

A User Interface for Running G7 Macro Model

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Abstract

Normally, we develop and apply a macro model under the same modeling software system such as G7, EVIEWS, and so on. In the case that if we hope to put the model into an internal information platform so that more people can use the model to do forecasting or policy simulation by themselves, it would be necessary to provide a user interface which is of as less as possible knowledge about the model development software such as EVIEWS and G7.

Some work has been done to have a user interface for running G7 macro model independent on G7 environment.

This paper consists 4 parts which are: 1. Why do we have this issue? 2. What is the advantage of G7 in realizing the object? 3. How is the current situation of the solution? 4. Which is the more reasonable and more satisfactory solution?

1. Why do we have this issue?

We often have some particular requirements from our partners when we make economic model and use the model in a research project or in normal economic analyses. Most of their requirements are the possibility to use the model by themselves, rather than just we use the model and tell them the results. In fact, if a model is a kind of product, we are located in the development stage of “farmer economy” which has the feature of using the product by the producer self.

This kind of special requirement is getting stronger and stronger, at least at different level of our information center system. The reason is, nearly every information center has network site called information platform on which lot of economic research fruits are displayed, including model simulation or forecasting if any. On the other hand, the users of the information platform more or less have knowledge of economic modeling and are also interesting in “playing” models although they have no time or experiences in model building, especially in mastering the model development tools such as the software of EVIEWS or G7.

To meet the needs mentioned above, it is better to let a model run independently leaving the software environment of developing the model. It is also necessary to provide user interface for preparing the values for exogenous variables, the fixer demands for endogenous variables and the specific requirements for tabling the results from running the model, according to the rules from the model development software tool.

2. What is the advantage of G7 in realizing the object?

To reach the objective mentioned in section 1, models developed by using different software have different difficulties. For example, the model developed by using EVIEWS will have to run in EVIEWS. Therefore, all the necessary preparations before running the model have to be done in EVIEWS. To run a model, the EVIEWS itself has to be run because the execution of the model needs its interpretation. It is decided by the relationship and mechanism between the development software and the mode. It means it will be necessary to master some knowledge about EVIEWS if ones hope to “play” a model developed by using EVIEWS.

However, the models developed by using the software G7 have the potential advantage to run it without G7. As we know, the model developed by using G7, in fact, is an executable file called “run.exe” in the case of macro model or an executable file called “dyme.exe” in the case of inter-industry (Econometric plus Input-output) model. It means that the model can run individually or independently.

This feature gives us the opportunity to use the model without much knowledge about G7. In other words, if we can design a user interface in which all the necessary preparations for running a model (give values to exogenous variables, set fixer information for endogenous variables) and for looking or comparing the results from model run (set display table format) can be done with the forms that people are easy to learn and to operate.

Based on the opinion above, a user interface for running G7 macro model has be developed.

3. How is the current situation of the solution?

The current situation of the solution for user interface to run G7 macro model is a single user version, which needs to be installed into his/her PC and has the name “Economic Model application System”.

(1) Start the system

When clicking the icon of the application system on desktop, following window (Fig. 1) will come out. One has to select the item set working folder in which there is the model to be played because all the other items in the main menu are dark or inactive except the help item.

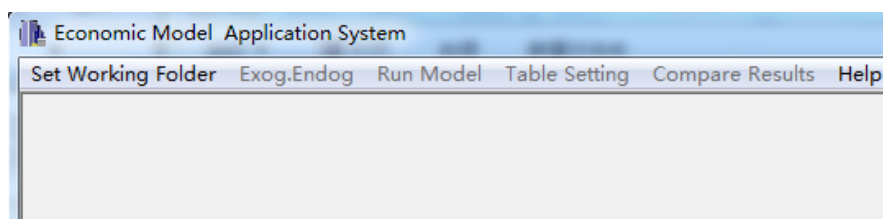


Fig. 1 Initial Window of the System

In the selected file folder, there has to be the file “build.cfg” which is one of the necessary files during the model building. We need some information, specially the build working space (BWS) bank name from this file.

