



(863 real changes made)

name: **<unnamed>**

log: **C:\Users\ramon\Desktop\UZH\Empirical Methods\Problem Sets\Problem Set 2\Stata\log\_gm**

log type: **smcl**

opened on: **11 Nov 2019, 17:42:25**

```

1 .
2 . use "C:\Users\ramon\Desktop\UZH\Empirical Methods\Problem Sets\Problem Set 2\Stata\class_size_p
3 .
4 . *Empirical Question
5 .
6 . ***a)
7 .
8 . gen big_school = 0

9 . replace big_school = 1 if n_classes > 2
(863 real changes made)

10 .
11 . ***a-i)
12 .
13 . reg mrkgrm classize

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>1396.59756</b> | <b>1</b>     | <b>1396.59756</b> | F(1, 1965)    | = | <b>28.22</b>  |
| Residual | <b>97259.1452</b> | <b>1,965</b> | <b>49.4957482</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.0142</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.0137</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>7.0353</b> |

| mrkgrm   | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|----------|-----------------|-----------------|--------------|--------------|----------------------|-----------------|
| classize | <b>.1341112</b> | <b>.0252472</b> | <b>5.31</b>  | <b>0.000</b> | <b>.0845971</b>      | <b>.1836254</b> |
| _cons    | <b>68.6283</b>  | <b>.7839904</b> | <b>87.54</b> | <b>0.000</b> | <b>67.09076</b>      | <b>70.16584</b> |

```

14 .
15 . outreg2 using "PS2_regressiona.doc", replace ctitle(a-i)
PS2_regressiona.doc
dir : seeout

```

```

16 .
17 . ***a-ii)
18 .
19 . reg mrkgrm classize big_school

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>2068.58052</b> | <b>2</b>     | <b>1034.29026</b> | F(2, 1964)    | = | <b>21.03</b>  |
| Residual | <b>96587.1622</b> | <b>1,964</b> | <b>49.1787995</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.0210</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.0200</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>7.0128</b> |

| mrkgrm     | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|------------|-----------------|-----------------|--------------|--------------|----------------------|-----------------|
| classize   | <b>.1019125</b> | <b>.0266311</b> | <b>3.83</b>  | <b>0.000</b> | <b>.0496844</b>      | <b>.1541407</b> |
| big_school | <b>1.246412</b> | <b>.3371876</b> | <b>3.70</b>  | <b>0.000</b> | <b>.5851293</b>      | <b>1.907695</b> |
| _cons      | <b>69.06062</b> | <b>.7901793</b> | <b>87.40</b> | <b>0.000</b> | <b>67.51094</b>      | <b>70.6103</b>  |

```

20 .
21 . outreg2 using "PS2_regressiona.doc", append ctitle(a-ii)
    PS2_regressiona.doc
    dir : seeout
22 .
23 . **b)
24 .
25 . drop big_school
26 .
27 . ***b-i)
28 .
29 . gen ln_mrkgrm = log(mrkgrm)
30 . reg mrkgrm classize pct_dis

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>36025.757</b>  | <b>2</b>     | <b>18012.8785</b> | F(2, 1964)    | = | <b>564.86</b> |
| Residual | <b>62629.9858</b> | <b>1,964</b> | <b>31.8889948</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.3652</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.3645</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>5.647</b>  |

  

| mrkgrm   | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classize | <b>-.0602863</b> | <b>.0211063</b> | <b>-2.86</b>  | <b>0.004</b> | <b>-.1016794</b>     | <b>-.0188931</b> |
| pct_dis  | <b>-.3348571</b> | <b>.0101615</b> | <b>-32.95</b> | <b>0.000</b> | <b>-.3547856</b>     | <b>-.3149286</b> |
| _cons    | <b>79.05196</b>  | <b>.7043112</b> | <b>112.24</b> | <b>0.000</b> | <b>77.67068</b>      | <b>80.43323</b>  |

```

31 . outreg2 using "PS2_regressionbi.doc", replace ctitle(normal)
    PS2_regressionbi.doc
    dir : seeout

```

```

32 . reg ln_mrkgrm classize pct_dis

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>7.53443573</b> | <b>2</b>     | <b>3.76721786</b> | F(2, 1964)    | = | <b>573.18</b> |
| Residual | <b>12.9082879</b> | <b>1,964</b> | <b>.006572448</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.3686</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.3679</b> |
| Total    | <b>20.4427236</b> | <b>1,966</b> | <b>.01039813</b>  | Root MSE      | = | <b>.08107</b> |

