

Title

How Inflation and 10-year Bond Yield Forecasting with Computer Science (AI) Could Support Pension Funds

Speaker/Company

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Abstract

Inflation and bond yields forecasting helps to regularly communicate with pension fund membership about future benefits compared to the future costs of living. Inflation as a Liability Risk has a strong impact on liabilities and benefit levels of active membership and pensioners as well as on interest rates. Additionally, the direction of interest rates has a big influence on the pricing of assets (esp. bonds, equities, and real estate). It means inflation has an impact on the pension fund's Total Risk. In Switzerland the inflation level after the finance crisis 2008 had been stable (on average over the period 2009-2021: the inflation rate was zero, 0%). Therefore, its current development has a strong impact on the "real" benefits of pension funds for active members and for pensions in payment. It would be very useful to investigate how active members and pensioners can be treated equally in terms of inflation and to make forecasts for these potential costs based on the prediction of inflation and 10-year government bond yields in advance. Scientific publications showed that forecasts for inflation, exchange rates, spot interest rates and other yields using Artificial Neural Network methods, provide very good predictions. Our forecasting results are based on Neural Network Autoregressive (NNAR) forecasting model (introduced by Prof. Hyndman and Prof. Athanasopoulos in 2018). The NNAR model is best suited for financial forecasting compared to the Autoregressive Integrated Moving Average (ARIMA) model.

Biography

PhD Ljudmila Bertschi is a qualified member of the Swiss actuarial association (SAV/SAA) and an accredited pension actuary of the Swiss chamber of pension fund experts (SKPE). She has a PhD in phys.-math. from the MSU and has worked in pension fund consulting for about 20 years in different Swiss and international consulting firms. She conducted a research study for the Federal Office of Social Security (2015), prepared many publications for international conferences as well as made presentations for Swiss chamber of pension fund experts (SKPE).

Dr. Mauro Triulzi is a qualified member of the Swiss actuarial association (SAV) and has a Dr. math. ETHZ. He has worked for about 20 years as a developer of actuarial tools and implemented the nested stochastic modelling for pension fund liabilities including mortality rates for ALM studies. Currently he develops different actuarial tools for local and international accounting valuations as well as pension fund administration services. Ljudmila Bertschi and Mauro Triulzi prepared and presented the EAA-Workshop on Oct 9, 2023 to this topic.
