

ECONOLAND-2001 ---- MANUAL

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/+x=-=/+x=-=/+x=-=/+$$$$$$$$$+\\=-x=+\\=-x=+\\=-x=+\\
$
$           Welcome to ECONOLAND-2001           $
$
$           Copyright 1991, 1993                $
$
$           Michael C. Lovell                    $
$           Wesleyan University                  $
$           Middletown, CT 06457                 $
$
/+x=-=/+x=-=/+x=-=/+$$$$$$$$$+\\=-x=+\\=-x=+\\=-x=+\\

```

This program provides you with a unique opportunity to administer macroeconomic policy in ECONOLAND, a mythical republic located in your personal computer, halfway between the artificial models of the textbook and the real world.

This program was originally developed for use by students enrolled in a college level course in macroeconomics. Any one who has taken such a course should be particularly well prepared for the exciting challenges offered by ECONOLAND-2001. And if you have never had a formal course in macroeconomics, the training missions offered by the ECONOLAND-2001 program may help you get up to speed.

ECONOLAND-2001 MANUAL

This manual is in file MANUAL.PRN. It will guide you through the training exercises and prepare you for exciting challenges to your stabilization skills, such as OPEC price hikes, war, disarmament, technological unemployment, and a productivity slowdown. It defines the basic concepts used in the program and explains how to install the ECONOLAND-2001 program. The appendix presents detailed information about how to install the program.

Additional documentation files are also included on the distribution disk --- see file README.1st

You may find it convenient to use the program LISTER, included on the documentation disk, to prepare hard copy of MANUAL.PRN and other files on your dot-matrix printer.

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Chapter 1: Starting the Program

Your favorite Travel Agent may not be able to sell you tickets to Econoland, but your IBM compatible PC will take you there, provided it is equipped with either two floppy disk drives or one floppy and a hard-disk. The steps for installing the program on your computer are explained in the README.TXT file on the distribution disk. Once your program is installed, just follow the steps listed below and your computer will whisk you away to Econoland.

1.1 Startup:

See file INSTALL.DOC for information about how to install the program, which is a onetime operation. Although the program runs most expeditiously on a computer equipped with a hard disk, it will run on a computer equipped with two floppy drives but no hard disk.

Once the program is installed on a hard disk, you start it by just typing

```
C:\ECONO\CECONO
                (followed with <ENTER>
```

Your computer will promptly time-warp you through time and space to Econoland year 2001.

If you have installed the program to run on two floppy drives, start the program by typing

```
A:\BECONO
```

Wait patiently while the computer loads the program and time-warps you through time and space to Econoland year 2001.

You can find additoinal information about installation in the appendix of this manual.

1.2: Politically Constrained Versus Politically Unconstrained Modes

As soon as you arrive at Econoland, your computer will display an opening welcome message. Tap any key and you will be confronted with a critical choice: do you want to run the computer in Politically Constrained or Politically Unconstrained Mode --- PC or PU?

Politically Constrained (PC) Mode: If you push C to select this option, your policy making efforts may be blocked, at least in part, by a balky Congress and cantankerous senators. For example, while you may be able to lower taxes, it is extremely unlikely that the President will be able to get any tax hikes that you propose through the House. Furthermore, you will not be able to assume control of the Federal Reserve Board; its chair will be inherited from the previous administration and will act as an independent agent insulated from political pressures. If you select the PC Mode you will be frustrated, but the President may be able to shift blame from the White House to the Federal Reserve Board and Congress when things go wrong.

Political Unconstrained (PU) Mode: If you select this mode by pushing U, you will have complete authority to adjust taxes, the level of government spending and monetary policy! You may receive suggestions from time to time from the Federal Reserve Board and more advice than you want from Congress and the Senate --- but you will be free to ignore their suggestions and proceed on your own initiative unhampered by the type of political constraints that

limit the ability of the President of the United States to implement policy objectives. Take Charge!

1.3. Main Menu Options and the Information Box:

The Main Menu offers you a list of options plus an Information Box which will keep you posted on the program's status.

```
~~~~~  
                                MAIN MENU
```

```
    League #1: National
```

```
T  Select Team    (#1: Incumbents)
```

```
M  Select Training Mission (#1: Government Spending Experiment:
```

```
A  Advance from Training Missions to Challenging Assignments
```

```
P  Proceed to Experiment
```

```
O  Output Option Menu
```

```
S  Setup Options (Add Teams, Change Drive, Fix Monitor, etc.)
```

```
H  HELP;  X Exit from program
```

```
~~~~~  
Training Mission #1: Government Spending Experiment
```

```
League #1: National
```

```
Team #1: Incumbents
```

```
Federal Reserve |Board: Alan Greenspan, Chair
```

```
Council of Economic Advisers: Laura Tyson, Chair
```

```
Alan Blinder
```

```
~~~~~  
Select options (e.g., T or M).
```

```
Then touch P to Proceed to experiment
```

The Information Box near the bottom of your screen advises that the program is prepared to undertake Training Mission #1: Government Spending Experiment. The Information Box also reveals that Team #1, Incumbents of the National League is currently in charge. You can activate the next team, Team #2: Entrepreneurs, by pushing T.

The ECONOLAND-2002 program includes two pre-set teams in order that you can undertake an initial trial run without taking time out to set up teams. But it is easy to place yourself in charge. Just push S in the Main Menu and you will be able to use the Setup Option Menu to Edit the team officials by tapping E and following the simple instructions. You will find it easy to appoint officials in Econoland; unlike Washington, the President of Econoland can make appointments without bothering with Senate confirmation hearings. Tap M when you are wish to return to the Main Menu.

As indicated by the bottom line prompt, tapping P will allow you to proceed to your first experiment. But before proceeding you should examine the historical record of Econoland reported in the next chapter of this manual. If you study the failures of the prior administration you may do better when you take charge.

