|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **پيوست (1): نتايج تخمين الگوي كاب داگلاس** | | | | | |
|  |  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| instruction file = terminal | | |  |  |  |
| data file = be-z5.txt | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Error Components Frontier (see B&C 1992) | | | | |  |
| The model is a cost function | | |  |  |  |
| The dependent variable is logged | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the ols estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |
|  |  |  |  |  |  |
| beta 0 -0.48476533E+01 0.27088479E+01 -0.17895627E+01 | | | | | |
| beta 1 0.34036966E+00 0.10158967E+00 0.33504356E+01 | | | | | |
| beta 2 0.48415723E+00 0.11210653E+00 0.43187245E+01 | | | | | |
| beta 3 0.33402503E+00 0.12497550E+00 0.26727241E+01 | | | | | |
| sigma-squared 0.11982954E+01 | | | |  |  |
|  |  |  |  |  |  |
| log likelihood function = -0.73759217E+03 | | | |  |  |
|  |  |  |  |  |  |
| the estimates after the grid search were : | | | |  |  |
|  |  |  |  |  |  |
| beta 0 -0.61104341E+01 | | |  |  |  |
| beta 1 0.34036966E+00 | | |  |  |  |
| beta 2 0.48415723E+00 | | |  |  |  |
| beta 3 0.33402503E+00 | | |  |  |  |
| sigma-squared 0.27831289E+01 | | | |  |  |
| gamma 0.90000000E+00 | | |  |  |  |
| mu is restricted to be zero | | |  |  |  |
| eta is restricted to be zero | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.56069255E+03 | | | | | |
| -0.61104341E+01 0.34036966E+00 0.48415723E+00 0.33402503E+00 0.27831289E+01 | | | | | |
| 9.00E-01 |  |  |  |  |  |
| gradient step | |  |  |  |  |
| iteration = 10 func evals = 87 llf = -0.51488079E+03 | | | | | |
| -0.10600763E+02 0.70054744E+00 0.56509450E+00 0.51168930E+00 0.48800540E+01 | | | | | |
| 9.58E-01 |  |  |  |  |  |
| iteration = 20 func evals = 149 llf = -0.51461748E+03 | | | | | |
| -0.10228386E+02 0.70323146E+00 0.58218010E+00 0.49355646E+00 0.54278621E+01 | | | | | |
| 9.62E-01 |  |  |  |  |  |
| iteration = 30 func evals = 262 llf = -0.51461571E+03 | | | | | |
| -0.10226246E+02 0.70309160E+00 0.58211010E+00 0.49350922E+00 0.53966017E+01 | | | | | |
| 9.61E-01 |  |  |  |  |  |
| iteration = 32 func evals = 271 llf = -0.51461570E+03 | | | | | |
| -0.10225999E+02 0.70311777E+00 0.58214872E+00 0.49348931E+00 0.54012211E+01 | | | | | |
| 9.61E-01 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the final mle estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |
|  |  |  |  |  |  |
| beta 0 -0.10225999E+02 0.13250087E+01 -0.77176843E+01 | | | | | |
| beta 1 0.70311777E+00 0.58443108E-01 0.12030807E+02 | | | | | |
| beta 2 0.58214872E+00 0.64235549E-01 0.90627188E+01 | | | | | |
| beta 3 0.49348931E+00 0.60522605E-01 0.81538015E+01 | | | | | |
| sigma-squared 0.54012211E+01 0.86307016E+00 0.62581484E+01 | | | | | |
| gamma 0.96143335E+00 0.70410869E-02 0.13654616E+03 | | | | | |
| mu is restricted to be zero | | |  |  |  |
| eta is restricted to be zero | | |  |  |  |
|  |  |  |  |  |  |
| log likelihood function = -0.51461570E+03 | | | |  |  |
|  |  |  |  |  |  |
| LR test of the one-sided error = 0.44595294E+03 | | | | |  |
| with number of restrictions = 1 | | |  |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | | |
|  |  |  |  |  |  |
| number of iterations = 32 | | |  |  |  |
|  |  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |  |
|  |  |  |  |  |  |
| number of cross-sections = 98 | | | |  |  |
|  |  |  |  |  |  |
| number of time periods = 5 | | |  |  |  |
|  |  |  |  |  |  |
| total number of observations = 490 | | | |  |  |
|  |  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| covariance matrix : | |  |  |  |  |
|  |  |  |  |  |  |
| 0.17556481E+01 -0.16015920E-01 0.71465417E-01 -0.80024339E-01 -0.18247939E-01 | | | | | |
| -1.67E-03 |  |  |  |  |  |
| -0.16015920E-01 0.34155969E-02 -0.54285082E-03 0.76366679E-03 0.39747098E-02 | | | | | |
| 2.45E-05 |  |  |  |  |  |
| 0.71465417E-01 -0.54285082E-03 0.41262058E-02 -0.32923059E-02 0.49822820E-02 | | | | | |
| -3.01E-05 |  |  |  |  |  |
| -0.80024339E-01 0.76366679E-03 -0.32923059E-02 0.36629857E-02 -0.10263459E-02 | | | | | |
| 6.22E-05 |  |  |  |  |  |
| -0.18247939E-01 0.39747098E-02 0.49822820E-02 -0.10263459E-02 0.74489009E+00 | | | | | |
| 5.52E-03 |  |  |  |  |  |
| -0.16729334E-02 0.24532759E-04 -0.30124257E-04 0.62243947E-04 0.55211722E-02 | | | | | |
| 4.96E-05 |  |  |  |  |  |

**پيوست(2): تخمين معادلات 3-20و3-21**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = new.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
|  |  |  |  |  |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| delta 0 0.00000000E+00 | | |  |  |
| delta 1 0.00000000E+00 | | |  |  |
| delta 2 0.00000000E+00 | | |  |  |
| delta 3 0.00000000E+00 | | |  |  |
| delta 4 0.00000000E+00 | | |  |  |
| delta 5 0.00000000E+00 | | |  |  |
| sigma-squared 0.94678971E+00 | | | |  |
| gamma 0.50000000E-01 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | |
| 0.00000000E+00 0.94678971E+00 0.50000000E-01 | | | | |
| gradient step | |  |  |  |
| iteration = 10 func evals = 66 llf = -0.60238895E+03 | | | | |
| -0.15190392E+03-0.33372184E+01-0.17474419E+02 0.13626815E+02-0.22170215E+00 | | | | |
| -0.53045792E+00-0.30136575E+00-0.50225839E+00 0.14119928E+00 0.80735098E+00 | | | | |
| -0.69693787E-01-0.48653624E-01 0.13366999E+00 0.35630261E+00 0.40208986E-01 | | | | |
| 0.15511766E+00 0.78508653E+00 0.13114106E-04 | | | | |
| iteration = 20 func evals = 139 llf = -0.54169771E+03 | | | | |
| -0.15199727E+03-0.24192339E+01-0.14316527E+02 0.13674504E+02-0.74598348E-01 | | | | |
| -0.56396350E+00-0.30323789E+00-0.47545301E+00 0.13724333E+00 0.68070883E+00 | | | | |
| 0.39369283E+00-0.98407753E+00 0.82306467E+01 0.24992936E+00 0.36447623E+00 | | | | |
| 0.64686016E+00 0.51292194E+00 0.90563510E-04 | | | | |
| iteration = 30 func evals = 288 llf = -0.53863487E+03 | | | | |
| -0.15191287E+03-0.54080139E+00-0.14672675E+02 0.13674425E+02 0.14277708E+00 | | | | |
| -0.58353715E+00-0.30354013E+00-0.40033711E+00 0.11879829E+00 0.69784760E+00 | | | | |
| 0.26452142E+01-0.31884838E+01 0.80054291E+01 0.24378016E+00 0.28870927E+00 | | | | |
| 0.70931564E+00 0.52834853E+00 0.17659581E-05 | | | | |
| pt better than entering pt cannot be found | | | |  |
| iteration = 36 func evals = 319 llf = -0.53861821E+03 | | | | |
| -0.15190046E+03-0.52232999E+00-0.14643950E+02 0.13678357E+02 0.14853262E+00 | | | | |
| -0.58185911E+00-0.30374914E+00-0.40418922E+00 0.11902683E+00 0.69657395E+00 | | | | |
| 0.26708043E+01-0.32039585E+01 0.80666065E+01 0.24286577E+00 0.27583896E+00 | | | | |
| 0.71952847E+00 0.52753090E+00 0.10000000E-07 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15190046E+03 0.10337001E+01 -0.14694830E+03 | | | | |
| beta 1 -0.52232999E+00 0.14703485E+01 -0.35524230E+00 | | | | |
| beta 2 -0.14643950E+02 0.13586753E+01 -0.10778108E+02 | | | | |
| beta 3 0.13678357E+02 0.12341944E+00 0.11082822E+03 | | | | |
| beta 4 0.14853262E+00 0.11478459E+00 0.12940118E+01 | | | | |
| beta 5 -0.58185911E+00 0.49673427E-01 -0.11713690E+02 | | | | |
| beta 6 -0.30374914E+00 0.44813126E-02 -0.67781288E+02 | | | | |
| beta 7 -0.40418922E+00 0.13187240E+00 -0.30650025E+01 | | | | |
| beta 8 0.11902683E+00 0.58629667E-01 0.20301468E+01 | | | | |
| beta 9 0.69657395E+00 0.62784421E-01 0.11094694E+02 | | | | |
| delta 0 0.26708043E+01 0.11278208E+01 0.23681105E+01 | | | | |
| delta 1 -0.32039585E+01 0.10835400E+01 -0.29569360E+01 | | | | |
| delta 2 0.80666065E+01 0.12042061E+01 0.66986927E+01 | | | | |
| delta 3 0.24286577E+00 0.20240331E-01 0.11999101E+02 | | | | |
| delta 4 0.27583896E+00 0.33608952E+00 0.82073062E+00 | | | | |
| delta 5 0.71952847E+00 0.20414188E+00 0.35246490E+01 | | | | |
| sigma-squared 0.52753090E+00 0.33374666E-01 0.15806327E+02 | | | | |
| gamma 0.10000000E-07 0.43523527E-05 0.22976079E-02 | | | | |
|  |  |  |  |  |
| log likelihood function = -0.53861821E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.27068014E+03 | | | | |
| with number of restrictions = 7 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 36 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.10685358E+01 -0.50055888E-01 -0.10050611E+00 -0.88027714E-01 0.58048574E-02 | | | | |
| -0.34244775E-02 0.18369782E-02 -0.68793079E-02 0.37974886E-02 0.44994640E-02 | | | | |
| 0.15839486E-04 -0.51046322E-01 -0.85418794E-01 -0.18175616E-02 0.32282607E-01 | | | | |
| 0.63478935E-02 -0.80099908E-03 0.19586457E-07 | | | | |
| -0.50055888E-01 0.21619248E+01 0.32802816E+00 0.12196885E-01 0.77644935E-01 | | | | |
| 0.12190080E-01 -0.74843420E-03 0.75749394E-01 -0.74758376E-01 -0.14425341E-01 | | | | |
| 0.11031680E+01 -0.82220758E+00 -0.11921263E+00 -0.36360938E-02 -0.19494475E+00 | | | | |
| 0.77041154E-03 -0.52328137E-04 -0.33201798E-07 | | | | |
| -0.10050611E+00 0.32802816E+00 0.18459987E+01 -0.81126184E-02 0.59339281E-02 | | | | |
| 0.58388568E-01 0.47366679E-03 -0.10532154E-01 -0.12097108E-01 -0.85158219E-01 | | | | |
| 0.20232711E+00 -0.13061790E+00 0.94088322E-01 0.10090360E-03 -0.32206996E-01 | | | | |
| 0.11545196E-01 -0.87475408E-03 0.18552236E-06 | | | | |
| -0.88027714E-01 0.12196885E-01 -0.81126184E-02 0.15232357E-01 0.13887636E-04 | | | | |
| 0.36539317E-04 -0.51705137E-03 -0.14288662E-02 -0.46699219E-03 0.61547570E-03 | | | | |
| 0.32618699E-02 -0.31740045E-02 -0.60700151E-02 0.18814864E-04 0.14573543E-03 | | | | |
| 0.17079501E-02 0.11656534E-03 0.48684141E-08 | | | | |
| 0.58048574E-02 0.77644935E-01 0.59339281E-02 0.13887636E-04 0.13175502E-01 | | | | |
| 0.47947127E-03 -0.13589740E-04 0.35049111E-02 0.19571344E-03 -0.23824570E-03 | | | | |
| 0.11194424E+00 -0.11626305E+00 -0.33393249E-01 -0.10623480E-04 0.26797237E-02 | | | | |
| -0.21198504E-03 -0.14226497E-03 -0.14108857E-08 | | | | |
| -0.34244775E-02 0.12190080E-01 0.58388568E-01 0.36539317E-04 0.47947127E-03 | | | | |
| 0.24674493E-02 0.33387823E-06 0.30083160E-03 -0.38835040E-03 -0.26986905E-02 | | | | |
| 0.93890054E-02 -0.66881799E-02 -0.23544387E-02 0.58842870E-04 -0.14150804E-02 | | | | |
| 0.11690421E-02 -0.17910872E-05 0.63958218E-08 | | | | |
| 0.18369782E-02 -0.74843420E-03 0.47366679E-03 -0.51705137E-03 -0.13589740E-04 | | | | |
| 0.33387823E-06 0.20082163E-04 0.70003465E-04 0.26661731E-04 -0.32901339E-04 | | | | |
| -0.31787816E-03 0.27466554E-03 0.35913363E-03 0.43117956E-05 0.21528578E-04 | | | | |
| -0.10564487E-03 -0.38385573E-05 -0.25374969E-09 | | | | |
| -0.68793079E-02 0.75749394E-01 -0.10532154E-01 -0.14288662E-02 0.35049111E-02 | | | | |
| 0.30083160E-03 0.70003465E-04 0.17390329E-01 -0.26880067E-02 0.59127333E-03 | | | | |
| 0.35715638E-01 -0.24491523E-01 -0.37767111E-02 -0.12476847E-03 -0.77949988E-02 | | | | |
| -0.10075823E-02 0.88964005E-04 -0.14664693E-08 | | | | |
| 0.37974886E-02 -0.74758376E-01 -0.12097108E-01 -0.46699219E-03 0.19571344E-03 | | | | |
| -0.38835040E-03 0.26661731E-04 -0.26880067E-02 0.34374378E-02 0.53444851E-03 | | | | |
| -0.16313358E-01 0.19603379E-02 -0.58583174E-02 0.16630087E-03 0.98672836E-02 | | | | |
| -0.62924442E-04 -0.43841858E-04 0.19249001E-08 | | | | |
| 0.44994640E-02 -0.14425341E-01 -0.85158219E-01 0.61547570E-03 -0.23824570E-03 | | | | |
| -0.26986905E-02 -0.32901339E-04 0.59127333E-03 0.53444851E-03 0.39418835E-02 | | | | |
| -0.89688355E-02 0.57884781E-02 -0.37521979E-02 -0.18871318E-04 0.14345474E-02 | | | | |
| -0.48389090E-03 0.42319509E-04 -0.82429171E-08 | | | | |
| 0.15839486E-04 0.11031680E+01 0.20232711E+00 0.32618699E-02 0.11194424E+00 | | | | |
| 0.93890054E-02 -0.31787816E-03 0.35715638E-01 -0.16313358E-01 -0.89688355E-02 | | | | |
| 0.12719798E+01 -0.11201701E+01 -0.31487597E+00 -0.14108903E-02 -0.11023993E+00 | | | | |
| -0.17037922E-01 -0.15021882E-02 -0.18578577E-07 | | | | |
| -0.51046322E-01 -0.82220758E+00 -0.13061790E+00 -0.31740045E-02 -0.11626305E+00 | | | | |
| -0.66881799E-02 0.27466554E-03 -0.24491523E-01 0.19603379E-02 0.57884781E-02 | | | | |
| -0.11201701E+01 0.11740590E+01 0.41737859E+00 -0.61252257E-03 -0.38826091E-01 | | | | |
| 0.38095525E-02 0.15041098E-02 -0.34744691E-07 | | | | |
| -0.85418794E-01 -0.11921263E+00 0.94088322E-01 -0.60700151E-02 -0.33393249E-01 | | | | |
| -0.23544387E-02 0.35913363E-03 -0.37767111E-02 -0.58583174E-02 -0.37521979E-02 | | | | |
| -0.31487597E+00 0.41737859E+00 0.14501123E+01 -0.91532057E-02 -0.84279487E-01 | | | | |
| 0.19538888E-01 -0.18509955E-03 0.20223820E-07 | | | | |
| -0.18175616E-02 -0.36360938E-02 0.10090360E-03 0.18814864E-04 -0.10623480E-04 | | | | |
| 0.58842870E-04 0.43117956E-05 -0.12476847E-03 0.16630087E-03 -0.18871318E-04 | | | | |
| -0.14108903E-02 -0.61252257E-03 -0.91532057E-02 0.40967101E-03 0.13603618E-02 | | | | |
| -0.44107327E-03 0.93850981E-05 -0.12260392E-08 | | | | |
| 0.32282607E-01 -0.19494475E+00 -0.32206996E-01 0.14573543E-03 0.26797237E-02 | | | | |
| -0.14150804E-02 0.21528578E-04 -0.77949988E-02 0.98672836E-02 0.14345474E-02 | | | | |
| -0.11023993E+00 -0.38826091E-01 -0.84279487E-01 0.13603618E-02 0.11295616E+00 | | | | |
| 0.59444805E-02 0.75134856E-04 0.31025093E-07 | | | | |
| 0.63478935E-02 0.77041154E-03 0.11545196E-01 0.17079501E-02 -0.21198504E-03 | | | | |
| 0.11690421E-02 -0.10564487E-03 -0.10075823E-02 -0.62924442E-04 -0.48389090E-03 | | | | |
| -0.17037922E-01 0.38095525E-02 0.19538888E-01 -0.44107327E-03 0.59444805E-02 | | | | |
| 0.41673906E-01 0.52993637E-04 0.41316216E-07 | | | | |
| -0.80099908E-03 -0.52328137E-04 -0.87475408E-03 0.11656534E-03 -0.14226497E-03 | | | | |
| -0.17910872E-05 -0.38385573E-05 0.88964005E-04 -0.43841858E-04 0.42319509E-04 | | | | |
| -0.15021882E-02 0.15041098E-02 -0.18509955E-03 0.93850981E-05 0.75134856E-04 | | | | |
| 0.52993637E-04 0.11138683E-02 0.42009437E-09 | | | | |
| 0.19586457E-07 -0.33201798E-07 0.18552236E-06 0.48684141E-08 -0.14108857E-08 | | | | |
| 0.63958218E-08 -0.25374969E-09 -0.14664693E-08 0.19249001E-08 -0.82429171E-08 | | | | |
