

# ABSTRACT

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This thesis aims to explore and develop approaches to infer the asset positions of managed futures funds and to further replicate their risk profiles. The approaches studied can be categorized into two classes, namely a regression-based, top-down approach, and a trend signal-based, bottom-up approach.

The replication problem for return time series is of general theoretical and practical interest. This requires, in particular, the specification of trading models and risk models to determine how the daily positions are adjusted based on market prices, risk and diversification indicators.

On the one hand, our top-down approach aims to replicate a given daily return series within a pre-specified investment universe by using regression methods to estimate position weights of individual instruments. The idea is to regress the time series of the strategy's returns against a collection of the returns of the pre-defined investment universe instruments by employing different rolling regressions. Then one can assess the results of varying regression methods and choose the optimal model based on the robustness of the estimators.

On the other hand, our bottom-up approach aims to construct a generic trend following strategy that captures the return and risk characteristics of the same benchmark. The method consists of three components. The first step concerns the trend signal generation using filter techniques. The second step is portfolio construction using a risk budgeting approach. Finally, the last step applies volatility targeting for each asset class and the entire portfolio. Similar to the first approach, there are a few alternative models available, and the parameters which best feature the performance of the given trend following strategy would be chosen as the optimal one.