Chapter 2: HISTORY OF ECONOLAND

2.1: What Went Wrong

Your first task will be to study data summarizing the recent and unfortunate history of Econoland's economy during the last eight years. The table shows that the economy suffered from disruptive instability during the previous administration:

- Unemployment swung erratically, at one point climbing above 10%. One worker in 10 could not find a job!
- Inflation averaged an unacceptable annual rate of 7.8% over the entire eight years.
- During the election campaign much was made of the fact that the "Economic Discomfort Index" -- the sum of the unemployment rate plus the inflation rate -- averaged a disgraceful 13.7%.

These basic facts summarize the economic disaster experienced under the last administration. To find out more about what happened, it is necessary to study the nitty-gritty table details more closely..

2.2 Table #1: Business Conditions Digest

The Business Conditions Digest table is an economic report card providing detailed information about the poor performance of Econoland's economy. The ten economic concepts reported on successive columns of the table are as relevant to the analysis of economic developments in Econoland as they are to the understanding of economic conditions in the United States. When you take charge of economic policy in 2001 the results of your decisions will be reported on similar tables.

ECONOLAND Table #1: BUSINESS\$ CONDITION\$ DIGEST										
DATE	GDP	GOVT	INV	CON	TaxR%	CPI%	MoneyS	MGR%	IntR%	UnEmp%
1993	1464	331	156	977	22.6	11.7	396	1.3	17.5	3.3
1994	1458	345	122	991	22.6	10.1	415	4.8	9.1	10.1
1995	1595	353	160	1082	22.6	5.2	453	8.8	12.2	6.2
1996	1643	362	139	1142	20.0	5.3	490	8.1	6.5	7.2
1997-1	1737	375	152	1210	20.0	3.9	510	16.3	3.3	4.9
1997-2	1761	379	163	1219	20.0	6.2	524	10.6	6.4	3.4
1997-3	1783	383	174	1226	20.0	8.6	535	8.6	9.9	2.6
1997-4	1806	387	185	1234	20.0	11.0	546	8.0	13.3	2.3
1998-1	1774	391	148	1234	20.0	10.0	556	7.3	16.2	5.3
1998-2	1790	395	151	1244	20.0	8.8	567	8.2	14.5	7.1
1998-3	1832	399	164	1269	20.0	7.8	581	9.8	11.1	6.7
1998-4	1882	403	179	1300	20.0	7.5	597	10.9	9.6	5.0
1999-1	1895	407	195	1293	23.0	7.5	611	9.8	12.3	4.7
1999-2	1924	408	213	1303	23.0	7.7	627	10.0	12.8	4.4
1999-3	1924	406	210	1308	23.0	7.5	642	9.6	14.8	5.7
1999-4	1955	414	216	1325	23.0	7.1	659	10.6	13.1	6.0
2000-1	2004	416	219	1369	21.0	6.9	677	11.1	12.9	5.1
2000-2	2036	417	222	1397	21.0	7.1	696	11.4	12.9	4.4
2000-3	2011	419	194	1398	21.0	6.5	715	11.0	13.5	6.8
2000-4	2050	420	212	1419	21.0	5.8	736	11.6	12.0	7.2
AVERAGE: UnEmp% = 5.9%; CPI% = 7.8%; EDI= 13.7%.										

Each row of Table 1 presents information for the particular time period identified in the first column. Data are reported only annually for the earlier years but more recent data are presented quarterly (four times a year). Thus the row labeled 1994 reports what happened during the whole year, while the row labeled 2000-1 covers only the first quarter (January through March) of the year 2000. Similarly, second quarter (April through June) of 1999 data are reported on row 1999-2.

Here is a glossary explaining the meaning of each of the concepts reported on the table.

DATE Year for annual data or Year & Quarter (e.g., 1997-2 is April-June of 1997). As in the United States, data on GDP and a number of other major economic indicators are published every three months --- i.e. quarterly.

GDP (Gross Domestic Product). GDP is the market value of all goods and services produced in the economy. This is the best single measure of the nation's output. The GDP data reported for Econoland are corrected for inflation. Because of price fluctuations, the dollar bill provides only a "rubber yardstick" for comparing economic values over time. Real GDP data use prices from a particular "base year" to help you compare the GDP and other data from different years. The GDP data for Econoland are measured in terms of prevailing 1993 prices.

How much of the nation's output is the result of government spending, how much is invested for a more productive future, and how much will be spent by consumers this year? The table reports the three basic components of Econoland's real GDP.

GOVT Real government spending on goods and services. This is the part of the nation's current output that is used for national defense, education, highway construction, police protection, and other government goods and services.

INV Real investment includes new factory buildings, machinery and inventory accumulation plus new house and apartment construction. In the context of GDP accounting, investment does not refer to the purchase of stocks and other financial securities.

CON Real consumption is that part of total output purchased by consumers, including clothing, books, new cars, food, etc.

TaxR% The tax rate is the proportion of the nation's income that the government levies to finance government spending. If tax revenue falls short of government spending, the deficit must be made up by borrowing. Deficit spending increases the national debt.

CPI% The inflation rate. Inflation occurs when the prices of most goods are rising and each dollar purchases fewer goods or services. The rate of inflation is measured by the annual percentage rate of change in the Consumer Price Index (CPI). Deflation is negative inflation; if and when the price level falls, the CPI% will be negative, signifying deflation.

Money\$ The money supply. The money supply, defined for Econoland as the sum of currency in circulation plus checking deposits, is controlled by the Federal Reserve System.

MGR% The money supply growth rate (percent per year). How rapidly the money supply changes over time has a fundamental effect on interest rates, the pace of economic activity, and inflation.

IntR% Interest rate (percent per year). This is the price charged to business firms when they borrow to invest in new factories and machinery. Consumers pay interest when they borrow to buy a new car or house. **UnEm%** Unemployment rate (Number unemployed/Labor Force). While workers obviously

suffer when the unemployment rate rises, hard times for workers generally mean that businesses find sales are under target and profits are short of the level enjoyed in prosperous times.

- EDI Economic Discomfort Index. This concept, the sum of the unemployment rate plus the annual rate of inflation, provides in one single number a measure of how well the economy is performing. When the economy slides in to recession, the discomfort index will rise sharply in response to the rise in unemployment. It will also soar if inflation gets out of control. Further, disinflation (falling prices) also adds to economic discomfort. In the 1990 election campaign, the incumbent candidate was embarrassed when the challenger pointed out what has happened to the EDI.
- EP-SCORE The Economic Policy Score is an overall measure of economic performance. Points are rewarded when real GDP grows, making more goods and services available to the public. But your EP-Score will drop rapidly when the EDI climbs as a result of high inflation or excessive unemployment.

