BOSTON CONSULTING GROUP

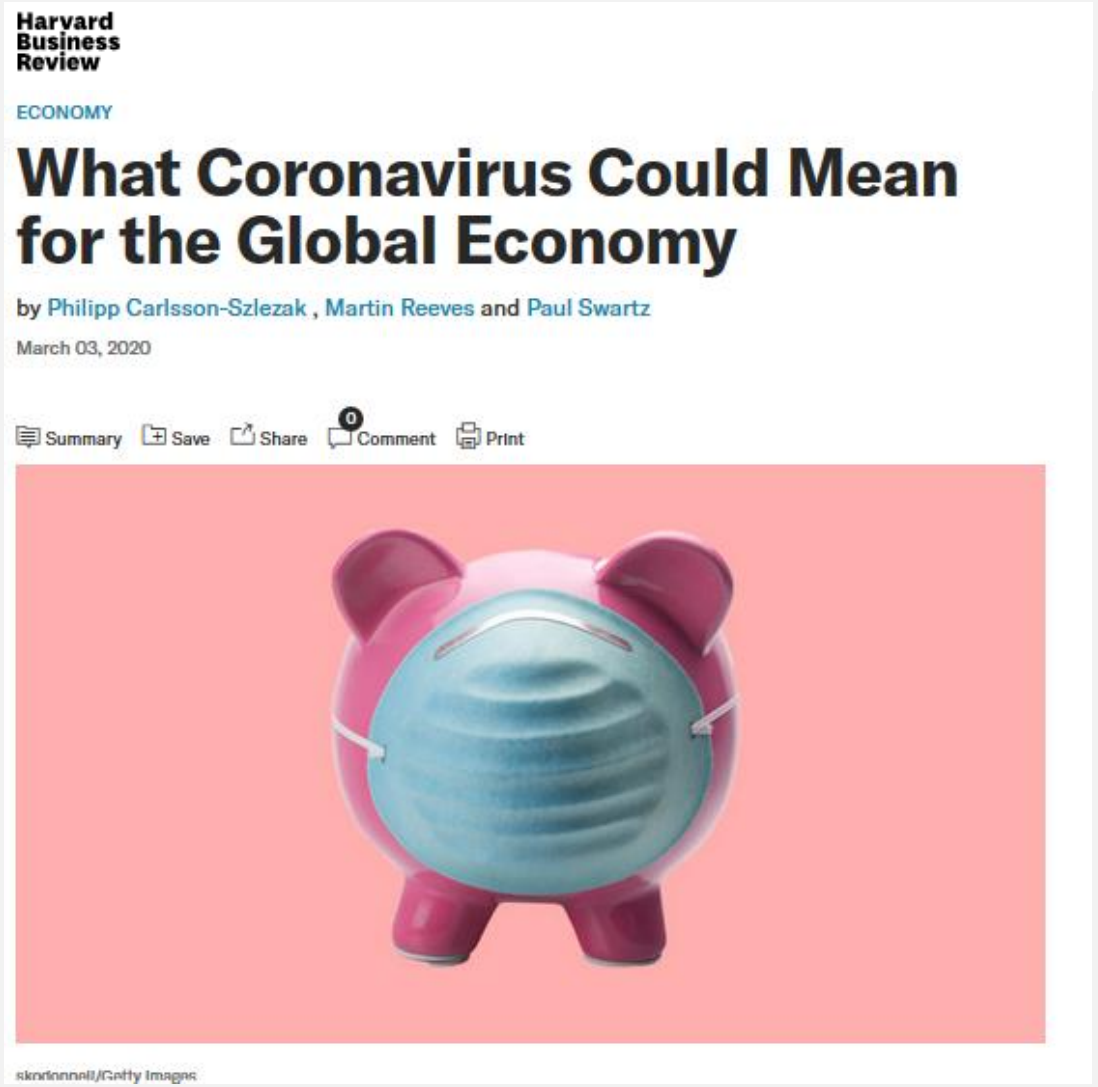
How to Think Through the Economic Impact of COVID-19

BCG Henderson Institute, Center for Macroeconomics

BCG HENDERSON INSTITUTE

NEW YORK, 3/1/2020

For a summary of the analysis in this deck, please see Harvard Business Review article, published March 3rd



Harvard Business Review

ECONOMY

What Coronavirus Could Mean for the Global Economy

by Philipp Carlsson-Szlezak , Martin Reeves and Paul Swartz

March 03, 2020

Summary Save Share 0 Comment Print

https://hbr.org/2020/03/what-coronavirus-could-mean-for-the-global-economy

How to think about the economic impact of COVID-19

In this document

1. What markets are telling us about the COVID-19 epidemic
2. How to think about the risk of a COVID-19 recession
3. What COVID-19's growth impact, recovery path, and legacy could look like

1. What markets are telling us about the COVID-19 epidemic

COVID-19 spread outside China has triggered aggressive re-pricing of risks in financial markets, though variations across asset classes

For risk assets, valuation impact has ranged from mild (credit spreads) to significant (equities) to borderline panicky (VIX)

For safe assets, a valuation spike in duration (US 10Y) underlines global shift in sentiment as term premium drops near all time lows

From equity market correction (-10%), plausible path to bear market (i.e. -20% fall), and possibly fast

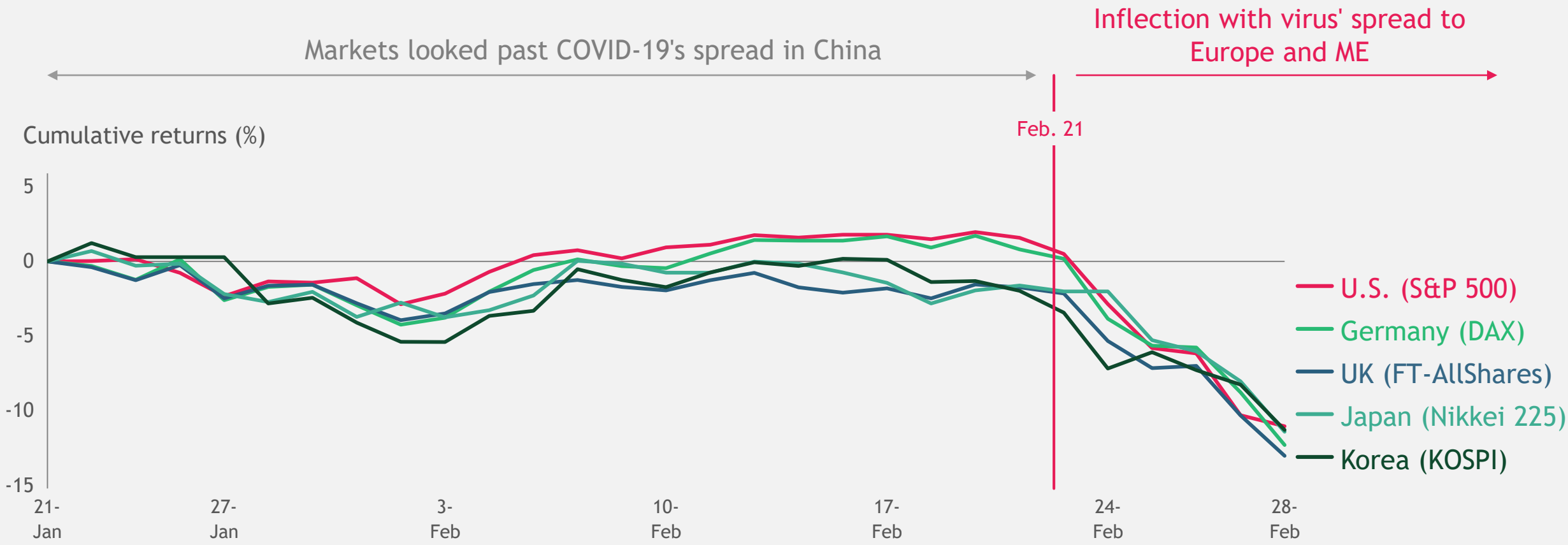
Mechanical models that translate market prices into recession probabilities reflect the uptick in risk

However, not even bear markets (-20%) guarantee a recession, despite widespread assumption, overlap is only ~2/3 in U.S.

