APPENDIX F

USE OF THE DEA SOFTWARE FOR THE ANALYSIS

The Warwick DEA Software

This study uses a limited version of the Warwick DEA (WDEA) Software supplied in Thannassoulis (2001). This software is developed in University of Warwick, Coventry, CV4 7AL, England. The limited version is limited and capable of assessing only 10 decision making units (DMU). For the analysis, one has to use the execution file 'Deawin.exe', which is the DEA program for Windows 3.1 or higher.

Preparing data input before invoking the program

For the analysis, input and output variables are arranged as columns and divisions as rows in an MS-Excel file and saved as ASCII text file in the same folder in which the Deawin.exe file is copied.

Initiating a 'Run' of the program

From 'File' menu, selecting 'Open' will show a dialog box like in Figure F1. Selecting the text file and clicking 'OK' will show the arrangement of the data as in Figure F2. The data file contains division name for a particular year (e.g. Chittagong1990, Dhaka1985) in the first column and the input and output variables in other columns.

Figure F1

Opening file of WDEA software

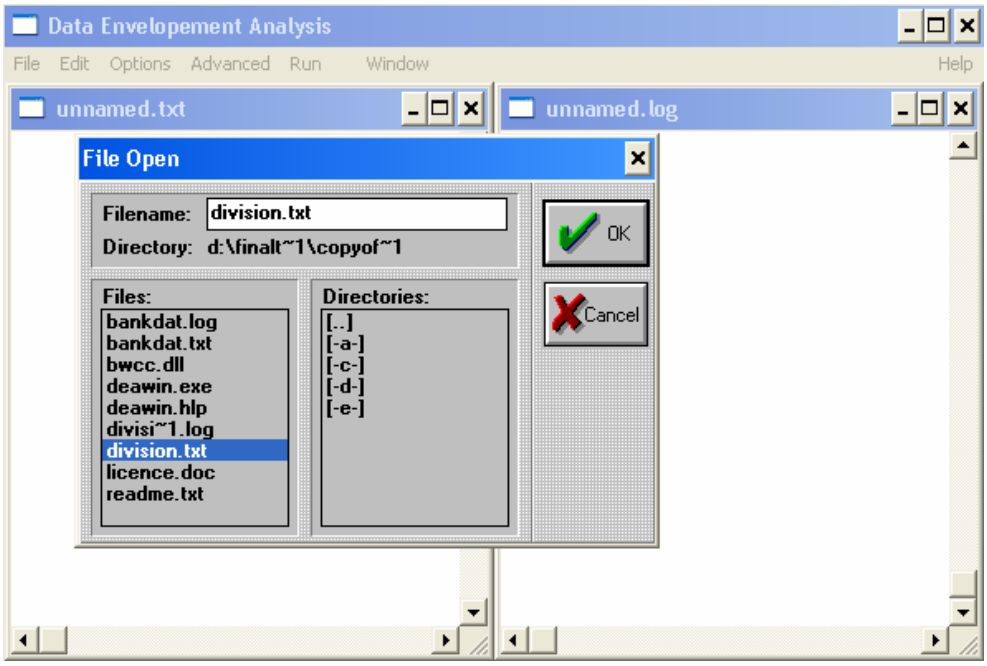


Figure F2

Data arrangement in the WDEA software

Data Envelopement Analysis - [d:\finalt~1\copyof~1\division.txt]

