Equity Duration

Inflation and Interest Rates

AN ACADEMIC REVIEW

BY

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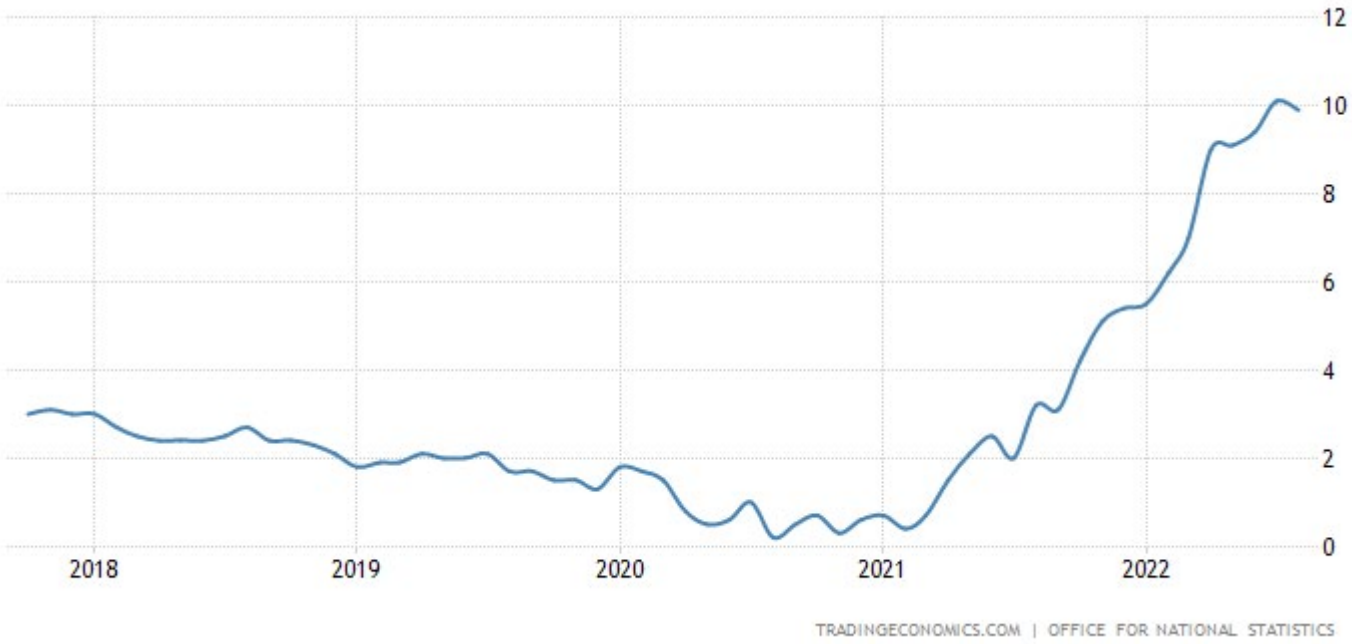
Duration

- Is the weighted average of the times of the cash flows.
- Fundamental concept in fixed income.
- A high duration bond is a bond with high interest rate risk.
- But how about duration in equities? What do we know about this?

State of the world
1. High inflation - Norway

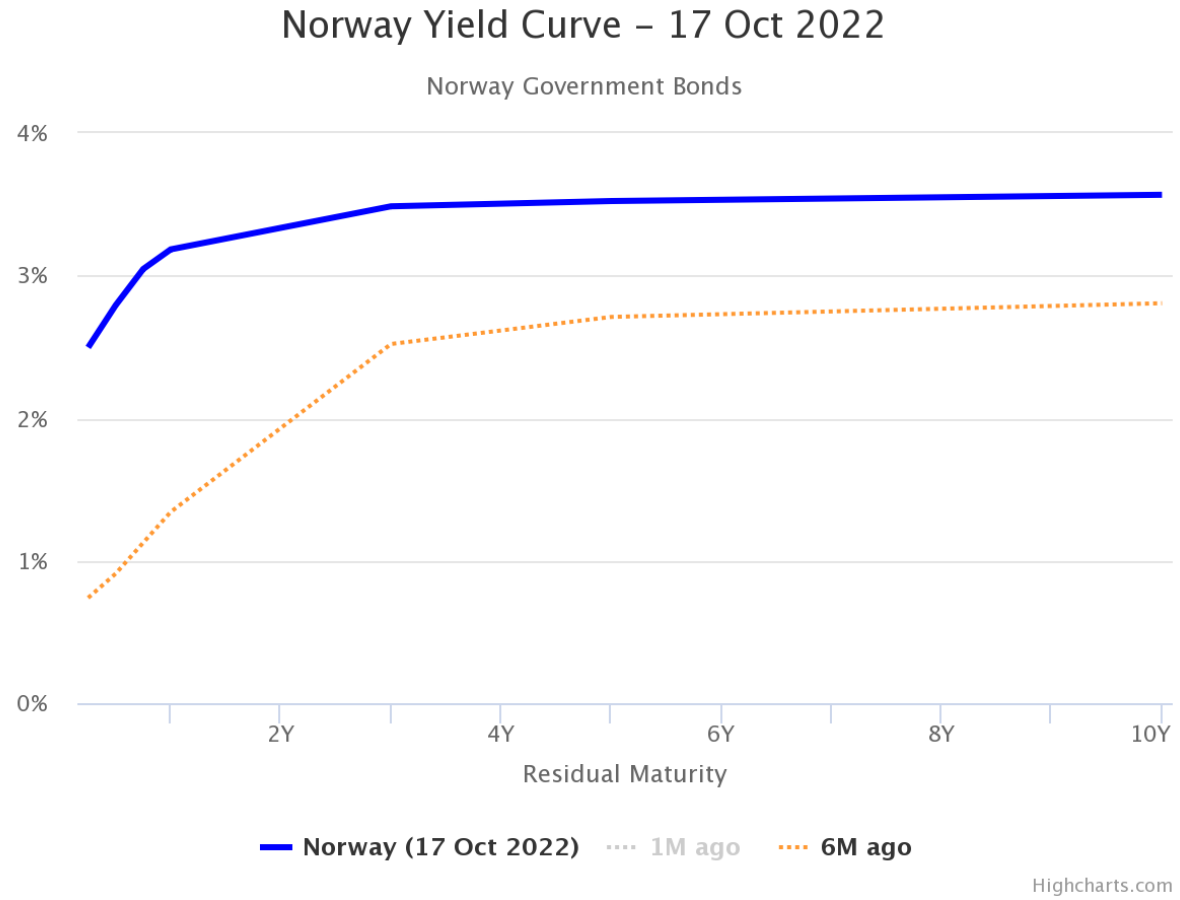
State of the world
1. High inflation - Germany

