

Meeting Minutes

PWC ILab Teams Meeting on 26.01.2024, 11:30am

Agenda: Code Adjustments and first Visualizations of Outputs
Participants: PWC: Christian Koellich, Florian Moemken,
WU: Florian Pauer, Lukas Handler,
Students: Arina Suhodolova, Sophie Grill, Alexei Volodin,
Dinara Zainullina, Sebastian Herzog
Last Meeting: 12.01.24 at 11:30am
Next Meeting: Online Teams Meeting on 12.02.24 at 11:00am

Presentation of code adjustments and first visualizations

- Team*
- Included credit spreads for HY and IG credit indices, but data was quarterly, which produced problems with the PCA
 - reduced target KMO test threshold to 0.85 and the window size to 84
 - Performed rolling PCA and plotted variance explained by PC1 and PC2 (PC3 already explains only 5% anymore).
 - Conducted regressions with macro data on PC1 and PC2 separately. R^2 reduced to around 20%. Last time it was significantly higher, because we did not account for the correlations.
 - Showed significant macro variables for PC1 and PC2 which have p-value of less than 0.001 (mainly currencies)
 - Started first visualizations of the results in Shiny. Shiny is adaptive to the underlying R-Code.
 - Visualized Principal Components with a Drop-Down-Menu to choose which Components to plot. The team has ideas to expand the plots (include loadings etc.).
 - Visualized Variability explained by the Principal Components based on the Eigenvalues
 - Visualized KMO results for each variable with threshold 0.85 and window size 423
 - Visualized standardized time series of the financial data
 - Currently assessing how to visualize Summary Statistics

Suggestions and Adjustments to be made

- Koellich*
- Include BAMLC0A1CAAAEY (HY) and BAMLH0A0HYM2 (AAA) as credit index time series.
 - Include presentation slide for comparison of rolling PCA with a 84 window size and a 423 window size.
 - Include Fama-French Factors to PCA financial data or Explanatory Macro Data.
 - Conduct more regressions to understand the implications. The objective is not to predict Principal Components i.e. not aiming for a high R^2 , but understanding the macro variables.

	<ul style="list-style-type: none"> – Include factor loadings and the visualization of them. Factor loadings can be transformed into weights of the underlying time series to investigate the drivers for interpretation.
<i>Handler</i>	<ul style="list-style-type: none"> – Try univariate regressions with the variables that might be contributing.
<i>Koellich</i>	<ul style="list-style-type: none"> – Implement a reactive KMO visualization (Drop-Down Menu with different KMO thresholds) – Implement the KMO visualization with threshold and different time windows on x-axis instead of the underlying variables on the x-axis. – If based on KMO no variables are dropped and it has no connection/insight into our findings, exclude presented KMO visualization, which shows the KMO result for every time series variable for the same window. – Include drop-down menu for the visualization of standardized time series.
<i>Moemken</i>	<ul style="list-style-type: none"> – Try Box-Whiskers plots for Summary Statistics visualization. – Visualize Time Series together with explained variability of the Principal Components to find relationships.
<i>Koellich</i>	<ul style="list-style-type: none"> – Visualize Factor loadings in a similar fashion to the Principal Components plot already implemented by the team. – Aggregate time series into sectors and visualize relative contribution of the sectors.