Financial signals should be treated with caution – instead focus on nature of shock, plausible recession type, and transmission channel

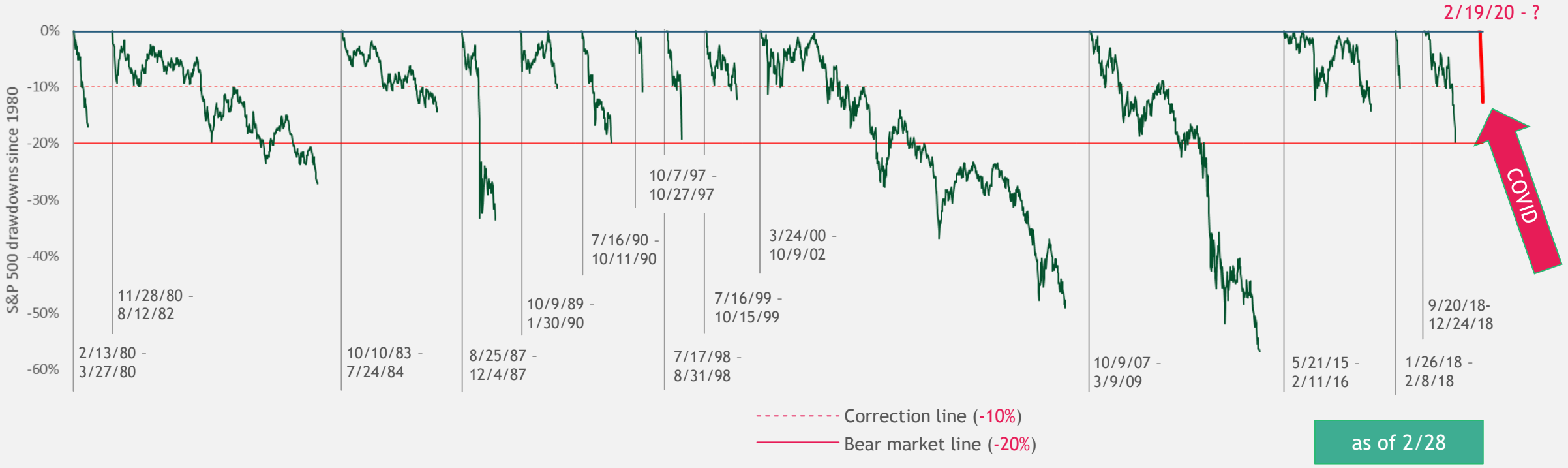
Source: BCG Center for Macroeconomics analysis

Global equity markets looked past COVID-19, then aggressively priced risks following spread to Europe



Source: Bloomberg; BCG Center for Macroeconomics analysis

How bad? Major equity market drawdowns since 1980



Key points about COVID-19 drawdown:

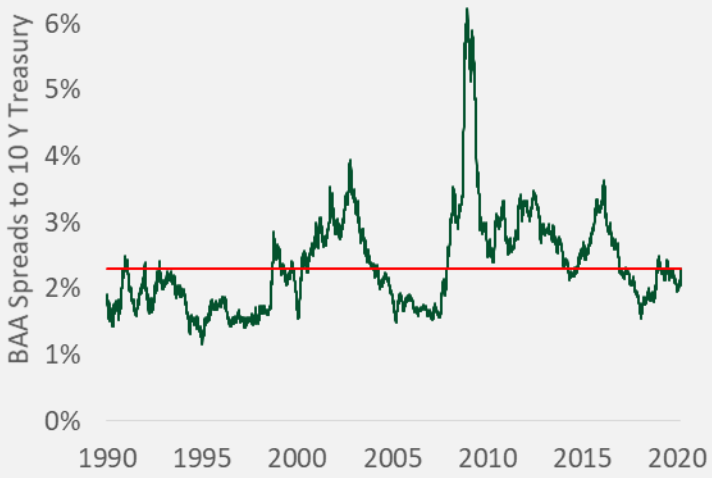
- COVID-19 drawdown stands out – though it's **not** the fastest 10% fall *ever*, it is the fastest 10% fall *from peak*
- Bear market potential: Only 7.24% from bear territory, fastest from peak to bear market was 39 days (1987)
- COVID-19 price impact not a liquidity issue (as was partly in late 2018) -- healthy trading volumes

Source: Bloomberg; BCG Center for Macroeconomics analysis

Risk assets have seen valuations decline, though variations across asset classes

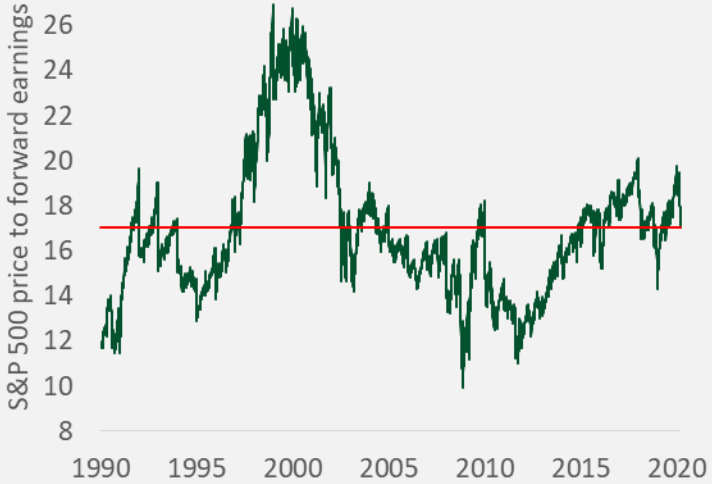
as of 2/28

Credit Spreads (BAA)



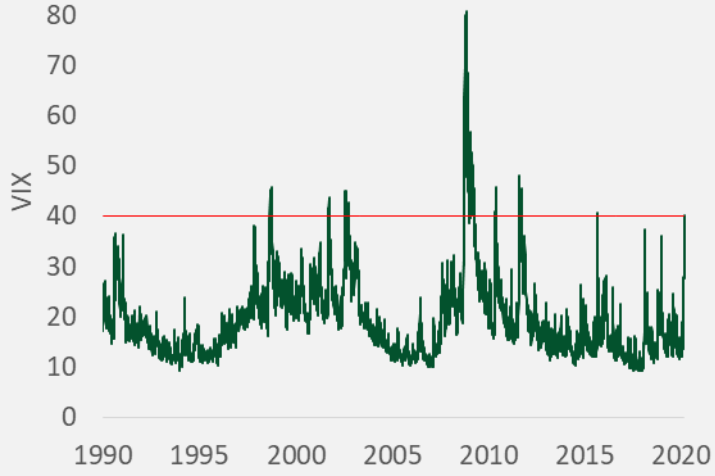
- So far, limited impact on credit spreads, modest move higher
- Suggests not much change in views of default risk
- No evidence of stress in credit system

Equity valuation (Forward P/E)



- Meaningful fall in equity valuations, but remain elevated
- Valuations probably not low enough yet to provide significant support from value buyers

Equity Volatility (VIX)



- Implied volatility on par with prior major dislocations
- Relative to credit and equities, Vol is hit worst
- Some intra-day prints were even higher (e.g. 02/28)

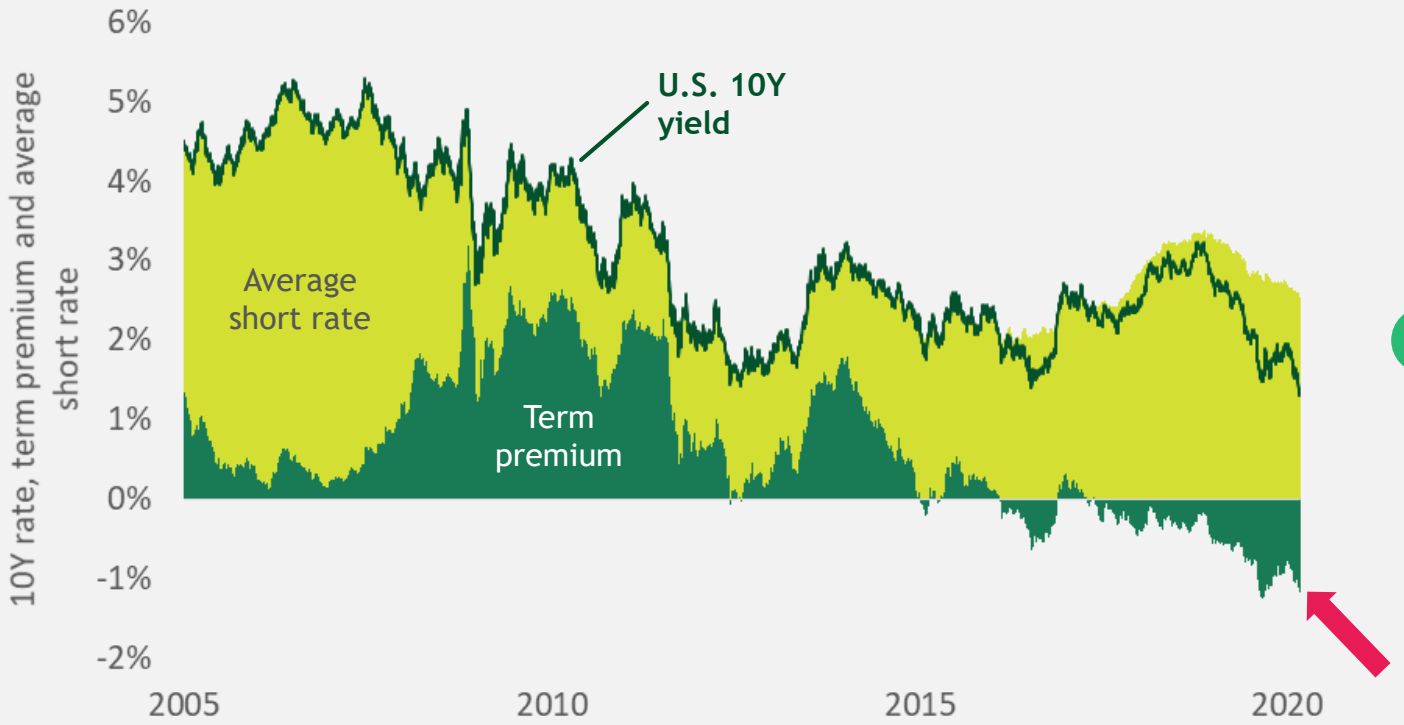
Source: Bloomberg, BCG Center for Macroeconomics Institute analysis

Safe assets see spike in valuation, as global shift in sentiment pushes U.S. term premium near all time lows

as of 2/28

U.S. 10Y rate, term structure decomposition

(10Y yield = average short rate + term premium)



