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Investment viewpoint

A better 'airbag' makes CHF bonds attractive

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The first half of 2022 showed that it is possible to incur painful losses even with safe CHF bonds. After many years of excellent performance, the portfolio with all Swiss bonds, for example, lost over 15% at times – performing about as badly as Swiss equities.[1]

In this commentary, we examine the factors that influence the loss potential of risk-free bonds, noting that the given interest rate level acts like an airbag, cushioning losses.

Need to know

- The loss potential of risk-free bonds depends on the duration and the size of the assumed interest rate increase, as well as on the given rate level, especially for longer periods
- Figurately speaking, the greater the interest rate risk, the greater the burden on the available airbag. However, the length of the investment horizon is even more decisive for the expected future return
- A slightly longer investment horizon, not too much interest rate risk and additional credit risk can help to significantly improve the return prospects of CHF bonds over the next 5 years

Going against theory

The first half was particularly painful from an asset allocation perspective because safe bonds are normally expected to have a stabilising effect when stock markets fall. According to theory, interest rates should fall when stock markets collapse and thus lead to positive returns, at least for risk-free bonds. Here the exact opposite happened. Interest rates rose significantly and comparatively quickly due to higher-than-expected inflation figures. The situation was aggravated by the fact that interest rates were very low at the beginning of the year, so there was practically no buffer available to reduce the losses from rising rates.

[1] Past performance is not a guarantee of future results.

Comment on the return of a risk-free bond:

The Return R of a risk-free bond over a certain period can be approximately broken down into two components.

$$R \approx -\text{Duration} \cdot \Delta r + \text{“Income”}$$

The first component is the return contribution, which results from the change in interest rates (Δr). The size of this return component is independent of the current interest rate level and the length of the period over which the return of the bond is calculated. It is mainly determined by the interest rate risk (duration) of the bond and the extent of the change in interest rates (Δr). The second return component contains the “Income” that the bond generates in the assumed period. This contribution depends largely on the interest rate level and the length of the period relevant for the return calculation.

While the return of a risk-free bond for short periods (e.g., one day) is mainly determined by the first return component, the importance of the second component usually increases with longer periods and higher interest rate levels. In an environment with low interest rates, however, the second component cannot form a significant buffer, even for longer periods, to be able to reduce any losses from rising rates (from the first component).

Not every rise in interest rates leads to the same loss

The loss potential of risk-free bonds depends not only on the duration and the size of the assumed interest rate increase, but also significantly on the given interest rate level, especially for longer periods. A risk-free bond with a duration of 5 years loses 2.5% for an interest rate increase of 0.5%, according to the first return component – regardless of the interest rate level. The second return component, meanwhile, depends very much on the rate level and on the length of the period. If we assume a period of one year with the rate increase being evenly distributed over the year, the annual “income” results from the average of the interest rate levels at the beginning and end of the year. With an initial interest rate level of 0% and an even rate increase of 0.5% over the year, a contribution of about +0.25% results for the second return component. If, on the other hand, an initial interest rate level of 4% is assumed, the second component results in a contribution of about 4.25% in one year. The same rate shock of 0.5% thus leads to an annual loss of -2.25% in the low interest rate environment, while an annual gain of +1.75% results in the high rate environment. The initial rate level thus acts like an airbag and can cushion losses. The level of the interest rate determines the quality of the airbag.

In other words, in an environment with higher interest rates, it takes larger rate increases for the return of a risk-free bond to slip into negative territory. While, for example, the annual return of a risk-free bond with a duration of 5 years is always negative in the first case (interest rate level 0%) with rising interest rates, in the second case (interest rate level 4%) a negative annual return requires an interest rate increase of 0.89% and more. If, on the other hand, the duration is doubled to 10 years, the annual return at an assumed interest rate level of 4% is already negative with a rate increase of more than 0.42%. So, it is not only the size of the interest rate increase and the level of the interest rate that determine when the corresponding returns become negative, but also the assumed interest rate risk. Figurately speaking, the greater the interest rate risk, the greater the burden on the available airbag.

Extending the investment horizon almost works wonders in the current environment

However, the length of the investment horizon is even more decisive for the expected future return. The longer the horizon, the greater the contribution from the second return component, because the income grows steadily over time. The airbag for cushioning losses from rising interest rate and credit risk premiums is correspondingly larger and better.