  

| ln_mrkgrm | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|-----------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classize  | <b>-.0007001</b> | <b>.000303</b>  | <b>-2.31</b>  | <b>0.021</b> | <b>-.0012944</b>     | <b>-.0001059</b> |
| pct_dis   | <b>-.0048256</b> | <b>.0001459</b> | <b>-33.08</b> | <b>0.000</b> | <b>-.0051117</b>     | <b>-.0045395</b> |
| _cons     | <b>4.367718</b>  | <b>.0101113</b> | <b>431.96</b> | <b>0.000</b> | <b>4.347888</b>      | <b>4.387548</b>  |

```

33 . outreg2 using "PS2_regressionbi.doc", append ctitle(log)
    PS2_regressionbi.doc
    dir : seeout

```

```

34 .
35 . ***b-ii)
36 .
37 . **c)
38 .
39 . gen small_size = 0

40 . replace small_size = 1 if classsize <= 10
    (8 real changes made)

41 .
42 . reg mrkgrm small_size pct_dis

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>35817.7919</b> | <b>2</b>     | <b>17908.8959</b> | F(2, 1964)    | = | <b>559.74</b> |
| Residual | <b>62837.9509</b> | <b>1,964</b> | <b>31.9948833</b> | Prob > F      | = | <b>0.0000</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | R-squared     | = | <b>0.3631</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.3624</b> |
|          |                   |              |                   | Root MSE      | = | <b>5.6564</b> |

| mrkgrm     | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|------------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| small_size | <b>2.559678</b>  | <b>2.003923</b> | <b>1.28</b>   | <b>0.202</b> | <b>-1.370361</b>     | <b>6.489718</b>  |
| pct_dis    | <b>-.3267693</b> | <b>.0097728</b> | <b>-33.44</b> | <b>0.000</b> | <b>-.3459354</b>     | <b>-.3076032</b> |
| _cons      | <b>77.09925</b>  | <b>.1834885</b> | <b>420.19</b> | <b>0.000</b> | <b>76.73939</b>      | <b>77.4591</b>   |

```

43 . outreg2 using "PS2_regressionc.doc", replace ctitle(c)
    PS2_regressionc.doc
    dir : seeout

```

```

44 . test _b[small_size]=0

```

```

    ( 1)  small_size = 0

```

```

           F( 1, 1964) =    1.63
           Prob > F =    0.2016

```

```

45 . local sign_ss = sign(_b[small_size])

```

```

46 . display "Ho: coef <= 0  p-value = " ttail(r(df_r), `sign_ss'*sqrt(r(F)))
    Ho: coef <= 0  p-value = .10081773

```

```

47 .
48 . ***c-i)
49 .

```

```

50 . ****Hand- and Stata-Testing!!!
51 .
52 . ***c-ii)
53 .
54 . reg mrkgrm pct_dis

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967          |
|----------|-------------------|--------------|-------------------|---------------|---|----------------|
| Model    | <b>35765.5896</b> | <b>1</b>     | <b>35765.5896</b> | F(1, 1965)    | = | <b>1117.49</b> |
| Residual | <b>62890.1531</b> | <b>1,965</b> | <b>32.005167</b>  | Prob > F      | = | <b>0.0000</b>  |
|          |                   |              |                   | R-squared     | = | <b>0.3625</b>  |
|          |                   |              |                   | Adj R-squared | = | <b>0.3622</b>  |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>5.6573</b>  |

  

| mrkgrm  | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|---------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| pct_dis | <b>-.3267448</b> | <b>.0097743</b> | <b>-33.43</b> | <b>0.000</b> | <b>-.3459139</b>     | <b>-.3075757</b> |
| _cons   | <b>77.10933</b>  | <b>.1833481</b> | <b>420.56</b> | <b>0.000</b> | <b>76.74975</b>      | <b>77.4689</b>   |

```

55 . outreg2 using "PS2_regressioncii.doc", replace ctitle(1)
    PS2_regressioncii.doc
    dir : seeout

