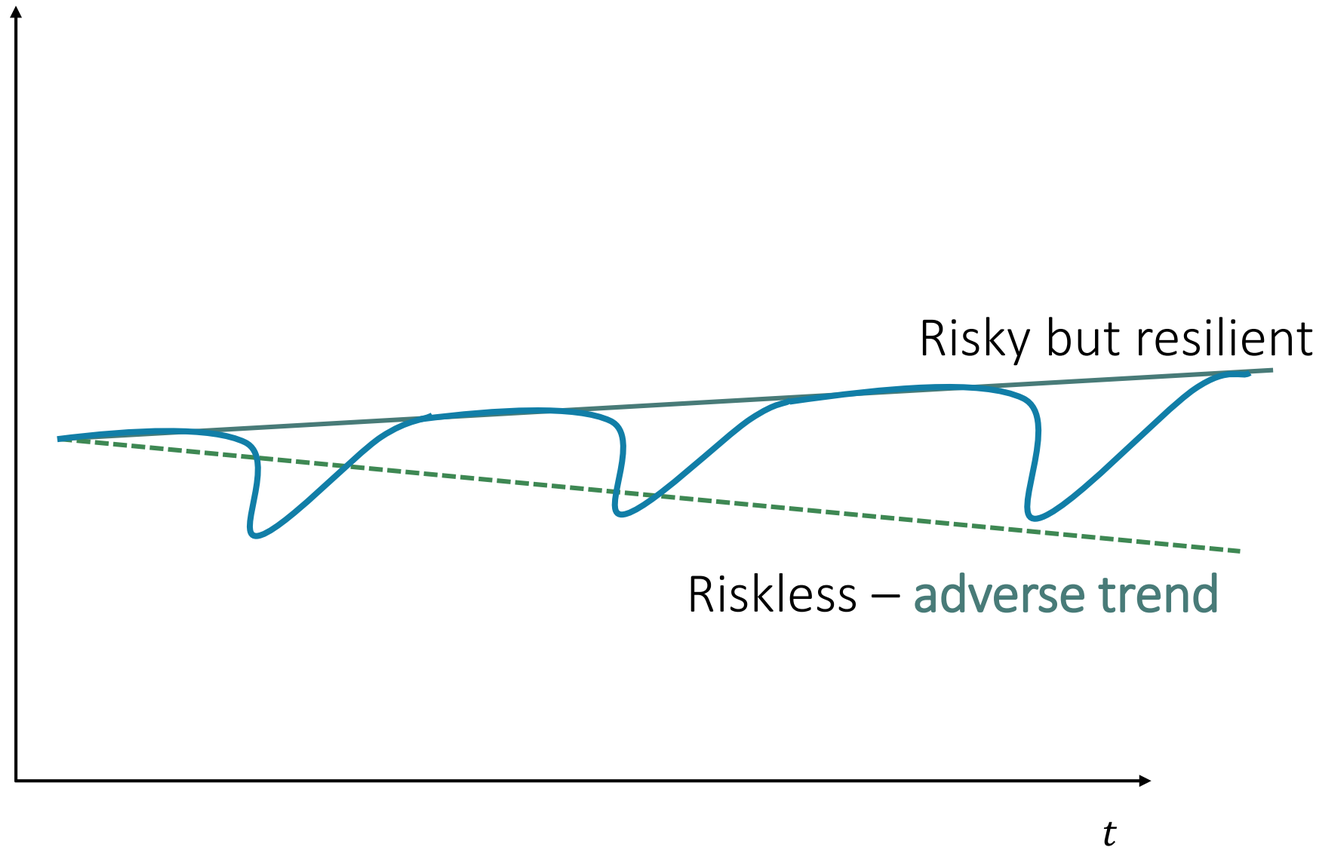
Outline of Book

- Part I: Society and Resilience
- Part II: 4 Elements of Resilience Management: COVID
- Part III: Macro Resilience
  - Innovation boost vs. Scarring
  - Financial whipsaw
  - Public Debt
  - Inflation whipsaw
- Part IV: Global Resilience
  - EMDE
  - Geopolitics, World order, Global finance, Value chains, Climate

Climate Change
Sustainability and Resilience

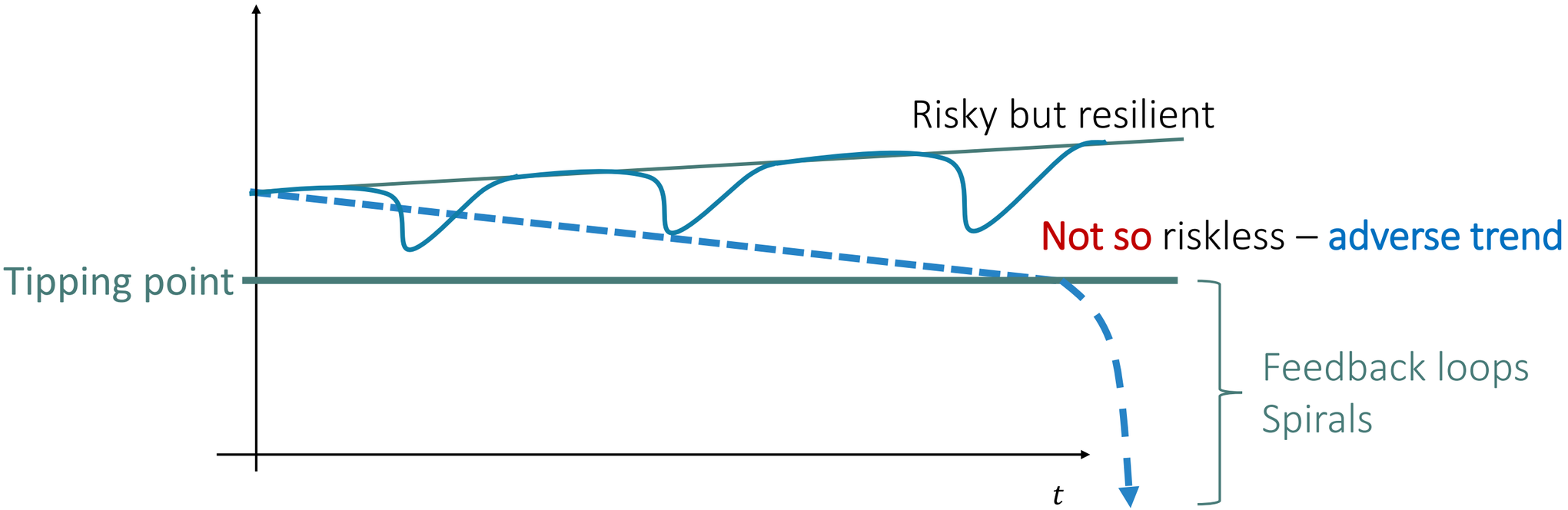
Resilience, Risk, and Growth - **Sustainability**

1. Resilience +
2. No adverse trend



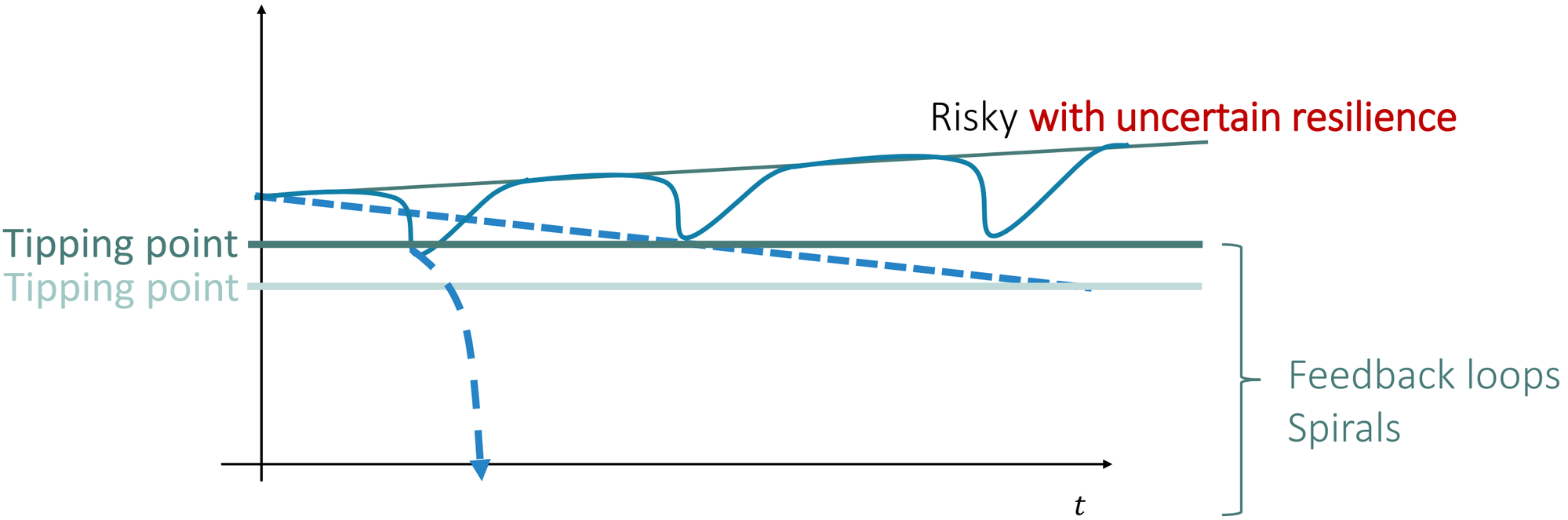
Tipping Points: Resilient Sustainable Path

- Seemingly riskless part with adverse trend subject to catastrophe risk
  - Resilience path is only hope



Tipping Points: Resilient Risky Sustainable Path

- Tighter tipping point – resilience strategy is more risky



- Uncertain tipping point

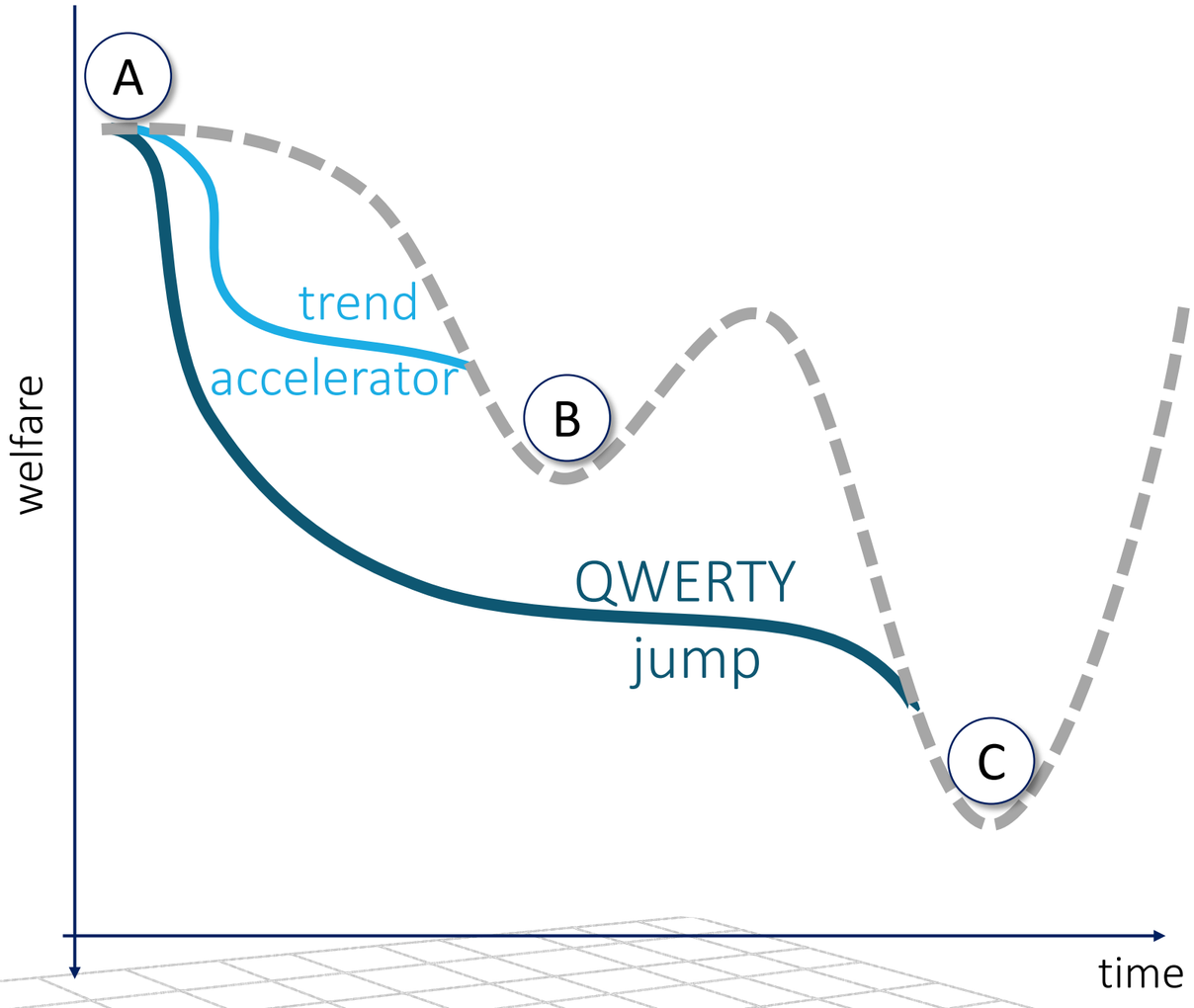
Innovation and Scarring

Digitalization – Life Sciences

Econ New Normal: Innovation and Scarring

- Innovation: Overcoming cannibalization, QWERTY problem, regulatory shackles

  - Tele medicine/Life sciences
  - Home office and real estate donut effect
  - Online learning/conferencing
  - Digital Money
- Scarring:
  - Belief and preference scarring
  - Labor market scarring
  - Debt overhang



