Basis Point Global Solutions

Global Macro and Fixed Income in the wake of COVID-19

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AGENDA

- How the virus impacted global bond markets
- Fiscal and monetary responses
- What the crisis revealed about market structure and liquidity
- Outlook: No yield, volatile spreads, and unknown inflation
- The global need for alternative safe investments

NO ARMY CAN WITHSTAND THE STRENGTH OF AN IDEA WHOSE TIME HAS COME

- VICTOR HUGO

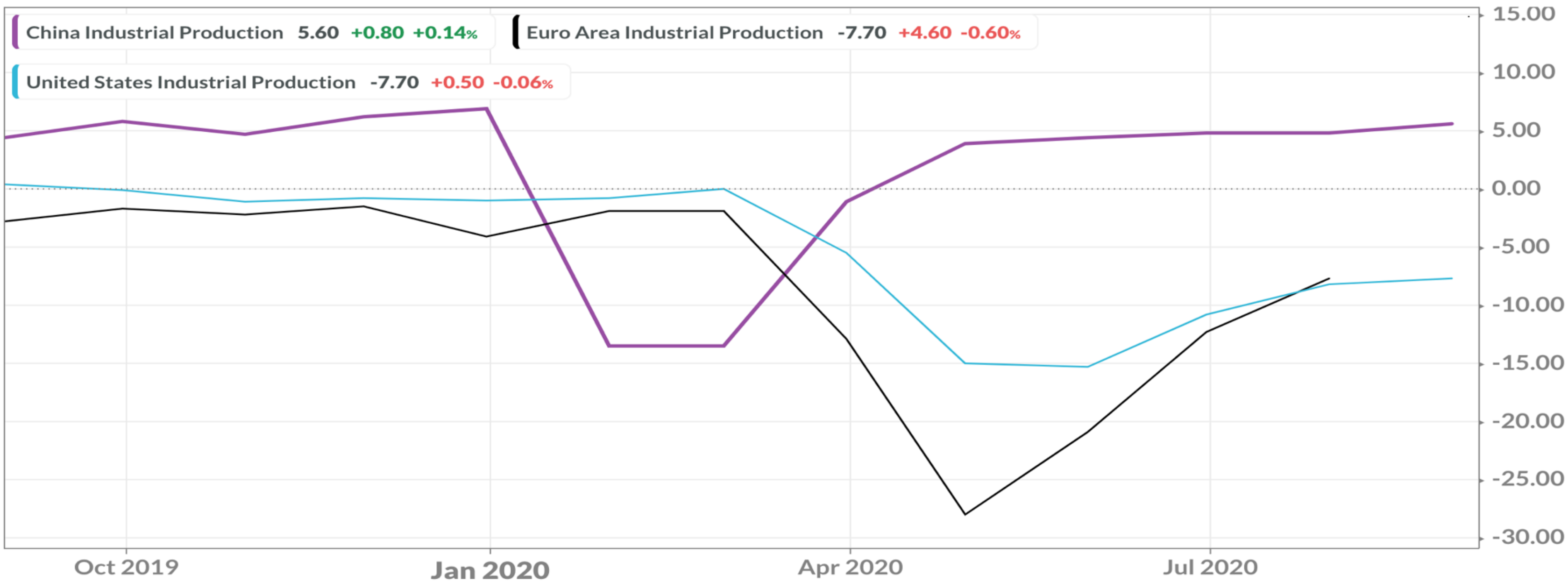
HOW DID THE CORONAVIRUS CRISIS IMPACT GLOBAL BONDS?

A TECTONIC SHIFT

GLOBAL ECONOMY: BATTLE IS FAR FROM OVER

- Global GDP recovery under way, with China leading G10
- US PMI 53.6/54.8, But other indicators weaker, housing strong, green shoots on jobs
- Europe consumer confidence flat, sales bounce, second spike in France and Spain
- Global growth unlikely to catch up to 2019 levels until 2022 or later
- Expect substantial permanent damage from structural changes, bankrupt firms and lost jobs

Global Industrial Production Recovering (YoY IP % Chg)

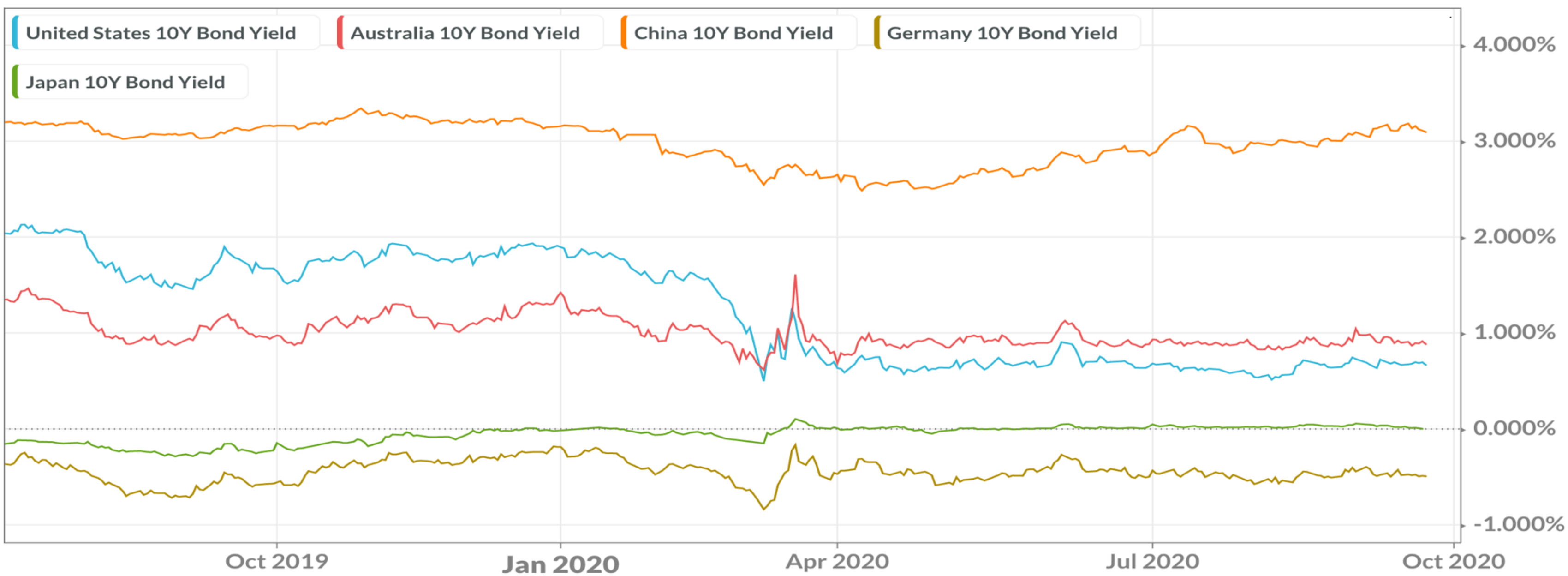


Source: KOYFIN

G10 RATES : SAFE HAVEN RALLY

- Downward shift in risk free rates likely to remain in place
  - Rates almost universally below 1% but very small shifts in EU and Japan
  - Globally negatively correlated to equities except for a brief disruption in March
  - Safe-haven status of government debt has been preserved…for now
  - …but only the US provided significant offsetting positive returns to risky assets

Developed and China 10 Year Yields

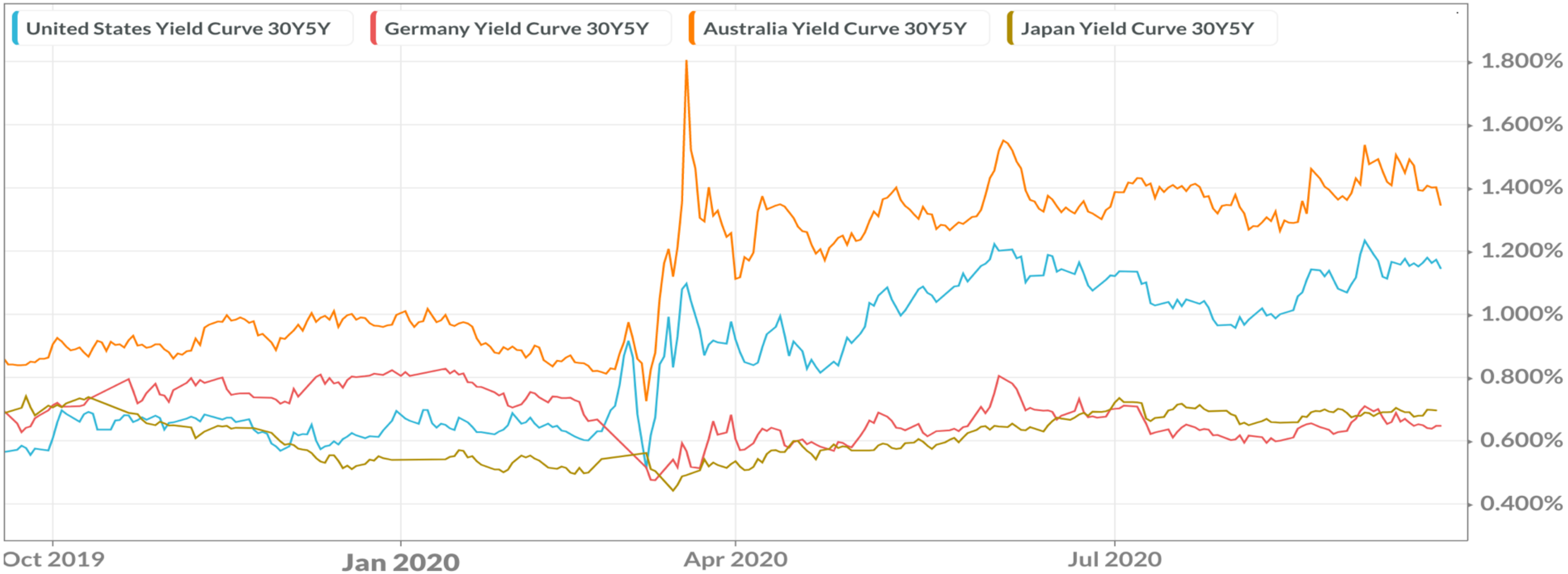


Source: KOYFIN

G10 HIGHER YIELDERS' CURVES STEEPER

- Good news and bad news
  - Steeper curves in the US, Australia, China……but not historically steep
  - Slopes in Europe and Japan remain flat
  - Real rates are now negative in all major developed regions