```

```

56 . predict residuals1, residuals

```

```

57 .
58 . reg small_size pct_dis

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967          |
|----------|-------------------|--------------|-------------------|---------------|---|----------------|
| Model    | <b>.00003067</b>  | <b>1</b>     | <b>.00003067</b>  | F(1, 1965)    | = | <b>0.01</b>    |
| Residual | <b>7.96743247</b> | <b>1,965</b> | <b>.004054673</b> | Prob > F      | = | <b>0.9307</b>  |
|          |                   |              |                   | R-squared     | = | <b>0.0000</b>  |
|          |                   |              |                   | Adj R-squared | = | <b>-0.0005</b> |
| Total    | <b>7.96746314</b> | <b>1,966</b> | <b>.004052626</b> | Root MSE      | = | <b>.06368</b>  |

  

| small_size | Coef.           | Std. Err.       | t           | P> t         | [95% Conf. Interval] |                 |
|------------|-----------------|-----------------|-------------|--------------|----------------------|-----------------|
| pct_dis    | <b>9.57e-06</b> | <b>.00011</b>   | <b>0.09</b> | <b>0.931</b> | <b>-.0002062</b>     | <b>.0002253</b> |
| _cons      | <b>.0039382</b> | <b>.0020637</b> | <b>1.91</b> | <b>0.056</b> | <b>-.0001091</b>     | <b>.0079854</b> |

```

59 . outreg2 using "PS2_regressioncii.doc", append ctitle(2)
    PS2_regressioncii.doc
    dir : seeout

```

```

60 . predict residuals2, residuals

```

```

61 .
62 . reg residuals1 residuals2

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>52.2022502</b> | <b>1</b>     | <b>52.2022502</b> | F(1, 1965)    | = | <b>1.63</b>   |
| Residual | <b>62837.9512</b> | <b>1,965</b> | <b>31.9786011</b> | Prob > F      | = | <b>0.2015</b> |
|          |                   |              |                   | R-squared     | = | <b>0.0008</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.0003</b> |
| Total    | <b>62890.1534</b> | <b>1,966</b> | <b>31.9888878</b> | Root MSE      | = | <b>5.655</b>  |

| residuals1 | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|------------|------------------|-----------------|--------------|--------------|----------------------|-----------------|
| residuals2 | <b>2.559679</b>  | <b>2.003413</b> | <b>1.28</b>  | <b>0.202</b> | <b>-1.369359</b>     | <b>6.488716</b> |
| _cons      | <b>-6.64e-09</b> | <b>.1275051</b> | <b>-0.00</b> | <b>1.000</b> | <b>-.2500594</b>     | <b>.2500594</b> |

63 . outreg2 using "PS2\_regressioncii.doc", append ctitle(3)

PS2\_regressioncii.doc

dir : seeout

64 .

65 . \*\*\*c-iii)

66 .

67 . egen mean\_mrkgrm = mean(mrkgrm)

68 . egen mean\_small\_size = mean(small\_size)

69 . egen mean\_pct\_dis = mean(pct\_dis)

70 .

71 . display mean\_mrkgrm - mean\_small\_size\*2.559768 - mean\_pct\_dis\*-.3267693

**77.099243**

72 .

73 . \*\*\*c-iv)

74 .

75 . reg ln\_mrkgrm small\_size pct\_dis

| Source   | SS                | df           | MS               | Number of obs | = | <b>1,967</b>  |
|----------|-------------------|--------------|------------------|---------------|---|---------------|
| Model    | <b>7.5099808</b>  | <b>2</b>     | <b>3.7549904</b> | F(2, 1964)    | = | <b>570.24</b> |
| Residual | <b>12.9327428</b> | <b>1,964</b> | <b>.0065849</b>  | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                  | R-squared     | = | <b>0.3674</b> |
|          |                   |              |                  | Adj R-squared | = | <b>0.3667</b> |
| Total    | <b>20.4427236</b> | <b>1,966</b> | <b>.01039813</b> | Root MSE      | = | <b>.08115</b> |

| ln_mrkgrm  | Coef.            | Std. Err.       | t              | P> t         | [95% Conf. Interval] |                  |
|------------|------------------|-----------------|----------------|--------------|----------------------|------------------|
| small_size | <b>.0365346</b>  | <b>.0287485</b> | <b>1.27</b>    | <b>0.204</b> | <b>-.0198462</b>     | <b>.0929154</b>  |
| pct_dis    | <b>-.0047317</b> | <b>.0001402</b> | <b>-33.75</b>  | <b>0.000</b> | <b>-.0050067</b>     | <b>-.0044568</b> |
| _cons      | <b>4.345013</b>  | <b>.0026323</b> | <b>1650.62</b> | <b>0.000</b> | <b>4.339851</b>      | <b>4.350176</b>  |

76 . outreg2 using "PS2\_regressionciv.doc", replace ctitle(c-iv)

PS2\_regressionciv.doc

dir : seeout

77 .