State of the world
1. High inflation - UK

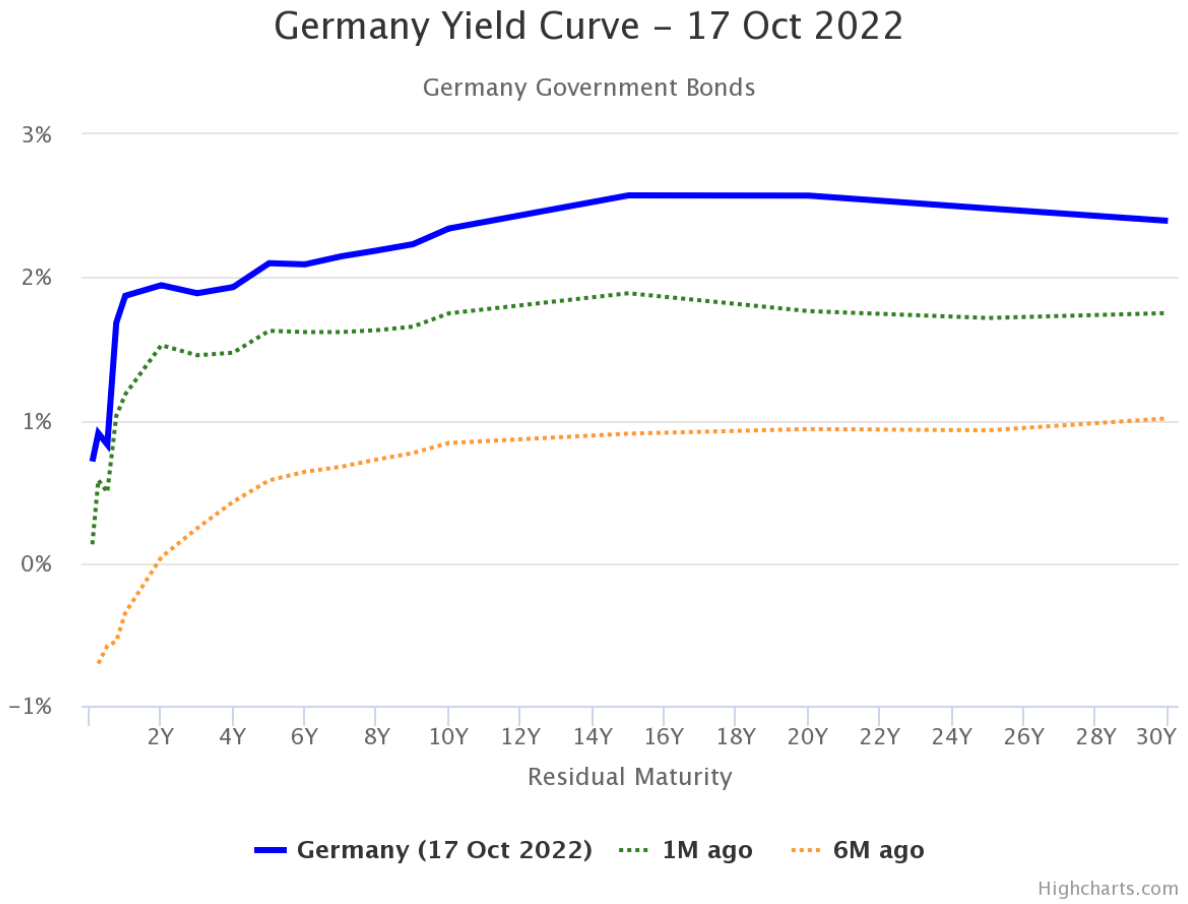


State of the world
1. High inflation - US

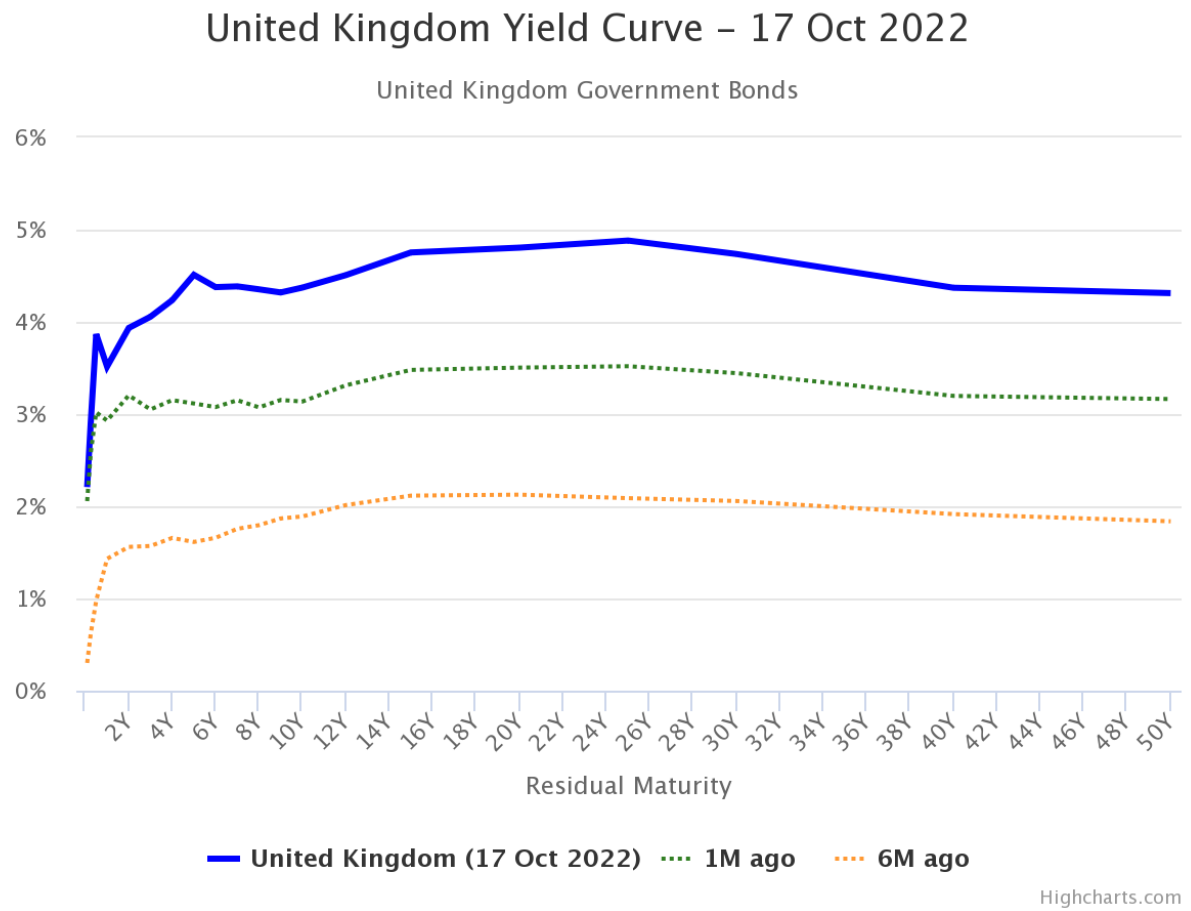
State of the world
2. Yield Curve in Norway



