THE EMPEROR HAS NO YIELD

Bond Returns, Risks and Alternatives in the post-Covid era

Basis Point Global Solutions

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No army can withstand the strength of an idea whose time has come

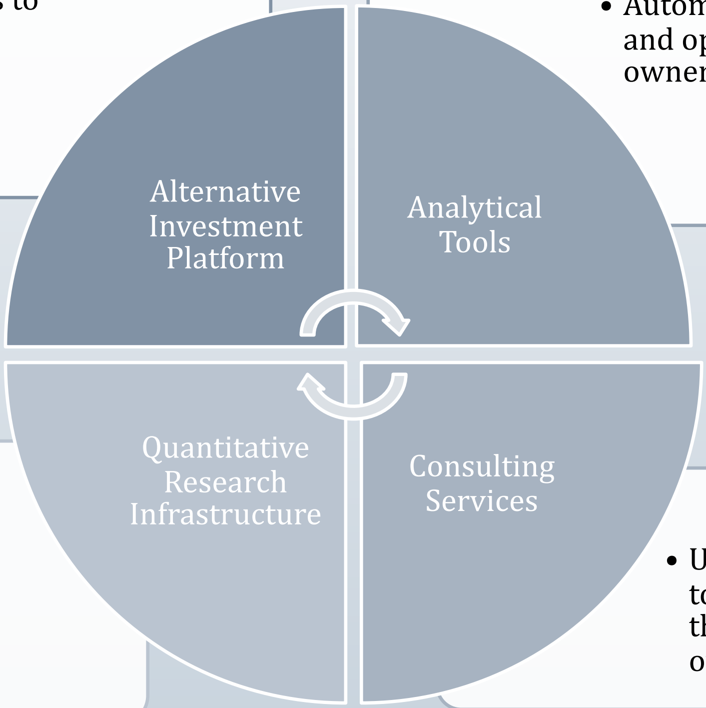
- VICTOR HUGO

Basis Point Global Solutions: Our Mission and Mandate

<u>Mission:</u> To provide cost-effective quantitative investment solutions, analytics and advice to improve asset owners' outcomes, while staying aligned with their interests

- Provide unique alternatives to conventional investment solutions, starting with traditional fixed income.

- Automated investment analysis and optimization for asset owners



- State of the art data, algorithmic and quantitative research platform

- Utilize a suite of quantitative tools to improve and streamline the investment process for asset owners

Agenda

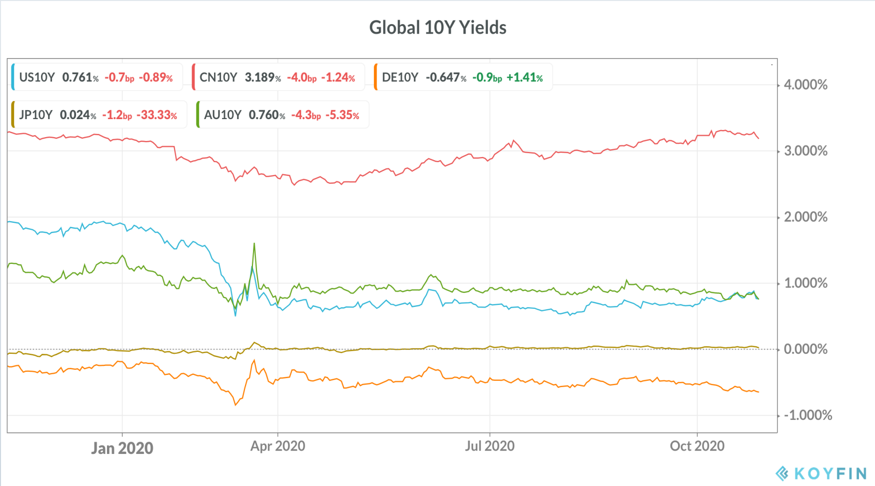
- Fixed Income Outlook: Lower Returns & Elevated Risk
- Why Bonds Don't Work Anymore
- A Few More Inconvenient Facts
- Towards Solutions: Exploring Alternatives

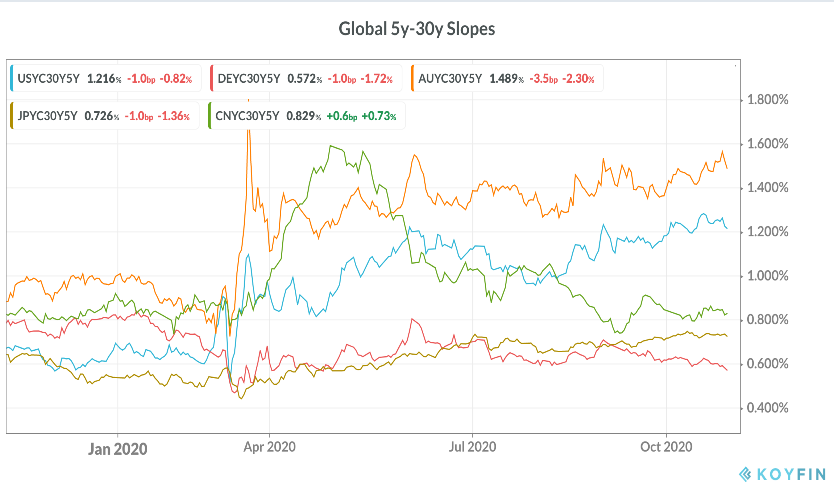
Fixed Income Outlook

LOWER RETURNS AND ELEVATED RISKS

Rates Outlook- Subdued, for Now

- Downward shift in US risk free rates -- likely to last for years
    - Rates almost universally below 1% - presaging low medium term returns
    - Rates closer to floors (-1%,?) -- so flight to quality cushion is diminished
    - Real rates are now **negative** in all major developed regions
- Steeper curves in the US, Australia, China……but not EU/JP
- **Growing risk of substantial losses from duration if rates head higher**