- Strong rally in duration (US 10Y) underlines global momentum of COVID-19 impact, as term premium materially driven by global demand for U.S. safe assets
- Decomposition of 10Y yield highlights record valuation:
  - *Term premium* component of 10Y has fallen near record lows, to negative 116bps, as investors are willing to pay for privilege of holding U.S. duration
  - *Average short rate* has fallen as outlook for higher policy rate over next 10 years has dimmed

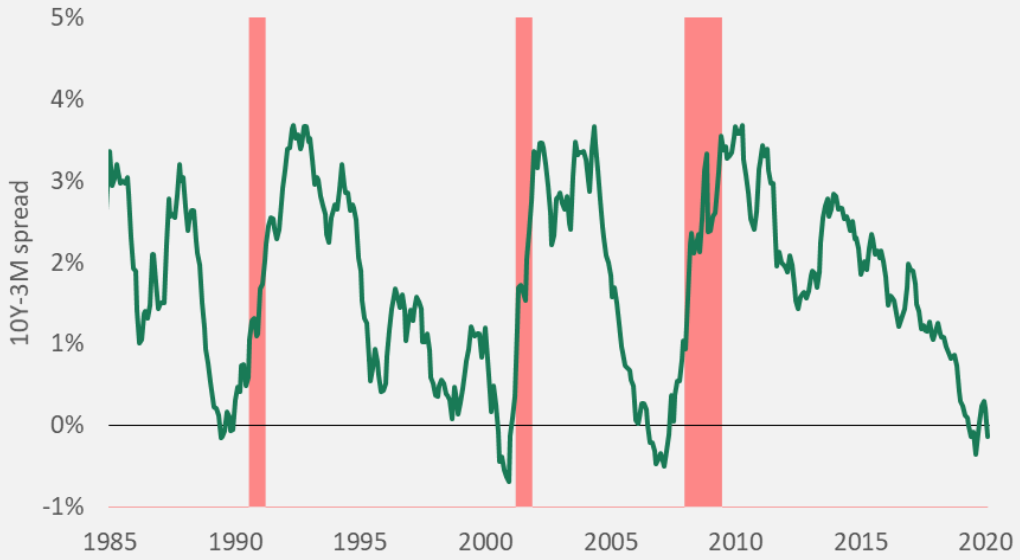
Source: Federal Reserve Bank of New York, BCG Center for Macroeconomics analysis

Market-based recession signals reflect the sell-off

For mechanical models to signal recession probability >50%, requires further market dislocation

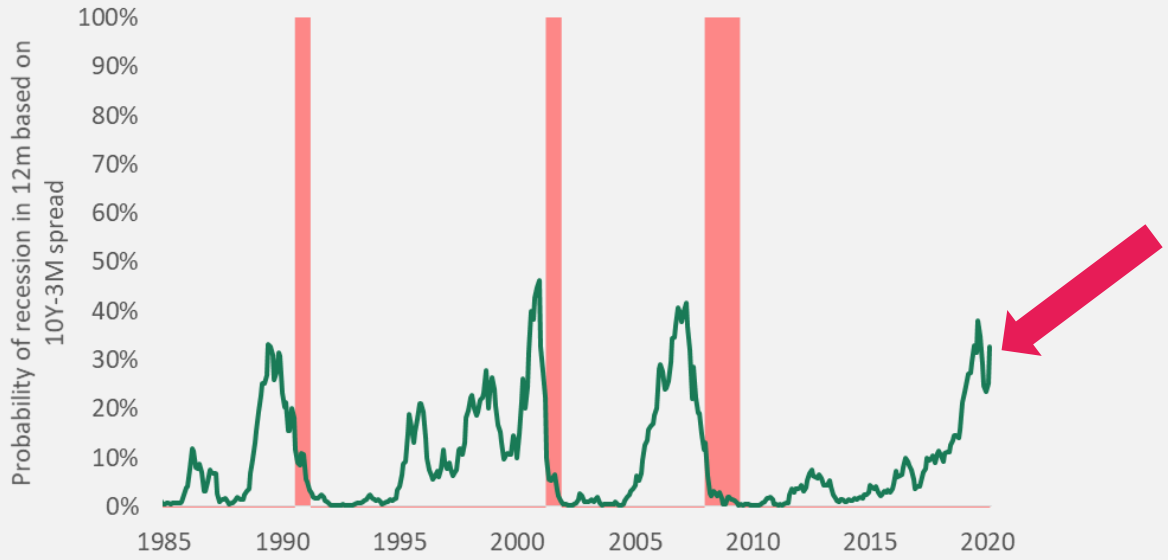
as of 2/28

Yield curve (10Y–3M spread) back to inversion



- Yield curve re-inverts – a "mechanical" recession indicator widely watched
- However, macro conditions cast doubt on signal's credibility, as negative term premium suppresses long rates and lowers bar for inversion and making a false or premature signal risk more likely

Probability of recession in 12mth (based on 10Y-3M yield spread)

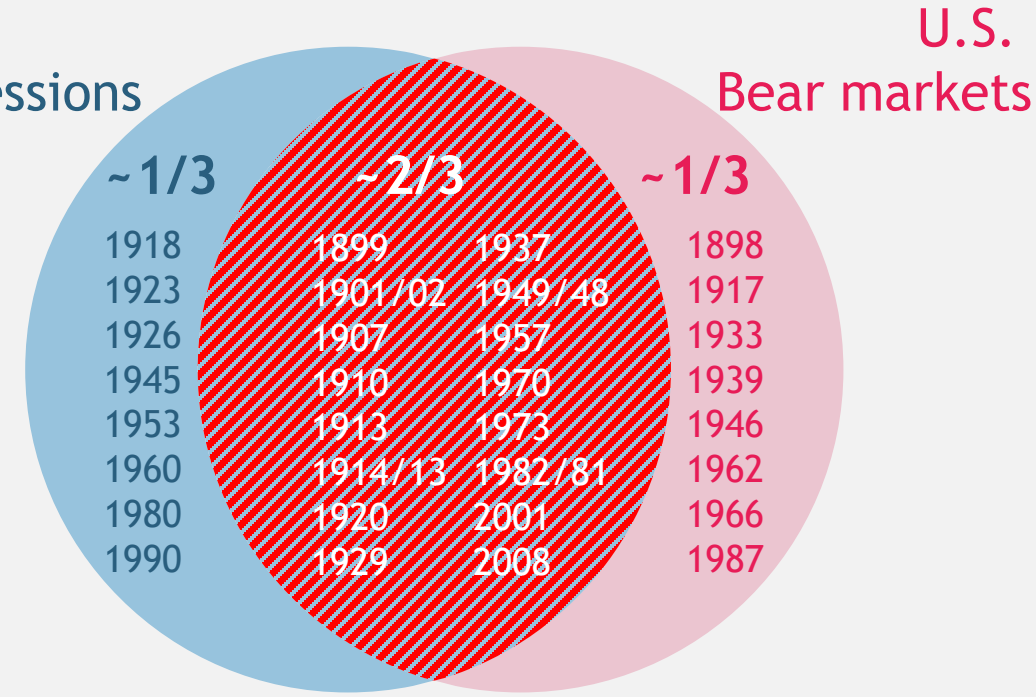


- A "mechanical" translation of the yield curve into recession probability space (probit model) show uptick, now at 33%
- For recession probability to move past 40% or 50% need steeper inversion
- Similarly, probit models based on equity prices would need a bear market (-20%) to signal recession probability ~ 50%

Source: NBER, Federal Reserve Bank of New York, Haver, Bloomberg, BCG Center for Macroeconomics analysis

Yet, not even bear markets guarantee a recession

Recession risk a function of vulnerability, nature of shock, and its transmission



- Bear markets (-20%) and recessions commonly conflated
- From a frequency perspective not entirely unreasonable (**2/3 of cases**)…
- …but **1/3** of all bear markets are non-recessionary (and **1/3** of all recessions never experience a bear market)
- To assess recession risk, must look at economy's **(1) vulnerability, (2) nature of shock, and (3) transmission mechanism** of the shock

Source: NBER, Bloomberg, BCG Center for Macroeconomics analysis

2. How to think about the risk of a "COVID-19 Recession"

Empirically, a recession is a high bar for a virus – prior epidemics that struck similarly vulnerable cycles were unable to end those

However, global and U.S. economies have been vulnerable long before COVID-19; in U.S., tight labor market has pushed growth down and thus vulnerability up

In taxonomy of recessions, COVID-19 fits a "real economy" recession, triggered by demand shocks, rather than a financial or policy error recession

COVID-19 has clear potential to deliver idiosyncratic confidence shock to consumer

Additional, likely impact from falls in household wealth (higher savings/lower consumption), though steep and sustained bear market would be necessary for markets to deliver the recession

Downside risks worth watching include policy errors outside the U.S. (where low rates may need to shift focus to fiscal policy), as well as credit distress in particular for SMEs in some geographies, less U.S.