Selective Steepening in Yield Curve Slopes

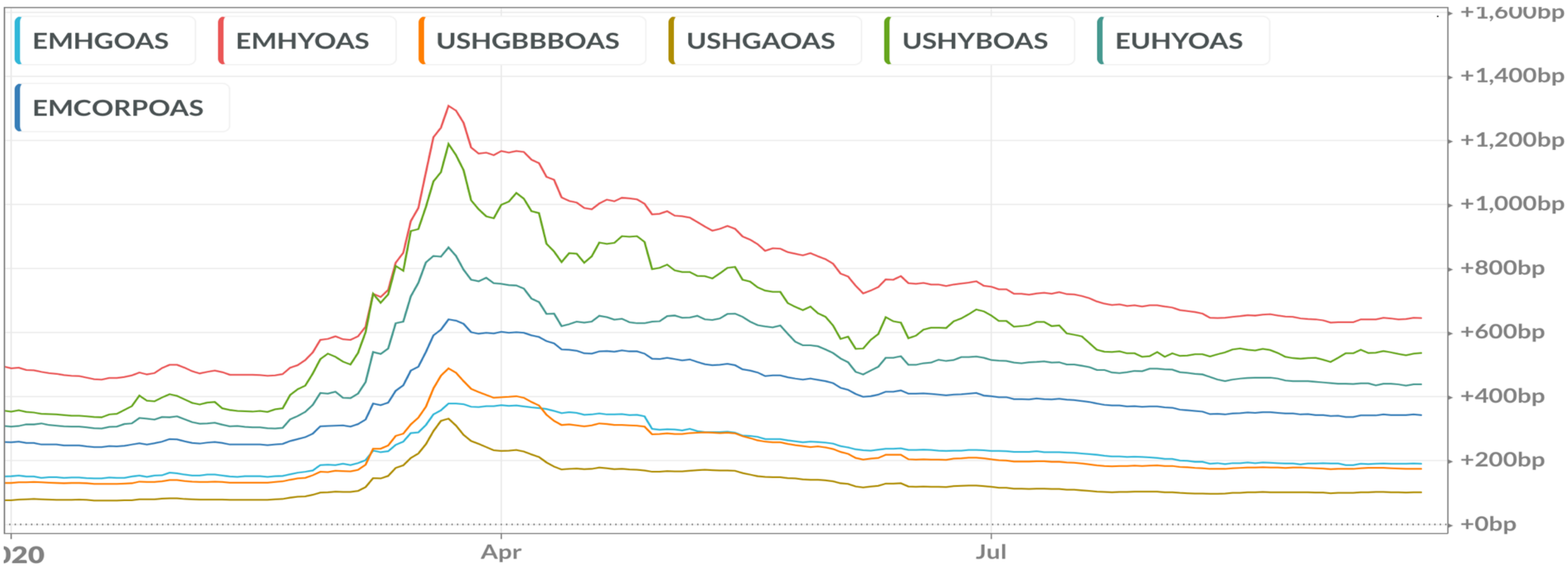


Source: KOYFIN

SPREAD MARKETS ARE LARGELY BACK – TOO FAR TOO SOON?

- Massive sell-off and recovery has been correlated with global stocks
  - Massive loss of liquidity was mitigated by Fed's liquidity and QE measures
  - IG Spread markets are almost back, HY spreads have recovered more slowly
  - Stimulus has exacerbated the reach for yield, hence spreads are ahead of fundamentals
  - Large pockets of credit concerns remain, including travel, leisure, and commercial real estate

High Grade Spreads Recovered Faster Than High Yield



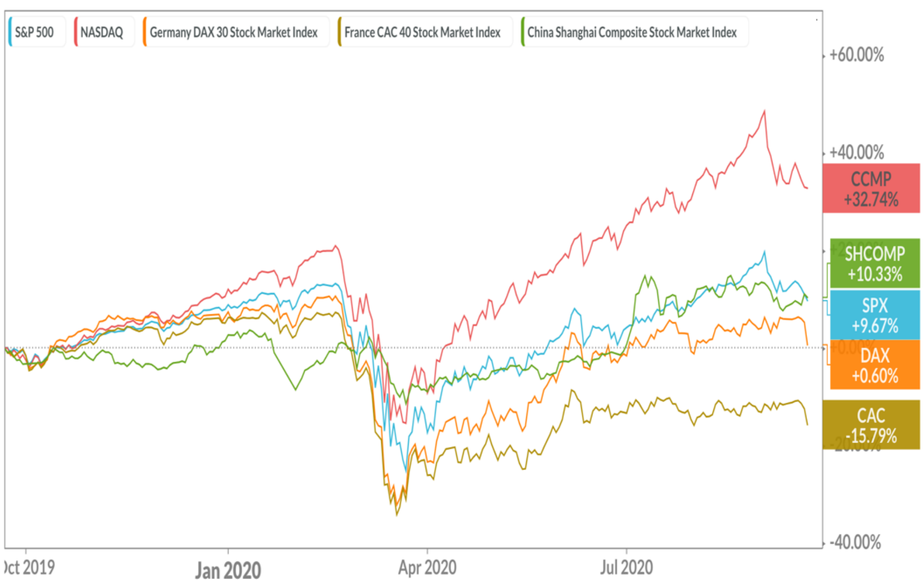
Source: KOYFIN

EQUITIES: DIVERGENT OUTCOMES

Covid-19 has created a two-speed world – a virtual economy that is soaring vs. a physical economy that is stagnant or slow

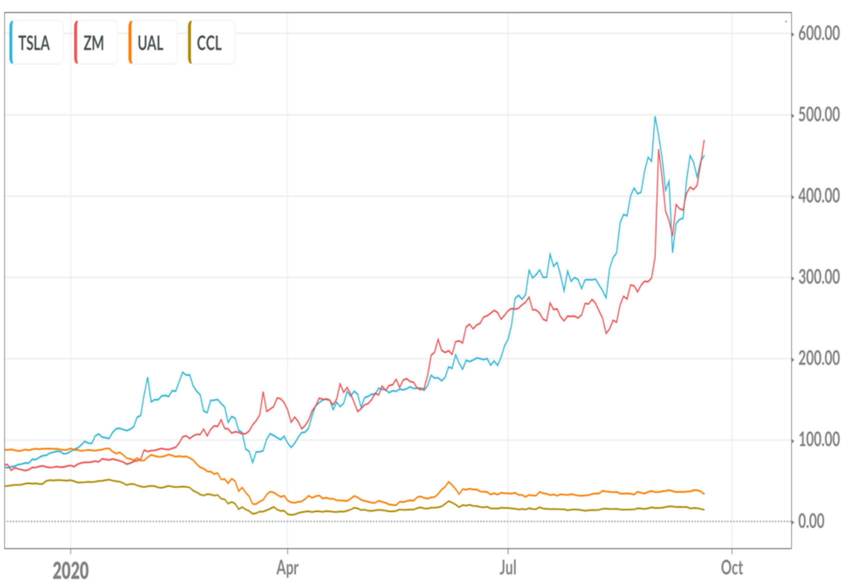
- The segments that are accelerating are not high employment sectors
- US large cap stocks, led by the tech/health giants, are ahead of Europe + other markets
- A bubble in "COVID" stocks?

Massive Global Divergence Led by US Large Cap + Tech



Source: KOYFIN

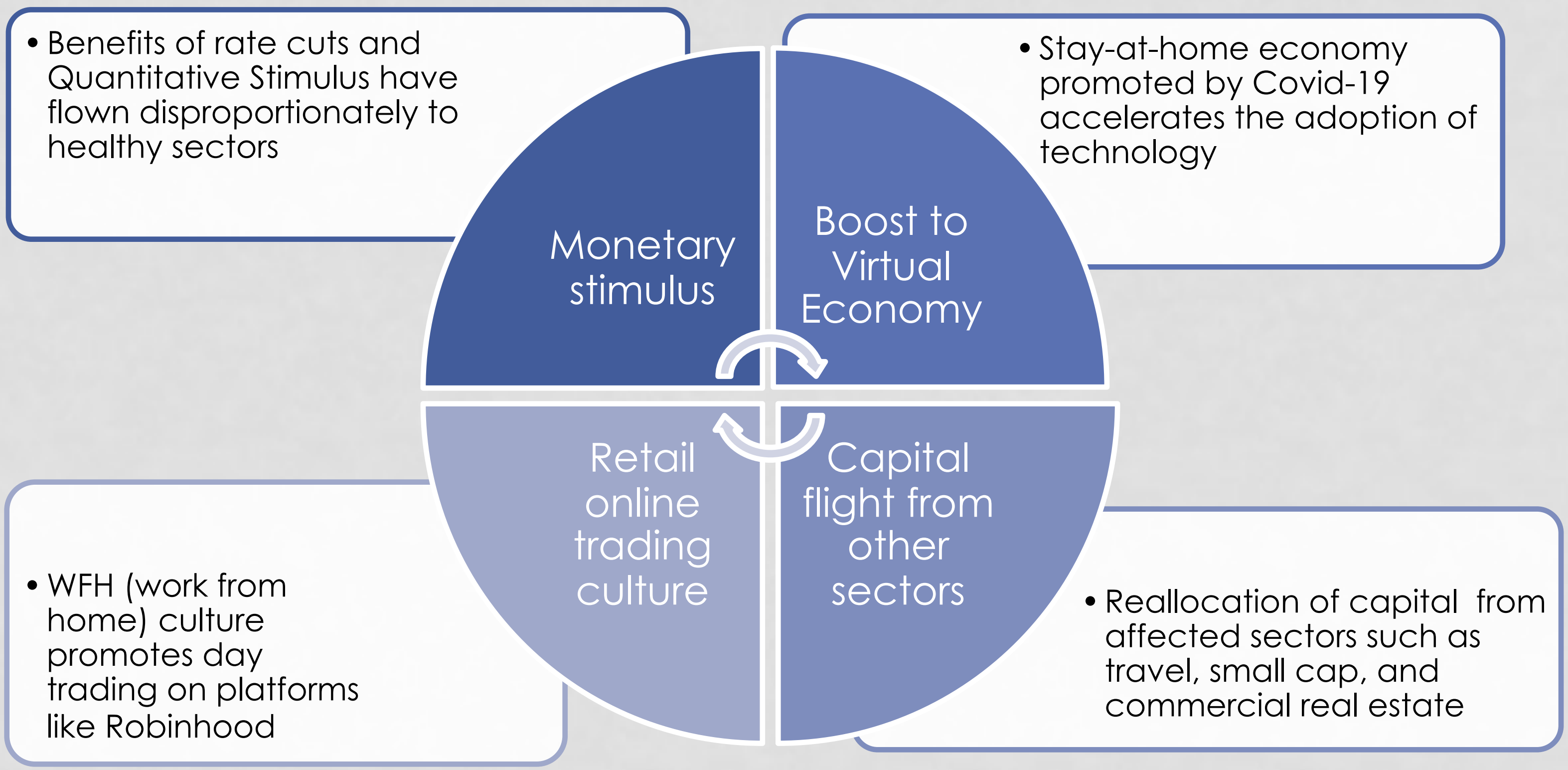
Sharp Divergence in US Tech/Healthcare versus Travel/Service



