Assuming

A green and black math equation

Description automatically generated

Whether the variable is stationary not, we define being exogenous if it satisfies that and , thus and are not allowed to be contemporeanously correlated.

**HP2012**

For ,

**Kristensen 2014**

Since , then unit-root implies that

This is only defined for .

If is long memory then it implies that ,

Assuming then the factor is positive for all values such that,

For , i.e. such that approaches stationarity, then only

must be satisfied, which is the standard condition for second order stationarity of the GARCH(1,1) model.

A green and black math symbol

Description automatically generated

A math equation with black text

Description automatically generated with medium confidence