



От данных к прогнозу

Использование Eviews

Методика

- Подготовка данных
- Перенос данных в Eviews
- Анализ данных
- Построение моделей и оценка
- Прогнозирование
- Анализ результатов

Подготовка данных

- Источники данных
- Создание базы данных
- Анализ данных

Источники данных

- Источники данных по налогам
 - Казначейство
 - Государственная налоговая инспекция
- Источники по экономическим данным
 - Национальный статистический комитет

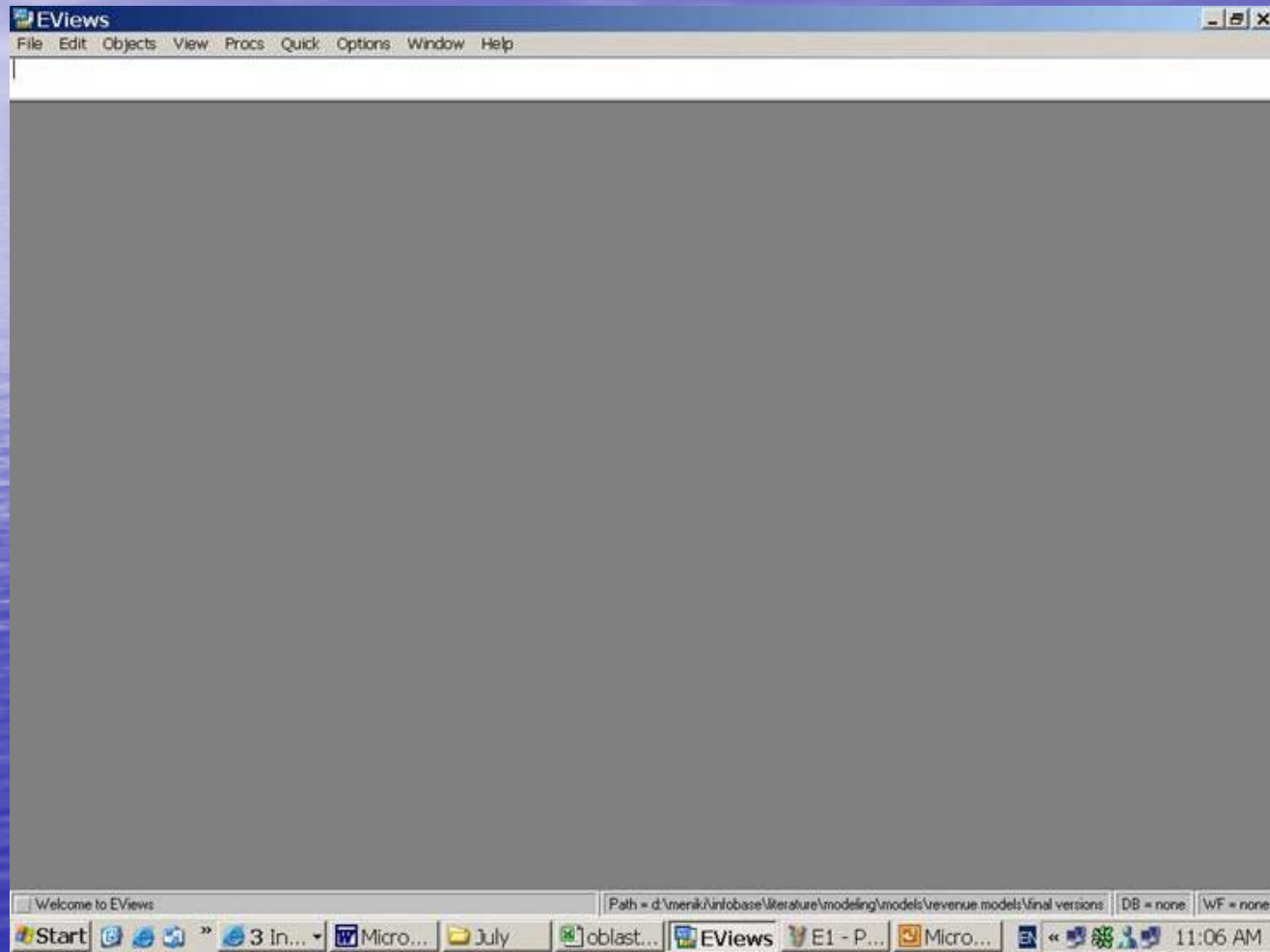
Создание базы данных

- Месячные временные ряды для каждого типа налога или дохода
- Месячные временные ряды по ВВП и другим экономическим данным
- Квартальные и годовые временные ряды