Source: BCG Center for Macroeconomics analysis

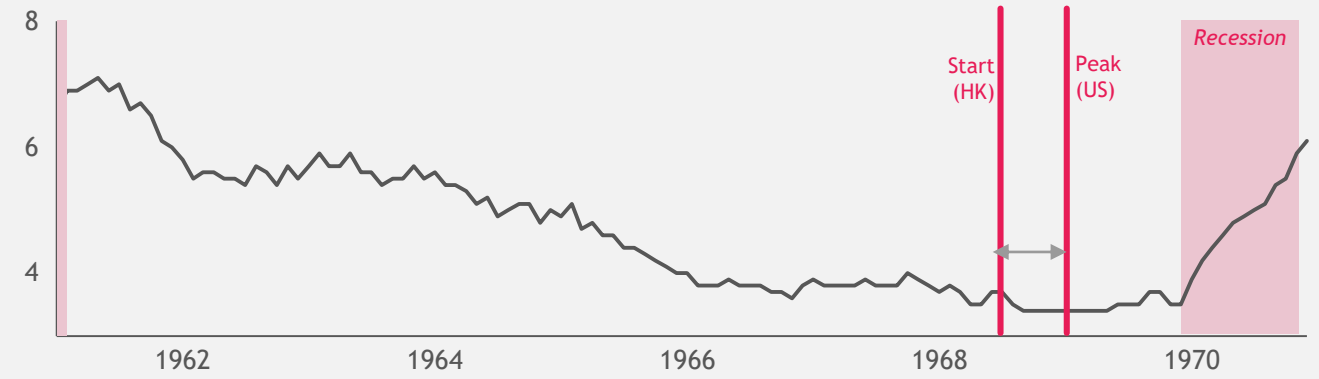
History suggests high bar for virus to end an expansion, even when cycle is *vulnerable* and epidemic is *severe*

Epidemic

U.S. cyclical tightness[1] (unemployment rate, %)

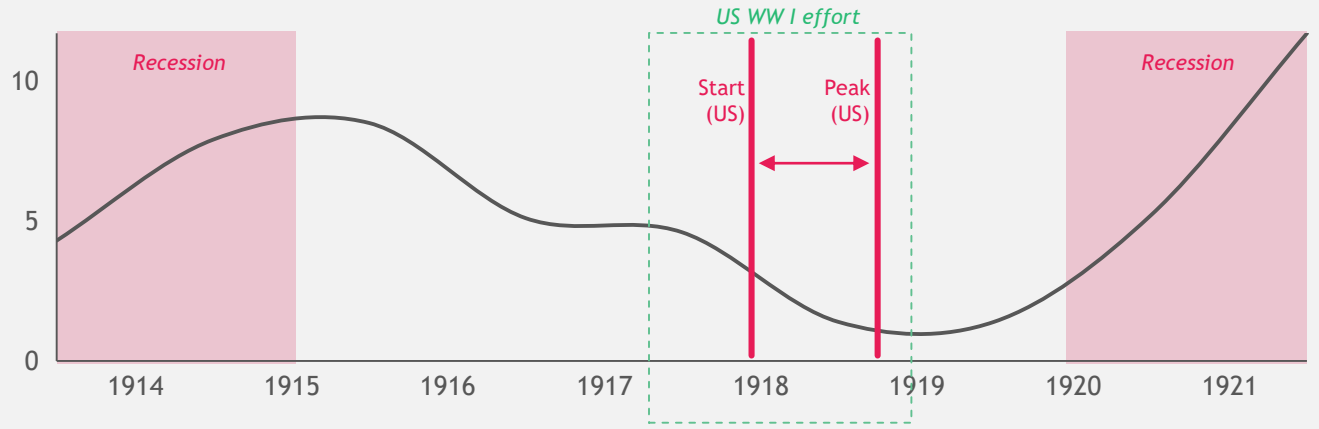
U.S. cyclical narrative

Hong Kong flu (1968-69)



- Very long, tight expansion
- Vulnerable to exogenous shocks, similar to today
- Hong Kong flu hits in 1968
- Does not end cycle

Spanish flu (1918-20)

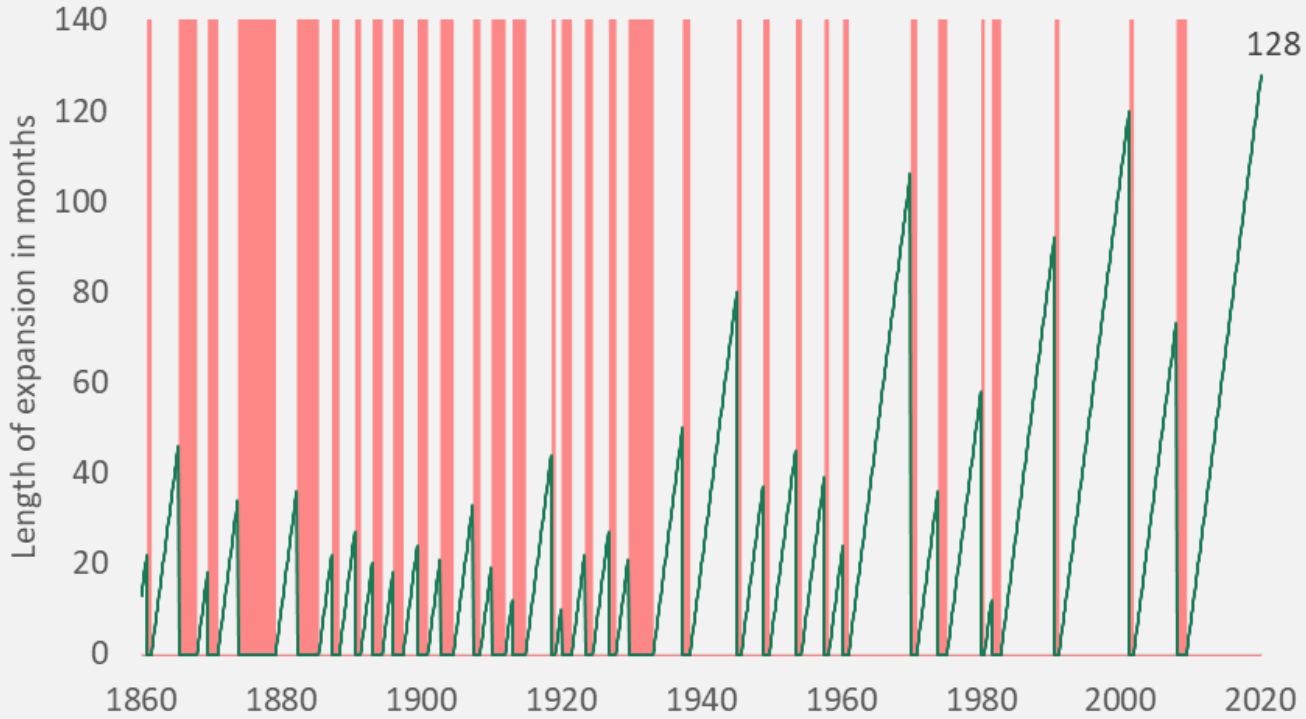


- Spanish flu intersects with end of WWI (1918)
- De-mobilization of war effort primes economy for recession[2]
- Yet, full recession does not hit until 1920

1. We use US data for this analysis because the most granular historical economic data is available there 2. De-mobilization lead to a recession in 1918 not shown here
Source: NBER, Bureau of Economic Analysis, WHO, BCG Center for Macroeconomics analysis

Regarding vulnerability, a record-length expansion…

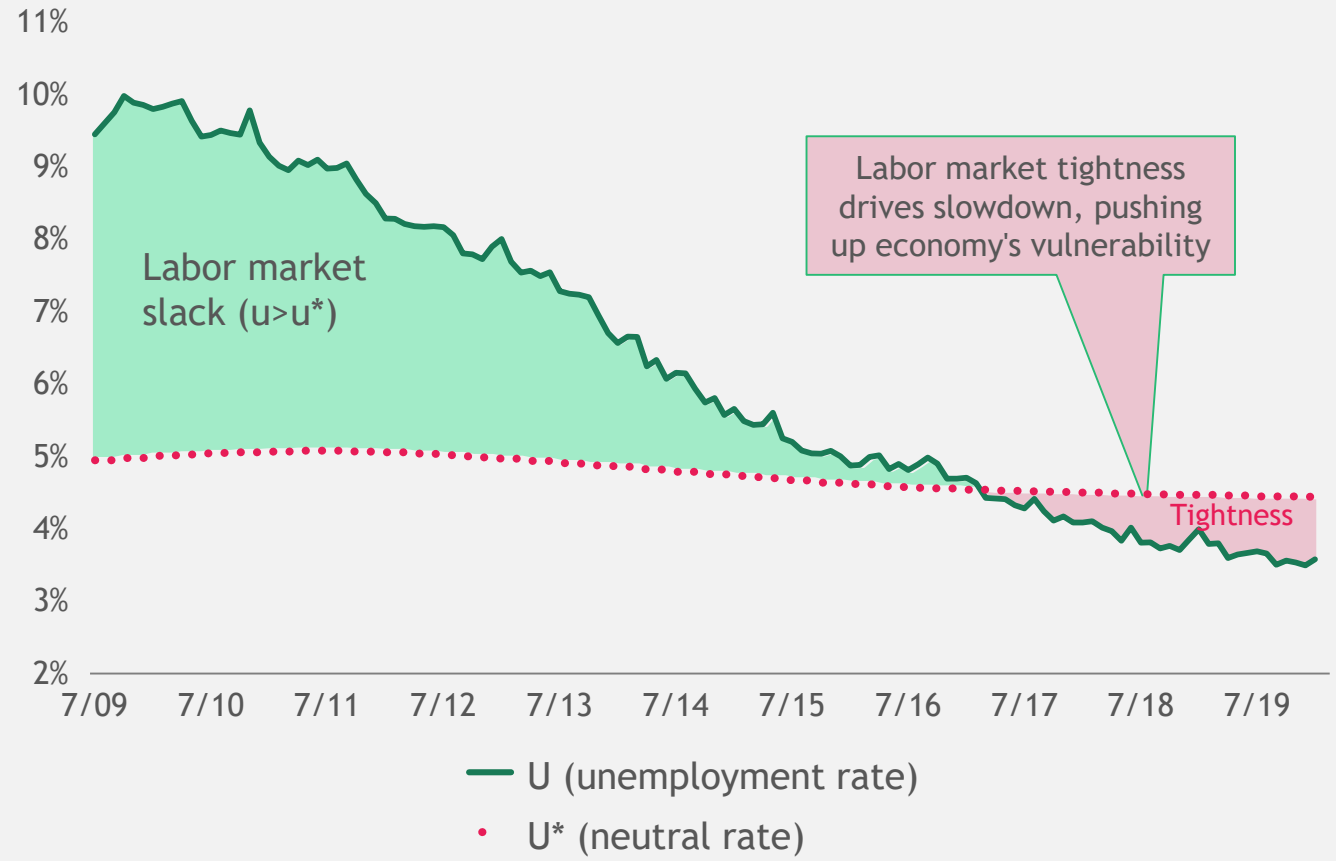
Global economic slowdown has raised vulnerabilities – here U.S. example