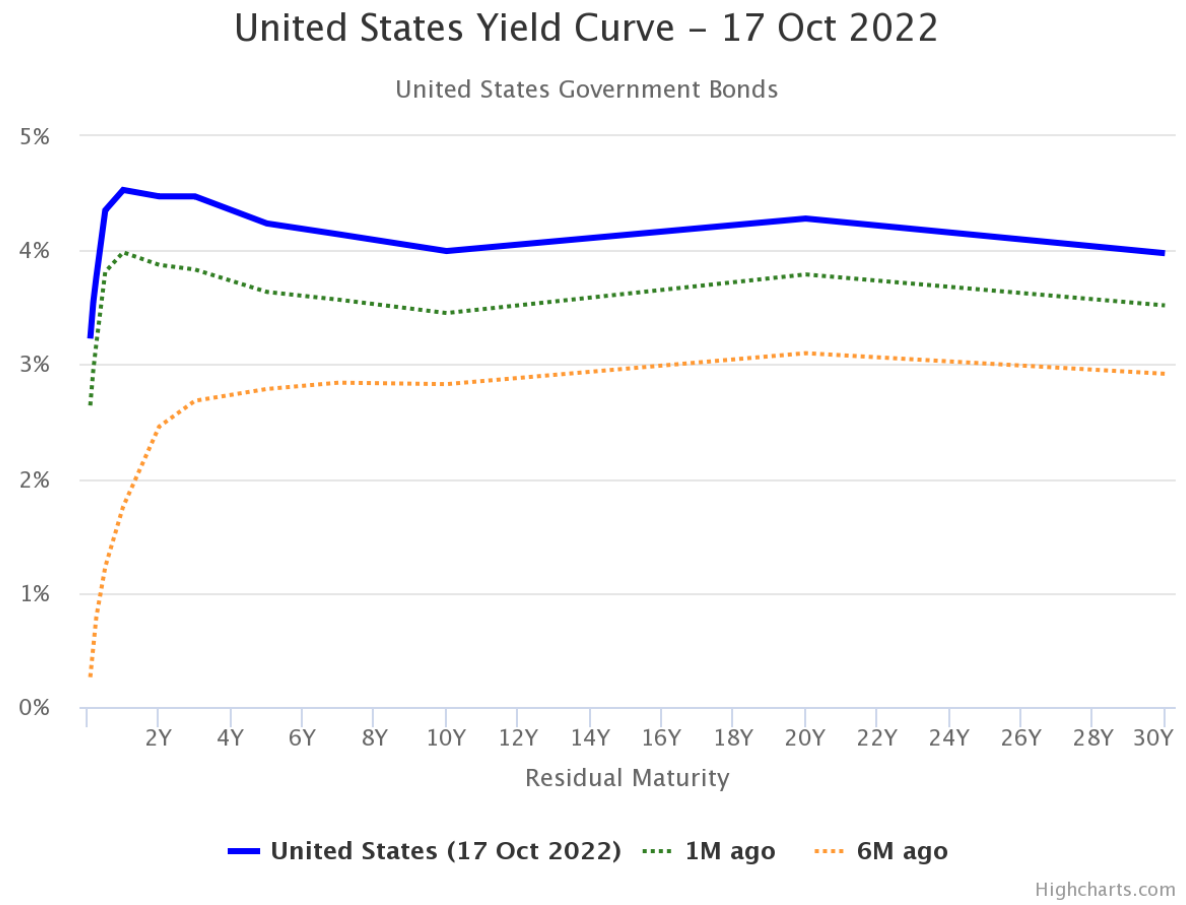
State of the world
2. Yield Curve in Germany