Chapter 3: Training Mission Sequence

Overview: Once you have started the Econoland-2001 Program the Main Menu offers you an unprecedented opportunity to enter into a Four Mission Training Sequence designed to help you appreciate how various policy measures influence economic developments. For Training Mission #1 you will be asked to adjust the level of government spending over the years 2001-2004 --- this is the first term of the new president's administration. For Training Mission #2 you are allowed to "replay history," going back over the years 2001-2004, but manipulating tax rates rather than government spending --- the government spending levels will remain at the level you set in Training Mission #1. For Training Mission #3 you once again replay history over the same period ---this time you get to set monetary policy, but you must live with the fiscal policy decisions you made on your first two training missions. Thus the first three Training Missions give you a chance to learn, one at a time, how the economy responds to each of three basic policy measures you can employ in an attempt to improve the performance of Econoland. When you have completed these first three Training Missions, you will move on in Training Mission 4 to manipulate the three policy measures simultaneously over the years 2005-2008, assuming that the president is reelected for a second term.

Training Mission #1: Government Spending

As is explained in most introductory economics text, an increase in the pace of government spending provides a stimulus to economic activity. Not only are people put to work producing the additional goods and services the government is buying. When those workers spend their additional income, a further spending boost adds additional stimulus to the economy. Textbooks explain that the effect of an increase in government spending on GDP equals the government spending multiplier times the change in government spending, but things are not quite that simple in Econoland. How big a stimulus a hike in government spending will produce in Econoland depends in part upon how close the economy is operating to capacity. If labor markets are already tight, the demand for additional workers will push up wages, contributing to inflationary pressures. Inflation is an unpleasant side effect of the economic stimulus of stepped up government spending; the inflationary response is likely to be particularly serious when there is little excess capacity.

How a change in government spending affects Econoland can be appreciated by comparing the results of two experiments --- consider the experience of two policy makers, the Candy Keynes versus the Fiscal Tightwads in year 2001:

ECONOLAND Table #1: BUSINESS\$ CONDITION\$ DIGEST											Train-
ing Mission #1: Government Spending Experiment											
League # 1: National											
Team #1: Candy Keynes											
DATE	GDP	GOVT	INV	CON	TaxR%	CPI%	MoneyS	MGR%	Intr%	UnEmp%	
2001-1	2111	424	231	1455	21.0	4.7	766	16.4	12.0	8.7	
2001-2	2192	434	253	1505	21.0	4.0	802	18.4	8.1	6.9	
2001-3	2259	444	274	1541	21.0	5.1	839	18.9	7.2	4.4	
2001-4	2294	454	290	1549	21.0	8.7	876	17.4	9.0	3.1	
AVERAGE: UnEmp% = 5.8%; CPI% = 5.6%; EDI= 11.4%. EP SCORE = 198 points											

The Candy Keynes were proud that their aggressive application of fiscal stimulus --- a rapid increase in government spending --- had successfully pushed the economy to full employment at the expense of only moderate inflation.

A rival policy team, the Fiscal Tightwads, pursued a different strategy. Their program of fiscal stringency stopped the upward spiral in government spending.


~~~~~  
GOVT = 440

Touch P to Process this quarter's decision; R to Revise;  
Y simulates to Year end; T simulates to the end of the President's term  
Touch the ESC key to end the simulation.  
~~~~~

Enter P to find out the result of your decision. After you have analyzed what has happened, enter your decision for the next period, and so on through to the end of the four year period.

Notes:

To speed the action, you can make your decisions for several quarters at one time by pushing Y or T instead of P. Or you could leave the simulation early, before finishing the full four years, by pushing the ESC key.

If certain influential members of the Senate regard your proposed fiscal policy as extreme, they will flash their objection onto your monitor:

~~~~~  
Sorry, The Senate Majority Leader objects that your budget will cause too much inflation unless you scale back your proposed increase in government spending. You are advised to ask for no more than 505  
~~~~~

If you are operating in PC Mode, you will have to abide by their constraint.

If you are operating in PU Mode, consider their advice carefully and then enter any level of government spending you like!

When you have completed the experiment, the computer will automatically move you over to the Output Menu. You will be prompted to look at graphs and tables revealing how Econoland has fared under your leadership.

Detailed information about how to interpret the evidence presented on the tables is presented in Chapter 4. Chapter 4 also explains how you can send a copy of the table summarizing your results on Training Mission #1 to your printer in order that you can analyze more carefully what has happened and preserve for prosperity the results of your first attempt at achieving economic stability for Econoland.

Training Mission #2: Tax Reform Experiment

The second Training Mission back-tracks over the same 1991-94 period but allows you to try to improve on your earlier achievements by adjusting the tax rate each quarter; government spending will remain at whatever level you specified in Training Mission #1.

When Econoland stagnates, suffering from excessive unemployment, a cut in the tax rate may help to stimulate the economy. The tax cut will leave Econoland's consumers and business enterprises with more discretionary purchasing power. To the extent that they spend these funds, the economy will be stimulated. Conversely, when inflation signals that the economy is over-stimulated, hiking taxes may be the appropriate fiscal strategy. A hike in taxes will discourage consumer spending, thereby reducing excess demand and relieving inflationary pressures.

Lower tax rates mean that the government will have to finance more of its spending by borrowing, which obviously implies that the government debt may grow more rapidly; as a consequence, the government may incur a higher inter-

est cost on its debt, which will contribute to even higher deficits in future years.

Tax adjustments are not an ideal fiscal panacea for stabilizing the economy. To the extent that the public recognizes that tax cuts in recessions are only temporary and are likely to be balanced out by higher taxes in a boom, consumers may well be inclined to absorb the fluctuations in their disposable income out of savings rather than consumption spending.