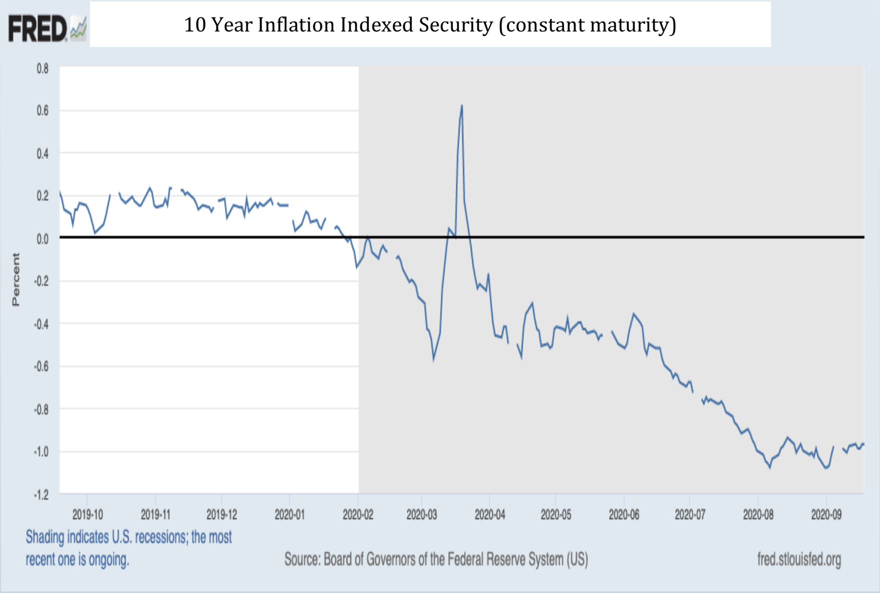


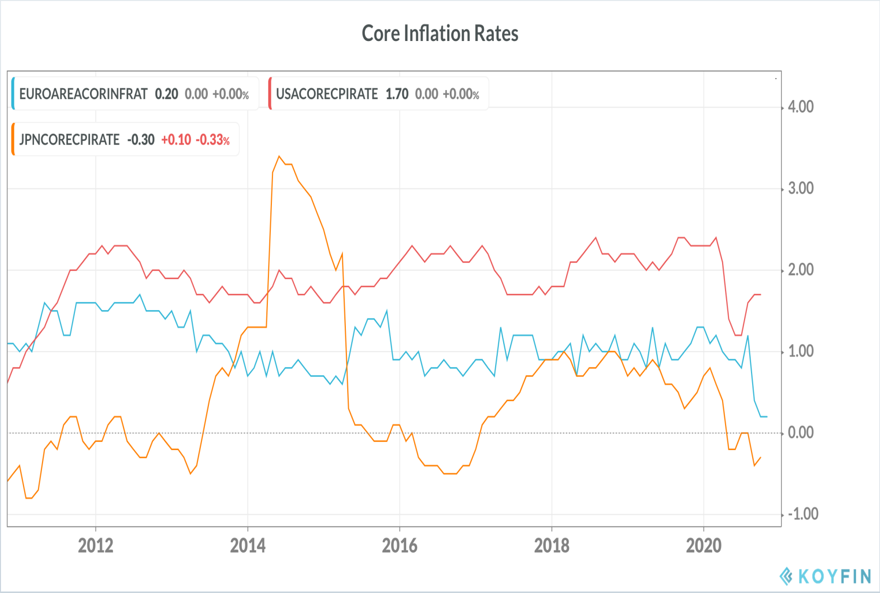
Source:

Real Yields are Now Negative

Near term, Covid-19 is causing a collapse in demand, so inflation has fallen
However, the risks of pick-up in inflation over the next few years are slowly rising
- Large fiscal deficits to cover the relief measure and social costs
- Likely long term easy monetary policy
- Unprecedented size of QE and other unorthodox measures

Cash and bonds lock in negative returns and may be less safe





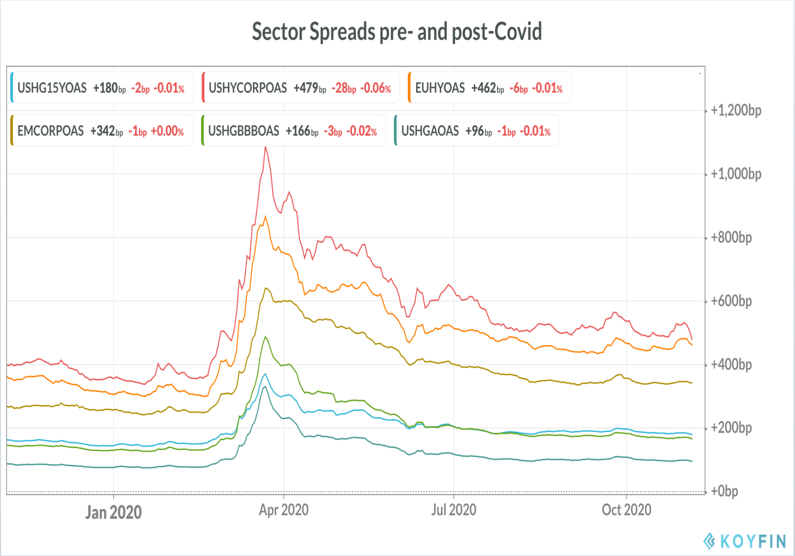
Source:

Source: St. Louis Fed

Spreads – Now Less Attractive

- Massive sell-off and recovery thanks to Fed, correlated with global stocks
  - Huge pockets of credit concerns remain, including travel, leisure, and commercial real estate
  - Massive disconnect between tight credit and plentiful liquidity in the financial system
  - IG Spread markets are almost back, HY and EM spreads have recovered more slowly
  - Stimulus has exacerbated the reach for yield, hence spreads are ahead of fundamentals
  - DIP financing, cov-lite, and asset transfers have caused massive drop in CDS auction recovery

Credit markets require careful navigation, with pockets of distress and bots of volatility likely



Sector	Spread	LT Mean	Zscore	Percentile	Spread/ Median
IG A	**96**	140	-0.49	33%	0.83
IG BBB	**166**	214	-0.45	36%	0.86
IG Long	**180**	193	-0.21	45%	0.97
US HY	**505**	570	-0.23	50%	1.00
EU HY	**462**	611	-0.39	48%	0.96
EMCorp	**342**	374	-0.17	48%	0.99
EM HY	**665**	702	-0.45	55%	1.04

Source:

Global Fixed Income Outlook: Do Risks Outweigh Rewards?

- Central banks and markets have painted bonds into a corner
  - Massive surge in virus in key jurisdictions (US, Europe, LatAm) will keep yield low and credit volatile
  - In 2021, a recovery from the virus may push up yields and stabilize credit
- How much political room for CB/Fiscal responses? How effective?
- Outlook: Slow recovery into 2022 but with elevated risk

Interest Rates

- Low for long: US10y range 0.5-1.0 %
- US steeper curves a silver lining
- Though not imminent, fiscal/ inflation risk to long end is a tail risk

