

# Executive Summary

## Problem and Research Question

The yield curve is one of the most prominent instruments for forecasting the economy. Past literature has produced very promising results for predicting economic factors using the yield curve. However, as most literature has only used one spread, it has lost much information about the yield curve. One spread only includes the overall slope and does not consider the whole range of the curve. Additionally, very few studies have practically applied the prediction to the Swiss stock market. Thus, this thesis will address the empirical question of whether a market timing strategy based on the yield curve could generate an excess return in the U.S. and Swiss stock markets while including a Principal Component Analysis on the yield curve to improve the forecasting power.

## Methodology

To address the research question, continuous and complete yield curves are needed. Consequently, the curves are estimated in the first step of this thesis using the Nelson-Siegel-Svensson method to be decomposed with the Principal Component Analysis in the second step. With the individual components identified, the probit model is used to find the best fit with the stock market of the respective country over the period from 1994 to 2022. By dividing the dataset into two halves in the next step, the model is trained in the first half to be tested in the second one. The resulting factors are used to develop a market timing strategy, which is ultimately assessed using a backtest in the out-of-sample period.

## Results

Some results are comparable to similar studies, while others contradict them. In general, the results of this thesis can be divided into the following two sub-results. First, the resulting factors of the Principal Component Analysis could be applied to both stock markets with a certain fit. This fit is stronger for Switzerland at a horizon of 6 months than the best fit of 12 months for the U.S. Secondly, the backtesting applied to the out-of-sample period could not yield in any excess returns compared to the buy-and-hold strategy.

## **Conclusion**

The empirical results suggest that applying Principal Component Analysis in combination with the probit model has some explanatory power for the Swiss and the U.S. stock markets. However, it should be mentioned that the sample testing and forecasting methods are only estimates, and the future cannot be fully predicted. While there is some fit for certain combinations, additional studies should test other, more dynamic multivariate models or machine learning applications to take full advantage of the Principal Component Analysis. Nevertheless, this thesis' research has made an additional contribution to the existing literature. The results show that the prediction is very sensitive to the forecasting horizons and the dependent variables that have been chosen. Furthermore, the results cannot confirm what past studies, such as Liu et al. (2004), have found, namely that the best forecasting horizon for stock markets is a one-month horizon.