Rolling window approach

**Model**

**TCI 1 = estimates from the vars package**

**TCI 2 and 3 = estimates from the Connectedness Approach package**

* All model runs are for VAR (1)
* Forecast horizon = 10
* I tested this from 1-10 and there was little material impact
* The shortest series (WCA, 68 data points) has been removed

**Model testing – Window size 50 🡪 200 (25 week increments)**

Serial Correlation Test

* Using the Breusch-Godfrey Test

A math equations on a white background

Description automatically generated

* Also sit from 0.11-0.21
  + The lowest being for the rolling window set to 100 weeks (0.11)
  + The highest being for the rolling window at 175

Therefore, increasing window length does not improve the model for this measure

Using the ES test, the results are slightly better

A math equations and formulas on a white background

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Normality Test

* Using the Multivariate Jacque bera test
* Fails for every model estimation across all window sizes – proportion of model runs where p-value < 0.05 = 1
* Q: Does this matter?
  + Is it reasonable to expect an 8 variable distribution to be approximately normal?

**Problem**

* Increasing window size provides no improvement for the model at all – the lowest occurs for rolling window 50 (proportion at 0.94)

Tomasz feedback:

Normality test is not a problem – not a necessary assumption for the model to work (but what are the implications?)

Finding best model

Both optimising serial correlation (bias?)

+

Forecasting measures more appropriate

Next steps:

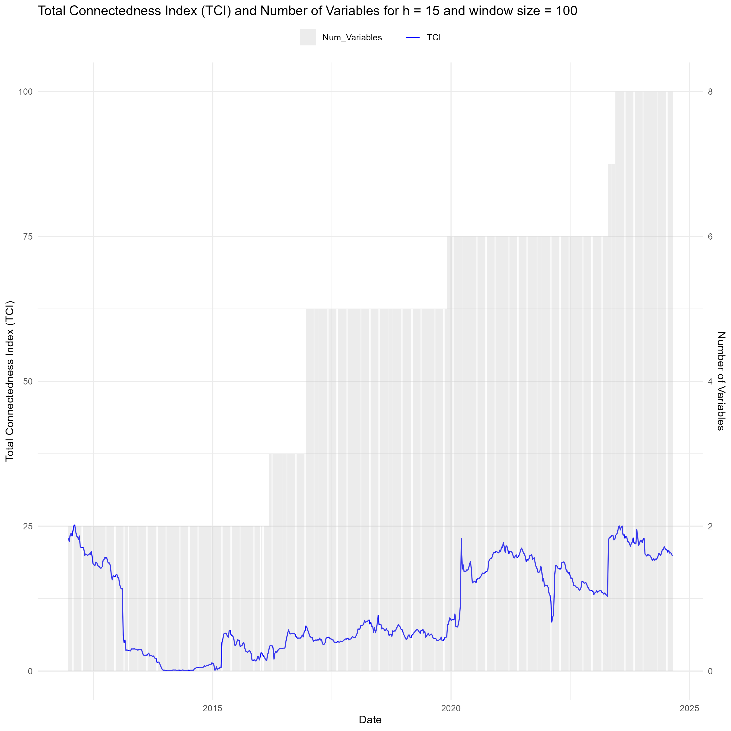
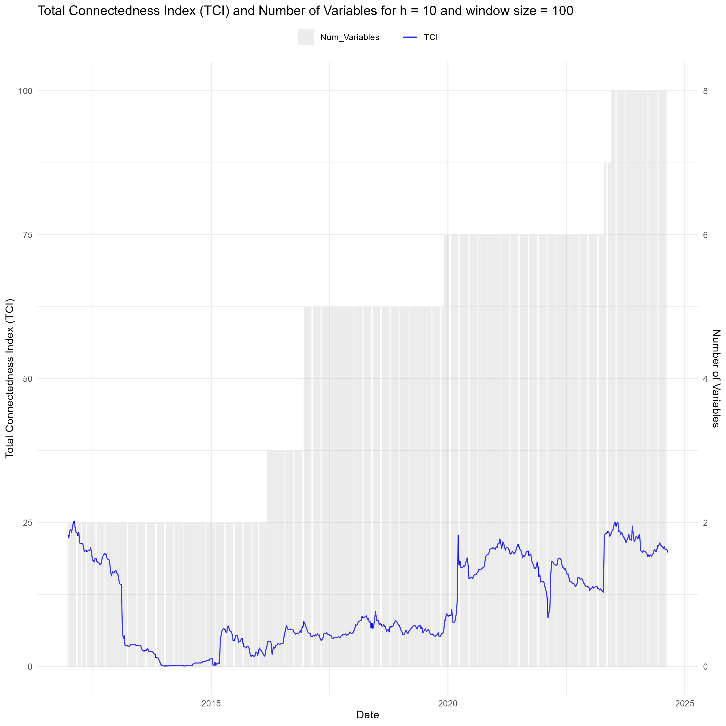
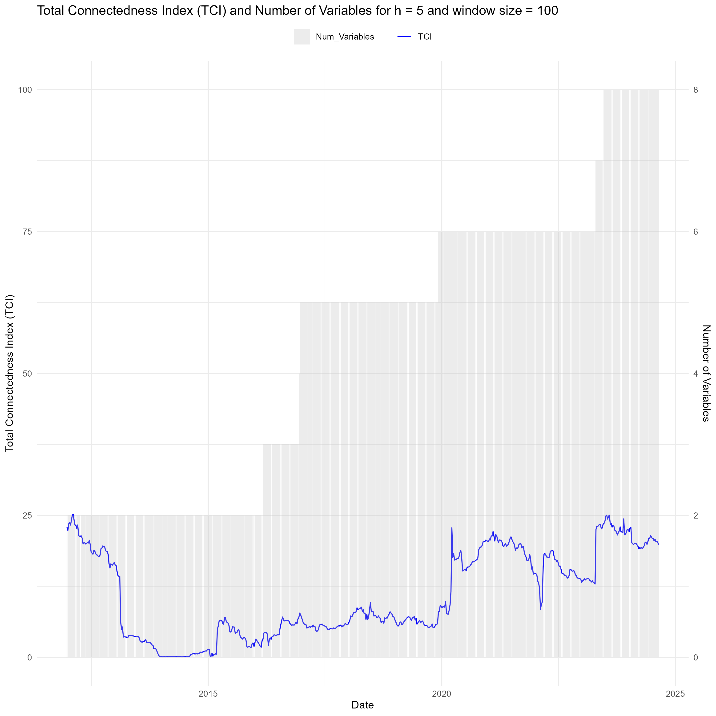
1. Can you propose narrative around the values
2. Does the package offer confidence intervals around TCI

Width of confidence intervals may be the issues

Compared to previous studies for similarities

**Model testing – h (1,10,15)**

A graph with blue lines

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**Questions**:

1. Problem moving from weekly returns / volatility to daily returns?
   1. Gives more data points for the rolling window analysis, but more volatile?

**Estimation**

Optimal settings

WCA removed

Window size = 100

H =10

|  |  |  |
| --- | --- | --- |
| Method | Proportion\_Serial\_Failed | Proportion\_Normality\_Failed |
| Method2 | 0.1138 | 1.0000 |

A graph of a graph

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