Credit Spreads

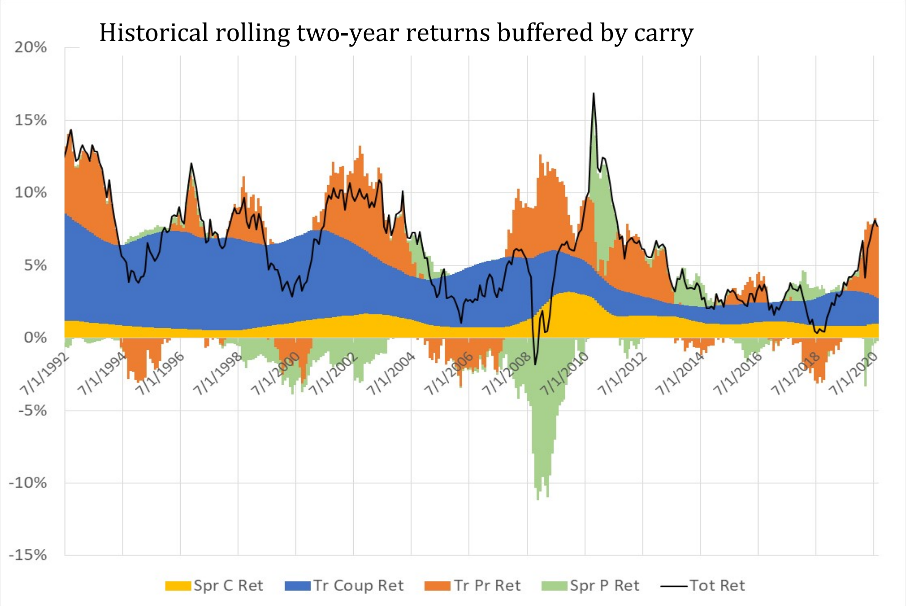
- IG spreads narrowed, not good value
- HY defaults up in 2021, recovery rates lower – pockets of value, Q4 volatility likely
- EM spreads cheap and volatile (for a reason)

Why Bonds Don’t Work Any More

POOR RISK ADJUSTED RETURNS

The Loss of Carry Decimates Prospective Bond Returns

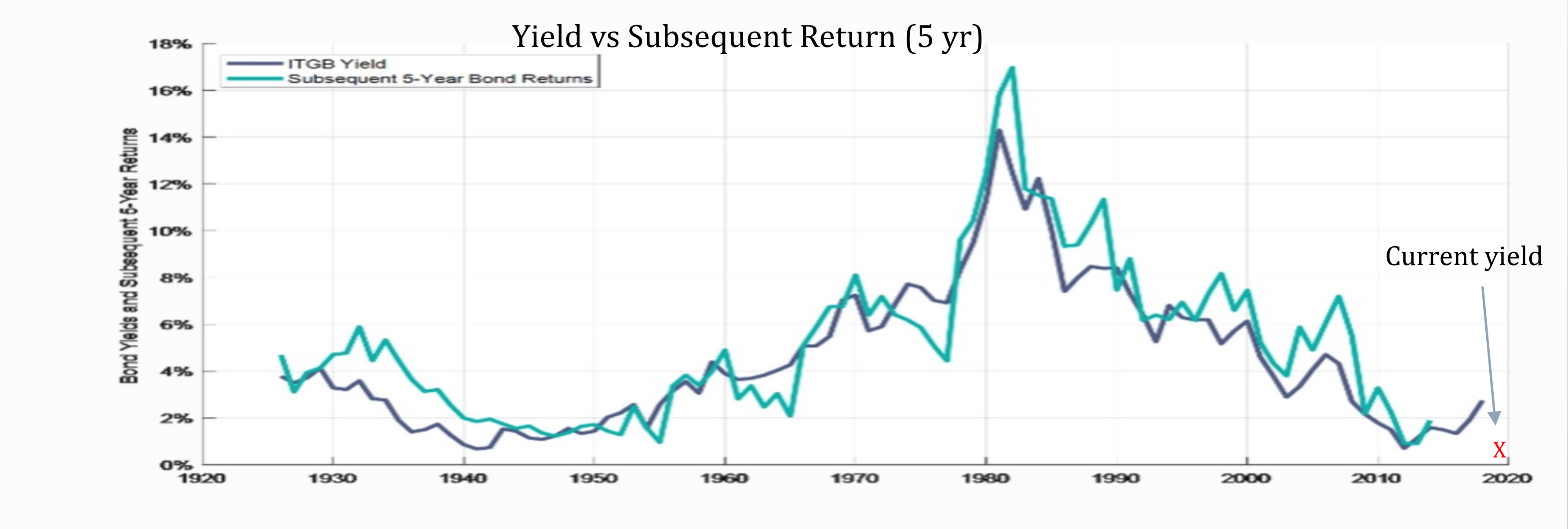
- Historical returns from Fixed Income Credit were buffered by higher risk free rates and by spreads
- Spread returns were often negatively correlated with rates, reducing volatility
- Low yields suggest limited room to rally, while IG spreads are close to historical tights
- IG credit returns from current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



	Yield to Worst	Projected Annlzd Ret	Historic volatility
Bloomberg Barclays Agg	1.1%	1.1%	3.3%
Interm Treasury	0.2%	0.2%	2.6%
Long Treasury	1.1%	1.1%	12.1%
MBS	1.1%	0.9%	2.2%
Interm Corp	1.2%	0.1%	4.4%
Long Corp	2.8%	4.2%	10.7%
High Yield	5.4%	2.7%	9.2%