Source: KOYFIN

VIRUS MAY BE BLOWING A TECH BUBBLE

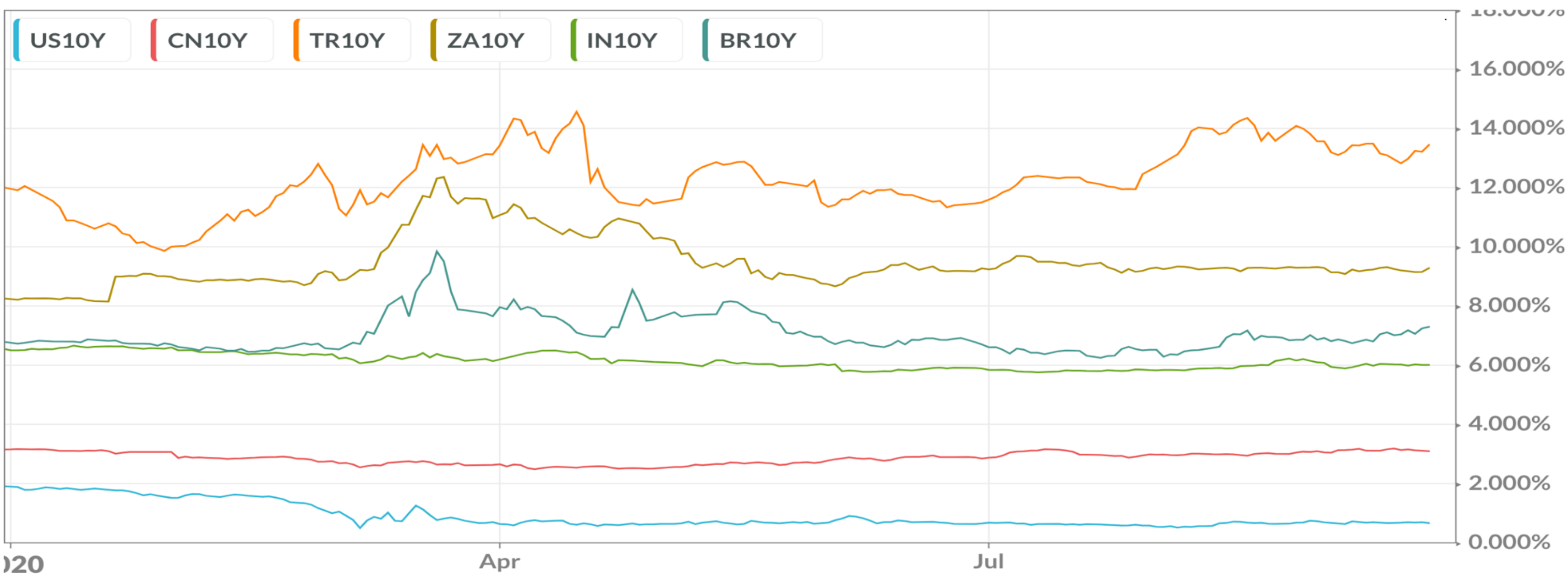
While the technology/growth stock bubble was already underway, the onset of the virus-induced crisis has exacerbated rather than pricked the bubble



EMERGING MARKET RATES SUBDUED

- Emerging Markets were bifurcated between safer regions like Asia and Eastern Europe…
  - …versus volatile EM regions like Latin America and Africa
  - India fell into the former group
  - In most countries, after initial sell-off and illiquidity, rates have rallied below pre-crisis levels
  - This contrasts with prior episodes – and signifies the deepening and domestication of EM bond markets

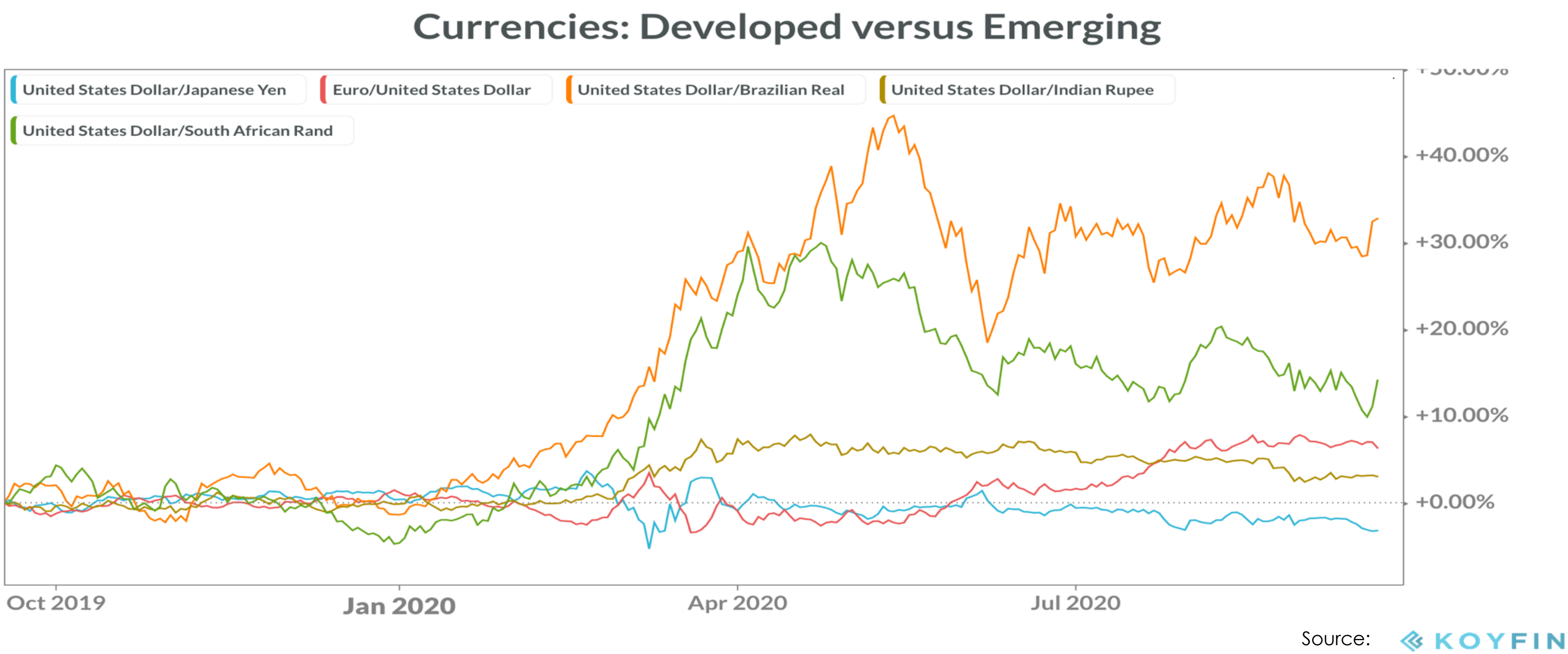
EM Rates Sell-offs Muted; Some Offer Value



Source: KOYFIN

CURRENCIES: TWO WORLDS

- Developed currencies were safe havens and remained stable
- Emerging currencies sold off against the dollar
- A few central banks sold dollars to smooth currency, but most have allowed sell-offs
- USD prospects balanced between near term risk aversion and long term negatives



FISCAL AND MONETARY RESPONSES

SHOCK AND AWE

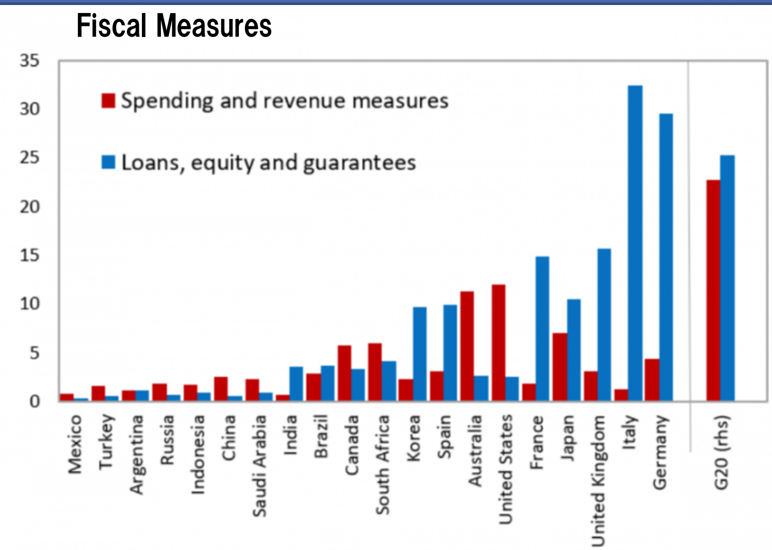
DM: MONETARY AND FISCAL FLOOD

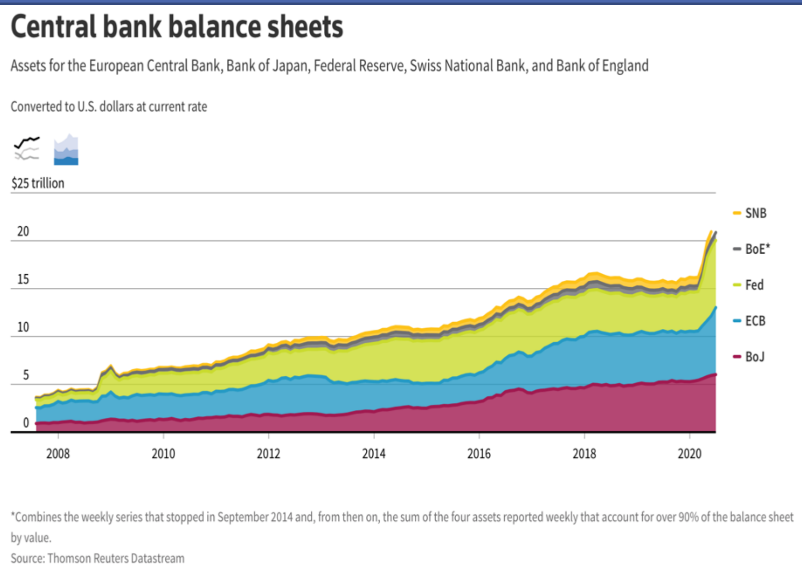
Fiscal: Globally, totaling over $9 Trillion

