

INSTRUCTIONS:

1. Answer **ONLY** the specified number of questions from the options provided in each section. Do not answer more than the required number of questions. Each section takes one hour.
2. Your answers must be on the paper provided. No more than one answer per page. Do not answer two questions on the same sheet of paper.
3. If you use more than one sheet of paper for a question, write "Page 1 of 2" and "Page 2 of 2."
4. Write **ONLY** on one side of each sheet. Use only pen. Answers in pencil will be disqualified.
5. Write ----- **END** ----- at the end of each answer.
6. Write your exam identification number in the upper right-hand corner of each sheet of paper.
7. Write the question number in the upper right-hand corner of each sheet of paper.

Section 2: Macroeconomics, Monetary Theory, and Econometrics—Answer One Question.

2A. (Econ 235) Analyze the demand for money by answering *all* of the following. As you answer each part, make sure you identify it with the appropriate letter:

- a.** Describe in words how changes in the demand for money affect the purchasing power of money, the price level, and real cash balances. Explain why this makes money like any other good or service.
- b.** Describe how you would construct a demand-stock graph for money. What goes on the two axes? What is the shape of the money stock curve? What is the shape of the money demand curve? Why does the money demand curve have that shape? And describe how you would depict real cash-balances on the graph. (Hint: If you put the interest rate on either axis, you automatically fail this section of the comprehensive examination.)
- c.** Describe at least four factors that cause the demand for money to change (i.e., shift). What are the two broad categories of money demand into which these various factors fall?
- d.** Relate the demand for money to the concept of velocity and to the equation of exchange.
- e.** Describe how the demand for money behaves during hyperinflations.
- f.** What do economists mean when they say a change in the money stock is *neutral*?

(over)

2B. (Econ 203) Problem Description: The State of North Carolina is interested in initiating an effort to reduce adult obesity. The State would like to know which groups of adults are most at-risk for high BMI and what factors lead to high BMI in order to better target the intervention. You are asked to explore what factors are associated with individuals' Body Mass Index (BMI), a measure of weight for height (weight (kg)/ height(m)²).

You will use data from the 2010 National Health Interview Survey Adult Sample File. This is a large, nationally representative sample from the United States. For this study, you will restrict your sample to non-Hispanic white males ages 18-65. You will explore how factors such as age and marital status are related to having high BMI. You will also consider whether the following behaviors are associated with BMI: smoking and hours of sleep.

You will estimate the following regression equations:

$$BMI_i = \alpha + \beta_1 age_i + \beta_2 age_i^2 + \beta_3 married_i + \beta_4 smoker_i + \beta_5 sleep_i + \epsilon_i \quad (1)$$

$$\ln(BMI_i) = \alpha + \beta_1 age_i + \beta_2 age_i^2 + \beta_3 married_i + \beta_4 smoker_i + \beta_5 sleep_i + \epsilon_i \quad (2)$$

Table 1: Estimates from a Regression of BMI and Log(BMI) on Basic Demographics and Behavior

Variables	Mean of Variable (SD)	Dependent Variable:	Dependent Variable:
		BMI	Log(BMI)
		(1)	(2)
Age	42.448 (13.512)	0.349 (0.360)	0.013 (0.001)
Age ²		-0.003 (0.0004)	-0.0001 (0.00001)
Married (0/1)	0.483 (0.500)	0.672 (0.143)	0.027 (0.005)
Smoker (0/1)	0.501 (0.500)	-0.299 (0.137)	-0.012 (0.005)
Hours of Sleep	7.083 (1.252)	-0.186 (0.055)	3.048 (0.029)

Notes: Sample is white males age 18-65 from the 2010 National Health Interview Survey Adult Sample who have BMI between 15-50. There are 5,463 observations. In Column (1) the dependent variable is BMI, and in Column (2) the dependent variable is log(BMI). The average BMI in the sample is 27.75 (standard deviation 5.13). A constant term is also included. Coefficients are estimated from OLS, with standard errors in parentheses.

(2B continued on next page)

2B (continued):

CODEBOOK:

sex: 1 = male, 2 = female

age: age measured in years

sleep: hours of sleep (0-24)

race_white: 1 if non-Hispanic white, 0 otherwise

race_black: 1 if non-Hispanic black, 0 otherwise

BMI (Body Mass Index (BMI) is calculated by: $\text{Weight (kg)} / \text{height(m)}^2$, valid entries are between 15-50)

married: 1 = married, 0 otherwise

smoker: 1 if current or former smoker, 0 otherwise

sleep: measured in hours, 0-24

Questions:

- (1) Which relationships can you interpret as causal and which should be interpreted with more caution and why (be specific)?
- (2) **Interpret** the following coefficients (use complete sentences in your responses):
 - a. Using the estimates in Column (1), describe the average marginal increase in BMI expected for one additional year of age for an individual age 40.
 - b. Is variable age significant in Column (1)? Please make sure to include the test and the critical value in your answer.
 - c. Holding all else in the model equal, how much heavier are non-smokers than smokers according to your estimates in Column (1)?
 - d. According to your estimates in Column (1), what is the increase in BMI that can be expected from an additional hour of sleep? Is this a large increase in BMI?
 - e. According to your estimates in Column (2), what is the percent increase in BMI that can be expected from an additional hour of sleep?
- (3) (3) What are the advantages and disadvantages of using levels versus a log regression?

2C. (Econ 202) Answer either **(a)** or **(b)** but *not* both:.

a. Compare fiscal policy with monetary policy. What are they, how are they similar, and how do they differ? Your answer should consider the role of government deficits (i.e., the national debt) in each and at least touch upon the concepts of “monetizing the debt,” “velocity,” the “Keynesian multipliers,” “crowding out,” and “Ricardian equivalence.” How does your answer relate to aggregate demand and loanable funds market? What is a liquidity trap?

b. Discuss the Solow growth model. What are its underlying assumptions and its conclusions? How consistent with empirical reality is the model, and what is meant by the term “convergence”? How would Austrian capital theory critique the Solow model? Also briefly explain endogenous growth theories. What variable do they make endogenous and how do they relate to the Solow model?