File Edit Options Advanced Run Window Help

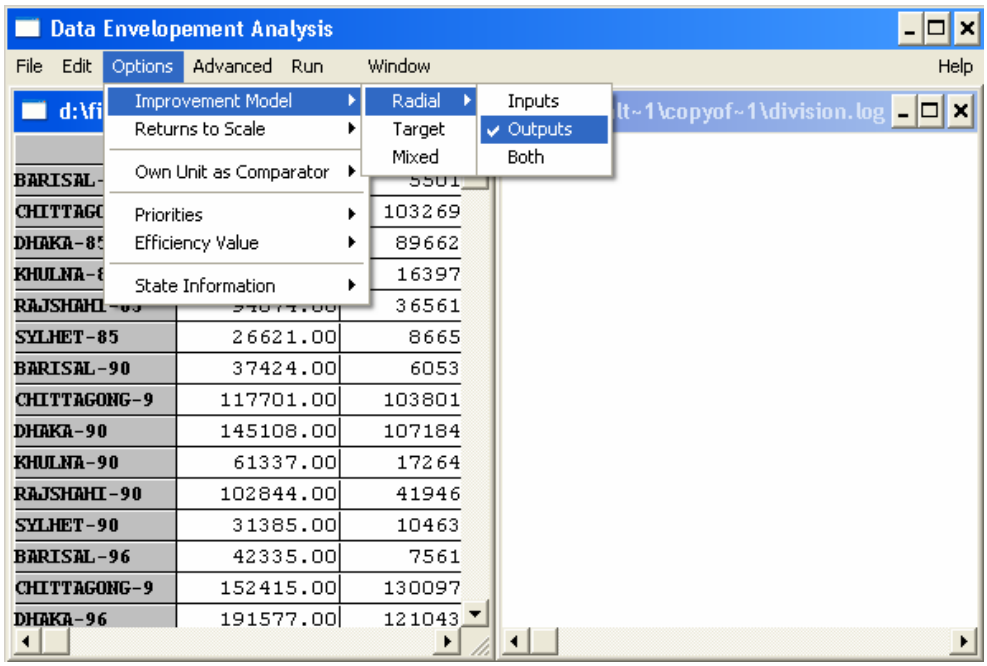
	GDP	CAPITAL	LAND	LABOR
BARISAL-85	27291.00	5501.00	2691.00	3271.00
CHITTAGONG-8	97970.00	103269.00	4851.00	8831.00
DHAKA-85	119072.00	89662.00	8920.00	13965.00
KHULNA-85	51755.00	16397.00	3880.00	5658.00
RAJSHAHI-85	94074.00	36561.00	9935.00	10538.00
SYLHET-85	26621.00	8665.00	2219.00	2801.00
BARISAL-90	37424.00	6053.00	3237.00	3793.00
CHITTAGONG-9	117701.00	103801.00	5346.00	9411.00
DHAKA-90	145108.00	107184.00	9064.00	15184.00
KHULNA-90	61337.00	17264.00	4739.00	6448.00
RAJSHAHI-90	102844.00	41946.00	9910.00	12209.00
SYLHET-90	31385.00	10463.00	2452.00	3102.00
BARISAL-96	42335.00	7561.00	2990.00	6489.00
CHITTAGONG-9	152415.00	130097.00	4995.00	9574.00
DHAKA-96	191577.00	121043.00	8762.00	14821.00
KHULNA-96	79070.00	57325.00	4544.00	7021.00
RAJSHAHI-96	131573.00	50643.00	9624.00	13347.00

Setting Options for the Run

In the ‘Options’ menu, in the category ‘Improvement Model’, one has to select ‘Radial’ and then ‘Output’, as shown in Figure F3 – since the analyses in this study chose output orientated DEA model, as mentioned in the text.

Figure F3

Setting ‘Improvement Model’ in the WDEA software

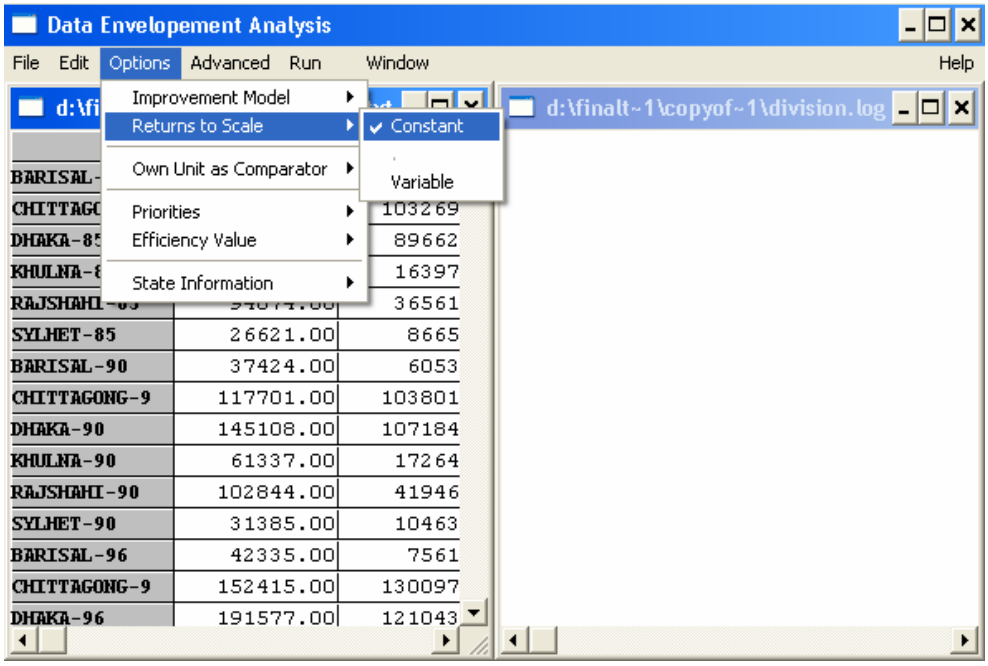


In the ‘Options’ menu, in the category ‘Returns to Scale’, one has to select ‘Constant’, as shown in Figure F4 – since the analyses in this study chose constant returns to scale, as mentioned in the text.