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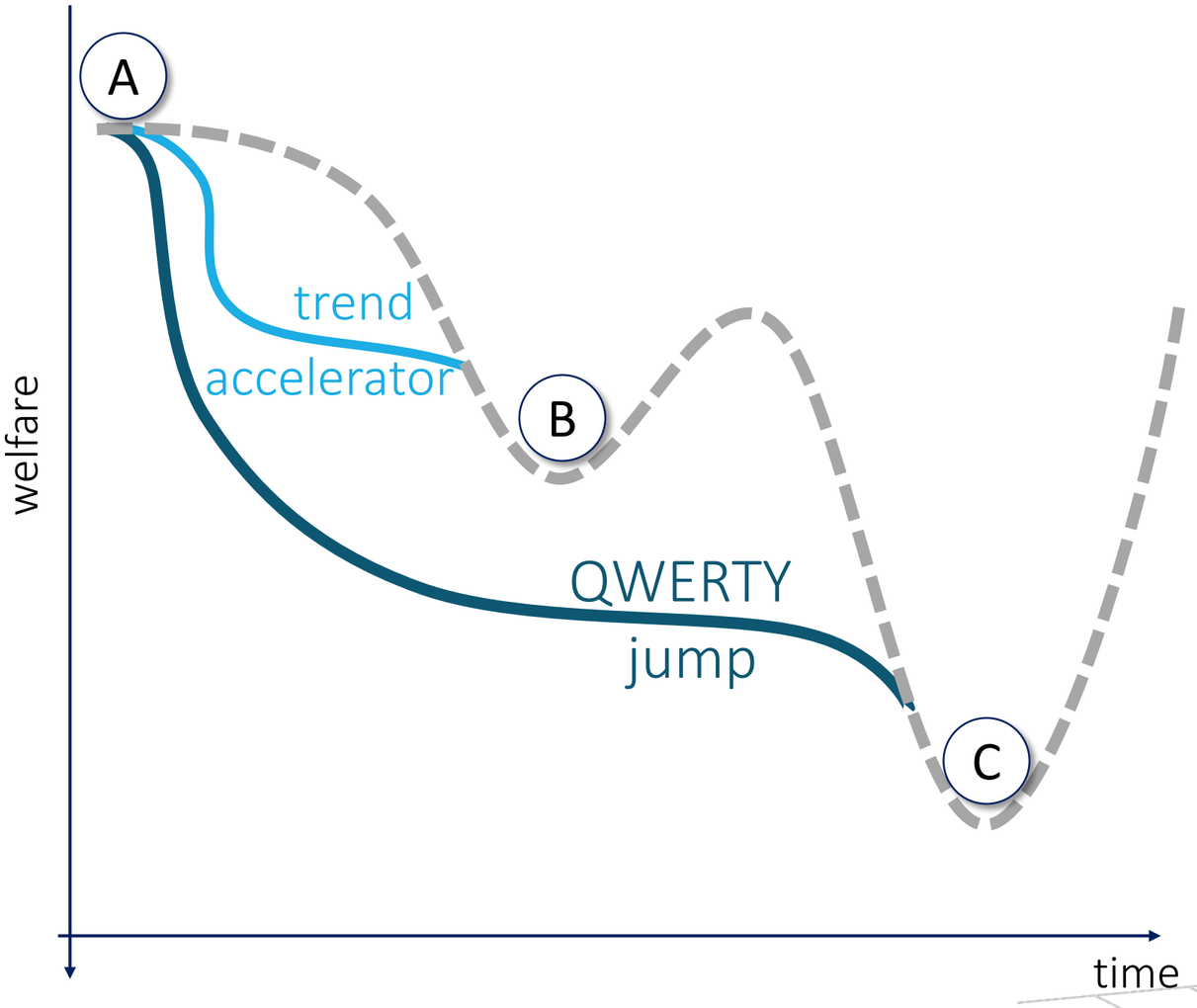
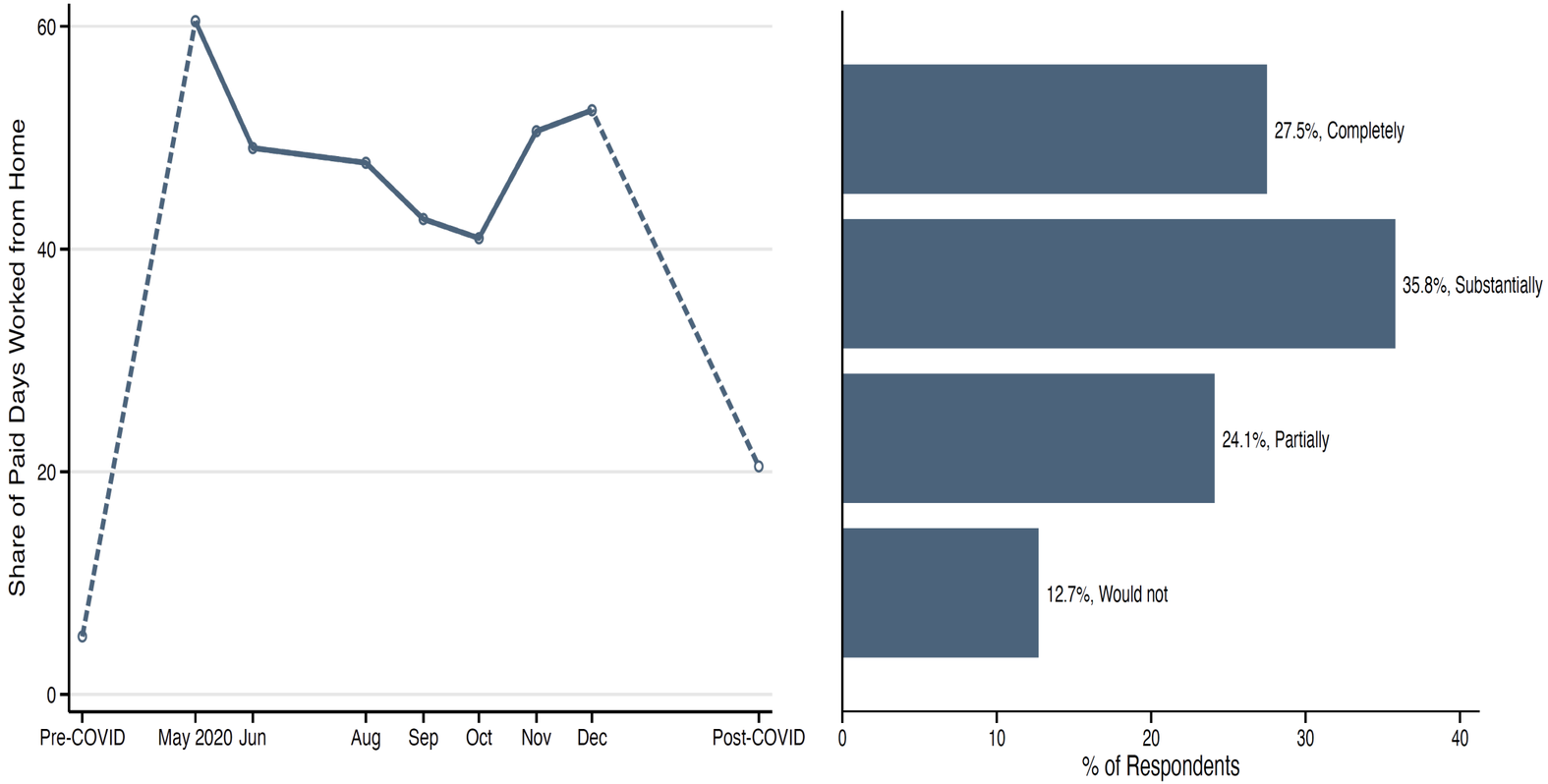


Covid and **city design**

- Fewer high rise buildings (lift fear)
  - From sky scrapers to office parks
  - Spread out cities ⇒ traffic
- Donut effect due to Covid for metropolitan areas
  - City centers are struggling, suburbs thriving

- Smart cities
  - Digitalization – New form of hygiene management
    (like sewage in 19th century)

Working from Home



Resilience and Policy Implications

- Health
  - Vaccines to return to “new normal”
- Macro
  - Low interest rate ⇒ more fiscal, less monetary resilience
- Finance
  - Efficient debt restructuring -- Capital requirements (buffers) (to avoid debt overhang)

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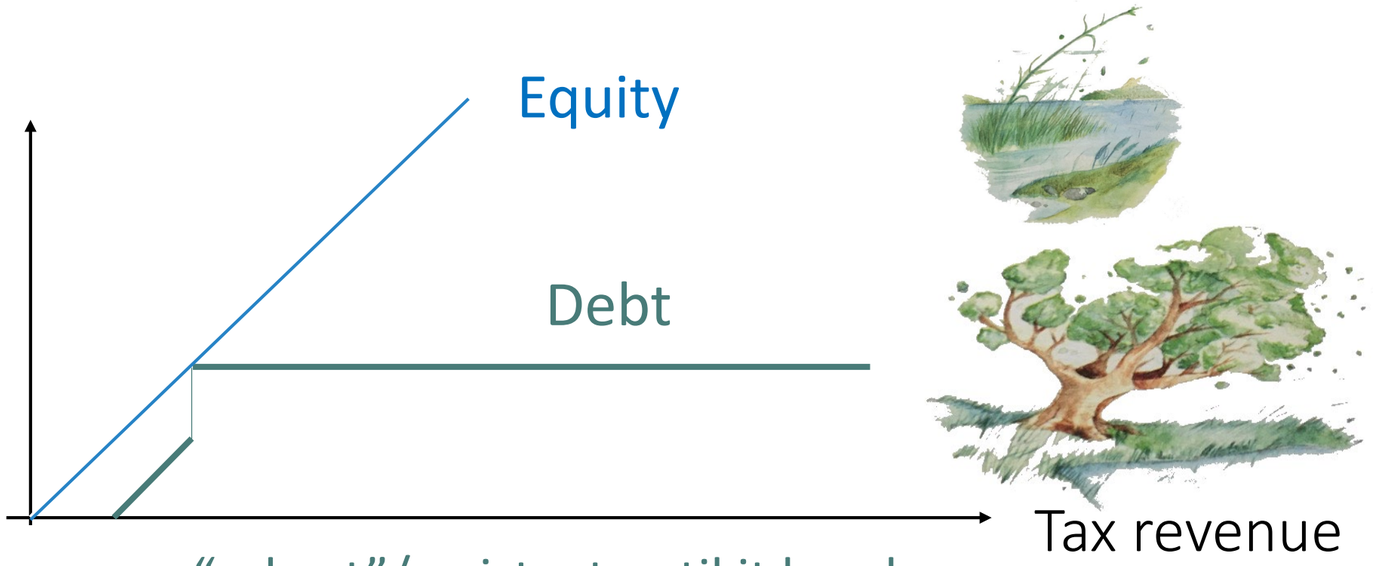

“robust”/resistant until it breaks through “Robustness barrier”

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  - Efficient debt restructuring (to avoid debt overhang) -- Capital requirements (buffers)
  - Flexible exchange rate + MacroPru (limited $-debt) -- Foreign exchange reserves (buffers)
  - Distributed Ledger Technology (DLT)
- Resilience Inequality ⇒ income and wealth inequality
- Global value chains
  - From “just in time” to “just in case” -- stress tests for GVC (resilience lessons from GFC)
- Emerging Economies – poverty and middle income traps
- Global geopolitics – global role of the dollar
- Climate change
  - Avoid tipping points
  - Sustainability = resilience + no adverse trend

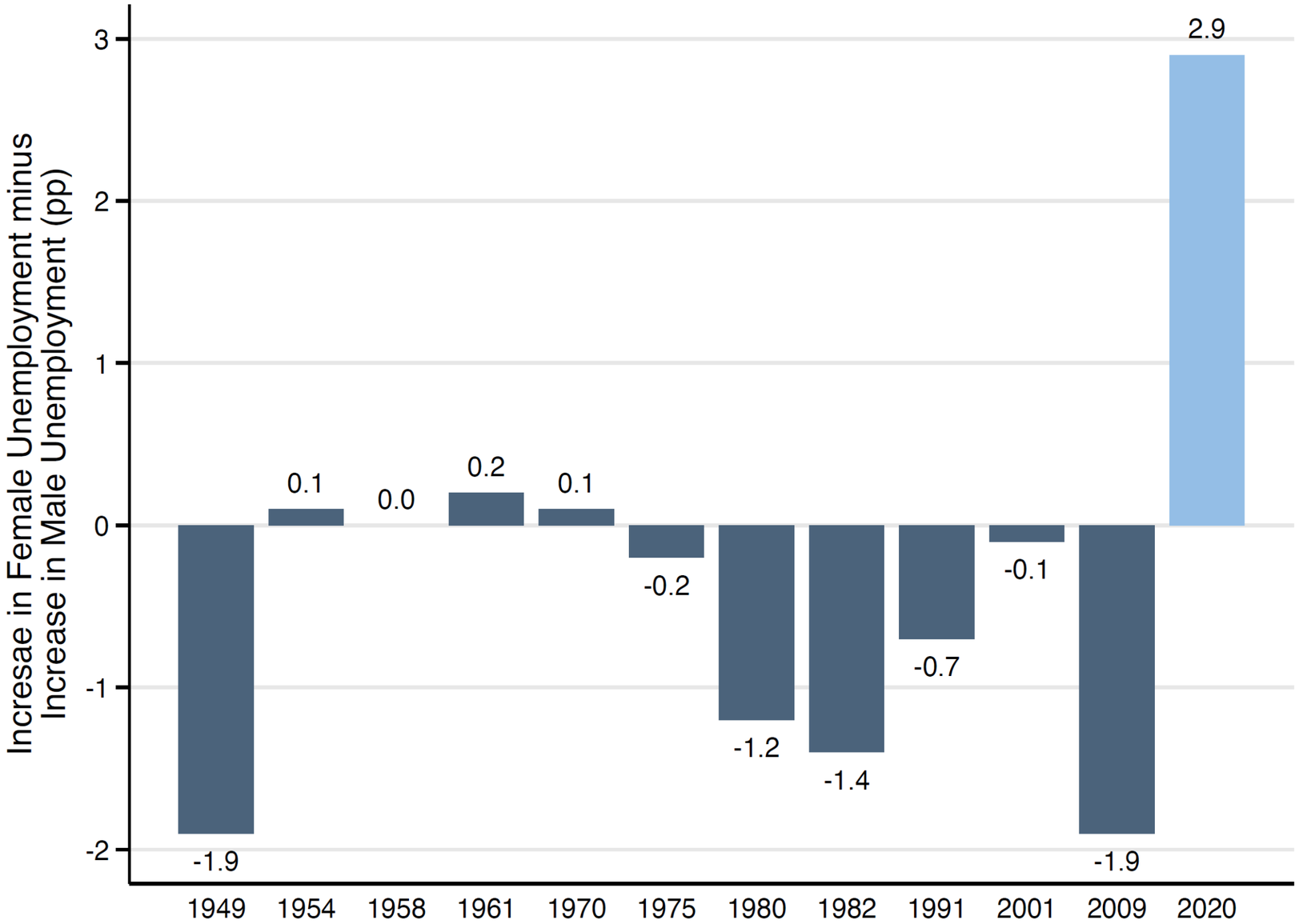
Resilience Inequality

Chapter 12

Inequality and Resilience

- Income inequality — static measure
- Wealth inequality
  - Discount rate effects
- Social mobility — dynamic measure
- Resilience inequality — (new concept)
  - Some people bounce back more easily than others
    … and hence can take more risk (earn higher risk premia)

