# Introduction to Stata: outreg2/logout

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June 16, 2017

# 基本統計量與相關係數 I

- 一般而言, 大部分學術論文的第一與第二個表格通常是:
  - 基本統計量。
  - 相關係數矩陣。
- 底下以一個例子說明, 並以 Stata 相關指令 (內定或外掛) 來處理。
  - 如何求得簡單 (最基本) 之統計量與較多元之統計量。
  - 如何求得相關係數矩陣 (與顯著性)。
  - 如何將結果輸出至 word/excel/tex?
  - 需先外掛一些好用指令:
    - ssc install logout (logout – Converts log or ASCII files into various output formats)
    - pwcorr_a 要另外下載
    - ssc install outreg2 (outreg2 – Arrange regression, summary, and tabulation into an illustrative table)

# 基本統計量與相關係數 II

- 基本統計量如下:

```
. cd "D:\#Intro2Stata\outreg2"
D:\#Intro2Stata\outreg2
. set more off
. sysuse auto, clear
(1978 Automobile Data)
. logout, save(logout-basic1) word excel replace: sum price mpg rep78 headroom
```

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| price | 74 | 6165.257 | 2949.496 | 3291 | 15906 |
| mpg | 74 | 21.2973 | 5.785503 | 12 | 41 |
| rep78 | 69 | 3.405797 | .9899323 | 1 | 5 |
| headroom | 74 | 2.993243 | .8459948 | 1.5 | 5 |

```
logout-basic1.xml
logout-basic1.rtf
dir
```

# 基本統計量與相關係數 III

- 更完整之基本統計量如下:

```
. quietly outreg2 using "logout-basic2", sum(detail) replace word excel dec(3) ///
> keep(price mpg rep78 headroom) eqkeep(N mean sd p5 p25 p50 p75 p95)
 :
.
```

- 相關係數矩陣如下:

```
. logout, save(logout-corr1) word excel replace: pwcorr price mpg rep78 headroom, sig
```

| | price | mpg | rep78 | headroom |
|---|---|---|---|---|
| price | 1.0000 | | | |
| mpg | -0.4686<br>0.0000 | 1.0000 | | |
| rep78 | 0.0066<br>0.9574 | 0.4023<br>0.0006 | 1.0000 | |
| headroom | 0.1145 | -0.4138 | -0.1480 | 1.0000 |

# 基本統計量與相關係數 IV

```
             |    0.3313    0.0002    0.2249
             |
logout-corr1.xml
logout-corr1.rtf
dir
```

- 或可用 (另外下載 ) pwcorr_a:

```
. logout, save(logout-corr2) word excel replace: pwcorr_a price mpg rep78 headroom
             |    price      mpg    rep78 headroom
-------------+------------------------------------
       price |    1.000
         mpg |   -0.469***  1.000
       rep78 |    0.007     0.402***  1.000
    headroom |    0.115    -0.414*** -0.148     1.000
logout-corr2.xml
logout-corr2.rtf
dir
```

# 一般線性迴歸結果彙整 I

- 假設我們跑了幾個迴歸, 希望將結果彙整成 Word 或 Excel 檔:

```
. reg price mpg
```

| Source | SS | df | MS | Number of obs | = | 74 |
|---|---|---|---|---|---|---|
| | | | | F(1, 72) | = | 20.26 |
| Model | 139449474 | 1 | 139449474 | Prob > F | = | 0.0000 |
| Residual | 495615923 | 72 | 6883554.48 | R-squared | = | 0.2196 |
| | | | | Adj R-squared | = | 0.2087 |
| Total | 635065396 | 73 | 8699525.97 | Root MSE | = | 2623.7 |

| price | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mpg | -238.8943 | 53.07669 | -4.50 | 0.000 | -344.7008 | -133.0879 |
| _cons | 11253.06 | 1170.813 | 9.61 | 0.000 | 8919.088 | 13587.03 |

```
. outreg2 using "outreg2-reg", word excel replace
outreg2-reg.rtf
outreg2-reg.xml
dir : seeout
. estimates store m1
```

# 一般線性迴歸結果彙整 II

```
. reg price rep78
```

| Source | SS | df | MS | | |
|---|---|---|---|---|---|
| Model | 24770.7652 | 1 | 24770.7652 | Number of obs | = 69 |
| Residual | 576772188 | 67 | 8608540.12 | F(1, 67) | = 0.00 |
| | | | | Prob > F | = 0.9574 |
| Total | 576796959 | 68 | 8482308.22 | R-squared | = 0.0000 |
| | | | | Adj R-squared | = -0.0149 |
| | | | | Root MSE | = 2934 |

| price | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| rep78 | 19.28012 | 359.4221 | 0.05 | 0.957 | -698.1295 | 736.6897 |
| _cons | 6080.379 | 1274.06 | 4.77 | 0.000 | 3537.345 | 8623.413 |

```
. outreg2 using "outreg2-reg", word excel append
outreg2-reg.rtf
outreg2-reg.xml
dir : seeout
. estimates store m2
```