State of the world
2. Yield Curve in UK



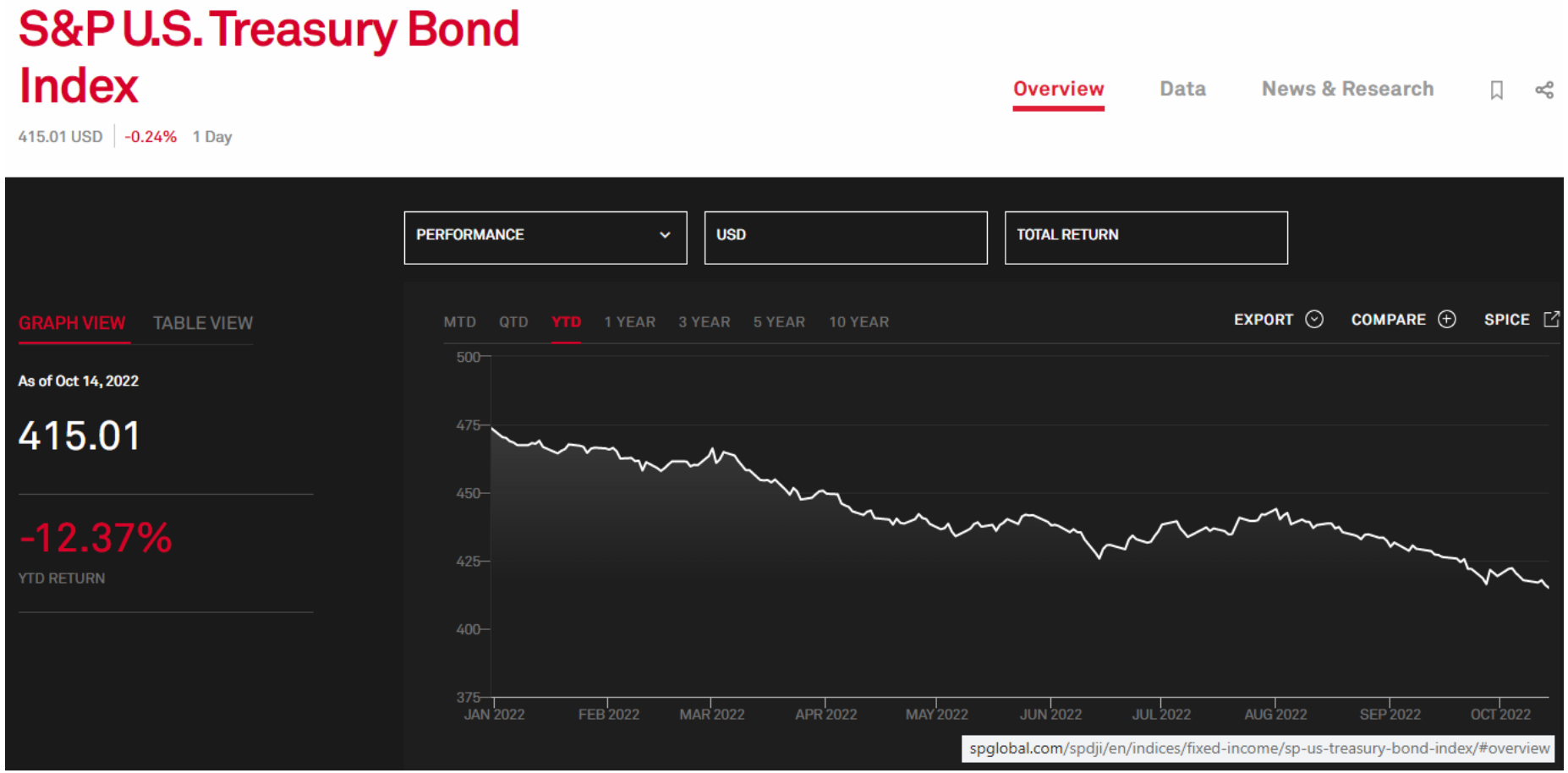
State of the world
2. Yield Curve in US



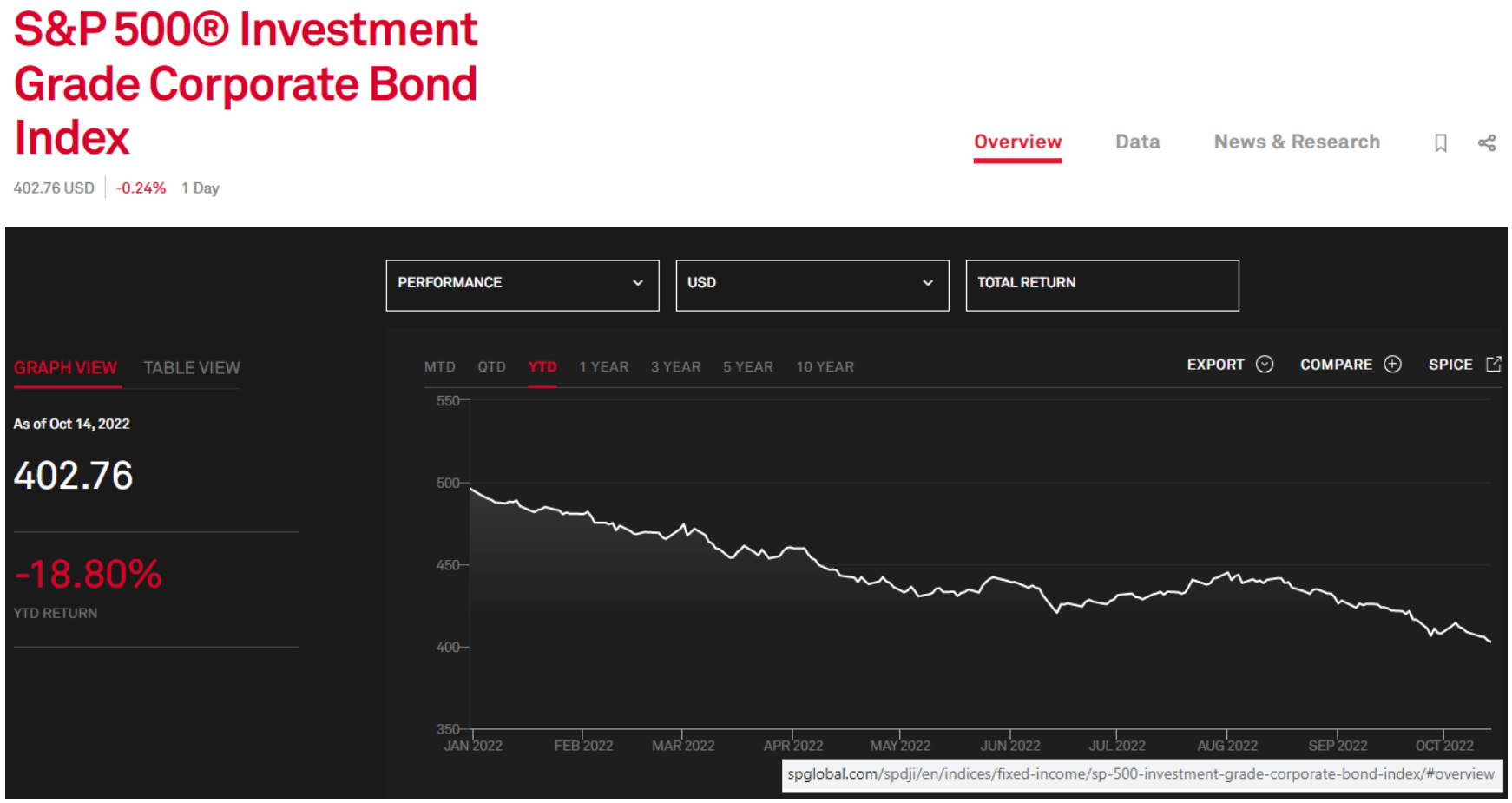
High inflation and bond returns

- High inflation is typically bad news for bonds for two main reasons
  - Bonds are claims in nominal terms
  - Central banks tend to raise interest rates to slow down inflation