Gender Inequality: Unemployment Increases in Recessions



International Economics and Resilience

Chapters 13, 14

Global Resilience

- Emerging Economies
  - Poverty trap
    - Resilience to bounce back after a shock
  - Middle-income trap

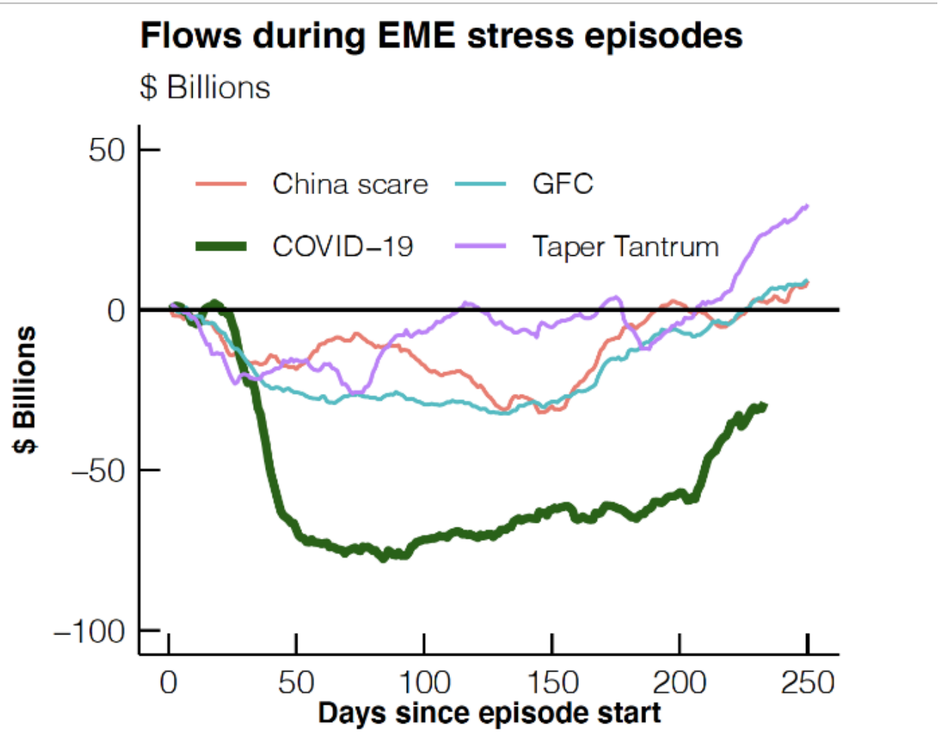
- Sovereign Debt Restructuring, IMF's SDR, ...

- Geopolitics "zero-sum thinking"
  - US vs. China: Europe's choice
  - Face mask diplomacy, vaccine nationalism

- Global Finance – US dollar
- Floating exchange rate as resilience enhancer
  - If debt in domestic denominated currency
- Global safe asset – resilience for advanced economies
- Capital flows and US monetary policy

Global Financial Crisis – just avoided in March 2020

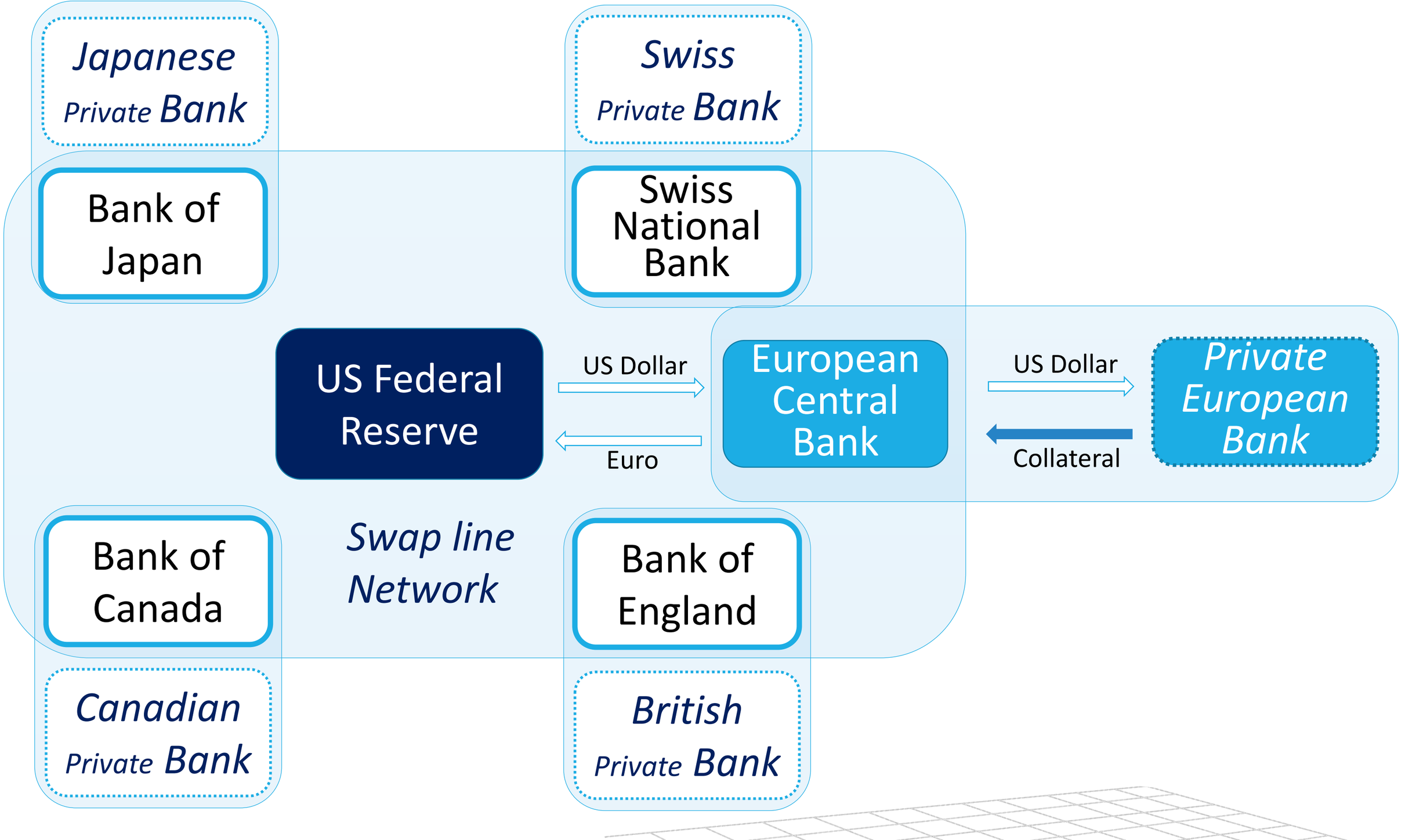
- Flight to safety in the US dollar



Source: National sources via Bloomberg.
Episode start dates: September 8, 2008 for Global Financial Crisis, May 22, 2013 for Taper Tantrum, July 26, 2015 for China Scare, and January 21, 2020 for COVID−19.
Excludes China. See panel 1 for list of countries included.

Size and speed!

- Fed interest rate cut and repo facility


Japanese Private Bank
Swiss Private Bank
Bank of Japan
Swiss National Bank
US Federal Reserve
US Dollar
Euro
European Central Bank
US Dollar
Collateral
Private European Bank
Swap line Network
Bank of Canada
Bank of England
Canadian Private Bank
British Private Bank

High Public Debt Levels, but low interest rates

- Debt/GDP vs. Value at Risk (Debt servicing cost$|\cdot$)

- Why is government debt interest rate so low?
  Asset pricing formula with second term

Asset Price = E[PV(cash flows)] + E[PV(service flows)]

dividends/interest convenience yield

1. **Safe asset** service flow:
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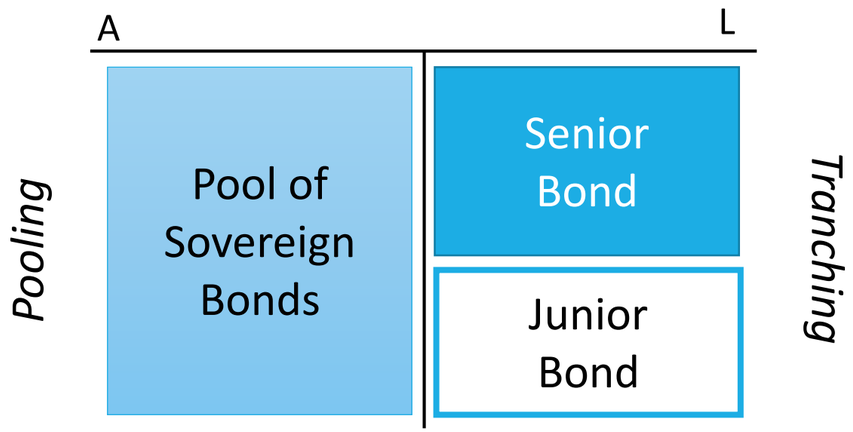
2. Collateral constraint (Lagrange multiplier)

- Safe asset status of gov. bonds – bubble feature that can pop
  - Fiscal space to "defend bubble"

See Brunnermeier, Merkel, Sannikov (2020). "Debt as safe asset: Mining the Bubble"

GloSBies


A
L
Pooling
Pool of Sovereign Bonds
Senior Bond
Junior Bond
Tranching

Resilience and Policy Implications

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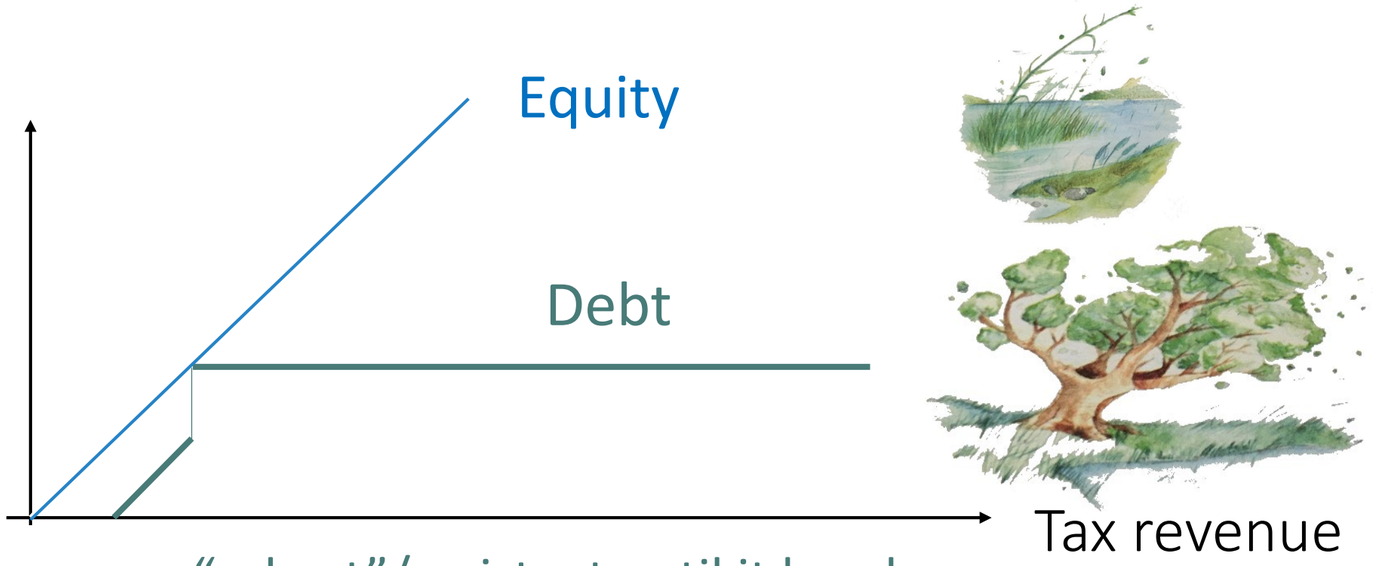

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  - Sustainability = resilience + no adverse trend

A Personal Conjecture

- In an increasingly complex society

- Autocratic societies
  - Seek **robustness** – attractive feature after crises
  - Suppression, minimize movements/disruptions
  - Surveillance
  - Tighten with each crisis … no rebound

Good in

- *Enforcing rules*

- Open/democratic society
  - More **resilient**
  - May appear wobbly when shock hits but internal mechanism allow for rebound
  - Open to mavericks
  - Transparency and more information flow/aggregation

- *Invented universally accepted vaccines*

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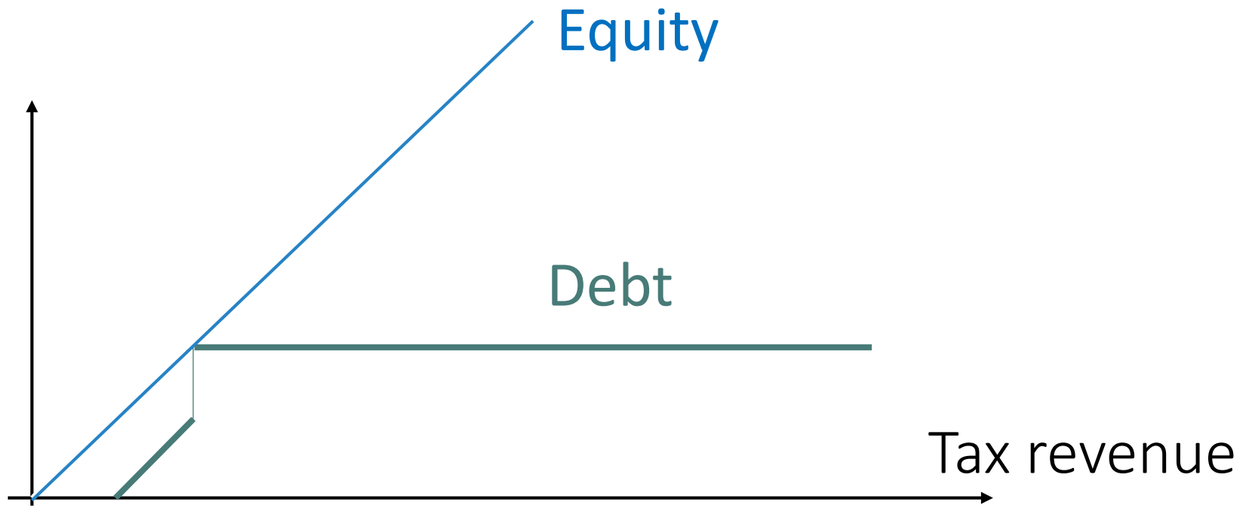
Financial Economics and Resilience/Covid