In the ‘Options’ menu, other by-default options will remain the same.

Figure F4

Setting 'Returns to Scale' in the WDEA software



Preparing for the 'Run'

In the 'Run' menu, clicking 'Select IOs' will result in a dialog box, where each column head of the data file will appear in the I/O list. From the I/O list, these variables has to be transferred to the appropriate box in the right hand side, as shown in Figure F5.

In the 'Run' menu, clicking 'Select Units' will result in a dialog box, where each row head of the data file will appear in the I/O list. From the I/O list, the units to be analyzed have to be transferred to the appropriate box in the right hand side.

Figure F5

Setting Input and Output in the WDEA software

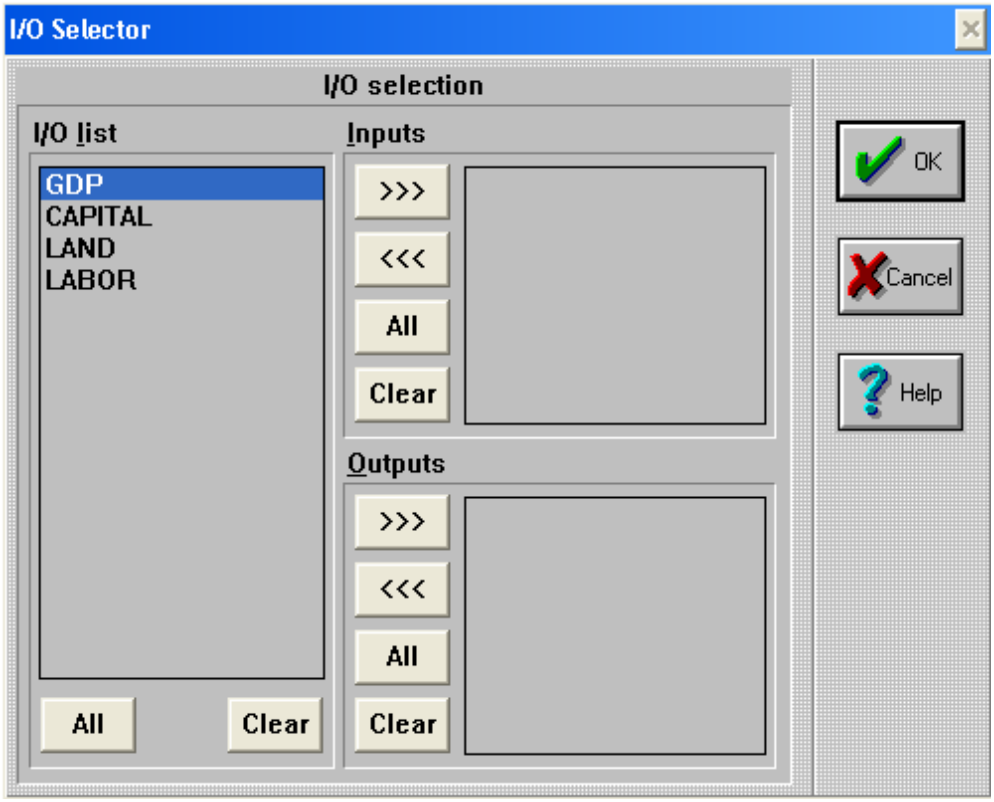
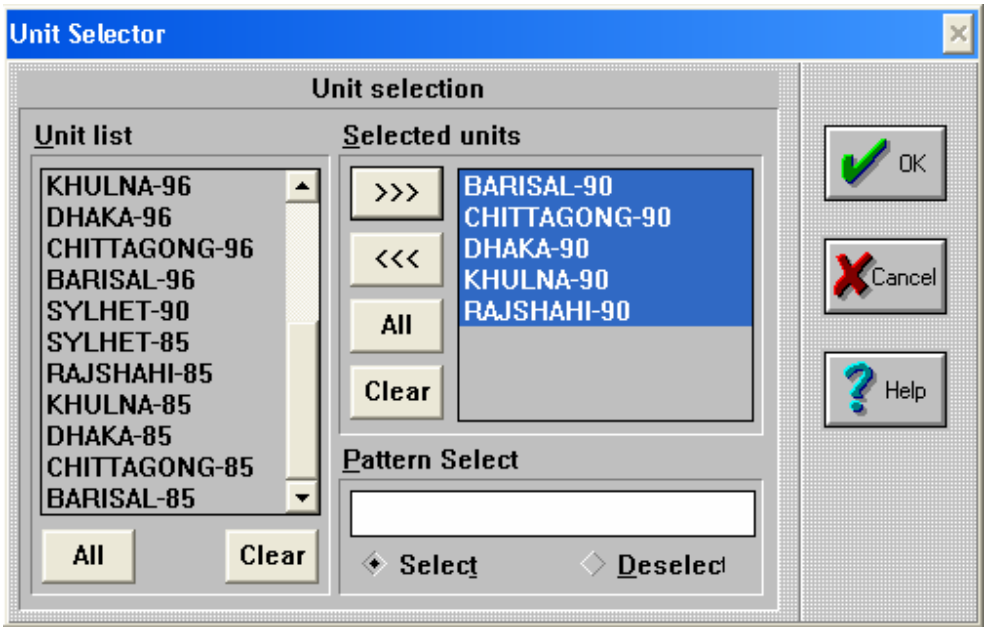