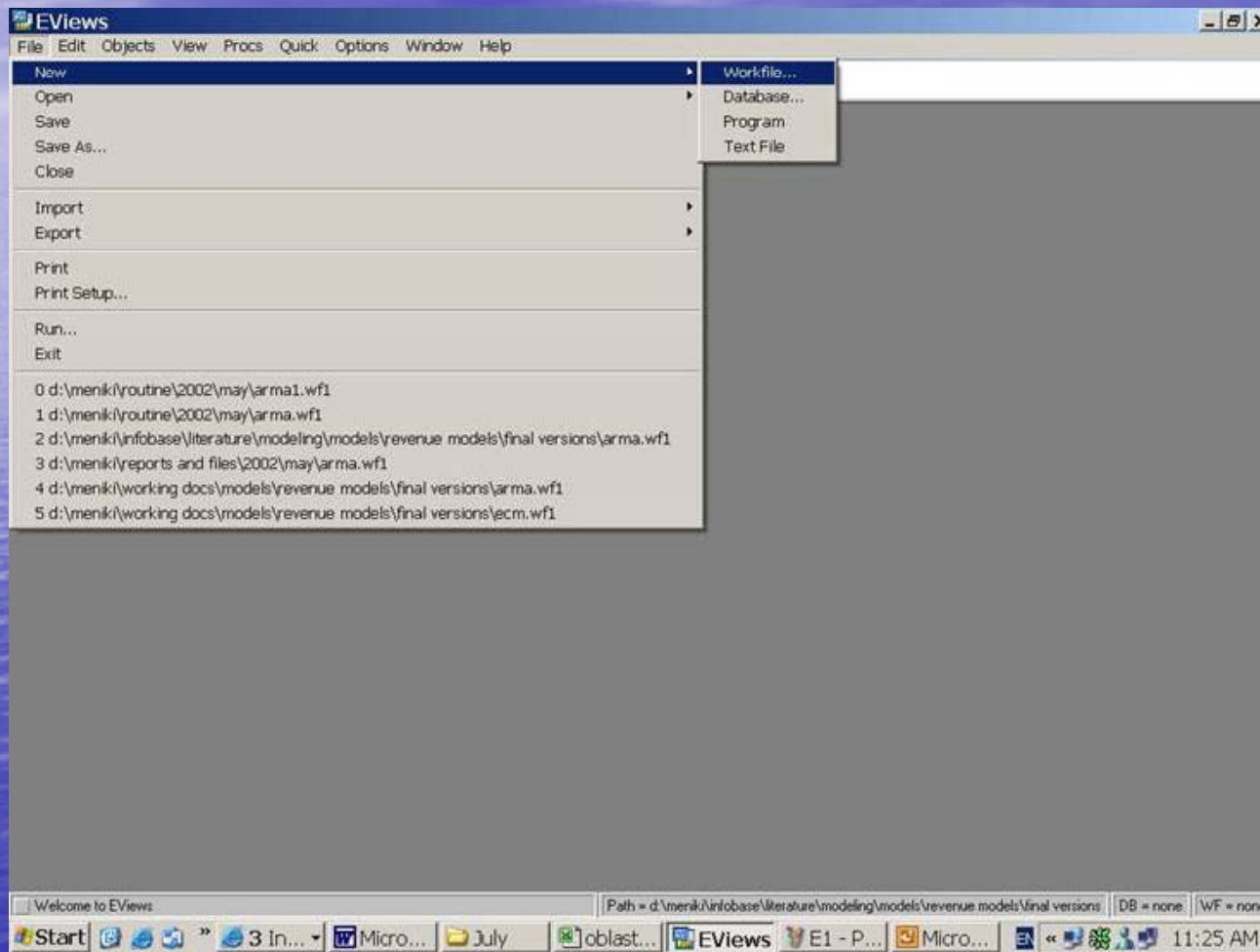
Анализ данных

- Проверка на ошибки, всплески
- Сезонность
- Тренд

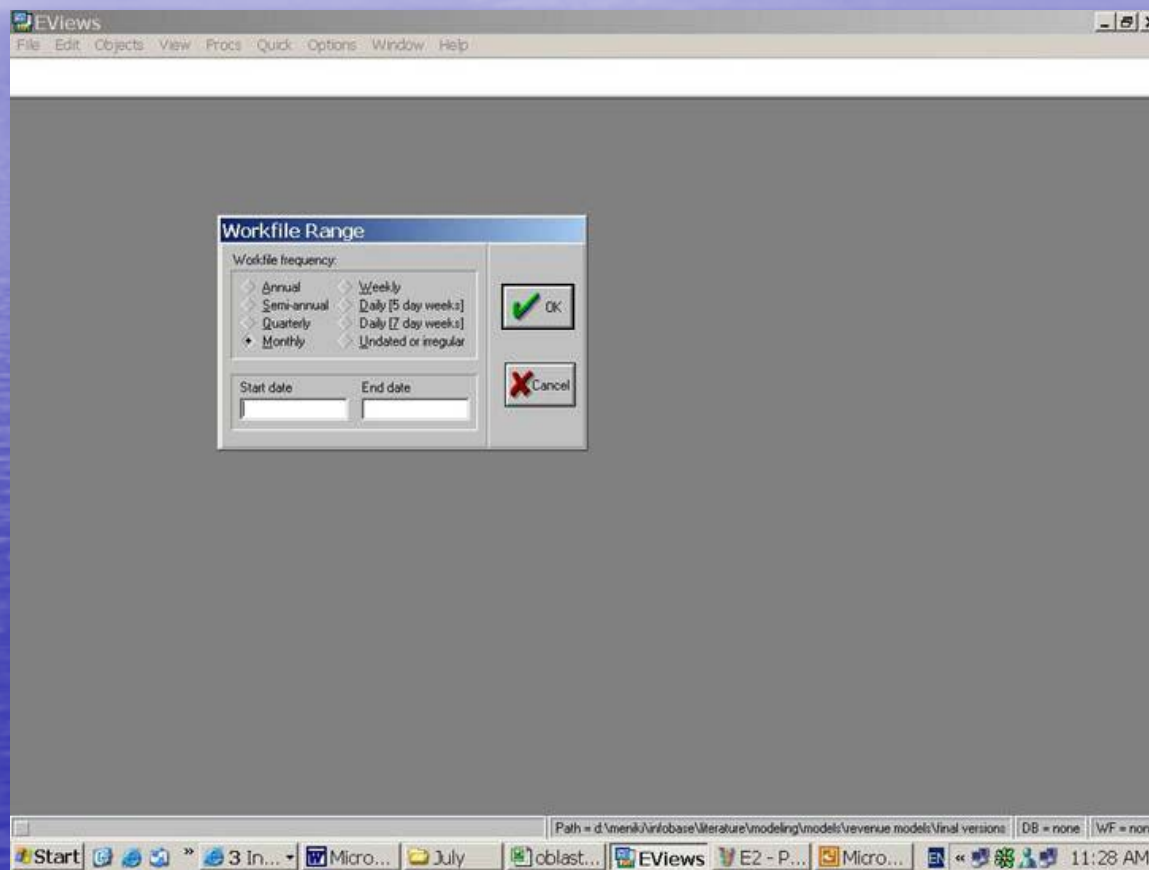
Главное окно Eviews



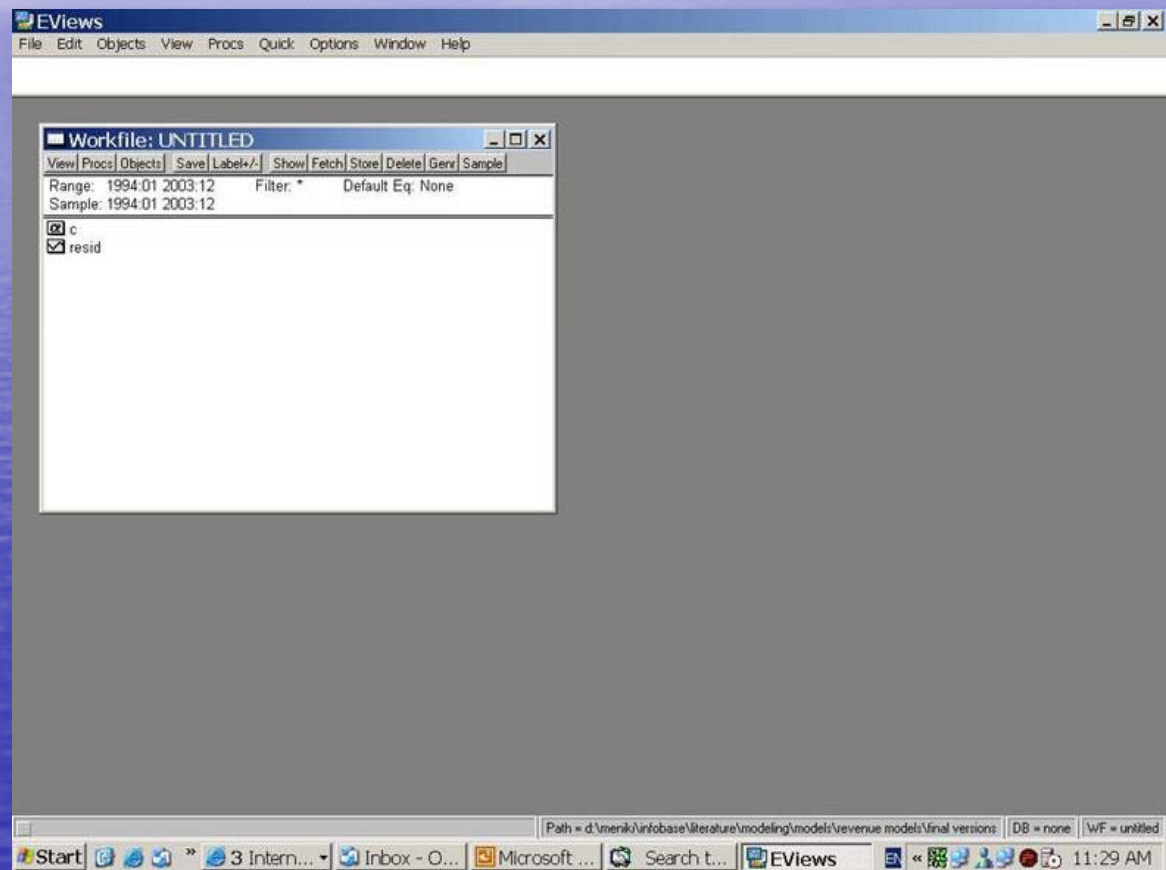
Создание рабочего файла



Диапазон рабочего файла



Пустой рабочий файл



Данные в таблицах Excel

Microsoft Excel - Tax data

File Edit View Insert Format Tools Data Window Help

Type a question for help

NTTierce 10 B / I U

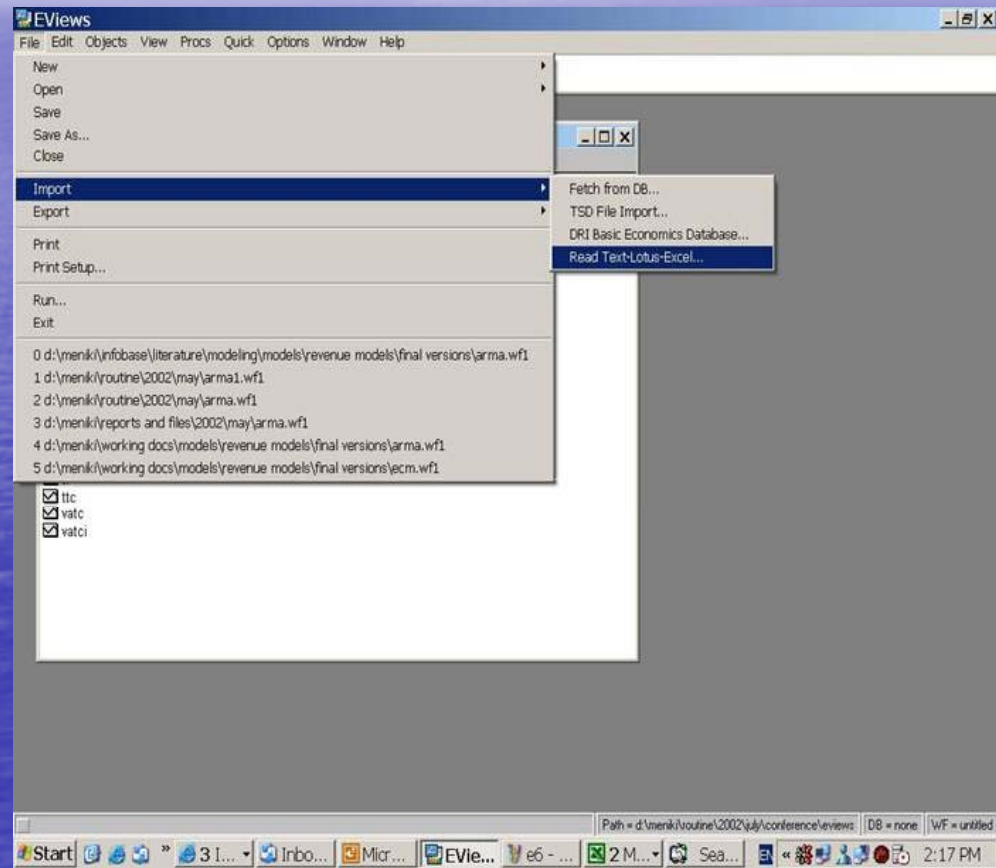
F20 31.8874

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		TR	TTC	VATC	VATCI	PRTC	ECD	ECI	PITC	CDC	STC	ESFC	ARTC	P