| -0.18578577E-07 -0.34744691E-07 0.20223820E-07 -0.12260392E-08 0.31025093E-07 | | | | |
| 0.41316216E-07 0.42009437E-09 0.18942974E-10 | | | | |
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|  |  |  |  |  |
| cost efficiency estimates : | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| firm year eff.-est. | | |  |  |
|  |  |  |  |  |
| 1 1 0.69800743E+01 | | | |  |
| 2 1 0.10197284E+01 | | | |  |
| 3 1 0.23892472E+01 | | | |  |
| 4 1 0.12501462E+01 | | | |  |
| 5 1 0.31322095E+01 | | | |  |
| 6 1 0.50039371E+01 | | | |  |
| 7 1 0.16254999E+01 | | | |  |
| 8 1 0.31788129E+01 | | | |  |
| 9 1 0.31978552E+01 | | | |  |
| 10 1 0.31419229E+01 | | | |  |
| 11 1 0.67385749E+01 | | | |  |
| 12 1 0.22826036E+01 | | | |  |
| 13 1 0.44902661E+01 | | | |  |
| 14 1 0.13222612E+01 | | | |  |
| 15 1 0.14534679E+01 | | | |  |
| 16 1 0.12639181E+01 | | | |  |
| 17 1 0.74427894E+01 | | | |  |
| 18 1 0.28556221E+01 | | | |  |
| 19 1 0.39243499E+02 | | | |  |
| 20 1 0.20780077E+01 | | | |  |
| 21 1 0.15233113E+01 | | | |  |
| 22 1 0.65817469E+01 | | | |  |
| 23 1 0.51384200E+01 | | | |  |
| 24 1 0.21657493E+01 | | | |  |
| 25 1 0.54355065E+01 | | | |  |
| 26 1 0.92628003E+01 | | | |  |
| 27 1 0.67168875E+01 | | | |  |
| 28 1 0.41761445E+01 | | | |  |
| 29 1 0.25905556E+01 | | | |  |
| 30 1 0.60392400E+01 | | | |  |
| 31 1 0.11119727E+01 | | | |  |
| 32 1 0.30191247E+01 | | | |  |
| 33 1 0.32481929E+01 | | | |  |
| 34 1 0.30725337E+01 | | | |  |
| 35 1 0.19521180E+01 | | | |  |
| 36 1 0.12902119E+01 | | | |  |
| 37 1 0.27289070E+01 | | | |  |
| 38 1 0.14995167E+01 | | | |  |
| 39 1 0.20648871E+01 | | | |  |
| 40 1 0.37580217E+01 | | | |  |
| 41 1 0.31234461E+01 | | | |  |
| 42 1 0.29997356E+01 | | | |  |
| 43 1 0.13613632E+01 | | | |  |
| 44 1 0.13533448E+01 | | | |  |
| 45 1 0.26765640E+01 | | | |  |
| 46 1 0.17541071E+01 | | | |  |
| 47 1 0.61587746E+01 | | | |  |
| 48 1 0.15238066E+01 | | | |  |
| 49 1 0.15800189E+01 | | | |  |
| 50 1 0.84311143E+01 | | | |  |
| 51 1 0.11203400E+01 | | | |  |
| 52 1 0.10000000E+01 | | | |  |
| 53 1 0.16248505E+02 | | | |  |
| 54 1 0.10522058E+02 | | | |  |
| 55 1 0.47333543E+01 | | | |  |
| 56 1 0.25738941E+01 | | | |  |
| 57 1 0.10330937E+01 | | | |  |
| 58 1 0.23984053E+02 | | | |  |
| 59 1 0.16166758E+01 | | | |  |
| 60 1 0.16815772E+02 | | | |  |
| 61 1 0.18056910E+02 | | | |  |
| 62 1 0.10000000E+01 | | | |  |
| 63 1 0.10000000E+01 | | | |  |
| 64 1 0.13476836E+02 | | | |  |
| 65 1 0.60733459E+01 | | | |  |
| 66 1 0.30538142E+01 | | | |  |
| 67 1 0.83351653E+01 | | | |  |
| 68 1 0.55381198E+01 | | | |  |
| 69 1 0.68890708E+01 | | | |  |
| 70 1 0.13259205E+01 | | | |  |
| 71 1 0.16216724E+01 | | | |  |
| 72 1 0.13110305E+01 | | | |  |
| 73 1 0.12214341E+02 | | | |  |
| 74 1 0.53462176E+01 | | | |  |
| 75 1 0.61990551E+01 | | | |  |
| 76 1 0.10259764E+03 | | | |  |
| 77 1 0.33488072E+01 | | | |  |
| 78 1 0.48952491E+02 | | | |  |
| 79 1 0.10620962E+01 | | | |  |
| 80 1 0.25559667E+01 | | | |  |
| 81 1 0.58941725E+02 | | | |  |
| 82 1 0.24510368E+01 | | | |  |
| 83 1 0.65190094E+01 | | | |  |
| 84 1 0.27629157E+01 | | | |  |
| 85 1 0.10568464E+01 | | | |  |
| 86 1 0.22794788E+01 | | | |  |
| 87 1 0.60531813E+01 | | | |  |
| 88 1 0.37247621E+01 | | | |  |
| 89 1 0.46993642E+01 | | | |  |
| 90 1 0.75832400E+01 | | | |  |
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| 92 1 0.62893044E+01 | | | |  |
| 93 1 0.38382034E+01 | | | |  |
| 94 1 0.15195841E+02 | | | |  |
| 95 1 0.14478076E+02 | | | |  |
| 96 1 0.34503146E+01 | | | |  |
| 97 1 0.22017056E+01 | | | |  |
| 98 1 0.34588456E+01 | | | |  |
| 1 2 0.92647583E+01 | | | |  |
| 2 2 0.11595666E+01 | | | |  |
| 3 2 0.17374896E+01 | | | |  |
| 4 2 0.91357356E+01 | | | |  |
| 5 2 0.23263632E+01 | | | |  |
| 6 2 0.41026156E+01 | | | |  |
| 7 2 0.18179202E+01 | | | |  |
| 8 2 0.20622786E+01 | | | |  |
| 9 2 0.25970744E+01 | | | |  |
| 10 2 0.25991131E+01 | | | |  |
| 11 2 0.36150124E+01 | | | |  |
| 12 2 0.73498925E+01 | | | |  |
| 13 2 0.11002083E+02 | | | |  |
| 14 2 0.11854104E+01 | | | |  |
| 15 2 0.16490770E+01 | | | |  |
| 16 2 0.12532429E+01 | | | |  |
| 17 2 0.33967404E+01 | | | |  |
| 18 2 0.20070183E+01 | | | |  |
| 19 2 0.18713189E+02 | | | |  |
| 20 2 0.14713050E+01 | | | |  |
| 21 2 0.13319773E+01 | | | |  |
| 22 2 0.10372595E+02 | | | |  |
| 23 2 0.27003716E+01 | | | |  |
| 24 2 0.85287160E+01 | | | |  |
| 25 2 0.36838798E+01 | | | |  |
| 26 2 0.13270554E+02 | | | |  |
| 27 2 0.71731767E+01 | | | |  |
| 28 2 0.32840322E+01 | | | |  |
| 29 2 0.19622743E+01 | | | |  |
| 30 2 0.36034613E+01 | | | |  |
| 31 2 0.16415053E+01 | | | |  |
| 32 2 0.12061481E+01 | | | |  |
| 33 2 0.21586433E+01 | | | |  |
| 34 2 0.20473417E+01 | | | |  |
| 35 2 0.21891889E+01 | | | |  |
| 36 2 0.19062322E+01 | | | |  |
| 37 2 0.27089492E+01 | | | |  |
| 38 2 0.15317317E+01 | | | |  |
| 39 2 0.17722308E+01 | | | |  |
| 40 2 0.31970285E+01 | | | |  |
| 41 2 0.56478420E+01 | | | |  |
| 42 2 0.12420269E+01 | | | |  |
| 43 2 0.23050191E+01 | | | |  |
| 44 2 0.11547181E+01 | | | |  |
| 45 2 0.15853503E+01 | | | |  |
| 46 2 0.31491711E+01 | | | |  |
| 47 2 0.21130526E+01 | | | |  |
| 48 2 0.17303109E+01 | | | |  |
| 49 2 0.20149373E+01 | | | |  |
| 50 2 0.11952167E+02 | | | |  |
| 51 2 0.15047233E+01 | | | |  |
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| 53 2 0.18853927E+02 | | | |  |
| 54 2 0.15112257E+01 | | | |  |
| 55 2 0.74638042E+01 | | | |  |
| 56 2 0.30512761E+01 | | | |  |
| 57 2 0.11373402E+01 | | | |  |
| 58 2 0.41227676E+02 | | | |  |
| 59 2 0.15307126E+01 | | | |  |
| 60 2 0.24611173E+02 | | | |  |
| 61 2 0.12452784E+02 | | | |  |
| 62 2 0.10000000E+01 | | | |  |
| 63 2 0.11235720E+01 | | | |  |
| 64 2 0.52503552E+01 | | | |  |
| 65 2 0.32498200E+01 | | | |  |
| 66 2 0.34401580E+01 | | | |  |
| 67 2 0.11349100E+02 | | | |  |
| 68 2 0.19370305E+02 | | | |  |
| 69 2 0.48118487E+01 | | | |  |
| 70 2 0.13837447E+01 | | | |  |
| 71 2 0.10000000E+01 | | | |  |
| 72 2 0.13168141E+01 | | | |  |
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| 74 2 0.23080674E+01 | | | |  |
| 75 2 0.67643870E+01 | | | |  |
| 76 2 0.34356820E+02 | | | |  |
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| 78 2 0.60126894E+01 | | | |  |
| 79 2 0.11188521E+01 | | | |  |
| 80 2 0.19417973E+01 | | | |  |
| 81 2 0.57369920E+02 | | | |  |
| 82 2 0.18531514E+01 | | | |  |
| 83 2 0.50732402E+01 | | | |  |
| 84 2 0.89808902E+01 | | | |  |
| 85 2 0.11085375E+01 | | | |  |
| 86 2 0.23305736E+01 | | | |  |
| 87 2 0.25673921E+01 | | | |  |
| 88 2 0.34047981E+01 | | | |  |
| 89 2 0.18702956E+01 | | | |  |
| 90 2 0.80772882E+01 | | | |  |
| 91 2 0.22035483E+01 | | | |  |
| 92 2 0.14288431E+02 | | | |  |
| 93 2 0.36197793E+01 | | | |  |
| 94 2 0.46880763E+01 | | | |  |
| 95 2 0.27605197E+01 | | | |  |
| 96 2 0.19243524E+01 | | | |  |
| 97 2 0.13081090E+01 | | | |  |
| 98 2 0.28317678E+01 | | | |  |
| 1 3 0.82313744E+01 | | | |  |
| 2 3 0.10486563E+01 | | | |  |
| 3 3 0.15944439E+01 | | | |  |
| 4 3 0.31375631E+01 | | | |  |
| 5 3 0.17369830E+01 | | | |  |
| 6 3 0.34609811E+01 | | | |  |
| 7 3 0.11939471E+01 | | | |  |
| 8 3 0.18000661E+01 | | | |  |
| 9 3 0.22670438E+01 | | | |  |
| 10 3 0.20939982E+01 | | | |  |
| 11 3 0.20058432E+01 | | | |  |
| 12 3 0.40646517E+01 | | | |  |
| 13 3 0.26314126E+01 | | | |  |
| 14 3 0.10840800E+01 | | | |  |
| 15 3 0.15263524E+01 | | | |  |
| 16 3 0.12735249E+01 | | | |  |
| 17 3 0.23926703E+01 | | | |  |
| 18 3 0.22728871E+01 | | | |  |
| 19 3 0.20233090E+02 | | | |  |
| 20 3 0.11722154E+01 | | | |  |
| 21 3 0.10943082E+01 | | | |  |
| 22 3 0.35759076E+01 | | | |  |
| 23 3 0.22689965E+01 | | | |  |
| 24 3 0.26076211E+01 | | | |  |
| 25 3 0.17429979E+01 | | | |  |
| 26 3 0.62055653E+01 | | | |  |
| 27 3 0.24842840E+01 | | | |  |
| 28 3 0.27640528E+01 | | | |  |
| 29 3 0.15200200E+01 | | | |  |
| 30 3 0.14275880E+01 | | | |  |
| 31 3 0.20311395E+01 | | | |  |
| 32 3 0.10000000E+01 | | | |  |
| 33 3 0.16362433E+01 | | | |  |
| 34 3 0.12591148E+01 | | | |  |
| 35 3 0.16620760E+01 | | | |  |
| 36 3 0.19285404E+01 | | | |  |
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| 38 3 0.12719619E+01 | | | |  |
| 39 3 0.14373844E+01 | | | |  |
| 40 3 0.19901748E+01 | | | |  |
| 41 3 0.33113947E+01 | | | |  |
| 42 3 0.20482898E+01 | | | |  |
| 43 3 0.14709683E+01 | | | |  |
| 44 3 0.12173638E+01 | | | |  |
| 45 3 0.12282871E+01 | | | |  |
| 46 3 0.75937654E+01 | | | |  |
| 47 3 0.15422715E+01 | | | |  |
| 48 3 0.21047659E+01 | | | |  |
| 49 3 0.19313057E+01 | | | |  |
| 50 3 0.17079879E+01 | | | |  |
| 51 3 0.13264543E+01 | | | |  |
| 52 3 0.13623245E+01 | | | |  |
| 53 3 0.17936910E+02 | | | |  |
| 54 3 0.19534705E+01 | | | |  |
| 55 3 0.37467267E+01 | | | |  |
| 56 3 0.17989831E+01 | | | |  |
| 57 3 0.10718298E+01 | | | |  |
| 58 3 0.64279113E+01 | | | |  |
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| 83 3 0.32360460E+01 | | | |  |
| 84 3 0.10441853E+02 | | | |  |
| 85 3 0.11299316E+01 | | | |  |
| 86 3 0.10438937E+01 | | | |  |
| 87 3 0.27040493E+01 | | | |  |
| 88 3 0.32287545E+01 | | | |  |
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| 7 4 0.23030235E+01 | | | |  |
| 8 4 0.34798885E+01 | | | |  |
| 9 4 0.50167895E+01 | | | |  |
| 10 4 0.44391302E+01 | | | |  |
| 11 4 0.32144609E+01 | | | |  |
| 12 4 0.40972671E+01 | | | |  |
| 13 4 0.81382352E+01 | | | |  |
| 14 4 0.10912748E+01 | | | |  |
| 15 4 0.17638987E+01 | | | |  |
| 16 4 0.14038391E+01 | | | |  |
| 17 4 0.52935424E+01 | | | |  |
| 18 4 0.31495780E+01 | | | |  |
| 19 4 0.35954401E+02 | | | |  |
| 20 4 0.18093741E+01 | | | |  |
| 21 4 0.15051773E+01 | | | |  |
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| 24 4 0.25183582E+01 | | | |  |
| 25 4 0.36089148E+01 | | | |  |
| 26 4 0.14012601E+02 | | | |  |
| 27 4 0.42030067E+01 | | | |  |
| 28 4 0.79156576E+01 | | | |  |
| 29 4 0.39538090E+01 | | | |  |
| 30 4 0.33383361E+01 | | | |  |
| 31 4 0.49801721E+01 | | | |  |
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| 35 4 0.12639402E+01 | | | |  |
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| 37 4 0.90272032E+01 | | | |  |
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| 39 4 0.19355845E+01 | | | |  |
| 40 4 0.65387020E+01 | | | |  |
| 41 4 0.98793690E+01 | | | |  |
| 42 4 0.26539193E+01 | | | |  |
| 43 4 0.21569342E+01 | | | |  |
| 44 4 0.12257137E+01 | | | |  |
| 45 4 0.19636601E+01 | | | |  |
| 46 4 0.16142724E+02 | | | |  |
| 47 4 0.28343461E+01 | | | |  |
| 48 4 0.33215739E+01 | | | |  |
| 49 4 0.20579814E+01 | | | |  |
| 50 4 0.35711736E+01 | | | |  |
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| 52 4 0.15978538E+01 | | | |  |
| 53 4 0.15127628E+02 | | | |  |
| 54 4 0.38282756E+01 | | | |  |
| 55 4 0.40880156E+01 | | | |  |
| 56 4 0.21266951E+01 | | | |  |
| 57 4 0.10000000E+01 | | | |  |
| 58 4 0.69716548E+02 | | | |  |
| 59 4 0.19471156E+01 | | | |  |
| 60 4 0.21366211E+02 | | | |  |
| 61 4 0.71658276E+01 | | | |  |
| 62 4 0.10000000E+01 | | | |  |
| 63 4 0.10000000E+01 | | | |  |
| 64 4 0.13890463E+02 | | | |  |
| 65 4 0.51360538E+01 | | | |  |
| 66 4 0.42146237E+01 | | | |  |
| 67 4 0.77889970E+01 | | | |  |
| 68 4 0.24006800E+02 | | | |  |
| 69 4 0.31352629E+01 | | | |  |
| 70 4 0.20285925E+01 | | | |  |
| 71 4 0.12883695E+01 | | | |  |
| 72 4 0.19317437E+01 | | | |  |
| 73 4 0.20316522E+01 | | | |  |
| 74 4 0.19390543E+01 | | | |  |
| 75 4 0.41745915E+01 | | | |  |
| 76 4 0.99108007E+02 | | | |  |
| 77 4 0.72074947E+01 | | | |  |
| 78 4 0.48428223E+01 | | | |  |
| 79 4 0.11625420E+01 | | | |  |
| 80 4 0.19272801E+01 | | | |  |
| 81 4 0.34540682E+03 | | | |  |
| 82 4 0.22913102E+01 | | | |  |
| 83 4 0.12670896E+02 | | | |  |
| 84 4 0.31555083E+01 | | | |  |
| 85 4 0.11858279E+01 | | | |  |
| 86 4 0.16339133E+01 | | | |  |
| 87 4 0.45682157E+01 | | | |  |
| 88 4 0.26819496E+01 | | | |  |
| 89 4 0.38599806E+01 | | | |  |
| 90 4 0.10146335E+02 | | | |  |
| 91 4 0.27019202E+01 | | | |  |
| 92 4 0.16068293E+02 | | | |  |
| 93 4 0.10450798E+02 | | | |  |
| 94 4 0.57642249E+01 | | | |  |
| 95 4 0.12789189E+01 | | | |  |
| 96 4 0.19428809E+01 | | | |  |
| 97 4 0.14364996E+01 | | | |  |
| 98 4 0.58935270E+01 | | | |  |
| 1 5 0.21855148E+01 | | | |  |
| 2 5 0.20690277E+01 | | | |  |
| 3 5 0.64674840E+01 | | | |  |
| 4 5 0.27612880E+01 | | | |  |
| 5 5 0.20071837E+01 | | | |  |
| 6 5 0.82773691E+01 | | | |  |
| 7 5 0.18276135E+01 | | | |  |
| 8 5 0.16957965E+01 | | | |  |
| 9 5 0.32870033E+01 | | | |  |
| 10 5 0.41661048E+01 | | | |  |
| 11 5 0.20512276E+01 | | | |  |
| 12 5 0.33134543E+01 | | | |  |
| 13 5 0.95620000E+01 | | | |  |
| 14 5 0.15940823E+01 | | | |  |
| 15 5 0.37442138E+01 | | | |  |
| 16 5 0.26095001E+01 | | | |  |
| 17 5 0.39465798E+01 | | | |  |
| 18 5 0.48703785E+01 | | | |  |
| 19 5 0.49060112E+02 | | | |  |
| 20 5 0.21294896E+01 | | | |  |
| 21 5 0.20273798E+01 | | | |  |
| 22 5 0.57373879E+01 | | | |  |
| 23 5 0.69716357E+01 | | | |  |
| 24 5 0.15961587E+01 | | | |  |
| 25 5 0.28193325E+01 | | | |  |
| 26 5 0.11908680E+02 | | | |  |
| 27 5 0.46962466E+01 | | | |  |
| 28 5 0.19050013E+01 | | | |  |
| 29 5 0.39426125E+01 | | | |  |
| 30 5 0.35436821E+01 | | | |  |
| 31 5 0.75610579E+01 | | | |  |
| 32 5 0.10000000E+01 | | | |  |
| 33 5 0.24013243E+01 | | | |  |
| 34 5 0.12171724E+01 | | | |  |
| 35 5 0.12017248E+01 | | | |  |
| 36 5 0.20305915E+01 | | | |  |
| 37 5 0.24727052E+01 | | | |  |
| 38 5 0.30935174E+01 | | | |  |
| 39 5 0.51954544E+01 | | | |  |
| 40 5 0.17773559E+02 | | | |  |
| 41 5 0.12181942E+02 | | | |  |
| 42 5 0.45016530E+01 | | | |  |
| 43 5 0.45778400E+01 | | | |  |
| 44 5 0.13587593E+01 | | | |  |
| 45 5 0.19155625E+01 | | | |  |
| 46 5 0.10525420E+02 | | | |  |
| 47 5 0.28189197E+01 | | | |  |
| 48 5 0.28933736E+01 | | | |  |
| 49 5 0.24909331E+01 | | | |  |
| 50 5 0.48488676E+01 | | | |  |
| 51 5 0.34350637E+01 | | | |  |