78 .

79 . \*\*d)

```

80 .
81 . gen many_dis = 0

82 . replace many_dis = 1 if pct_dis > 10
    (858 real changes made)

83 . gen many_disXclasssize = many_dis*classsize

84 . reg mrkgrm classsize many_dis many_disXclasssize

```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>29649.3319</b> | <b>3</b>     | <b>9883.11065</b> | F(3, 1963)    | = | <b>281.14</b> |
| Residual | <b>69006.4108</b> | <b>1,963</b> | <b>35.153546</b>  | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.3005</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.2995</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>5.929</b>  |

| mrkgrm             | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|--------------------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classsize          | <b>-.1101571</b> | <b>.0291463</b> | <b>-3.78</b>  | <b>0.000</b> | <b>-.1673179</b>     | <b>-.0529962</b> |
| many_dis           | <b>-15.71298</b> | <b>1.346291</b> | <b>-11.67</b> | <b>0.000</b> | <b>-18.35329</b>     | <b>-13.07267</b> |
| many_disXclasssize | <b>.2686753</b>  | <b>.043792</b>  | <b>6.14</b>   | <b>0.000</b> | <b>.1827916</b>      | <b>.354559</b>   |
| _cons              | <b>79.52074</b>  | <b>.9369263</b> | <b>84.87</b>  | <b>0.000</b> | <b>77.68326</b>      | <b>81.35821</b>  |

```

85 . outreg2 using "PS2_regressiond.doc", replace ctitle(d)
    PS2_regressiond.doc
    dir : seeout

```

```

86 .
87 . ***d-i)
88 .
89 . test _b[many_dis]=0

    ( 1)  many_dis = 0

           F( 1, 1963) = 136.22
           Prob > F = 0.0000

90 . test _b[many_disXclasssize]=0, accumulate

    ( 1)  many_dis = 0
    ( 2)  many_disXclasssize = 0

           F( 2, 1963) = 401.85
           Prob > F = 0.0000

91 .
92 .
93 . ****Ru^2=0.3005

```

94 . reg mrkgrm classize

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>1396.59756</b> | <b>1</b>     | <b>1396.59756</b> | F(1, 1965)    | = | <b>28.22</b>  |
| Residual | <b>97259.1452</b> | <b>1,965</b> | <b>49.4957482</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.0142</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.0137</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>7.0353</b> |

  

| mrkgrm   | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|----------|-----------------|-----------------|--------------|--------------|----------------------|-----------------|
| classize | <b>.1341112</b> | <b>.0252472</b> | <b>5.31</b>  | <b>0.000</b> | <b>.0845971</b>      | <b>.1836254</b> |
| _cons    | <b>68.6283</b>  | <b>.7839904</b> | <b>87.54</b> | <b>0.000</b> | <b>67.09076</b>      | <b>70.16584</b> |

95 . \*\*\*\*Rr^2=0.0142  
 96 . \*\*\*\*q=2, N-K=df=1,963  
 97 . display ((0.3005-0.0142)/2)/((1-0.3005)/1963)  
**401.72044**

98 .  
 99 .  
 100 . \*\*\*d-ii)  
 101 .  
 102 . \*\*e)  
 103 .  
 104 . reg mrkgrm classize if many\_dis == 1

| Source   | SS                | df         | MS                | Number of obs | = | 858           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>826.915211</b> | <b>1</b>   | <b>826.915211</b> | F(1, 856)     | = | <b>18.08</b>  |
| Residual | <b>39159.72</b>   | <b>856</b> | <b>45.7473364</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |            |                   | R-squared     | = | <b>0.0207</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.0195</b> |
| Total    | <b>39986.6352</b> | <b>857</b> | <b>46.6588509</b> | Root MSE      | = | <b>6.7637</b> |

  

| mrkgrm   | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|----------|-----------------|-----------------|--------------|--------------|----------------------|-----------------|
| classize | <b>.1585182</b> | <b>.0372848</b> | <b>4.25</b>  | <b>0.000</b> | <b>.0853379</b>      | <b>.2316986</b> |
| _cons    | <b>63.80775</b> | <b>1.102878</b> | <b>57.86</b> | <b>0.000</b> | <b>61.64309</b>      | <b>65.97241</b> |