Chapter 9

Resilience and Debt



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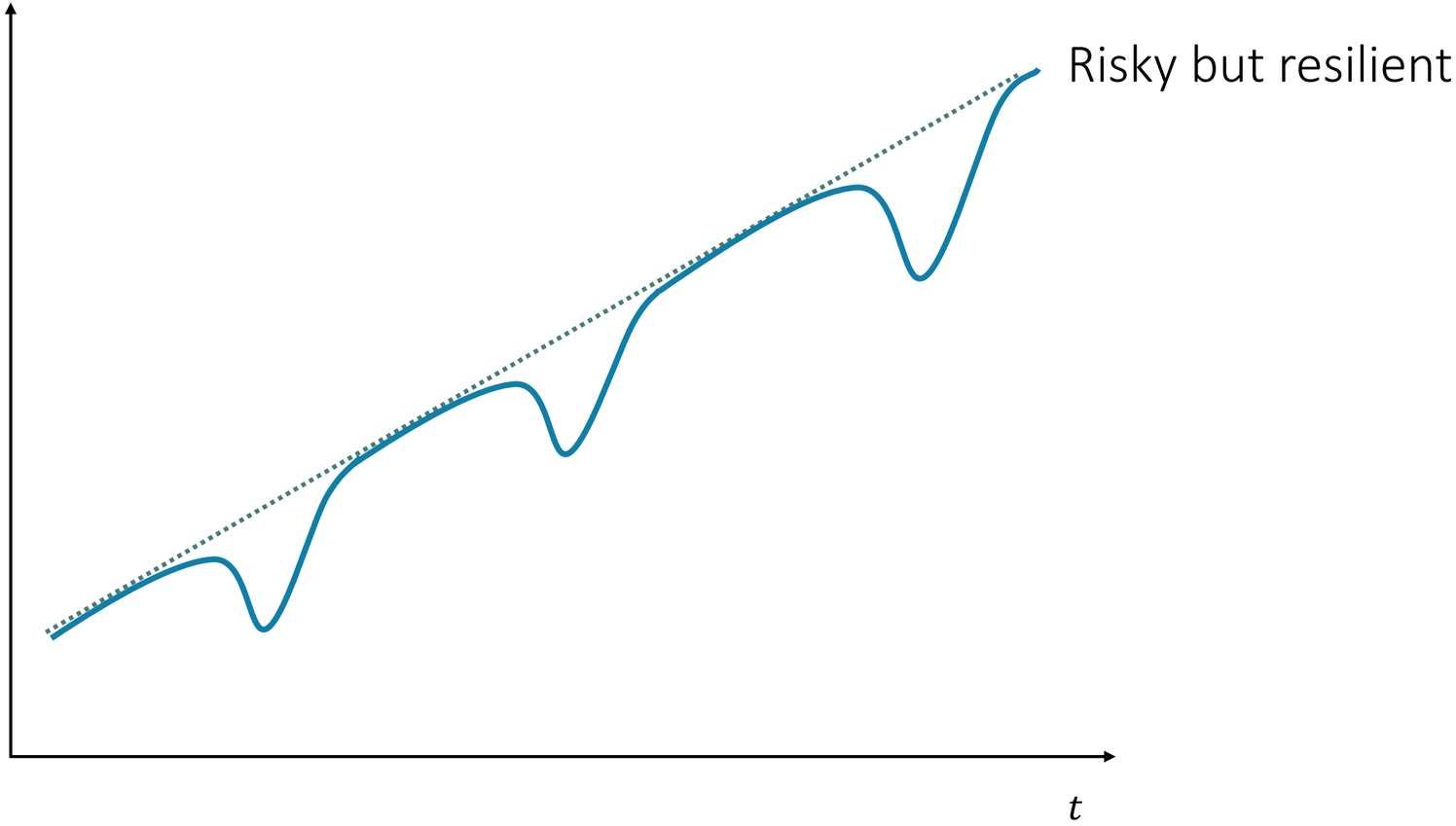
Equity

Resilience and the Slope of the Yield Curve

- Resilient path



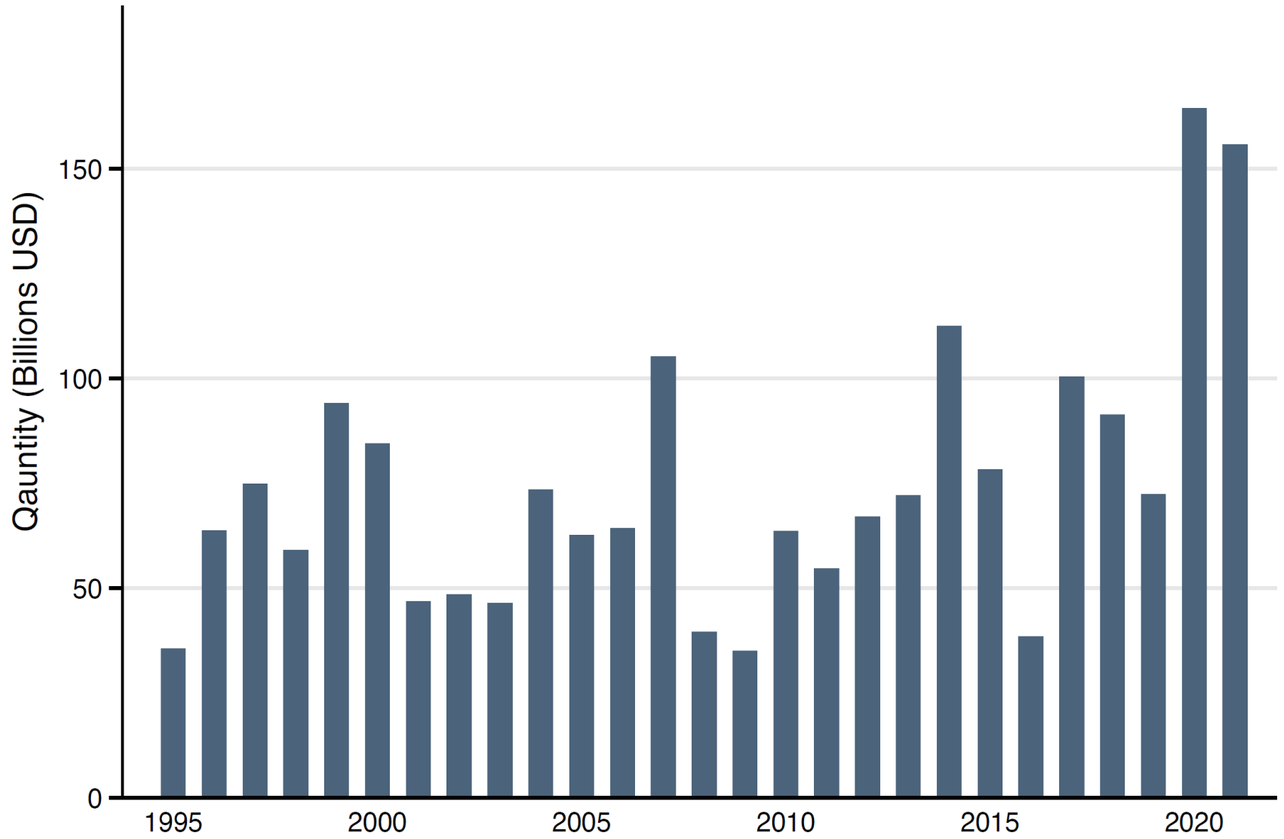
Resilience and the slope of the yield curve

- Increasing ⇒ resilience (V recessions)
- Flat ⇒ random walk (permanent)

“Financial Markets Whipsaw”: Stocks and Corporate Bonds

- March 2020 shivers followed by strong recovery
  - **Stock market** record heights – IPOs like during NASDAQ bubble

*Record **IPOs** due to SPACs*



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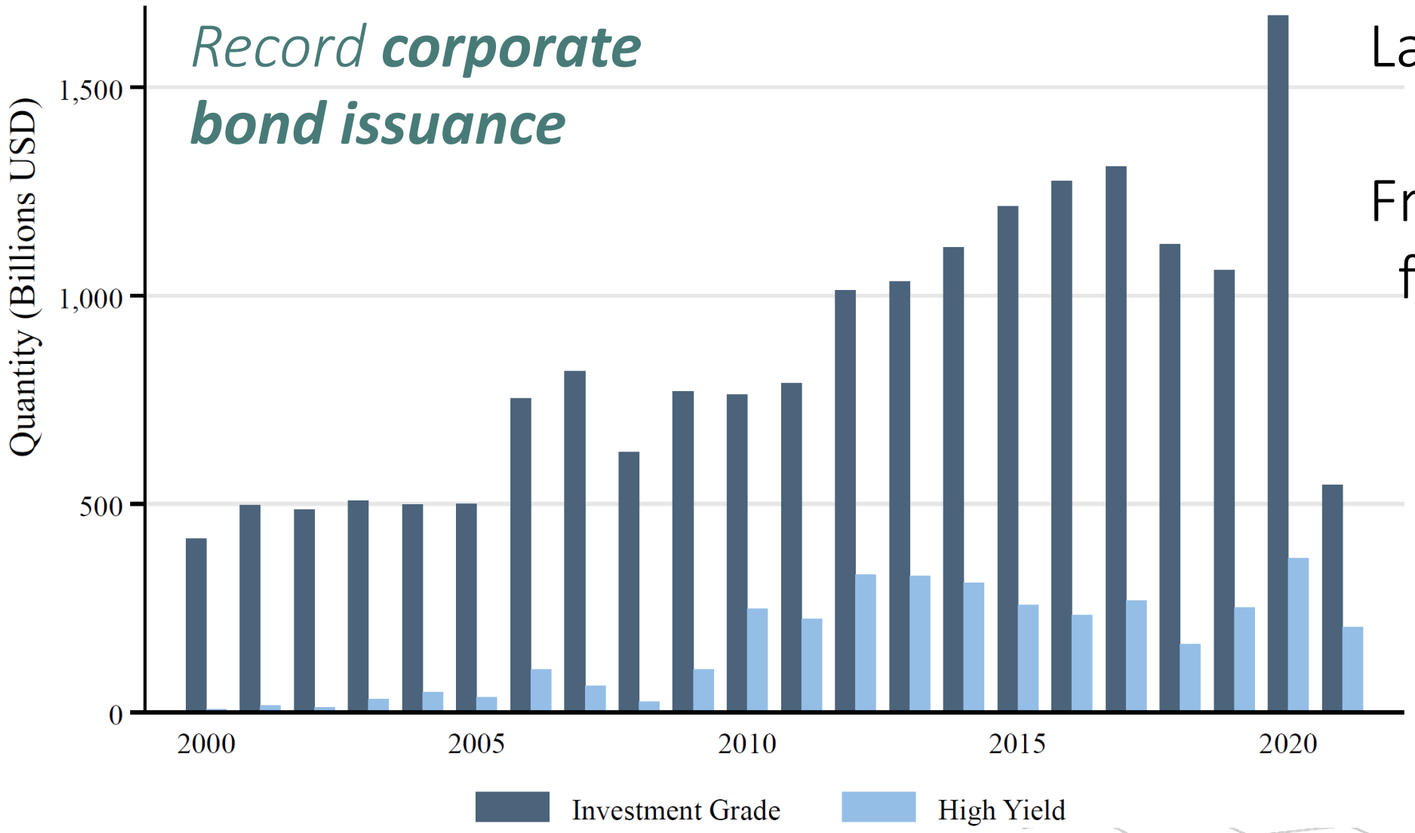
  - **Corporate bond market**

CB: Tail risk removal

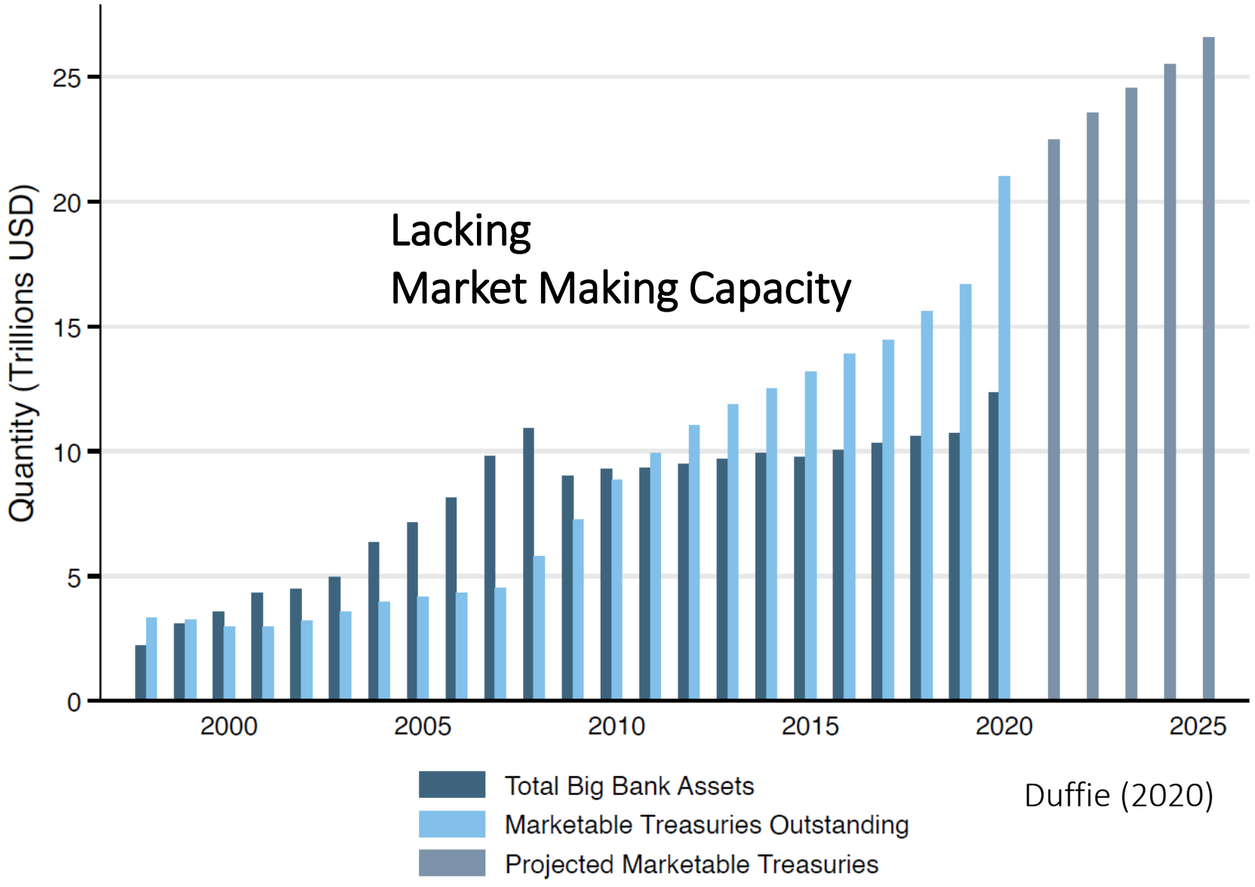


Large corporation paid back bank loans (from drawn credit lines)

