ECN3184 Econometric methods

Midterm exam

Instructor: Alma Kudebayeva

Duration: 1 hour 30 min

Last Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Total weight of the exam is 30%.

1. The output shows the result of regressing *FDHOPC*, expenditure on food consumed at home per capita, on *EXPPC*, total household expenditure per capita, and *SIZEAM*, *SIZEAF*, *SIZEJM*, *SIZEJF*, and *SIZEIN*, numbers of adult males, adult females, junior males, junior females, and infants, respectively, in the household, using the *CES* data set. Provide an interpretation of the regression coefficients and perform appropriate tests.



2. 

The output above shows the result of regressing the logarithm of hourly earnings on years of schooling, years of work experience, *ASVABC* score, and *SA*, an interactive variable defined as the product of *S* and *ASVABC*, for males in *EAEF* Data Set 21. The mean values of *S*, *EXP*, and *ASVABC* in the sample were 13.7, 17.9, and 52.1, respectively. Give an interpretation of the regression output.

*Answer:*

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3. A researcher has data from the National Longitudinal Survey of Youth for the year 2000 on hourly earnings, *Y*, years of schooling, *S*, and years of work experience, *X*, for a sample of 1,774 males and 1,468 females. She defines a dummy variable *MALE* for being male, a slope dummy

variable *SMALE* as the product of *S* and *MALE*, and another slope dummy variable *XMALE* as the product of *X* and *MALE*. She performs the following regressions (1) log *Y* on *S* and *X* for the entire sample, (2) log *Y* on *S* and *X* for males only, (3) log *Y* on *S* and *X* for females only, (4) log *Y* on *S*,

*X*, and *MALE* for the entire sample, and (5) log *Y* on *S*, *X*, *MALE*, *SMALE*, and *XMALE* for the entire sample. The results are shown in the table, with standard errors in parentheses. *RSS* is the residual sum of squares and *n* is the number of observations.

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The correlations between *MALE* and *SMALE*, and *MALE* and *XMALE*, were both 0.96. The correlation between *SMALE* and *XMALE* was 0.93.

• Give an interpretation of the coefficients of *S* and *SMALE* in regression (5).

• Give an interpretation of the coefficients of *MALE* in regressions (4) and (5).

• The researcher hypothesises that the earnings function is different for males and females. Perform a test of this hypothesis using regression (4), and also using regressions (1) and (5).

• Explain the differences in the tests using regression (4) and using regressions (1) and (5).

• Explain which of (1), (4), and (5) would be your preferred specification.



4. 

The above table gives the output of the regression. Where LGFDHO is the logarithm of the food expenditures, LGEXP is the logarithm of the total household expenditures, LGSIZE is the logarithm of the household size.

a) Write the regression equation

b) Give the interpretation for the estimates of the coefficients

c) Perform all appropriate tests.

**Problem 5** The following is STATA output of the estimation of CAPM for Microsoft stock prices.

Based on Durbin-Watson statistics and Breusch-Godfrey test check for autocorrelation.

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Durbin-Watson d-statistic (2, 63) = 2.212786



**6.** Using your *EAEF* data set, with *LGEARN* as the dependent variable and *S*, *EXP*, and *MALE* as the explanatory variables. Perform the Goldfed-Quandt and White tests for heteroskedasticity. The Stata output for the Goldfed\_Quandt and White tests is given below.





Where ELGEARN2 is the square of the predicted residuals, the SEXP is the product of S and EXP.