105 . outreg2 using "PS2\_regressionone.doc", replace ctitle(high dis)  
PS2\_regressionone.doc  
dir : seeout

106 . reg mrkgrm classize if many\_dis == 0

| Source   | SS                | df           | MS                | Number of obs | = | 1,109         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>502.144157</b> | <b>1</b>     | <b>502.144157</b> | F(1, 1107)    | = | <b>18.62</b>  |
| Residual | <b>29846.6908</b> | <b>1,107</b> | <b>26.9617803</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.0165</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.0157</b> |
| Total    | <b>30348.835</b>  | <b>1,108</b> | <b>27.3906453</b> | Root MSE      | = | <b>5.1925</b> |

  

| mrkgrm   | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| classize | <b>-.1101571</b> | <b>.0255254</b> | <b>-4.32</b> | <b>0.000</b> | <b>-.1602407</b>     | <b>-.0600735</b> |
| _cons    | <b>79.52074</b>  | <b>.8205313</b> | <b>96.91</b> | <b>0.000</b> | <b>77.91076</b>      | <b>81.13071</b>  |

```
107 . outreg2 using "PS2_regression.doc", append ctitle(low dis)
    PS2_regression.doc
    dir : seeout
```

```
108 . reg mrkgrm classize many_dis many_disXclassize
```

| Source   | SS                | df           | MS                | Number of obs | = | 1,967         |
|----------|-------------------|--------------|-------------------|---------------|---|---------------|
| Model    | <b>29649.3319</b> | <b>3</b>     | <b>9883.11065</b> | F(3, 1963)    | = | <b>281.14</b> |
| Residual | <b>69006.4108</b> | <b>1,963</b> | <b>35.153546</b>  | Prob > F      | = | <b>0.0000</b> |
|          |                   |              |                   | R-squared     | = | <b>0.3005</b> |
|          |                   |              |                   | Adj R-squared | = | <b>0.2995</b> |
| Total    | <b>98655.7428</b> | <b>1,966</b> | <b>50.1809475</b> | Root MSE      | = | <b>5.929</b>  |

  

| mrkgrm            | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|-------------------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classize          | <b>-.1101571</b> | <b>.0291463</b> | <b>-3.78</b>  | <b>0.000</b> | <b>-.1673179</b>     | <b>-.0529962</b> |
| many_dis          | <b>-15.71298</b> | <b>1.346291</b> | <b>-11.67</b> | <b>0.000</b> | <b>-18.35329</b>     | <b>-13.07267</b> |
| many_disXclassize | <b>.2686753</b>  | <b>.043792</b>  | <b>6.14</b>   | <b>0.000</b> | <b>.1827916</b>      | <b>.354559</b>   |
| _cons             | <b>79.52074</b>  | <b>.9369263</b> | <b>84.87</b>  | <b>0.000</b> | <b>77.68326</b>      | <b>81.35821</b>  |

```
109 . outreg2 using "PS2_regression.doc", append ctitle(d)
    PS2_regression.doc
    dir : seeout
```

```
110 .
111 . **f)
112 .
113 . foreach regioncode in Reg1 Reg2 Reg3 Reg4 Reg5 Reg6{
    2.      gen `regioncode' = 0
    3.      replace `regioncode' = 1 if regioncode == "`regioncode'"
    4. }
(255 real changes made)
(195 real changes made)
(267 real changes made)
(276 real changes made)
(574 real changes made)
(400 real changes made)
```

```
114 .
115 . **g)
116 .
117 . reg mrkgrm classize pct_dis if regioncode == "Reg1"
```

| Source   | SS                | df         | MS                | Number of obs | = | 255           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>2865.43406</b> | <b>2</b>   | <b>1432.71703</b> | F(2, 252)     | = | <b>66.06</b>  |
| Residual | <b>5465.35025</b> | <b>252</b> | <b>21.6878978</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |            |                   | R-squared     | = | <b>0.3440</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.3388</b> |
| Total    | <b>8330.78431</b> | <b>254</b> | <b>32.7983634</b> | Root MSE      | = | <b>4.657</b>  |

