12307683

# TENTAMEN / EXAMINATION

Fylls i av **student** / *To be completed by the* ***student***

| | |
|---|---|
| Skriv anonymiseringskoden på samtliga svarsblad / *Write your anonymity code on each sheet* | Anonymiseringskod / *Anonymity code*: N E G C 1 6 - 0 0 1 2 - X R Y |
| Provbenämning / *Exam name*: Tentamen | Oanmäld |
| Kurskod / *Course code*: N E G C 1 6 | Modul / *Module*: 1 0 0 0 |
| Tentamensdatum / *Examination date*: 2 0 2 0 - 1 1 - 0 4 | |
| Jag har tagit del av regler som gäller vid tentamen / *I have read the current rules for examinations* ☐ Ja / *Yes* | Antal inlämnade blad med anonymiseringskod / *Number of sheets with anonymity code* |

Fylls i av **skrivvakt** / *To be completed by the* ***invigilator***

| | | |
|---|---|---|
| Kontroll av legitimation / *Identification checked* | ☐ Ja / Yes | Härmed intygas att kontroller utförts / *This is to certify that the checks have been carried out* |
| Kontroll av inlämnade blad / *Answer sheets checked* | ☐ Ja / Yes | Tydlig sign. / *Signature* |
| Inlämningstid / *Time of submission* | : | |

Fylls i av **lärare** / *To be completed by the* ***examiner***

*Bedömning av uppgifter / Questions attempted*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | ~ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | ~ |
| | | | | | | | | | | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | ~ |
| | | | | | | | | | | |

| | |
|---|---|
| Totalt antal poäng / *Total points*: D:4 | Examin. lärare / Kursansvarig signatur / *Signature of the examiner* |
| Betyg / *Grade*: VG | Namnförtydligande / *Clarification of the signature* |

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Försättsbladet ska alltid lämnas in även om ingen uppgift behandlats / *Examination should always be submitted even if no questions are answered*

Utskriven 2020-11-23 kl. 08:33:25

NEGC16-0012-XRY

1a)

$$Probability, Inlef = \beta_0 + \beta_1 * exper + \beta_2 * exper^2 + u_i$$

$$Probability, Inlef = 0{,}215 + 0{,}050 * exper + (-0{,}001) * exper^2$$

1b)

It is not a linear regression model.

At first, one extra year of experience will have an increasing effect on the probability of being inlef, but since we have $exper^2$ with a negative parameter, this variable will at some point overweigh the variable $exper$, which indicates that eventually one additional year of experience will have a negative effect on the probability of being in the labor force, instead of a positive effect. Thus, the model is not a linear regression model.

1c)

$$Probability, Inlef = 0{,}215 + 0{,}050 * 10 + (-0{,}001) * 10^2 = 0{,}215 + 0{,}50 - 0{,}1 = 0{,}615 = 61{,}5\%$$

The probability that a woman with 10 years of labor market experience is in the labor force is 61,5 %.

1d)

It is not a linear regression model since it follows the normal cumulative distribution function (CDF), which is not linear.

1e) i: 2 ii: 5 iii: 11 iv: 15

2a)

$$Y_t = \pi_0 + \pi_1 R_t + \pi_2 P_t + \pi_3 R_{t-1} + \pi_4 P_{t-1} + v_t$$
$$M_t = \pi_5 + \pi_6 R_t + \pi_7 P_t + \pi_8 R_{t-1} + \pi_9 P_{t-1} + w_t$$

2b)

$$M, endogenous\ variables = 2\ (Y_t\ and\ M_t)$$

The Money demand function excludes 0 variables, which is less than $M - 1 = 1$,
→ the Money demand function is underidentified.

The Money supply function excludes 4 variables $(R_t, P_t, R_{t-1}, P_{t-1})$, which is more than $M - 1 = 1$,
→ the Money supply function is overidentified.

2c)

Fixed effects least-squares dummy variable model:

$$C_{it} = \alpha_1 + \alpha_2 D_{2i} + \beta_2 Q_{it} + \beta_3 FP_{it} + \beta_4 LF_{it} + u_{it}$$
$$D_{2i}: dummy\ variable\ airline\ 2$$
$$Q_{it}: output$$
$$FP_{it}: fuel\ price$$
$$LF_{it}: load\ factor$$

2d)

The Constant Coefficient Model is not a good model for estimating the estimated cost function since it gives the same intercept to both airlines, where if we instead use the Fixed-Effects LSDV Model as above, each airline has its own intercept.

2e) v: 18 vi: 21 vii: 27 viii: 31

3a)

Short run demand function: $constant - 0{,}218 log X_{1,t-1} - 0{,}855 log X_{2,t-1} + 0{,}864 log T_{t-1}$

3b)

$$(1-\delta) = 0{,}864 \rightarrow \delta = 1 - 0{,}864 = 0{,}136$$

The coefficient of adjustment is $\delta = 0{,}136$

3c)

Long-run price elasticity of demand: $\frac{-0{,}218}{\delta} = \frac{-0{,}218}{0{,}136} \approx -1{,}603$

3d)

Endogenous: $Q_t, P_t$

Exogenous: $I_{t-1}$

Predetermined: $P_{t-1}, I_{t-1}, Q_{t-1}$

3e) ix: 34 x: 38 xi: 41 xii: 47

4a)

2 lags for $X_t$, 2 lags for $Y_t$.

4b)

p: 1, d: 0, q: 2 (ARIMA(1,0,2))

4c)

Test statistic: $\tau = \frac{-4}{2} = -2$, absolute value 2

Critical value: $-4{,}04$, absolute value 4,04
(from the dickey fuller-table, sample size $100$ ($\approx 105$), $t_{ct}, 1\%: -4{,}04$).

4d)

$$H_0: nonstationarity, containes\ a\ unit\ root$$

$$H_a: stationarity, containes\ no\ unit\ root$$

Since $2 < 4{,}04$, $H_0$ cannot be rejected, i.e. the time series is nonstationary, it contains a unit root.

4e) xiii: 51 xiv: 54 xv: 57 xvi: 63

5a)

$$PPCE_t = \alpha + \beta_0 PPDI_t + \beta_1 PPDI_{t-1} + \cdots + u_t$$

5b)

$$H_0: no\ autocorrelation$$

$$H_a: autocorrelation$$

Durbin h test statistic: $4{,}076806$

Critical values: $\pm 1{,}96$

Since: $4{,}076806 > 1{,}96$, $H_0$ can be rejected, i.e. there is autocorrelation in the model.

5c)

The probability that a woman with no children is in the labor force is 60,64 %.

$$P_i = P(Z \leq 0{,}270 - 0{,}540 * 0 + 0{,}010 * 0) = P(Z \leq 0{,}270) = 0{,}1064 + 0{,}5 = 0{,}6064$$

5d)

According to the estimates, the probability of the woman being in the labor force will increase:

The child turning 6 means that it goes from being in the group "kids<6 years" to "kids 6-18", thus the probability of the woman being inlef goes from 39,36 % to 61,03 %:

$$P_i = P(Z \leq 0{,}270 - 0{,}540 * 1 + 0{,}010 * 0) = P(Z \leq -0{,}270) = 1 - 0{,}6064 = 0{,}3936$$

$$P_i = P(Z \leq 0{,}270 - 0{,}540 * 0 + 0{,}010 * 1) = P(Z \leq 0{,}280) = 0{,}1103 + 0{,}5 = 0{,}6103$$

5e) xvii: 66 xviii: 72 xix: 74 xx: 78