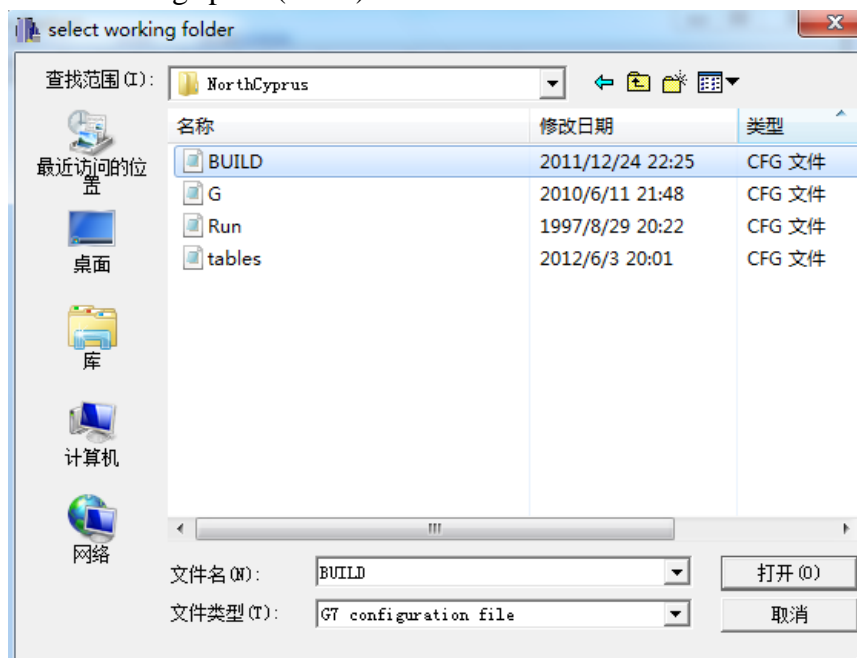


Fig. 2 The Working Folder Window

After confirming the “build.cfg” file, a new window will come out to ask the “stub” file which is necessary when displaying exogenous or endogenous variables.

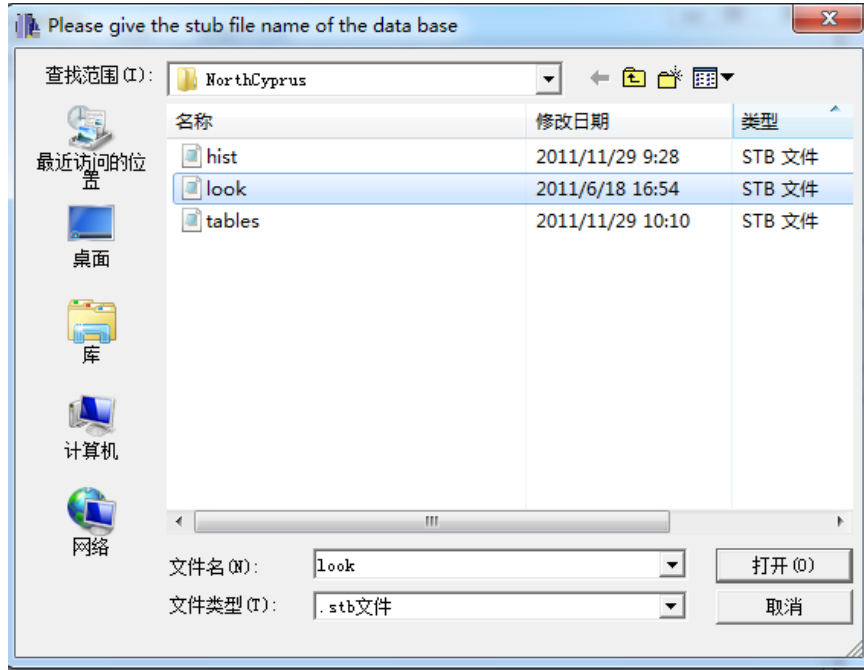


Fig. 3 The Window to Select “Stub” File

After the selection of “stub” file, the main menu of the system changed into following in which all the items of the main menu are bright or active.

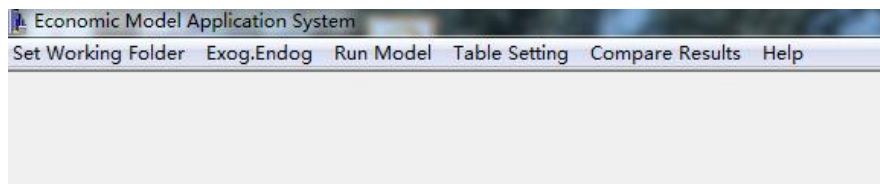


Fig.4 The Main Menu after Selecting Working Folder

(2) Prepare the .fix file

For the preparations of giving values to exogenous variables or set fixer information for endogenous variables, you can select the sub-item of the item “Exog.Endog” accordingly.