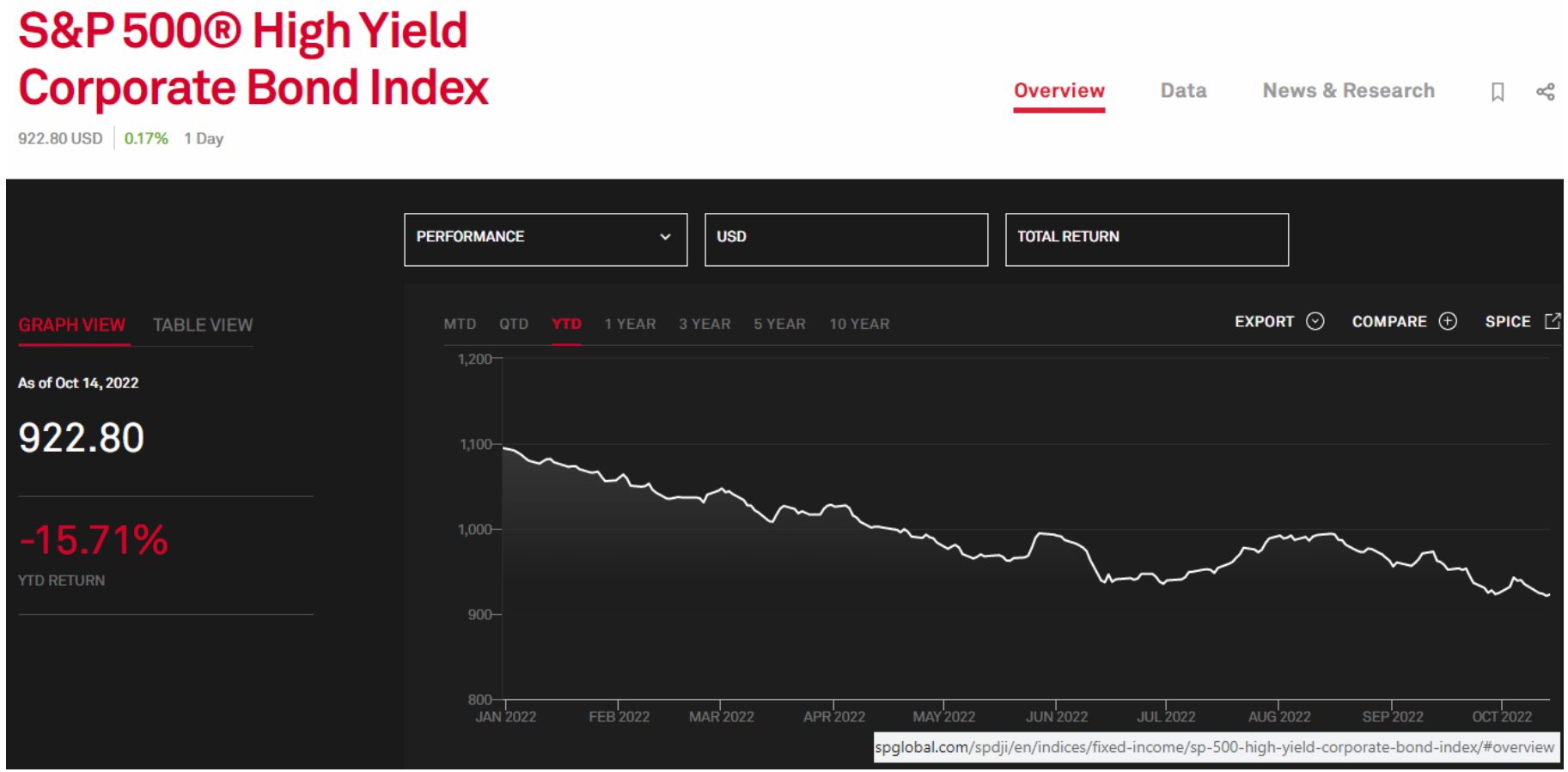
Bond returns - Treasuries



Bond returns – US Investment Grade Corporate Bonds



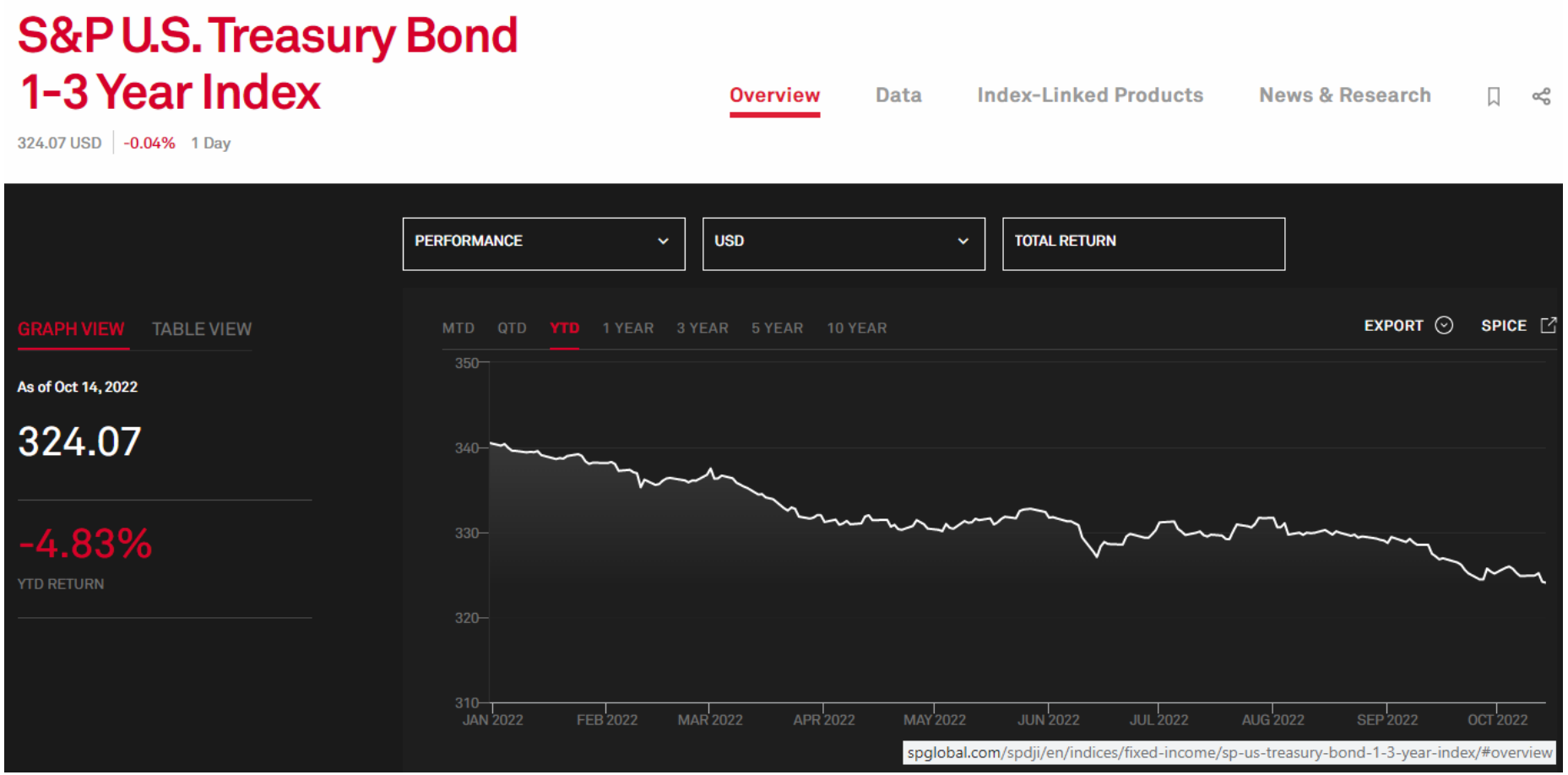
Bond returns – US High-Yield Corporate Bonds