Figure F6

Setting 'Units of Observation' in the WDEA software

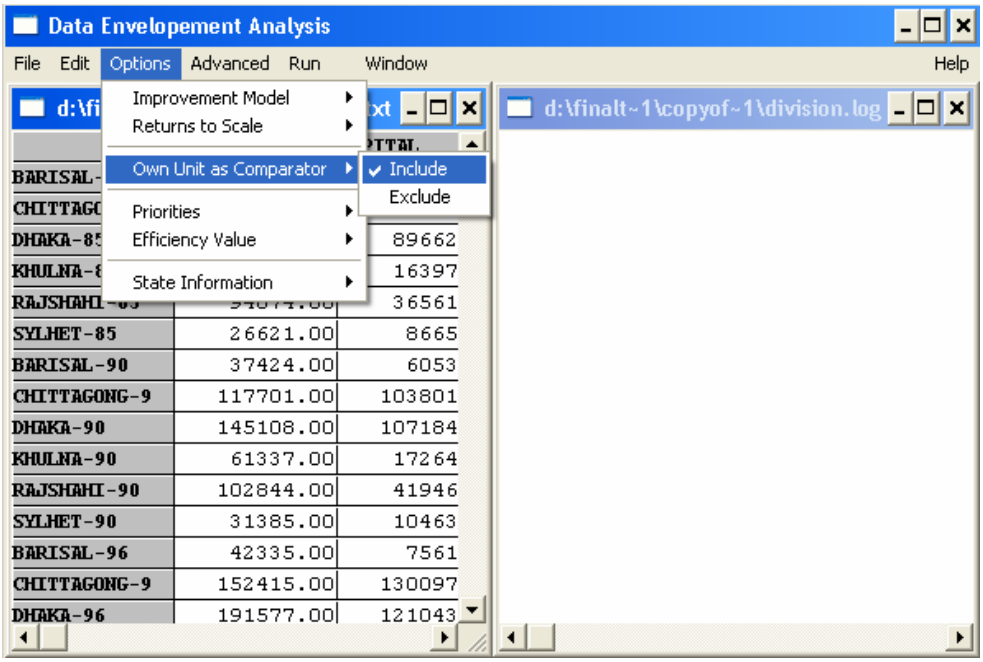


The 'Run'

Two options can be followed. If 'Include' is selected in the 'Options' menu in the 'Own Unit as Comparator' category, then every unit for which the efficiency is measured will also take part in determining the frontier too. This option has to be followed, when efficiency for a division is measured with respect to the same year frontier. Setting the option 'Own Unit as Comparator' is shown in Figure F7.

