QF604 MCQ Practice Test 2

Please tick the most suitable answer to each multiple-choice question.

Q1. What is χ^2_7 divided by $F_{7,14}$ assuming the numerator is independent of all other chi-square variables?

(A) Normal $7 \times Z(0,1)$

(B) $0.5\chi^2_{14}$

(C) χ^2_{14}

(D) None of the above

Q2. Suppose we run an Ordinary Least Square regression of $Y_i = a + bX_i + e_i$ where e_i is a white noise that is independent of X_i. Given sample averages for Y and X are 60 and 8, respectively, and $\hat{a} = 20$, what is $\hat{b}$?

(A) 2.5

(B) 5.0

(C) 7.5

(D) Indeterminate from the given information.

Q3. When a stochastic process $\{Y_t\}$ is strong-stationary, the following statement is most accurate:

(A) all means are constant

(B) all moments are constant at every point in time

(C) autocorrelation lag k is a function of only variable k.

(D) all the above are correct

Q4. What is the difference between a trend stationary process and a unit root process?

(A) only the unit root process displays increasing volatility

(B) only the trend stationary process has deterministic trend

(C) only the unit root process has a difference series that is stationary

(D) None of the above

Q5. Suppose we are testing if S_t is a unit root or $I(1)$ process, and we perform the following OLS regression $\Delta S_t = \delta + \theta S_{t-1} + e_t$, where e_t is a stationary random variable. Suppose the critical ADF statistic for this case at 1% significance level is -3.44, and the computed $\hat{\theta} < 0$'s "t-statistic" is -3.05, then you

(A) reject null of no unit root

(B) reject null of unit root

(C) accept [or cannot reject] null of no unit root

(D) accept [or cannot reject] null of unit root.

Q6. If market prices follow random walks, then

(A) the market is inefficient

(B) stock prices do not have probability distributions

(C) one can never make positive profits

(D) one can never consistently outperform the market

Q7. The predictability of stock returns under rational theory is most closely connected with

(A) forecasting daily time trend of the stock return

(B) forecasting long-term stock return autocorrelations

(C) forecasting weekly stock price variations

(D) forecasting momentum of stock movements

Q8. A factor risk premium can be estimated by running

(A) Cross-sectional regression on the risk factors

(B) Cross-sectional regression on factor loadings

(C) Time series regression on the risk factors

(D) Time series regression on the factor loadings

Q9. In a mulitple linear regression, an irrelevant variable was included. Which of the following is most accurate?

(A) the estimated coefficients will always be biased downward

(B) the estimated coefficients will never be unbiased

(C) the estimated coefficient standard errors are typically smaller

(D) the estimated coefficient standard errors are typically larger

Q10. If it is not known if the risk premia change over time, we can estimate them using

(A) Fama-French model

(B) Fama-McBeth approach

(C) Panel regression

(D) None of the above

Q11. Suppose $Z_t = c_0 + c_1 Y_t + e_t, \quad i = 1, 2, \ldots, N$. Y_t and zero mean e_t are stochastically independent, and e_t is autocorrelated, then the generalized least squares (GLS) estimator is

(A) unbiased but not efficient

(B) unbiased and efficient

(C) biased but consistent

(D) biased and inefficient

Q12. Suppose If $Y_t = c_0 + c_1X_t + c_2Z_t + e_t, \quad t = 1, 2, \ldots, T$. X_t and zero mean e_t are stochastically independent. It is suspected that $e_t = \rho e_{t-1} + u_t$ where $\rho \neq 0$ and u_t is mean zero i.i.d. If you test H_0: $\rho = 0$, Durbin–Watson d-statistic gives 2.48, and at 5% significance level, $T = 90$, $k = 3$, the critical values $D_L = 1.589$, $D_U = 1.726$, how do you conclude?

(A) Reject H_0, accept positive autocorrelation

(B) Reject H_0, accept negative autocorrelation

(C) Accept H_0

(D) Inconclusive on H_0

Q13. When disturbances are heteroskedastic, generalized least squares estimation is preferred to OLS, wherever feasible, because

(A) OLS is unbiased

(B) OLS is inefficient

(C) OLS is inconsistent

(D) OLS cannot provide for a test.

Q14. In selecting different stocks for a common event study e.g. earnings announcement, it is a problem if their calendar dates are clustered together because

(A) This will reduce the efficiency of estimation

(B) The number of sample points wil be reduced

(C) This may introduce unobserved external systematic event not related to the event news

(D) None of the above

Q15. According to the unbiased expectations hypothesis, the following spot-forward relationship of Euros (versus US$) should hold:

$$F_{t,t+6} = E_t(S_{t+6}) + \pi_{t,t+6},$$

where $F_{t,t+6}$ is the forward six-month Euros per US$ at time t, and S_{t+6} is the future spot rate at $t+6$ months. $E_t(.)$ denotes conditional expectation given all market information current at t, and risk premium $\pi_{t,t+6} = 0$. Which of the following is a problem with the estimators if you run a regression of $F_{t,t+6}$ on S_{t+6}?

