

# Evaluation of Machine Learning in Finance

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# Problems in Empirical Finance

Regressors can be:

Non-stationary - information now does not contain information about the future

Persistent - shocks in a series have effects that last for a long time

Cross sectionally correlated - regressors may seem important but are actually the result of a different underlying regressor

Endogeneous - omitted variable bias, etc

# Problems in Empirical Finance

Data is not robust - structural breaks are evident in returns data, and many regressors that once performed well do not anymore

Extremely large number of potential factors (regressors) that is still increasing: over 600 documented in the literature

# What is Machine Learning?

Statistical/Machine Learning refers to a vast set of tools for understanding data

Building statistical models for predicting outputs based on inputs

Find patterns in datasets

Examples of models: Ordinary Least Squares, LASSO Regression, Generalized Linear Models, Decisions Trees, Neural Networks

# Why apply Machine Learning in Finance?

Well suited for prediction

Better equipped to deal with large dimensionality

Capable of capturing non-linear transformations humans cannot realistically find

Already shown to have results in literature

# Model Overview

Returns are modelled as an additive error model

# Real World Observations

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# Simulation Design

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# Data Source

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# Results

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# Questions and Answers