2	1994.01	140.1	138.5	24.7		74.6	7.1		10.2	1.2		6.9	3.2	
3	1994.02	90.2	88.6	21.0		21.8	6.3		10.0	0.6		8.5	6.0	
4	1994.03	143.7	136.3	37.2		42.6	8.0		16.4	0.9		9.9	5.9	
5	1994.04	129.6	124.0	33.2		37.8	9.3		18.0	1.8		9.3	5.8	
6	1994.05	148.3	134.0	42.4		34.0	11.7		17.3	11.1		6.4	4.8	
7	1994.06	223.3	208.7	63.5		48.0	27.5		28.0	5.8		11.5	6.0	
8	1994.07	125.9	110.7	35.6		28.8	13.4		13.3	0.7	1.7	8.0	3.1	
9	1994.08	141.9	131.0	30.4		30.6	15.4		20.7	2.8	7.3	10.8	6.1	
10	1994.09	161.4	133.6	46.1		18.7	17.6		17.7	6.2	10.2	6.6	5.0	
11	1994.10	183.4	154.1	56.6		23.5	20.8		19.8	4.7	11.0	8.0	3.3	
12	1994.11	129.7	117.5	36.7		23.1	11.7		17.3	1.5	9.6	8.9	3.6	
13	1994.12	271.8	241.8	90.9		42.7	24.0		36.3	8.4	13.2	8.7	7.2	
14	1995.01	100.4	93.8	26.0		14.4	8.5	4.5	13.5	2.4	7.6	7.2	3.4	
15	1995.02	155.4	149.9	41.4		32.6	-1.1	9.6	19.3	10.9	10.6	10.1	3.9	
16	1995.03	197.3	164.3	48.8		25.2	3.6	13.0	28.9	12.3	13.9	9.0	3.8	
17	1995.04	175.2	164.8	38.1		38.1	5.8	14.3	19.5	11.9	11.2	10.2	5.0	
18	1995.05	169.5	135.4	29.4		22.4	7.2	12.1	15.0	12.1	10.4	13.1	3.9	
19	1995.06	263.4	232.4	62.5		50.5	13.9	19.0	26.9	8.9	14.0	16.6	7.1	
20	1995.07	229.5	188.2	55.7		31.9	5.8	21.9	20.0	9.7	14.1	12.0	4.8	
21	1995.08	271.1	251.3	70.8		37.2	18.3	22.5	30.4	11.8	17.9	15.8	11.2	
22	1995.09	243.7	225.9	81.3		31.0	12.6	16.6	23.6	13.2	17.7	10.5	8.8	
23	1995.10	252.2	256.5	79.5		51.0	10.8	17.8	25.8	14.1	16.2	20.2	10.4	
24	1995.11	268.2	247.7	79.1		47.8	17.1	18.1	28.1	13.2	16.4	7.1	3.5	
25	1995.12	286.3	249.0	92.7		32.5	10.2	16.1	32.8	13.7	17.1	8.3	7.2	
26	1996.01	194.5	179.5	56.2		41.3	5.3	9.3	18.5	9.8	12.5	11.3	5.2	
27	1996.02	184.5	168.5	54.7		23.1	11.7	9.0	15.6	11.0	13.0	11.9	5.8	
28	1996.03	223.9	193.6	73.7		28.4	6.8	14.8	17.8	13.2	15.6	7.0	2.2	
29	1996.04	224.7	200.0	69.4		30.6	9.2	11.8	17.8	14.0	14.4	10.0	5.2	
30	1996.05	259.6	223.4	74.7		28.3	16.0	15.6	21.4	11.8	17.0	11.2	5.8	1
31	1996.06	231.3	206.0	78.8		22.3	8.9	16.8	20.6	12.1	16.7	8.1	5.2	