- US Fiscal measures include a $483B paycheck protection program, the $2.3 T CARES act, and an additional $200B Families First act.
- The EU set out a $2T response plan including a package of €750B, and individual governments have also taken actions

Monetary: For developed CBs, totaling over $6 Trillion

- The Federal reserve cut rates by 150bp to zero, and established 9 new liquidity facilities, a new QE program, lower bank capital requirements, dollar swap facilities, and other measures
- The ECB and BOJ enacted similar measures, but kept rates (already at or below 0) unchanged

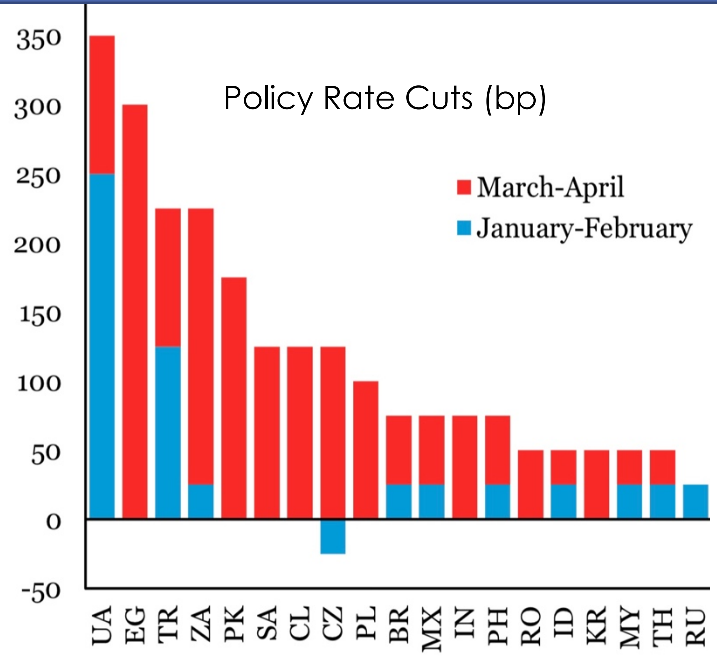




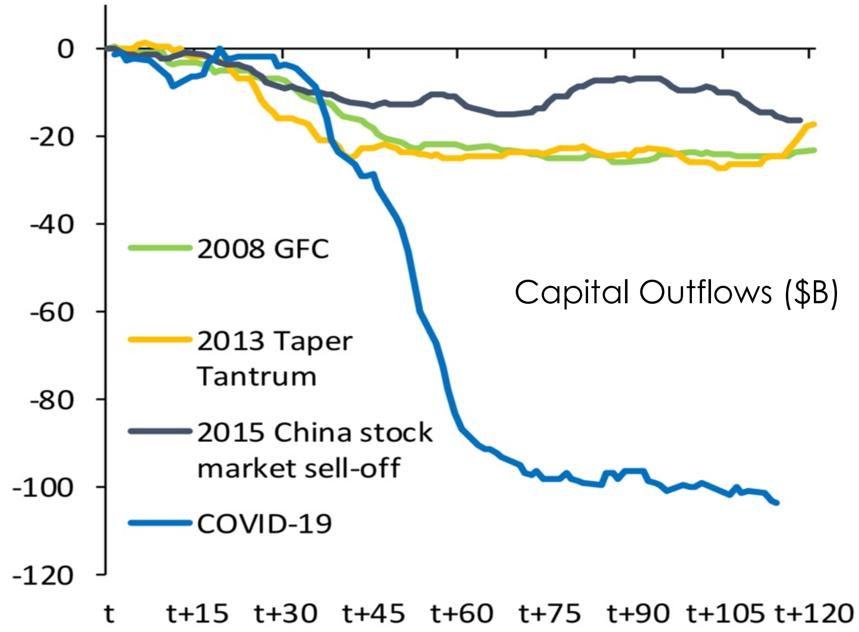
Source: IMF Blog

EM: CAPITAL OUTFLOWS DESPITE STIMULUS MEASURES

- Because many EM external balance sheets were reasonably healthy, 74 out of 97 EM central banks were able to cut rates
- The fiscal responses in EM, averaging 2.5%, were much smaller than DM (7.7% of GDP)
- Capital outflows from EM exceed those in prior crises. The IMF has increased emergency facilities to meet $100B in demand, and granted debt relief to 29 countries
- EM central banks and governments continue to evaluate further measures as the virus remains a threat



Source: Haver, IIF



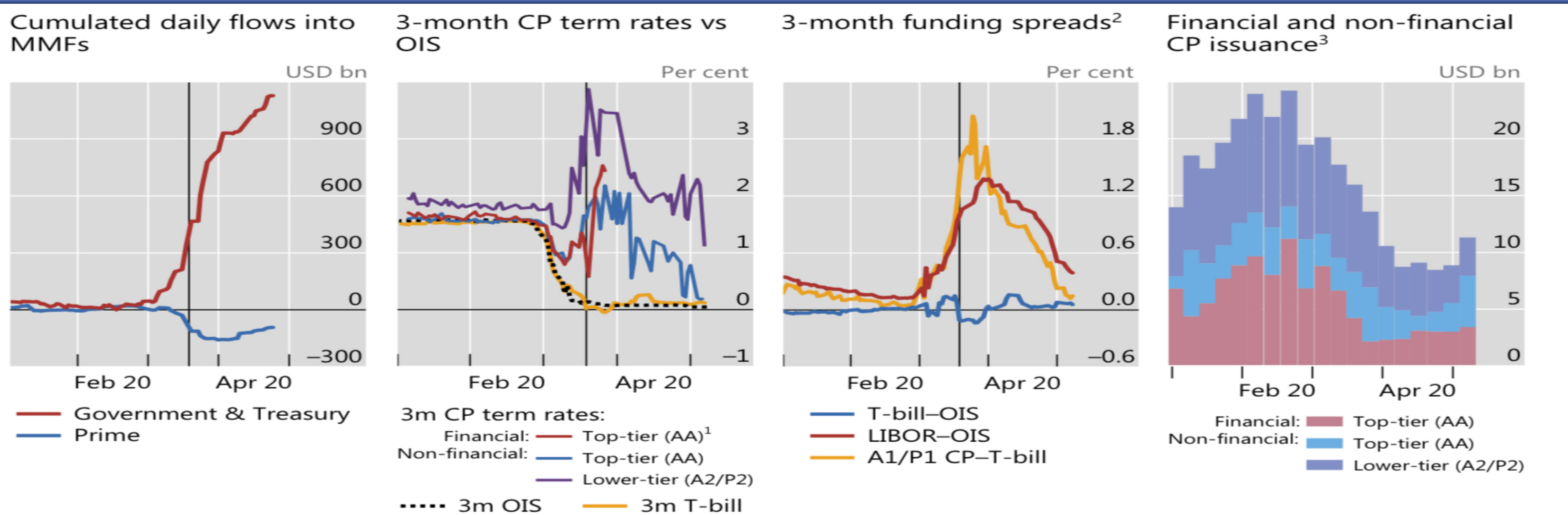
Source: IIF

WHAT THE CRISIS REVEALED ABOUT MARKET STRUCTURE AND LIQUIDITY

THIN AND FRAGILE

US DOLLAR FUNDING LIQUIDITY DURING CRISIS

- Short term funding markets experienced a severe dislocation during the Covid-19 crisis
  - Investors jumped from Prime to Government Money Market Funds
  - This led to loss of funding for banks and shortening of funding maturities
  - The LIBOR-OIS spread and CP rates widened (as in 2008, even though banks were not the problem)
  - Commercial paper markets dried up
- Loss of liquidity for unsecured credit even for very short maturities



The vertical line indicates 18 March 2020 (the establishment of the Fed Money Market Mutual Fund Liquidity Facility, MMLF).

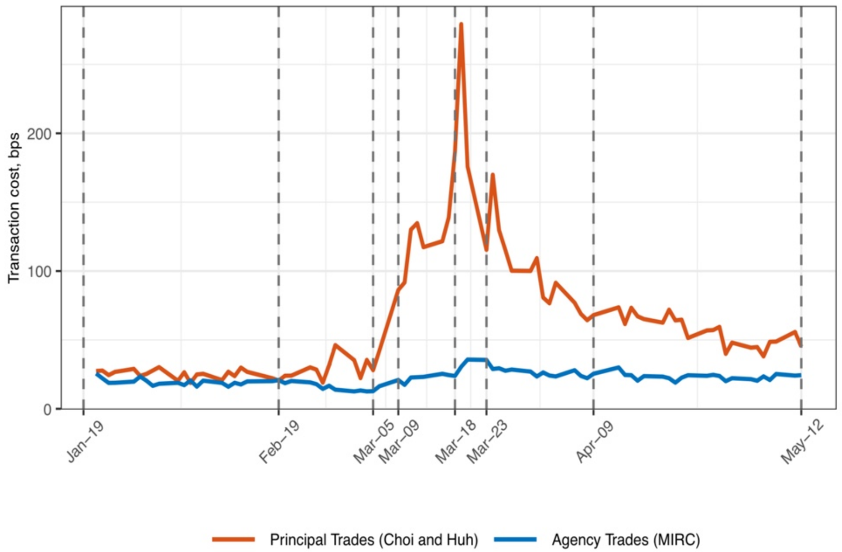
Source: US Dollar Funding Markets during the Covid-19 crisis, Eren, Schrimpf and Sushko (2020)

Sources: Board of Governors of the Federal Reserve System; Bloomberg; Crane Data; JPMorgan Chase; authors' calculations.