| 52 5 0.13490622E+01 | | | |  |
| 53 5 0.17203931E+02 | | | |  |
| 54 5 0.27035559E+01 | | | |  |
| 55 5 0.43992148E+01 | | | |  |
| 56 5 0.39444846E+01 | | | |  |
| 57 5 0.13781326E+01 | | | |  |
| 58 5 0.65608140E+01 | | | |  |
| 59 5 0.15238348E+01 | | | |  |
| 60 5 0.90539793E+01 | | | |  |
| 61 5 0.70419744E+01 | | | |  |
| 62 5 0.10000000E+01 | | | |  |
| 63 5 0.10503420E+01 | | | |  |
| 64 5 0.36103303E+01 | | | |  |
| 65 5 0.23363305E+01 | | | |  |
| 66 5 0.69664434E+01 | | | |  |
| 67 5 0.10366154E+02 | | | |  |
| 68 5 0.26278470E+02 | | | |  |
| 69 5 0.29561533E+01 | | | |  |
| 70 5 0.82967814E+01 | | | |  |
| 71 5 0.11337844E+01 | | | |  |
| 72 5 0.14303775E+01 | | | |  |
| 73 5 0.19556811E+01 | | | |  |
| 74 5 0.27630894E+01 | | | |  |
| 75 5 0.20533066E+01 | | | |  |
| 76 5 0.10367270E+02 | | | |  |
| 77 5 0.23767550E+02 | | | |  |
| 78 5 0.50394692E+01 | | | |  |
| 79 5 0.11057182E+01 | | | |  |
| 80 5 0.20191695E+01 | | | |  |
| 81 5 0.22882211E+01 | | | |  |
| 82 5 0.21858025E+01 | | | |  |
| 83 5 0.55334840E+01 | | | |  |
| 84 5 0.75860231E+01 | | | |  |
| 85 5 0.12928838E+01 | | | |  |
| 86 5 0.16582451E+01 | | | |  |
| 87 5 0.19188694E+01 | | | |  |
| 88 5 0.13716381E+01 | | | |  |
| 89 5 0.21120855E+01 | | | |  |
| 90 5 0.12016601E+02 | | | |  |
| 91 5 0.13959148E+01 | | | |  |
| 92 5 0.49813779E+01 | | | |  |
| 93 5 0.30752690E+01 | | | |  |
| 94 5 0.10718101E+02 | | | |  |
| 95 5 0.20590063E+01 | | | |  |
| 96 5 0.17517444E+01 | | | |  |
| 97 5 0.11959755E+01 | | | |  |
| 98 5 0.24583260E+01 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| mean efficiency = 0.61985110E+01 | | | |  |
|  |  |  |  |  |
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|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| summary of panel of observations: | | | |  |
| (1 = observed, 0 = not observed) | | | |  |
|  |  |  |  |  |
| t: 1 2 3 4 5 | |  |  |  |
| n |  |  |  |  |
| 1 1 1 1 1 1 5 | | |  |  |
| 2 1 1 1 1 1 5 | | |  |  |
| 3 1 1 1 1 1 5 | | |  |  |
| 4 1 1 1 1 1 5 | | |  |  |
| 5 1 1 1 1 1 5 | | |  |  |
| 6 1 1 1 1 1 5 | | |  |  |
| 7 1 1 1 1 1 5 | | |  |  |
| 8 1 1 1 1 1 5 | | |  |  |
| 9 1 1 1 1 1 5 | | |  |  |
| 10 1 1 1 1 1 5 | | |  |  |
| 11 1 1 1 1 1 5 | | |  |  |
| 12 1 1 1 1 1 5 | | |  |  |
| 13 1 1 1 1 1 5 | | |  |  |
| 14 1 1 1 1 1 5 | | |  |  |
| 15 1 1 1 1 1 5 | | |  |  |
| 16 1 1 1 1 1 5 | | |  |  |
| 17 1 1 1 1 1 5 | | |  |  |
| 18 1 1 1 1 1 5 | | |  |  |
| 19 1 1 1 1 1 5 | | |  |  |
| 20 1 1 1 1 1 5 | | |  |  |
| 21 1 1 1 1 1 5 | | |  |  |
| 22 1 1 1 1 1 5 | | |  |  |
| 23 1 1 1 1 1 5 | | |  |  |
| 24 1 1 1 1 1 5 | | |  |  |
| 25 1 1 1 1 1 5 | | |  |  |
| 26 1 1 1 1 1 5 | | |  |  |
| 27 1 1 1 1 1 5 | | |  |  |
| 28 1 1 1 1 1 5 | | |  |  |
| 29 1 1 1 1 1 5 | | |  |  |
| 30 1 1 1 1 1 5 | | |  |  |
| 31 1 1 1 1 1 5 | | |  |  |
| 32 1 1 1 1 1 5 | | |  |  |
| 33 1 1 1 1 1 5 | | |  |  |
| 34 1 1 1 1 1 5 | | |  |  |
| 35 1 1 1 1 1 5 | | |  |  |
| 36 1 1 1 1 1 5 | | |  |  |
| 37 1 1 1 1 1 5 | | |  |  |
| 38 1 1 1 1 1 5 | | |  |  |
| 39 1 1 1 1 1 5 | | |  |  |
| 40 1 1 1 1 1 5 | | |  |  |
| 41 1 1 1 1 1 5 | | |  |  |
| 42 1 1 1 1 1 5 | | |  |  |
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| 49 1 1 1 1 1 5 | | |  |  |
| 50 1 1 1 1 1 5 | | |  |  |
| 51 1 1 1 1 1 5 | | |  |  |
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| 54 1 1 1 1 1 5 | | |  |  |
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| 60 1 1 1 1 1 5 | | |  |  |
| 61 1 1 1 1 1 5 | | |  |  |
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| 64 1 1 1 1 1 5 | | |  |  |
| 65 1 1 1 1 1 5 | | |  |  |
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| 86 1 1 1 1 1 5 | | |  |  |
| 87 1 1 1 1 1 5 | | |  |  |
| 88 1 1 1 1 1 5 | | |  |  |
| 89 1 1 1 1 1 5 | | |  |  |
| 90 1 1 1 1 1 5 | | |  |  |
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| 95 1 1 1 1 1 5 | | |  |  |
| 96 1 1 1 1 1 5 | | |  |  |
| 97 1 1 1 1 1 5 | | |  |  |
| 98 1 1 1 1 1 5 | | |  |  |
|  |  |  |  |  |
| 98 98 98 98 98 490 | | |  |  |

**پيوست(3): نتايج تخمين تابع با در نظر گرفتن**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| instruction file = terminal | | |  |  |  |
| data file = be1478.txt | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |  |
| The model is a cost function | | |  |  |  |
| The dependent variable is logged | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the ols estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |
|  |  |  |  |  |  |
| beta 0 -0.16145103E+03 0.76767384E+02 -0.21031201E+01 | | | | | |
| beta 1 -0.18765862E+02 0.47347893E+01 -0.39633996E+01 | | | | | |
| beta 2 0.14762716E+02 0.70924123E+01 0.20814802E+01 | | | | | |
| beta 3 -0.69252174E+00 0.82033583E-01 -0.84419297E+01 | | | | | |
| beta 4 -0.33214384E+00 0.16382108E+00 -0.20274793E+01 | | | | | |
| beta 5 0.89098170E+00 0.21889956E+00 0.40702763E+01 | | | | | |
| sigma-squared 0.10119743E+01 | | | |  |  |
|  |  |  |  |  |  |
| log likelihood function = -0.69517764E+03 | | | |  |  |
|  |  |  |  |  |  |
| the estimates after the grid search were : | | | |  |  |
|  |  |  |  |  |  |
| beta 0 -0.16163231E+03 | | |  |  |  |
| beta 1 -0.18765862E+02 | | |  |  |  |
| beta 2 0.14762716E+02 | | |  |  |  |
| beta 3 -0.69252174E+00 | | |  |  |  |
| beta 4 -0.33214384E+00 | | |  |  |  |
| beta 5 0.89098170E+00 | | |  |  |  |
| delta 0 0.00000000E+00 | | |  |  |  |
| delta 1 0.00000000E+00 | | |  |  |  |
| delta 2 0.00000000E+00 | | |  |  |  |
| delta 3 0.00000000E+00 | | |  |  |  |
| delta 4 0.00000000E+00 | | |  |  |  |
| delta 5 0.00000000E+00 | | |  |  |  |
| sigma-squared 0.10324466E+01 | | | |  |  |
| gamma 0.50000000E-01 | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.69526281E+03 | | | | | |
| -0.16163231E+03-0.18765862E+02 0.14762716E+02-0.69252174E+00-0.33214384E+00 | | | | | |
| 0.89098170E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | | |
| 0.00000000E+00 0.00000000E+00 0.10324466E+01 0.50000000E-01 | | | | | |
| gradient step | |  |  |  |  |
| iteration = 10 func evals = 84 llf = -0.59278373E+03 | | | | | |
| -0.16164671E+03-0.18558003E+02 0.14670739E+02-0.64501606E+00-0.32731044E+00 | | | | | |
| 0.87537370E+00-0.19085870E+01 0.21372678E+00 0.30674819E+01 0.35990977E+00 | | | | | |
| 0.78205867E+00 0.10852358E+01 0.56862102E+00 0.10000000E-07 | | | | | |
| iteration = 20 func evals = 173 llf = -0.56414418E+03 | | | | | |
| -0.16171228E+03-0.16671574E+02 0.14601672E+02-0.63048388E+00-0.32349305E+00 | | | | | |
| 0.79286523E+00-0.16722011E+01 0.43483188E+00 0.10132928E+02 0.24188612E+00 | | | | | |
| 0.17947987E+00 0.64295639E+00 0.58443637E+00 0.10000000E-07 | | | | | |
| iteration = 21 func evals = 176 llf = -0.56414418E+03 | | | | | |
| -0.16171228E+03-0.16671574E+02 0.14601672E+02-0.63048389E+00-0.32349305E+00 | | | | | |
| 0.79286524E+00-0.16722010E+01 0.43483188E+00 0.10132928E+02 0.24188613E+00 | | | | | |
| 0.17947984E+00 0.64295636E+00 0.58443637E+00 0.10004932E-07 | | | | | |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the final mle estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |  |
|  |  |  |  |  |  |
| beta 0 -0.16171228E+03 0.99813845E+00 -0.16201388E+03 | | | | | |
| beta 1 -0.16671574E+02 0.14370113E+01 -0.11601561E+02 | | | | | |
| beta 2 0.14601672E+02 0.14353116E+00 0.10173172E+03 | | | | | |
| beta 3 -0.63048389E+00 0.52930572E-01 -0.11911526E+02 | | | | | |
| beta 4 -0.32349305E+00 0.54447796E-02 -0.59413433E+02 | | | | | |
| beta 5 0.79286524E+00 0.66335096E-01 0.11952425E+02 | | | | | |
| delta 0 -0.16722010E+01 0.40459822E+00 -0.41329916E+01 | | | | | |
| delta 1 0.43483188E+00 0.19169840E+00 0.22683125E+01 | | | | | |
| delta 2 0.10132928E+02 0.12105771E+01 0.83703284E+01 | | | | | |
| delta 3 0.24188613E+00 0.20516060E-01 0.11790086E+02 | | | | | |
| delta 4 0.17947984E+00 0.35703947E+00 0.50268907E+00 | | | | | |
| delta 5 0.64295636E+00 0.21824137E+00 0.29460793E+01 | | | | | |
| sigma-squared 0.58443637E+00 0.37252381E-01 0.15688564E+02 | | | | | |
| gamma 0.10004932E-07 0.14565702E-05 0.68688294E-02 | | | | | |
|  |  |  |  |  |  |
| log likelihood function = -0.56414418E+03 | | | |  |  |
|  |  |  |  |  |  |
| LR test of the one-sided error = 0.26206691E+03 | | | | |  |
| with number of restrictions = 7 | | |  |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | | |
|  |  |  |  |  |  |
| number of iterations = 21 | | |  |  |  |
|  |  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |  |
|  |  |  |  |  |  |
| number of cross-sections = 98 | | | |  |  |
|  |  |  |  |  |  |
| number of time periods = 5 | | |  |  |  |
|  |  |  |  |  |  |
| total number of observations = 490 | | | |  |  |
|  |  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| covariance matrix : | |  |  |  |  |
|  |  |  |  |  |  |
| 0.99628036E+00 0.79036572E-01 -0.91465634E-01 0.14580389E-03 0.21109270E-02 | | | | | |
| -0.36527406E-02 -0.15246255E-01 -0.15821577E-02 0.67904201E-02 -0.45474656E-03 | | | | | |
| 0.11550155E-01 0.70925494E-02 -0.13344762E-02 -0.20043220E-09 | | | | | |
| 0.79036572E-01 0.20650014E+01 -0.25580438E-01 0.65930281E-01 0.10334223E-02 | | | | | |
| -0.95113108E-01 0.37367631E-01 -0.42127247E-01 0.18927803E+00 -0.14494684E-03 | | | | | |
| -0.17541560E-01 -0.29182434E-02 -0.25312412E-02 -0.36249183E-07 | | | | | |
| -0.91465634E-01 -0.25580438E-01 0.20601194E-01 -0.30862083E-03 -0.74563196E-03 | | | | | |
| 0.15824180E-02 -0.55017856E-02 0.10590881E-02 -0.44527576E-02 -0.23468331E-03 | | | | | |
| -0.13362998E-02 0.43642684E-02 -0.16203276E-04 0.10303171E-08 | | | | | |
| 0.14580389E-03 0.65930281E-01 -0.30862083E-03 0.28016454E-02 0.11521743E-04 | | | | | |
| -0.30540167E-02 0.28488183E-02 -0.16395084E-02 0.84543926E-03 0.38138974E-04 | | | | | |
| -0.97056135E-03 0.48519246E-03 -0.89368614E-04 0.35094144E-08 | | | | | |
| 0.21109270E-02 0.10334223E-02 -0.74563196E-03 0.11521743E-04 0.29645625E-04 | | | | | |
| -0.65927811E-04 0.18544577E-03 -0.49188492E-04 0.28029280E-03 0.11207150E-04 | | | | | |
| 0.29573165E-04 -0.20283544E-03 0.22254195E-05 -0.95716320E-10 | | | | | |
| -0.36527406E-02 -0.95113108E-01 0.15824180E-02 -0.30540167E-02 -0.65927811E-04 | | | | | |
| 0.44003449E-02 -0.20143196E-02 0.20425898E-02 -0.76784829E-02 -0.71754254E-05 | | | | | |
| 0.82614989E-03 0.27254657E-03 0.11227236E-03 0.14527866E-08 | | | | | |
| -0.15246255E-01 0.37367631E-01 -0.55017856E-02 0.28488183E-02 0.18544577E-03 | | | | | |
| -0.20143196E-02 0.16369972E+00 -0.18355542E-01 -0.54412780E-01 -0.50474231E-03 | | | | | |
| -0.10043361E+00 -0.34738980E-01 0.47123854E-03 0.28477643E-08 | | | | | |
| -0.15821577E-02 -0.42127247E-01 0.10590881E-02 -0.16395084E-02 -0.49188492E-04 | | | | | |
| 0.20425898E-02 -0.18355542E-01 0.36748278E-01 0.44538355E-01 -0.10276797E-02 | | | | | |
| -0.12872729E-01 0.62666779E-02 0.29959629E-03 0.90365308E-08 | | | | | |
| 0.67904201E-02 0.18927803E+00 -0.44527576E-02 0.84543926E-03 0.28029280E-03 | | | | | |
| -0.76784829E-02 -0.54412780E-01 0.44538355E-01 0.14654970E+01 -0.68678366E-02 | | | | | |
| -0.78456299E-01 0.23959791E-01 -0.36907072E-02 -0.60606446E-07 | | | | | |
| -0.45474656E-03 -0.14494684E-03 -0.23468331E-03 0.38138974E-04 0.11207150E-04 | | | | | |
| -0.71754254E-05 -0.50474231E-03 -0.10276797E-02 -0.68678366E-02 0.42090873E-03 | | | | | |
| 0.17492636E-02 -0.58320835E-03 0.22587758E-04 0.88251618E-09 | | | | | |
| 0.11550155E-01 -0.17541560E-01 -0.13362998E-02 -0.97056135E-03 0.29573165E-04 | | | | | |
| 0.82614989E-03 -0.10043361E+00 -0.12872729E-01 -0.78456299E-01 0.17492636E-02 | | | | | |
| 0.12747719E+00 0.78886449E-02 0.42331841E-04 0.77477029E-08 | | | | | |
| 0.70925494E-02 -0.29182434E-02 0.43642684E-02 0.48519246E-03 -0.20283544E-03 | | | | | |
| 0.27254657E-03 -0.34738980E-01 0.62666779E-02 0.23959791E-01 -0.58320835E-03 | | | | | |
| 0.78886449E-02 0.47629294E-01 0.79119308E-04 -0.38799370E-09 | | | | | |
| -0.13344762E-02 -0.25312412E-02 -0.16203276E-04 -0.89368614E-04 0.22254195E-05 | | | | | |
| 0.11227236E-03 0.47123854E-03 0.29959629E-03 -0.36907072E-02 0.22587758E-04 | | | | | |
| 0.42331841E-04 0.79119308E-04 0.13877399E-02 0.32935876E-08 | | | | | |
| -0.20043220E-09 -0.36249183E-07 0.10303171E-08 0.35094144E-08 -0.95716320E-10 | | | | | |
| 0.14527866E-08 0.28477643E-08 0.90365308E-08 -0.60606446E-07 0.88251618E-09 | | | | | |
| 0.77477029E-08 -0.38799370E-09 0.32935876E-08 0.21215967E-11 | | | | | |

**پيوست(4): نتايج تخمين تابع با در نظر گرفتن**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| instruction file = terminal | | |  |  |  |
| data file = be2579.txt | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |  |
| The model is a cost function | | |  |  |  |
| The dependent variable is logged | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the ols estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |
|  |  |  |  |  |  |
| beta 0 -0.82400098E+02 0.21436072E+02 -0.38439924E+01 | | | | | |
| beta 1 0.51319943E+01 0.36787154E+01 0.13950506E+01 | | | | | |
| beta 2 0.70309821E+01 0.19519448E+01 0.36020394E+01 | | | | | |
| beta 3 -0.26396471E+00 0.59636837E-01 -0.44262023E+01 | | | | | |
| beta 4 -0.14404170E+00 0.44476927E-01 -0.32385714E+01 | | | | | |
| beta 5 -0.25534182E+00 0.17117647E+00 -0.14916876E+01 | | | | | |
| sigma-squared 0.11837666E+01 | | | |  |  |
|  |  |  |  |  |  |
| log likelihood function = -0.73359319E+03 | | | |  |  |
|  |  |  |  |  |  |
| the estimates after the grid search were : | | | |  |  |
|  |  |  |  |  |  |
| beta 0 -0.82596166E+02 | | |  |  |  |
| beta 1 0.51319943E+01 | | |  |  |  |
| beta 2 0.70309821E+01 | | |  |  |  |
| beta 3 -0.26396471E+00 | | |  |  |  |
| beta 4 -0.14404170E+00 | | |  |  |  |
| beta 5 -0.25534182E+00 | | |  |  |  |
| delta 0 0.00000000E+00 | | |  |  |  |
| delta 1 0.00000000E+00 | | |  |  |  |
| delta 2 0.00000000E+00 | | |  |  |  |
| delta 3 0.00000000E+00 | | |  |  |  |
