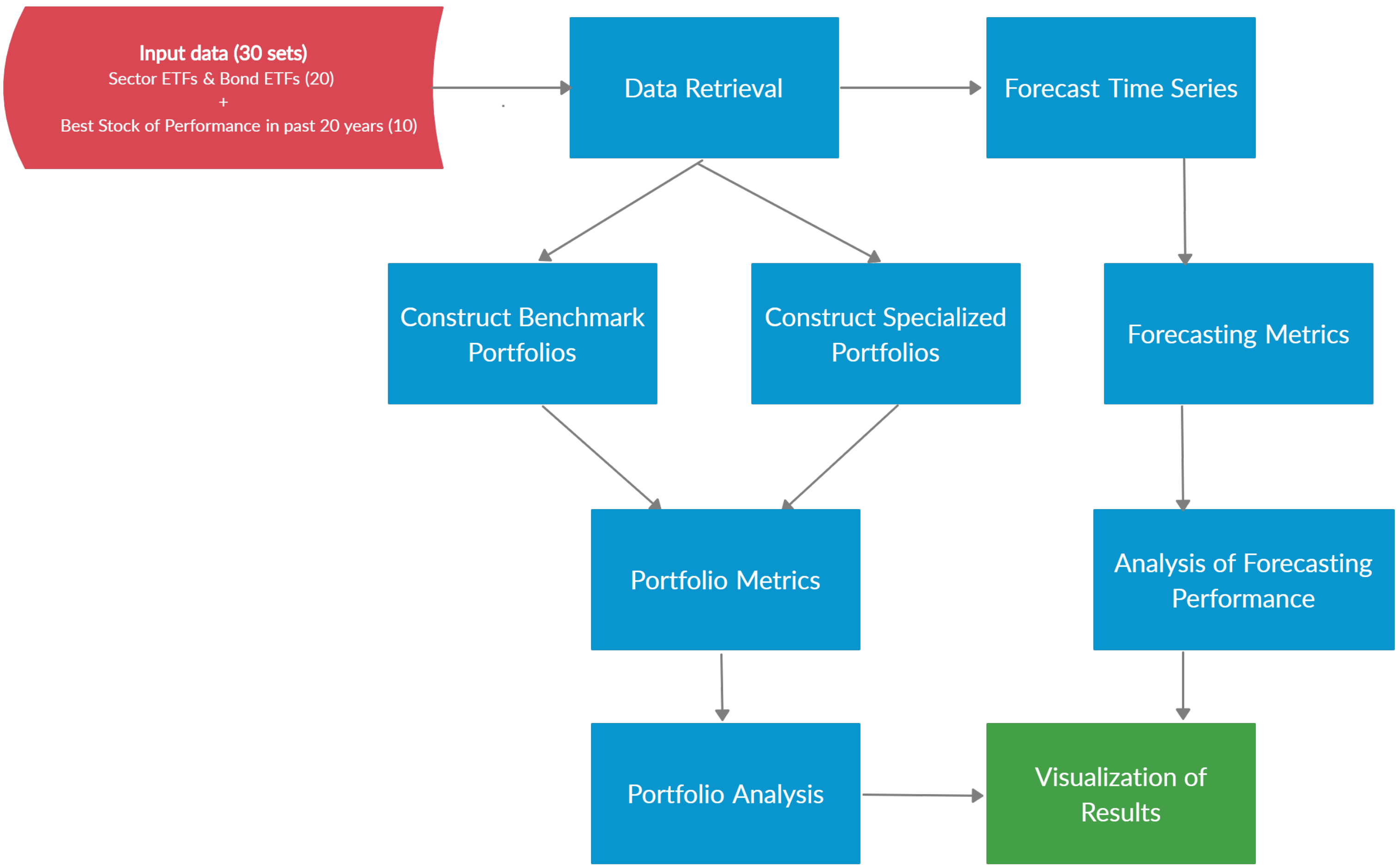

Data Retrieval

Data Members

-Training data (1999-2013) weekly data

Methods

-Normalization
-Remove null data

Forcast Time Series

Data Members

-Test data (2014-2020) weekly data

Methods

-Normalization
-Remove null data

Construct Benchmark Portfolios

Data Members

-Covariance and correlation matrix of training data

Methods

-Black-Litterman's (Inverse variance portfolio)
-Efficient Frontier (Markwits portfolio optimization)

Construct Specialized Portfolios

Data Members

-HRP: Covariance and correlation matrix
-Distance correlation network: Distance correlation matrix

Methods

-Hierarchical Risk Parity (HRP)
-Distance correlation network
Both methods cluster first, then use risk-based weight allocation method

Portfolio Metrics

Data Members

-Accumulative capital under each model

Methods

-Risk-based weight allocation method

Forecasting Metrics

Data Members

-Accumulative capital under each model

Methods

-Risk-based weight allocation method

Portfolio Analysis

Data Members

-Returns statistics
-Drawdown statistics
-Risk-return statistics

Methods

-Comparing indicators of each model

Forecast Performance

Data Members

-Returns statistics
-Drawdown statistics
-Risk-return statistics

Methods

-Comparing indicators of each model

Visualization of Results

Data Members

-Returns data
-Drawdown data (Processed returns data)

Methods

-Dendrogram Plot
-Histogram Plot
-Probability distribution graph
-Kamada Kawai method (Distance correlation network)
-Bar Plot