Training Mission #3: Monetary Policy Experiment

Monetary policy is the primary focus of Training Mission #3. In this experiment the Chairman of the Federal Reserve Board takes charge, setting interest rates in order to improve the performance of the economy. Fiscal controls --- the level of government spending and tax rates --- are kept constant at the level inherited from the two previous experiments in order that the full impact of monetary policy will be clearly revealed. Back-tracking over the year's 2001-2004 should contribute to improved economic performance. The central bank can select the level of interest rates as the primary control variable, allowing the money supply to rise or fall as required in order to achieve the targeted interest rate. If the monetary authorities conclude that the economy is overheating, perhaps as a result of mistaken fiscal policy, they can respond by hiking interest rates. The "tight money" policy means that business firms will have to pay a higher rate of interest on the funds they borrow to finance the construction of new factories and machinery, potential car buyers will be discouraged because of the high monthly payment on that new vehicle, and potential home buyers will find that they cannot afford the higher monthly mortgage payments required when borrowing becomes more expensive. All this means that a decision of the Fed to hike the interest rate will slow down the economy, curbing inflationary pressure but perhaps generating a rise in unemployment. When recession makes unemployment rather than inflation the primary concern, a role back of interest rates may help to stimulate the economy.

You may have noticed that in the first two Training Exercises both the interest rates and the money supply were subject to considerable fluctuation. In both these training exercises the Fed was maintaining its independence from the Executive Branch of Government --- you were not responsible for monetary policy. In these experiments the Fed chose to "Lean Against the Wind," following a type of policy sometimes practiced in the United States. Under a Leaning Against the Wind strategy, the Fed adjusts interest rate periodically, after taking careful note of what is happening to both the pace of inflation and the level of unemployment. When inflation threatens, the Fed Leans Against the Wind by raising interest rates in order to discourage excessive spending and slow down the economy. Conversely, when rising unemployment is thought to be the more serious problem, the Fed lowers interest rates in an attempt to stabilize the economy.

In training Mission #3 the computer prompts you with a suggested interest rate. You will be encouraged to "Lean Against the Wind," raising interest rate when inflation threatens and lowering the interest rate if unemployment signals that there is excessive slack in the economy. But you will have the option of departing from these suggestions in order to set your own rate. Or you can focus on controlling the rate of growth of the money supply by selecting the O (for Option Menu) in the Decision Box in order to confront the following choices:

```
~~~~~  
Select the Fed's Control Instrument (currently Leaning Against the Wind)  
Touch M to control the rate of growth of the money supply  
  
Tap i to peg the rate of interest
```

Push W to activate Wage Price Guideposts

Rather than setting the rate of interest, this option menu allows the Fed to control the rate of growth of the money supply --- just push M. When you select MGR%, you lose control of Intr% --- the rate of interest will fluctuate in response to market forces, rising or falling as required in order to equate the demand for money with the supply of money that you prescribe. Many economists argue that given the limited state of current knowledge about how the economy actually works, any attempt at fine-tuning the economy by manipulating the interest rate is likely to do more harm than good. These monetarists argue that it is best to abandon discretionary monetary policy in favor of the simple rule of constant money supply growth regardless of the current level of unemployment or rate of inflation. The Econoland-2001 money supply control option allows you to put this rule into action on your computer, but only if you operate in PU Mode.

Wage Price Guideposts: Observe that the Option Menu also offers you the option of invoking Wage Price Guideposts. According to conventional economic wisdom, neither Wage-Price Guideposts or out right wage and price controls are regarded as effective techniques for controlling inflation --- but the conventional wisdom is often wrong, and you may want to see for yourself.

Training Mission #4: Managing the Economy - 4 More Years

Thanks in part to your skill in managing the economy, your President has been reelected for a second four year term. You have accepted his invitation to remain in charge of economic policy. For the second term, which starts at the beginning of 1905, you inherit the economic situation you created in Experiments 1 through 3. During the second term, fiscal and monetary policy will be set simultaneously. Each quarter both tax rates and government spending can be adjusted. And monetary policy can also be modified each quarter --- the Fed can set either the interest rate or alternatively the rate of growth of the money supply, depending on which policy control variable you choose from the Policy Option Box activated by touching O.

Output Options: You can terminate an experiment at any point by pushing Function Key F7 whenever the Decision Box is at the bottom of the screen. The Output Menu that will appear on your monitor allows you to plot a graph of your output and to display several different types of tables on your monitor or, if you like, send your output to your printer or store it in a disk file. From the Output Menu, you return to the main menu by tapping M.

Restart, Modify and other Options:

Once at the main menu you can push P to proceed. Since you have previously played the experiment, you will be given the option of RESTART, MODIFY or CONTINUE:

The CONTINUE option allows you to compete the experiment if you haven't already completed it.

The MODIFY option allows you to replay your earlier experiment, starting at the date you choose (e.g. 2007, quarter 2).

The RESTART option time-warps you back to the very beginning of the experiment and allows you to try again --- Practice Makes Perfect.

After you have completed the four Training Missions, carefully study the results in order that you can learn from experience. Then you can test your mettle by moving directly ahead to confront the Eight Challenging Assignments offered by pushing the A option on the Main Menu.

Chapter 4: Evaluating Performance

The Business Condition Digest table presents much useful information about what is happening in Econoland, but it does not tell the full story. Additional information is available on other tables that can be generated from the program's Output Menu.