Yields Strongly Predict Medium Term Returns for Government Bonds

- 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

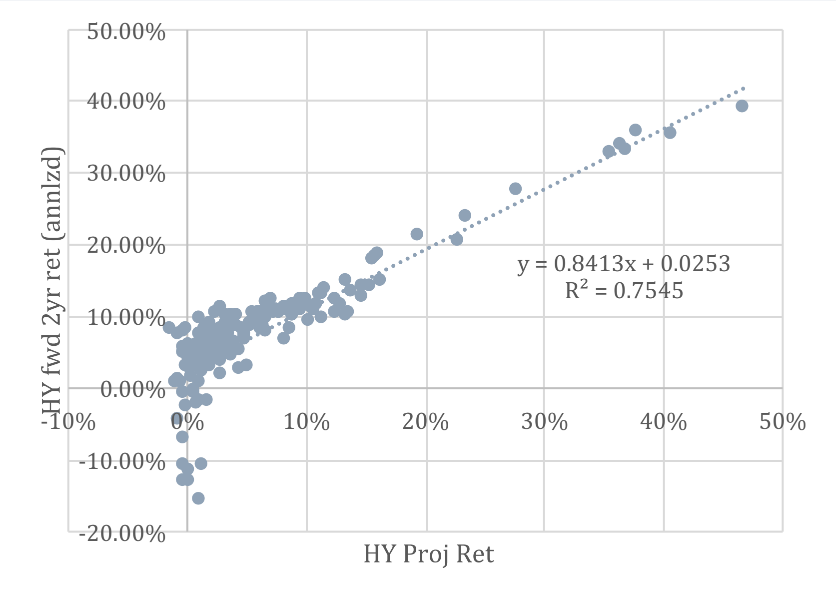


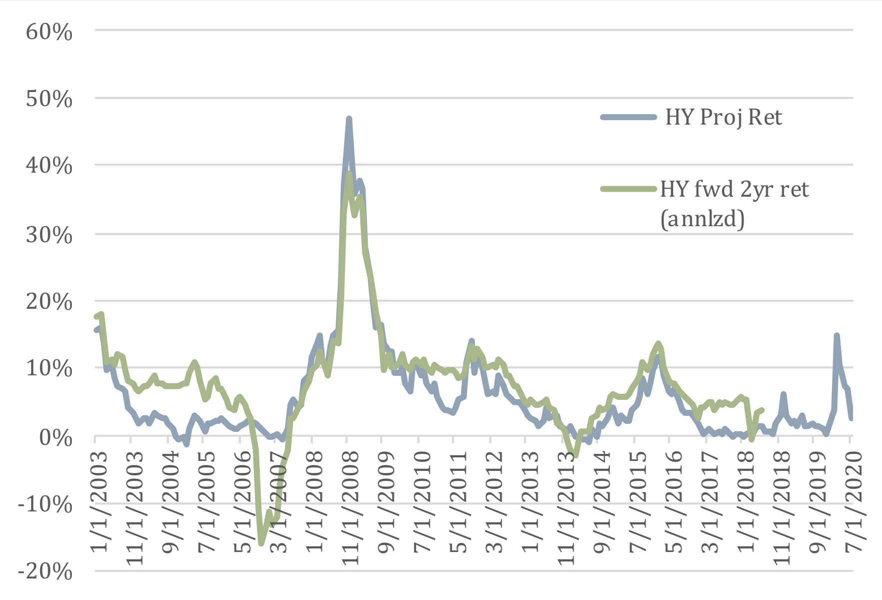
Source: Wade Pfau, Forbes, Mar 24, 2020

Source: Bloomberg, Author's calculations,

Mean Reverting Credit Spreads Allow us to Model Medium Term Credit Returns

- Interest rate and spread behavior are modeled separately
- We capture and model key drivers to spread movements:
  - Mean reversion
  - Credit migration
  - Spread roll-down
- Actual returns have shown a strong relationship to medium term projected returns





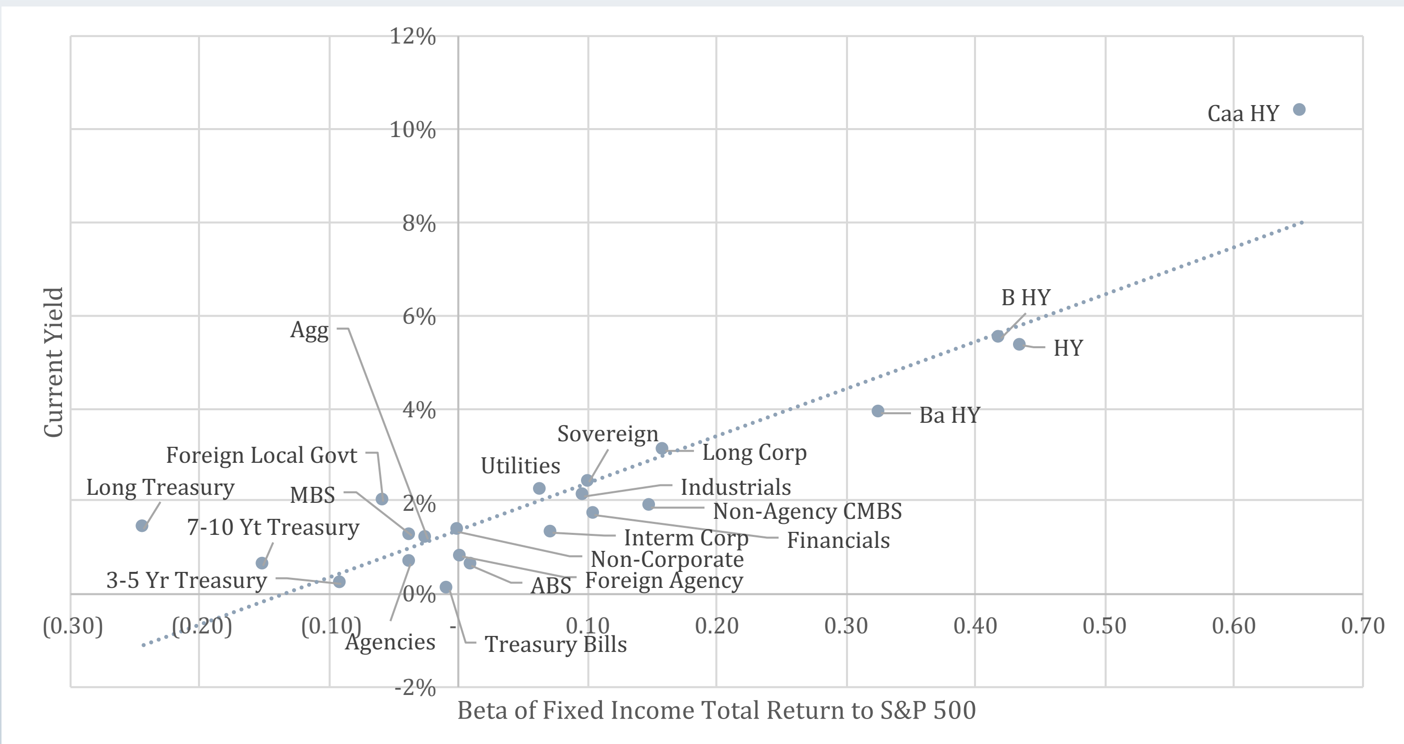
Source: Basis Point Global Solutions

A Few More Inconvenient Facts

BONDS HAVE EQUITY RISK? ALPHA OR BETA? WHAT LIQUIDITY?