# 一般線性迴歸結果彙整 III

```
. reg price headroom
```

| Source | SS | df | MS | | |
|---|---|---|---|---|---|
| Model | 8326675.45 | 1 | 8326675.45 | Number of obs | = 74 |
| Residual | 626738721 | 72 | 8704704.45 | F(1, 72) | = 0.96 |
| | | | | Prob > F | = 0.3313 |
| Total | 635065396 | 73 | 8699525.97 | R-squared | = 0.0131 |
| | | | | Adj R-squared | = -0.0006 |
| | | | | Root MSE | = 2950.4 |

| price | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| headroom | 399.2149 | 408.1764 | 0.98 | 0.331 | -414.4699 | 1212.9 |
| _cons | 4970.31 | 1268.998 | 3.92 | 0.000 | 2440.608 | 7500.011 |

```
. outreg2 using "outreg2-reg", word excel append
outreg2-reg.rtf
outreg2-reg.xml
dir : seeout
. estimates store m3
```

# 一般線性迴歸結果彙整 IV

```
. reg price mpg rep78 headroom
```

| Source | SS | df | MS | | |
|---|---|---|---|---|---|
| Model | 148497605 | 3 | 49499201.8 | Number of obs | = 69 |
| Residual | 428299354 | 65 | 6589220.82 | F(3, 65) | = 7.51 |
| | | | | Prob > F | = 0.0002 |
| Total | 576796959 | 68 | 8482308.22 | R-squared | = 0.2575 |
| | | | | Adj R-squared | = 0.2232 |
| | | | | Root MSE | = 2566.9 |

| price | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mpg | -289.3462 | 62.53921 | -4.63 | 0.000 | -414.2456 | -164.4467 |
| rep78 | 670.8971 | 343.5213 | 1.95 | 0.055 | -15.16242 | 1356.957 |
| headroom | -300.0293 | 398.0516 | -0.75 | 0.454 | -1094.993 | 494.9346 |
| _cons | 10921.33 | 2153.003 | 5.07 | 0.000 | 6621.487 | 15221.17 |

```
. outreg2 using "outreg2-reg", word excel ctitle(full) dec(3) append
outreg2-reg.rtf
outreg2-reg.xml
dir : seeout
. estimates store m4
```

# 一般線性迴歸結果彙整 V

```
. reg price mpg rep78 headroom, robust
Linear regression                               Number of obs     =         69
                                                F(3, 65)          =       7.80
                                                Prob > F          =     0.0002
                                                R-squared         =     0.2575
                                                Root MSE          =     2566.9
```

| price | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mpg | -289.3462 | 67.62857 | -4.28 | 0.000 | -424.4097 | -154.2826 |
| rep78 | 670.8971 | 269.764 | 2.49 | 0.015 | 132.1412 | 1209.653 |
| headroom | -300.0293 | 288.9519 | -1.04 | 0.303 | -877.1062 | 277.0475 |
| _cons | 10921.33 | 2079.182 | 5.25 | 0.000 | 6768.917 | 15073.74 |

```
. outreg2 using "outreg2-reg", word excel adjr2 br dec(3) ctitle(full) append
outreg2-reg.rtf
outreg2-reg.xml
dir : seeout
. estimates store m5
```

# 一般線性迴歸結果彙整 VI

```
. estout m1 m2 m3 m4 m5, cells(b(star fmt(3)) se(par)) stats(r2_a N, fmt(%9.3f %9.0g) ///
> labels(R-squared))
```

| | m1<br>b/se | m2<br>b/se | m3<br>b/se | m4<br>b/se | m5<br>b/se |
|---|---|---|---|---|---|
| mpg | -238.894*** | | | -289.346*** | -289.346*** |
| | (53.077) | | | (62.539) | (67.629) |
| rep78 | | 19.280 | | 670.897 | 670.897* |
| | | (359.422) | | (343.521) | (269.764) |
| headroom | | | 399.215 | -300.029 | -300.029 |
| | | | (408.176) | (398.052) | (288.952) |
| _cons | 11253.061*** | 6080.379*** | 4970.310*** | 10921.330*** | 10921.330*** |
| | (1170.813) | (1274.060) | (1268.998) | (2153.003) | (2079.182) |
| R-squared | 0.209 | -0.015 | -0.001 | 0.223 | 0.223 |
| N | 74 | 69 | 74 | 69 | 69 |