Freed up risk-bearing bank capital by banks for lending to SMEs

“Financial Markets Whipsaw”: US Treasury

- March 2020 shivers followed by strong recovery
  - **Gov. bond market shivers** CB: Market maker of last resort to preserve safe asset status
    - What’s a safe asset? Precautionary savings: Asset Price = E[PV(cash flows)] + E[PV(service flows)]
      - Good friend: can sell at high price and low-bid ask spread in crisis times



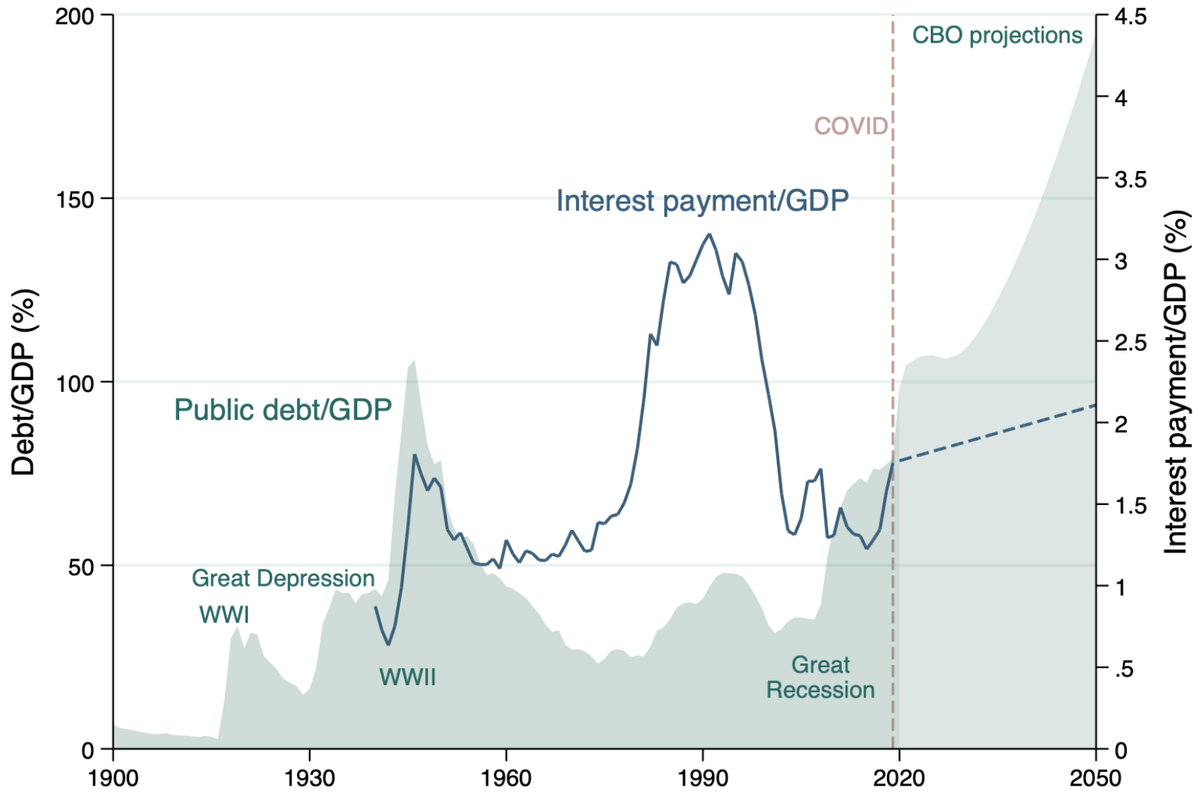
Duffie (2020)

Government Debt, Fiscal Policy and Resilience/Covid

Chapter 10

High Public Debt Levels, but low interest rates

- Debt/GDP vs. Value at Risk (Debt servicing cost|·)



- Why is government debt interest rate so low?

See Brunnermeier, Merkel, Sannikov (2020). “Debt as safe asset: Mining the Bubble”

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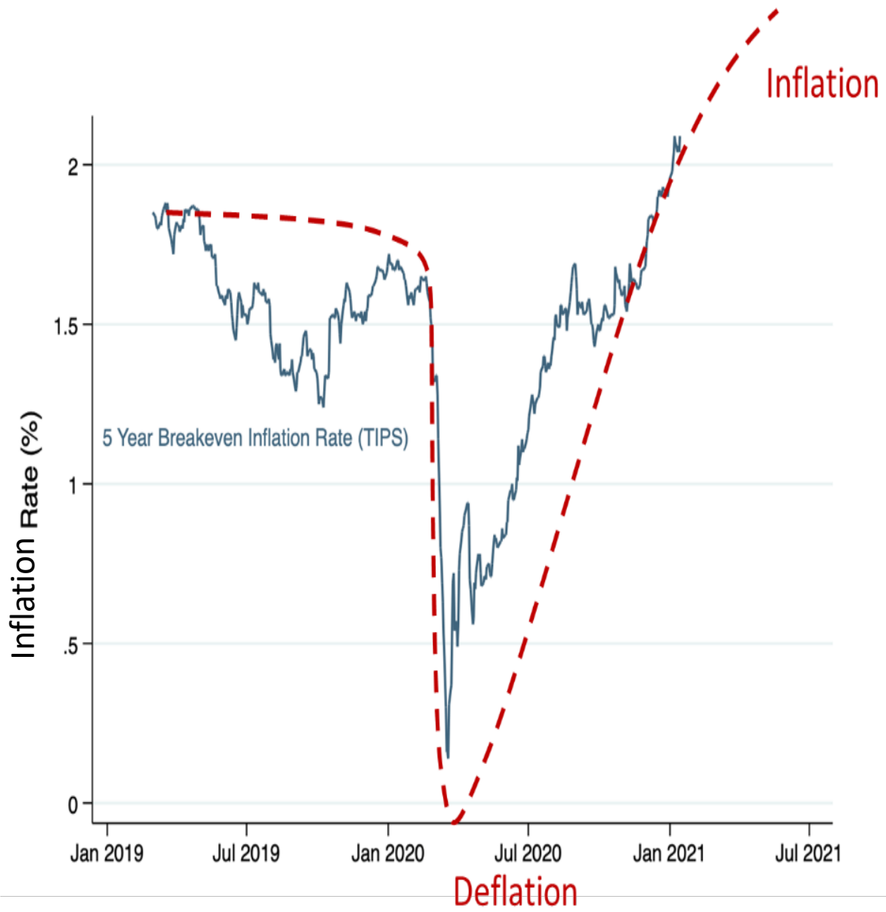
Monetary Policy and Resilience/Covid

Chapter 11

“Inflation Whipsaw”

5 Year Breakeven Inflation Rate (TIPS)

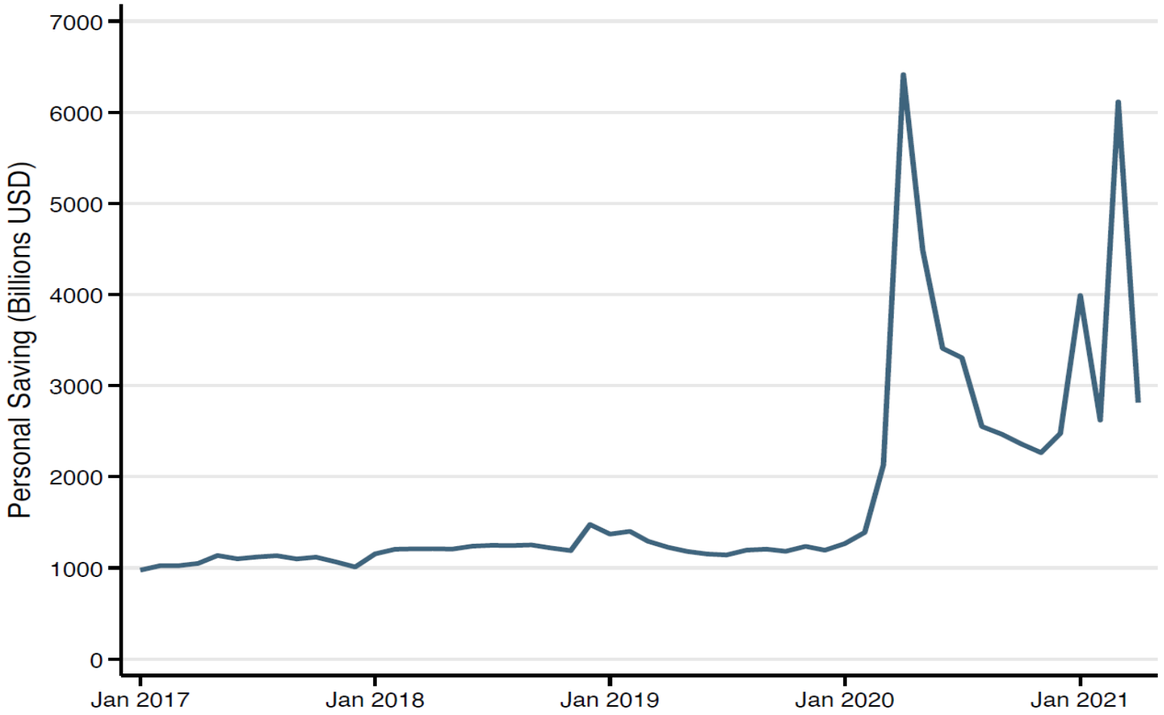


- **2 traps** (“resilience destroyers”)
  - Deflation trap
  - Inflation trap (fiscal + financial dominance)

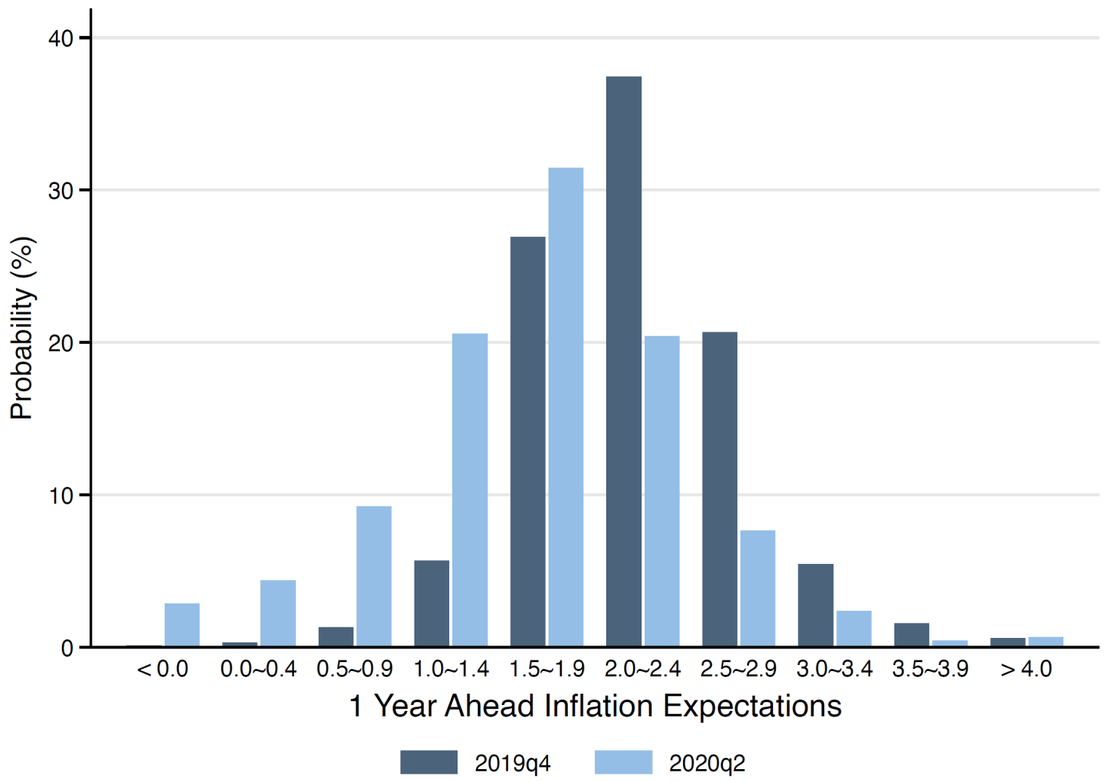
- **Independence** central bank
  + MacroPru
  - Accelerator and breaks