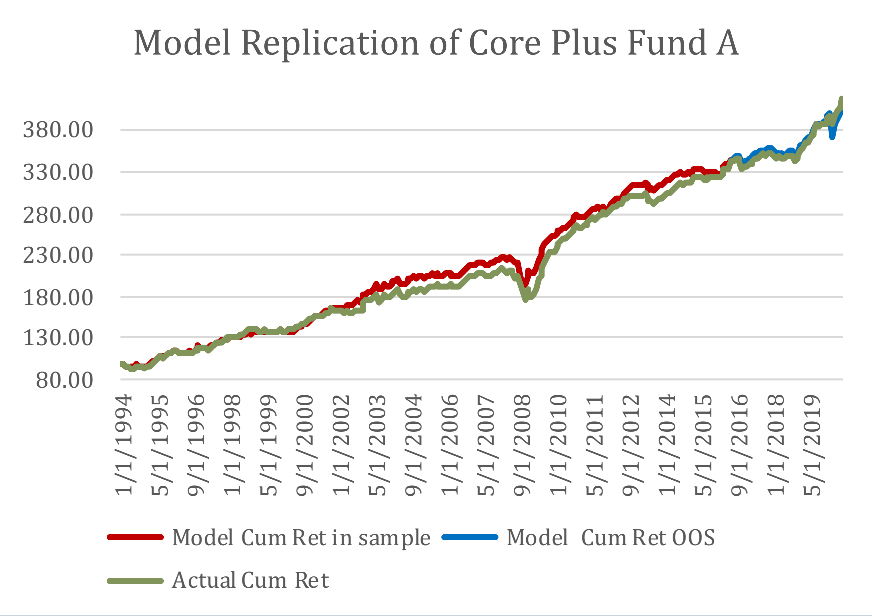
Spread Risk Closely Mirrors Equity Market Risk

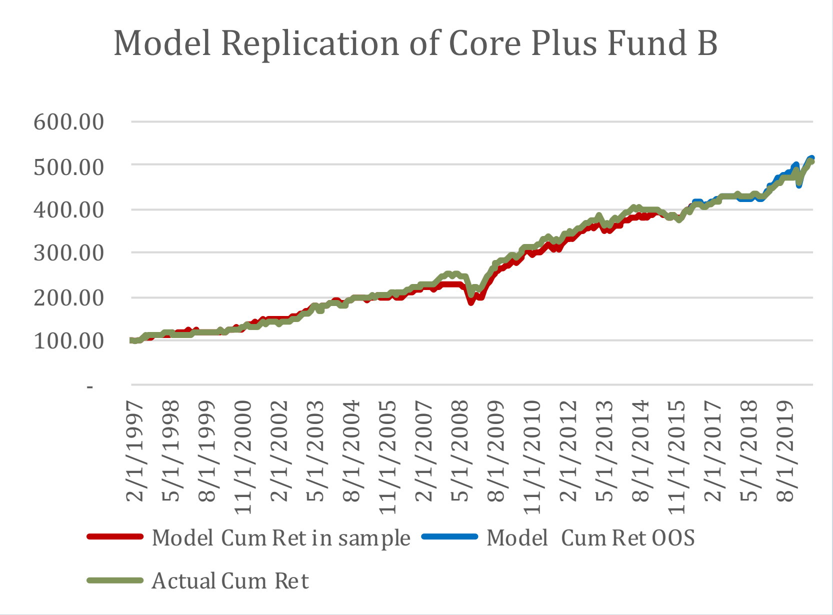
- With global rates so low, the reach for yield is going down the credit spectrum
- But this is **not free lunch**
- The yields of bond sectors are very closely related to their correlation to equity risk
- The reduction of the rate risk premium is causing bonds to carry even more equity risk



Returns for Most Multi Sector Funds are Driven by Beta

- Our proprietary model can replicate returns of top-rated Core Plus funds using just two credit factors (intermediate credit and high yield in once case, interm. credit and total bond market in the other)
  - Correlation of over 90% even during the Out of Sample (OOS) period (last 5 years)
- Most, if not all of the returns, are attributable to beta
  - Given low yields, lower fees using passive replication can have meaningful impact on returns
- Asset allocation changes are of modest, if any, value as risk is distributed to other credit classes, which are all highly correlated.

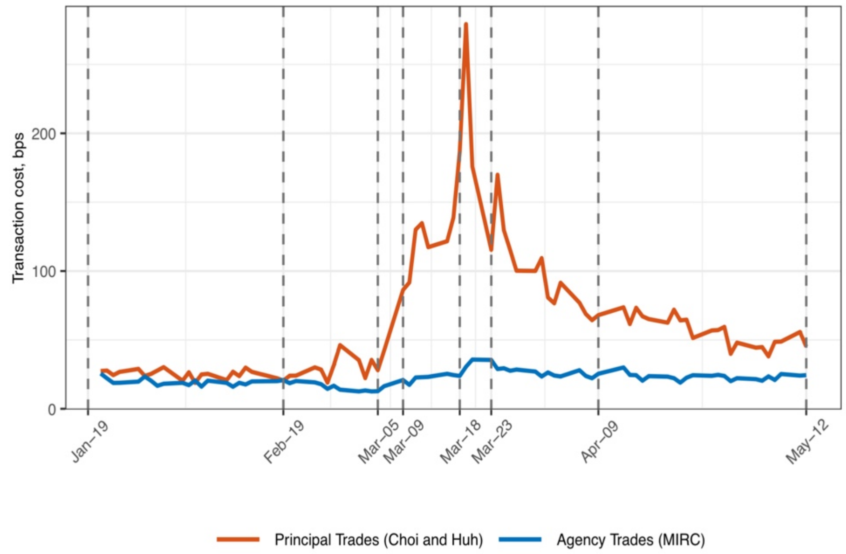




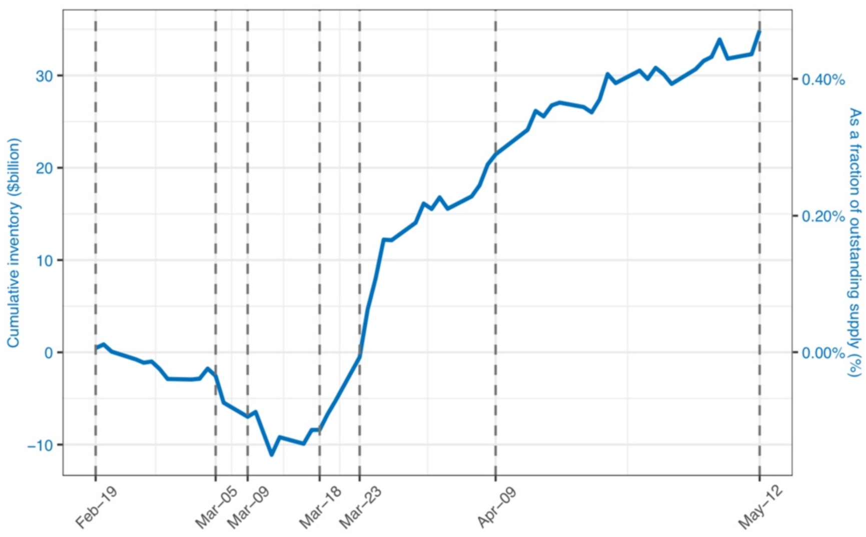
Spread Product Liquidity Evaporates During Crisis

- Corporate, sovereign and structured bonds lose liquidity during sell-offs – e.g. 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 soars