```
~~~~~
                                OUTPUT MENU --- Tables and Graphs
                                ~~~~~

S  Select Table: #1 Business Conditions Digest
D  Select Table Destination: Monitor Screen

B  Produce taBle; Q for Quarterly or Y for Yearly data
G  Glossary
P  Plot a Lovely Graph
C  Continue simulation

R  Return to Program's Main Menu
H  Help; X to Exit from program
~~~~~
```

Touching P plots a graph of your experiment that is similar in format to the historical record on the chart at the beginning of Chapter 2. Tapping S allows you to select any of four additional tables that will be described in this chapter. You can use the D key to direct the program to send the computer output to your computer's monitor for immediate viewing, to your printer for hardcopy, or to a disk file for future reference. After the desired output is generated, you may push R to return to the Main Menu for another simulation

Here is the format of the second table of experimental output:

Table #2: Economic Indicators:

```
ECONOLAND Table #2: ECONOMIC INDICATOR$ ; Training Mission #1
DATE  Wage%  KapS  WorkF  PotGNP  TaxRev  GDeficit  Gdebt  GDP  CPI
2001-1  6.2    1373  126    2196    414     301      2704  2111  175.3
2001-2  5.5    1396  127    2226    428     191      2751  2176  177.0
2001-3  5.8    1425  127    2259    441     132      2784  2244  178.6
2001-4  7.2    1458  128    2294    451     131      2817  2294  180.9
```

AVERAGE: UnEmp% = 6.4%; CPI% = 4.3%; EDI = 10.7%. EP SCORE = 201 points

The various concepts presented on the table deserve a brief explanation;

DATE Year for annual data or Year & Quarter (1991-2 is April-June of '91)
Wage% Rate of increase in money wage rate (percent per annum). When unemployment rises in Econoland, workers may be less successful at winning wage increases at the bargaining table, which may lessen inflationary pressure.
KapS The Capital Stock. The stock of productive capital, measured in real terms, including factories, machinery, office buildings and houses. The capital accumulation achieved through investment activity will help to make Econoland workers more productive in the years ahead.
WorkF TheWork Force. This concept, which is defined in Econoland as in the United States, includes all those aged 16 or over who are either working or looking for work (unemployed).
PotGDP Potential GDP. This is an estimate, measured in real terms, of how

much the economy is capable of producing when operating at or close to capacity --- it is the maximum sustainable output of the economy. Potential GDP depends in part upon variables that are not easily influenced, such as the rate of growth of the workforce and the pace of technological innovation. But current and past economic policies also influence the level of Potential GDP achieved at any particular point in time. If interest rates have been particularly high because the Fed has been moving aggressively to stem inflation, investment spending will have been curtailed, which will slow the growth of the capital stock which is so essential for an expanding potential GDP.

TaxRev Tax revenue. The tax revenue raised by the government is used to pay for its spending on goods and services and to make interest payments on the national debt. Caution: the figures in this column can not be compared directly with the level of GDP, GOVT and other variables measured in real terms; they must be adjusted for inflation by dividing by the CPI.

GDeficit Government Deficit (GOVT + interest payments on debt - TaxRev). Governments incur a deficit when the tax revenue collected from the public falls short of total expenditures on goods and services plus interest payments on the national debt, unemployment insurance benefits and other transfer payments.

Gdebt Government Debt (Cumulative result of government borrowing). This is the total amount that the government has borrowed over the years --- it is the inevitable consequence of deficit spending. The GDebt figures are reported on the table in nominal rather than real terms, as is customary. The nominal data should be divided by the CPI before being compared to real GDP and other concepts that have already been adjusted for inflation.

GDP Gross Domestic Product ~ Market value of economy's output, measured in real terms.

CPI Consumer Price Index (measures the general price level)

The EDI (Economic Discomfort Index) and the EPScore (Economic Policy Score) were defined in Chapter 2.

Table #3 Survey of Current Business: This single table combines all the evidence presented on Tables #1 and #2.

If your printer will print compressed (small) type, using this option will save paper by printing out on one sheet or the variables reported on both tables #1 and #2. As explained in Appendix I, the Setup menu's Configure Computer option leads to a menu offering a procedure that will automatically set compressed type on many types of dot-matrix printers. Alternatively, it may be possible to set compressed type on your printer from its control panel.

Table 4: Performance Evaluation: This table provides a convenient summary of how well a team has managed Econoland.

ECONOLAND Table #4: PERFORMANCE EVALUATION

Team #2 Entrepreneurs; League #1 National

Exp	AVERAGES			FINAL QUARTER				EPScore Num	
	unemp%	CPI%	Discom%	Date	GDP	CPI	RealGDebt	Team #2	Pa
Training Missions -----									
1	6.4	4.3	10.7	2001-4	2294	180.9	1558	201	435
2	9.7	2.4	13.0	2004-4	2829	190.3	1457	570	445
Total Score								771	880

Preliminary EPQ (Economic Policy Quotient) = $100 * (771/880) = 88$

Challenges -----									
1	7.5	4.4	12.1	2008-4	3486	245.5	1920	975	500
Total Score:								975	500

$$\text{EPQ (Economic Policy Quotient)} = 100 * (975/500) = 195$$

Each row of this table summarizes the results for a particular experiment. The first three columns report the AVERAGE level of several performance indicators over the entire period covered by the simulation. This is followed by data on how Econoland was doing in the final quarter. The next to last column reports the Economic Policy Score on each experiment, which is an overall evaluation of performance. Compare your score on each experiment with the "par score" reported in the very last column.

A Preliminary EPQ Score is calculated on the basis of performance on the Training Mission you have completed. The final EPQ Score, based on how the team's performance measured up when confronted by Challenging Shocks appears on the bottom line of the table.

Table #5: International Financial Statistics: A convenient comparison of the performance of all the teams in the league that have played the selected experiment is provided by Table 5.

ECONOLAND Table #5: INTERNATIONAL FINANCIAL STATISTICS Challenge

#1: Normalcy

League #1: National

Par Score: 500

Team Num	EPScore	AVERAGES			FINAL QUARTER			REPLAY HISTORY	
		Unemp%	CPI%	Discom%	Date	Govt	TaxR%	Modify	Restart
1	-500	9.4	10.0	19.4	2005-3	512.0	26.0	2	4
2	875	7.5	4.4	12.1	2008-4	591.0	18.0	9	5

~~~~~

| Team<br>Num | FINAL QUARTER |        |      |       |      |        |      |       |           |  |
|-------------|---------------|--------|------|-------|------|--------|------|-------|-----------|--|
|             | Intr%         | MoneyS | MGR% | CPI   | KapS | PotGDP | GDP  | Uemp% | RealGdebt |  |
| 1           | 17.2          | 1788   | 12.0 | 276.7 | 2044 | 2943   | 1991 | 30.6  | 1423      |  |
| 2           | 2.0           | 2842   | 28.5 | 245.5 | 2532 | 3486   | 3412 | 9.7   | 1920      |  |

The first team had a disastrous experience: Massive unemployment sparked a revolution --- the economic advisers as well as the President were forced to flee the country. On the basis of this miserable performance the team was awarded a penalty EPC score of -500!