- 請在 Stata 中, 打開 'outreg2-reg.rtf' 或 'outreg2-reg.xml' 看看。

# 一般線性迴歸結果彙整 VII

- 此外, 在 loop 中如何儲存結果呢?

```
. local replace replace
. foreach v in "mpg" "rep78" "headroom" "mpg rep78 headroom" {
  2.    reg price `v´, robust
  3.    outreg2 using "outreg2-reg-loop", word excel adjr2 br dec(3) `replace´
  4.    local replace append
  5. }
```

Linear regression

| | |
|---|---|
| Number of obs | = 74 |
| F(1, 72) | = 17.28 |
| Prob > F | = 0.0001 |
| R-squared | = 0.2196 |
| Root MSE | = 2623.7 |

| price | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mpg | -238.8943 | 57.47701 | -4.16 | 0.000 | -353.4727 | -124.316 |
| _cons | 11253.06 | 1376.393 | 8.18 | 0.000 | 8509.272 | 13996.85 |

```
outreg2-reg-loop.rtf
outreg2-reg-loop.xml
```

# 一般線性迴歸結果彙整 VIII

```
dir : seeout
Linear regression                               Number of obs     =         69
                                                F(1, 67)          =       0.00
                                                Prob > F          =     0.9531
                                                R-squared         =     0.0000
                                                Root MSE          =       2934
```

| price | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| rep78 | 19.28012 | 326.4983 | 0.06 | 0.953 | -632.4133 | 670.9735 |
| _cons | 6080.379 | 1258.395 | 4.83 | 0.000 | 3568.613 | 8592.146 |

```
outreg2-reg-loop.rtf
outreg2-reg-loop.xml
dir : seeout
Linear regression                               Number of obs     =         74
                                                F(1, 72)          =       1.76
                                                Prob > F          =     0.1888
                                                R-squared         =     0.0131
                                                Root MSE          =     2950.4
```

# 一般線性迴歸結果彙整 IX

| price | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| headroom | 399.2149 | 300.9356 | 1.33 | 0.189 | -200.6892 | 999.119 |
| _cons | 4970.31 | 856.2261 | 5.80 | 0.000 | 3263.454 | 6677.165 |

```
outreg2-reg-loop.rtf
outreg2-reg-loop.xml
dir : seeout
Linear regression                               Number of obs     =         69
                                                F(3, 65)          =       7.80
                                                Prob > F          =     0.0002
                                                R-squared         =     0.2575
                                                Root MSE          =     2566.9
```

| price | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mpg | -289.3462 | 67.62857 | -4.28 | 0.000 | -424.4097 | -154.2826 |
| rep78 | 670.8971 | 269.764 | 2.49 | 0.015 | 132.1412 | 1209.653 |
| headroom | -300.0293 | 288.9519 | -1.04 | 0.303 | -877.1062 | 277.0475 |
| _cons | 10921.33 | 2079.182 | 5.25 | 0.000 | 6768.917 | 15073.74 |

# 一般線性迴歸結果彙整 X

```
outreg2-reg-loop.rtf
outreg2-reg-loop.xml
dir : seeout
```

# Logit/Probit 迴歸結果彙整 I

- 接著考慮 Logit 迴歸之情形:

$$p(y=1) = \frac{e^{x'\beta}}{1+e^{x'\beta}} \tag{1}$$

同上,

- 被解釋變數 $y =$ `inlf` 為一虛擬變數, 若有工作則其值為 1; 否則為 0。
- 而解釋變數 $x$ 則包括:
  - 年齡 (`age`)
  - 教育年數 (`educ`)
  - 小於六歲小孩子之個數 (`kidslt6`)
  - 大於六歲小孩子之個數 (`kidsge6`)

# Logit/Probit 迴歸結果彙整 II

```
. // Logit
. import excel "mroz.xls", sheet("Sheet1") firstrow clear
. save "mroz.dta", replace
file mroz.dta saved
.
. use "mroz.dta", clear
.
. logit inlf age educ kidslt6 kidsge6, nolog
```