Dealer inventories shrink amidst outflows



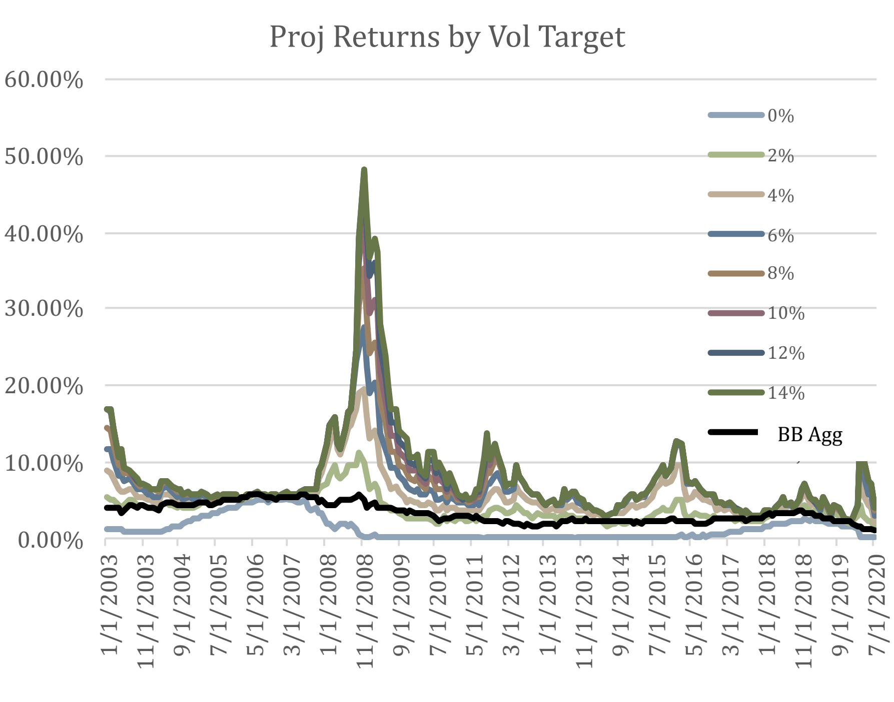
Source: Kargar et.al. Corporate Bond Liquidity During the Covid-19 crisis, NBER Working Paper No. 27355, June 2020

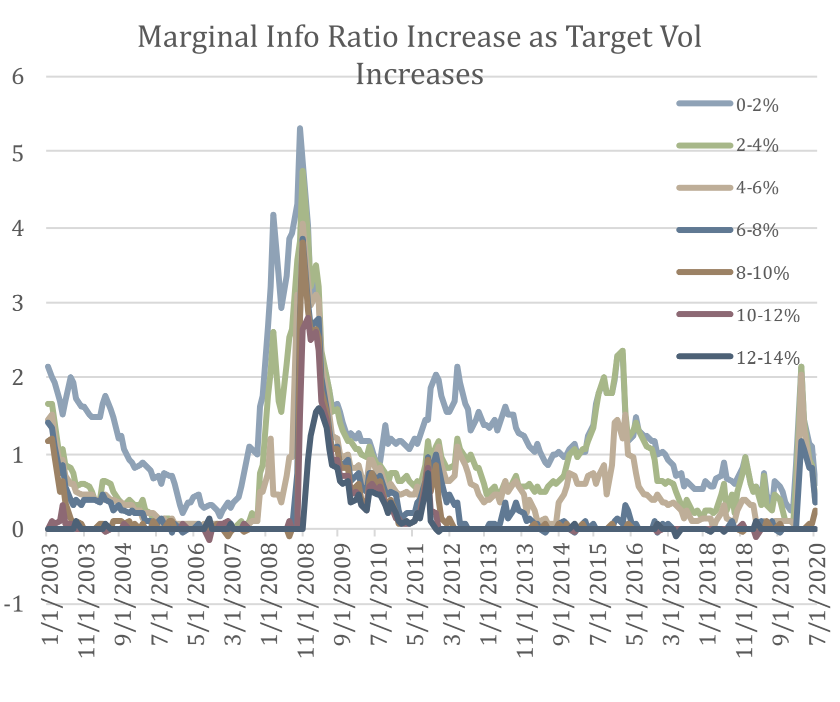
Towards solutions

VIABLE FIXED INCOME ALTERNATIVES

Dynamic Asset Allocation Model bases Risk Exposure on Marginal Information Ratios

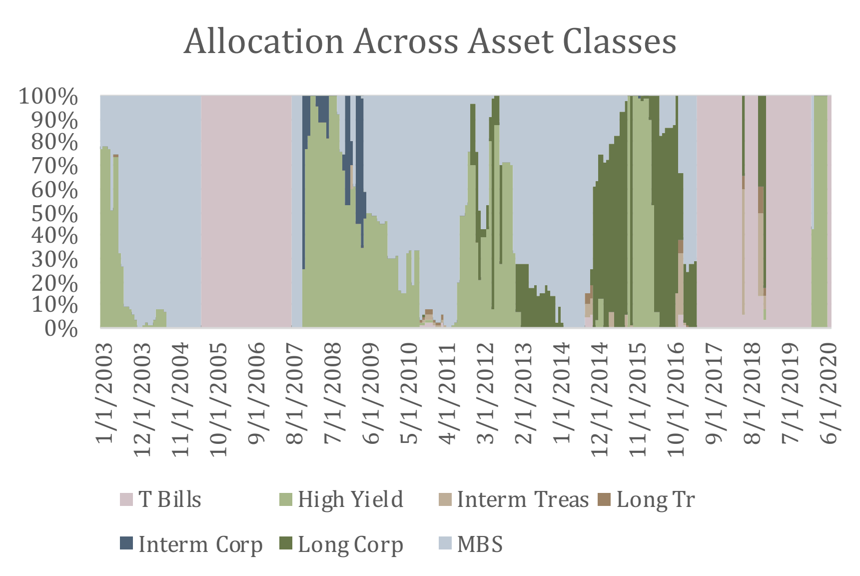
- Using projected returns shown earlier, optimal allocations are estimated for varying levels of risk
- Risk exposure is determined based on marginal information ratio per unit of risk (as shown on bottom graph)
- In many periods, little value in taking on additional volatility