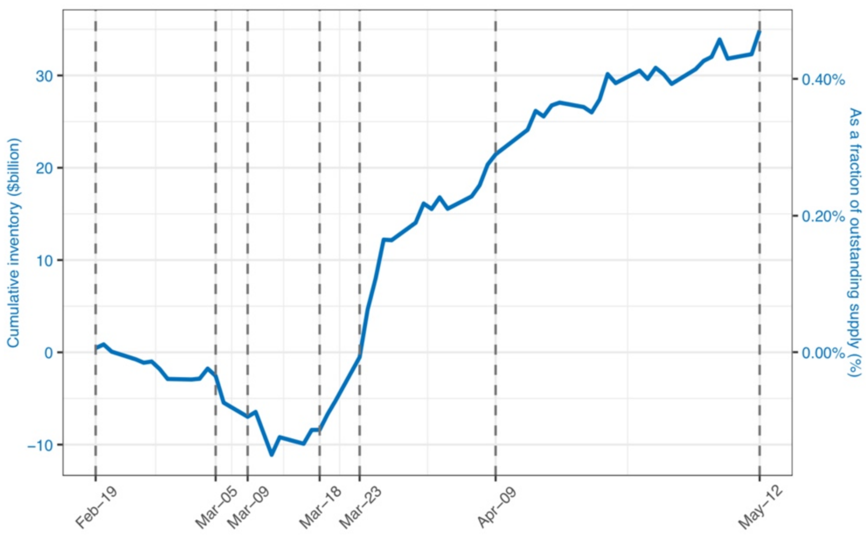
SPREAD PRODUCT LIQUIDITY EVAPORATED

- Corporate, sovereign and structured bonds all lost liquidity in March 2020
  - Market makers became extremely risk averse – widening bid-offers and refusing to buy bonds
  - The stricter regulatory environment post-GFC may have played a role in dealer risk aversion
  - Sovereign and structured credit bonds also became very illiquid
- The Fed had to avert a liquidity crisis by stepping in with QE and liquidity provision

Bid offer spreads for principal trades soared



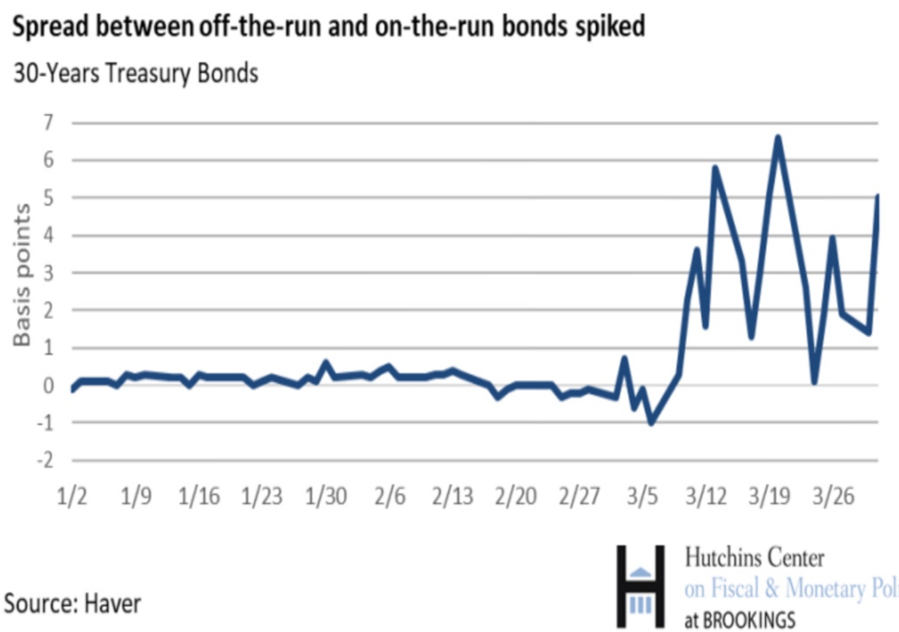
Dealer inventories shrank amidst outflows



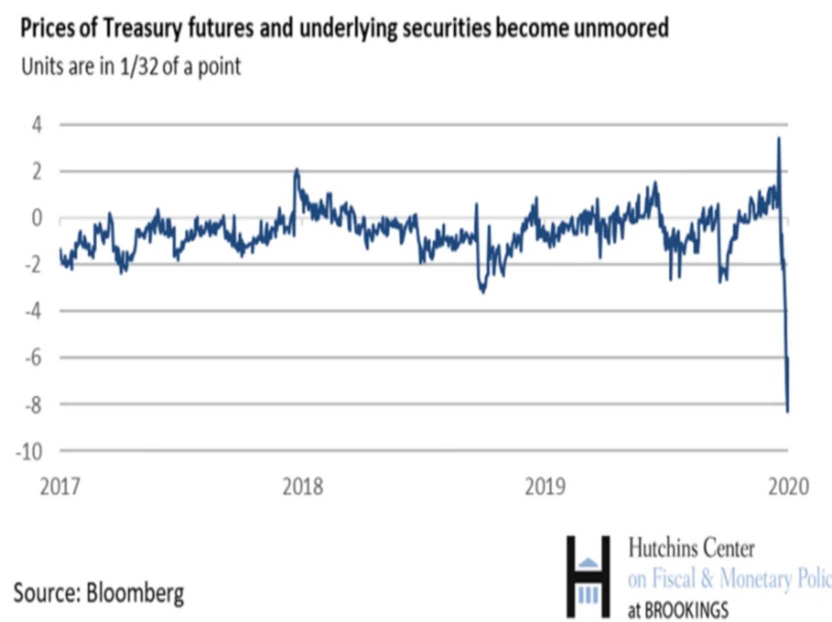
Source: Kargar et.al. Corporate Bond Liquidity During the Covid-19 crisis, NBER Working Paper No. 27355, June 2020

EVEN US TREASURIES EXPERIENCED A LIQUIDITY EPISODE

- US Treasuries went through a period of illiquidity in March 2020
  - On-the run vs Off –the run treasury spreads widened
  - The prices of futures and underlying deliverable treasuries diverged
  - Bond prices were extremely volatile, especially at the long end
- For a brief period after the Fed cut, yields backed up sharply before rallying to new lows
- The market stabilized after the Fed acted



Source: Haver



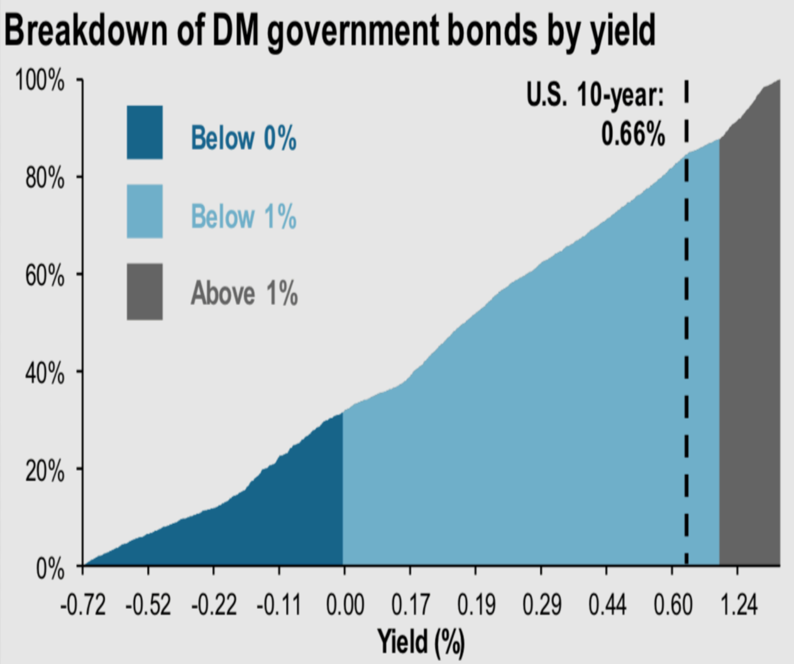
Source: Bloomberg

OUTLOOK: NO YIELD, VOLATILE SPREADS, AND UNKNOWN INFLATION

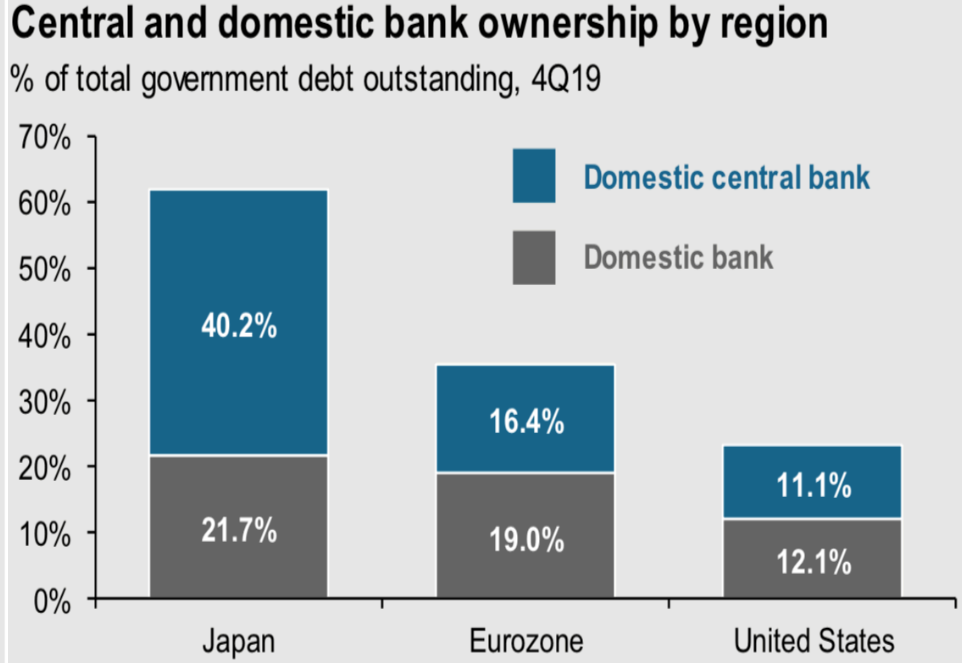
MORE QUESTIONS THAN ANSWERS

MOST DEVELOPED GOVERNMENT BONDS NOW YIELD UNDER 1%

- Europe and Japan each have over $5T in negative yielding bonds
- The US is now converging in yield towards other major developed regions
- Government bonds still offer safety and liquidity, but…
- Very low income and only a limited deflation and growth hedge
- Exposed to issuance and inflation
- Real yields are negative across the board