The following table shows the annualised expected returns of a 10-year Swiss Confederation bond over an investment horizon of 5 years. The interest rate level (or the Eidgenossen yield curve) of 15 September 2022 serves as the basis.

10 year Swiss Government bond	Changes of the interest rate level in 5 years							
	-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
	1.83%	1.07%	0.36%	-0.31%	-0.93%	-1.51%	-2.05%	-2.55%

Source: Bloomberg, LOIM as at 20 September 2022. For illustrative purposes only.

If interest rates rise evenly by 1% over the next 5 years (or 0.2% every year), the 10-year Swiss Confederation bond loses approx. 0.31% on average every year. If, on the other hand, the duration is shortened to 5 years and a 5-year Swiss Confederation bond is assumed, an interest rate increase of almost 0.5% per year (or 2.5% over 5 years) is required to suffer an average annual loss.

5 year Swiss Government bond	Changes of the interest rate level in 5 years							
	-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
	1.20%	0.95%	0.71%	0.49%	0.27%	0.07%	-0.12%	-0.30%

Source: Bloomberg, LOIM as at 20 September 2022. For illustrative purposes only.

The long-term return expectations become even better if one considers a 5-year BBB bond instead of the risk-free 5-year Confederation bond. This has an additional average credit risk premium of about 2% today. This added compensation for the credit risk helps to absorb possible losses from future interest rate increases and possibly also further widening of the credit risk premiums. As the following scenario analysis for the assumed 5-year BBB bond shows, even if today's BBB credit risk premiums double and interest rates rise evenly by 3% over the next 5 years, this still results in an average positive annual return contribution of a proud 1.17%.

5 year BBB bond		Changes of the interest rate level in 5 years							
		-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
Relative changes in the spread levels in 5 years.	-50%	3.66%	3.41%	3.18%	2.95%	2.74%	2.53%	2.34%	2.16%
	0%	3.14%	2.89%	2.65%	2.43%	2.22%	2.01%	1.82%	1.64%
	50%	2.95%	2.70%	2.46%	2.23%	2.02%	1.82%	1.63%	1.45%
	100%	2.67%	2.42%	2.18%	1.96%	1.74%	1.54%	1.35%	1.17%

Source: Bloomberg, LOIM as at 20 September 2022. For illustrative purposes only.

A slightly longer investment horizon, not too much interest rate risk and additional credit risk can help to significantly improve the return prospects of CHF bonds over the next 5 years. The following two tables show the expected average annual returns for the SBI AAA-BBB Index and the SBI A-BBB Index over the period.

SBI AAA-BBB Index		Changes of the interest rate level in 5 years							
		-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
Relative changes in the spread levels in 5 years.	-50%	2.64%	2.18%	1.76%	1.38%	1.04%	0.73%	0.45%	0.19%
	0%	2.39%	1.93%	1.51%	1.13%	0.79%	0.48%	0.19%	-0.06%
	50%	2.29%	1.83%	1.41%	1.03%	0.69%	0.38%	0.10%	-0.16%
	100%	2.15%	1.69%	1.27%	0.89%	0.55%	0.24%	-0.04%	-0.30%

SBI A-BBB Index		Changes of the interest rate level in 5 years							
		-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
Relative changes in the spread levels in 5 years.	-50%	3.20%	3.02%	2.85%	2.69%	2.55%	2.42%	2.30%	2.19%
	0%	2.77%	2.58%	2.41%	2.26%	2.11%	1.98%	1.87%	1.76%
	50%	2.60%	2.42%	2.25%	2.09%	1.95%	1.82%	1.70%	1.60%
	100%	2.37%	2.18%	2.01%	1.86%	1.72%	1.59%	1.47%	1.36%

Source: Bloomberg, LOIM as at 20 September 2022. For illustrative purposes only.

The comparatively long interest rate risks (duration of approx. 7 years) and the low proportion of corporate bonds (approx. 25%) mean that the return cushion of the SBI AAA-BBB Index is somewhat smaller and is even eaten up in the event of major interest rate and spread increases. Meanwhile, the SBI A-BBB Index, with a duration of approx. 4.3 years and consisting almost exclusively of corporate bonds, does not show an average annual loss in any scenario over an investment horizon of 5 years.

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