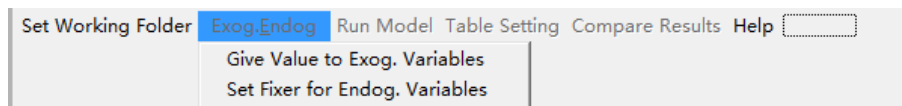


Fig. 5 The Sub Menu of “Exog. Endog” Option

If the sub-item “Give Value to Exog. Variables” is selected, a working interface, as following, will be displayed.

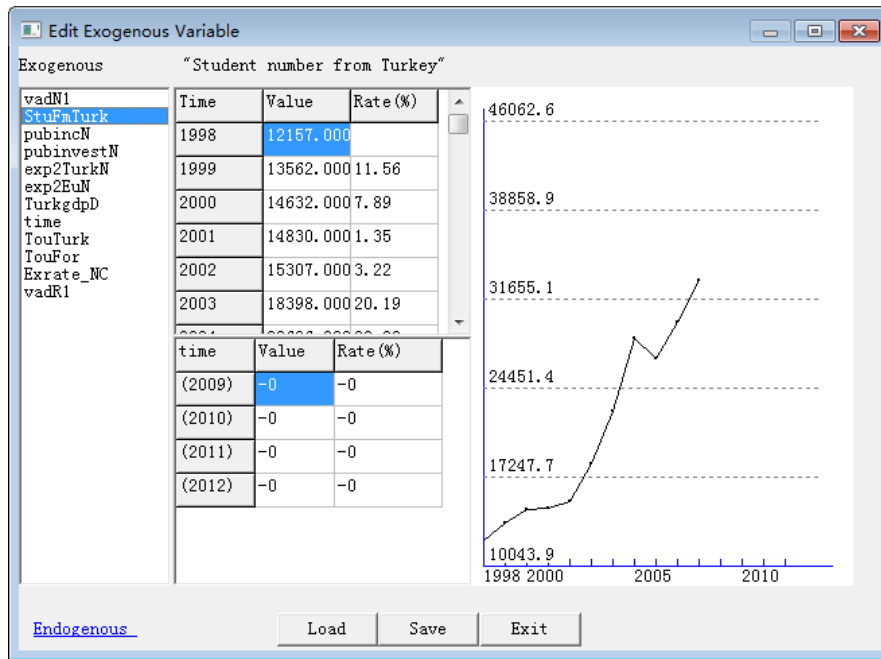


Fig. 6 The Window for Giving Values to Exogenous Variables

To give values to an exogenous variable out of the sample period, select the variable from the left column. The historical values, the growth rates and the curve (with black color) of the selected variable in sample period will be displayed in different area of the window, respectively. There are three different ways for giving values to the selected exogenous variable:

- (A) Give the absolute number in the column of "Value". The interpolation will be executed automatically if two numbers are given to two periods which are not next to each other. As soon as giving the values by this way, the corresponding growth rates will be automatically displayed in the "Rate(%)" column and its curve will be extended with red color.
- (B) Give the growth rate number in the column of "Rate(%)" . The interpolation will be executed automatically if two numbers are given to two periods which are not next to each other. As soon as giving the values by this way, the corresponding absolute numbers will be automatically displayed in the "Value" column and its curve will be extended with red color.
- (C) Extend the curve by using the mouse. When moving the mouse (press down the left clicker and move the cursor) and extending the curve, a red line connected to the historical data curve (black line) will be displayed, the corresponding absolute numbers and the growth rates of the extending red line will be automatically displayed in the columns of "Value" and "Rate(%)" .