Logistic regression — Number of obs = 753; LR chi2(4) = 99.67; Prob > chi2 = 0.0000; Log likelihood = -465.03978; Pseudo R2 = 0.0968

| inlf | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| age | -.063381 | .0124618 | -5.09 | 0.000 | -.0878057 | -.0389562 |
| educ | .1979224 | .0373293 | 5.30 | 0.000 | .1247583 | .2710864 |
| kidslt6 | -1.470007 | .1949278 | -7.54 | 0.000 | -1.852058 | -1.087956 |
| kidsge6 | -.0940861 | .0665954 | -1.41 | 0.158 | -.2246107 | .0364385 |
| _cons | 1.036848 | .7701192 | 1.35 | 0.178 | -.4725582 | 2.546254 |

```
. outreg2 using "outreg2-logit", word dec(4) replace
```

# Logit/Probit 迴歸結果彙整 III

```
outreg2-logit.rtf
dir : seeout


. predict pr1, pr
. sum pr1
    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
         pr1 |        753    .5683931    .1752728   .0314459   .9241488

. margins, atmeans
Adjusted predictions                              Number of obs     =        753
Model VCE    : OIM
Expression   : Pr(inlf), predict()
at           : age             =    42.53785 (mean)
               educ            =    12.28685 (mean)
               kidslt6         =    .2377158 (mean)
               kidsge6         =    1.353254 (mean)
------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       _cons |    .573424   .0193127    29.69   0.000     .5355718    .6112762
------------------------------------------------------------------------------
```

# Logit/Probit 迴歸結果彙整 IV

```
. margins, dydx(*)
Average marginal effects                        Number of obs     =        753
Model VCE    : OIM
Expression   : Pr(inlf), predict()
dy/dx w.r.t. : age educ kidslt6 kidsge6
```

| | dy/dx | Delta-method Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| age | -.0136043 | .0025064 | -5.43 | 0.000 | -.0185166 | -.0086919 |
| educ | .0424826 | .0074582 | 5.70 | 0.000 | .0278648 | .0571004 |
| kidslt6 | -.3155262 | .0357467 | -8.83 | 0.000 | -.3855883 | -.245464 |
| kidsge6 | -.0201949 | .0142306 | -1.42 | 0.156 | -.0480864 | .0076966 |

# Logit/Probit 迴歸結果彙整 V

```
. margins, at(age=(20 70))
Predictive margins                              Number of obs     =        753
Model VCE    : OIM
Expression   : Pr(inlf), predict()
1._at        : age             =          20
2._at        : age             =          70
```

| | Margin | Delta-method Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| _at | | | | | | |
| 1 | .8203898 | .0351901 | 23.31 | 0.000 | .7514185 | .889361 |
| 2 | .2206597 | .0528415 | 4.18 | 0.000 | .1170923 | .3242272 |

# Logit/Probit 迴歸結果彙整 VI

```
. logit inlf age educ kidslt6 kidsge6, nolog robust
Logistic regression                             Number of obs     =        753
                                                Wald chi2(4)      =      74.84
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -465.03978               Pseudo R2         =     0.0968
```

| inlf | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| age | -.063381 | .0123909 | -5.12 | 0.000 | -.0876667 | -.0390952 |
| educ | .1979224 | .037428 | 5.29 | 0.000 | .1245648 | .27128 |
| kidslt6 | -1.470007 | .2027587 | -7.25 | 0.000 | -1.867407 | -1.072607 |
| kidsge6 | -.0940861 | .0684295 | -1.37 | 0.169 | -.2282056 | .0400333 |
| _cons | 1.036848 | .757325 | 1.37 | 0.171 | -.447482 | 2.521177 |

```
. outreg2 using "outreg2-logit", word dec(4) br append
outreg2-logit.rtf
dir : seeout
```

# Logit/Probit 迴歸結果彙整 VII

- 根據 (1) 式, 我們知道

$$p(y=0) = 1 - p(y=1) = \frac{1}{1+e^{x'\beta}} \tag{2}$$

所以, odds ratio 即為 (1) 式除以 (2) 式:

$$\frac{p(y=1)}{p(y=0)} = e^{x'\beta} \tag{3}$$

兩邊同取對數 (log odds ratio) 可得:

$$\ln\left[\frac{p(y=1)}{p(y=0)}\right] = x'\beta \tag{4}$$

# Logit/Probit 迴歸結果彙整 VIII

```
. // odds ratio
. logit inlf age educ kidslt6 kidsge6, nolog or
Logistic regression                             Number of obs     =        753
                                                LR chi2(4)        =      99.67
                                                Prob > chi2       =     0.0000
Log likelihood = -465.03978                     Pseudo R2         =     0.0968
```

| inlf | Odds Ratio | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| age | .9385858 | .0116965 | -5.09 | 0.000 | .9159388 | .9617928 |
| educ | 1.218868 | .0454995 | 5.30 | 0.000 | 1.132875 | 1.311388 |
| kidslt6 | .2299239 | .0448185 | -7.54 | 0.000 | .1569138 | .3369046 |
| kidsge6 | .9102044 | .0606154 | -1.41 | 0.158 | .7988271 | 1.03711 |
| _cons | 2.820313 | 2.171977 | 1.35 | 0.178 | .6234054 | 12.75921 |

```
. outreg2 using "outreg2-logit-or", word br dec(4) replace
outreg2-logit-or.rtf
dir : seeout
```