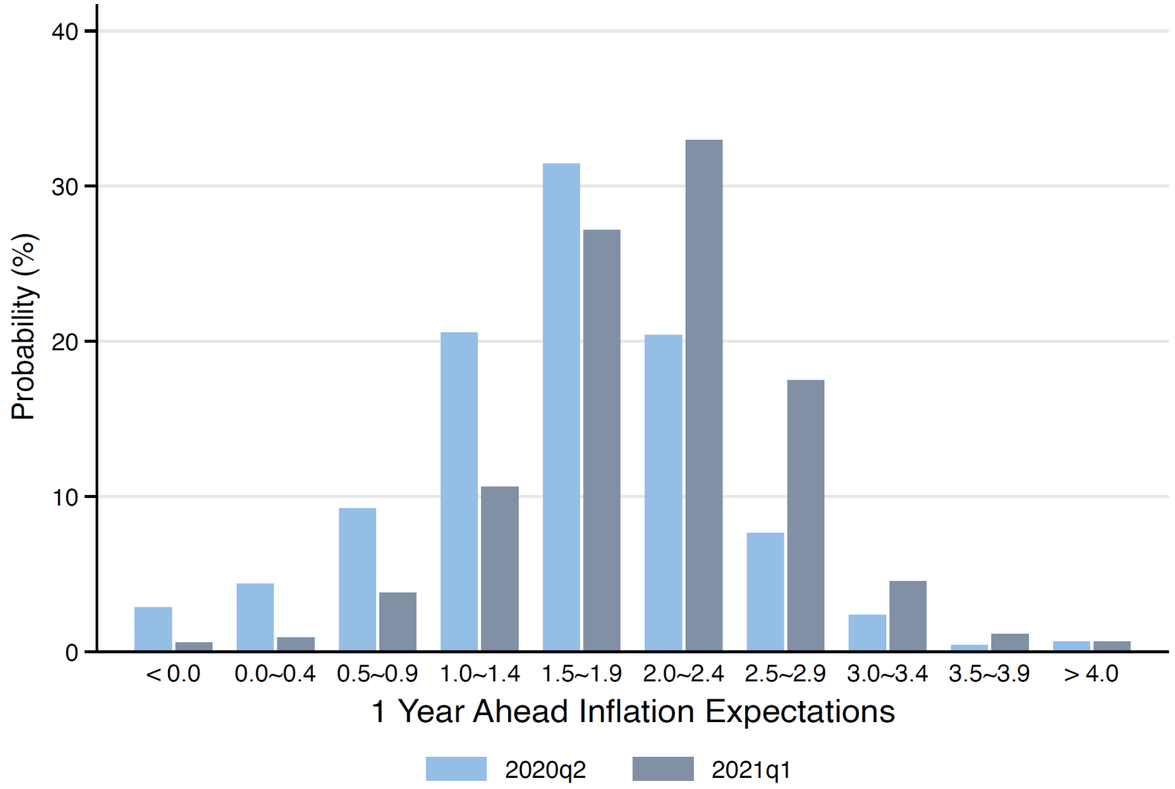
“Inflation Whipsaw”

- Stimulus checks ⇨ checking accounts at Banks
  - ⇨ hold reserves at Fed
  - ⇨ Fed buys Government debt (QE)
  - ⇨ Government issues debt to finance stimulus
- Personal savings due to increase uncertainty

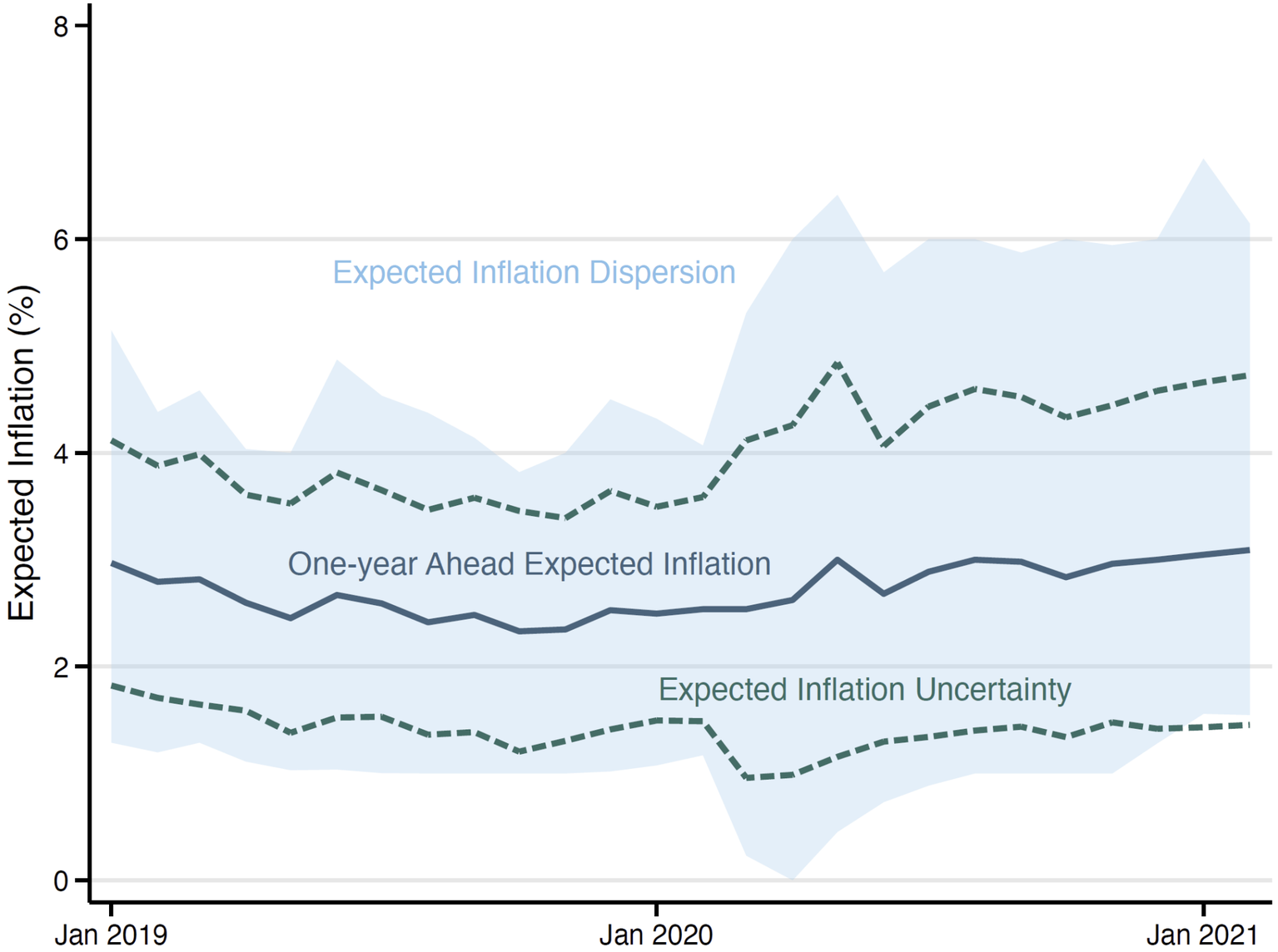


Shift in Inflation Expectations – Professional Forecasters

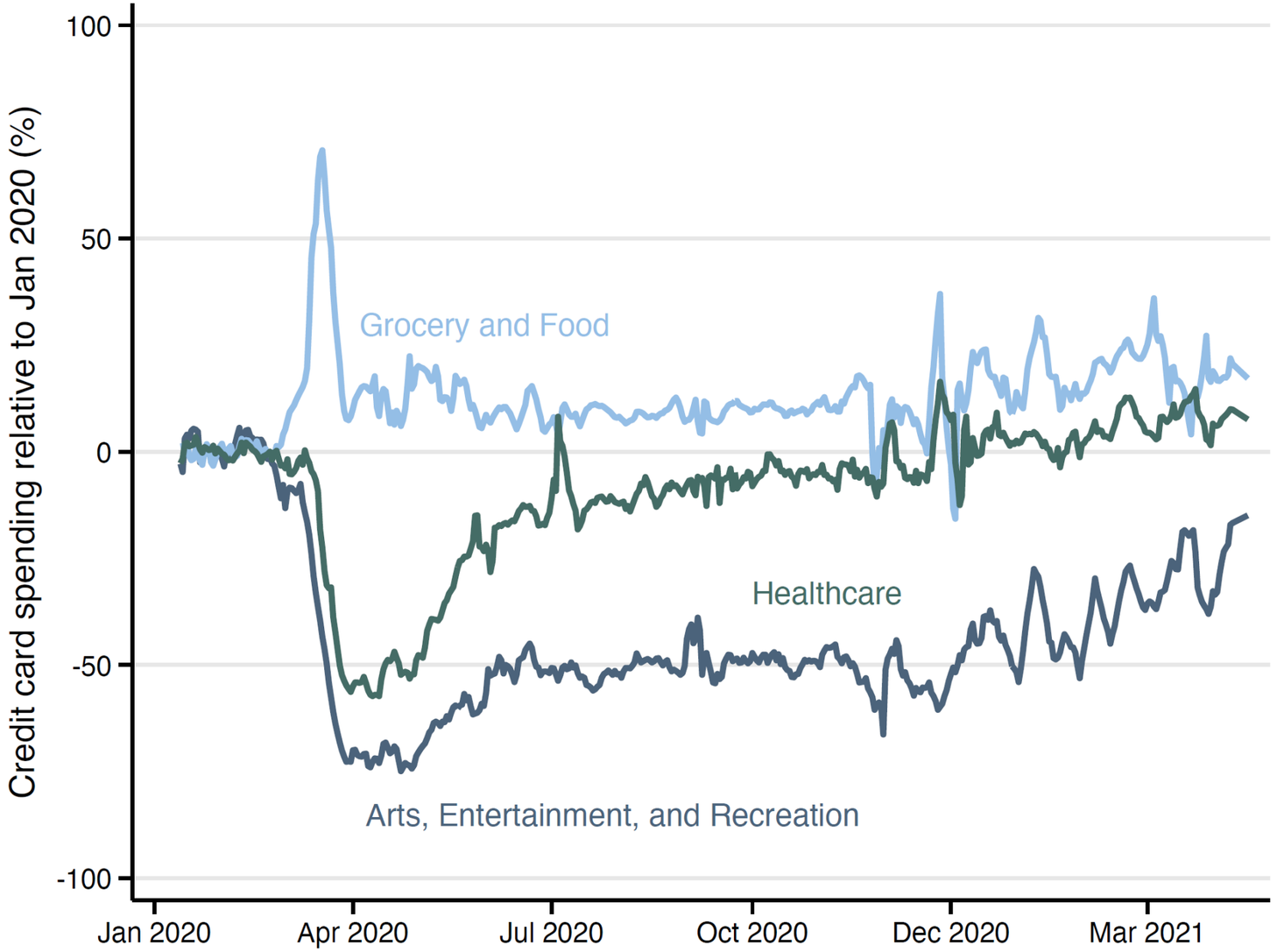




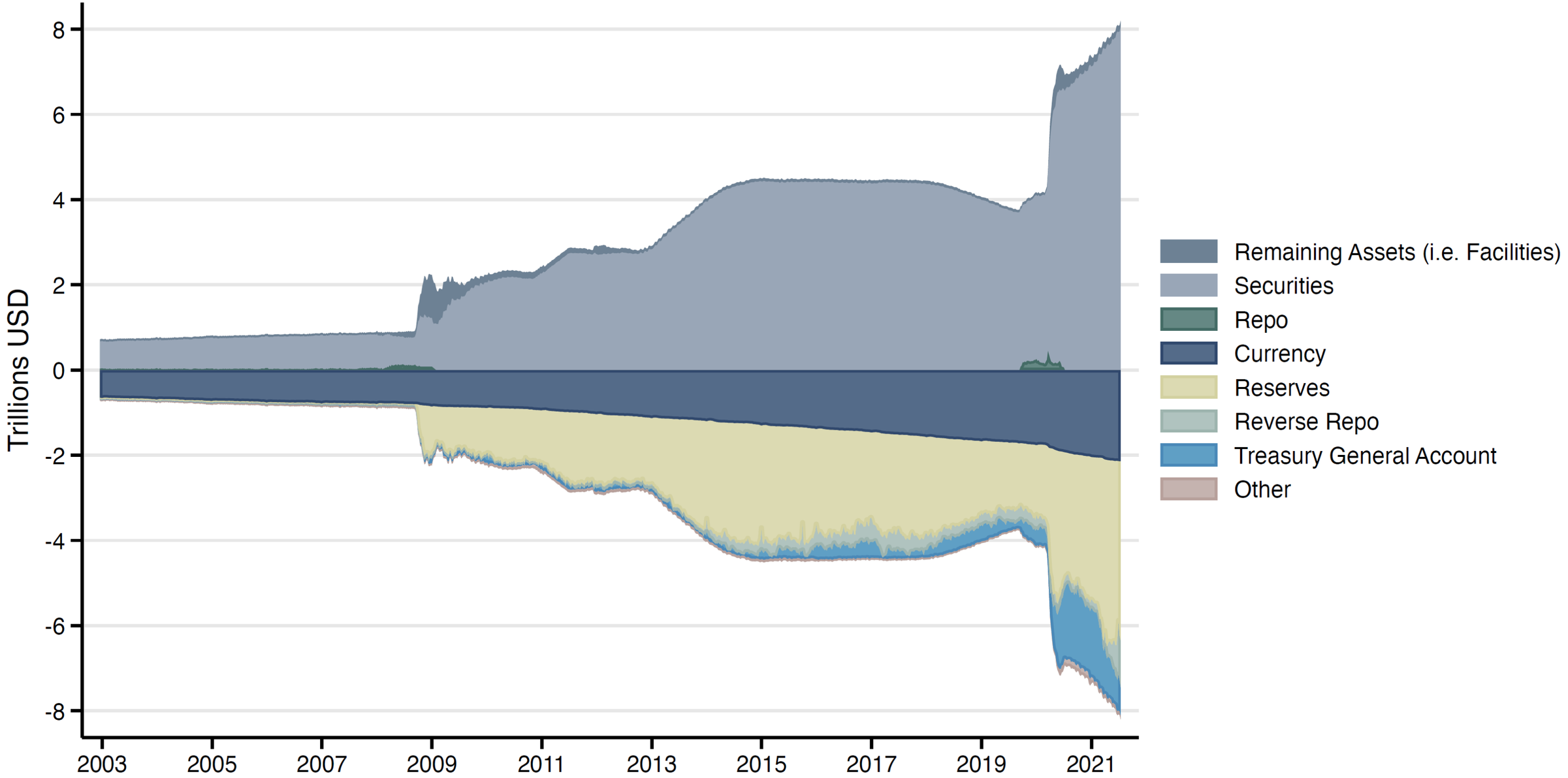
Shift in Inflation Expectations – Households