| delta 4 0.00000000E+00 | | |  |  |  |
| delta 5 0.00000000E+00 | | |  |  |  |
| sigma-squared 0.12077142E+01 | | | |  |  |
| gamma 0.50000000E-01 | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.73372469E+03 | | | | |  |
| -0.82596166E+02 0.51319943E+01 0.70309821E+01-0.26396471E+00-0.14404170E+00 | | | | | |
| -0.25534182E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | | |
| 0.00000000E+00 0.00000000E+00 0.12077142E+01 0.50000000E-01 | | | | | |
| gradient step | |  |  |  |  |
| iteration = 10 func evals = 65 llf = -0.64885149E+03 | | | | |  |
| -0.82595760E+02 0.51323333E+01 0.70341026E+01-0.26562466E+00-0.14314998E+00 | | | | | |
| -0.25927725E+00-0.34909527E+00-0.18283963E+00 0.92610186E-02 0.29271011E+00 | | | | | |
| -0.29215705E+00-0.66695829E-01 0.10230202E+01 0.63042503E-03 | | | | | |
| iteration = 20 func evals = 156 llf = -0.61956673E+03 | | | | | |
| -0.82480186E+02 0.56556600E+01 0.70414071E+01-0.16255865E+00-0.14381080E+00 | | | | | |
| -0.25316349E+00-0.16271823E+00-0.92157883E+00 0.35351134E+01 0.31564360E+00 | | | | | |
| -0.14190856E+00 0.11391824E+01 0.75685159E+00 0.66118489E-03 | | | | | |
| iteration = 30 func evals = 204 llf = -0.61949106E+03 | | | | | |
| -0.82478108E+02 0.56649886E+01 0.70407559E+01-0.16227411E+00-0.14378613E+00 | | | | | |
| -0.25354397E+00-0.16621668E+00-0.92127318E+00 0.35630519E+01 0.31523581E+00 | | | | | |
| -0.13852377E+00 0.11404629E+01 0.75621888E+00 0.66111067E-03 | | | | | |
| iteration = 31 func evals = 212 llf = -0.61949106E+03 | | | | | |
| -0.82478108E+02 0.56649886E+01 0.70407559E+01-0.16227407E+00-0.14378613E+00 | | | | | |
| -0.25354395E+00-0.16621619E+00-0.92127338E+00 0.35630513E+01 0.31523580E+00 | | | | | |
| -0.13852428E+00 0.11404630E+01 0.75621884E+00 0.66111087E-03 | | | | | |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the final mle estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | |  |  |
|  |  |  |  |  |  |
| beta 0 -0.82478108E+02 0.99425555E+00 -0.82954637E+02 | | | | | |
| beta 1 0.56649886E+01 0.10057942E+01 0.56323537E+01 | | | | | |
| beta 2 0.70407559E+01 0.10682569E+00 0.65908827E+02 | | | | | |
| beta 3 -0.16227407E+00 0.38502892E-01 -0.42145943E+01 | | | | | |
| beta 4 -0.14378613E+00 0.33403339E-02 -0.43045436E+02 | | | | | |
| beta 5 -0.25354395E+00 0.45602847E-01 -0.55598272E+01 | | | | | |
| delta 0 -0.16621619E+00 0.19596806E+00 -0.84818000E+00 | | | | | |
| delta 1 -0.92127338E+00 0.17552119E+00 -0.52487871E+01 | | | | | |
| delta 2 0.35630513E+01 0.77702402E+00 0.45855099E+01 | | | | | |
| delta 3 0.31523580E+00 0.22054402E-01 0.14293554E+02 | | | | | |
| delta 4 -0.13852428E+00 0.12609726E+00 -0.10985511E+01 | | | | | |
| delta 5 0.11404630E+01 0.10380682E+00 0.10986397E+02 | | | | | |
| sigma-squared 0.75621884E+00 0.38203278E-01 0.19794606E+02 | | | | | |
| gamma 0.66111087E-03 0.13779122E-03 0.47979172E+01 | | | | | |
|  |  |  |  |  |  |
| log likelihood function = -0.61949106E+03 | | | |  |  |
|  |  |  |  |  |  |
| LR test of the one-sided error = 0.22820426E+03 | | | | |  |
| with number of restrictions = 7 | | |  |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | | |
|  |  |  |  |  |  |
| number of iterations = 31 | | |  |  |  |
|  |  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | |  |  |
|  |  |  |  |  |  |
| number of cross-sections = 98 | | | |  |  |
|  |  |  |  |  |  |
| number of time periods = 5 | | |  |  |  |
|  |  |  |  |  |  |
| total number of observations = 490 | | | |  |  |
|  |  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| covariance matrix : | |  |  |  |  |
|  |  |  |  |  |  |
| 0.98854409E+00 0.33590108E-02 -0.89227824E-01 0.26992586E-02 0.20265407E-02 | | | | | |
| 0.62082875E-03 0.23179059E-01 -0.22384736E-01 0.90739806E-01 -0.42947351E-03 | | | | | |
| -0.16087232E-01 0.44663406E-03 -0.20939991E-02 0.83736592E-05 | | | | | |
| 0.33590108E-02 0.10116219E+01 0.16970435E-01 -0.16765917E-02 -0.79062279E-03 | | | | | |
| -0.46745568E-01 -0.84241493E-04 -0.10151141E-02 0.53441169E-02 -0.56085568E-03 | | | | | |
| 0.17057125E-02 -0.29908335E-02 -0.16628940E-02 0.11983370E-07 | | | | | |
| -0.89227824E-01 0.16970435E-01 0.11411728E-01 -0.39379769E-03 -0.33693552E-03 | | | | | |
| -0.84773767E-03 -0.17925848E-03 -0.13602847E-03 -0.66442814E-03 -0.13676794E-04 | | | | | |
| 0.45402039E-03 -0.42333419E-03 -0.13751261E-03 -0.53111464E-07 | | | | | |
| 0.26992586E-02 -0.16765917E-02 -0.39379769E-03 0.14824727E-02 0.60929814E-05 | | | | | |
| -0.15818221E-04 -0.13615118E-01 0.11914260E-01 -0.48869891E-01 0.36557526E-03 | | | | | |
| 0.98651245E-02 -0.21207922E-03 0.93255980E-03 -0.44789841E-05 | | | | | |
| 0.20265407E-02 -0.79062279E-03 -0.33693552E-03 0.60929814E-05 0.11157831E-04 | | | | | |
| 0.35314109E-04 -0.14613871E-03 0.14941796E-03 -0.55856995E-03 0.40559395E-05 | | | | | |
| 0.88982843E-04 0.15520992E-04 0.17783292E-04 -0.51185376E-07 | | | | | |
| 0.62082875E-03 -0.46745568E-01 -0.84773767E-03 -0.15818221E-04 0.35314109E-04 | | | | | |
| 0.20796196E-02 -0.45986647E-02 0.42917495E-02 -0.17608660E-01 0.15933200E-03 | | | | | |
| 0.31480349E-02 0.17754732E-03 0.36389068E-03 -0.15816680E-05 | | | | | |
| 0.23179059E-01 -0.84241493E-04 -0.17925848E-03 -0.13615118E-01 -0.14613871E-03 | | | | | |
| -0.45986647E-02 0.38403479E-01 0.10193535E+00 -0.54299160E+00 0.20470591E-02 | | | | | |
| 0.11786649E-01 0.16711531E-02 0.11130668E-01 -0.58538711E-04 | | | | | |
| -0.22384736E-01 -0.10151141E-02 -0.13602847E-03 0.11914260E-01 0.14941796E-03 | | | | | |
| 0.42917495E-02 0.10193535E+00 0.30807690E-01 0.54254299E-01 -0.38812083E-02 | | | | | |
| -0.93793174E-01 0.13459509E-02 -0.11288464E-01 0.48540598E-04 | | | | | |
| 0.90739806E-01 0.53441169E-02 -0.66442814E-03 -0.48869891E-01 -0.55856995E-03 | | | | | |
| -0.17608660E-01 -0.54299160E+00 0.54254299E-01 0.60376632E+00 0.13983988E-01 | | | | | |
| 0.51497426E+00 0.69261208E-02 0.44415547E-01 -0.20914822E-03 | | | | | |
| -0.42947351E-03 -0.56085568E-03 -0.13676794E-04 0.36557526E-03 0.40559395E-05 | | | | | |
| 0.15933200E-03 0.20470591E-02 -0.38812083E-02 0.13983988E-01 0.48639666E-03 | | | | | |
| -0.14652078E-02 0.16112495E-02 -0.19060120E-03 0.17909392E-05 | | | | | |
| -0.16087232E-01 0.17057125E-02 0.45402039E-03 0.98651245E-02 0.88982843E-04 | | | | | |
| 0.31480349E-02 0.11786649E-01 -0.93793174E-01 0.51497426E+00 -0.14652078E-02 | | | | | |
| 0.15900518E-01 -0.66319167E-02 -0.77605627E-02 0.37957788E-04 | | | | | |
| 0.44663406E-03 -0.29908335E-02 -0.42333419E-03 -0.21207922E-03 0.15520992E-04 | | | | | |
| 0.17754732E-03 0.16711531E-02 0.13459509E-02 0.69261208E-02 0.16112495E-02 | | | | | |
| -0.66319167E-02 0.10775857E-01 0.70268636E-04 0.31784550E-06 | | | | | |
| -0.20939991E-02 -0.16628940E-02 -0.13751261E-03 0.93255980E-03 0.17783292E-04 | | | | | |
| 0.36389068E-03 0.11130668E-01 -0.11288464E-01 0.44415547E-01 -0.19060120E-03 | | | | | |
| -0.77605627E-02 0.70268636E-04 0.14594905E-02 0.42667662E-05 | | | | | |
| 0.83736592E-05 0.11983370E-07 -0.53111464E-07 -0.44789841E-05 -0.51185376E-07 | | | | | |
| -0.15816680E-05 -0.58538711E-04 0.48540598E-04 -0.20914822E-03 0.17909392E-05 | | | | | |
| 0.37957788E-04 0.31784550E-06 0.42667662E-05 0.18986421E-07 | | | | | |

**پيوست(5): نتايج تخمين تابع با در نظر گرفتن**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | | | |  |
|  |  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| instruction file = terminal | | |  |  |  |
| data file = be3689.txt | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |  |
| The model is a cost function | | |  |  |  |
| The dependent variable is logged | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the ols estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |
|  |  |  |  |  |  |
| beta 0 0.24526425E+01 0.64063959E-01 0.38284280E+02 | | | | | |
| beta 1 -0.33063706E+00 0.17530018E+00 -0.18861194E+01 | | | | | |
| beta 2 0.71757875E+00 0.71142425E-01 0.10086510E+02 | | | | | |
| beta 3 -0.27725566E+00 0.53362580E-01 -0.51956944E+01 | | | | | |
| beta 4 -0.27475142E+00 0.31575767E-01 -0.87013380E+01 | | | | | |
| beta 5 -0.65113924E+00 0.15006794E+00 -0.43389630E+01 | | | | | |
| sigma-squared 0.10131906E+01 | | | |  |  |
|  |  |  |  |  |  |
| log likelihood function = -0.69547191E+03 | | | |  |  |
|  |  |  |  |  |  |
| the estimates after the grid search were : | | | |  |  |
|  |  |  |  |  |  |
| beta 0 0.22712499E+01 | | |  |  |  |
| beta 1 -0.33063706E+00 | | |  |  |  |
| beta 2 0.71757875E+00 | | |  |  |  |
| beta 3 -0.27725566E+00 | | |  |  |  |
| beta 4 -0.27475142E+00 | | |  |  |  |
| beta 5 -0.65113924E+00 | | |  |  |  |
| delta 0 0.00000000E+00 | | |  |  |  |
| delta 1 0.00000000E+00 | | |  |  |  |
| delta 2 0.00000000E+00 | | |  |  |  |
| delta 3 0.00000000E+00 | | |  |  |  |
| delta 4 0.00000000E+00 | | |  |  |  |
| delta 5 0.00000000E+00 | | |  |  |  |
| sigma-squared 0.10336874E+01 | | | |  |  |
| gamma 0.50000000E-01 | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.69559808E+03 | | | | |  |
| 0.22712499E+01-0.33063706E+00 0.71757875E+00-0.27725566E+00-0.27475142E+00 | | | | | |
| -0.65113924E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | | |
| 0.00000000E+00 0.00000000E+00 0.10336874E+01 0.50000000E-01 | | | | | |
| gradient step | |  |  |  |  |
| iteration = 10 func evals = 61 llf = -0.62665813E+03 | | | | |  |
| 0.20223418E+01-0.33684264E+00 0.61126042E+00-0.25003362E+00-0.24058099E+00 | | | | | |
| -0.65031075E+00-0.35933927E-01-0.19091482E+00 0.20398496E+00 0.40045090E+00 | | | | | |
| 0.42545364E-01 0.36477692E+00 0.97307671E+00 0.30104434E-05 | | | | | |
| iteration = 20 func evals = 106 llf = -0.57709324E+03 | | | | |  |
| 0.21989958E+01 0.15826962E+00 0.77286464E+00-0.15858048E+00-0.25286887E+00 | | | | | |
| -0.61690019E+00-0.77332827E+00-0.69866747E+00 0.77333542E+01 0.25613890E+00 | | | | | |
| 0.83221440E+00 0.10817293E+01 0.62486152E+00 0.71972970E-05 | | | | | |
| iteration = 30 func evals = 161 llf = -0.57586365E+03 | | | | |  |
| 0.21779588E+01 0.69587792E-02 0.77443214E+00-0.18804724E+00-0.25676138E+00 | | | | | |
| -0.66220438E+00-0.70233748E+00-0.33567411E+00 0.85770537E+01 0.24182166E+00 | | | | | |
| 0.38149581E+00 0.11145013E+01 0.62137547E+00 0.11933762E-04 | | | | | |
| iteration = 31 func evals = 168 llf = -0.57586364E+03 | | | | |  |
| 0.21779592E+01 0.69588246E-02 0.77443201E+00-0.18804731E+00-0.25676129E+00 | | | | | |
| -0.66220420E+00-0.70233456E+00-0.33567484E+00 0.85770570E+01 0.24182151E+00 | | | | | |
| 0.38149267E+00 0.11145017E+01 0.62137521E+00 0.11933788E-04 | | | | | |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| the final mle estimates are : | | |  |  |  |
|  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |  |
|  |  |  |  |  |  |
| beta 0 0.21779592E+01 0.65905983E-01 0.33046456E+02 | | | | | |
| beta 1 0.69588246E-02 0.14763925E+00 0.47133973E-01 | | | | | |
| beta 2 0.77443201E+00 0.54891855E-01 0.14108323E+02 | | | | | |
| beta 3 -0.18804731E+00 0.43519526E-01 -0.43209871E+01 | | | | | |
| beta 4 -0.25676129E+00 0.27668754E-01 -0.92798283E+01 | | | | | |
| beta 5 -0.66220420E+00 0.12066676E+00 -0.54878757E+01 | | | | | |
| delta 0 -0.70233456E+00 0.18418333E+00 -0.38132363E+01 | | | | | |
| delta 1 -0.33567484E+00 0.72746089E-01 -0.46143352E+01 | | | | | |
| delta 2 0.85770570E+01 0.82934225E+00 0.10341999E+02 | | | | | |
| delta 3 0.24182151E+00 0.17433454E-01 0.13871118E+02 | | | | | |
| delta 4 0.38149267E+00 0.19393465E+00 0.19671197E+01 | | | | | |
| delta 5 0.11145017E+01 0.13439614E+00 0.82926619E+01 | | | | | |
| sigma-squared 0.62137521E+00 0.43476093E-01 0.14292343E+02 | | | | | |
| gamma 0.11933788E-04 0.14170611E-05 0.84215054E+01 | | | | | |
|  |  |  |  |  |  |
| log likelihood function = -0.57586365E+03 | | | |  |  |
|  |  |  |  |  |  |
| LR test of the one-sided error = 0.23921652E+03 | | | | |  |
| with number of restrictions = 7 | | |  |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |  |
|  |  |  |  |  |  |
| number of iterations = 31 | | |  |  |  |
|  |  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |  |
|  |  |  |  |  |  |
| number of cross-sections = 98 | | | |  |  |
|  |  |  |  |  |  |
| number of time periods = 5 | | |  |  |  |
|  |  |  |  |  |  |
| total number of observations = 490 | | | |  |  |
|  |  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| covariance matrix : | |  |  |  |  |
|  |  |  |  |  |  |
| 0.43435987E-02 0.56494386E-02 0.79436161E-03 0.59002153E-03 -0.21337107E-03 | | | | | | |
| -0.24347219E-03 0.36020946E-02 -0.22498587E-02 0.26172134E-02 -0.52351804E-03 | | | | | | |
| -0.39639357E-02 0.27880287E-02 -0.24179648E-03 -0.82980448E-08 | | | | | | |
| 0.56494386E-02 0.21797349E-01 0.11646583E-02 0.46939986E-02 0.41500864E-03 | | | | | | |
| 0.13702364E-02 0.47884983E-03 -0.41965240E-02 0.40394442E-01 -0.44564793E-03 | | | | | | |
| -0.16187603E-02 0.77182678E-02 -0.61671223E-03 -0.75034745E-08 | | | | | | |
| 0.79436161E-03 0.11646583E-02 0.30131157E-02 0.39268609E-03 -0.18577533E-03 | | | | | | |
| 0.37557955E-02 -0.13785258E-02 -0.40803698E-03 -0.64549914E-02 0.75253173E-04 | | | | | | |
| 0.13462789E-02 0.12954985E-02 -0.26689020E-03 -0.36228985E-07 | | | | | | |
| 0.59002153E-03 0.46939986E-02 0.39268609E-03 0.18939492E-02 -0.16777067E-04 | | | | | | |
| 0.14555542E-02 -0.58507649E-03 -0.77197617E-04 0.65572875E-02 -0.85311131E-04 | | | | | | |
| 0.59723456E-03 0.29865720E-03 -0.10571059E-03 -0.17715679E-07 | | | | | | |
| -0.21337107E-03 0.41500864E-03 -0.18577533E-03 -0.16777067E-04 0.76555994E-03 | | | | | | |
| 0.62153941E-03 0.31592892E-03 -0.33370909E-03 0.24823764E-02 0.54496840E-05 | | | | | | |
| -0.45485751E-03 0.54988960E-03 0.60204994E-05 0.17950383E-07 | | | | | | |
| -0.24347219E-03 0.13702364E-02 0.37557955E-02 0.14555542E-02 0.62153941E-03 | | | | | | |
| 0.14560468E-01 0.13675156E-02 0.76187799E-03 -0.89800481E-03 -0.93029105E-04 | | | | | | |