- At 128 months, current U.S. expansion is longest on record
- Length of expansion per se does not drive up recession risk
- However, it does lead to cyclical tightness, which drives up cycle's vulnerability
- 2018 growth spurt (tax cuts) lead to transient growth bump, since then growth has come down and vulnerability gone up

Source: BCG Center for Macroeconomics analysis

…has left the labor market very tight, pushing growth down and vulnerability up — long before COVID-19 hit



- Long U.S. expansion has led to very tight labor market (u<u*)
- Leaving economy vulnerable to shocks
- An exogenous shock has been dominant recession scenario since early 2018 (along with policy error, up until Fed's pivot in early 2019)

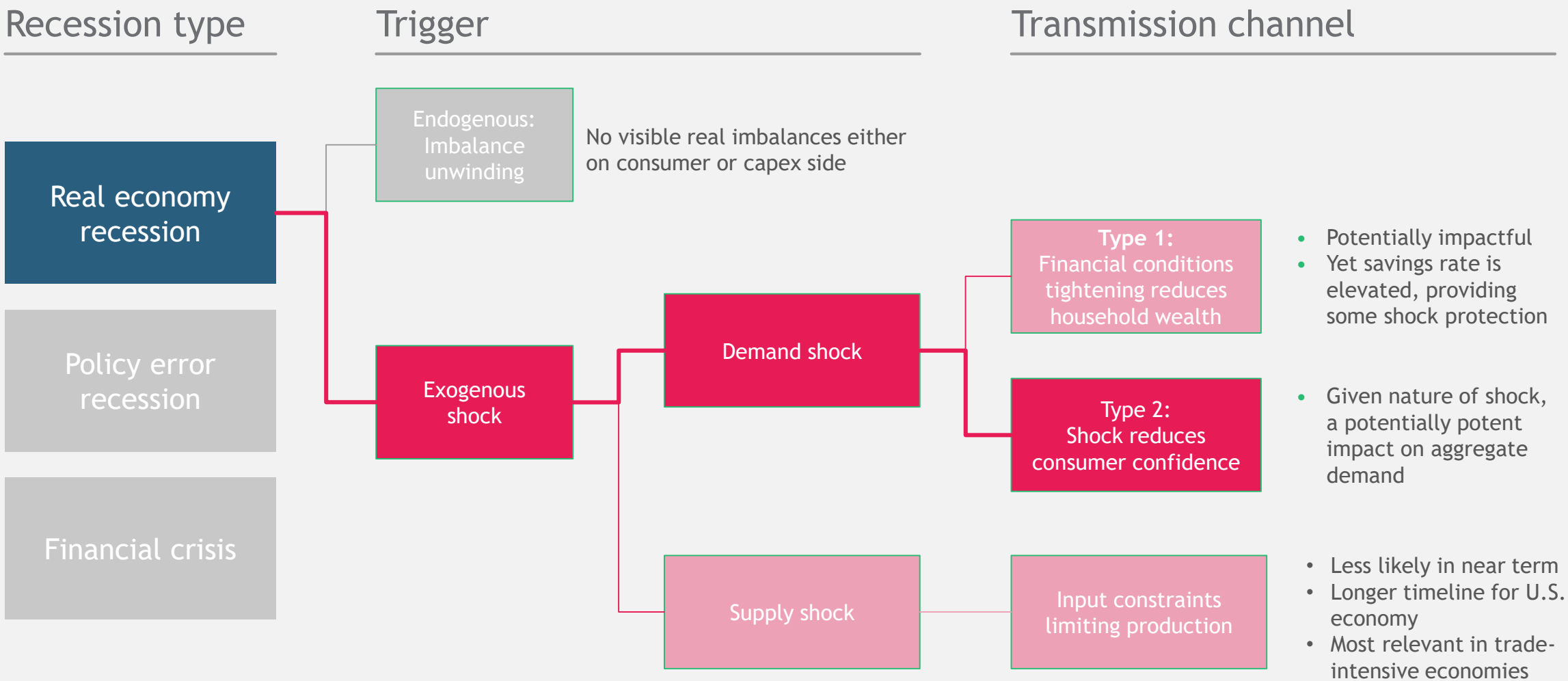
Source: BCG Center for Macroeconomics analysis

From virus to recession (I/II): Where COVID-19 would fit in the taxonomy of recessions

Recession taxonomy	Recession typical form	Trigger	Relevant today?	
Real economy recession	Unwind of real economy imbalances, e.g. capex boom/bust	• Imbalances became unsustainable • Exogenous shock delivers demand and/or supply shock	• No real economy imbalances such as consumption or capex boom • However, the exogenous shock scenarios are perennial and more potent since ~late 2018, given slowing and thus more vulnerable growth	✓
Policy error recession	Monetary policy too tight, central bank "ahead of curve" (potentially driven by too high inflation)	Policy rate (r) too high relative to neutral rate (r*), slowing credit intermediation with lag	• U.S. monetary policy already on easy stance – multiple cuts since mid-2019 despite interest rates below neutral rate (r*) • Fed signals additional willingness to cut (Friday 2/28)	—
Financial crisis recession	A financial crisis cripples financial intermediation and disrupts the real economy	Financial imbalances unwind, financial intermediation impaired, real economy disrupted	• No visible financial imbalances akin to 2007/08 • Credit growth has not fueled real economy boom, nor is it held on banks' balance sheet, thus systemic risk not equivalent to subprime	—

Source: BCG Center for Macroeconomics analysis

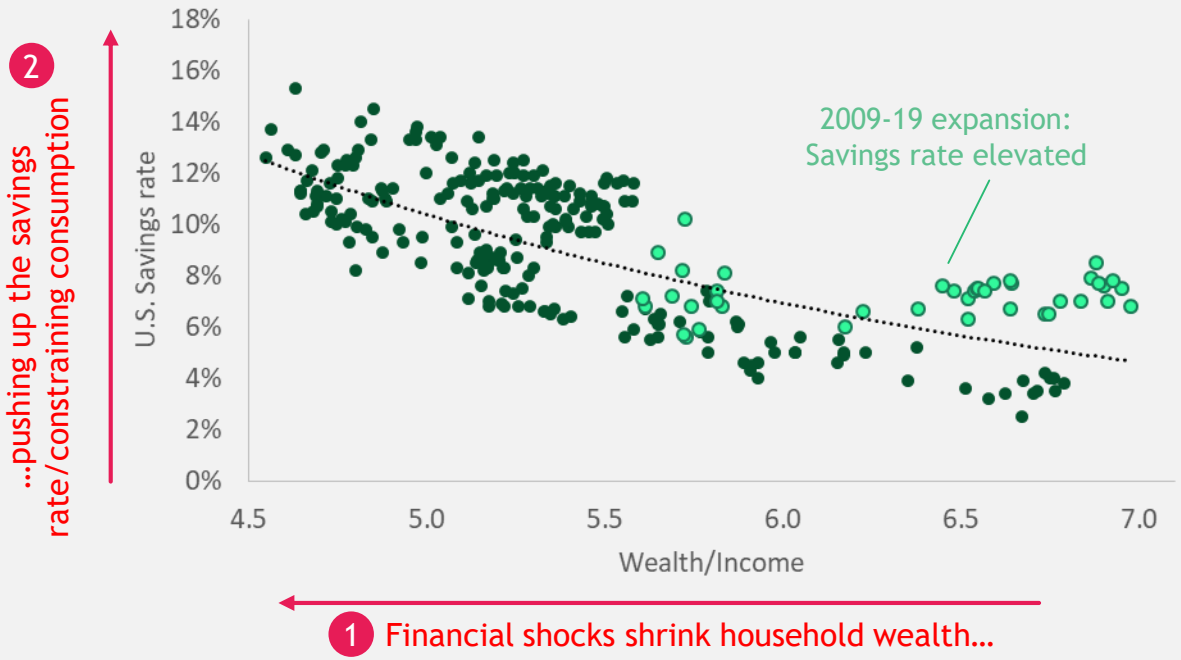
From virus to recession (II/II): How exogenous shocks such as COVID-19 can transmit to the real economy