# Logit/Probit 迴歸結果彙整 IX

```
. logit inlf age educ kidslt6 kidsge6, nolog robust or
Logistic regression                             Number of obs     =        753
                                                Wald chi2(4)      =      74.84
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -465.03978               Pseudo R2         =     0.0968
```

| inlf | Odds Ratio | Robust Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| age | .9385858 | .0116299 | -5.12 | 0.000 | .9160661 | .9616592 |
| educ | 1.218868 | .0456198 | 5.29 | 0.000 | 1.132655 | 1.311642 |
| kidslt6 | .2299239 | .0466191 | -7.25 | 0.000 | .1545239 | .3421154 |
| kidsge6 | .9102044 | .0622849 | -1.37 | 0.169 | .7959606 | 1.040845 |
| _cons | 2.820313 | 2.135893 | 1.37 | 0.171 | .6392357 | 12.44324 |

```
. outreg2 using "outreg2-logit-or", word br dec(4) eform cti(odds ratio) drop(inlf) appen
outreg2-logit-or.rtf
dir : seeout
```

# Panel Data 迴歸結果彙整 I

- 假設我們跑了幾個擁有許多 (國家、州或省、產業、公司或年) 的高維度固定效應的迴歸時, 但不希望 (其實一般也沒太大意義) 報告這些係數, 怎麼在 outreg2 中處理?

```
. webuse grunfeld, clear
. xtset company year
       panel variable:  company (strongly balanced)
        time variable:  year, 1935 to 1954
                delta:  1 year
. xtreg invest mvalue kstock, re robust
Random-effects GLS regression                   Number of obs     =       200
Group variable: company                         Number of groups  =        10
R-sq:                                           Obs per group:
     within  = 0.7668                                         min =        20
     between = 0.8196                                         avg =      20.0
     overall = 0.8061                                         max =        20
                                                Wald chi2(2)      =     70.13
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
                                  (Std. Err. adjusted for 10 clusters in company)
```

# Panel Data 迴歸結果彙整 II

| invest | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mvalue | .1097811 | .0137557 | 7.98 | 0.000 | .0828206 | .1367417 |
| kstock | .308113 | .0549728 | 5.60 | 0.000 | .2003683 | .4158576 |
| _cons | -57.83441 | 24.84323 | -2.33 | 0.020 | -106.5262 | -9.142576 |
| sigma_u | 84.20095 | | | | | |
| sigma_e | 52.767964 | | | | | |
| rho | .71800838 | (fraction of variance due to u_i) | | | | |

```
. outreg2 using "outreg2-pd", word excel replace
outreg2-pd.rtf
outreg2-pd.xml
dir : seeout
```

# Panel Data 迴歸結果彙整 III

```
. xtreg invest mvalue kstock, fe robust
Fixed-effects (within) regression               Number of obs      =       200
Group variable: company                         Number of groups   =        10
R-sq:                                           Obs per group:
     within  = 0.7668                                         min =        20
     between = 0.8194                                         avg =      20.0
     overall = 0.8060                                         max =        20
                                                F(2,9)             =     28.31
corr(u_i, Xb)  = -0.1517                        Prob > F           =    0.0001
                                         (Std. Err. adjusted for 10 clusters in company)
```

| invest | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mvalue | .1101238 | .0151945 | 7.25 | 0.000 | .0757515 | .1444961 |
| kstock | .3100653 | .0527518 | 5.88 | 0.000 | .1907325 | .4293981 |
| _cons | -58.74393 | 27.60286 | -2.13 | 0.062 | -121.1859 | 3.698079 |
| sigma_u | 85.732501 | | | | | |
| sigma_e | 52.767964 | | | | | |
| rho | .72525012 | (fraction of variance due to u_i) | | | | |