| -0.10577859E-02 -0.20486247E-02 -0.39104016E-03 -0.24689173E-07 | | | | | | |
| 0.36020946E-02 0.47884983E-03 -0.13785258E-02 -0.58507649E-03 0.31592892E-03 | | | | | | |
| 0.13675156E-02 0.33923499E-01 -0.41886876E-02 -0.14639626E-01 -0.11443758E-02 | | | | | | |
| -0.35394559E-01 -0.32436125E-02 -0.31249586E-03 0.18021126E-06 | | | | | | |
| -0.22498587E-02 -0.41965240E-02 -0.40803698E-03 -0.77197617E-04 -0.33370909E-03 | | | | | | |
| 0.76187799E-03 -0.41886876E-02 0.52919935E-02 -0.38785353E-01 0.25936257E-03 | | | | | | |
| 0.57938151E-02 -0.86806959E-02 0.34629740E-03 -0.66190126E-07 | | | | | | |
| 0.26172134E-02 0.40394442E-01 -0.64549914E-02 0.65572875E-02 0.24823764E-02 | | | | | | |
| -0.89800481E-03 -0.14639626E-01 -0.38785353E-01 0.68780857E+00 0.11046916E-02 | | | | | | |
| -0.21190714E-02 0.81414014E-01 -0.25909053E-02 0.14402996E-05 | | | | | | |
| -0.52351804E-03 -0.44564793E-03 0.75253173E-04 -0.85311131E-04 0.54496840E-05 | | | | | | |
| -0.93029105E-04 -0.11443758E-02 0.25936257E-03 0.11046916E-02 0.30392533E-03 | | | | | | |
| 0.10220469E-02 0.18221315E-03 0.55033010E-04 -0.16256406E-07 | | | | | | |
| -0.39639357E-02 -0.16187603E-02 0.13462789E-02 0.59723456E-03 -0.45485751E-03 | | | | | | |
| -0.10577859E-02 -0.35394559E-01 0.57938151E-02 -0.21190714E-02 0.10220469E-02 | | | | | | |
| 0.37610649E-01 0.35338558E-03 0.30029079E-03 -0.20701281E-06 | | | | | | |
| 0.27880287E-02 0.77182678E-02 0.12954985E-02 0.29865720E-03 0.54988960E-03 | | | | | | |
| -0.20486247E-02 -0.32436125E-02 -0.86806959E-02 0.81414014E-01 0.18221315E-03 | | | | | | |
| 0.35338558E-03 0.18062322E-01 -0.53019080E-03 0.61662743E-07 | | | | | | |
| -0.24179648E-03 -0.61671223E-03 -0.26689020E-03 -0.10571059E-03 0.60204994E-05 | | | | | | |
| -0.39104016E-03 -0.31249586E-03 0.34629740E-03 -0.25909053E-02 0.55033010E-04 | | | | | | |
| 0.30029079E-03 -0.53019080E-03 0.18901707E-02 0.43368730E-07 | | | | | | |
| -0.82980448E-08 -0.75034745E-08 -0.36228985E-07 -0.17715679E-07 0.17950383E-07 | | | | | | |
| -0.24689173E-07 0.18021126E-06 -0.66190126E-07 0.14402996E-05 -0.16256406E-07 | | | | | | |
| -0.20701281E-06 0.61662743E-07 0.43368730E-07 0.20080623E-11 | | | | | | |

**پیوست(6): نتایج تخمین مربوط به ازمون فرضيه پنجم**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Output from the program FRONTIER (Version 4.1c) | | | | |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| instruction file = terminal | | |  |  |  |  |  |
| data file = be-z5z1.txt | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |  |  |  |
| The model is a cost function | | |  |  |  |  |  |
| The dependent variable is logged | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| the ols estimates are : | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |  |  |
|  |  |  |  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | | | |  |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | | | |  |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | | | |  |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | | | |  |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | | |  |  |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | | | |  |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | | | |  |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | | | |  |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | | | |  |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | | | |  |
| sigma-squared 0.93574939E+00 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| the estimates after the grid search were : | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |  |  |  |
| beta 1 -0.33419165E+01 | | |  |  |  |  |  |
| beta 2 -0.17477873E+02 | | |  |  |  |  |  |
| beta 3 0.13884474E+02 | | |  |  |  |  |  |
| beta 4 -0.21841166E+00 | | |  |  |  |  |  |
| beta 5 -0.68245589E+00 | | |  |  |  |  |  |
| beta 6 -0.31230181E+00 | | |  |  |  |  |  |
| beta 7 -0.50314958E+00 | | |  |  |  |  |  |
| beta 8 0.14751687E+00 | | |  |  |  |  |  |
| beta 9 0.82868475E+00 | | |  |  |  |  |  |
| delta 0 0.00000000E+00 | | |  |  |  |  |  |
| delta 1 0.00000000E+00 | | |  |  |  |  |  |
| delta 2 0.00000000E+00 | | |  |  |  |  |  |
| delta 3 0.00000000E+00 | | |  |  |  |  |  |
| delta 4 0.00000000E+00 | | |  |  |  |  |  |
| sigma-squared 0.94678971E+00 | | | |  |  |  |  |
| gamma 0.50000000E-01 | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | | |  |  |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | | | | |
| 0.94678971E+00 0.50000000E-01 | | | |  |  |  |  |
| gradient step | |  |  |  |  |  |  |
| iteration = 10 func evals = 93 llf = -0.59092958E+03 | | | | | |  |  |
| -0.15190161E+03-0.33332056E+01-0.17398732E+02 0.13680071E+02-0.18102729E+00 | | | | | | | |
| -0.53696652E+00-0.30333443E+00-0.21535685E+00 0.14459738E+00 0.81092662E+00 | | | | | | | |
| -0.69609549E+00 0.95124464E+00 0.35611459E+00 0.18535275E+00 0.88170061E+00 | | | | | | | |
| 0.72856167E+00 0.57012125E-04 | | | |  |  |  |  |
| iteration = 20 func evals = 145 llf = -0.54485840E+03 | | | | | |  |  |
| -0.15194088E+03-0.31450870E+01-0.16314865E+02 0.13734012E+02-0.15973714E+00 | | | | | | | |
| -0.63780545E+00-0.30475100E+00-0.35215318E+00 0.14070824E+00 0.77512422E+00 | | | | | | | |
| -0.10383292E+01 0.77313238E+01 0.25460557E+00 0.18652859E+00 0.73054365E+00 | | | | | | | |
| 0.53172027E+00 0.94460035E-04 | | | |  |  |  |  |
| iteration = 21 func evals = 151 llf = -0.54485840E+03 | | | | | |  |  |
| -0.15194088E+03-0.31450869E+01-0.16314865E+02 0.13734012E+02-0.15973721E+00 | | | | | | | |
| -0.63780546E+00-0.30475100E+00-0.35215337E+00 0.14070823E+00 0.77512419E+00 | | | | | | | |
| -0.10383291E+01 0.77313248E+01 0.25460555E+00 0.18652811E+00 0.73054367E+00 | | | | | | | |
| 0.53172032E+00 0.94460073E-04 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| the final mle estimates are : | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| coefficient standard-error t-ratio | | | | | |  |  |
|  |  |  |  |  |  |  |  |
| beta 0 -0.15194088E+03 0.99598760E+00 -0.15255298E+03 | | | | | | |  |
| beta 1 -0.31450869E+01 0.10036019E+01 -0.31337993E+01 | | | | | | |  |
| beta 2 -0.16314865E+02 0.11009952E+01 -0.14818289E+02 | | | | | | |  |
| beta 3 0.13734012E+02 0.14290990E+00 0.96102591E+02 | | | | | | |  |
| beta 4 -0.15973721E+00 0.81232603E-01 -0.19664175E+01 | | | | | | |  |
| beta 5 -0.63780546E+00 0.43224047E-01 -0.14755801E+02 | | | | | | |  |
| beta 6 -0.30475100E+00 0.54471082E-02 -0.55947301E+02 | | | | | | |  |
| beta 7 -0.35215337E+00 0.22078701E+00 -0.15949914E+01 | | | | | | |  |
| beta 8 0.14070823E+00 0.47860272E-01 0.29399796E+01 | | | | | |  |  |
| beta 9 0.77512419E+00 0.51941986E-01 0.14922883E+02 | | | | | |  |  |
| delta 0 -0.10383291E+01 0.39468961E+00 -0.26307485E+01 | | | | | | |  |
| delta 1 0.77313248E+01 0.15130017E+01 0.51099246E+01 | | | | | | |  |
| delta 2 0.25460555E+00 0.28221750E-01 0.90216074E+01 | | | | | |  |  |
| delta 3 0.18652811E+00 0.65743353E+00 0.28372163E+00 | | | | | | |  |
| delta 4 0.73054367E+00 0.22620515E+00 0.32295625E+01 | | | | | | |  |
| sigma-squared 0.53172032E+00 0.67168069E-01 0.79162663E+01 | | | | | | |  |
| gamma 0.94460073E-04 0.40156071E-04 0.23523236E+01 | | | | | | |  |
|  |  |  |  |  |  |  |  |
| log likelihood function = -0.54485840E+03 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| LR test of the one-sided error = 0.25819976E+03 | | | | |  |  |  |
| with number of restrictions = 6 | | |  |  |  |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | | |  |  |
|  |  |  |  |  |  |  |  |
| number of iterations = 21 | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |  |  |  |
|  |  |  |  |  |  |  |  |
| number of cross-sections = 98 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| number of time periods = 5 | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| total number of observations = 490 | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| covariance matrix : | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 0.99199130E+00 -0.92698015E-03 -0.82965026E-02 -0.90258469E-01 0.10900320E-02 | | | | | | | |
| -0.11423228E-02 0.20451730E-02 0.25169669E-02 0.14996672E-03 0.44242855E-03 | | | | | | | |
| -0.19921126E-02 -0.19301542E-01 0.24454786E-03 0.66784262E-02 -0.26255765E-03 | | | | | | | |
| -0.66087794E-03 -0.53553360E-06 | | | |  |  |  |  |
| -0.92698015E-03 0.10072167E+01 0.49651645E-01 0.10543816E-01 -0.79674827E-02 | | | | | | | |
| -0.49664651E-03 -0.43984062E-03 0.23922133E-01 -0.47198745E-01 -0.22183660E-02 | | | | | | | |
| 0.14460549E-01 0.11553765E+00 -0.16783961E-02 -0.44192156E-01 0.26294542E-03 | | | | | | | |
| 0.46239489E-02 0.33943386E-05 | | | |  |  |  |  |
| -0.82965026E-02 0.49651645E-01 0.12121904E+01 -0.11561798E-02 -0.30946082E-01 | | | | | | | |
| 0.29577359E-01 0.27418580E-03 -0.83323244E-01 -0.50888903E-02 -0.56926418E-01 | | | | | | | |
| 0.66472038E-01 0.51526384E+00 -0.74565332E-02 -0.20297474E+00 0.15363329E-01 | | | | | | | |
| 0.19898951E-01 0.15586748E-04 | | | |  |  |  |  |
| -0.90258469E-01 0.10543816E-01 -0.11561798E-02 0.20423241E-01 -0.15362151E-02 | | | | | | | |
| -0.27885146E-03 -0.74037285E-03 -0.69047533E-02 -0.58347505E-03 0.36431977E-03 | | | | | | | |
| 0.35730266E-02 0.56200131E-02 -0.43401927E-03 -0.10255974E-01 0.43478419E-02 | | | | | | | |
| 0.96584608E-03 0.75883830E-06 | | | |  |  |  |  |
| 0.10900320E-02 -0.79674827E-02 -0.30946082E-01 -0.15362151E-02 0.65987357E-02 | | | | | | | |
| 0.53213979E-03 0.32217992E-04 0.13583410E-01 0.99497680E-03 0.16110775E-02 | | | | | | | |
| -0.13022618E-01 -0.51033716E-01 0.10220612E-02 0.36459837E-01 -0.45108041E-03 | | | | | | | |
| -0.35379584E-02 -0.26861617E-05 | | | |  |  |  |  |
| -0.11423228E-02 -0.49664651E-03 0.29577359E-01 -0.27885146E-03 0.53213979E-03 | | | | | | | |
| 0.18683183E-02 0.82801189E-05 0.13192376E-02 0.58908698E-04 -0.13532379E-02 | | | | | | | |
| -0.20440285E-02 -0.60825040E-02 0.22475641E-03 0.53908551E-02 0.47735854E-03 | | | | | | | |
| -0.69529905E-03 -0.38430594E-06 | | | |  |  |  |  |
| 0.20451730E-02 -0.43984062E-03 0.27418580E-03 -0.74037285E-03 0.32217992E-04 | | | | | | | |
| 0.82801189E-05 0.29670987E-04 0.21666219E-03 0.21844771E-04 -0.28487396E-04 | | | | | | | |
| -0.61357094E-04 0.24444828E-03 0.10865765E-04 0.18043356E-03 -0.18960635E-03 | | | | | | | |
| -0.11455965E-04 -0.13336689E-07 | | | |  |  |  |  |
| 0.25169669E-02 0.23922133E-01 -0.83323244E-01 -0.69047533E-02 0.13583410E-01 | | | | | | | |
| 0.13192376E-02 0.21666219E-03 0.48746904E-01 0.40479215E-05 0.43681947E-02 | | | | | | | |
| -0.25258684E-01 -0.14333089E+00 0.30054018E-02 0.87316026E-01 -0.97230668E-02 | | | | | | | |
| -0.96568301E-02 -0.71110287E-05 | | | |  |  |  |  |
| 0.14996672E-03 -0.47198745E-01 -0.50888903E-02 -0.58347505E-03 0.99497680E-03 | | | | | | | |
| 0.58908698E-04 0.21844771E-04 0.40479215E-05 0.22906057E-02 0.24861339E-03 | | | | | | | |
| -0.16486268E-02 -0.86834702E-02 0.13779871E-03 0.48746506E-02 0.16929063E-03 | | | | | | | |
| -0.50114034E-03 -0.36925477E-06 | | | |  |  |  |  |
| 0.44242855E-03 -0.22183660E-02 -0.56926418E-01 0.36431977E-03 0.16110775E-02 | | | | | | | |
| -0.13532379E-02 -0.28487396E-04 0.43681947E-02 0.24861339E-03 0.26979699E-02 | | | | | | | |
| -0.33445053E-02 -0.25415192E-01 0.37906128E-03 0.10482907E-01 -0.74359811E-03 | | | | | | | |
| -0.10483875E-02 -0.81588584E-06 | | | |  |  |  |  |
| -0.19921126E-02 0.14460549E-01 0.66472038E-01 0.35730266E-02 -0.13022618E-01 | | | | | | | |
| -0.20440285E-02 -0.61357094E-04 -0.25258684E-01 -0.16486268E-02 -0.33445053E-02 | | | | | | | |
| 0.15577989E+00 0.19667076E+00 -0.57385268E-02 -0.23248363E+00 0.10380793E-01 | | | | | | | |
| 0.57822257E-02 0.87887815E-05 | | | |  |  |  |  |
| -0.19301542E-01 0.11553765E+00 0.51526384E+00 0.56200131E-02 -0.51033716E-01 | | | | | | | |
| -0.60825040E-02 0.24444828E-03 -0.14333089E+00 -0.86834702E-02 -0.25415192E-01 | | | | | | | |
| 0.19667076E+00 0.22891742E+01 -0.23012345E-01 -0.54259338E+00 0.50227698E-01 | | | | | | | |
| 0.45370345E-01 0.39234493E-04 | | | |  |  |  |  |
| 0.24454786E-03 -0.16783961E-02 -0.74565332E-02 -0.43401927E-03 0.10220612E-02 | | | | | | | |
| 0.22475641E-03 0.10865765E-04 0.30054018E-02 0.13779871E-03 0.37906128E-03 | | | | | | | |
| -0.57385268E-02 -0.23012345E-01 0.79646719E-03 0.11031727E-01 -0.80276097E-03 | | | | | | | |
| -0.75346379E-03 -0.60530845E-06 | | | |  |  |  |  |
| 0.66784262E-02 -0.44192156E-01 -0.20297474E+00 -0.10255974E-01 0.36459837E-01 | | | | | | | |
| 0.53908551E-02 0.18043356E-03 0.87316026E-01 0.48746506E-02 0.10482907E-01 | | | | | | | |
| -0.23248363E+00 -0.54259338E+00 0.11031727E-01 0.43221885E+00 -0.36148431E-01 | | | | | | | |
| -0.24685097E-01 -0.22870454E-04 | | | |  |  |  |  |
| -0.26255765E-03 0.26294542E-03 0.15363329E-01 0.43478419E-02 -0.45108041E-03 | | | | | | | |
| 0.47735854E-03 -0.18960635E-03 -0.97230668E-02 0.16929063E-03 -0.74359811E-03 | | | | | | | |
| 0.10380793E-01 0.50227698E-01 -0.80276097E-03 -0.36148431E-01 0.51168769E-01 | | | | | | | |
| 0.68815024E-03 0.29571297E-05 | | | |  |  |  |  |
| -0.66087794E-03 0.46239489E-02 0.19898951E-01 0.96584608E-03 -0.35379584E-02 | | | | | | | |
| -0.69529905E-03 -0.11455965E-04 -0.96568301E-02 -0.50114034E-03 -0.10483875E-02 | | | | | | | |
| 0.57822257E-02 0.45370345E-01 -0.75346379E-03 -0.24685097E-01 0.68815024E-03 | | | | | | | |
| 0.45115495E-02 0.21659389E-05 | | | |  |  |  |  |
| -0.53553360E-06 0.33943386E-05 0.15586748E-04 0.75883830E-06 -0.26861617E-05 | | | | | | | |
| -0.38430594E-06 -0.13336689E-07 -0.71110287E-05 -0.36925477E-06 -0.81588584E-06 | | | | | | | |
| 0.87887815E-05 0.39234493E-04 -0.60530845E-06 -0.22870454E-04 0.29571297E-05 | | | | | | | |