Source: BCG Center for Macroeconomics analysis

Demand shock, type-1: Financial shocks shrink household wealth, savings go up, and consumption down

Elevated U.S. savings rate a buffer when shocks hit

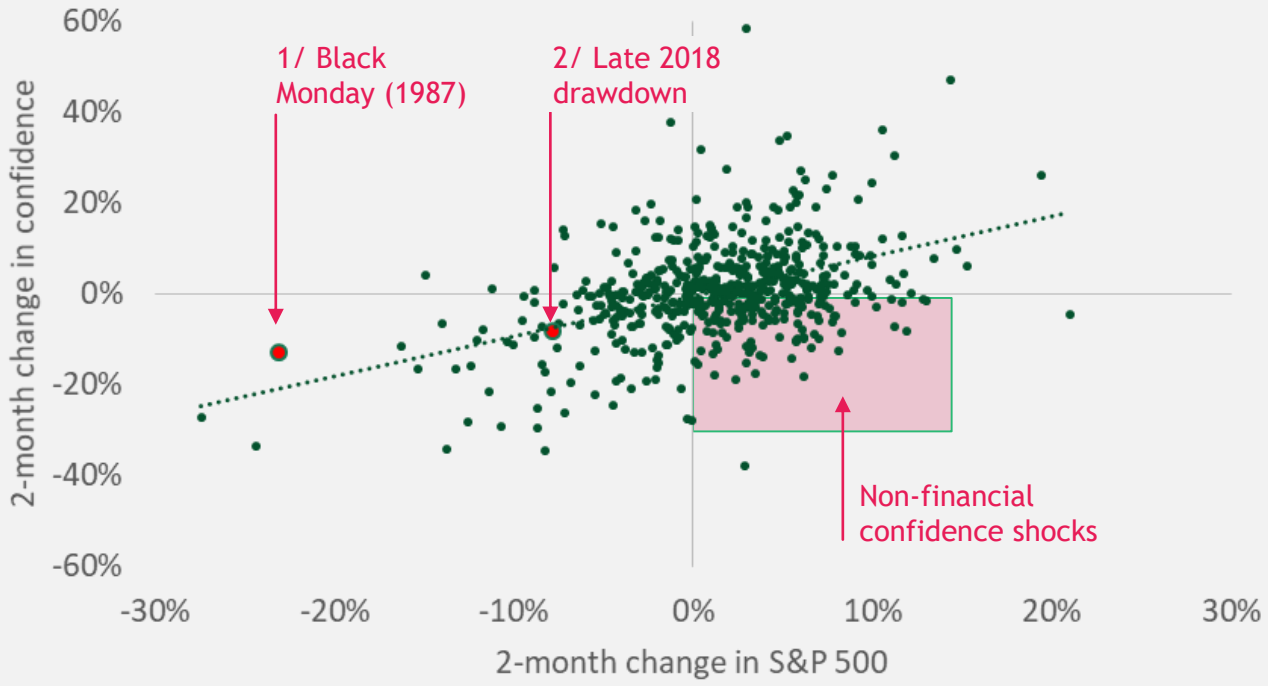


Transmission mechanism, impact, buffer

- **Transmission mechanism:** Market sell-off (confidence shock) can transmit to real economy, as wealth shrinks, savings rise, and thus consumption drops (inverse of savings)
- **Impact:** in the U.S. a sell-off would need to be both deep and sustained to feed through to real economy – the 2018/9 near bear market (-19.78%) saw now consumption dip
- **High savings rate is buffer:** Current expansion has seen high savings rate, suggesting some household resilience to wealth shocks

Source: NBER, BEA, Federal Reserve Board, BCG Center for Macroeconomics analysis

Demand shock, type-2: Wide range of non-financial confidence shocks, and COVID-19 a very plausible one



- Scatter plot demonstrates strong positive correlation between equity market performance and consumer confidence
- Though impact shocks can vary: 1987 Black Monday (marked 1) damages confidence only marginally more than late 2018 drawdown (marked 2)
- Importantly, non-financial shocks to confidence are common (red box), and COVID a very plausible such scenario

Source: BCG Center for Macroeconomics analysis

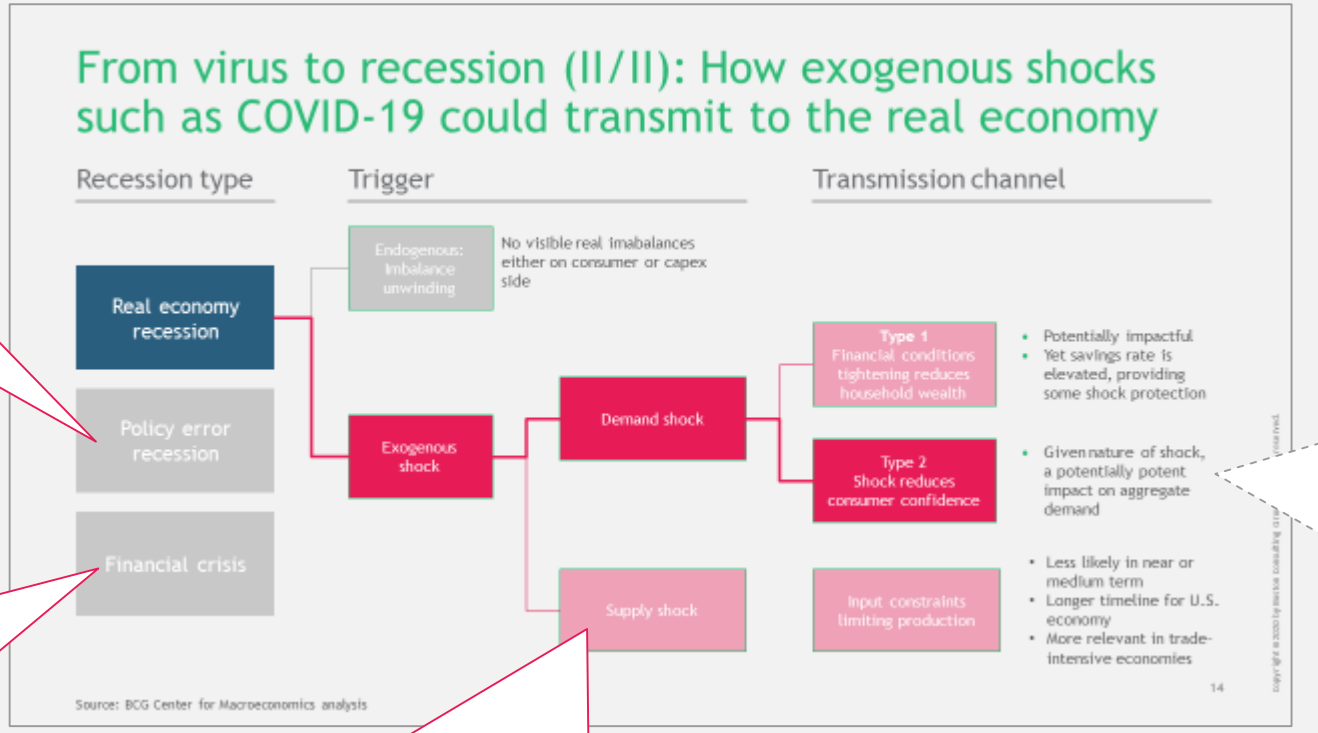
Beyond demand shocks, three downside risks to watch

2 Policy error

COVID-19 impact surprises to downside, but central banks act timidly (U.S.) or don't have room to act (ECB, BOJ) and fail to switch to fiscal policy

1 Credit problems arise

As noted, credit spreads remain low at this point, but if shock persists, debt issuance and roll-over could become more difficult (starting in HY), triggering liquidity crunch and broader impact in credit markets