Source: JP Morgan

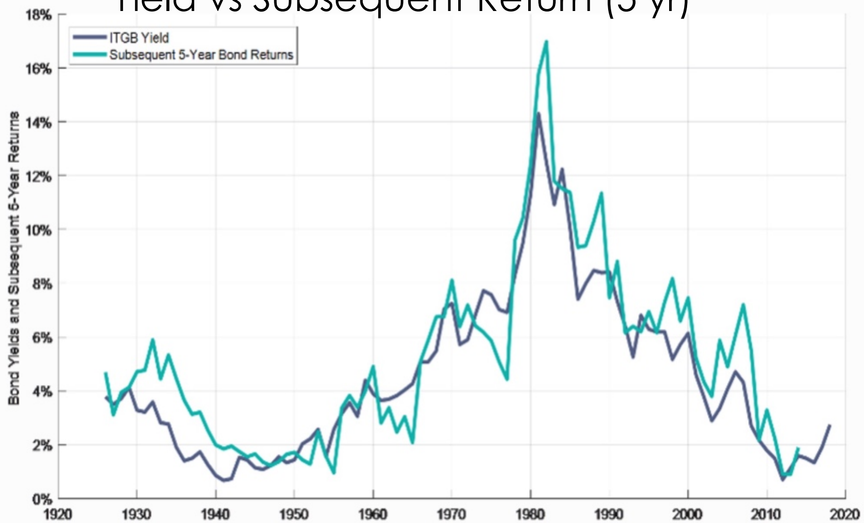


Source: JP Morgan

LOW AND VOLATILE FIXED INCOME RETURN PROSPECTS

- The yield to maturity is an excellent point estimate of a bond's annualized return at maturity
- The Covid-19 crisis has killed prospects for returns of $100 Trillion bonds around the world
- In most cases, the nominal returns will fall short of historically experienced inflation
- In Europe and Japan, returns may be negative even in nominal terms
- It is well past time to question the conventional wisdom of a 60-40 stock-bond allocation

Yield vs Subsequent Return (5 yr)



Source: Wade Pfau, Forbes, Mar 24. 2020

Sector	Yield (7/15/20)	Est. Info Ratio
US Short Tsy	0.13%	0.3
US 10 Yr Tsy	0.67%	0.1
US 30 Yr Tsy	1.43%	0.075
IG Corporate	2.01%	0.25*
Japan 10 Yr	0.01%	0.0
German 10 Yr	-0.53%	---
China 10y	3.08%	0.55

Source: Bloomberg, Author's calculations,

WILL COVID-19 SLOW DOWN OR SPEED UP THE REACH FOR YIELD?

Despite the volatility in spread products, the coronavirus looks likely to accelerate the global reach for yield

QE
- Excess liquidity looking for a home

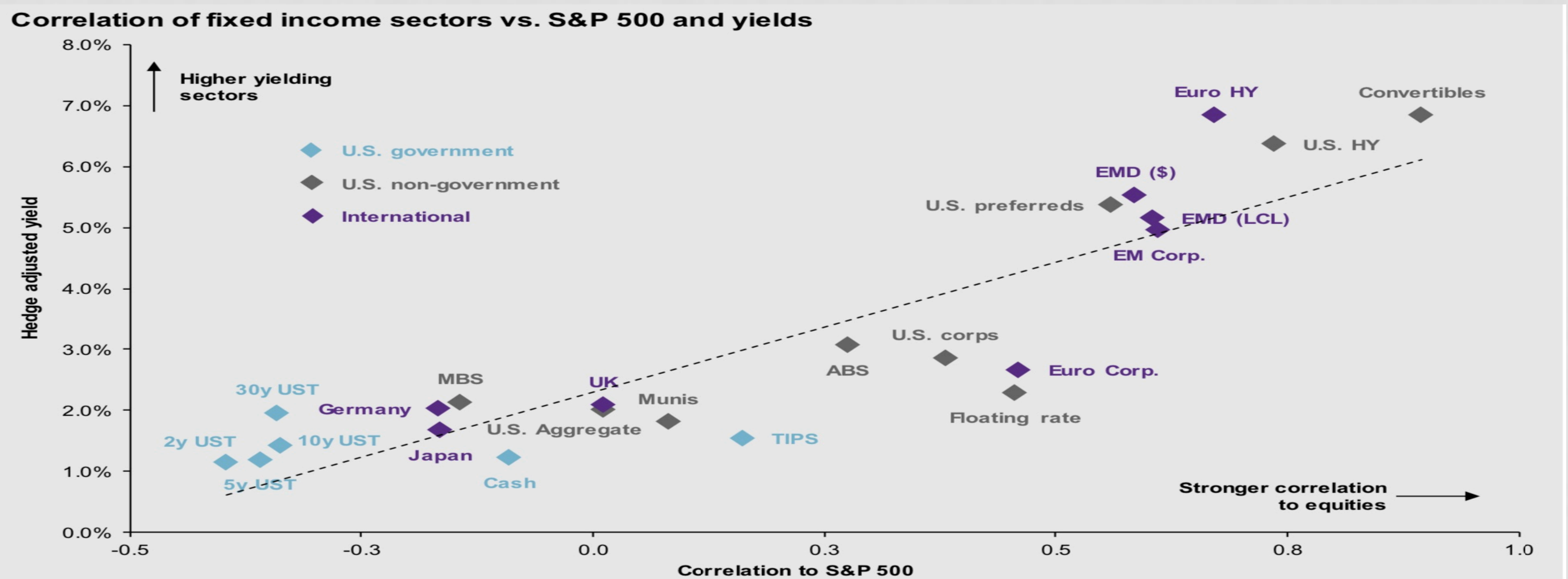
Lower Rates
- Drop in risk-free rates leaves investors with few safe alternatives

Rise in Retirees
- Global aging population looking for safe income

Slow growth
- Covid-19 hurts growth, prompting search for carry

YET YIELDS COMPENSATE MOSTLY FOR EQUITY MARKET RISK

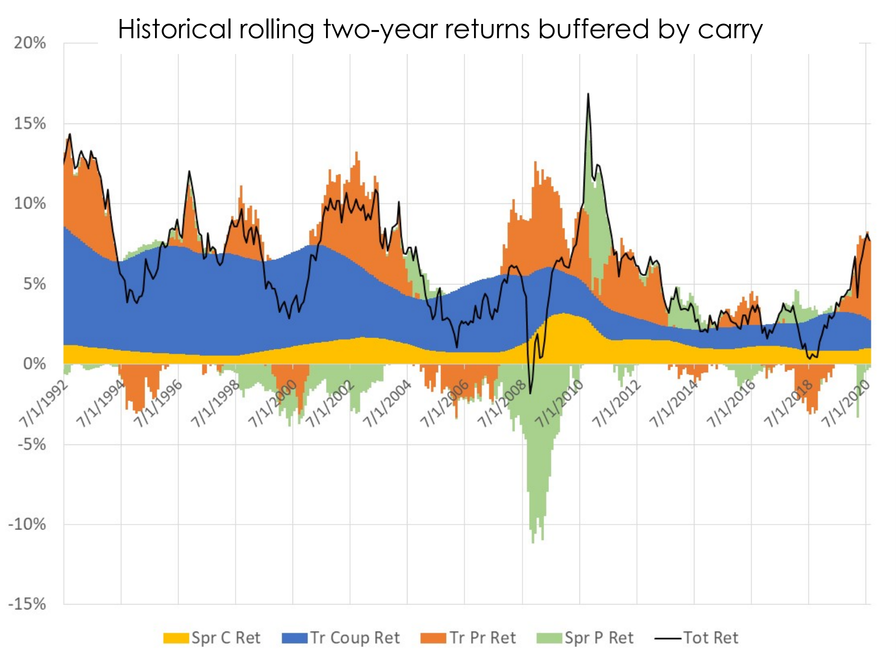
- With government bonds' nominal yields low, most future fixed income returns will come from spread
- But this is not free lunch
- The yields of bond sectors are very closely related to their correlation to equity risk
- The reduction of the rate risk premium is causing bonds to carry even more equity risk

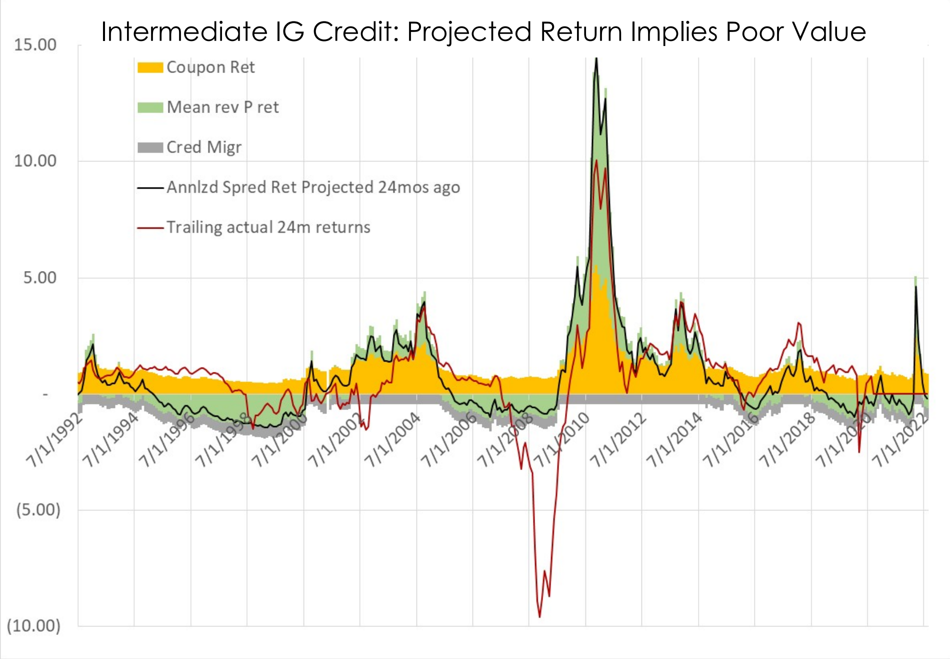


Source: JP Morgan Asset Management

HISTORICALLY LOW YIELDS SUGGEST POOR REWARD/RISK FOR IG CREDIT

- Historical credit returns were buffered by higher risk free rates and by spreads
- Spread returns were often negatively correlated with rates, reducing volatility
- Low yields suggest limited room to rally, while IG spreads are close to historical tights
- IG credit returns from current starting levels have been historically poor- not a good value