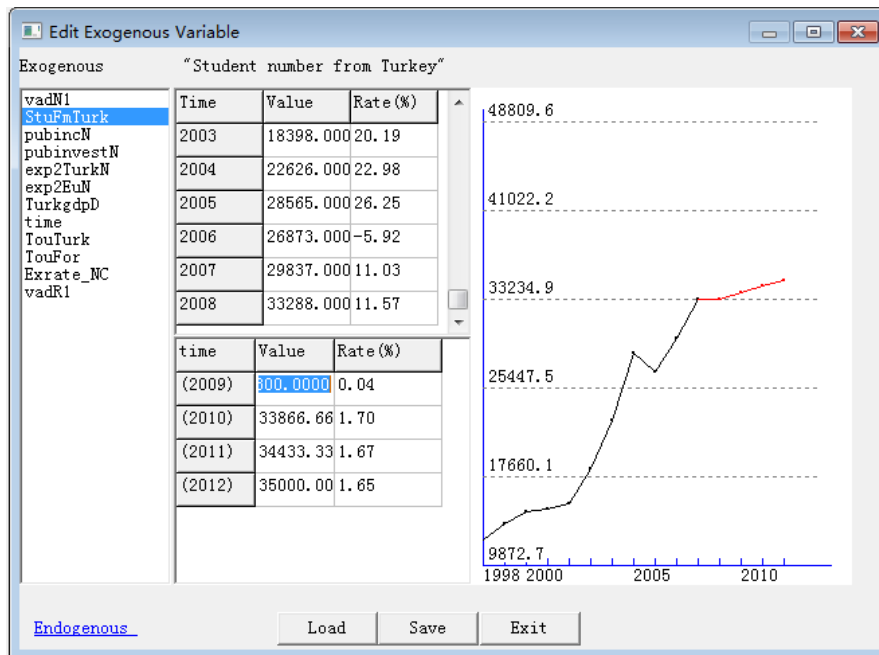


Fig. 7 The Window for Giving Values to Exogenous Variables

The exogenous values given by those three ways can be saved by clicking the button “Save” and the saved file will have the suffix “fix” automatically. It is also possible to load a file, by click the “Load” button, to restore the previous work for giving values to exogenous variables.

If the sub-item “Set Fixer for Endog. Variables” in Fig.5 is selected, or if the button located at the down-left corner in Fig. 6 or Fig. 7 is selected, a working interface, as following, will be displayed.

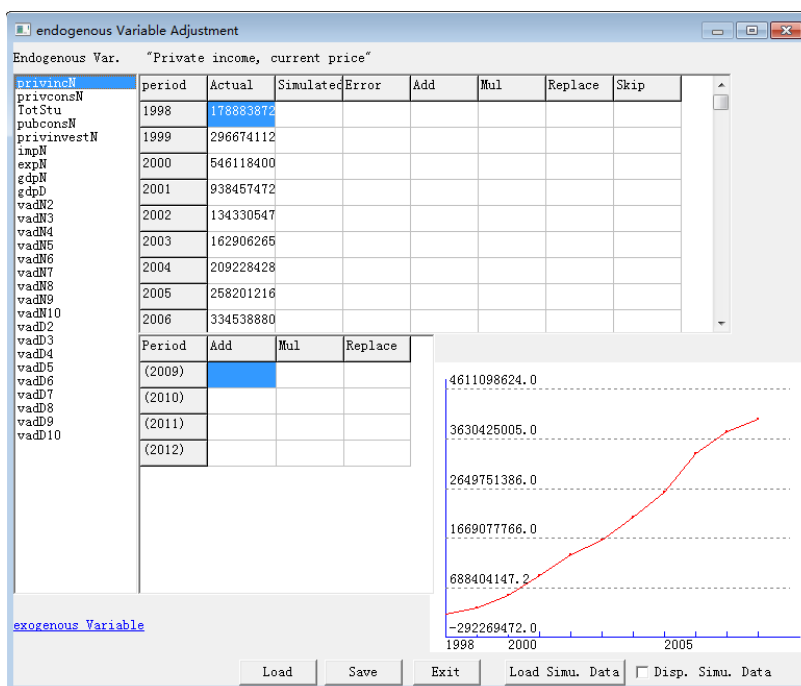


Fig. 8 Set Fixer for Endogenous Variables

It can be seen that there are four parts in that window. The left or first part is a list of all the endogenous variables of the model. The second part is the sample period area which includes the actual historical data, the historical simulation values, the errors of the historical simulation, and the options for setting fixer operation (Add / Mul / Replace / Skip). The third part is the forecasting period area which includes the options for setting fixer operation (Add / Mul / Replace / Skip). The fourth part is the area of displaying curve(s).

