

## A

In equity portfolios, to balance the prospects of great long-term return with downside protection, investors are encouraged to look for asset classes that diversify their portfolios. Safe-haven assets like gold, government bonds, and derivative-based hedging strategies are a common choices. This thesis explores how well different subtypes of fixed income perform at this task. Do they mitigate downfalls? Or could they even work as a hedge?

The idea for this came from Erik Nordensköld at Citroneer. From his long career within wealth management, his real-world observations did not align with what he thought was commonly held beliefs around equities and bonds. He wondered if credit actually do protect against equity downfalls in the way that most believe? This was because he had experienced that the protection did not exist to the extent that is commonly assumed. Especially so when large falls in markets occur, then credits did not seem to protect but rather followed equities in the downturns. Of particular interest is the assertion that government bonds could be replaced by certain investment grade corporate bonds.

## B

To better understand how an asset might contribute to the risk exposure as part of a portfolio, VaR and ES are calculated for the asset. Since VaR and ES do not tell us when extreme scenarios will happen, the results will only state something about the asset in general. Even though it is not ideal, it will give us a general idea of how much downside protection we can anticipate in extreme cases. When combined with time-varying correlation, this is helpful. For instance, if the correlation is high, it is expected that a significant decline in equity prices will also result in a significant decline in fixed income prices, in the sense that both will experience, say, a 99th percentile event. Having a number on the magnitude of such a decline from the ES and VaR estimates, it is possible to somewhat anticipate how much protection one can expect.

## C

The relative comparison indicates that corporate credits are less protective against equity downside as compared to government bonds. However, it is challenging to draw any decisive conclusions since the relationship is not constant but rather unpredictable, and the magnitude of the link varies between marketplaces. In the UK and US, IG bonds do not appear to be a reliable substitute for government bonds, but in Germany, there does indeed seem to be some truth to the statements.

## D

The most conveying example of the effectiveness of government bonds over IG corporate bonds is the comparison between the correlations of US stocks to US IG corporate bonds and US stocks to the US government bonds index. The two graphs are almost identical, differing mostly in the magnitude of the downfalls during 2008, 2019 and 2022, all of which were times of major equity market drawdowns. No big difference during 20008 though, which highlights that the dynamics change over time.

So, for the assertions that IG bonds could act as a replacement for government bonds, this example refute that. However, the results are conflicting, and thus, conclusions from particular markets may serve as the foundation for generalizations about IG bonds' serving as an adequate replacement for government bonds.

## E

The general protective qualities of fixed income as compared to equities are apparent from the VaR and ES results. The tail risk of equities is, across all regions and for all models, larger. This means that fixed income should, in general, act as a shock-absorber for these portfolios. In this sense, some of the fixed income assets provide what seems to be very enticing downside protection in the most extreme cases, where the 99.9th percentile drawdowns are just slightly larger than the 99th percentile ones.

## F

The results show that investors cannot rely on simple heuristics to decide whether to include fixed income or not for downside protection, or as a hedge. While some findings support the effectiveness of fixed income, the results are divided. Overall, this paper supports the claim that fixed income can act as a shock-absorber for equity portfolios, in particular government bonds and some investment-grade corporate bonds.