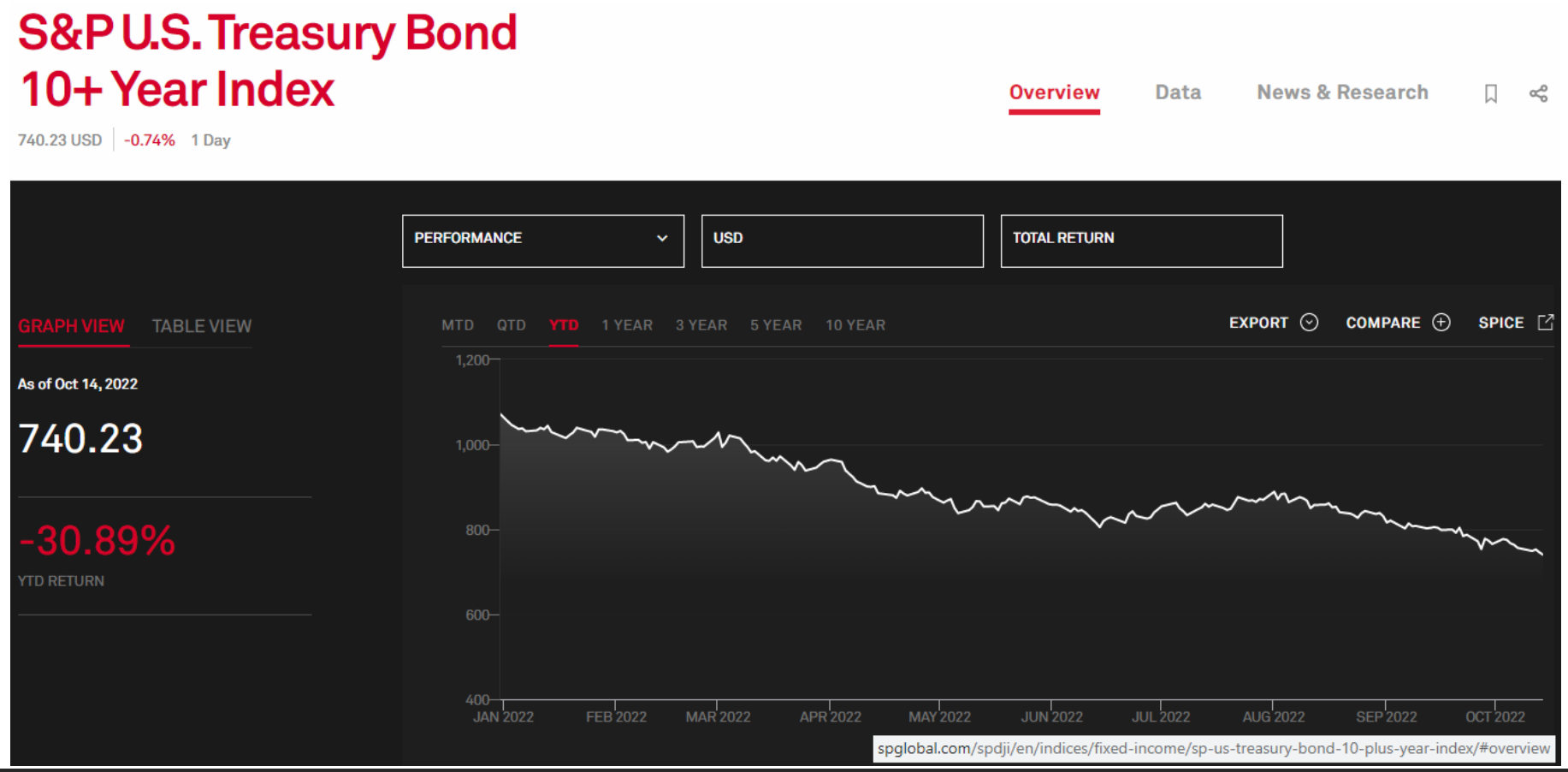
Duration and bond returns

- High inflation -> higher interest rates
- Higher interest -> affect more bonds with higher duration

Bond returns – Low Duration



Bond returns – High Duration



Bond returns – Low Duration

Bond returns – High Duration

Duration and asset returns

- Duration is a fundamental concept in fixed-income.
- It is also easily computed in fixed income.
- Can we come up with an analogous concept in equities?
  - Academic review on the issue

Duration - Equities

- Calculating appropriate risk premia to discount future cash flows is at the heart of investment decisions.
- But how do risk premia vary with cash flow maturity?
  - Intuitively, cash flows far in the future seem to be more risky.
  - leading asset pricing models predict this.

- Binsbergen, J. H. v., M. W. Brandt, and R. S. J. Koijen (2012). “On the Timing and Pricing of Dividends”. In: American Economic Review 102.4, pp. 1596–1618.

Binsbergen, J. H. v., M. W. Brandt, and R. S. J. Koijen (2012)

- They recover prices of dividend strips on the aggregate stock market using data from derivatives markets.
- The price of a k-year dividend strip is the present value of the dividend paid in k years.
- The value of the stock market is the sum of all dividend strip prices across maturities.
- They find that expected returns, Sharpe ratios, and volatilities on short-term strips are higher than on the aggregate stock market, while their CAPM betas are well below one.

Binsbergen, J. H. v., M. W. Brandt, and R. S. J. Koijen (2012)

- Downward sloping equity term structure at long maturities.
- Short duration cash flows offer higher compensation for risk than long duration cash flows.
  - This was not expected.
- WHY?

Weber, M. (2018)

- Weber, M. (2018). “Cash Flow Duration and the Term Structure of Equity Returns”. In: Journal of Financial Economics 128.3.

- He creates a novel measure of cash flow duration at the firm level using balance sheet data.
- The term structure of equity returns is downward-sloping: stocks with high cash flow duration earn 1.10% per month lower returns than short-duration stocks in the cross-section.

Weber, M. (2018)

- Why?

- Risk?
  - Factor models can explain only 50% of the return differential.

- Behavioral “story” – mispricing?
  - The difference in returns is three times larger after periods of high investor sentiment.

Weber, M. (2018)

Behavioral “story” - mispricing

- He argues that:
  - Analysts extrapolate from past earnings growth into the future and predict high returns for high-duration stocks following high-sentiment periods.
  - However, these expectations are not realized.
- He finds that, using institutional ownership as a proxy for short-sale constraints, the negative cross- sectional relationship between cash flow duration and returns is only contained within short-sale constrained stocks

Gonçalves, A. (2021)

Gonçalves, A. S. (2021). “The Short Duration Premium”. In: Journal of Financial Economics 141.3.

- Uncovers new empirical facts about the duration premium.
- Provide a novel explanation for why the short duration premium exists in financial markets.

Gonçalves, A. (2021)

- He develops and apply a novel firm-level measure of equity duration and find that, from 1973 to 2018, short duration stocks paid a large premium (8.6% per year in value weighted decile portfolios) relative to long duration stocks despite having lower market betas.
- Two new empirical facts:
  - the premium is long-lived (lasts for at least five years) and is strong even among large firms (market equity in the highest NYSE quintile).
  - controlling for duration, the value and profitability premia disappear.

Gonçalves, A. (2021)

- Why do we have this premium?
- The paper argues that long-term investors care about long-term wealth, and thus price:
  - market risk (i.e., variation in current wealth)
  - reinvestment risk (i.e., variation in expected wealth growth).

- Reinvestment risk: exposure to a deterioration in investment opportunities that affects the prospects of long-term investors when they reinvest their wealth in financial markets.

Gonçalves, A. (2021)

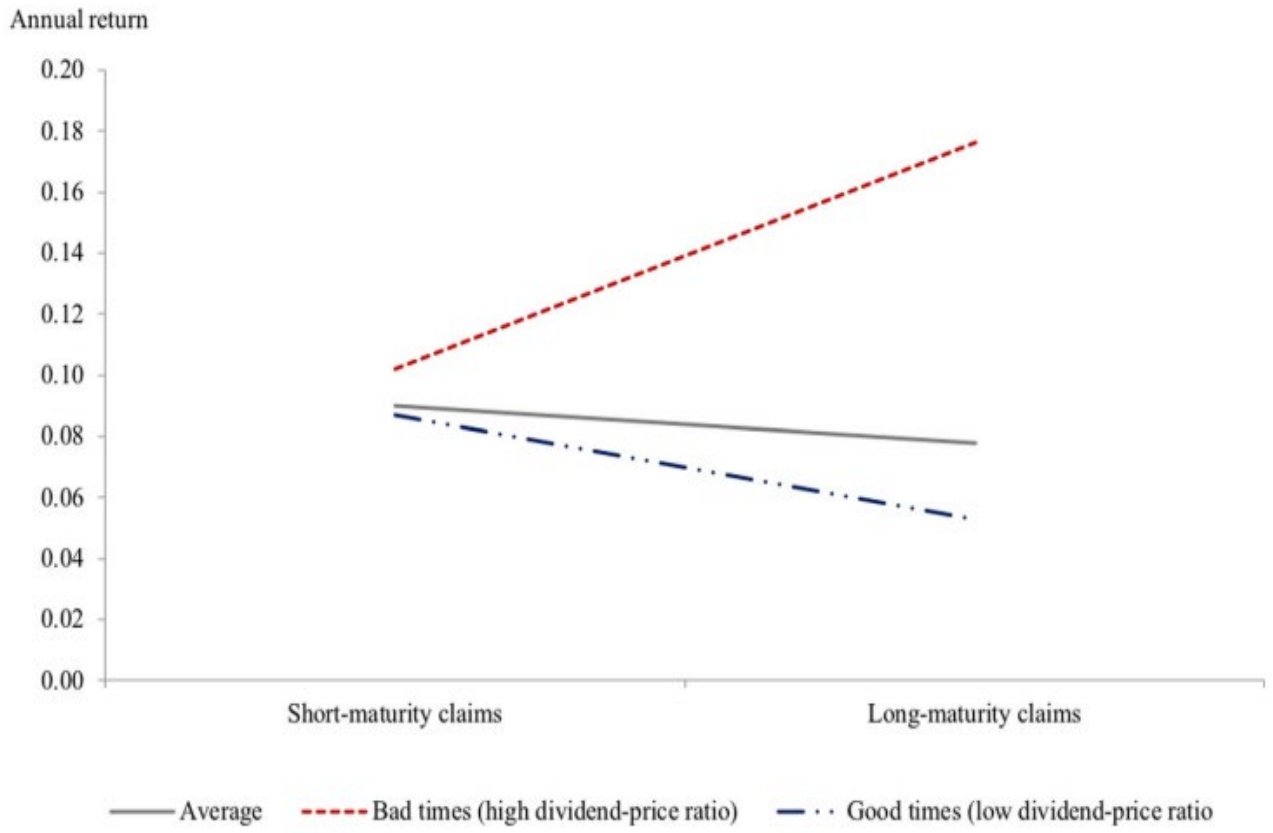
- The paper empirically shows that:
  - investors can only earn the short duration premium by being exposed to substantial reinvestment risk.
  - the reinvestment risk exposure is large enough to explain the short duration premium observed empirically.
  - the short duration premium is substantially larger in periods in which earning the premium requires higher exposure to reinvestment risk.
- Gonçalves, A. S. (2021). “Reinvestment Risk and the Equity Term Structure”. In: Journal of Finance 76.5 explores this issue further.