Figure F7

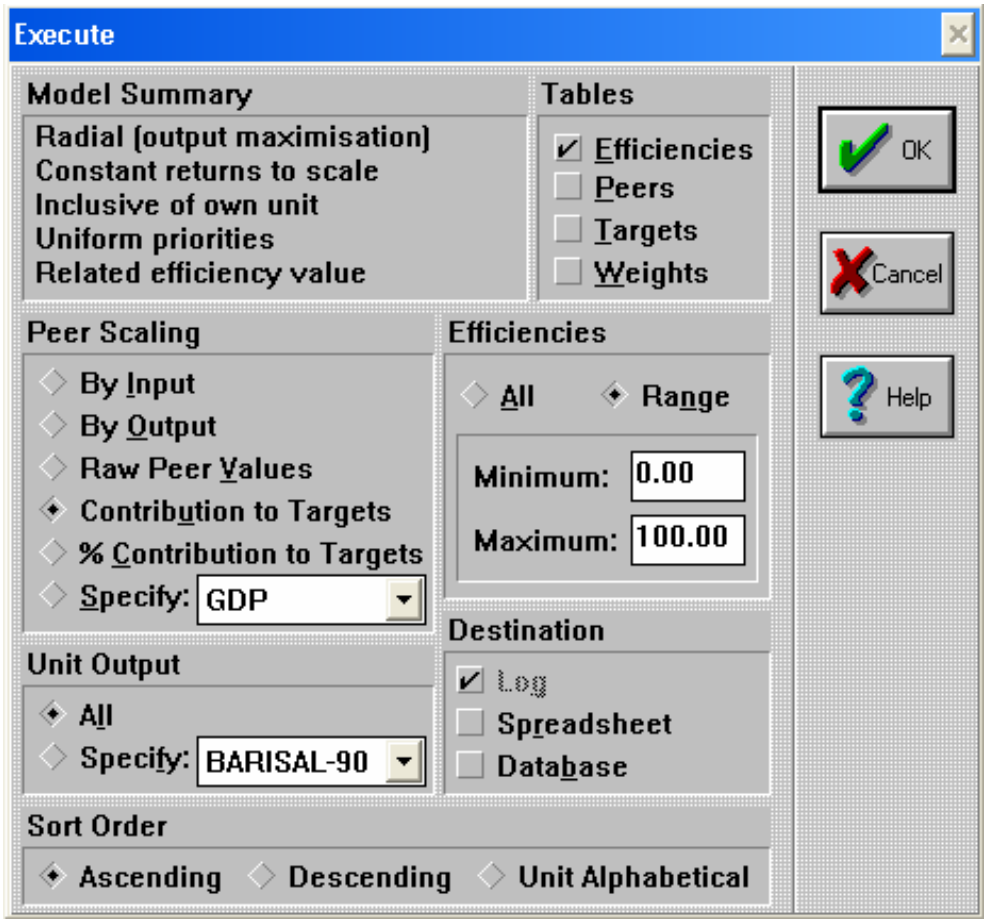
Setting the option 'Own Unit as Comparator' in the WDEA software



On the other hand, if 'Exclude' is selected, then the unit for which the efficiency is measured will not take part in determining the frontier, whereas the other units will determine the frontier. This option has to be followed, when efficiency for a division is measured with respect to a different year frontier. The execution dialog box is shown in Figure F8.

Figure F8

The 'Execution' dialog box in WDEA software



Two options are there after selecting 'Execute' from the 'Run' menu. First, 'All' has to be selected in the 'Unit Output' section, if own unit takes part in determining the frontier. Second, the own unit has to be selected in the 'Specify' section, if own unit does not take part in determining the frontier.

The Analyses

The output files will contain efficiency of each division with respect to the same period frontier:

- efficiency of every division at 1985 with respect to frontier determined by six divisions each at 1985
- efficiency of every division at 1990 with respect to frontier determined by six divisions each at 1990
- efficiency of every division at 1996 with respect to frontier determined by six divisions each at 1996
- efficiency of every division at 2000 with respect to frontier determined by six divisions each at 2000

This file will also contain efficiency of each division with respect to the other period frontier:

- efficiency of every division at 1985 with respect to frontier determined by six divisions each at 1990 (here, the single division at 1985 does not take part in determining the frontier)
- efficiency of every division at 1990 with respect to frontier determined by six divisions each at 1985 (here, the single division at 1990 does not take part in determining the frontier)
- efficiency of every division at 1990 with respect to frontier determined by six divisions each at 1996 (here, the single division at 1990 does not take part in determining the frontier)
- efficiency of every division at 1996 with respect to frontier determined by six divisions each at 1990 (here, the single division at 1996 does not take part in determining the frontier)
- efficiency of every division at 1996 with respect to frontier determined by six divisions each at 2000 (here, the single division at 1996 does not take part in determining the frontier)

- efficiency of every division at 2000 with respect to frontier determined by six divisions each at 1996 (here, the single division at 2000 does not take part in determining the frontier)
- efficiency of every division at 1985 with respect to frontier determined by six divisions each at 2000 (here, the single division at 1985 does not take part in determining the frontier)
- efficiency of every division at 2000 with respect to frontier determined by six divisions each at 1985 (here, the single division at 2000 does not take part in determining the frontier)