  

| mrkgrm   | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classize | <b>-.0900784</b> | <b>.0450526</b> | <b>-2.00</b>  | <b>0.047</b> | <b>-.1788059</b>     | <b>-.0013508</b> |
| pct_dis  | <b>-.2490626</b> | <b>.0218086</b> | <b>-11.42</b> | <b>0.000</b> | <b>-.2920129</b>     | <b>-.2061122</b> |
| _cons    | <b>81.00851</b>  | <b>1.311482</b> | <b>61.77</b>  | <b>0.000</b> | <b>78.42564</b>      | <b>83.59137</b>  |



118 . outreg2 using "PS2\_regressionong.doc", replace ctitle(Reg1)

PS2\_regressionong.doc

dir : seeout

119 . foreach regioncode in Reg2 Reg3 Reg4 Reg5 Reg6{

2. reg mrkgrm classize pct\_dis if regioncode == "`regioncode'"

3. outreg2 using "PS2\_regressionong.doc", append ctitle(`regioncode')

4. }

| Source   | SS                | df         | MS                | Number of obs | = | 195           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>3017.96063</b> | <b>2</b>   | <b>1508.98031</b> | F(2, 192)     | = | <b>34.84</b>  |
| Residual | <b>8314.72655</b> | <b>192</b> | <b>43.3058675</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |            |                   | R-squared     | = | <b>0.2663</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.2587</b> |
| Total    | <b>11332.6872</b> | <b>194</b> | <b>58.4159133</b> | Root MSE      | = | <b>6.5807</b> |

  

| mrkgrm   | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| classize | <b>-.054951</b>  | <b>.0822927</b> | <b>-0.67</b> | <b>0.505</b> | <b>-.2172648</b>     | <b>.1073629</b>  |
| pct_dis  | <b>-.2521636</b> | <b>.0309288</b> | <b>-8.15</b> | <b>0.000</b> | <b>-.3131675</b>     | <b>-.1911597</b> |
| _cons    | <b>77.17122</b>  | <b>2.510945</b> | <b>30.73</b> | <b>0.000</b> | <b>72.21864</b>      | <b>82.1238</b>   |

PS2\_regressionong.doc

dir : seeout

| Source   | SS                | df         | MS                | Number of obs | = | 267           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>2924.30927</b> | <b>2</b>   | <b>1462.15463</b> | F(2, 264)     | = | <b>45.65</b>  |
| Residual | <b>8456.43979</b> | <b>264</b> | <b>32.0319689</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |            |                   | R-squared     | = | <b>0.2570</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.2513</b> |
| Total    | <b>11380.7491</b> | <b>266</b> | <b>42.7847709</b> | Root MSE      | = | <b>5.6597</b> |

  

| mrkgrm   | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| classize | <b>.1678957</b>  | <b>.0669434</b> | <b>2.51</b>  | <b>0.013</b> | <b>.0360848</b>      | <b>.2997067</b>  |
| pct_dis  | <b>-.2127071</b> | <b>.027496</b>  | <b>-7.74</b> | <b>0.000</b> | <b>-.2668463</b>     | <b>-.1585678</b> |
| _cons    | <b>69.64526</b>  | <b>2.225889</b> | <b>31.29</b> | <b>0.000</b> | <b>65.2625</b>       | <b>74.02801</b>  |

PS2\_regressionong.doc

dir : seeout

| Source   | SS                | df         | MS                | Number of obs | = | 276           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>4600.18127</b> | <b>2</b>   | <b>2300.09063</b> | F(2, 273)     | = | <b>84.22</b>  |
| Residual | <b>7455.58685</b> | <b>273</b> | <b>27.3098419</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |            |                   | R-squared     | = | <b>0.3816</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.3770</b> |
| Total    | <b>12055.7681</b> | <b>275</b> | <b>43.8391568</b> | Root MSE      | = | <b>5.2259</b> |

  

| mrkgrm   | Coef.            | Std. Err.       | t             | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|---------------|--------------|----------------------|------------------|
| classize | <b>.0074092</b>  | <b>.0458776</b> | <b>0.16</b>   | <b>0.872</b> | <b>-.0829096</b>     | <b>.0977281</b>  |
| pct_dis  | <b>-.4898067</b> | <b>.0388518</b> | <b>-12.61</b> | <b>0.000</b> | <b>-.5662939</b>     | <b>-.4133195</b> |
| _cons    | <b>80.17505</b>  | <b>1.479157</b> | <b>54.20</b>  | <b>0.000</b> | <b>77.26304</b>      | <b>83.08705</b>  |

