a) mutual fund # 4
mutual fund # 6
mutual fund # 8

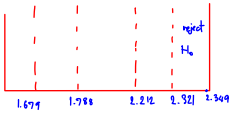
b) mutual fund # 4
mutual fund # 6
mutual fund # 5

c) mutual fund # 5
mutual fund # 17
mutual fund # 3

Nuntayod
6104641300

d) from Carhart-four factor (mutual fund # 1)

Durbin-Watson d-statistic (5, 120) = 2.349188
at 5% significant: n=120 d_L = 1.679
k=4 d_U = 1.788



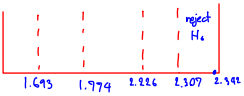
$H_0: \rho = 0$
$H_a: \rho \neq 0$

∴ H_0 is rejected at 5% significant, this model contribute of Autocorrelation problem

Overall test is significant, at 5% significant, but for individual test was insignificant for 3 variable which is a signal of multicollinearity

From FF (mutual fund # 1)

Durbin-Watson d-statistic (4, 120) = 2.322202
at 5% significant: n=120 d_L = 1.693
k=3 d_U = 1.794



$H_0: \rho = 0$
$H_a: \rho \neq 0$

∴ H_0 is rejected at 5% significant, this model contribute of Autocorrelation problem

Overall test is significant, at 5% significant, but for individual test was insignificant for 2 variable which is a signal of multicollinearity

Since both Carhart-four factor & FF occur both Autocorrelation & Multicolinearity, but for Carhart-four factor have higher adjusted R^2, therefor Carhart-four factor should be employed in this case.

From Carhart-four factor

for r_{mrt} which reflec that the 1% point chang in market risk premium will effect r_{jt} to increase by 88.39% point

for r_{smbt} which reflec that the 1% point chang in size premium will effect r_{jt} to decrease by 10.55% point

for r_{hmlt} which reflect that the 1% point chang in value premium will effect r_{jt} to decrease by 29.53% point

for r_{umlt} which reflec that the 1% point chang in momentum premium will effect r_{jt} to decrease by 16.89% point

For overall test

$F(4,115) = 130.81$ $H_0: \beta_1 = 0, \beta_2 = 0, \beta_3 = 0, \beta_4 = 0$ H_a: Otherwise

which is strongly evidence to reject H_0 at 5% significant
$\beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0$

Coefficient of determinant or R^2
The variation of r_{jt} was explained by independent variable by 81.98%.

Individual test

r_{mrt} $H_0: \beta_1 = 0$ $H_a: \beta_1 \neq 0$ at 5% significant
$P(|t| = 0.000 < 0.025$
H_0 is rejected at 5% significant.
r_{mrt} is statistical significant

r_{smbt} $H_0: \beta_2 = 0$ $H_a: \beta_2 \neq 0$ at 5% significant
$P(|t| = 0.049 > 0.025$
H_0 is not rejected at 5% significant.
r_{smbt} is statistical insignificant

r_{hmlt} $H_0: \beta_3 = 0$ $H_a: \beta_3 \neq 0$ at 5% significant
$P(|t| = 0.045 > 0.025$
H_0 is not rejected at 5% significant.
r_{smbt} is statistical insignificant

r_{umlt} $H_0: \beta_4 = 0$ $H_a: \beta_4 \neq 0$ at 5% significant
$P(|t| = 0.157 > 0.025$
H_0 is not rejected at 5% significant.
r_{smbt} is statistical insignificant

e) The most appropriated should be FF due to the fact if we consider between FR and CAPM, smb & hml shouldn't drop because (t-test)($\sqrt{VIF}$) are all more than 2 which exist a multicollinearity which if drop them out will occur a specification error. And for umd have (t-test)($\sqrt{VIF}$) all less than 2 and also insignificant which should be drop off the model