When one selects one endogenous variable listed, the actual historical data of that variable will be displayed in the column "Actual" of the part 2 and its curve will be displayed in the fourth part, as shown in the Fig. 8 above.

If one clicks the button "Load Simu. Data", the system will show a window for selecting the data bank in which there are historical simulation values of the model and the system will load that bank and display the simulation data and the errors in the part 2 plus the simulation curve in the part 4 of the Fig.8 which looks like as following Fig. 9.

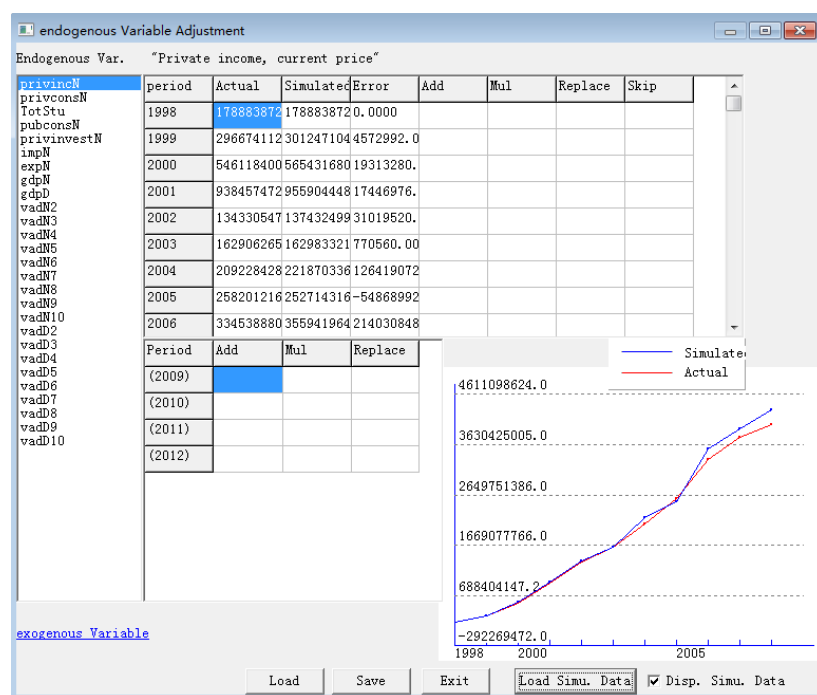


Fig. 9 Set fixer for Endogenous Variables

It has to be pointed that the simulation values of endogenous variables are not the values from regressions, but the values from the model simulation run in the sample period. To show their simulation value from running the model by means of data and curve is want to help user better understand the behavior of the endogenous variables.

You can select proper fixer operation for that endogenous variable in part 2 or part 3, depending upon whether a historical simulation to be carried out or a forecasting

simulation to be done. For historical simulation, there are four different fixer operations can be selected. They are Add, Multiplication (Mul), Replace and Skip, located in the part 2 of the Fig. 8 or Fig.9. For forecasting simulation, there are three different fixer operations can be selected. They are Add, Multiplication (Mul) and Replace, located in the part 3 of the Fig. 8 or Fig.9.

For fixer options Add, Multiplication and Replace, the interpolation will be executed automatically if two numbers are given to two periods which are not next to each other. To have the Skip operation, which is only suitable for historical simulation, it will be enough to appear the word “Skip” once in any period of the sample range.

Obviously, it is also possible to save the contents worked out into file by selecting the “Save” button. If some work of setting fixer information to endogenous variables has been done before and has been saved in a file, it is also possible to load that file and continue the work on that basis by selecting the “Load” button.

There is also a way to change work on setting fixer information to endogenous variables into giving values to exogenous variables by clicking the button “Exogenous Variables” located at the down-left corner of the window in Fig8 or Fig. 9.

(3) Run the Model

After finishing the preparations in giving values to exogenous variables and setting fixer information to endogenous variables, one can select the “Run Model” option from the main menu of the system in Fig. 4. To response the selection, following window which we are familiar with will be displayed.