PS2\_regressionong.doc

dir : seeout

| Source   | SS         | df  | MS         | Number of obs | = | 574    |
|----------|------------|-----|------------|---------------|---|--------|
| Model    | 10101.2705 | 2   | 5050.63523 | F(2, 571)     | = | 169.65 |
| Residual | 16999.5884 | 571 | 29.7716085 | Prob > F      | = | 0.0000 |
|          |            |     |            | R-squared     | = | 0.3727 |
|          |            |     |            | Adj R-squared | = | 0.3705 |
| Total    | 27100.8589 | 573 | 47.2964378 | Root MSE      | = | 5.4563 |

| mrkgrm    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| classsize | .0212184  | .0429338  | 0.49   | 0.621 | -.0631092            | .1055459  |
| pct_dis   | -.3191605 | .0195322  | -16.34 | 0.000 | -.3575243            | -.2807967 |
| _cons     | 75.24485  | 1.556768  | 48.33  | 0.000 | 72.18715             | 78.30254  |

PS2 regression.doc

dir : seeout

| Source   | SS         | df  | MS         | Number of obs | = | 400    |
|----------|------------|-----|------------|---------------|---|--------|
| Model    | 8889.58149 | 2   | 4444.79075 | F(2, 397)     | = | 168.84 |
| Residual | 10451.356  | 397 | 26.3258338 | Prob > F      | = | 0.0000 |
|          |            |     |            | R-squared     | = | 0.4596 |
|          |            |     |            | Adj R-squared | = | 0.4569 |
| Total    | 19340.9375 | 399 | 48.4735276 | Root MSE      | = | 5.1309 |

| mrkgrm    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| classsize | -.0758319 | .0540577  | -1.40  | 0.161 | -.1821071            | .0304432  |
| pct_dis   | -.4038452 | .0231615  | -17.44 | 0.000 | -.4493797            | -.3583107 |
| _cons     | 79.62101  | 1.882575  | 42.29  | 0.000 | 75.91994             | 83.32207  |

PS2 regression.doc

dir : seeout

120 .

121 . \*\*\*\*Model alternative: Dummy with ommitting Reg5:

122 . reg mrkgrm classsize pct\_dis Reg1 Reg2 Reg3 Reg4 Reg6

| Source   | SS         | df    | MS         | Number of obs | = | 1,967  |
|----------|------------|-------|------------|---------------|---|--------|
| Model    | 39479.1959 | 7     | 5639.88513 | F(7, 1959)    | = | 186.70 |
| Residual | 59176.5468 | 1,959 | 30.2075277 | Prob > F      | = | 0.0000 |
|          |            |       |            | R-squared     | = | 0.4002 |
|          |            |       |            | Adj R-squared | = | 0.3980 |
| Total    | 98655.7428 | 1,966 | 50.1809475 | Root MSE      | = | 5.4961 |

| mrkgrm    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| classsize | .006539   | .0218313  | 0.30   | 0.765 | -.036276             | .049354   |
| pct_dis   | -.3085222 | .0102683  | -30.05 | 0.000 | -.3286603            | -.2883842 |
| Reg1      | 3.501301  | .4311002  | 8.12   | 0.000 | 2.655837             | 4.346764  |
| Reg2      | .9691248  | .4671522  | 2.07   | 0.038 | .0529574             | 1.885292  |
| Reg3      | .3992164  | .4098365  | 0.97   | 0.330 | -.4045451            | 1.202978  |
| Reg4      | 3.257748  | .4188072  | 7.78   | 0.000 | 2.436394             | 4.079103  |
| Reg6      | .2489347  | .3595311  | 0.69   | 0.489 | -.456169             | .9540384  |
| _cons     | 75.55303  | .8013656  | 94.28  | 0.000 | 73.98141             | 77.12465  |

```
123 . outreg2 using "PS2_regressiongalt.doc", replace ctitle(alt)
    PS2_regressiongalt.doc
    dir : seeout
```

```
124 .
125 . **h)
126 .
127 . ***h-i)
128 .
129 . reg mrkgrm classize sc_boys if n_classes == 1
```

| Source   | SS                | df         | MS                | Number of obs | = | 240           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>378.269997</b> | <b>2</b>   | <b>189.134999</b> | F(2, 237)     | = | <b>2.12</b>   |
| Residual | <b>21139.3133</b> | <b>237</b> | <b>89.1954149</b> | Prob > F      | = | <b>0.1222</b> |
|          |                   |            |                   | R-squared     | = | <b>0.0176</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.0093</b> |
| Total    | <b>21517.5833</b> | <b>239</b> | <b>90.0317294</b> | Root MSE      | = | <b>9.4443</b> |