This table also reports how many "replays" the teams made on each experiment in the Modify and Restart columns. Clearly, Team 2's performance was way above par because they learned from experience through repeated experimentation. Perhaps Team 1 will also try again.

## Chapter 5: Eight Challenging Assignments

Once you have completed the four Training Missions you can put your macro planning skills to the acid test. The Econoland-2001 program offers eight challenging assignments providing ample opportunity to test, rethink, and refine your economic policy making skills. Each experiment will start in year 2001; each assignment involves a challenging new scenario.

To shift to your first Challenging Assignment, touch A while in the Main Menu. To move on to the next challenge, push A once more. Or select any of the other options listed on the menu.

**Challenge #1: Normalcy:** For Challenge #1 you have the simplest possible assignment: just restore normal economic conditions in Econoland --- put things right, after the disastrous years of the previous administration. Your job is to restore the economy to full employment without inflation. Lay the groundwork for prosperity in the 21st Century!

**Challenge #2: OPEC:** In this scenario, peace and tranquility is interrupted by a drastic and unexpected increase in petroleum prices engineered by OPEC (the Organization of Petroleum Exporting Countries). The drastic hike in oil prices, similar to that which shook not only the US but the entire energy dependent world in 1973, confronts the policy makers with a particularly a difficult choice:

**Option A:** The Federal Reserve System can move to stop the inflationary pressure by tightening up on the cost of credit --- raising interest rates --- in order to slow down investment spending in new plant, factories, equipment, houses and consumer durables. But while high interest rates may slow the inflationary tide, they will also have the unfortunate side effect of generating insufficient effective demand for the nation's output. Thus the economy will suffer from a severe recession in the aftermath of the energy crunch.

**Option B:** The Fed can move to offset the economic slowdown which is likely to follow the rise in prices generated by OPEC's shenanigans by expanding the money supply and pushing down interest rates. But while less unemployment will be generated by an expansionary policy, the Fed is likely to be blamed for having added to the inflationary fires by accommodating the OPEC price hikes with an enlarged money supply.

Econoland's central bankers, confronted by the OPEC challenge, are likely to find themselves damned if they do and damned if they don't. Slowing down the economy will cause the Fed to be blamed for economic stagnation. Or if they stimulate the economy to avoid recession, they will be blamed for the inflation that follows.

**Challenge #3: WAR!** The deteriorating international situation leaves Econoland with no option but to mobilize its military forces. The uncontrolled hike in government spending is likely to generate massive inflationary pressure. Your powers are limited because you no longer control government spending, which is dictated by military necessity. How seriously wartime mobilization will disrupt the economy depends in part upon how vigorously the Fed moves to stem the inflationary tide by holding the rate of growth of the money supply in check and hiking interest rates --- but the Secretary of the Treasury is concerned that higher interest rates will increase the cost of servicing the National Debt, thereby making the deficit even larger. Experts advise that the inflationary pressures will be less threatening if the massive increase in military expenditure is paid for with higher taxes rather than government borrowing from

the banking system.

**Challenge #4: Peace:** Peace at last; peace for all time! But demobilization may be far from easy. What will happen to the economy now that the military industrial complex has lost its mission. Can defense plants convert to the production of civilian goods and compete in the marketplace?. Will the cut back in government spending dictated by the peace treaty make it difficult to convert from swords to plowshares? Demobilization will not be easy, in part because the peace treaty will prevent you from manipulating the level of government spending. Will appropriate tax adjustments coupled with judicious monetary policy provide enough stimulus to meet the shock of massive cutbacks in the pace of government spending?

**Challenge #5: Automation:** The automation option accelerates the rate of growth in output per worker. Will automation of the production process mean that workers will suffer from technological unemployment, their jobs being taken over by robots? Since the very beginning of the Industrial Revolution, workers have tried to hold back the tide of progress by attempting to force their employers to keep everyone on the payroll and by limiting the rise in output that technological change facilitates. Never the less, technological progress makes a positive contribution to economic well-being: the development of new and improved techniques of production, by increasing worker productivity, provides an opportunity for the more rapid growth in real wages and a higher level of output for the average worker.

**Challenge #6: Productivity Slowdown:** If it were true that increases in worker productivity made massive technological unemployment inevitable than it would also be true that a slowdown in the rate of productivity growth would be a blessing. But that is not what happened in the United States where a slowing down in the rate of productivity growth since about 1973 has meant that the standard of living is no longer subject to continued improvement. Since about 1973 the United States and, indeed every major industrialized country, has experienced a drastic slowdown in the rate of growth in worker productivity. Can the slowdown be partially offset by a policy of low interest rates coupled with tighter control on government spending in order to release resources for additional investment?

**Challenge #7: Designer Experiments:** When you undertake this challenge you will be faced with a new menu offering a wide choice of shocks which you can mix and blend in imaginative combinations in order to construct your own exciting mix of challenges. You can choose War or Peace (Shocks #3 or #4). Or you can rise to the occasion by simultaneously taking on both OPEC and the Slowdown in the Rate of Productivity Growth (Shocks #2 and #6). For still more of a challenge, make it a triple by adding War to the OPEC and Slowdown challenges.

**Challenge #8: Random Shocks:** For your last challenge the mix of shocks will be determined randomly by the computer. Surprise! You won't know which set of challenges will confront you until the news headline flashes a warning on the screen.

## Appendix I: Technical Information

1. Set Up Options: The Econoland-2001 program contains a number of Set Up options that you may use to add new Leagues and Teams and refine the operation of your computer. Pushing S on the Main Menu presents you with the following options:

```
~~~~~
 SETUP OPTION MENU
                          ~~~~~
```

```
A  Add New League
N  Add New Team;  T Select next Team

D  Edit League Description
E  Edit Team Description

O  Configure Computer Options (Monitor Display, etc.)

