**Instructions on Assessment:**

The assignment is an individual written piece of work, and you are required to address all three sections (A, B, and C) of this question in order to achieve the maximum grade. Please choose ONLY ONE (1) out of THREE (3) datasets provided in the Assessment and Submission folder on Blackboard. All datasets include a continuous dependent variable, two continuous independent variables, and a dummy independent variable. You must supply evidence of your calculations and analysis where tables, charts, and figures should be presented from Excel, EViews, Stata, SPSS, or other software of your choice.

**Section A: Ordinary Least Squares (400 words, 12 marks)**

Estimate the regression equation 𝑌 = 𝛽0 + 𝛽1𝑋1 + 𝛽2𝑋2 +𝛽3𝑋3 +𝜀 via ordinary least squares (2 marks). Interpret all regression coefficients and assess their statistical significance using a T-test (4 marks). Discuss the explanatory power of the model using the R-squared and the F-test (2 marks). Briefly explain the implications of documented relationships or lack thereof for theory and practice in context of relevant academic sources (4 marks).

**Section B: Diagnostic Tests (800 words, 24 marks)**

Discuss the assumptions you used when performing an ordinary least squares regression (4 marks). Formally test for any THREE (3) different assumption violations using appropriate statistical procedures, justifying and critically evaluating these using relevant literature (15 marks). Briefly discuss the implications of the results for model validity (5 marks). In this section, you can address concepts such as, for example, autocorrelation, heteroskedasticity, multicollinearity, endogeneity, heterogeneity, or omitted variable bias.

**Section C: Robustness Checks (800 words, 24 marks)**

Perform ONE (1) robustness check of your choice for your model. Present the procedure using necessary equations, tables, and figures, and referencing appropriate academic sources (15 marks). Discuss the relevance of the robustness test employed in relation to model and diagnostic test results (5 marks). Compare the coefficients qualitatively and quantitatively to those obtained from ordinary least squares (4 marks). In this

section, you can address concepts such as, for example, subsample estimations, structural shifts, robust standard errors, weighted least squares, autoregressive models, GARCH, quantile regression, ridge regression, or LASSO.