Assignment 1 : EII3005 – Financial Econometrics
Semester 1, Session 2024/2025
**Date of Submission : 22 November 2024**
Save your assignment as "Assignment1_[Yourname]" in .doc or .pdf format, and submit to
aminhaniff@um.edu.my

_____

Title: Analyzing the Global Financial Crisis with Univariate Models

Objective:

To evaluate and interpret the best-fitting model for MSCI USA Daily Index Return data across
three different phases of the Global Financial Crisis: pre-crisis, crisis, and post-crisis. The goal
is to understand which model (ARMA, ARCH, or GARCH) best captures the data's
characteristics in each period and to interpret the implications for volatility and market stability.
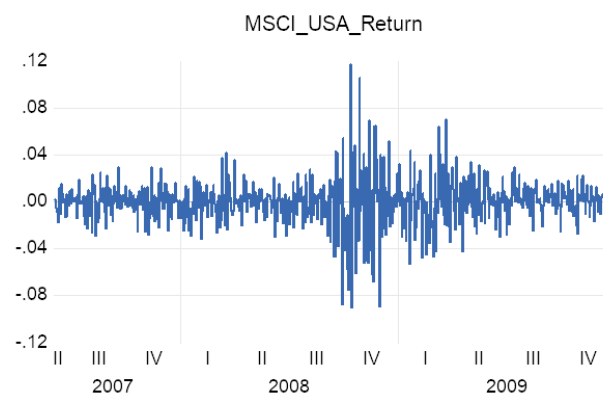
Data Preparation and Period Segmentation

- Import the **03-msci_usa_gfc.xlsx** data into Eviews
- **Divide** the MSCI USA Daily Index **return data** into three periods:
    - **Period 1 (Pre-Crisis)**: 1st June 2007 - 14th September 2008
    - **Period 2 (During Crisis)**: 15th September 2008 - 30th April 2009
    - **Period 3 (Post-Crisis)**: 1st May 2009 - 31st December 20009

PART A : QUESTION FOR EACH PERIOD :

1. **Stationary Check**
    a) **Perform both ADF and PP tests.** Present the test results and interpret statistically. Is
    the data stationary across all three periods? Explain why stationarity is essential for
    model estimation.

2. **Model Selection and Justification**
    a) Estimate the **best suitable and well-fitted** model for each period, whether it is
    ARMA(p,q) model, or ARCH(p,q) model or GARCH(p,q) model.
    b) Explain why you selected ARMA, ARCH, or GARCH as the best model for each
    period. Discuss the **significance of the diagnostic test** results and how they support
    your choice.

3. Model Interpretation
a) Once you have the best model for each period, **interpret the parameters** of the chosen model. If an ARCH or GARCH model is selected, discuss what the volatility dynamics reveal about market conditions during each phase of the crisis.

PART B : QUESTION FOR ALL THREE PERIODS

1. Comparison Across Periods

a) Summarize findings across the three periods and discuss any notable changes in volatility or return patterns in relation to the economic conditions of each phase.
b) Based on the modelling results, describe how market behavior changed across the three periods. How did volatility dynamics evolve, and what does this suggest about market stability? volatility persistence, cluster
why market not stable?

--------------------------------------- **END OF ASSIGNMENT** --