R  Return to Main Menu
H  for Help;  X to eXit
~~~~~
```

As explained in the Help menu, the first several options allow you to add Leagues and Teams and/or edit the names of participants in existing teams. For example, touching E provides you with the chance to edit the name of the incumbent team:

```
~~~~~
Edit name of team number  1
```

```
Incumbents_____
EDIT OPTIONS: DELETE clears the string; BACKSPACE removes last character;
               touch ENTER (RETURN) when finished; ESC leaves string unchanged
~~~~~
```

There are two additional unprompted options: Touch T to change the active Team; if there is more than one League, touching L will shift to the next League. The Information Box at the bottom of the screen will keep you posted as to the current selection.

The O option takes you to the Configure Computer Option Menu:

```
~~~~~
                          COMPUTER CONFIGURATION OPTIONS
                          ~~~~~
```

```
S Sound: ON
I Printer Initialization String: Epson or IBM Proprinter
M Fine tune program to improve display on your Monitor

H Help; X to Exit from program
R Return to Previous Menu
~~~~~
```

S This option turns off sirens and beepers, which may reduce both excitement and stress.

I If you have an Epson or IBM Proprinter compatible dot-matrix printer attached to your computer, this option can be used to automatically send your printer a command string that will make it start up in compressed type (e.g., 17 characters per inch) in order to accommodate Table 3, the Survey of Current Business computer output generated by ECONOL. If you on't set this option (or if it doesn't work on your particular printer), you may be able to set your printer to compressed type by hand each time you run the ECONOL program. Alternatively, you can use Tables 1 and Tables 2, which together contain all the data consolidated on Table 3.

MThis option takes you to a menu which allows you to adapt the colors that the computer selects in order to improve your computer display, whether it has a VGA, EGA, CGA, Hercules, or standard monochrome monitor.

2. Monitor Adjustments: ECONOLAND automatically detects whether you have a color (or grayscale) or a monochrome monitor. If you have a color monitor, it will assign particular colors to different types of messages and text strings. If you have a monochrome monitor, it may try to use low versus high video display and inverse video. There are four different types of strings displayed by the ECONOLAND program: Default, Message, Prompt, and Warning. These may be sharp and clear on a VGA monitor, but they can be improved on some other computer/monitors, such as an ATT 6300. When you select the M option on the Setup Menu, you will be presented with the following menu:

```

~~~~~
COLOR INSTALLATION OPTION MENU Color (or Grayscale) Monitor
~~~~~

H Help and Instructions
ReSet the colors of the following strings      Fore & Back
D Default String, used most frequently        0      3
M Message String, a more prominent statement  14     1
P Prompt String, it should grab your eye      14     3
W Warning String, look out!                   14     4
L Load colors from MONITOR.CFF file
S Save these new colors for future use
I Install Default Colors
R Return to Previous Menu;   X to Exit from program
~~~~~

```

Before proceeding, adjust your monitor's CONTRAST and BRIGHTNESS knobs in order to finetune the display. Next, push the letter on the Color Installation Option Menu corresponding to the type of text string you wish to improve; the computer will respond with a Set Screen Color Display presenting a Color Palette showing the colors your computer can display.

```

~~~~~
                          Set Screen Color

This is the Color of Your String ( 0 3 )