# Panel Data 迴歸結果彙整 IV

```
. outreg2 using "outreg2-pd", word excel append
outreg2-pd.rtf
outreg2-pd.xml
dir : seeout
```

```
. xi: reg invest mvalue kstock i.company, robust
i.company         _Icompany_1-10      (naturally coded; _Icompany_1 omitted)
Linear regression                               Number of obs     =        200
                                                F(11, 188)        =     230.01
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9441
                                                Root MSE          =     52.768
```

| invest | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mvalue | .1101238 | .019378 | 5.68 | 0.000 | .0718975 | .1483501 |
| kstock | .3100653 | .042795 | 7.25 | 0.000 | .2256452 | .3944854 |
| _Icompany_2 | 172.2025 | 45.33833 | 3.80 | 0.000 | 82.76529 | 261.6397 |
| _Icompany_3 | -165.2751 | 43.34871 | -3.81 | 0.000 | -250.7875 | -79.76276 |
| _Icompany_4 | 42.4874 | 65.0075 | 0.65 | 0.514 | -85.75047 | 170.7253 |
| _Icompany_5 | -44.32013 | 72.32776 | -0.61 | 0.541 | -186.9984 | 98.35814 |

# Panel Data 迴歸結果彙整 V

| | | | | | | |
|---|---|---|---|---|---|---|
| _Icompany_6 | 47.13539 | 70.1674 | 0.67 | 0.503 | -91.28122 | 185.552 |
| _Icompany_7 | 3.743212 | 73.4742 | 0.05 | 0.959 | -141.1966 | 148.683 |
| _Icompany_8 | 12.75103 | 66.25976 | 0.19 | 0.848 | -117.9571 | 143.4592 |
| _Icompany_9 | -16.92558 | 70.17203 | -0.24 | 0.810 | -155.3513 | 121.5002 |
| _Icompany_10 | 63.72884 | 77.69617 | 0.82 | 0.413 | -89.53949 | 216.9972 |
| _cons | -70.29669 | 79.06791 | -0.89 | 0.375 | -226.271 | 85.67764 |

```
. outreg2 using "outreg2-pd", word excel append
outreg2-pd.rtf
outreg2-pd.xml
dir : seeout


. xi: reg invest mvalue kstock i.company, robust
i.company         _Icompany_1-10      (naturally coded; _Icompany_1 omitted)
Linear regression                               Number of obs     =        200
                                                F(11, 188)        =     230.01
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9441
                                                Root MSE          =     52.768
```

| invest | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|

# Panel Data 迴歸結果彙整 VI

| | | | | | | |
|---|---|---|---|---|---|---|
| mvalue | .1101238 | .019378 | 5.68 | 0.000 | .0718975 | .1483501 |
| kstock | .3100653 | .042795 | 7.25 | 0.000 | .2256452 | .3944854 |
| _Icompany_2 | 172.2025 | 45.33833 | 3.80 | 0.000 | 82.76529 | 261.6397 |
| _Icompany_3 | -165.2751 | 43.34871 | -3.81 | 0.000 | -250.7875 | -79.76276 |
| _Icompany_4 | 42.4874 | 65.0075 | 0.65 | 0.514 | -85.75047 | 170.7253 |
| _Icompany_5 | -44.32013 | 72.32776 | -0.61 | 0.541 | -186.9984 | 98.35814 |
| _Icompany_6 | 47.13539 | 70.1674 | 0.67 | 0.503 | -91.28122 | 185.552 |
| _Icompany_7 | 3.743212 | 73.4742 | 0.05 | 0.959 | -141.1966 | 148.683 |
| _Icompany_8 | 12.75103 | 66.25976 | 0.19 | 0.848 | -117.9571 | 143.4592 |
| _Icompany_9 | -16.92558 | 70.17203 | -0.24 | 0.810 | -155.3513 | 121.5002 |
| _Icompany_10 | 63.72884 | 77.69617 | 0.82 | 0.413 | -89.53949 | 216.9972 |
| _cons | -70.29669 | 79.06791 | -0.89 | 0.375 | -226.271 | 85.67764 |

```
. outreg2 using "outreg2-pd", word excel drop(_I*) append
outreg2-pd.rtf
outreg2-pd.xml
dir : seeout
```

