GROWTH AT RISK : Evaluation of financial condition index

Summary of the Thesis :

Financial stress is complex to understand but it is important to follow its evolution. This thesis will be about the construction and the comparison of different financial stress indexes. First, we will introduce the financial stress and why it is important to create an index to measure it. In fact, countries need to be prepared at any time to a crisis. If they respond too late or too early, it will cost them a lot. A financial condition index (FCI) help to prevent those issues by giving timely warnings.

Our goal is to quantify and predict the effect of financial conditions on growth and on real economy. For this purpose, we will compute and investigate growth-at-risk (GaR), which is a new measure used in central banks of sensitivity of real economy to a change in financial conditions. At the same time, we would like to create a new financial condition index for the US using publicly available data. Finally, the performance of the new index is evaluated and compared to an existing FCI in a GaR framework.

Moreover, we will talk about the VAR method and the application of Bayesian technics. Then, it will be about the different type of factors model. We will introduce the cointegration problem that can arise while constructing a factor model and discusses the possible tests that can be done to avoid this issue. For the evaluation and prediction of GaR, the quantile prediction will be used. It will make a prediction on the value of a quantile for the GDP growth based on our index level and the GDP in the past. Finally, an application of a construction of a financial condition index is explained and is compared to the performance of an existing one. It has been shown that without creating groups for the variables we are not able to arrive to an index with good behavior. However, creating groups according to the type and content of the variables and estimating a dynamic index of the variables and sum the first factor of each group gives a good index. In fact, its dynamics is very similar to the NFCI and the results of the prediction according to the Bayesian method are very similar. For the quantile regression, the major difference between our index and the NFCI is for the highest quantile. As we are interested in the lowest quantile to determine a possible warning on the economic conditions, we can accept that our index is correct. There can be improvements that still can be done in the future with a better selection of variables or with a refined model such as adding a weight to the factors or using the TVP-FAVAR.