



# Python for Time Series

- Dickey-Fuller Test
  - In this test the null hypothesis states that  $\Phi = 1$  (this is also called a unit test).
  - If p value is low ( $<0.05$ ) we reject the null hypothesis, so we assume the dataset is stationary.



# Python for Time Series

- Dickey-Fuller Test
  - In this test the null hypothesis states that  $\Phi = 1$  (this is also called a unit test).
  - If p value is high ( $>0.05$ ) we **fail to reject** the null hypothesis.



# Python for Time Series

- Dickey-Fuller Test
  - It can be tricky to remember the null hypothesis, so later on we will develop a nice function that returns an easy to read report!



# Python for Time Series

- Granger Causality Tests
  - The Granger causality test is a hypothesis test to determine if one time series is useful in forecasting another.



# Python for Time Series

- Granger Causality Tests
  - While it is fairly easy to measure correlations between series it's another thing to observe changes in one series correlated to changes in another after a consistent amount of time.



# Python for Time Series

- Granger Causality Tests
  - This test is used to see if there is an indication of causality, but keep in mind, it could always be some outside factor unaccounted for!