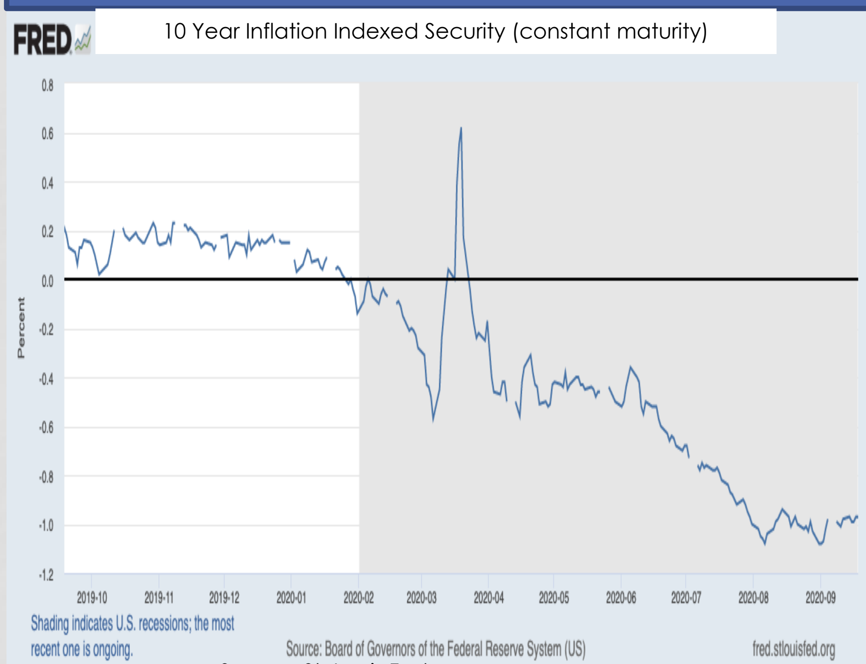


Source: Basis Point Global Solutions

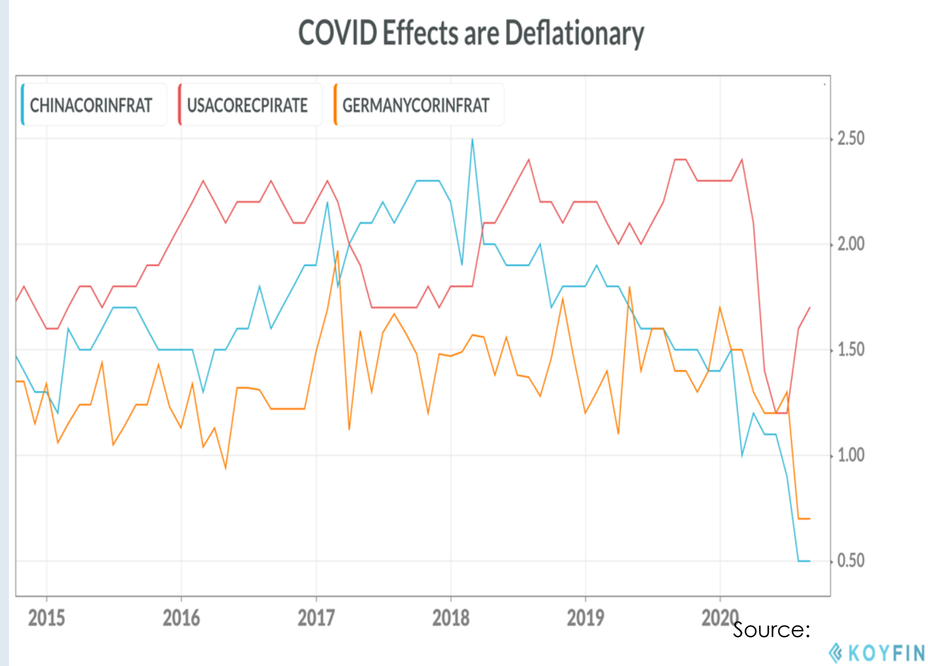
THE IMMEDIATE IMPACT OF COVID-19 IS DEFLATIONARY, BUT LATER?

Near term, Covid-19 is causing a collapse in demand
Real yields are at historically low levels while inflation has fallen
However, the risks of pick-up in inflation over the next few years have risen

- Likely long term easy monetary policy
- Unprecedented size of QE
- Large fiscal deficits to cover the relief measure and social costs
- Fiat currencies allow huge latitude to central banks (with only a few decades of experience)



Source: St. Louis Fed



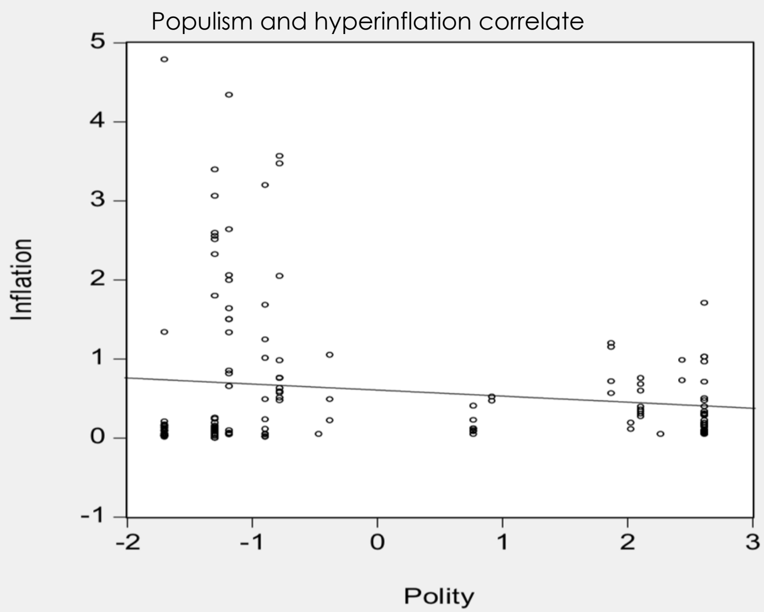
Source:

POPULIST POLITICS COULD USHER IN INFLATION

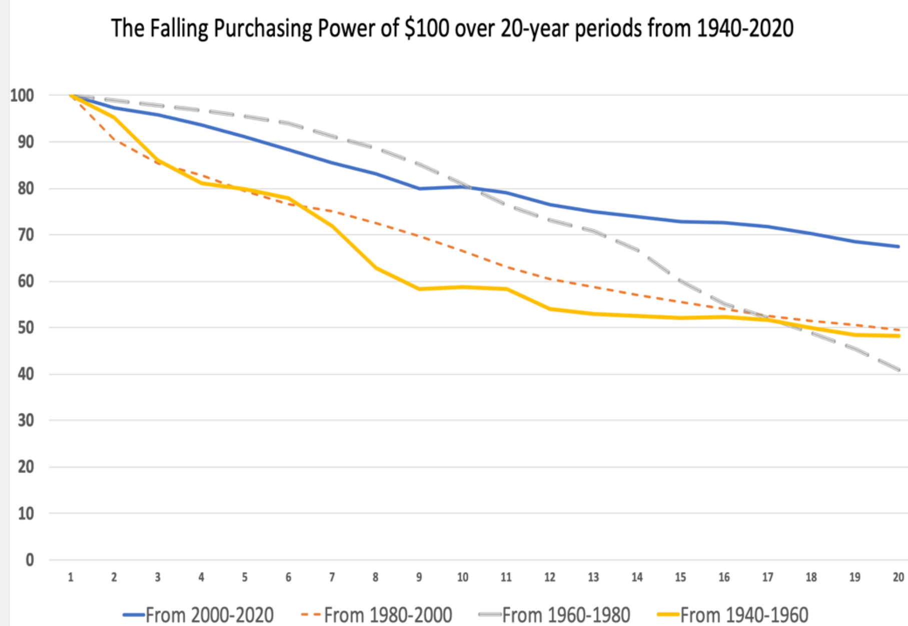
The past two decades have been <u>unusually benign </u>in inflationary erosion

However, populist politics raises risks of inflation in the coming decade

- The gradual abandonment of fiscal conservatism given low government borrowing costs
- Inflation transfers wealth from savers to spenders, which addresses rising inequality
- MMT (Modern Monetary Theory) and similar ideas are gaining currency
- Populism has often favored inflation as a wealth transfer mechanism



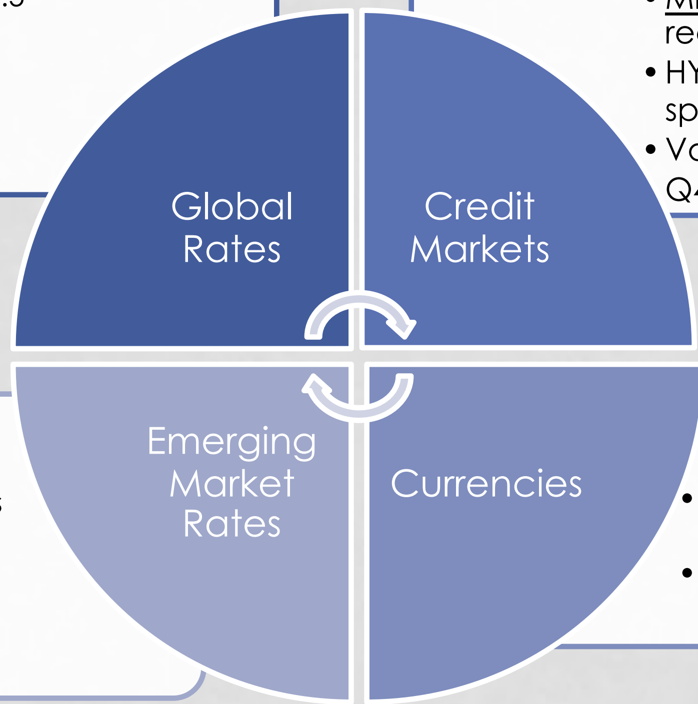
Source: Bittencourt, Manoel. "Democracy, populism and hyperinflation: some evidence from Latin America." *Economics of Governance* 13 (2010): 311-332.



