Meeting recap: July 1st, 2025

**Holly:**

1. Found references regarding the incorporation of external covariates to time series modelling.
2. After some analysis, it has been concluded that their approach to exogenous data is different, since they consider an “additive effect” of the external covariates. In our case, we are considering that the external covariates have a “multiplicative effect” on the model.
3. Another distinction is that other models consider the exogenous variables as a time-dependent series of observations. We are considering the external information to be fixed and unchanged for each individual.
4. The use of exogenous variables for time series is described in the paper: *“VARX-L: Structured regularization for large vector autoregressions with exogenous variables.”*   
   Their cited literature and posterior citations do not consider covariate-dependent time-series networks.
5. Tasks:
   1. Continue literature review, to ensure the novelty of our approach.
   2. Write a preliminary summary of the literature, which describes related works and emphasizes the novelty of our approach.

**Jose:**

1. Wrote the skeleton for performing large-scale simulations on a high-performance computing cluster. Currently, the VAR and MultiVAR models are programmed.
2. Since GIMME estimates USEM and not VAR, it is unclear how to implement GIMME for simulation comparison. The Group-MultiVAR has GIMME as one of the compared methods, so there is a way of making comparison.
3. A function for cross-validation has been programmed for our proposed Sparse R-VAR method. Further exploration needed.
4. Tasks:
   1. Email authors of the G-MultiVAR paper to ask how GIMME was compared to other methods in VAR models.
   2. Complete code for simulation comparison, and run small examples to explore results.
   3. Decide on measurements of performance.

Gene:

1. Searched for potential sources of data in which a time-series structure could be dependent on additional exogenous covariates. Found a wide range of potential sources.
2. Found two datasets that may be of interest.
3. Tasks:
   1. Reach out to researchers to gain access to specific datasets.
   2. Continue to search potential public-access datasets.