~~~~~ Color Palette ~~~~~

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
01 11 21 31 41 51 61 71 81 91 101 111 121 131 141 151
02 12 22 32 42 52 62 72 82 92 102 112 122 132 142 152
03 13 23 33 43 53 63 73 83 93 103 113 123 133 143 153
04 14 24 34 44 54 64 74 84 94 104 114 124 134 144 154

```

|    |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| 05 | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 95 | 105 | 115 | 125 | 135 | 145 | 155 |
| 06 | 16 | 26 | 36 | 46 | 56 | 66 | 76 | 86 | 96 | 106 | 116 | 126 | 136 | 146 | 156 |
| 07 | 17 | 27 | 37 | 47 | 57 | 67 | 77 | 87 | 97 | 107 | 117 | 127 | 137 | 147 | 157 |

You use the arrow keys to select the desired color.

If you have a color monitor, your PC will assign colors by the numbers; for example, number 14 is yellow and 4 is red, which means that color number 14 4 on the color matrix will display on a color monitor as yellow on red.

On some monochrome monitors certain squares on the Color Palette will display as inverse while others may not show at all! Use the arrow keys to change the "color" number of the string in order to improve the quality of the display.

Push <ENTER> when finished selecting the best display for your string.

To save these colors so that they will automatically be installed each time you start the ECONOLAND program, just tap S. Or, if your efforts made things worse, you can restore the previous setting by touching S or the default colors by touching I.

3. Printing Graphs: You are not alone if your dot-matrix printer does not respond by printing out a nice hard-copy graph. You had obtained the graph on your screen by touching P while in the Output menu; then you pushed the D option when the graph of your Macroland experience was displayed on your monitor; and the output on your dot-matrix printer was garbage! The problem is that there are 100's of different dot-matrix printers out there --- the D option works on many but by no means all of them. For example, the option does work on the Panasonic KX-P1124 and the Epson FX85; it fails on the older Epson MX printer. The problem usually arises because your particular printer does not use the control code that this option sends to your printer in order to put it into "graphics mode."

There are three possible strategies that you can employ:

a. Experiment with an alternative unprompted graphics option available when the graph is displayed on your monitor in the hopes that one may work on your printer: Instead of responding with a D when prompted, try pushing 5; if that doesn't work, try 6.

b. Use the MS-DOS command GRAPHICS. You invoke this command BEFORE entering ECONOL by typing  
 [drive:][path]GRAPHICS  
 where [drive:][path] may be required to indicate the location of the GRAPHICS.-COM file; e.g., B:GRAPHICS or C:\DOS\GRAPHICS. When you have started MACROLAND and obtained on your screen the graph you wish to print, push Print-Scrn. Be forewarned, however, that this MS-DOS command does not function properly with all hardware. Various options for the GRAPHICS command are specified in the Dos Manual that came with your computer.

c. If you use a recent version of WordPerfect, use the included GRAB utility to "capture" the graph when it is displayed on your screen and store it in a file that can be retrieved into a WordPerfect document. See the WordPerfect manual for details.

2. TECHNICAL STARTUP OPTION: Adding MONO at the end of the command string

forces the program to start up in monochrome mode regardless of how the computer is equipped; e.g., type ECONOL MONO instead of just ECONOL to start up the program on a two floppy drive computer.

3. DIRECTORY\PATH TO FILES: Ordinarily, the program will identify the appropriate directory area containing the required files. The program first looks for ECONOL.HST. If this file is not in the default directory area when the program is started, the user will have the option of either changing the Drive\Directory or exiting from the program.

4. FILES USED BY ECONOLAND-2000: The following files will be created in the course of running the ECONOLAND program:

|              |                                                                                                |
|--------------|------------------------------------------------------------------------------------------------|
| ECONOLAN.CLS | List of Leagues                                                                                |
| ECON0g.CLT   | List of teams in League g.                                                                     |
| ECON0g0t.TEA | One file for each team, which will contain records summarizing the results of each simulation. |
| ECON0g0t.E0x | One file containing results of experiment x by team t in league g.                             |
| ECONO-0n.OUT | File of output sent to disk from the Output Menu. Files are numbered consecutively (n).        |
| MONITOR.CFF  | Contains the color settings for the monitor and other setup options.                           |

5. MEMORY MANAGEMENT: ECONOLAND accumulates a number of files in the course of conducting experiments on a number of teams. In order to limit the amount of disk space the program uses, you may want to delete certain files from time to time. To start afresh, two-floppy disk drive users should create a new Data Disk (Chapter I.1, Step 1); hard disk users should delete all files in directory area C:\ECONO\TEAMDAT and then enter C:\ECONO\CTEAMDAT. Alternatively, the following files may be deleted without interfering with subsequent experiments with the existing team setup:

|              |                                                                                                                                                                                                            |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECONO-0n.OUT | Files of table output may be deleted if no longer needed.                                                                                                                                                  |
| ECON0c0g.TEA | File used by Tables #4 and #5                                                                                                                                                                              |
| ECON010t.E0X | File recording experimental results. Do not delete file ECON010t.E01 until the 2nd experiment is played. Similarly, delete ECON010t.E02 and ECON01pt.E03 only after the subsequent experiment is executed. |

As mentioned earlier, on a two-floppy disk computer it is best to keep each League on a separate floppy disk.

## Appendix II: Group Activities

Classroom: ECONOLAND-2002 can be used effectively for classroom instruction. One strategy is to partition the students into groups of two to five students, with as seven to ten teams in a League. Each group is given an Economic Prescription Blank on which to enter its government spending decisions for the first year; the team also decides on the office that will be held by each student participant and the name they have chosen for their team. The instructor then has the information entered into the computer and at the next class meeting distributes a detailed printout to each team and the summary information provided by Table #5.

This procedure provides a vehicle for discussing the effects of alternative policy actions on the economy: Which team did best and why? Why did some teams get into difficulty? Was the advice of expert economists helpful --- should presidents consult only one expert to avoid confusion or get a "second opinion"? Observe that some teams did more harm than good, doing worse than a

policy of "No Change" (entering the default option each time) --- does this imply that discretionary policy should be avoided? Perhaps some teams will do worse on Training Missions #2 and #3 than they did on Training Mission #1, suggesting that the privilege of setting tax and monetary policy may lead to counterproductive results.

New prescription blanks can be used to enter decisions for subsequent rounds. Alternatively, if the computer equipment is readily available, students can be encouraged to enter their own decisions, either during a class session, a section meeting, or on their own time.

The Network Version of the Econoland program allows students to enter decisions from a variety of different computers. The results are readily summarized by generating Table #5, which provides a consolidated overview of the achievement of the various teams for discussion with the entire class.

**Tournaments:** The Economic Policy Score (Tables #1 and #5) and the Economic Policy Quotients (Table #4) provide ready yardsticks for ranking the performance of competing teams. League champions can challenge star performers in other leagues to a runoff competition.

## Appendix III: Bugs, Ordering

### Ordering and Registration Information:

ECONOLAND-2001, a "shareware program," is provided at no charge to the user for evaluation and testing for a brief trial period --- 5 day maximum. If you find this program useful, educational, enjoyable and/or fun please send a registration payment of \$50 to

Lovell's ECONOLAND  
63 Carriage Drive  
Durham, CT 06422

Upon receipt of payment, you will be sent a personalized copy of the latest revision of the program and a printed copy of the program's documentation. Specify 3 1/2 inch disks if this format rather than 5 1/4 inch is desired. The registration fee will license one copy for use on any one computer at any one time. Write to the above address for information about licensing the program for classroom use, site licensing and network applications. THE SHAREWARE CONCEPT --- Try before you buy! The Shareware distribution concept is based on the Honor Principle. Shareware has the ultimate money-back guarantee -- if you don't use the product, you don't pay for it. Feel free to pass copies of the original ECONOLAND-2001 Program and Documentation disks along to interested friends for evaluation. Please encourage them to register their copy if they find they can use the program. COMMERCIAL

DISTRIBUTION: Anyone distributing ECONOLAND-2001 for any kind of remuneration must first contact Lovell's ECONOLAND at the above address for authorization. However, distributors recognized by the Association of Shareware Professionals as adhering to its guidelines for shareware distributors, are authorized to begin offering ECONOLAND-2001 immediately.

Bug Reporting: Information about the precise location in which a bug was encountered and any error messages displayed on the screen will help in locating the source of the difficulty. Please also report the version number of the operating system; a listing of your CONFIG.SYS file and of your AUTOEXEC.BAT file may be of assistance in determining the cause of idiosyncratic problems.

Example: A user reported that the program hangs or crashes with a report of "Dos Error 4." When this information was reported to a computer hacker, she determined that Dos Error 4 arises because the computer was not configured to open enough files simultaneously. The remedy for this problem is for the user to add the line

FILES=20

to the CONFIG.SYS file on the computer, as explained in the MS-DOS manual.

Please report your suggestions for improving the program as well as information about any bugs you have encountered in running this program to the above address.