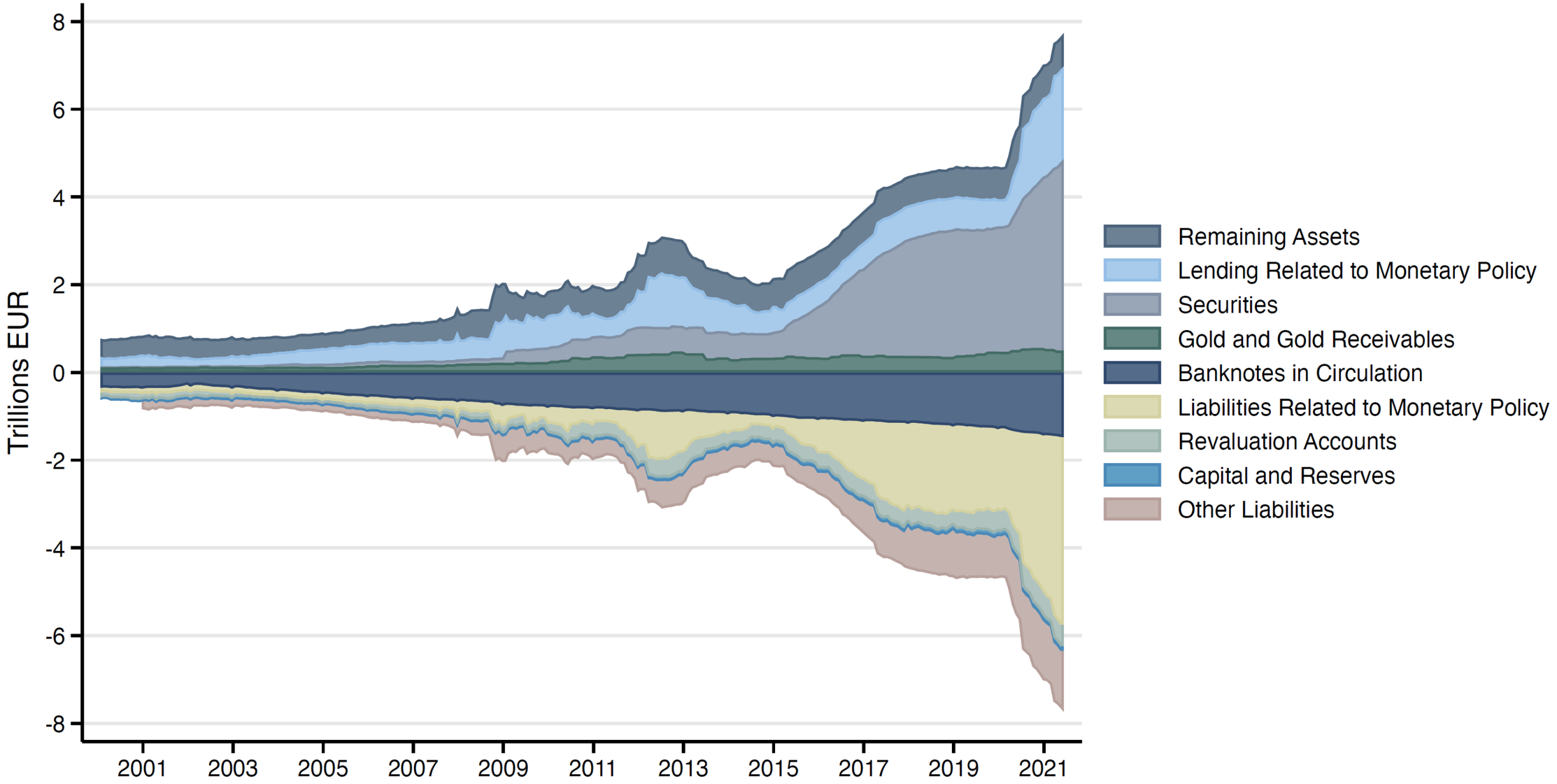
Spending patterns



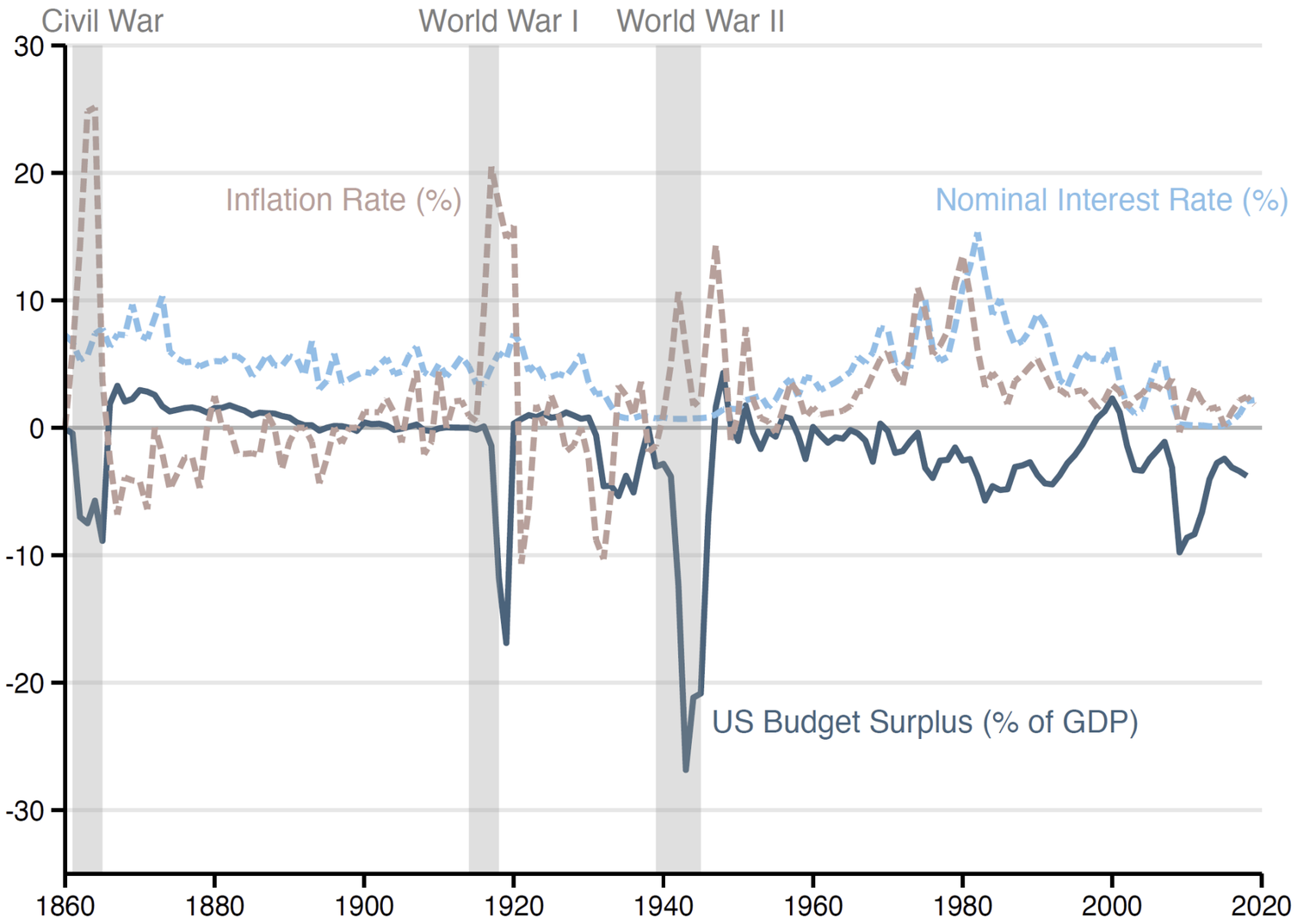
FED Balance Sheet



ECB Balance Sheet



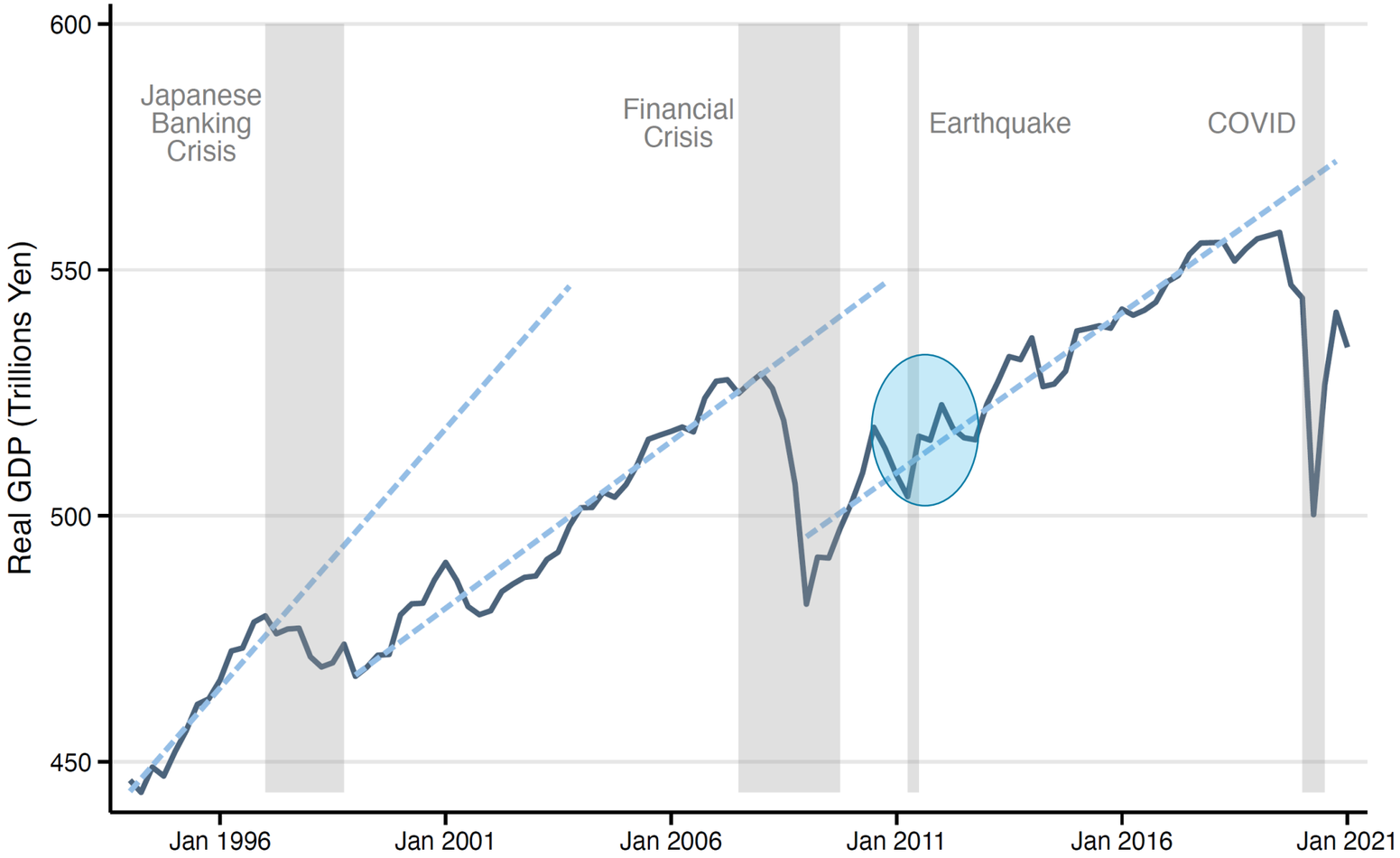
Fiscal Inflation Link



Resilience and the Yield Curve

Resilience ≠ Risk and Growth

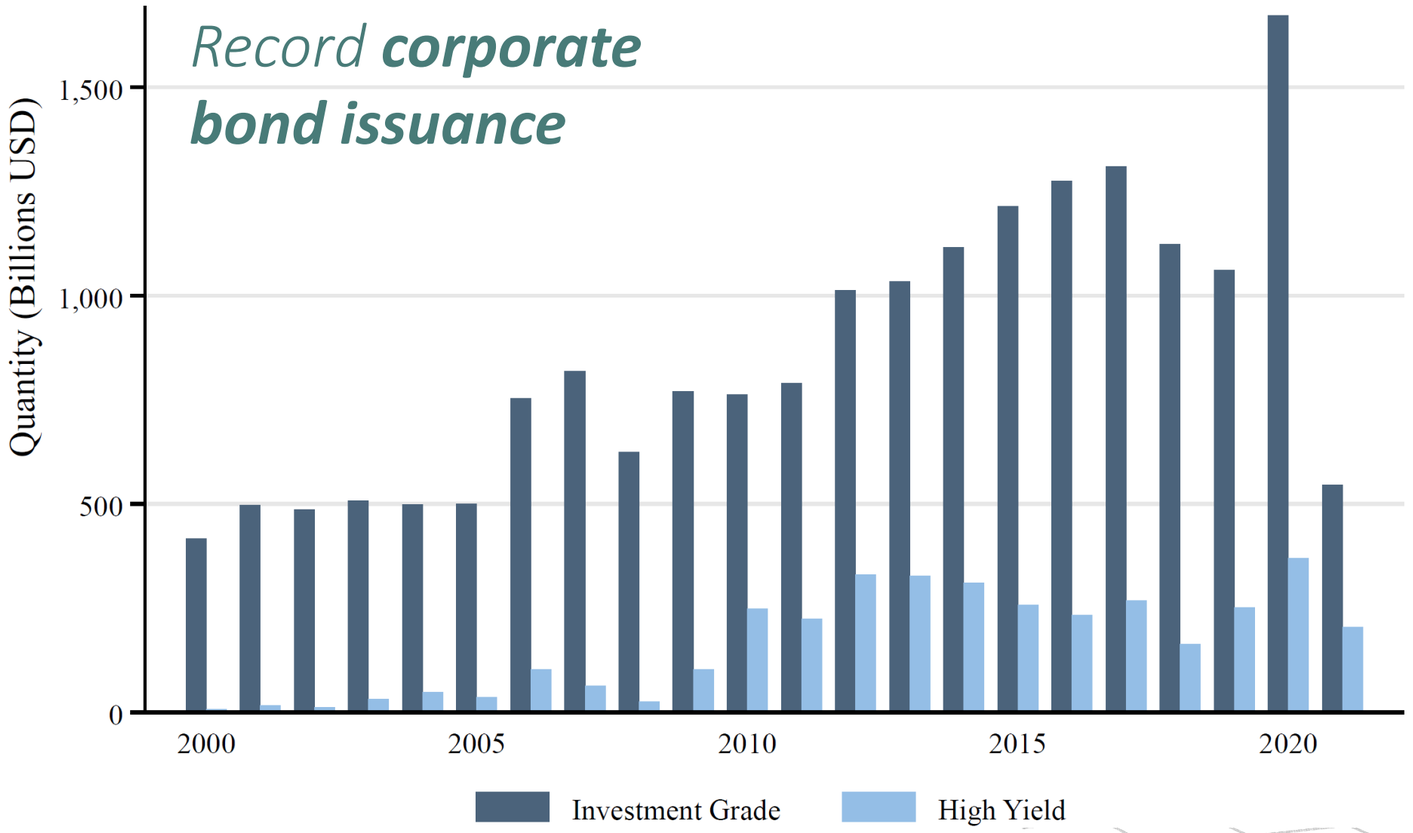
- Japanese GDP
  - Lack of resilience after financial crisis, resilience after Fukoshima



“Financial Markets Whipsaw”: Stocks and Corporate Bonds

- March 2020 shivers followed by strong recovery
  - **Stock market** record heights – IPOs like during NASDAQ bubble
  - **Corporate bond market**