# Panel Data 迴歸結果彙整 VII

```
. xi: reg invest mvalue kstock i.company i.year, robust
i.company         _Icompany_1-10      (naturally coded; _Icompany_1 omitted)
i.year            _Iyear_1935-1954    (naturally coded; _Iyear_1935 omitted)
Linear regression                               Number of obs     =        200
                                                F(30, 169)        =      55.46
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9517
                                                Root MSE          =     51.725
```

| invest | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mvalue | .1177158 | .0191799 | 6.14 | 0.000 | .0798528 | .1555789 |
| kstock | .3579163 | .0544027 | 6.58 | 0.000 | .25052 | .4653126 |
| _Icompany_2 | 207.0542 | 45.87922 | 4.51 | 0.000 | 116.484 | 297.6244 |
| _Icompany_3 | -135.2308 | 43.64201 | -3.10 | 0.002 | -221.3845 | -49.07711 |
| _Icompany_4 | 95.3538 | 67.37354 | 1.42 | 0.159 | -37.64834 | 228.3559 |
| _Icompany_5 | -5.438636 | 71.35518 | -0.08 | 0.939 | -146.3009 | 135.4237 |
| _Icompany_6 | 102.8886 | 72.39836 | 1.42 | 0.157 | -40.03303 | 245.8102 |
| _Icompany_7 | 51.46657 | 74.15875 | 0.69 | 0.489 | -94.93025 | 197.8634 |
| _Icompany_8 | 67.49048 | 68.4246 | 0.99 | 0.325 | -67.58656 | 202.5675 |
| _Icompany_9 | 30.21752 | 70.87016 | 0.43 | 0.670 | -109.6873 | 170.1223 |
| _Icompany_10 | 126.8371 | 80.74055 | 1.57 | 0.118 | -32.55288 | 286.227 |

# Panel Data 迴歸結果彙整 VIII

| | | | | | | |
|---|---|---|---|---|---|---|
| _Iyear_1936 | -19.19741 | 20.42031 | -0.94 | 0.349 | -59.50914 | 21.11433 |
| _Iyear_1937 | -40.69001 | 25.22834 | -1.61 | 0.109 | -90.49329 | 9.113276 |
| _Iyear_1938 | -39.2264 | 22.90384 | -1.71 | 0.089 | -84.44088 | 5.988073 |
| _Iyear_1939 | -69.47029 | 29.37702 | -2.36 | 0.019 | -127.4635 | -11.47711 |
| _Iyear_1940 | -44.23507 | 20.42449 | -2.17 | 0.032 | -84.55506 | -3.915085 |
| _Iyear_1941 | -18.80446 | 20.06319 | -0.94 | 0.350 | -58.41122 | 20.80229 |
| _Iyear_1942 | -21.13979 | 20.79511 | -1.02 | 0.311 | -62.19143 | 19.91185 |
| _Iyear_1943 | -42.97762 | 21.00895 | -2.05 | 0.042 | -84.45139 | -1.503844 |
| _Iyear_1944 | -43.09876 | 24.3687 | -1.77 | 0.079 | -91.20503 | 5.007497 |
| _Iyear_1945 | -55.68303 | 23.21866 | -2.40 | 0.018 | -101.519 | -9.847073 |
| _Iyear_1946 | -31.16928 | 23.81147 | -1.31 | 0.192 | -78.17552 | 15.83695 |
| _Iyear_1947 | -39.39223 | 22.84673 | -1.72 | 0.087 | -84.49397 | 5.709496 |
| _Iyear_1948 | -43.71651 | 27.34758 | -1.60 | 0.112 | -97.70338 | 10.27036 |
| _Iyear_1949 | -73.4951 | 26.06687 | -2.82 | 0.005 | -124.9537 | -22.03647 |
| _Iyear_1950 | -75.89611 | 26.74627 | -2.84 | 0.005 | -128.6959 | -23.09629 |
| _Iyear_1951 | -62.4809 | 32.88449 | -1.90 | 0.059 | -127.3982 | 2.436389 |
| _Iyear_1952 | -64.63233 | 37.15616 | -1.74 | 0.084 | -137.9823 | 8.717656 |
| _Iyear_1953 | -67.71796 | 38.98302 | -1.74 | 0.084 | -144.6743 | 9.23843 |
| _Iyear_1954 | -93.52622 | 29.31568 | -3.19 | 0.002 | -151.3983 | -35.65412 |
| _cons | -86.90019 | 75.436 | -1.15 | 0.251 | -235.8184 | 62.01805 |

```
. outreg2 using "outreg2-pd", word excel append
outreg2-pd.rtf
```