| 0.21659389E-05 0.16125100E-08 | | | |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | پیوست (7): نتایج تخمین مربوط به ازمون فرضيه ششم | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = be-z5z2.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| delta 0 0.00000000E+00 | | |  |  |
| delta 1 0.00000000E+00 | | |  |  |
| delta 2 0.00000000E+00 | | |  |  |
| delta 3 0.00000000E+00 | | |  |  |
| delta 4 0.00000000E+00 | | |  |  |
| sigma-squared 0.94678971E+00 | | | |  |
| gamma 0.50000000E-01 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | |
| 0.94678971E+00 0.50000000E-01 | | | |  |
| gradient step | |  |  |  |
| iteration = 10 func evals = 67 llf = -0.60190847E+03 | | | | |
| -0.15190144E+03-0.33379069E+01-0.17471345E+02 0.13654788E+02-0.26407507E+00 | | | | |
| -0.53167509E+00-0.30264713E+00-0.48516273E+00 0.13591801E+00 0.80831497E+00 | | | | |
| -0.76632472E-01-0.83160676E-01 0.35613829E+00 0.38091414E-01 0.20355157E+00 | | | | |
| 0.78250856E+00 0.10982690E-04 | | | |  |
| iteration = 20 func evals = 115 llf = -0.57312600E+03 | | | | |
| -0.15191813E+03-0.31482051E+01-0.16699141E+02 0.13761196E+02-0.22589742E+00 | | | | |
| -0.62809411E+00-0.30685098E+00-0.50934968E+00 0.13422887E+00 0.78744657E+00 | | | | |
| -0.85243369E+00-0.24433356E+00 0.30543600E+00 0.94933874E+00 0.33446180E+00 | | | | |
| 0.59907243E+00 0.49290127E-04 | | | |  |
| iteration = 24 func evals = 134 llf = -0.57310312E+03 | | | | |
| -0.15191833E+03-0.31447473E+01-0.16690389E+02 0.13760927E+02-0.22562190E+00 | | | | |
| -0.62784394E+00-0.30683794E+00-0.50872244E+00 0.13411122E+00 0.78702025E+00 | | | | |
| -0.85392967E+00-0.24418557E+00 0.30558031E+00 0.95039184E+00 0.33522719E+00 | | | | |
| 0.59964861E+00 0.49372194E-04 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15191833E+03 0.99615571E+00 -0.15250460E+03 | | | | |
| beta 1 -0.31447473E+01 0.11531469E+01 -0.27271003E+01 | | | | |
| beta 2 -0.16690389E+02 0.16440156E+01 -0.10152209E+02 | | | | |
| beta 3 0.13760927E+02 0.15298513E+00 0.89949443E+02 | | | | |
| beta 4 -0.22562190E+00 0.53889343E-01 -0.41867630E+01 | | | | |
| beta 5 -0.62784394E+00 0.55339420E-01 -0.11345329E+02 | | | | |
| beta 6 -0.30683794E+00 0.60979229E-02 -0.50318436E+02 | | | | |
| beta 7 -0.50872244E+00 0.17327339E+00 -0.29359526E+01 | | | | |
| beta 8 0.13411122E+00 0.50858724E-01 0.26369363E+01 | | | | |
| beta 9 0.78702025E+00 0.78910808E-01 0.99735419E+01 | | | | |
| delta 0 -0.85392967E+00 0.48991764E+00 -0.17430066E+01 | | | | |
| delta 1 -0.24418557E+00 0.75181610E-01 -0.32479429E+01 | | | | |
| delta 2 0.30558031E+00 0.29336783E-01 0.10416285E+02 | | | | |
| delta 3 0.95039184E+00 0.44485877E+00 0.21363900E+01 | | | | |
| delta 4 0.33522719E+00 0.18709252E+00 0.17917723E+01 | | | | |
| sigma-squared 0.59964861E+00 0.54927551E-01 0.10917083E+02 | | | | |
| gamma 0.49372194E-04 0.76875366E-05 0.64223686E+01 | | | | |
|  |  |  |  |  |
| log likelihood function = -0.57310312E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.20171033E+03 | | | | |
| with number of restrictions = 6 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 24 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.99232619E+00 -0.14029662E-01 -0.33729462E-01 -0.88239842E-01 -0.63167555E-03 | | | | |
| -0.21034315E-02 0.19570959E-02 -0.24126255E-02 0.55360345E-03 0.16697714E-02 | | | | |
| 0.10307930E-01 -0.10906693E-02 -0.57298630E-03 -0.82788965E-02 -0.37530068E-02 | | | | |
| -0.64012498E-03 -0.14556786E-06 | | | |  |
| -0.14029662E-01 0.13297478E+01 0.75802566E+00 -0.34438752E-01 0.20758359E-01 | | | | |
| 0.20840910E-01 0.16564099E-02 0.10239716E+00 -0.57864555E-01 -0.36779368E-01 | | | | |
| -0.23087164E+00 0.17783301E-01 0.12051426E-01 0.19120131E+00 0.84697957E-01 | | | | |
| 0.22220554E-01 0.41189897E-05 | | | |  |
| -0.33729462E-01 0.75802566E+00 0.27027871E+01 -0.10836802E+00 0.44873758E-01 | | | | |
| 0.78585259E-01 0.51573154E-02 0.12823007E+00 -0.27534917E-01 -0.12950215E+00 | | | | |
| -0.52769947E+00 0.43590063E-01 0.27379567E-01 0.43471360E+00 0.19325190E+00 | | | | |
| 0.45967398E-01 0.88337375E-05 | | | |  |
| -0.88239842E-01 -0.34438752E-01 -0.10836802E+00 0.23404451E-01 -0.24558356E-02 | | | | |
| -0.26585156E-02 -0.89384718E-03 -0.98583099E-02 0.12931360E-02 0.55672348E-02 | | | | |
| 0.28802776E-01 -0.32997070E-02 -0.19798398E-02 -0.22737383E-01 -0.10563688E-01 | | | | |
| -0.22193643E-02 -0.50332554E-06 | | | |  |
| -0.63167555E-03 0.20758359E-01 0.44873758E-01 -0.24558356E-02 0.29040613E-02 | | | | |
| 0.12120250E-02 0.11865021E-03 0.54487226E-02 -0.53598414E-03 -0.21690067E-02 | | | | |
| -0.13116455E-01 0.13507225E-02 0.79308929E-03 0.10527986E-01 0.45631375E-02 | | | | |
| 0.13492065E-02 0.18372342E-06 | | | |  |
| -0.21034315E-02 0.20840910E-01 0.78585259E-01 -0.26585156E-02 0.12120250E-02 | | | | |
| 0.30624514E-02 0.12857618E-03 0.38016075E-02 -0.74515126E-03 -0.37635305E-02 | | | | |
| -0.15046150E-01 0.10225777E-02 0.84068064E-03 0.12618382E-01 0.55446210E-02 | | | | |
| 0.13211873E-02 0.21026631E-06 | | | |  |
| 0.19570959E-02 0.16564099E-02 0.51573154E-02 -0.89384718E-03 0.11865021E-03 | | | | |
| 0.12857618E-03 0.37184663E-04 0.46622923E-03 -0.61757309E-04 -0.26449926E-03 | | | | |
| -0.13842603E-02 0.15630234E-03 0.92656864E-04 0.10953912E-02 0.50789817E-03 | | | | |
| 0.10635746E-03 0.24374328E-07 | | | |  |
| -0.24126255E-02 0.10239716E+00 0.12823007E+00 -0.98583099E-02 0.54487226E-02 | | | | |
| 0.38016075E-02 0.46622923E-03 0.30023666E-01 -0.40601449E-02 -0.61452595E-02 | | | | |
| -0.35927380E-01 0.49343067E-02 0.23676916E-02 0.27637041E-01 0.12668172E-01 | | | | |
| 0.37552458E-02 0.39555298E-06 | | | |  |
| 0.55360345E-03 -0.57864555E-01 -0.27534917E-01 0.12931360E-02 -0.53598414E-03 | | | | |
| -0.74515126E-03 -0.61757309E-04 -0.40601449E-02 0.25866098E-02 0.13390202E-02 | | | | |
| 0.81264000E-02 -0.67778753E-03 -0.43602984E-03 -0.66716800E-02 -0.30066933E-02 | | | | |
| -0.80764653E-03 -0.15372149E-06 | | | |  |
| 0.16697714E-02 -0.36779368E-01 -0.12950215E+00 0.55672348E-02 -0.21690067E-02 | | | | |
| -0.37635305E-02 -0.26449926E-03 -0.61452595E-02 0.13390202E-02 0.62269157E-02 | | | | |
| 0.25884378E-01 -0.21437325E-02 -0.13455886E-02 -0.21320348E-01 -0.94853699E-02 | | | | |
| -0.22199226E-02 -0.43059078E-06 | | | |  |
| 0.10307930E-01 -0.23087164E+00 -0.52769947E+00 0.28802776E-01 -0.13116455E-01 | | | | |
| -0.15046150E-01 -0.13842603E-02 -0.35927380E-01 0.81264000E-02 0.25884378E-01 | | | | |
| 0.24001929E+00 -0.34343845E-02 -0.85194769E-02 -0.21464667E+00 -0.91158830E-01 | | | | |
| -0.15338488E-01 -0.62265673E-05 | | | |  |
| -0.10906693E-02 0.17783301E-01 0.43590063E-01 -0.32997070E-02 0.13507225E-02 | | | | |
| 0.10225777E-02 0.15630234E-03 0.49343067E-02 -0.67778753E-03 -0.21437325E-02 | | | | |
| -0.34343845E-02 0.56522744E-02 0.48115527E-03 -0.26964058E-02 0.14046436E-02 | | | | |
| 0.40686529E-03 0.33469299E-06 | | | |  |
| -0.57298630E-03 0.12051426E-01 0.27379567E-01 -0.19798398E-02 0.79308929E-03 | | | | |
| 0.84068064E-03 0.92656864E-04 0.23676916E-02 -0.43602984E-03 -0.13455886E-02 | | | | |
| -0.85194769E-02 0.48115527E-03 0.86064684E-03 0.71927208E-02 0.30746246E-02 | | | | |
| 0.83004913E-03 0.11299687E-06 | | | |  |
| -0.82788965E-02 0.19120131E+00 0.43471360E+00 -0.22737383E-01 0.10527986E-01 | | | | |
| 0.12618382E-01 0.10953912E-02 0.27637041E-01 -0.66716800E-02 -0.21320348E-01 | | | | |
| -0.21464667E+00 -0.26964058E-02 0.71927208E-02 0.19789932E+00 0.81315630E-01 | | | | |
| 0.13446198E-01 0.54597469E-05 | | | |  |
| -0.37530068E-02 0.84697957E-01 0.19325190E+00 -0.10563688E-01 0.45631375E-02 | | | | |
| 0.55446210E-02 0.50789817E-03 0.12668172E-01 -0.30066933E-02 -0.94853699E-02 | | | | |
| -0.91158830E-01 0.14046436E-02 0.30746246E-02 0.81315630E-01 0.35003612E-01 | | | | |
| 0.53979724E-02 0.24904469E-05 | | | |  |
| -0.64012498E-03 0.22220554E-01 0.45967398E-01 -0.22193643E-02 0.13492065E-02 | | | | |
| 0.13211873E-02 0.10635746E-03 0.37552458E-02 -0.80764653E-03 -0.22199226E-02 | | | | |
| -0.15338488E-01 0.40686529E-03 0.83004913E-03 0.13446198E-01 0.53979724E-02 | | | | |
| 0.30170358E-02 0.29762156E-06 | | | |  |
| -0.14556786E-06 0.41189897E-05 0.88337375E-05 -0.50332554E-06 0.18372342E-06 | | | | |
| 0.21026631E-06 0.24374328E-07 0.39555298E-06 -0.15372149E-06 -0.43059078E-06 | | | | |
| -0.62265673E-05 0.33469299E-06 0.11299687E-06 0.54597469E-05 0.24904469E-05 | | | | |
| 0.29762156E-06 0.59098219E-10 | | | |  |

**پيوست(8): نتايج تخمين مربوط به ازمون فرضيه هفتم**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = be-z5z3.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| delta 0 0.00000000E+00 | | |  |  |
| delta 1 0.00000000E+00 | | |  |  |
| delta 2 0.00000000E+00 | | |  |  |
| delta 3 0.00000000E+00 | | |  |  |
| delta 4 0.00000000E+00 | | |  |  |
| sigma-squared 0.94678971E+00 | | | |  |
| gamma 0.50000000E-01 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | |
| 0.94678971E+00 0.50000000E-01 | | | |  |
| gradient step | |  |  |  |
| iteration = 10 func evals = 74 llf = -0.66104078E+03 | | | | |
| -0.15185303E+03-0.33446792E+01-0.17460038E+02 0.14186383E+02-0.15532442E+00 | | | | |
| -0.67722549E+00-0.32566074E+00-0.58161820E+00 0.16190139E+00 0.83705579E+00 | | | | |
| 0.98205843E-01-0.44898964E+00 0.13698602E+01-0.43107035E-01 0.60971281E+00 | | | | |
| 0.95360830E+00 0.10000000E-07 | | | |  |
| iteration = 20 func evals = 152 llf = -0.60054821E+03 | | | | |
| -0.15204916E+03-0.32340910E+01-0.14541113E+02 0.13832863E+02 0.12865715E+00 | | | | |
| -0.60487765E+00-0.30823135E+00-0.51735263E+00 0.23600866E+00 0.69747682E+00 | | | | |
| 0.16494625E+01-0.24930928E+01 0.13983948E+02-0.47657880E+00 0.98471160E+00 | | | | |
| 0.66186897E+00 0.10000000E-07 | | | |  |
| pt better than entering pt cannot be found | | | |  |
| iteration = 30 func evals = 225 llf = -0.60039034E+03 | | | | |
| -0.15204757E+03-0.32322478E+01-0.14522869E+02 0.13856296E+02 0.12909876E+00 | | | | |
| -0.60602799E+00-0.30928452E+00-0.53971162E+00 0.23635319E+00 0.69736835E+00 | | | | |
| 0.17100383E+01-0.25168610E+01 0.13756324E+02-0.53065828E+00 0.98978105E+00 | | | | |
| 0.67921195E+00 0.69957787E-06 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15204757E+03 0.99638645E+00 -0.15259900E+03 | | | | |
| beta 1 -0.32322478E+01 0.99906684E+00 -0.32352668E+01 | | | | |
| beta 2 -0.14522869E+02 0.11609735E+01 -0.12509217E+02 | | | | |
| beta 3 0.13856296E+02 0.13968627E+00 0.99195830E+02 | | | | |
| beta 4 0.12909876E+00 0.10447622E+00 0.12356760E+01 | | | | |
| beta 5 -0.60602799E+00 0.48230002E-01 -0.12565374E+02 | | | | |
| beta 6 -0.30928452E+00 0.53667124E-02 -0.57630165E+02 | | | | |
| beta 7 -0.53971162E+00 0.14434066E+00 -0.37391516E+01 | | | | |
| beta 8 0.23635319E+00 0.54127821E-01 0.43665751E+01 | | | | |
| beta 9 0.69736835E+00 0.53780054E-01 0.12967044E+02 | | | | |
| delta 0 0.17100383E+01 0.61867239E+00 0.27640450E+01 | | | | |
| delta 1 -0.25168610E+01 0.97985834E+00 -0.25685968E+01 | | | | |
| delta 2 0.13756324E+02 0.11956730E+01 0.11505089E+02 | | | | |
| delta 3 -0.53065828E+00 0.40141562E+00 -0.13219672E+01 | | | | |
| delta 4 0.98978105E+00 0.21790432E+00 0.45422736E+01 | | | | |
| sigma-squared 0.67921195E+00 0.42792690E-01 0.15872149E+02 | | | | |
| gamma 0.69957787E-06 0.28779934E-05 0.24307834E+00 | | | | |
|  |  |  |  |  |
| log likelihood function = -0.60039034E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.14713589E+03 | | | | |
| with number of restrictions = 6 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 30 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.99278596E+00 -0.71513941E-03 -0.19933847E-01 -0.90362723E-01 -0.15818806E-02 | | | | |
| -0.17753956E-02 0.20477678E-02 0.10791792E-02 -0.51651019E-03 0.94253202E-03 | | | | |
| -0.18125323E-01 0.17490552E-01 -0.66063849E-02 0.42797171E-02 0.40153103E-02 | | | | |
| 0.98459899E-04 0.73209829E-08 | | | |  |
| -0.71513941E-03 0.99813455E+00 0.28289368E-01 0.94824218E-02 0.19510933E-03 | | | | |
| 0.90420081E-03 -0.42926894E-03 0.39141885E-01 -0.45619662E-01 -0.10078357E-02 | | | | |
| 0.20816504E-01 -0.19240014E-01 0.17684114E-02 -0.46583357E-02 -0.62617984E-02 | | | | |
| -0.22750706E-03 -0.11052321E-07 | | | |  |
| -0.19933847E-01 0.28289368E-01 0.13478594E+01 -0.26617888E-02 0.31146196E-01 | | | | |
| 0.42703258E-01 0.31925539E-03 -0.30186025E-01 0.96195965E-02 -0.62236985E-01 | | | | |
| 0.33291778E+00 -0.35524755E+00 0.96720947E-01 -0.51525375E-01 -0.69110902E-01 | | | | |
| -0.65273371E-03 -0.24995401E-06 | | | |  |
| -0.90362723E-01 0.94824218E-02 -0.26617888E-02 0.19512254E-01 -0.91541369E-03 | | | | |
| 0.48163092E-03 -0.71080796E-03 -0.39383630E-02 -0.60667130E-03 0.44155285E-03 | | | | |
| -0.12041160E-01 0.27903721E-02 -0.20299659E-02 0.10778517E-01 0.23130416E-02 | | | | |
| 0.21361804E-03 0.23747839E-07 | | | |  |
| -0.15818806E-02 0.19510933E-03 0.31146196E-01 -0.91541369E-03 0.10915281E-01 | | | | |
| 0.10217478E-02 0.88773284E-04 0.20753164E-02 0.28802582E-02 -0.14878538E-02 | | | | |
| 0.47632358E-01 -0.89518351E-01 0.45707739E-02 0.22235908E-01 -0.27274050E-02 | | | | |
| 0.71132428E-03 -0.20860685E-06 | | | |  |
| -0.17753956E-02 0.90420081E-03 0.42703258E-01 0.48163092E-03 0.10217478E-02 | | | | |
| 0.23261331E-02 -0.15138448E-04 -0.37728366E-03 0.27919691E-03 -0.19801373E-02 | | | | |
| 0.10476019E-01 -0.10621283E-01 -0.66008898E-03 -0.22794381E-02 -0.18367159E-02 | | | | |
| 0.43462062E-04 -0.51268069E-08 | | | |  |
| 0.20477678E-02 -0.42926894E-03 0.31925539E-03 -0.71080796E-03 0.88773284E-04 | | | | |
| -0.15138448E-04 0.28801602E-04 0.17990198E-03 0.41806597E-04 -0.29804221E-04 | | | | |
| 0.82536674E-03 -0.60571922E-03 0.49274090E-04 -0.39502331E-03 -0.12577335E-03 | | | | |
| -0.64041958E-05 -0.21725670E-08 | | | |  |
| 0.10791792E-02 0.39141885E-01 -0.30186025E-01 -0.39383630E-02 0.20753164E-02 | | | | |
| -0.37728366E-03 0.17990198E-03 0.20834227E-01 -0.17035899E-02 0.14818894E-02 | | | | |
