The plan

Hypothesis:

The wholesale beef price spike in COVID may have heterogenous shocks in the retail beef market, in magnitude, speed and length. If true, then this implies that using aggregate beef price series can be misleading, and that consumer preferences should be modelled in any analysis of level price effects or analysis of wholesale-retail or farm-retail price spreads.

1. Test for unit root for all time series
2. Test for structural break for all time series
3. Run Johansen test (trace test) for number of cointegrations
4. Run VECM with this number of cointegrating relationships
5. For each equation with retail price as the dependent variable, test whether the variables for wholesale prices are the same as the other equations with retail price as the dependent variable.
6. Get orthogonalized impulse response functions for all equations. Plot them out. Check to see if wholesale prices are affected contemporaneously by retail prices, which might imply that the causality is not merely unidirectional from wholesale to retail.