"Ugly" version of the demand shock plays out

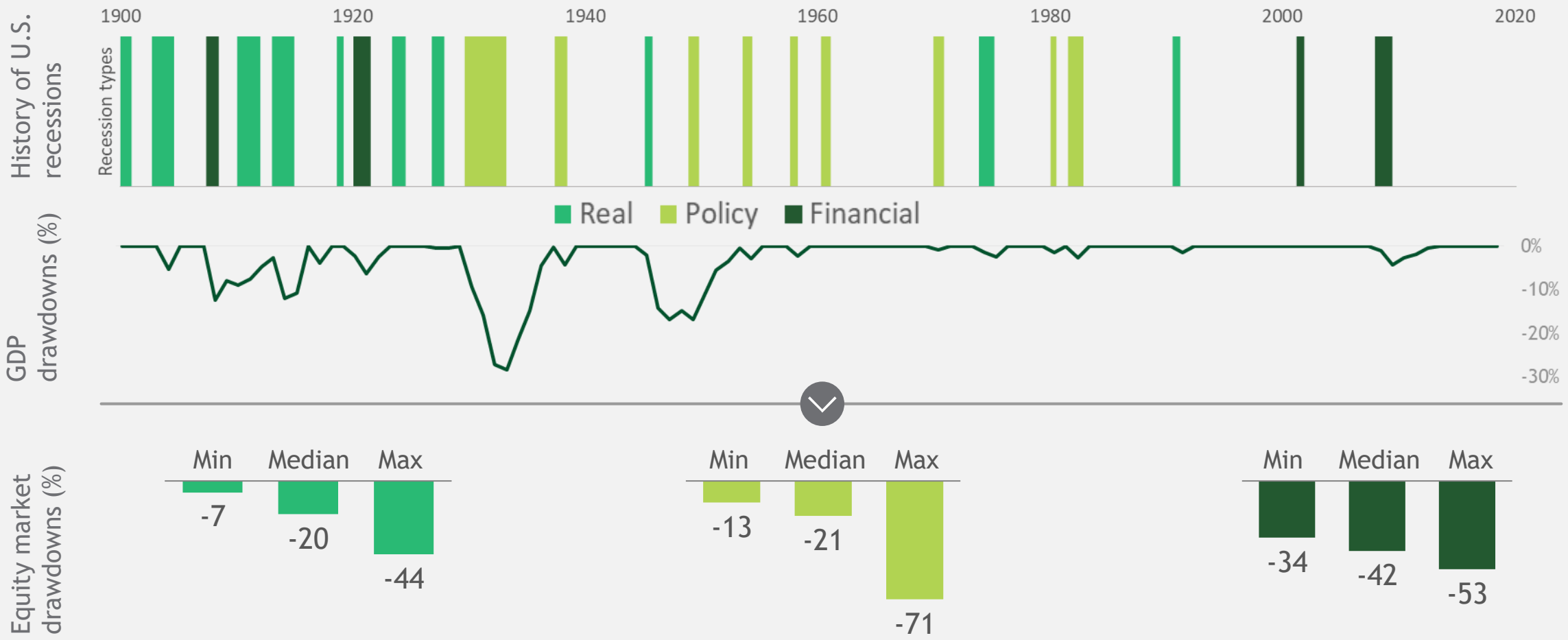
The dominant transmission channel could turn into a worst-case scenario, where a full-fledged pandemic with high human death tolls leads to a deep and sustained confidence slump

3 Supply side shock materializes

At present less menacing path, particularly for U.S., but if impact persists (financial shock, confidence shock), disruption to production could weigh on output, employment (particularly in very open economies)

Source: BCG Center for Macroeconomics analysis

What if? Recession impact is function of type – "real economy recessions" are generally the most benign



Note: Economic drawdown are real GDP per capita drawdown from prior high using annual data; Equity market drawdown during recession based on S&P 500 and DJIA back to 1897.
Source: NBER, Bloomberg, BCG Center for Macroeconomics analysis

3. What COVID-19's growth impact, recovery path, and legacy could look like

Definition of "recession" is technical, depending on timing, e.g. a 6-month slump can be either a clear recession or narrow escape

Scenarios for growth impact and recover path can be conceptualized as V-U-L in both levels and growth space

V-shape corresponds to intertemporal displacement of demand with growth overshoot on rebound — still plausible scenario

U-shape is ugly sibling of V, a larger shock with eventual return to prior growth rates, but (some) permanently lost output

L-shape implies a structural break on the economy's supply side (labor market, capital formation, productivity) — difficult to see

V-shape dominates empirical landscape of prior epidemics globally

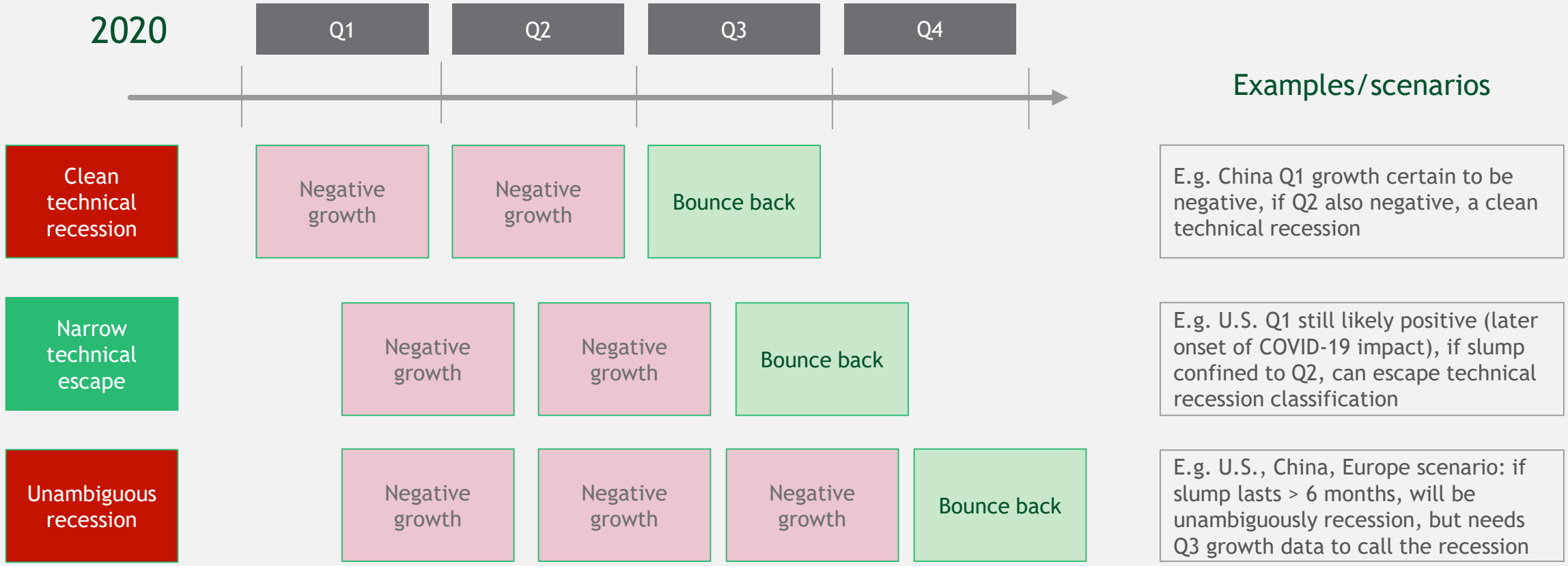
Beyond cyclical, structural legacy of COVID-19 plausible in microeconomic, macroeconomic and (geo)political dimensions

Source: BCG Center for Macroeconomics analysis

Definition of "recession" somewhat artifical/technical

Depending on timing, 6-month slump can be recession or narrow escape, 9mths is unambiguous

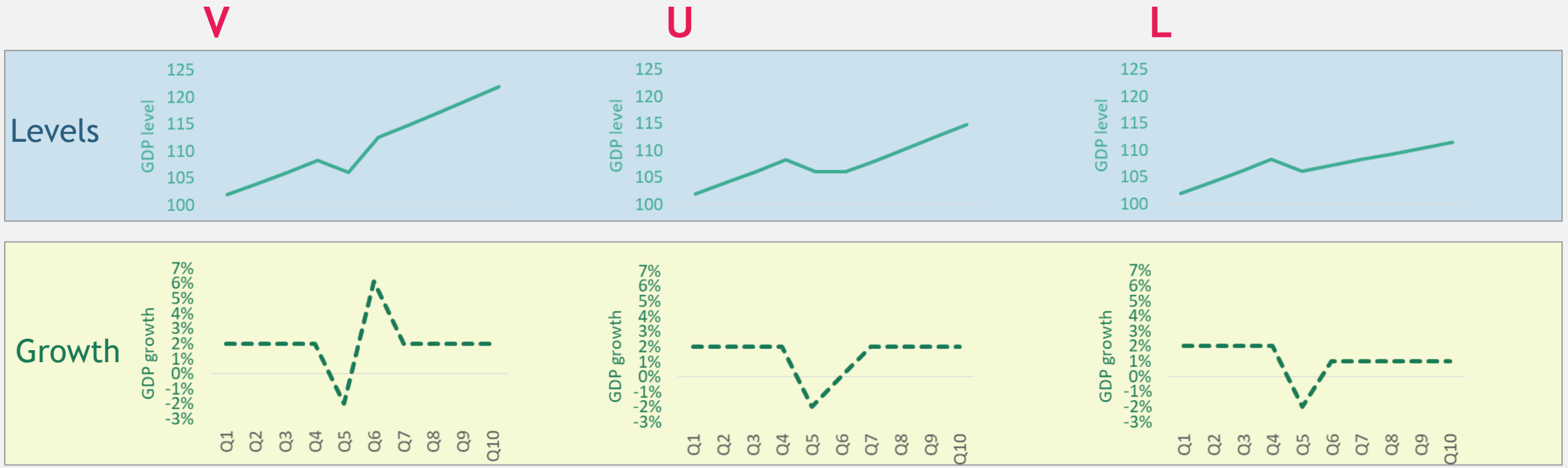
ILLUSTRATIVE



Source: BCG Center for Macroeconomics analysis

How will we look back at COVID-19's growth impact? Consider V, U, and L-scenarios in levels & growth space

Illustrative



Classic shock – real recession, minor policy error

An intertemporal displacement of demand, resume orig. output path

Large shock – financial recession or major policy error

Output path shifted lower, but same growth path (slope)

Shock + something breaks on supply side (structural impact)

Output path shift lower with a lower growth rate (new slope)

Source: BCG Center for Macroeconomics analysis

Scenarios: V-shape still likely, U a worse but plausible form of V, and L-shape is possible but unlikely

V (likely)

Output is mostly delayed, not foregone, implying rebound…

V-shape implies first half of year is impacted, but effectively does not spread into second half and beyond

Firmly, a demand (not supply) shock

U (plausible)

Ugly sibling of V-shape, sustained confidence and financial shock

Spills into second half of year as COVID-19 path surprises to the downside and/or containment and mitigation attempts disappoint