Gormsen, N.J.(2021)

Niels J. Gormsen, “Time Variation of the Equity Term Structure”, 2021. In: Journal of Finance 76.4.

- The paper studies the term structure of one-period expected returns on dividend claims with different maturity.
- The paper finds that the slope of the term structure is countercyclical.
  - In good times, long-maturity equity claims have 4% lower expected annual return than short-maturity equity claims,
  - In bad times, they have 5% higher expected return.

Gormsen, N.J.(2021)



Gormsen, N.J.(2021)

- A single risk factor can explain the average downward slope by making near-future dividends riskier than distant future dividends.
- But such a risk factor generally becomes more pronounced in bad times, in the sense that it commands a higher premium, which means that the risk factor makes the slope even more negative in bad times.
- To instead make the slope positive, we need an additional risk factor, in particular one that makes distant-future dividends risky during bad times.

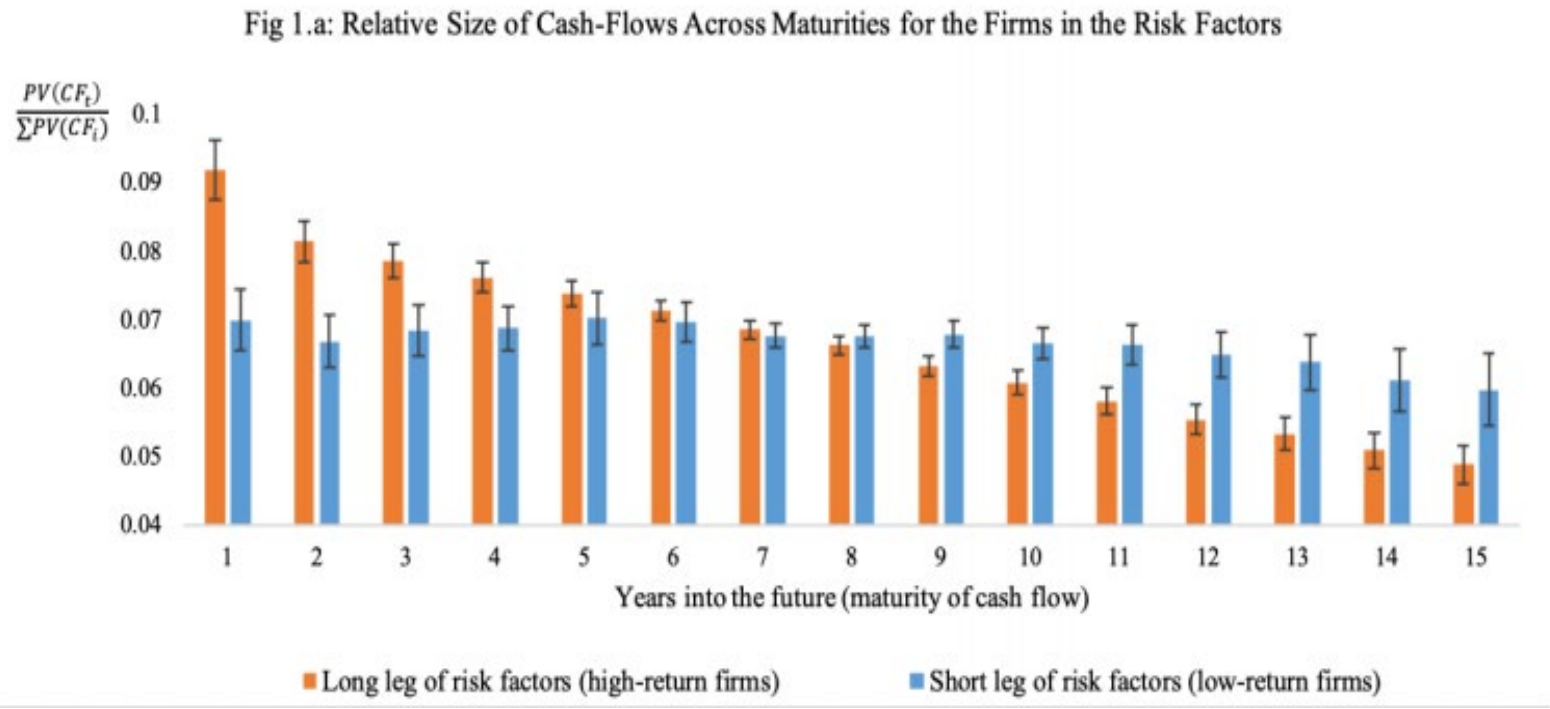
Gormsen, N.J. and E. Lazarus(2021)

Duration-Driven Returns, Niels J. Gormsen and Eben Lazarus, 2021

- They propose a duration-based explanation for the premia on major equity factors, including value, profitability, investment, low-risk, and payout factors.
- These factors invest in firms that earn most of their cash flows in the near future and could therefore be driven by a premium on near-future cash flows.
- The expected CAPM alpha on individual cash flows decrease in maturity within a firm, and the alpha is not related to the above characteristics when controlling for maturity.

Gormsen, N.J. and E. Lazarus(2021)

- They find that the risk factors invest in firms that have a short cash-flow duration.



Gormsen, N.J. and E. Lazarus(2021)

- Why near-future cash flows have high CAPM alphas?
- A natural explanation is that near-future cash flows are riskier than their market betas suggest.
- For example, Gormsen and Koijen (2020) show that the value of near-future dividends drops by as much as 40% during February and March of 2020 as the coronavirus crisis unfolds.
- If near-future dividends are highly exposed to such bad economic shocks, it may help explain why their returns are high relative to more-conventional measures of risk.