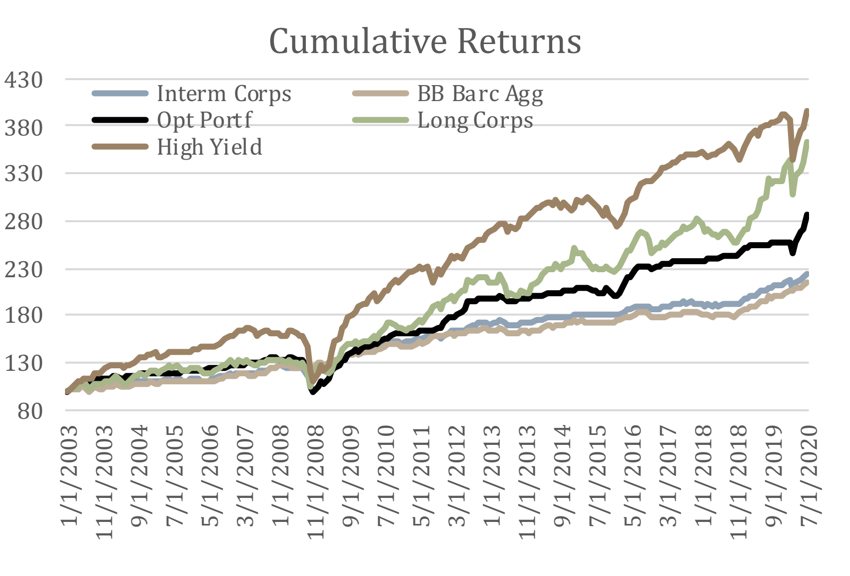




Traditional Fixed Income Alternative: Dynamic Asset Allocation Allows Risk Based on Marginal Info Ratios

- Minimum marginal information ratio set to 0.75
- Because projected returns are often low, risk appetite rarely exceeds a 6% target volatility.
    - When the credit market sells off sharply, the model buys high yield and corporates
    - When incremental return from taking risk is low, preferred options are MBS and T Bills.
- Model rarely invests cash in Treasuries
    - A variation of this model, incorporating Treasury Futures, can further improve risk-reward characteristics





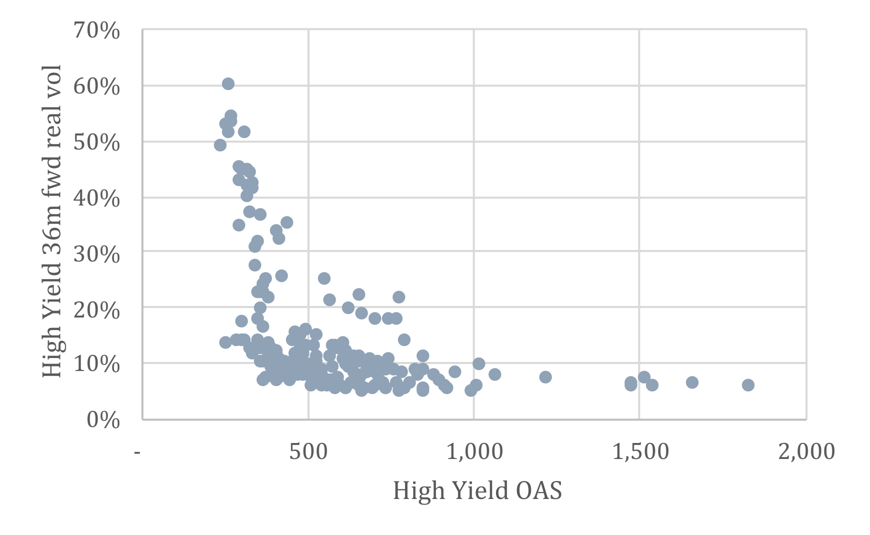
Developing Proprietary Model for Fixed Income Volatility

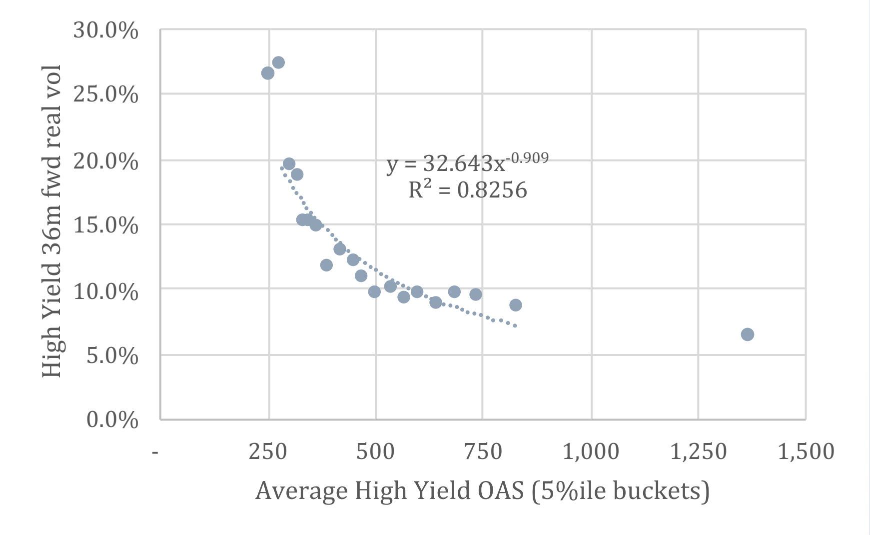
Volatility modeling in fixed income is path and level dependent

Future volatility is highest when spreads are low…

…leading to an inverse power law relationship between current spread levels and future volatility

More accurate projections for both return and volatility improves the asset allocation framework

