Limetations G(z) does not depend on the individual stock i or the time periode t. It maintains its form over the entire timeperiode accros all stocks forexample to different stocks with different volatilty would have the same estimated paremeter value from a maco predictor. One could argue that each stock would have a different sensitveity towards forexample the Treasury bill rate. These senstivites are likely to be time dependent as well, forexample sensitives might differ in high and low volailty periods. Overall this could prove an issue when it comes to the models abilty to captuer volatilty clusering which often seen in fincanial data.

The first problem of g not depending on “i” could be resvolved by running the estimation procedure on every single stock such that we get stock spescific estimates. To overcome second problem one could consider a rolling window estimanion to put more weight on recent observation – which would help capture volatilty clustering in data.

In the arbitrage theroy one could consider “Z\_t” as a regressor containitn all relevant stock factors – excees reutns on the market portofolio, HML, SMB etc. , which is set to have a lineary correlaton with expected excees returns.

An alternative way of modeling this could be to run the estimation on every singel stock with some sort of rolling window estimation, such that old observation does

If we want to predict future observation, then it would be unwise to fit a model on the entire dataset. This would lead to overfitting with good prediction in sample, but poor out-of-sample predictions as bias would be too low and the variance to large. To overcome this, we use regularization in form of different hyperparameters that penalize the parameters and splitting our data set 3 groups training, validation, and testing. The limitation of this approach is that the validation sample fits are not truly out-of-sample as they are used for tuning, as it is input to the estimation. The results can however depend on the choice between training, and validation sets. An alternative could be to do a k-fold cross validation procedure by randomly splitting observations into k non overlapping sets and could overcome potential randomness in regards to the choice of the validation set.

never the case and will must likely lead to overfitting. Such a model would extremely good prediction in sample, but most likely break down out-of-sample.