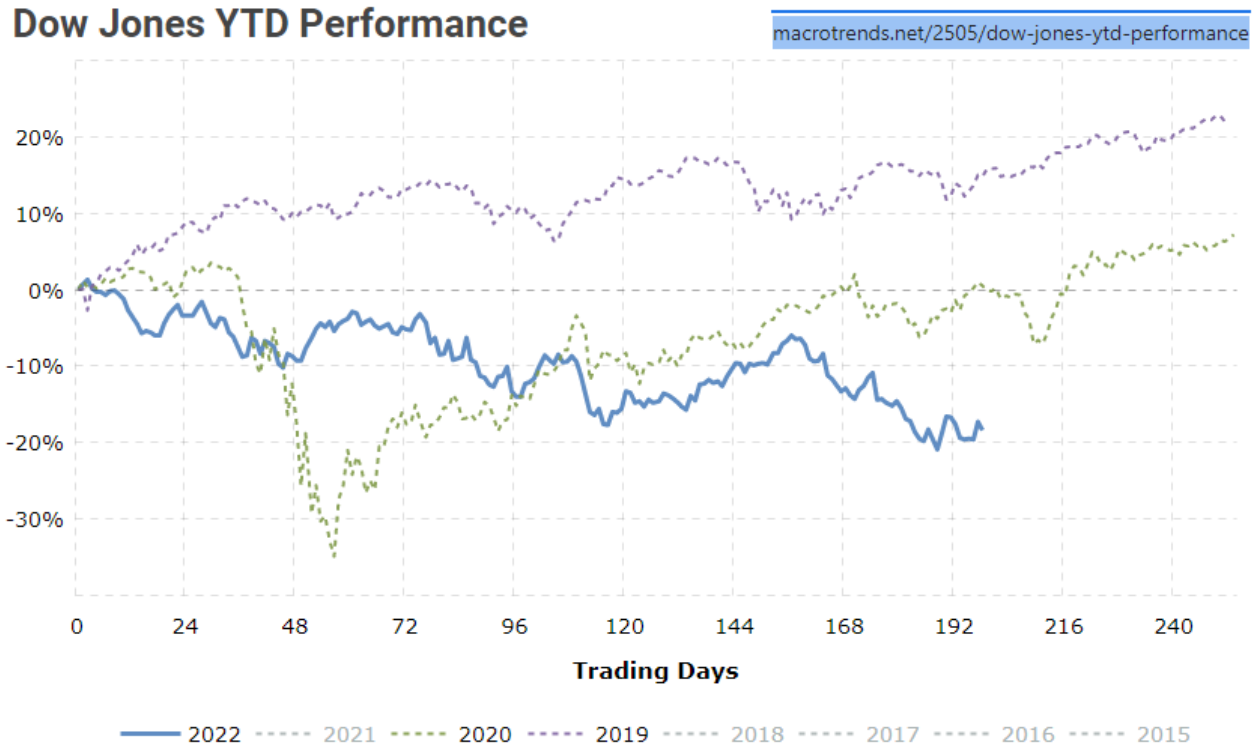
Gormsen, N.J. and E. Lazarus(2021)

- They address this possibility by studying the consumption risk in duration-sorted portfolios.
- They find that the market-adjusted returns on short-duration firms are positively exposed to consumption risk while the market-adjusted returns on the long-duration firms are negatively exposed to consumption risk.
- This finding suggests that consumption risk plays a role in the premium on near-future cash flows and thus the premium on the duration factor.

Big Picture

- Duration is a key concept in fixed income.
- But, it may be a key concept in equities too.
- It may be one of the reasons why we have…

Big Picture


Dow Jones YTD Performance
macrotrends.net/2505/dow-jones-ytd-performance
20%
10%
0%
-10%
-20%
-30%
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Trading Days
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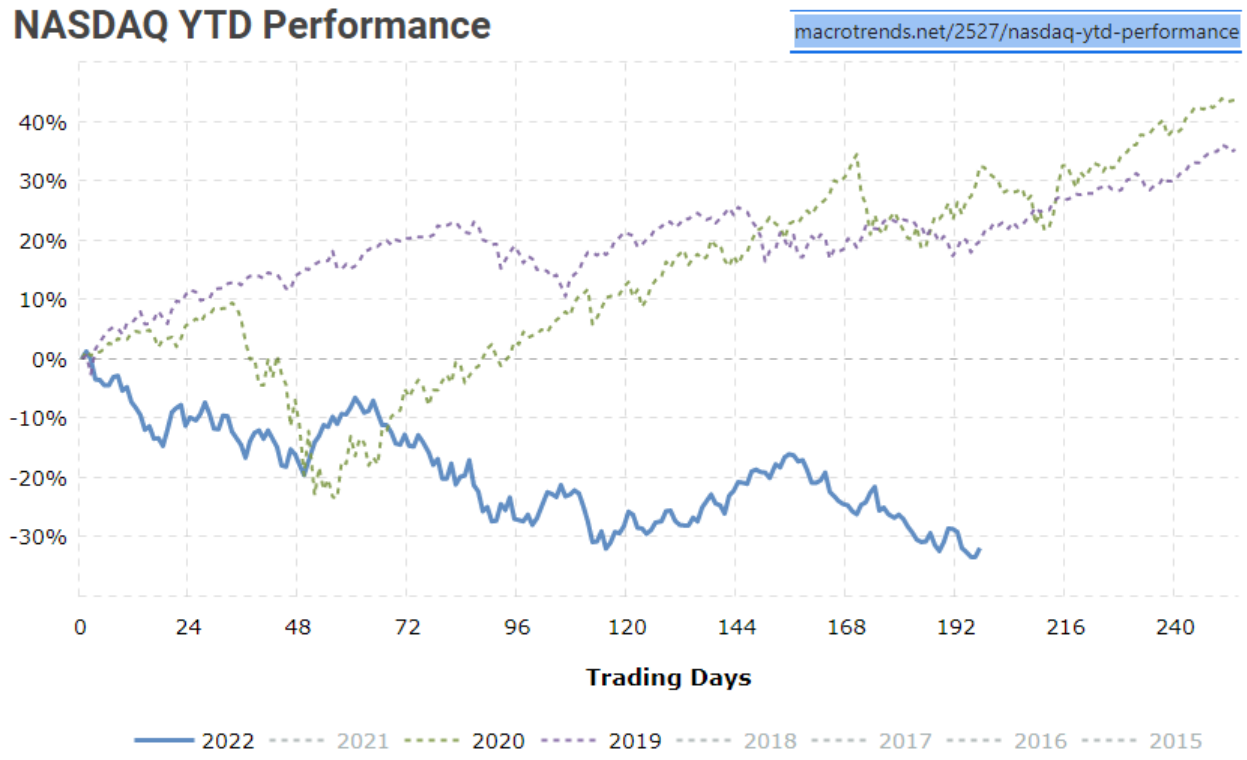
NASDAQ YTD Performance
macrotrends.net/2527/nasdaq-ytd-performance
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Trading Days
2022
2021
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