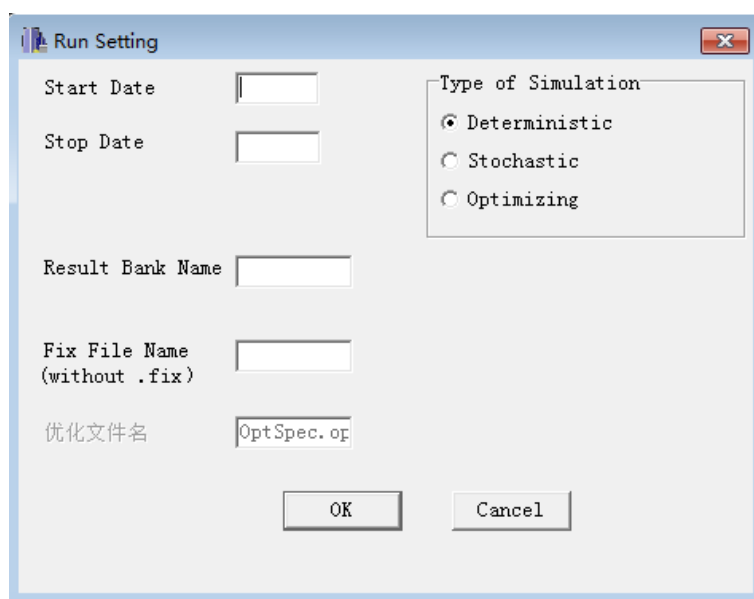


Fig. 10 To Set Model Run Information

It is exactly the same one as in G7 for running macro model.

(4) Set the Stub File for Results Comparison

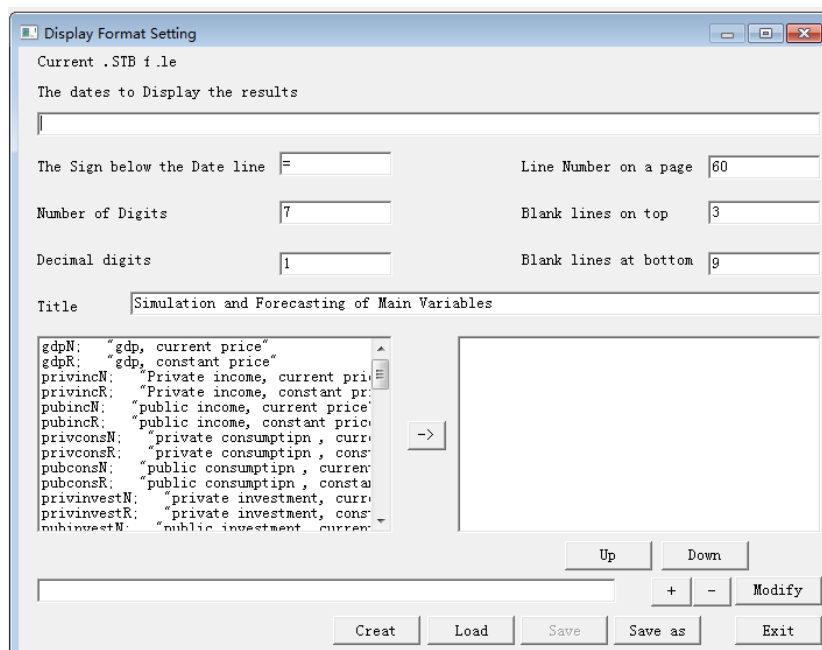


Fig 11 Prepare Stub File for Compare Output

It is easy to understand the contents displayed in the Fig. 11 above. It is just for preparing the stub file which is necessary to compare the results from different runs of the model. It needs to be pointed out that if one wants to compare the values of some variables themselves, the operation is just click or select the variables plus click the button “->”. In that case, the selected variables, with their descriptions, will appear in the right side box which is the place to have the variables whose values need to be compared and displayed.

For comparing or displaying a combination of several variables, such as GDP/TotPop, it is possible to type the expression in the long blank box located near the bottom of the Fig. 11.

Also it is possible to save the work by click the button “Save as” or button “Create” and reload the previous work by click “Load” button.

Fig 12 shows the situation when doing some operation on this interface.