CB: Tail risk removal



“Financial Markets Whipsaw”: US Treasury

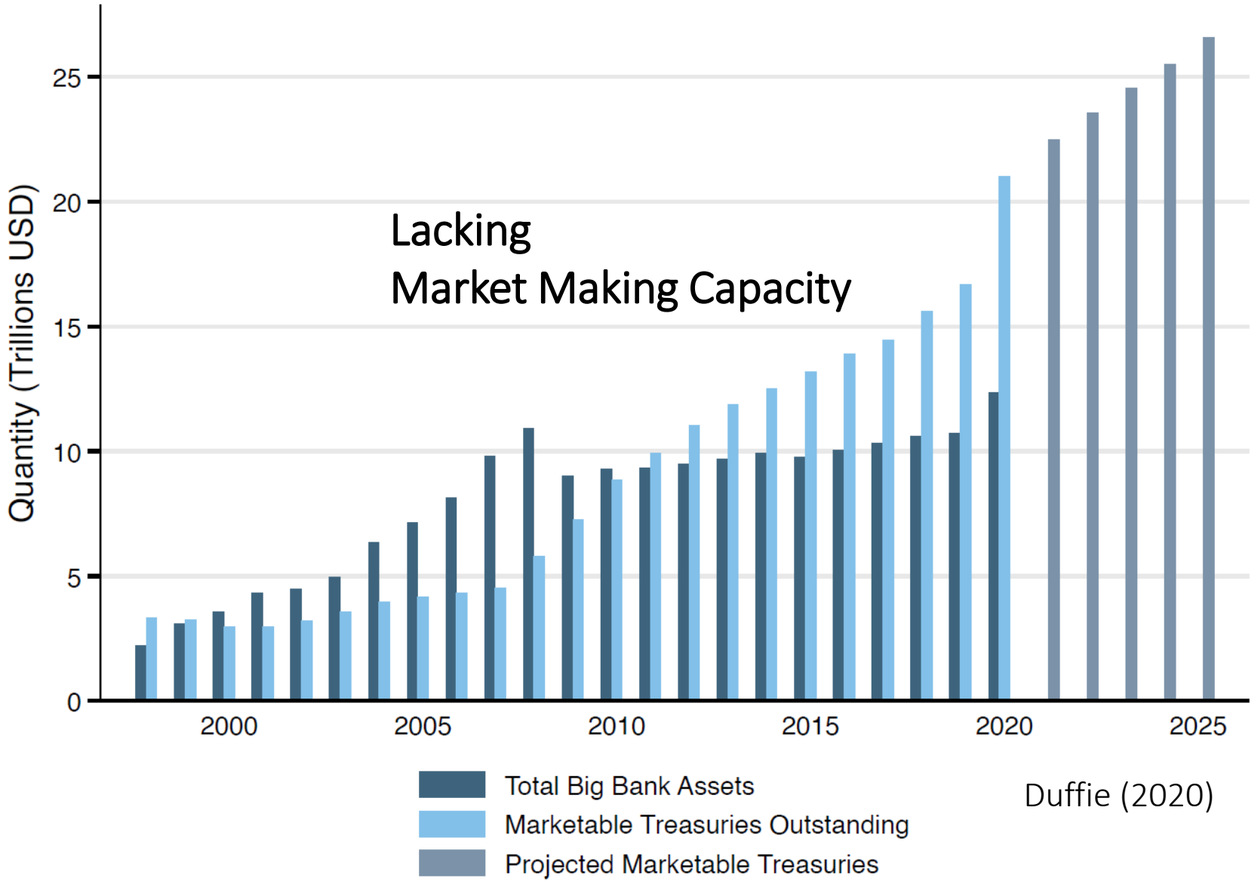
- March 2020 shivers followed by strong recovery
  - **Stock market** record heights – IPOs like during NASDAQ bubble
  - **Corporate bond market**
  - **Gov. bond market shivers**
    - What’s a safe asset?
      - **Good friend analog:** can sell at
        - High price and
        - Low bid-ask spread (even at crises times)
      - Precautionary savings
        - Asset Price = E[PV(cash flows)] + E[PV(service flows)]
        - ⇒ Low (cash flow) interest rate $r < g$
      - **Safe asset tautology:** pop like a bubble

CB: Market maker of last resort

to preserve safe asset status

“Financial Markets Whipsaw”: US Treasury

- March 2020 shivers followed by strong recovery
  - **Gov. bond market shivers** CB: Market maker of last resort to preserve safe asset status
    - What’s a safe asset?
      - Good friend: can sell at high price and low-bid ask spread in crisis times



Duffie (2020)

High **Public Debt** at Low Interest Rate

- Resilience:
  - Prior to shock: Low fiscal debt levels
  - During shock: Fiscal countercyclical response

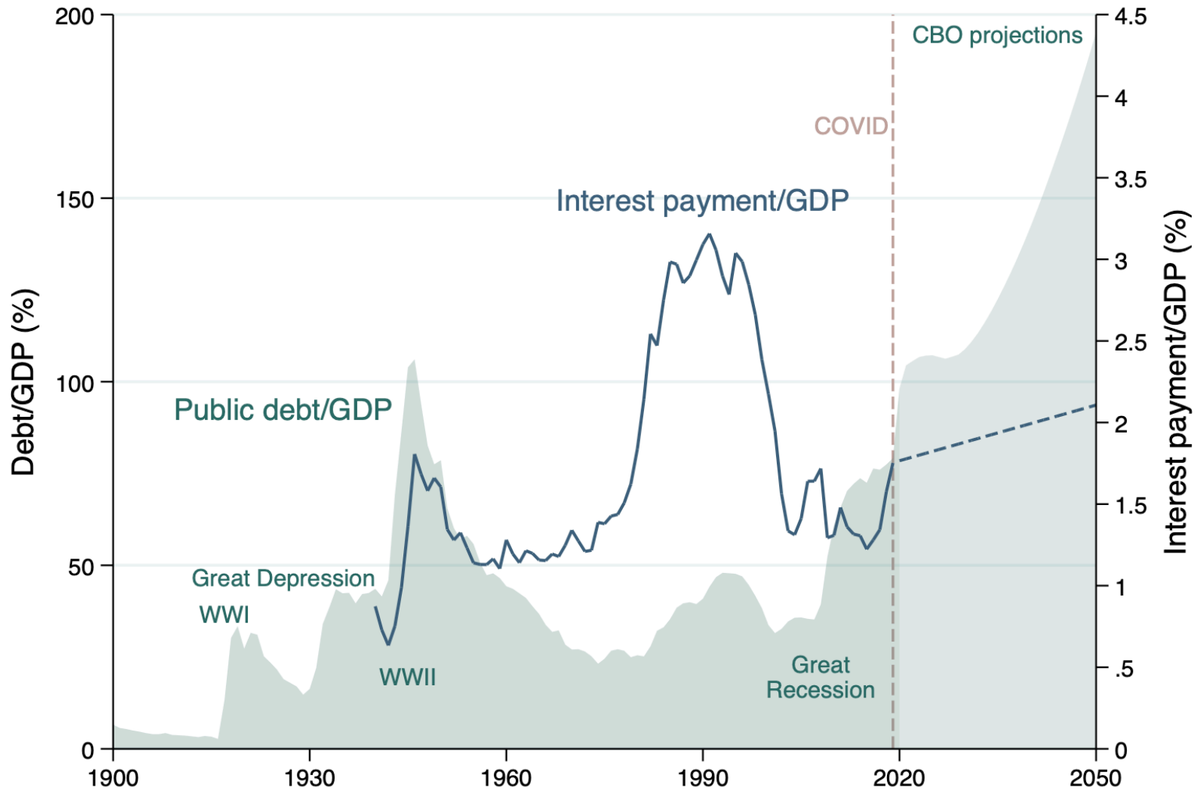
- Be aware of interest rate spikes – loss of safe asset status

- New metric:
  - Value at Risk (Debt servicing cost$|\cdot$) instead of **Debt/GDP**

- Low interest rate environment
  - More fiscal policy space, esp. if $r < g$
  - Less monetary policy space … hit ZLB/Reversal Rate

High Public Debt Levels, but low interest rates

- Debt/GDP vs. Value at Risk (Debt servicing cost|·)

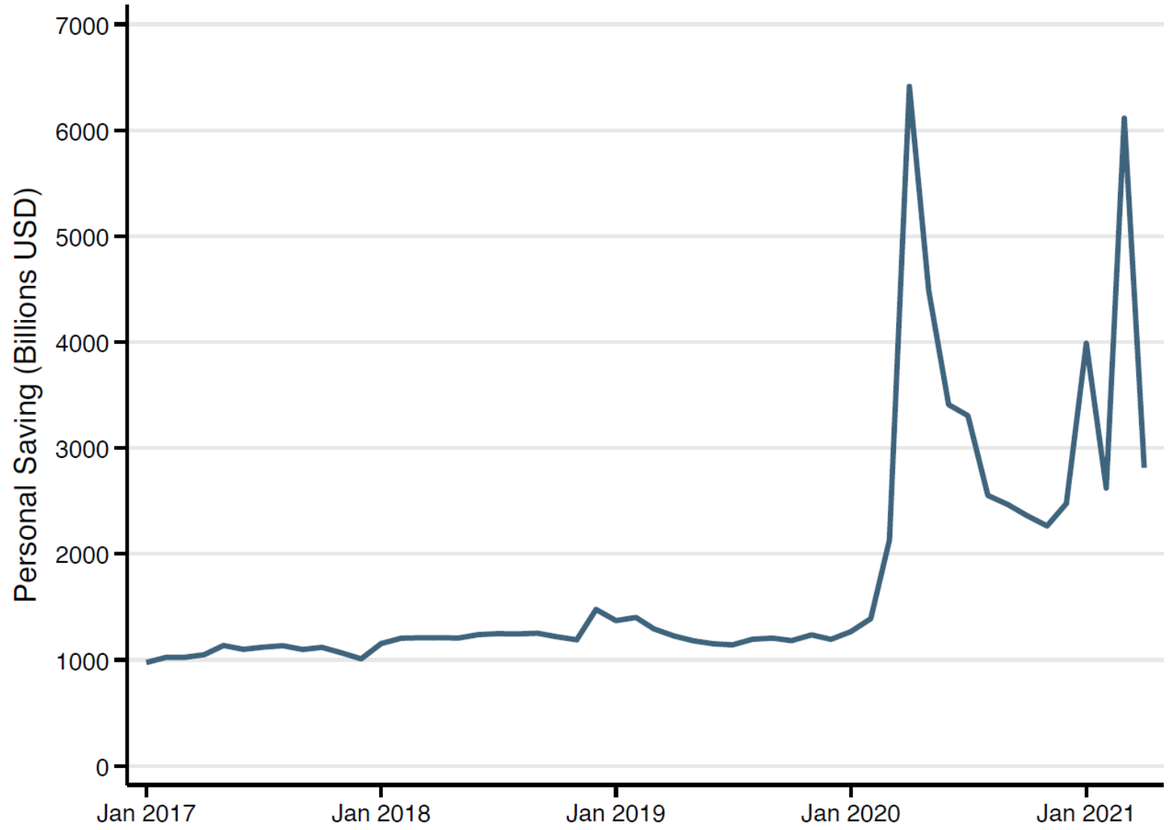


- Why is government debt interest rate so low?

See Brunnermeier, Merkel, Sannikov (2020). “Debt as safe asset: Mining the Bubble”

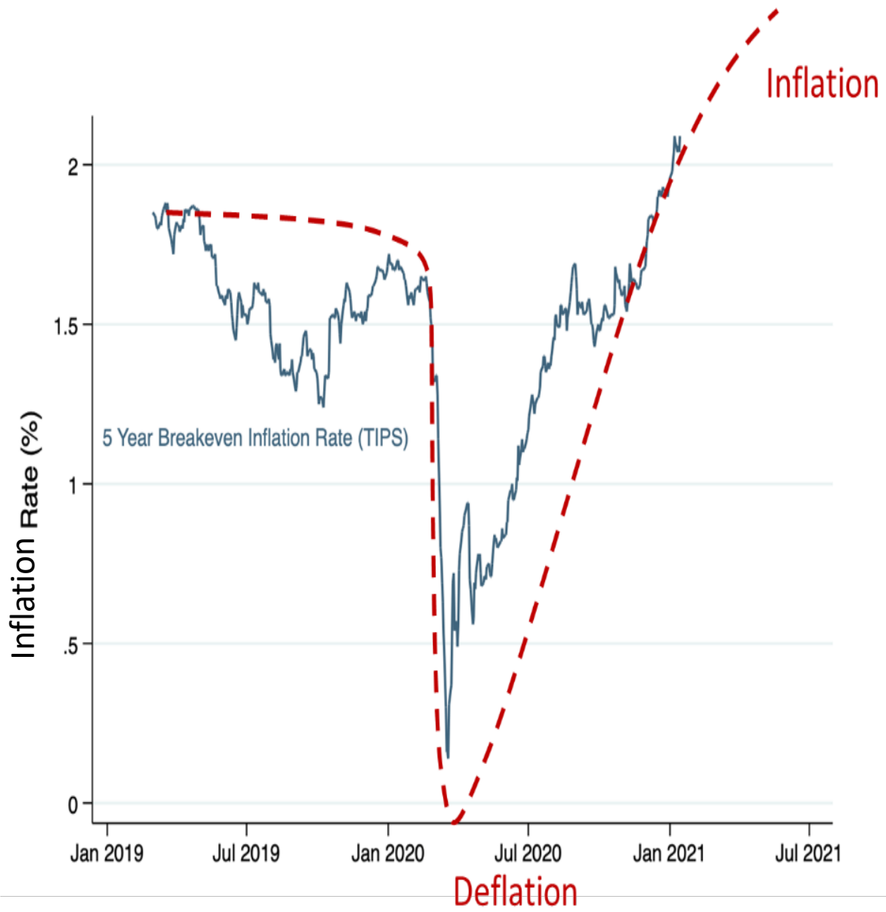
“Inflation Whipsaw”

- Stimulus checks ⇨ checking accounts at Banks ⇨ hold reserves at Fed ⇨ Fed buys Government debt (QE) ⇨ Government issues debt to finance stimulus
- Personal savings due to increase uncertainty



“Inflation Whipsaw”

5 Year Breakeven Inflation Rate (TIPS)



- **2 traps** (“resilience destroyers”)
  - Deflation trap
  - Inflation trap (fiscal + financial dominance)

- **Independence** central bank
  + MacroPru
  - Accelerator and breaks