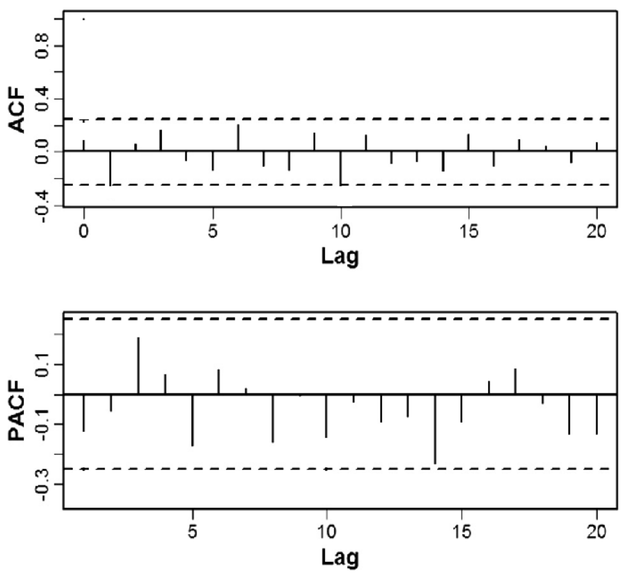
(A) Nonlinear problem

(B) Unbiased but inefficient estimators

(C) Consistent but inefficient estimators

(D) Not consistent and inefficient estimators

Q16. In the following correlograms, each bar represents the correlation value on one period in the lags, and the dotted lines represent the two standard deviation bounds. Identify the stochastic process as:



(A) ARMA(1,1)

(B) ARMA(1,3)

(C) White Noise

(D) ARIMA(1,1,1)

Q17. In estimating a GARCH model, where conditional variance of zero-mean residual error e_t is $h_t = \beta_0 + \beta_1 h_{t-1} + \beta_2 (e_{t-1} - \lambda)^2$, for $\lambda > 0$, what is the most plausible set of estimates? ($\lambda = 0.01$)

(A) $\beta_0 = 0.025$, $\beta_1 = 0.5$, $\beta_2 = 0.5$

(B) $\beta_0 = -0.025$, $\beta_1 = 0.8$, $\beta_2 = 0.8$

(C) $\beta_0 = 0.025$, $\beta_1 = 0.3$, $\beta_2 = 0.65$

(D) $\beta_0 = -0.025$, $\beta_1 = 0.3$, $\beta_2 = 0.65$

Q18. White's HCCME estimator is used in

(A) GLS estimation to obtain efficient estimators

(B) GLS estimation to obtain unbiasedness

(C) OLS estimation to obtain BLUE estimators

(D) OLS estimation to obtain test statistic

Q19. Suppose a first linear regression is $Y_{1t} = a_0 + a_1 X_t + e_t$ for $t = 1, 2, \ldots, T$, and the vector of residual errors has $T \times T$ covariance matrix Σ. Suppose a second linear regression is $Y_{2t} = a_0 + a_1 Z_t + v_t$ for $t = 1, 2, \ldots, T$, and the vector of residual errors has $T \times T$ covariance matrix Σ. e_t and v_t are independent.

If we form dependent variable vector $M_{2T\times 1} = (Y_{11}, \dots, Y_{1T}, Y_{21}, \dots, Y_{2T})^T$, and explanatory variable matrix

$$S_{2T\times 2} = \begin{pmatrix} 1 & 1 & \dots & 1 & 1 & 1 & \dots & 1 \\ X_1 & X_2 & \dots & X_T & Z_1 & Z_2 & \dots & Z_T \end{pmatrix}^T$$

to run the linear regression, would the GLS estimates of a_0, a_1 be different from the GLS estimates if we run the first and the second regressions separately?

(A) The combined regression is more efficient due to larger sample

(B) The combined regression is more efficient because of GLS

(C) The combined regression is less efficient because of pooled noise

(D) The combined regression is less efficient because of inversion error

Q20. In a linear regression model $Y = XB + e$, $Y_{N\times 1}$ takes only binary values of 1 or 0, X is a $N \times 3$ explanatory variable matrix where the first column contains all ones, and e is a N vector of zero mean i.i.d. residual errors. e is non-normal. Let the i^{th} row of X be X_i. Suppose $E(Y_i|X_i) = \frac{e^{X_i B}}{1+e^{X_i B}}$ using logistic regression. If the estimates of B are $(0.1, 0.2, 0.05)$, what is the estimated probability of $Y = 1$ when $X_i = (1, 1, 2)$?

(A) 0.60

(B) 0.65

(C) 0.70

(D) None of the above.

Ans: Q1 (B), Q2 (B), Q3 (D), Q4 (A), Q5 (D), Q6 (D), Q7 (B), Q8 (B), Q9 (D), Q10 (B)
Q11 (B), Q12 (B), Q13 (B), Q14 (C), Q15 (D), Q16 (C), Q17 (C), Q18 (D), Q19 (B), Q20 (A)