Econometria I - REC2301 Prof. Daniel Santos

Nome: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ # USP: \_\_\_\_\_\_\_\_\_\_

**ATENÇÃO**

**Só considerarei o que estiver escrito no espaço designado para a questão. Use o rascunho para organizar suas ideias.**

1. Considere o modelo:

Suponha que **ε**|**X** ~ N[0,σ2I].

1. (1 ponto) Escreva o conjunto de momentos válidos que é utilizado na derivação do estimador de Mínimos Quadrados Ordinários, e suas respectivas contrapartidas amostrais.

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1. (1 ponto)Mostramos em sala que os momentos apontados acima produzem um sistema de equações que tem forma matricial . Além disso, vimos que o modelo expresso na equação (1), quando empilhado para as N observações de uma amostra e após estimado, produz a equação matricial. Com base nestas duas equações matriciais, derive a fórmula do estimador de MQO em uma regressão linear múltipla. Sabendo que o modelo da equação (1) ainda produz a equação , qual a distribuição de ?

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1. Considere o modelo . Suponha que ε|X ~ N[0,σ2], e que você estimou o modelo em amostra com 20 observações independentes, e obteve os seguintes resultados:

|  |  |  |  |
| --- | --- | --- | --- |
| Coeficiente Estimado | Matriz **(X’X)-1** | | |
| a = 0,36 | 0,9 | 0 | 0 |
| b = 1,21 | 0 | 0,11 | 0 |
| c = -0,04 | 0 | 0 | 0,2 |

Além disso, você calculou a soma dos quadrados dos resíduos, , e o resultado foi 18. Com base na tabela em anexo, responda:

1. (1 ponto) Qual seria uma estimativa não-viesada de σ2 (calcule o valor)?

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1. (1 ponto) Quais os coeficientes estatisticamente diferentes de zero a 5% de significância (isto é, os coeficientes para os quais você rejeitaria a hipótese nula de que é igual a zero)? Você rejeitaria a hipótese de que c < 0?

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1. (1 ponto) Como você testaria a hipótese de que a + b = 1 e b = c?.

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1. Em um estudo feito a fim de quantificar a influência da localização geográfica sobre a produção de soja, temos a formulação do seguinte modelo:

Sendo *S, NE, N, SE e* CO variáveis dummy indicando se determinada unidade produtora está localizada nas regiões Sul, Nordeste, Norte, Sudeste e Centro-Oeste, respectivamente. Suponha ainda que a esperança de u seja nula em cada uma das regiões do Brasil, isto é, que

E[u | S, NE, N, SE, CO] = 0.

1. (1 ponto) Qual hipótese de Gauss-Markov é violada no modelo acima?

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1. (1 ponto) Excluir a variável CO do modelo acima resolveria o problema? Por quê? Neste caso, qual a interpretação do coeficiente β2?

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1. Considere o modelo:

Suponha que **ε**|**X** ~ N[0,Σ], onde Σ é a matriz de covariância de **ε**, e possui o formato:

|  |  |  |  |
| --- | --- | --- | --- |
| σ11 | σ12 | ... | σ1N |
| σ12 | σ22 |  |  |
| ⁞ |  |  |  |
| σ1N |  |  | σNN |

Σ =

1. Qual a distribuição do estimador de MQO neste caso?

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1. O estimador de MQO neste caso é *BLUE* (o melhor estimador linear não-viesado)? Qual seria a fórmula do estimador *BLUE* neste caso?

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