| 0.63963729E-02 -0.60328346E-03 -0.62881244E-02 -0.64878744E-02 -0.11605052E-02 | | | | |
| 0.25789888E-03 -0.87811451E-08 | | | |  |
| -0.51651019E-03 -0.45619662E-01 0.96195965E-02 -0.60667130E-03 0.28802582E-02 | | | | |
| 0.27919691E-03 0.41806597E-04 -0.17035899E-02 0.29298210E-02 -0.47569895E-03 | | | | |
| 0.13831064E-01 -0.26727183E-01 0.38458396E-03 0.70483468E-02 -0.69909908E-03 | | | | |
| 0.20393738E-03 -0.63869621E-07 | | | |  |
| 0.94253202E-03 -0.10078357E-02 -0.62236985E-01 0.44155285E-03 -0.14878538E-02 | | | | |
| -0.19801373E-02 -0.29804221E-04 0.14818894E-02 -0.47569895E-03 0.28922942E-02 | | | | |
| -0.15995565E-01 0.17024946E-01 -0.34782241E-02 0.25287350E-02 0.32840029E-02 | | | | |
| 0.27751428E-04 0.13888018E-07 | | | |  |
| -0.18125323E-01 0.20816504E-01 0.33291778E+00 -0.12041160E-01 0.47632358E-01 | | | | |
| 0.10476019E-01 0.82536674E-03 0.63963729E-02 0.13831064E-01 -0.15995565E-01 | | | | |
| 0.38275553E+00 -0.52458465E+00 0.75080715E-01 0.27957863E-01 -0.55524303E-01 | | | | |
| 0.34086160E-02 -0.11015887E-05 | | | |  |
| 0.17490552E-01 -0.19240014E-01 -0.35524755E+00 0.27903721E-02 -0.89518351E-01 | | | | |
| -0.10621283E-01 -0.60571922E-03 -0.60328346E-03 -0.26727183E-01 0.17024946E-01 | | | | |
| -0.52458465E+00 0.96012237E+00 0.53466156E-01 -0.22678027E+00 0.36471962E-01 | | | | |
| -0.58553434E-02 0.22985806E-05 | | | |  |
| -0.66063849E-02 0.17684114E-02 0.96720947E-01 -0.20299659E-02 0.45707739E-02 | | | | |
| -0.66008898E-03 0.49274090E-04 -0.62881244E-02 0.38458396E-03 -0.34782241E-02 | | | | |
| 0.75080715E-01 0.53466156E-01 0.14296339E+01 -0.17311941E+00 0.46422405E-01 | | | | |
| -0.53837591E-02 0.59601982E-06 | | | |  |
| 0.42797171E-02 -0.46583357E-02 -0.51525375E-01 0.10778517E-01 0.22235908E-01 | | | | |
| -0.22794381E-02 -0.39502331E-03 -0.64878744E-02 0.70483468E-02 0.25287350E-02 | | | | |
| 0.27957863E-01 -0.22678027E+00 -0.17311941E+00 0.16113450E+00 0.72047110E-02 | | | | |
| 0.44077213E-03 -0.74003234E-06 | | | |  |
| 0.40153103E-02 -0.62617984E-02 -0.69110902E-01 0.23130416E-02 -0.27274050E-02 | | | | |
| -0.18367159E-02 -0.12577335E-03 -0.11605052E-02 -0.69909908E-03 0.32840029E-02 | | | | |
| -0.55524303E-01 0.36471962E-01 0.46422405E-01 0.72047110E-02 0.47482294E-01 | | | | |
| 0.95263980E-03 0.10302190E-06 | | | |  |
| 0.98459899E-04 -0.22750706E-03 -0.65273371E-03 0.21361804E-03 0.71132428E-03 | | | | |
| 0.43462062E-04 -0.64041958E-05 0.25789888E-03 0.20393738E-03 0.27751428E-04 | | | | |
| 0.34086160E-02 -0.58553434E-02 -0.53837591E-02 0.44077213E-03 0.95263980E-03 | | | | |
| 0.18312144E-02 -0.34374439E-07 | | | |  |
| 0.73209829E-08 -0.11052321E-07 -0.24995401E-06 0.23747839E-07 -0.20860685E-06 | | | | |
| -0.51268069E-08 -0.21725670E-08 -0.87811451E-08 -0.63869621E-07 0.13888018E-07 | | | | |
| -0.11015887E-05 0.22985806E-05 0.59601982E-06 -0.74003234E-06 0.10302190E-06 | | | | |
| -0.34374439E-07 0.82828460E-11 | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| پیوست(9): نتایج تخمین مربوط به ازمون فرضيه هشتم | | | | |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = be-z5z4.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| delta 0 0.00000000E+00 | | |  |  |
| delta 1 0.00000000E+00 | | |  |  |
| delta 2 0.00000000E+00 | | |  |  |
| delta 3 0.00000000E+00 | | |  |  |
| delta 4 0.00000000E+00 | | |  |  |
| sigma-squared 0.94678971E+00 | | | |  |
| gamma 0.50000000E-01 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | |
| 0.94678971E+00 0.50000000E-01 | | | |  |
| gradient step | |  |  |  |
| iteration = 10 func evals = 65 llf = -0.60192937E+03 | | | | |
| -0.15190264E+03-0.33377602E+01-0.17470243E+02 0.13642217E+02-0.27346775E+00 | | | | |
| -0.53222889E+00-0.30209594E+00-0.48071134E+00 0.13427327E+00 0.80796666E+00 | | | | |
| -0.80438960E-01-0.37088846E-01 0.17769641E+00 0.35600212E+00 0.20622761E+00 | | | | |
| 0.78340514E+00 0.13419054E-04 | | | |  |
| iteration = 20 func evals = 126 llf = -0.54539085E+03 | | | | |
| -0.15196300E+03-0.30124352E+01-0.15732021E+02 0.13694846E+02-0.21062955E+00 | | | | |
| -0.63054655E+00-0.30408164E+00-0.48627052E+00 0.12601681E+00 0.74639003E+00 | | | | |
| -0.46256628E+00 0.15407902E+00 0.83248731E+01 0.23669633E+00 0.68610771E+00 | | | | |
| 0.56773607E+00 0.86055240E-04 | | | |  |
| iteration = 29 func evals = 198 llf = -0.54392590E+03 | | | | |
| -0.15194724E+03-0.23967823E+01-0.14821682E+02 0.13682545E+02-0.19066688E+00 | | | | |
| -0.59247077E+00-0.30359641E+00-0.46154737E+00 0.10153691E+00 0.70431272E+00 | | | | |
| -0.48948237E+00 0.15525159E+00 0.92934550E+01 0.24008954E+00 0.74301863E+00 | | | | |
| 0.54284250E+00 0.96701714E-04 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15194724E+03 0.10133574E+01 -0.14994436E+03 | | | | |
| beta 1 -0.23967823E+01 0.16664366E+01 -0.14382679E+01 | | | | |
| beta 2 -0.14821682E+02 0.11733215E+01 -0.12632243E+02 | | | | |
| beta 3 0.13682545E+02 0.13018989E+00 0.10509683E+03 | | | | |
| beta 4 -0.19066688E+00 0.38363323E-01 -0.49700304E+01 | | | | |
| beta 5 -0.59247077E+00 0.43183091E-01 -0.13719971E+02 | | | | |
| beta 6 -0.30359641E+00 0.47450877E-02 -0.63981201E+02 | | | | |
| beta 7 -0.46154737E+00 0.12874496E+00 -0.35849742E+01 | | | | |
| beta 8 0.10153691E+00 0.73474903E-01 0.13819265E+01 | | | | |
| beta 9 0.70431272E+00 0.53902362E-01 0.13066454E+02 | | | | |
| delta 0 -0.48948237E+00 0.37922553E-01 -0.12907421E+02 | | | | |
| delta 1 0.15525159E+00 0.16283402E-01 0.95343467E+01 | | | | |
| delta 2 0.92934550E+01 0.10131697E+01 0.91726543E+01 | | | | |
| delta 3 0.24008954E+00 0.20451478E-01 0.11739471E+02 | | | | |
| delta 4 0.74301863E+00 0.61446722E-01 0.12092079E+02 | | | | |
| sigma-squared 0.54284250E+00 0.30078835E-01 0.18047325E+02 | | | | |
| gamma 0.96701714E-04 0.97157937E-05 0.99530431E+01 | | | | |
|  |  |  |  |  |
| log likelihood function = -0.54392590E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.26006477E+03 | | | | |
| with number of restrictions = 6 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 29 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.10268933E+01 0.24564185E+00 -0.64501249E-01 -0.92082331E-01 0.39848198E-02 | | | | |
| -0.35866399E-02 0.20739725E-02 0.73895926E-02 -0.10478788E-01 0.30127593E-02 | | | | |
| 0.35596898E-03 -0.15526952E-02 0.68770630E-02 -0.30796590E-03 -0.11858819E-02 | | | | |
| -0.54274861E-03 0.16684473E-05 | | | |  |
| 0.24564185E+00 0.27770110E+01 -0.29804444E+00 0.30503046E-03 0.27490046E-01 | | | | |
| -0.13362752E-01 -0.45595541E-03 0.92135748E-01 -0.12219570E+00 0.14450599E-01 | | | | |
| -0.63967848E-03 -0.10221836E-01 0.15258883E+00 -0.20965993E-02 -0.23790261E-02 | | | | |
| -0.49286156E-02 0.11458945E-04 | | | |  |
| -0.64501249E-01 -0.29804444E+00 0.13766833E+01 0.23726792E-02 -0.55028511E-02 | | | | |
| 0.41831093E-01 0.83611621E-05 -0.23816988E-01 0.12615758E-01 -0.63097710E-01 | | | | |
| -0.54358333E-02 0.35279394E-02 0.17165384E+00 0.26317460E-03 0.11988219E-01 | | | | |
| -0.10855103E-02 -0.57896470E-05 | | | |  |
| -0.92082331E-01 0.30503046E-03 0.23726792E-02 0.16949406E-01 -0.74845008E-03 | | | | |
| 0.62776411E-03 -0.58491860E-03 -0.31711494E-02 -0.40782138E-04 0.14311317E-03 | | | | |
| 0.37856082E-03 -0.65313213E-04 -0.48226839E-02 -0.38558204E-03 -0.47879409E-03 | | | | |
| -0.37835156E-03 -0.13611525E-06 | | | |  |
| 0.39848198E-02 0.27490046E-01 -0.55028511E-02 -0.74845008E-03 0.14717445E-02 | | | | |
| -0.35110920E-03 0.27627388E-04 0.21343481E-02 -0.10837640E-02 0.25605056E-03 | | | | |
| -0.31272551E-03 -0.59473191E-04 0.13027267E-01 -0.15872353E-03 0.55611276E-03 | | | | |
| 0.13209891E-03 0.20714938E-06 | | | |  |
| -0.35866399E-02 -0.13362752E-01 0.41831093E-01 0.62776411E-03 -0.35110920E-03 | | | | |
| 0.18647793E-02 -0.23037739E-04 -0.10552154E-02 0.55184555E-03 -0.19260695E-02 | | | | |
| 0.23867816E-04 0.80899337E-04 -0.51080958E-03 0.13682695E-03 0.10073765E-03 | | | | |
| 0.46953653E-04 -0.41177953E-06 | | | |  |
| 0.20739725E-02 -0.45595541E-03 0.83611621E-05 -0.58491860E-03 0.27627388E-04 | | | | |
| -0.23037739E-04 0.22515858E-04 0.13467027E-03 0.20838078E-04 -0.12071499E-04 | | | | |
| -0.16762141E-04 0.52843074E-05 0.19285496E-03 0.17084638E-04 0.22240432E-04 | | | | |
| 0.18754041E-04 0.29809857E-08 | | | |  |
| 0.73895926E-02 0.92135748E-01 -0.23816988E-01 -0.31711494E-02 0.21343481E-02 | | | | |
| -0.10552154E-02 0.13467027E-03 0.16575266E-01 -0.39560072E-02 0.11491293E-02 | | | | |
| 0.32622151E-03 -0.47103485E-03 -0.46821651E-02 0.59685352E-04 -0.67025842E-03 | | | | |
| 0.43093042E-03 -0.26614012E-07 | | | |  |
| -0.10478788E-01 -0.12219570E+00 0.12615758E-01 -0.40782138E-04 -0.10837640E-02 | | | | |
| 0.55184555E-03 0.20838078E-04 -0.39560072E-02 0.53985613E-02 -0.61141864E-03 | | | | |
| -0.16922555E-04 0.44931840E-03 -0.47933254E-02 0.55143887E-04 0.18918799E-03 | | | | |
| 0.23807303E-03 -0.47191536E-06 | | | |  |
| 0.30127593E-02 0.14450599E-01 -0.63097710E-01 0.14311317E-03 0.25605056E-03 | | | | |
| -0.19260695E-02 -0.12071499E-04 0.11491293E-02 -0.61141864E-03 0.29054646E-02 | | | | |
| 0.24725277E-03 -0.16646876E-03 -0.76090173E-02 -0.26122269E-04 -0.54664155E-03 | | | | |
| 0.52790790E-04 0.27023513E-06 | | | |  |
| 0.35596898E-03 -0.63967848E-03 -0.54358333E-02 0.37856082E-03 -0.31272551E-03 | | | | |
| 0.23867816E-04 -0.16762141E-04 0.32622151E-03 -0.16922555E-04 0.24725277E-03 | | | | |
| 0.14381200E-02 -0.51116095E-03 -0.37306507E-01 0.84944239E-04 -0.23393336E-02 | | | | |
| -0.17344654E-03 -0.22885416E-06 | | | |  |
| -0.15526952E-02 -0.10221836E-01 0.35279394E-02 -0.65313213E-04 -0.59473191E-04 | | | | |
| 0.80899337E-04 0.52843074E-05 -0.47103485E-03 0.44931840E-03 -0.16646876E-03 | | | | |
| -0.51116095E-03 0.26514917E-03 0.11050621E-01 -0.63490241E-05 0.78212075E-03 | | | | |
| 0.84084544E-04 0.55358399E-07 | | | |  |
| 0.68770630E-02 0.15258883E+00 0.17165384E+00 -0.48226839E-02 0.13027267E-01 | | | | |
| -0.51080958E-03 0.19285496E-03 -0.46821651E-02 -0.47933254E-02 -0.76090173E-02 | | | | |
| -0.37306507E-01 0.11050621E-01 0.10265128E+01 -0.65025008E-02 0.60592964E-01 | | | | |
| 0.79822516E-03 0.12737589E-04 | | | |  |
| -0.30796590E-03 -0.20965993E-02 0.26317460E-03 -0.38558204E-03 -0.15872353E-03 | | | | |
| 0.13682695E-03 0.17084638E-04 0.59685352E-04 0.55143887E-04 -0.26122269E-04 | | | | |
| 0.84944239E-04 -0.63490241E-05 -0.65025008E-02 0.41826295E-03 -0.13932455E-03 | | | | |
| 0.53609097E-04 -0.11789080E-06 | | | |  |
| -0.11858819E-02 -0.23790261E-02 0.11988219E-01 -0.47879409E-03 0.55611276E-03 | | | | |
| 0.10073765E-03 0.22240432E-04 -0.67025842E-03 0.18918799E-03 -0.54664155E-03 | | | | |
| -0.23393336E-02 0.78212075E-03 0.60592964E-01 -0.13932455E-03 0.37756997E-02 | | | | |
| 0.15331403E-03 0.64407064E-06 | | | |  |
| -0.54274861E-03 -0.49286156E-02 -0.10855103E-02 -0.37835156E-03 0.13209891E-03 | | | | |
| 0.46953653E-04 0.18754041E-04 0.43093042E-03 0.23807303E-03 0.52790790E-04 | | | | |
| -0.17344654E-03 0.84084544E-04 0.79822516E-03 0.53609097E-04 0.15331403E-03 | | | | |
| 0.90473629E-03 0.14516054E-06 | | | |  |
| 0.16684473E-05 0.11458945E-04 -0.57896470E-05 -0.13611525E-06 0.20714938E-06 | | | | |
| -0.41177953E-06 0.29809857E-08 -0.26614012E-07 -0.47191536E-06 0.27023513E-06 | | | | |
| -0.22885416E-06 0.55358399E-07 0.12737589E-04 -0.11789080E-06 0.64407064E-06 | | | | |
| 0.14516054E-06 0.94396648E-10 | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **پيوست(10): نتايج تخمين مربوط به ازمون فرضيه نهم** | | | | |
|  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = be-z5z6.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Tech. Eff. Effects Frontier (see B&C 1993) | | | |  |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15188003E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| delta 0 0.00000000E+00 | | |  |  |
| delta 1 0.00000000E+00 | | |  |  |
| delta 2 0.00000000E+00 | | |  |  |
| delta 3 0.00000000E+00 | | |  |  |
| delta 4 0.00000000E+00 | | |  |  |
| sigma-squared 0.94678971E+00 | | | |  |
| gamma 0.50000000E-01 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.67402824E+03 | | | | |
| -0.15188003E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 0.00000000E+00 | | | | |
| 0.94678971E+00 0.50000000E-01 | | | |  |
| gradient step | |  |  |  |
| iteration = 10 func evals = 66 llf = -0.60207062E+03 | | | | |
| -0.15190644E+03-0.33369777E+01-0.17468874E+02 0.13601594E+02-0.26112358E+00 | | | | |
| -0.54261510E+00-0.30015276E+00-0.47906025E+00 0.13611268E+00 0.80689631E+00 | | | | |
| -0.73833668E-01-0.67873707E-01 0.19765506E+00 0.35752750E+00 0.81480863E-01 | | | | |
| 0.78399584E+00 0.10845169E-05 | | | |  |
| iteration = 18 func evals = 109 llf = -0.58887851E+03 | | | | |
| -0.15189437E+03-0.33434856E+01-0.17449066E+02 0.13735399E+02-0.28978067E+00 | | | | |
| -0.58483347E+00-0.30576651E+00-0.27769897E+00 0.13379823E+00 0.81549105E+00 | | | | |
| -0.35287396E+00-0.39197794E+00 0.60154881E+00 0.35586227E+00 0.48496405E+00 | | | | |
| 0.60736264E+00 0.10200012E-04 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15189437E+03 0.99588200E+00 -0.15252246E+03 | | | | |
| beta 1 -0.33434856E+01 0.99787776E+00 -0.33505964E+01 | | | | |
| beta 2 -0.17449066E+02 0.99755343E+00 -0.17491861E+02 | | | | |
| beta 3 0.13735399E+02 0.17536757E+00 0.78323483E+02 | | | | |
| beta 4 -0.28978067E+00 0.80935408E-01 -0.35803942E+01 | | | | |
| beta 5 -0.58483347E+00 0.14708408E+00 -0.39761847E+01 | | | | |
| beta 6 -0.30576651E+00 0.64074863E-02 -0.47720198E+02 | | | | |
| beta 7 -0.27769897E+00 0.58317000E+00 -0.47618871E+00 | | | | |
| beta 8 0.13379823E+00 0.42723666E-01 0.31317124E+01 | | | | |
| beta 9 0.81549105E+00 0.46161544E-01 0.17666026E+02 | | | | |
| delta 0 -0.35287396E+00 0.52691734E+00 -0.66969511E+00 | | | | |
| delta 1 -0.39197794E+00 0.10723619E+01 -0.36552767E+00 | | | | |