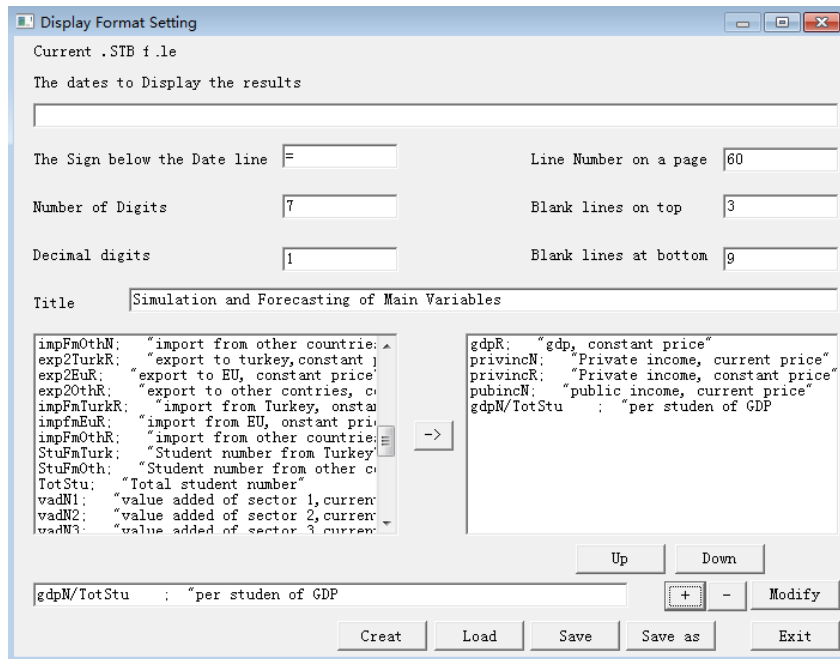


Fig. 12 An Example of Setting Stub File

(5) Compare and Export the Results

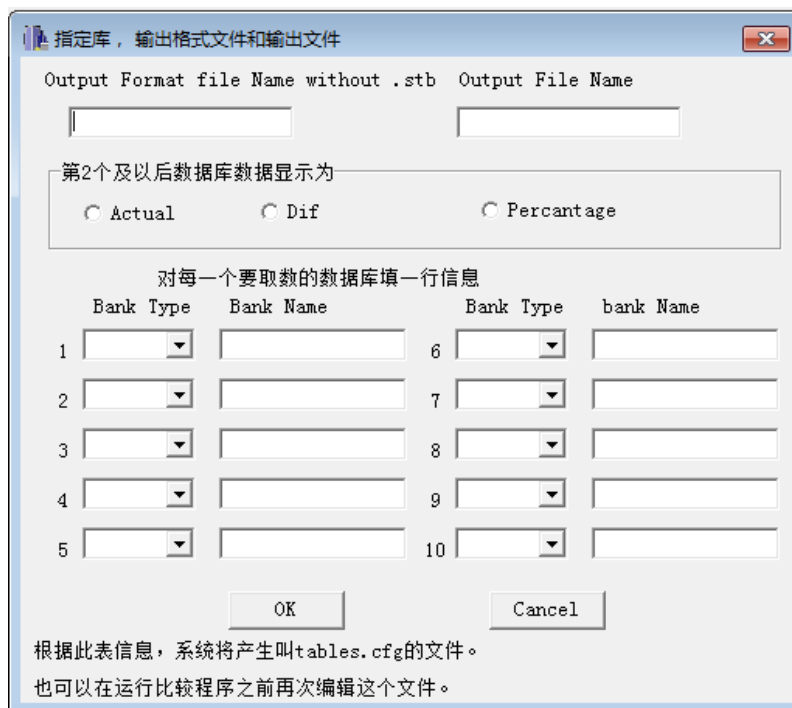


Fig13. The Interface for Result Comparison

It is exactly the same one as in G7 for comparing results.

4. Which is the more reasonable and more satisfactory solution?

The current situation described in section 3 is only a single PC user version, it is necessary to copy all the necessary files into user's PC for application. We need to have it works in network environment. The current opinion for this point is to design a web service program which has model menu for users' selection. As soon as one user selects one model from a model list, the system will judge the legality of the user to access that model, judge whether it is his/her first time to access this model, judge if the model in server has newer version than that one of the client has had. In the case if it is his/her first time to legally access that model or if the model in server is newer than the user has had, the system will come out a window for prompting the user to download the model files, including its data bank. The server cannot send files to that user because it is not allowed from the security system of the network.

Further consideration for improving this system into a more reasonable and more satisfactory solution is to develop a new "build" program which can generate a new version of the model which can directly run in a network environment.