Quiz 2

ECON312 Time Series Analysis

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Student _____ _____

first name last name

Grade _____ / 10

Instructions

- The quiz is closed-book.
- No electronic devices are allowed.
- Write your answers in a clear and unambiguous way.

  Good luck!

Question 1 (10 pts.)

We have following results of unit root tests for the following variables: W_t, Y_t, X_t, Z_t.

$$\begin{aligned}
\widehat{\Delta W_t} &= 0.757 - 0.091 W_{t-1} \\
(tau) &\qquad (-3.178) \\
\widehat{\Delta Y_t} &= 0.031 - 0.039 Y_{t-1} \\
(tau) &\qquad (-1.975) \\
\widehat{\Delta X_t} &= 0.782 - 0.092 X_{t-1} + 0.009 t \\
(tau) &\qquad (-3.099) \\
\widehat{\Delta Z_t} &= 0.332 - 0.036 Z_{t-1} + 0.005 t \\
(tau) &\qquad (-1.913)
\end{aligned}$$

1. Write down the Null and Alternative Hypotheses for the Dickey-Fuller tests above. (1 pt)

2. Sketch a graph for the distribution of the test statistic along with the rejection region(s). (1 pt)

3. Which series are stationary, and which are non-stationary at 95% level of confidence? (6 pts)

4. Determine the order of integration for each series. (2 pts)

Table 12.2 Critical Values for the Dickey–Fuller Test

Model	1%	5%	10%
$\Delta y_t = \gamma y_{t-1} + v_t$	−2.56	−1.94	−1.62
$\Delta y_t = \alpha + \gamma y_{t-1} + v_t$	−3.43	−2.86	−2.57
$\Delta y_t = \alpha + \lambda t + \gamma y_{t-1} + v_t$	−3.96	−3.41	−3.13