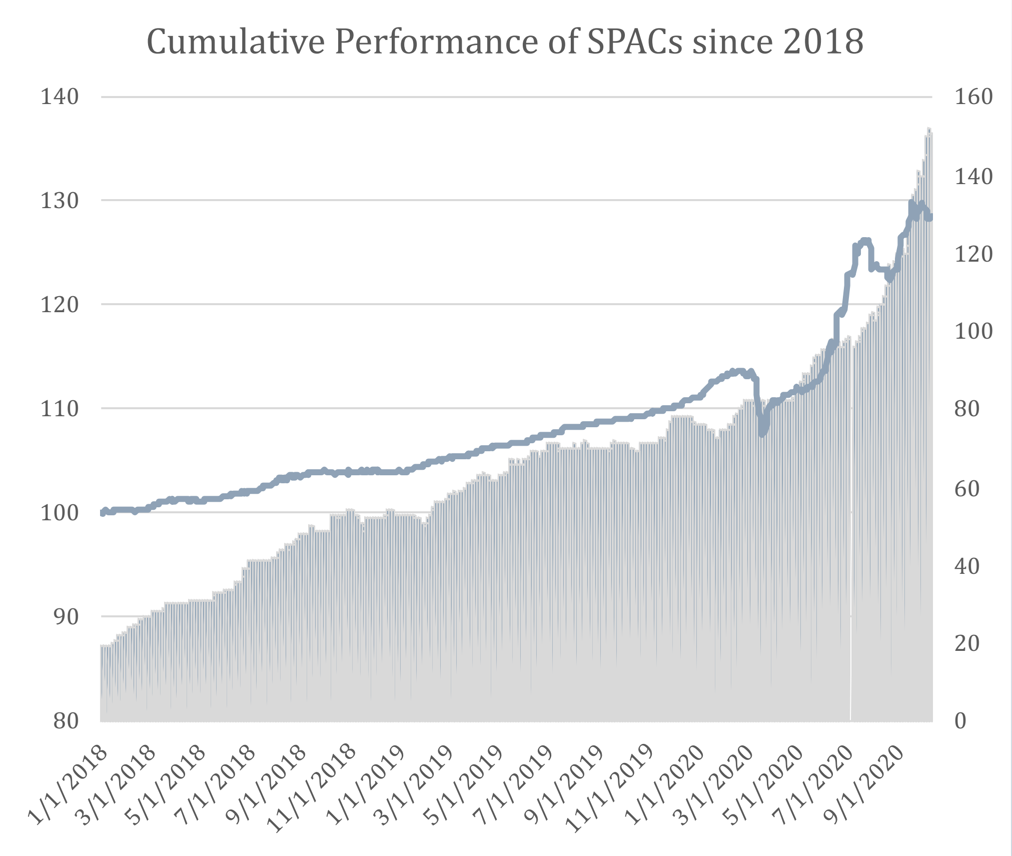




Source: Barclays

Front End Alternative
Producing safe returns at low durations (cash alternative)

- SPACs (if purchased and managed effectively) offer **principal protection** and offer upside when private companies go public through reverse mergers.
- Structure isolates **funds in trust** and is invested in liquid treasuries; upside comes from both potential for shares to appreciate as well as **warrants** that are granted to owners of SPAC units
- Risk and return characteristics can be customized through heuristics that determine disposition of assets at various thresholds.
- Principal protected tranche can also be delivered through a structured solution
- Holding period up to 24 months

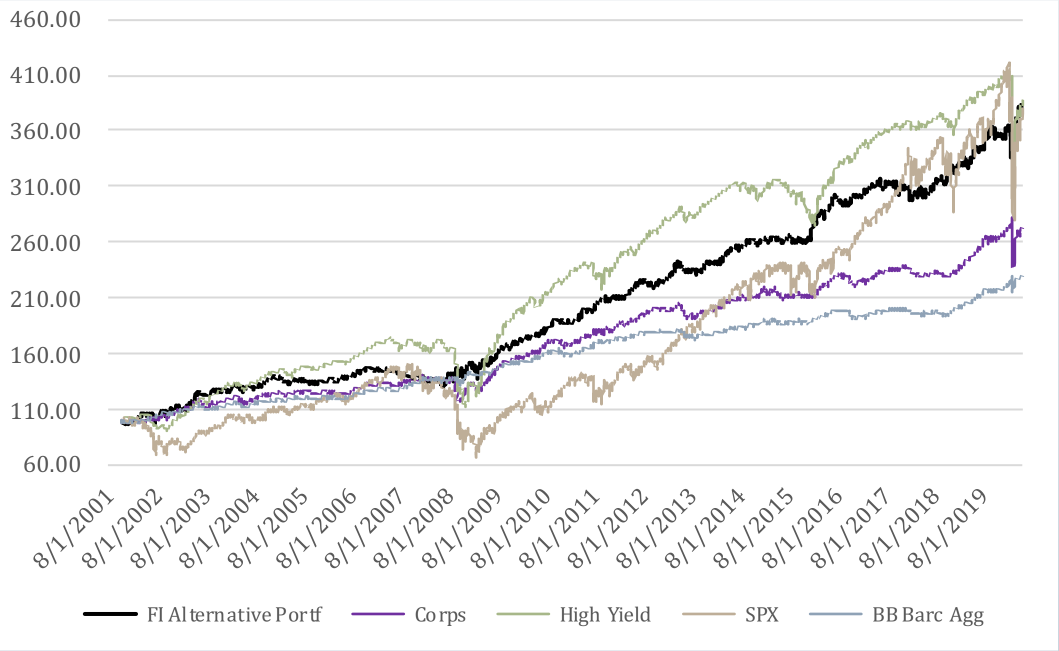


Absolute Return Alternative

With broad range of securities and low risk

- Fixed Income "killer" – similar risk to bonds with much better expected returns
- Product with limited exposure to market risk factors, and an attractive risk/reward profile
- Target projected returns of ~4% to 5%, with a risk of ~6% in USD (annualized std dev)
- Liquid constituents – monthly or shorter liquidity
- Customizable overall risk level, stock beta and duration beta

Historic Returns 2001-2020	***Annualized Avg Retn***	***Annualized Std Dev***	***Max Drawdown***
SPX	7.7%	15.0%	-55.2%
Corporates	5.8%	6.0%	-16.0%
High Yield	7.9%	10.6%	-35.3%
BB Barc Agg	4.7%	3.6%	-6.3%
FI Alternative Portf	**7.8%**	**6.2%**	**-11.5%**



Absolute Return Alternative Solution Elements

Combination of low-volatility strategies from multiple asset classes

- G10 Bonds
- Credit (Corporate, Sovereign, Structured)
- Common Stocks
- Inflation Linked Securities
- REITs and other real assets
- Derivatives – to tailor risk profile and hedge

Quantitative framework to control for key dimensions of risk while optimizing reward/risk

- 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

AI/ML for automation and low costs, using liquid assets

- Select from highly scalable asset classes
- Liquid instruments
- Automatable investing
- Intelligent decision making

Alternate Investment Solutions Platform

Low Cost Traditional Fixed Income

- New Core+ or Core benchmarks to separate alpha from spread beta – much harder to beat
- Smart beta through low cost sector allocation strategies – beats most active core/core+ strategies
- Optimal portfolios using asset allocation among fixed income sectors
- Avoid fees that can take up 20-40% of returns

Front End Alternative

- Front end solution – using products that have principal protection over 1-2 years
- The $200B SPAC market is associated with the highly volatile IPO market,
- It can be repurposed to create low-risk short-duration bond alternative with much higher returns

Absolute Return Alternative

- Target liquid asset classes including equities, futures, and liquid options
- Algorithms to identify and combine positive risk premia with low correlation to equity risk factors
- Combine return drivers with duration overlays and market and tail risk hedges to create overall strategy
- Goal: A liquid scalable fixed income substitute that mimics the historical characteristics of fixed income

Conclusions

Fixed Income Outlook

- Low yields offer limited value for long term investors
- Likely negative real returns compounded with risk of rate selloff
- Spread markets have limited room to rally

Are Fixed Income allocations too high?

- Poor projected returns and lower safe haven value for rates
- Spreads correlated to equities, with predictably low returns
- Active fixed income funds generate mostly beta

Some Interesting Alternatives

- Automated liquid low cost smart beta solutions
- Front end principal protected solutions
- Multi-asset absolute return alternatives

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