# Panel Data 迴歸結果彙整 IX

```
outreg2-pd.xml
dir : seeout


. xi: reg invest mvalue kstock i.company i.year, robust
i.company         _Icompany_1-10      (naturally coded; _Icompany_1 omitted)
i.year            _Iyear_1935-1954    (naturally coded; _Iyear_1935 omitted)
Linear regression                               Number of obs     =        200
                                                F(30, 169)        =      55.46
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9517
                                                Root MSE          =     51.725
```

| invest | Coef. | Robust Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| mvalue | .1177158 | .0191799 | 6.14 | 0.000 | .0798528 | .1555789 |
| kstock | .3579163 | .0544027 | 6.58 | 0.000 | .25052 | .4653126 |
| _Icompany_2 | 207.0542 | 45.87922 | 4.51 | 0.000 | 116.484 | 297.6244 |
| _Icompany_3 | -135.2308 | 43.64201 | -3.10 | 0.002 | -221.3845 | -49.07711 |
| _Icompany_4 | 95.3538 | 67.37354 | 1.42 | 0.159 | -37.64834 | 228.3559 |
| _Icompany_5 | -5.438636 | 71.35518 | -0.08 | 0.939 | -146.3009 | 135.4237 |
| _Icompany_6 | 102.8886 | 72.39836 | 1.42 | 0.157 | -40.03303 | 245.8102 |

# Panel Data 迴歸結果彙整 X

| | | | | | | |
|---|---|---|---|---|---|---|
| _Icompany_7 | 51.46657 | 74.15875 | 0.69 | 0.489 | -94.93025 | 197.8634 |
| _Icompany_8 | 67.49048 | 68.4246 | 0.99 | 0.325 | -67.58656 | 202.5675 |
| _Icompany_9 | 30.21752 | 70.87016 | 0.43 | 0.670 | -109.6873 | 170.1223 |
| _Icompany_10 | 126.8371 | 80.74055 | 1.57 | 0.118 | -32.55288 | 286.227 |
| _Iyear_1936 | -19.19741 | 20.42031 | -0.94 | 0.349 | -59.50914 | 21.11433 |
| _Iyear_1937 | -40.69001 | 25.22834 | -1.61 | 0.109 | -90.49329 | 9.113276 |
| _Iyear_1938 | -39.2264 | 22.90384 | -1.71 | 0.089 | -84.44088 | 5.988073 |
| _Iyear_1939 | -69.47029 | 29.37702 | -2.36 | 0.019 | -127.4635 | -11.47711 |
| _Iyear_1940 | -44.23507 | 20.42449 | -2.17 | 0.032 | -84.55506 | -3.915085 |
| _Iyear_1941 | -18.80446 | 20.06319 | -0.94 | 0.350 | -58.41122 | 20.80229 |
| _Iyear_1942 | -21.13979 | 20.79511 | -1.02 | 0.311 | -62.19143 | 19.91185 |
| _Iyear_1943 | -42.97762 | 21.00895 | -2.05 | 0.042 | -84.45139 | -1.503844 |
| _Iyear_1944 | -43.09876 | 24.3687 | -1.77 | 0.079 | -91.20503 | 5.007497 |
| _Iyear_1945 | -55.68303 | 23.21866 | -2.40 | 0.018 | -101.519 | -9.847073 |
| _Iyear_1946 | -31.16928 | 23.81147 | -1.31 | 0.192 | -78.17552 | 15.83695 |
| _Iyear_1947 | -39.39223 | 22.84673 | -1.72 | 0.087 | -84.49397 | 5.709496 |
| _Iyear_1948 | -43.71651 | 27.34758 | -1.60 | 0.112 | -97.70338 | 10.27036 |
| _Iyear_1949 | -73.4951 | 26.06687 | -2.82 | 0.005 | -124.9537 | -22.03647 |
| _Iyear_1950 | -75.89611 | 26.74627 | -2.84 | 0.005 | -128.6959 | -23.09629 |
| _Iyear_1951 | -62.4809 | 32.88449 | -1.90 | 0.059 | -127.3982 | 2.436389 |
| _Iyear_1952 | -64.63233 | 37.15616 | -1.74 | 0.084 | -137.9823 | 8.717656 |
| _Iyear_1953 | -67.71796 | 38.98302 | -1.74 | 0.084 | -144.6743 | 9.23843 |
| _Iyear_1954 | -93.52622 | 29.31568 | -3.19 | 0.002 | -151.3983 | -35.65412 |

# Panel Data 迴歸結果彙整 XI

| | | | | | | |
|---|---|---|---|---|---|---|
| _cons | -86.90019 | 75.436 | -1.15 | 0.251 | -235.8184 | 62.01805 |

```
. outreg2 using "outreg2-pd", word excel drop(_I*) append
outreg2-pd.rtf
outreg2-pd.xml
dir : seeout
```

- 請在 Stata 中, 打開 'outreg2-pd1.rtf' 或 'outreg2-pd1.xml' 看看當中之差異。