| delta 2 0.60154881E+00 0.92579280E+00 0.64976613E+00 | | | | |
| delta 3 0.35586227E+00 0.29946500E-01 0.11883267E+02 | | | | |
| delta 4 0.48496405E+00 0.17457352E+00 0.27779932E+01 | | | | |
| sigma-squared 0.60736264E+00 0.10987038E+00 0.55279926E+01 | | | | |
| gamma 0.10200012E-04 0.31946015E-04 0.31928904E+00 | | | | |
|  |  |  |  |  |
| log likelihood function = -0.58887852E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.17015954E+03 | | | | |
| with number of restrictions = 6 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 18 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.99178095E+00 0.73016578E-03 -0.50045268E-03 -0.89176297E-01 -0.66662387E-03 | | | | |
| 0.21612459E-03 0.20162527E-02 0.32706893E-02 0.13586288E-03 0.27773575E-04 | | | | |
| 0.86290874E-02 -0.10724660E-01 0.19068060E-02 0.32754869E-03 0.35461549E-03 | | | | |
| 0.13584267E-02 0.37154926E-06 | | | |  |
| 0.73016578E-03 0.99576002E+00 0.10835962E-02 0.86152256E-02 -0.25866932E-02 | | | | |
| 0.36820200E-02 -0.37733290E-03 0.53407478E-01 -0.45840123E-01 0.17921942E-03 | | | | |
| 0.98780003E-02 -0.24152337E-01 0.61925560E-02 0.11472464E-02 0.10148287E-01 | | | | |
| 0.23440716E-02 0.77787366E-06 | | | |  |
| -0.50045268E-03 0.10835962E-02 0.99511284E+00 -0.71439886E-02 -0.40121150E-02 | | | | |
| 0.26326636E-01 0.28166884E-03 -0.36064664E-01 -0.15188434E-02 -0.45925168E-01 | | | | |
| -0.12555521E-01 0.44589224E-01 -0.11828949E-01 -0.83392438E-03 -0.25010712E-01 | | | | |
| -0.71452731E-02 -0.13896170E-05 | | | |  |
| -0.89176297E-01 0.86152256E-02 -0.71439886E-02 0.30753783E-01 -0.96281511E-02 | | | | |
| 0.10739853E-01 -0.11174947E-02 0.98595232E-02 0.43716449E-03 0.48319591E-03 | | | | |
| 0.85537246E-01 -0.81158522E-01 0.99269643E-02 0.25259292E-02 -0.17501217E-01 | | | | |
| 0.97040243E-02 0.29423587E-05 | | | |  |
| -0.66662387E-03 -0.25866932E-02 -0.40121150E-02 -0.96281511E-02 0.65505403E-02 | | | | |
| 0.12542502E-02 0.43402760E-03 0.25322277E-01 0.72205762E-03 0.16344629E-03 | | | | |
| -0.39052126E-01 -0.90255918E-02 0.62260807E-02 0.67136966E-03 0.46569922E-01 | | | | |
| 0.19164357E-03 0.14658153E-07 | | | |  |
| 0.21612459E-03 0.36820200E-02 0.26326636E-01 0.10739853E-01 0.12542502E-02 | | | | |
| 0.21633727E-01 -0.68898592E-03 -0.13168396E+00 -0.35013170E-02 -0.78528171E-03 | | | | |
| -0.46991296E-01 0.20804303E+00 -0.61384311E-01 -0.82789530E-02 -0.12609082E+00 | | | | |
| -0.23865640E-01 -0.64794827E-05 | | | |  |
| 0.20162527E-02 -0.37733290E-03 0.28166884E-03 -0.11174947E-02 0.43402760E-03 | | | | |
| -0.68898592E-03 0.41055881E-04 -0.13764766E-02 -0.41874901E-04 -0.17365120E-04 | | | | |
| -0.40637636E-02 0.50371582E-02 -0.94573326E-03 -0.16834236E-03 -0.14654065E-03 | | | | |
| -0.60022229E-03 -0.17481959E-06 | | | |  |
| 0.32706893E-02 0.53407478E-01 -0.36064664E-01 0.98595232E-02 0.25322277E-01 | | | | |
| -0.13168396E+00 -0.13764766E-02 0.34008725E+00 -0.15938276E-01 0.36305405E-02 | | | | |
| -0.34490455E+00 0.91407525E+00 -0.23772605E+00 -0.34985057E-01 -0.41710088E+00 | | | | |
| -0.10589748E+00 -0.29245352E-04 | | | |  |
| 0.13586288E-03 -0.45840123E-01 -0.15188434E-02 0.43716449E-03 0.72205762E-03 | | | | |
| -0.35013170E-02 -0.41874901E-04 -0.15938276E-01 0.18253116E-02 0.10686410E-03 | | | | |
| -0.73659540E-02 0.22925814E-01 -0.78656643E-02 -0.87825997E-03 -0.11646125E-01 | | | | |
| -0.27909409E-02 -0.72963595E-06 | | | |  |
| 0.27773575E-04 0.17921942E-03 -0.45925168E-01 0.48319591E-03 0.16344629E-03 | | | | |
| -0.78528171E-03 -0.17365120E-04 0.36305405E-02 0.10686410E-03 0.21308882E-02 | | | | |
| 0.12377550E-02 -0.49950616E-02 0.19389382E-02 0.14633951E-03 0.29164356E-02 | | | | |
| 0.64749163E-03 0.15670404E-06 | | | |  |
| 0.86290874E-02 0.98780003E-02 -0.12555521E-01 0.85537246E-01 -0.39052126E-01 | | | | |
| -0.46991296E-01 -0.40637636E-02 -0.34490455E+00 -0.73659540E-02 0.12377550E-02 | | | | |
| 0.27764188E+00 0.30804440E+00 -0.81241970E-01 -0.14659795E-01 -0.53602878E+00 | | | | |
| -0.34479847E-01 -0.73402088E-05 | | | |  |
| -0.10724660E-01 -0.24152337E-01 0.44589224E-01 -0.81158522E-01 -0.90255918E-02 | | | | |
| 0.20804303E+00 0.50371582E-02 0.91407525E+00 0.22925814E-01 -0.49950616E-02 | | | | |
| 0.30804440E+00 0.11499600E+01 0.47067329E+00 0.51998234E-01 0.63311093E+00 | | | | |
| 0.16171515E+00 0.40726698E-04 | | | |  |
| 0.19068060E-02 0.61925560E-02 -0.11828949E-01 0.99269643E-02 0.62260807E-02 | | | | |
| -0.61384311E-01 -0.94573326E-03 -0.23772605E+00 -0.78656643E-02 0.19389382E-02 | | | | |
| -0.81241970E-01 0.47067329E+00 0.85709231E+00 -0.22689885E-01 -0.35846976E+00 | | | | |
| -0.63402902E-01 -0.14753020E-04 | | | |  |
| 0.32754869E-03 0.11472464E-02 -0.83392438E-03 0.25259292E-02 0.67136966E-03 | | | | |
| -0.82789530E-02 -0.16834236E-03 -0.34985057E-01 -0.87825997E-03 0.14633951E-03 | | | | |
| -0.14659795E-01 0.51998234E-01 -0.22689885E-01 0.89679285E-03 -0.29572496E-01 | | | | |
| -0.60008886E-02 -0.16864842E-05 | | | |  |
| 0.35461549E-03 0.10148287E-01 -0.25010712E-01 -0.17501217E-01 0.46569922E-01 | | | | |
| -0.12609082E+00 -0.14654065E-03 -0.41710088E+00 -0.11646125E-01 0.29164356E-02 | | | | |
| -0.53602878E+00 0.63311093E+00 -0.35846976E+00 -0.29572496E-01 0.30475914E-01 | | | | |
| -0.99946500E-01 -0.28667759E-04 | | | |  |
| 0.13584267E-02 0.23440716E-02 -0.71452731E-02 0.97040243E-02 0.19164357E-03 | | | | |
| -0.23865640E-01 -0.60022229E-03 -0.10589748E+00 -0.27909409E-02 0.64749163E-03 | | | | |
| -0.34479847E-01 0.16171515E+00 -0.63402902E-01 -0.60008886E-02 -0.99946500E-01 | | | | |
| 0.12071500E-01 -0.50330474E-05 | | | |  |
| 0.37154926E-06 0.77787366E-06 -0.13896170E-05 0.29423587E-05 0.14658153E-07 | | | | |
| -0.64794827E-05 -0.17481959E-06 -0.29245352E-04 -0.72963595E-06 0.15670404E-06 | | | | |
| -0.73402088E-05 0.40726698E-04 -0.14753020E-04 -0.16864842E-05 -0.28667759E-04 | | | | |
| -0.50330474E-05 0.10205479E-08 | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| پیوست(11): نتایج تخمین گاما | | | | |
|  |  |  |  |  |
| Output from the program FRONTIER (Version 4.1c) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| instruction file = terminal | | |  |  |
| data file = be-z5.txt | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Error Components Frontier (see B&C 1992) | | | | |
| The model is a cost function | | |  |  |
| The dependent variable is logged | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the ols estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.15170643E+03 0.74461417E+02 -0.20373830E+01 | | | | |
| beta 1 -0.33419165E+01 0.81247861E+01 -0.41132363E+00 | | | | |
| beta 2 -0.17477873E+02 0.46541200E+01 -0.37553550E+01 | | | | |
| beta 3 0.13884474E+02 0.68806849E+01 0.20178913E+01 | | | | |
| beta 4 -0.21841166E+00 0.53568447E-01 -0.40772445E+01 | | | | |
| beta 5 -0.68245589E+00 0.80853230E-01 -0.84406756E+01 | | | | |
| beta 6 -0.31230181E+00 0.15898170E+00 -0.19643884E+01 | | | | |
| beta 7 -0.50314958E+00 0.37071110E+00 -0.13572552E+01 | | | | |
| beta 8 0.14751687E+00 0.37652182E+00 0.39178838E+00 | | | | |
| beta 9 0.82868475E+00 0.21562055E+00 0.38432550E+01 | | | | |
| sigma-squared 0.93574939E+00 | | | |  |
|  |  |  |  |  |
| log likelihood function = -0.67395829E+03 | | | |  |
|  |  |  |  |  |
| the estimates after the grid search were : | | | |  |
|  |  |  |  |  |
| beta 0 -0.15274612E+03 | | |  |  |
| beta 1 -0.33419165E+01 | | |  |  |
| beta 2 -0.17477873E+02 | | |  |  |
| beta 3 0.13884474E+02 | | |  |  |
| beta 4 -0.21841166E+00 | | |  |  |
| beta 5 -0.68245589E+00 | | |  |  |
| beta 6 -0.31230181E+00 | | |  |  |
| beta 7 -0.50314958E+00 | | |  |  |
| beta 8 0.14751687E+00 | | |  |  |
| beta 9 0.82868475E+00 | | |  |  |
| sigma-squared 0.19976162E+01 | | | |  |
| gamma 0.85000000E+00 | | |  |  |
| mu is restricted to be zero | | |  |  |
| eta is restricted to be zero | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| iteration = 0 func evals = 20 llf = -0.52359093E+03 | | | | |
| -0.15274612E+03-0.33419165E+01-0.17477873E+02 0.13884474E+02-0.21841166E+00 | | | | |
| -0.68245589E+00-0.31230181E+00-0.50314958E+00 0.14751687E+00 0.82868475E+00 | | | | |
| 0.19976162E+01 0.85000000E+00 | | | |  |
| gradient step | |  |  |  |
| iteration = 10 func evals = 72 llf = -0.47686282E+03 | | | | |
| -0.15291697E+03-0.36858471E+01-0.11887857E+02 0.13503456E+02-0.15939162E+00 | | | | |
| -0.45833213E+00-0.29591780E+00-0.24991038E+00 0.17483865E+00 0.56327375E+00 | | | | |
| 0.37513639E+01 0.93999585E+00 | | | |  |
| iteration = 20 func evals = 211 llf = -0.47180467E+03 | | | | |
| -0.13888572E+03-0.10177597E+02-0.11184021E+02 0.12202093E+02-0.12862437E+00 | | | | |
| -0.45785608E+00-0.26614702E+00-0.55063950E+00 0.48093035E+00 0.53312683E+00 | | | | |
| 0.49261866E+01 0.96020399E+00 | | | |  |
| iteration = 30 func evals = 408 llf = -0.46721908E+03 | | | | |
| 0.85720066E+01-0.51765990E+01-0.38077880E+01-0.14373613E+01-0.12562594E+00 | | | | |
| -0.37060434E+00 0.49073596E-01-0.35921016E+00 0.25166197E+00 0.19165960E+00 | | | | |
| 0.51985821E+01 0.96337122E+00 | | | |  |
| iteration = 37 func evals = 505 llf = -0.46681944E+03 | | | | |
| -0.12484572E+02-0.78344292E+01-0.46309246E+01 0.49037860E+00-0.12447763E+00 | | | | |
| -0.37601327E+00 0.49813038E-02-0.45487359E+00 0.37403460E+00 0.22922109E+00 | | | | |
| 0.52478081E+01 0.96365661E+00 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| the final mle estimates are : | | |  |  |
|  |  |  |  |  |
| coefficient standard-error t-ratio | | | | |
|  |  |  |  |  |
| beta 0 -0.12484572E+02 0.41316989E+02 -0.30216558E+00 | | | | |
| beta 1 -0.78344292E+01 0.40929786E+01 -0.19141144E+01 | | | | |
| beta 2 -0.46309246E+01 0.25741549E+01 -0.17990078E+01 | | | | |
| beta 3 0.49037860E+00 0.38390595E+01 0.12773404E+00 | | | | |
| beta 4 -0.12447763E+00 0.31368677E-01 -0.39682143E+01 | | | | |
| beta 5 -0.37601327E+00 0.51827602E-01 -0.72550775E+01 | | | | |
| beta 6 0.49813038E-02 0.89165956E-01 0.55865535E-01 | | | | |
| beta 7 -0.45487359E+00 0.18487226E+00 -0.24604751E+01 | | | | |
| beta 8 0.37403460E+00 0.18878264E+00 0.19812976E+01 | | | | |
| beta 9 0.22922109E+00 0.12024564E+00 0.19062735E+01 | | | | |
| sigma-squared 0.52478081E+01 0.86339229E+00 0.60781272E+01 | | | | |
| gamma 0.96365661E+00 0.68573659E-02 0.14052868E+03 | | | | |
| mu is restricted to be zero | | |  |  |
| eta is restricted to be zero | | |  |  |
|  |  |  |  |  |
| log likelihood function = -0.46681944E+03 | | | |  |
|  |  |  |  |  |
| LR test of the one-sided error = 0.41427770E+03 | | | | |
| with number of restrictions = 1 | | |  |  |
| [note that this statistic has a mixed chi-square distribution] | | | | |
|  |  |  |  |  |
| number of iterations = 37 | | |  |  |
|  |  |  |  |  |
| (maximum number of iterations set at : 300) | | | | |
|  |  |  |  |  |
| number of cross-sections = 98 | | | |  |
|  |  |  |  |  |
| number of time periods = 5 | | |  |  |
|  |  |  |  |  |
| total number of observations = 490 | | | |  |
|  |  |  |  |  |
| thus there are: 0 obsns not in the panel | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| covariance matrix : | |  |  |  |
|  |  |  |  |  |
| 0.17070936E+04 -0.12355043E+02 0.91177035E+02 -0.15858133E+03 0.66914381E-01 | | | | |
| 0.11453755E+01 0.36806682E+01 -0.71662420E+00 0.58559992E+00 -0.42448102E+01 | | | | |
| 0.20733282E+01 0.17839275E-01 | | | |  |
| -0.12355043E+02 0.16752474E+02 -0.15942331E+01 0.13235516E+01 -0.13557653E-01 | | | | |
| -0.40659071E-01 -0.34755677E-01 0.69157464E+00 -0.77230171E+00 0.79215984E-01 | | | | |
| 0.39465673E-01 0.45054691E-03 | | | |  |
| 0.91177035E+02 -0.15942331E+01 0.66262732E+01 -0.84977696E+01 -0.21797729E-02 | | | | |
| 0.11152887E+00 0.19781756E+00 -0.88981716E-01 0.73206101E-01 -0.30940349E+00 | | | | |
| 0.21885786E+00 0.20082265E-02 | | | |  |
| -0.15858133E+03 0.13235516E+01 -0.84977696E+01 0.14738378E+02 -0.63976149E-02 | | | | |
| -0.10767730E+00 -0.34223476E+00 0.73204622E-01 -0.62521899E-01 0.39585625E+00 | | | | |
| -0.19299901E+00 -0.16649473E-02 | | | |  |
| 0.66914381E-01 -0.13557653E-01 -0.21797729E-02 -0.63976149E-02 0.98399388E-03 | | | | |
| -0.98866622E-04 0.15354571E-03 -0.43377800E-03 0.78357306E-03 0.97109737E-04 | | | | |
| 0.12873680E-02 0.11738092E-04 | | | |  |
| 0.11453755E+01 -0.40659071E-01 0.11152887E+00 -0.10767730E+00 -0.98866622E-04 | | | | |
| 0.26861003E-02 0.25256768E-02 -0.20466033E-02 0.18546068E-02 -0.52380400E-02 | | | | |
| 0.58676637E-02 0.53188369E-04 | | | |  |
| 0.36806682E+01 -0.34755677E-01 0.19781756E+00 -0.34223476E+00 0.15354571E-03 | | | | |
| 0.25256768E-02 0.79505678E-02 -0.18526659E-02 0.16377890E-02 -0.92205994E-02 | | | | |
| 0.43831632E-02 0.37934897E-04 | | | |  |
| -0.71662420E+00 0.69157464E+00 -0.88981716E-01 0.73204622E-01 -0.43377800E-03 | | | | |
| -0.20466033E-02 -0.18526659E-02 0.34177753E-01 -0.31938694E-01 0.43869148E-02 | | | | |
| 0.27457094E-02 0.34248952E-04 | | | |  |
| 0.58559992E+00 -0.77230171E+00 0.73206101E-01 -0.62521899E-01 0.78357306E-03 | | | | |
| 0.18546068E-02 0.16377890E-02 -0.31938694E-01 0.35638886E-01 -0.36395948E-02 | | | | |
| -0.14585425E-02 -0.17637679E-04 | | | |  |
| -0.42448102E+01 0.79215984E-01 -0.30940349E+00 0.39585625E+00 0.97109737E-04 | | | | |
| -0.52380400E-02 -0.92205994E-02 0.43869148E-02 -0.36395948E-02 0.14459015E-01 | | | | |
| -0.98733070E-02 -0.90814627E-04 | | | |  |
| 0.20733282E+01 0.39465673E-01 0.21885786E+00 -0.19299901E+00 0.12873680E-02 | | | | |
| 0.58676637E-02 0.43831632E-02 0.27457094E-02 -0.14585425E-02 -0.98733070E-02 | | | | |
| 0.74544624E+00 0.54650777E-02 | | | |  |
| 0.17839275E-01 0.45054691E-03 0.20082265E-02 -0.16649473E-02 0.11738092E-04 | | | | |
| 0.53188369E-04 0.37934897E-04 0.34248952E-04 -0.17637679E-04 -0.90814627E-04 | | | | |
| 0.54650777E-02 0.47023467E-04 | | | |  |