| mrkgrm   | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|----------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| classize | <b>.0964143</b>  | <b>.1099979</b> | <b>0.88</b>  | <b>0.382</b> | <b>-.1202843</b>     | <b>.3131129</b>  |
| sc_boys  | <b>-.3024193</b> | <b>.1529586</b> | <b>-1.98</b> | <b>0.049</b> | <b>-.6037514</b>     | <b>-.0010871</b> |
| _cons    | <b>72.92232</b>  | <b>2.177034</b> | <b>33.50</b> | <b>0.000</b> | <b>68.63352</b>      | <b>77.21113</b>  |

```
130 . outreg2 using "PS2_regressionhi.doc", replace ctitle(1)
    PS2_regressionhi.doc
    dir : seeout
```

```
131 .
132 . ***h-ii)
133 .
134 . reg mrkgrm sc_girls sc_boys if n_classes == 1
```

| Source   | SS                | df         | MS                | Number of obs | = | 240           |
|----------|-------------------|------------|-------------------|---------------|---|---------------|
| Model    | <b>378.269997</b> | <b>2</b>   | <b>189.134999</b> | F(2, 237)     | = | <b>2.12</b>   |
| Residual | <b>21139.3133</b> | <b>237</b> | <b>89.1954149</b> | Prob > F      | = | <b>0.1222</b> |
|          |                   |            |                   | R-squared     | = | <b>0.0176</b> |
|          |                   |            |                   | Adj R-squared | = | <b>0.0093</b> |
| Total    | <b>21517.5833</b> | <b>239</b> | <b>90.0317294</b> | Root MSE      | = | <b>9.4443</b> |

| mrkgrm   | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|----------|-----------------|-----------------|--------------|--------------|----------------------|-----------------|
| sc_girls | <b>.0964143</b> | <b>.1099979</b> | <b>0.88</b>  | <b>0.382</b> | <b>-.1202843</b>     | <b>.3131129</b> |
| sc_boys  | <b>-.206005</b> | <b>.1150097</b> | <b>-1.79</b> | <b>0.075</b> | <b>-.432577</b>      | <b>.020567</b>  |
| _cons    | <b>72.92232</b> | <b>2.177034</b> | <b>33.50</b> | <b>0.000</b> | <b>68.63352</b>      | <b>77.21113</b> |

```
135 . outreg2 using "PS2_regressionhii.doc", replace ctitle(1)
    PS2_regressionhii.doc
    dir : seeout
```

```

136 .
137 . correlate sc_boys sc_girls
      (obs=1,967)

```

|          | sc_boys sc_girls |               |
|----------|------------------|---------------|
| sc_boys  | <b>1.0000</b>    |               |
| sc_girls | <b>0.7918</b>    | <b>1.0000</b> |

```

138 . reg mrkgrm classize if n_classes == 1

```

| Source   | SS                | df         | MS                | Number of obs | = | <b>240</b>     |
|----------|-------------------|------------|-------------------|---------------|---|----------------|
| Model    | <b>29.6008824</b> | <b>1</b>   | <b>29.6008824</b> | F(1, 238)     | = | <b>0.33</b>    |
| Residual | <b>21487.9825</b> | <b>238</b> | <b>90.2856406</b> | Prob > F      | = | <b>0.5675</b>  |
|          |                   |            |                   | R-squared     | = | <b>0.0014</b>  |
|          |                   |            |                   | Adj R-squared | = | <b>-0.0028</b> |
| Total    | <b>21517.5833</b> | <b>239</b> | <b>90.0317294</b> | Root MSE      | = | <b>9.5019</b>  |

| mrkgrm   | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                 |
|----------|------------------|-----------------|--------------|--------------|----------------------|-----------------|
| classize | <b>-.0475071</b> | <b>.0829689</b> | <b>-0.57</b> | <b>0.567</b> | <b>-.2109544</b>     | <b>.1159402</b> |
| _cons    | <b>72.65987</b>  | <b>2.186222</b> | <b>33.24</b> | <b>0.000</b> | <b>68.35305</b>      | <b>76.96668</b> |

```

139 .
140 .
      end of do-file

```