As it drags on, supply shock more plausible, incl. layoffs

L (unlikely)

COVID-19 has structural damage, as economy shifts to permanently different/lower growth path

Difficult to see at this point

Would require serious collateral damage, e.g. down shift in productivity growth

Source: BCG Center for Macroeconomics analysis

V-shape monopolizes empirical landscape (all examples)

U would be V's ugly sibling and L-shape implies (improbable) structural damage

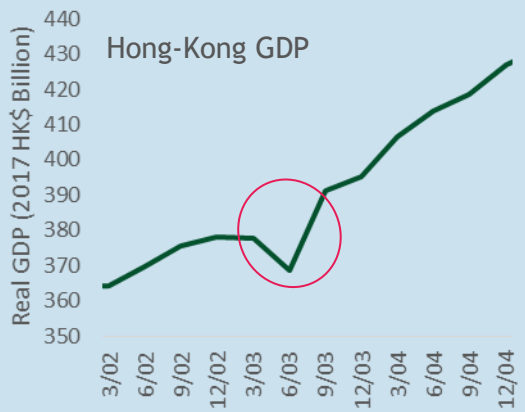
2003 SARS
(299 deaths in Hong Kong)

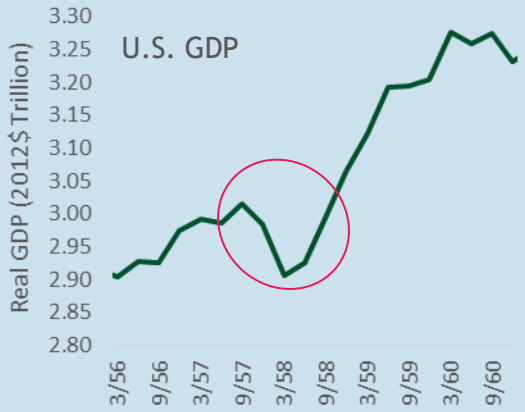
1957/58 H2N2
(116k deaths in U.S.)

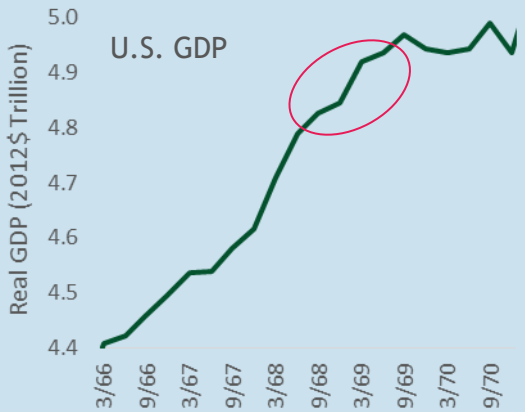
1968 H3N2
(100k deaths in U.S.)

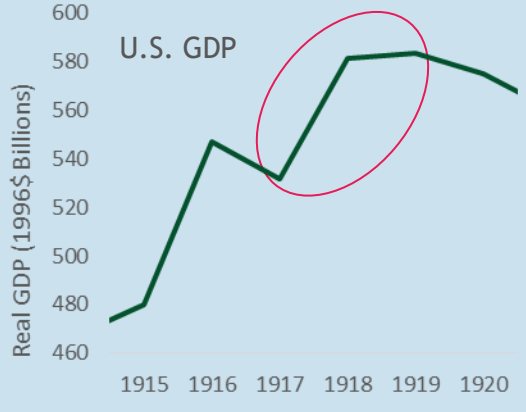
1918 Spanish Flu
(675k deaths in U.S.)

Levels

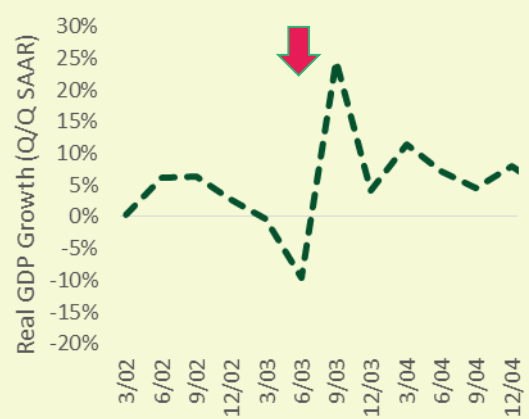


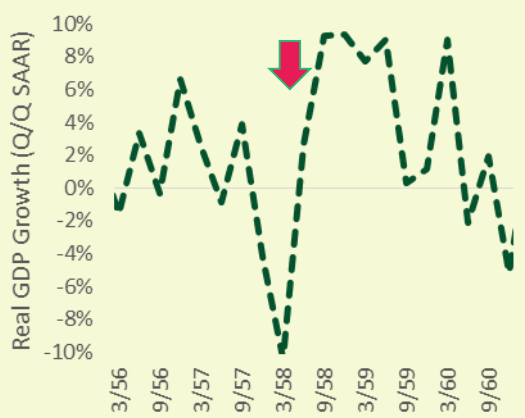


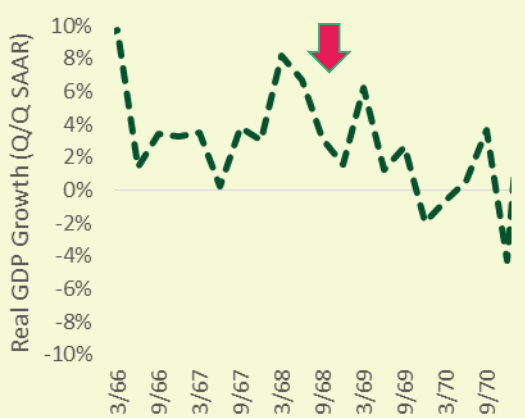


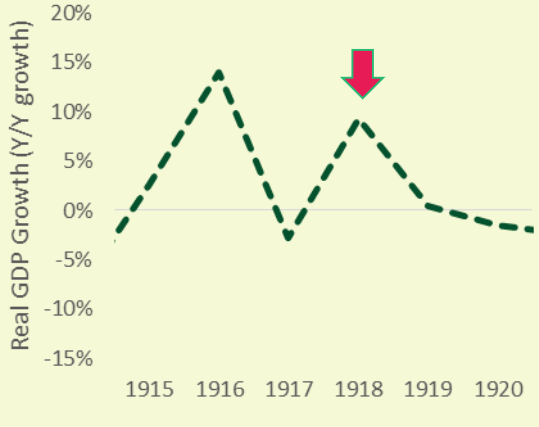


Growth









Source: U.S. Census, BEA, CDC, Census and Statistics Department (Hong Kong), BCG Center for Macroeconomics analysis

To assess impact, some drivers to consider

Cyclical

- Is demand shock (consumption mostly) foregone or delayed?
- Is a supply shock plausible or likely (input constraints, layoffs, etc.) in a given economy?
- How deep is the wealth impact and how long does it last?
- Does shock have more damaging knock-on risks (e.g. financial, policy error)

Structural

- Consumers: Does shock lead into permanent "overhang" (e.g. changed behavior and attitudes)
- Firms: Does shock have collateral damage? (e.g. disintermediation of value chains?)
- Are there unexpected positive externalities? (e.g. adoption/development of new technologies/processes)

Source: BCG Center for Macroeconomics analysis

Beyond cyclical impact, what could be COVID-19's structural legacy?

Macroeconomic

Global value chain: COVID-19 potentially reinforces ongoing shift towards disintermediation of value chains

If persists, COVID-19 could shape U.S. presidential election both operationally and public debate and focus (e.g. on government capabilities, role of state, health care access, etc.)

Political

COVID-19 and COVID containment capabilities could become new yardstick or battle ground in geopolitical and economic systems rivalry

The virus could lead to regime change in countries with brittle institutions

COVID-19 epidemic and aftermath could lead to re-assessment of multilateral cooperation architecture – or become a new dimension of "decoupling"

Source: BCG Center for Macroeconomics analysis

What could be microeconomic legacy of a macro shock like CoVid-19?

SARS

2002-2003 SARS outbreak is widely credited with accelerating the adoption of online shopping in China, and specifically with Alibaba's commercial inflection

Comprehensive broadband rollout was a necessary but insufficient pre-condition, and SARS epidemic triggered and accelerated the shift in consumer behavior

COVID-19

What could be COVID-19 knock-on effects in terms of technology adoption or new processes?

- e-schooling and e-delivery of learning materials? (Think Japanese school closures; some New York schools have drawn up e-learning capabilities)
- **"Digital crowd control"** (smart phone-based enforcement of Wuhan quarantine enables political will to permit digital surveillance)

Future crisis?

What current technologies could mature by time future epidemic hits?

- Automated/robotic delivery? (taking "infected" humans out of equation)
- Digital nursing assistants, reducing humans' greater liability as disease transmitters
- Automated temperature screening at public transport nodes?

Source: BCG Center for Macroeconomics analysis

Contacts

Center for Macroeconomic at BCG Henderson Institute

Philipp Carlsson-Szlezak, Ph.D.
Chief Economist
Partner and Managing Director
carlsson-szlezak.philipp@bcg.com

Martin Reeves
Chairman, BCG Henderson Institute
Senior Partner and Managing Director
reeves.martin@bcg.com

Paul Swartz
Director
Senior Economist
swartz.paul@bcg.com


BCG
BOSTON
CONSULTING
GROUP
bcg.com