Source: BLS, Author's calculations

GLOBAL FIXED INCOME OUTLOOK

- Markets are at a crossroads:
- Negative: Uptick in virus in key jurisdictions (US, France, Spain, India, Indon, LatAm)
- Positive: Improving global PMIs, credit spreads, and equity market sentiment
- CB/Fiscal responses are very powerful but stalled now – slow recovery to extend into 2022



Global Rates

- Rates subdued- US10y in 0.5-1.0 % range
- Growth/inflation in EU/JP below target - quiescent
- Fiscal/inflation risk to long end, but not imminent

Credit Markets

- Mixed: IG credit has recovered, not good value
- HY defaults up in 2021, but spreads 156bp wider-cheap
- Value in fallen angels Q4 volatility likely

Emerging Market Rates

- Room for selected EM CBs to cut further (MX, CN, RU)
- Value @425bp over US
- Two groups (virus/ cmdty)
- EMFX remains safety valve

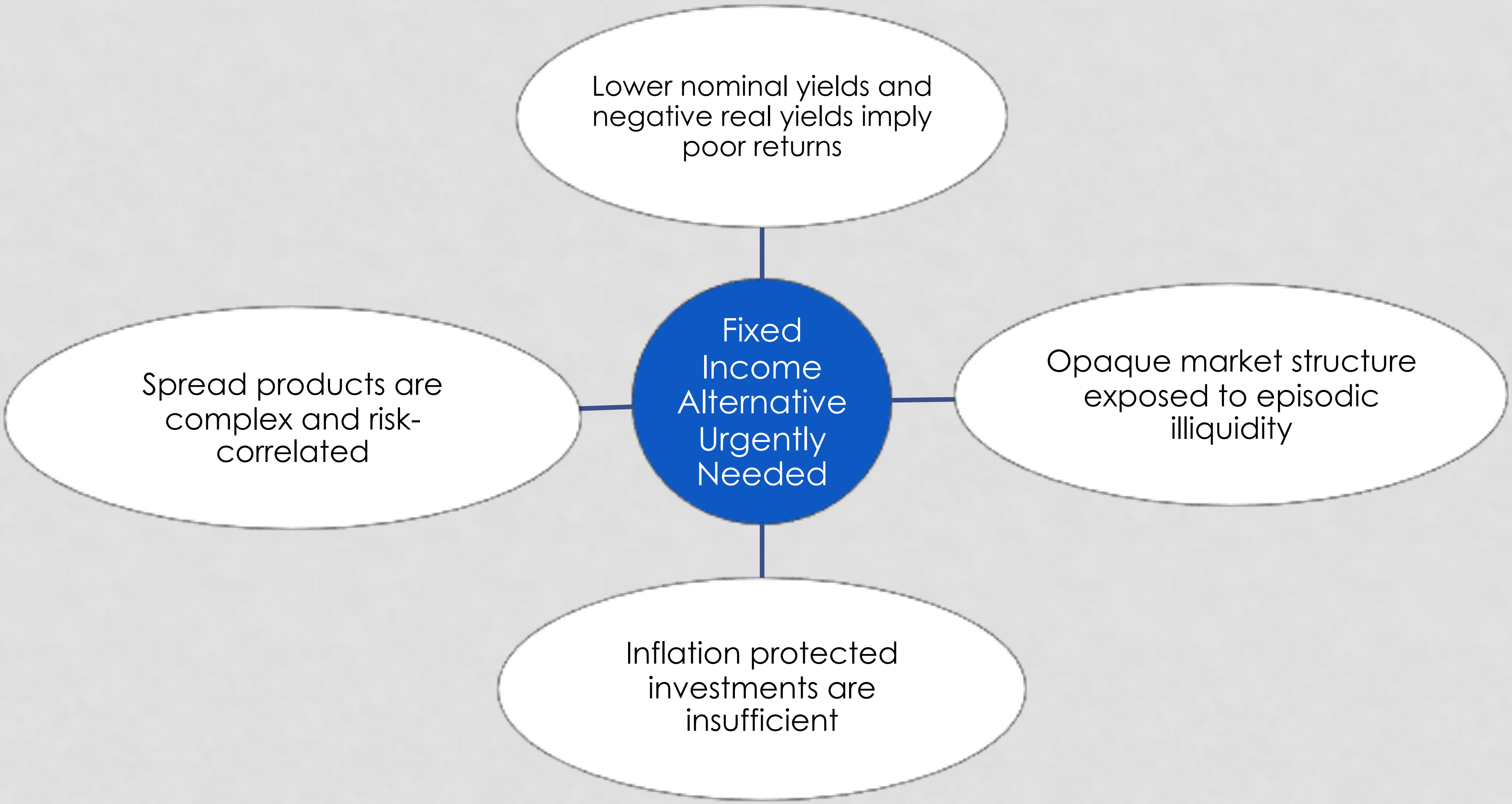
Currencies

- US Dollar could get a bid if risk-off resumes
- Longer term, expect Dollar weakness (deficits/rates)

THE GLOBAL NEED FOR ALTERNATIVE SAFE INVESTMENTS

FRESH THINKING ON FIXED INCOME

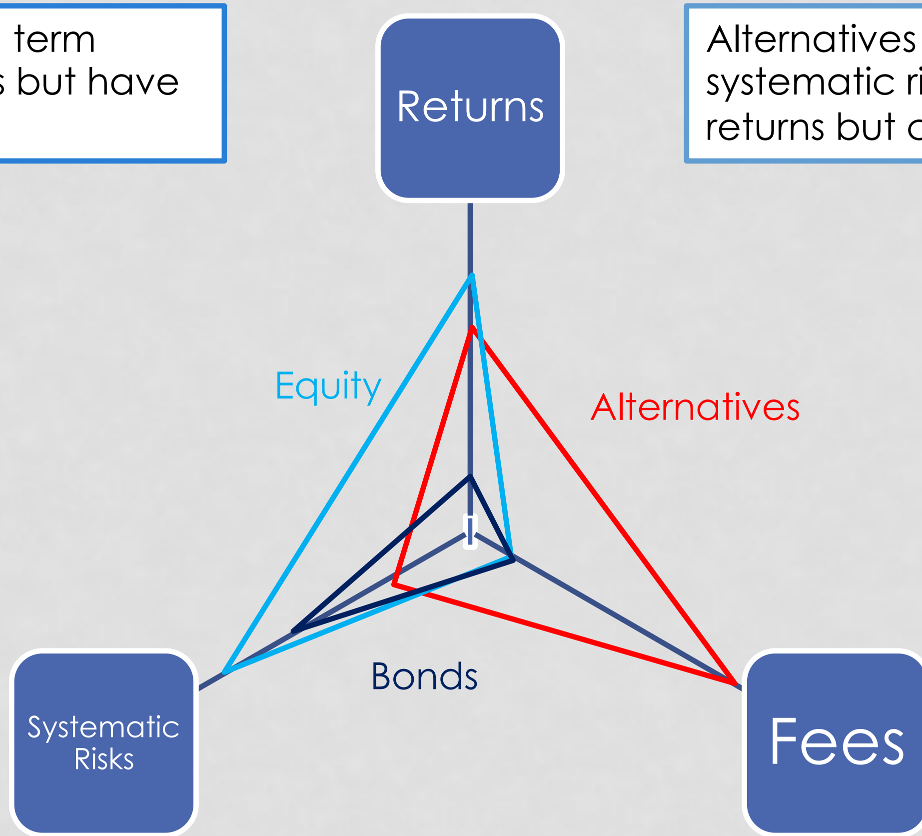
GLOBAL FIXED INCOME :
A $100 TRILLION PROBLEM



POOR PROSPECTS FOR BONDS CREATE A GAP IN THE INVESTMENT UNIVERSE

Equity has high long term returns and low fees but have high systematic risk

Alternatives aim for low systematic risk and high long term returns but charge high fees



Bonds provide a diversified medium risk, low fee complement to equity but prospective returns are too low

INEFFICIENCIES IN BOND INVESTING

Fixed Income market structure and characteristics create additional difficulties – its LOCA (Spanish for crazy)

Liquidity
- Most bonds lose liquidity during risk off periods

Opacity
- OTC market making and hidden market structure

Comple xity
- Large number of sectors, issues, and cash flow structures

Agency
- Many intermediaries; high fees made worse by low rates

FIXED INCOME ALTERNATIVE SOLUTION ELEMENTS

Combination of low-volatility strategies from multiple asset classes	Quantitative framework to control for key dimensions of risk while optimizing reward/risk	AI/ML for automation and low costs, using liquid assets
• G10 Bonds • Credit (Corporate, Sovereign, Structured) • Common Stocks • Inflation Linked Securities • REITs and other real assets • Derivatives – to tailor risk profile and hedge	• Control for key systematic risks and diversify sources of return • Quantitative security/asset selection to minimize tail risk and add alpha • Anti-fragility techniques to avoid asset class bubbles	• Select from highly scalable asset classes • Liquid instruments • Automatable investing • Intelligent decision making

AGENDA FOR POLICY MAKERS AND REGULATORS

Access to individuals

- Direct lending and crowd sourcing of credit through technology platforms and blockchain

Data and technology

- Broaden trading and data accessibility to make credit as transparent as equity

Disruption

- Reduce intermediaries to increase transparency and fees

Structured Finance

- Revive structured credit but with careful regulation and control

CONCLUSIONS

- The global recovery will be slow and we expect rates to remain very low
- Real returns of most government bonds and cash globally likely to be negative – putting pressure on flows
- We expect the global reach for yield to intensify
- Outlook for spread products is mixed (prefer HY to IG), volatile and correlated with equities
- Fixed income liquidity is vulnerable to sudden stops
- Deflation near term, but inflation a future risk
- There is a critical unmet need for alternative safe investments

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