10.7

(c)

mod3<-lm(xper~age+cap+lab,data=chard)

v<-mod3$residuals

mod4<-lm(q~xper+cap+lab+v,data=chard)

summary(mod4)

Q=-2.4867+0.5121XPER+0.3321CAP+0.2399LAB-0.4157v

V的係數是顯著，所以XPER和error term 是correclated

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -2.48669 2.18960 -1.136 0.25996

xper 0.51210 0.17731 2.888 0.00515 \*\*

cap 0.33213 0.12422 2.674 0.00933 \*\*

lab 0.23998 0.09721 2.469 0.01601 \*

v -0.41575 0.18917 -2.198 0.03127 \*

10.9

#(a)

library(PoEdata)

data(newbroiler)

time=c(11:50)

mod1<-lm(log(qprod[c(11:50)])~log(p[c(11:50)])+log(pf[c(11:50)])

+time+log(qprod[c(10:49)]),data=newbroiler)

summary(mod1)

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 2.109688 0.799153 2.640 0.0123 \*

log(p[c(11:50)]) 0.009110 0.067941 0.134 0.8941

log(pf[c(11:50)]) -0.090195 0.042646 -2.115 0.0416 \* time 0.011171 0.005149 2.170 0.0369 \* log(qprod[c(10:49)]) 0.732689 0.106635 6.871 0.0000000561 \*\*\*

所有的正負號都符合預期。

(b)

library(AER)

mod2<-ivreg(log(qprod[c(11:50)])~log(p[c(11:50)])+log(pf[c(11:50)])+time

+log(qprod[c(10:49)])

|log(y[c(11:50)])+log(pb[c(11:50)])+popgro[c(11:50)]+log(p[c(10:49)])+lexpts[c(11:50)]

+log(pf[c(11:50)])+time+log(qprod[c(10:49)])

,data=newbroiler)

summary(mod2)

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 2.974703 1.025654 2.900 0.006403 \*\*

log(p[c(11:50)]) 0.289120 0.133000 2.174 0.036568 \*

log(pf[c(11:50)]) -0.163530 0.058689 -2.786 0.008550 \*\*

time 0.020679 0.007202 2.871 0.006894 \*\*

log(qprod[c(10:49)]) 0.598974 0.139139 4.305 0.000128 \*\*\*

ln(p)係數比(a)小題大得多，也變顯著。

(c)

mod3<-lm(log(p[c(11:50)])~log(y[c(11:50)])+log(pb[c(11:50)])

+popgro[c(11:50)]+log(p[c(10:49)])+lexpts[c(11:50)]

+log(pf[c(11:50)])+time+log(qprod[c(10:49)])

,data=newbroiler)

summary(mod3)

mod4<-lm(log(qprod[c(11:50)])~mod3$residuals+log(p[c(11:50)])+log(pf[c(11:50)])

+time+log(qprod[c(10:49)]),data=newbroiler)

summary(mod4)

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -11.54092 5.95476 -1.938 0.06177 .

log(y[c(11:50)]) 1.23558 0.62482 1.977 0.05694 .

log(pb[c(11:50)]) 0.02008 0.21059 0.095 0.92463

popgro[c(11:50)] 0.06116 0.08578 0.713 0.48118

log(p[c(10:49)]) 0.34221 0.15329 2.232 0.03294 \*

lexpts[c(11:50)] 1.67985 0.74007 2.270 0.03032 \*

log(pf[c(11:50)]) 0.14844 0.10082 1.472 0.15102

time -0.06229 0.02231 -2.792 0.00888 \*\*

log(qprod[c(10:49)]) 0.16088 0.28487 0.565 0.57630

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 2.97470 0.71074 4.185 0.000190 \*\*\*

mod3$residuals -0.45723 0.11777 -3.882 0.000453 \*\*\*

log(p[c(11:50)]) 0.28912 0.09216 3.137 0.003513 \*\*

log(pf[c(11:50)]) -0.16353 0.04067 -4.021 0.000305 \*\*\*

time 0.02068 0.00499 4.144 0.000214 \*\*\*

log(qprod[c(10:49)]) 0.59897 0.09642 6.212 0.000000457 \*\*\*

mod3$residual顯著，顯示ln(PRICE)是內生變數

(d)

mod9<-lm(log(p[c(11:50)])~log(p[c(10:49)])+log(y[c(11:50)])+log(pb[c(11:50)])

+popgro[c(11:50)]++lexpts[c(11:50)]

,data=newbroiler)

summary(mod9)

ln(Pt-1 ) and ln(EXPTS) 有p=0.05 顯著ln(Y) 有 p=.10 顯著 所有工具變數的F-test F= 3.92, p= 0.0072.沒有大於經驗法則的F=10 所以這些工具變數都不夠成為2SLS的工具變數。

(e)

mod8<-lm(mod2$residuals~log(y[c(11:50)])+log(pb[c(11:50)])

+popgro[c(11:50)]+log(p[c(10:49)])+lexpts[c(11:50)]

+log(pf[c(11:50)])+time+log(qprod[c(10:49)])

,data=newbroiler)

rs2<-summary(mod8)$r.squared

rs2

N<-40

q<-N\*rs2

q

L<-5

B<-1

pvalue<-1-pchisq(q,L-B)

pvalue

Rsquare=0.09178 NRsquare=3.67142 p value=0.4523

無法拒絕 validity of over-identifying restrictions.

11-4

1. Least square 因為沒有內生變數

beta 是identified 因為 可以被consistent estimate

1. 2SLS 因為y1是內生變數

Alpha是identified 因為M-1=1 而x在第二式沒出現

11.6

data(truffles)

head(truffles)

modD<-lm(q~p+ps+di,data=truffles)

summary(modD)

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 1.09105 3.71158 0.294 0.77112

p 0.02330 0.07684 0.303 0.76418

ps 0.71004 0.21432 3.313 0.00272 \*\*

di 0.07644 1.19086 0.064 0.94931

modS<-lm(q~p+pf,data=truffles)

summary(modS)

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 20.03278 1.22197 16.39 1.47e-15 \*\*\*

p 0.33799 0.02174 15.54 5.42e-15 \*\*\*

pf -1.00092 0.07639 -13.10 3.23e-13 \*\*\*

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P 不合理 需求量減少價格應該上升

其他係數的正負都和預期一樣