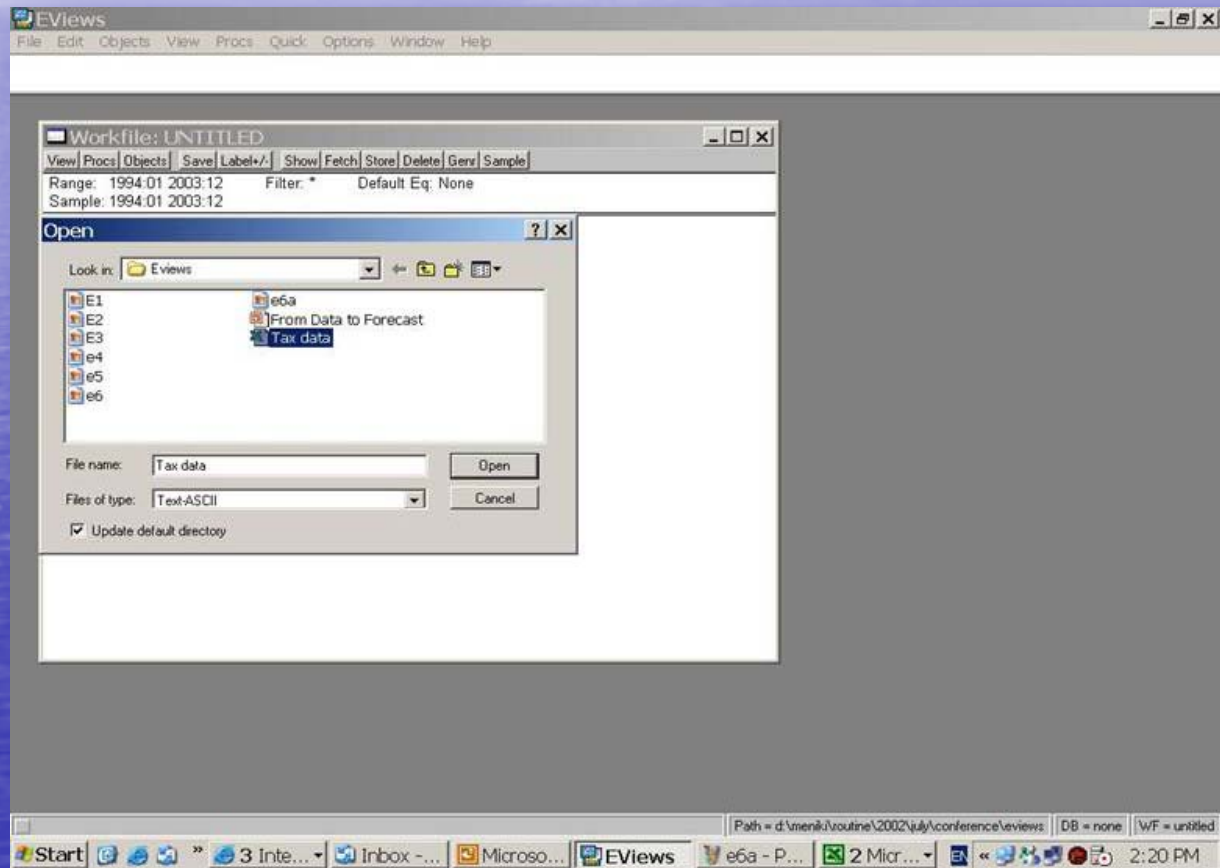
Ready NUM

Start 31... Inbo... Micr... EViews e4... 2 M... Sea... 2:16 PM

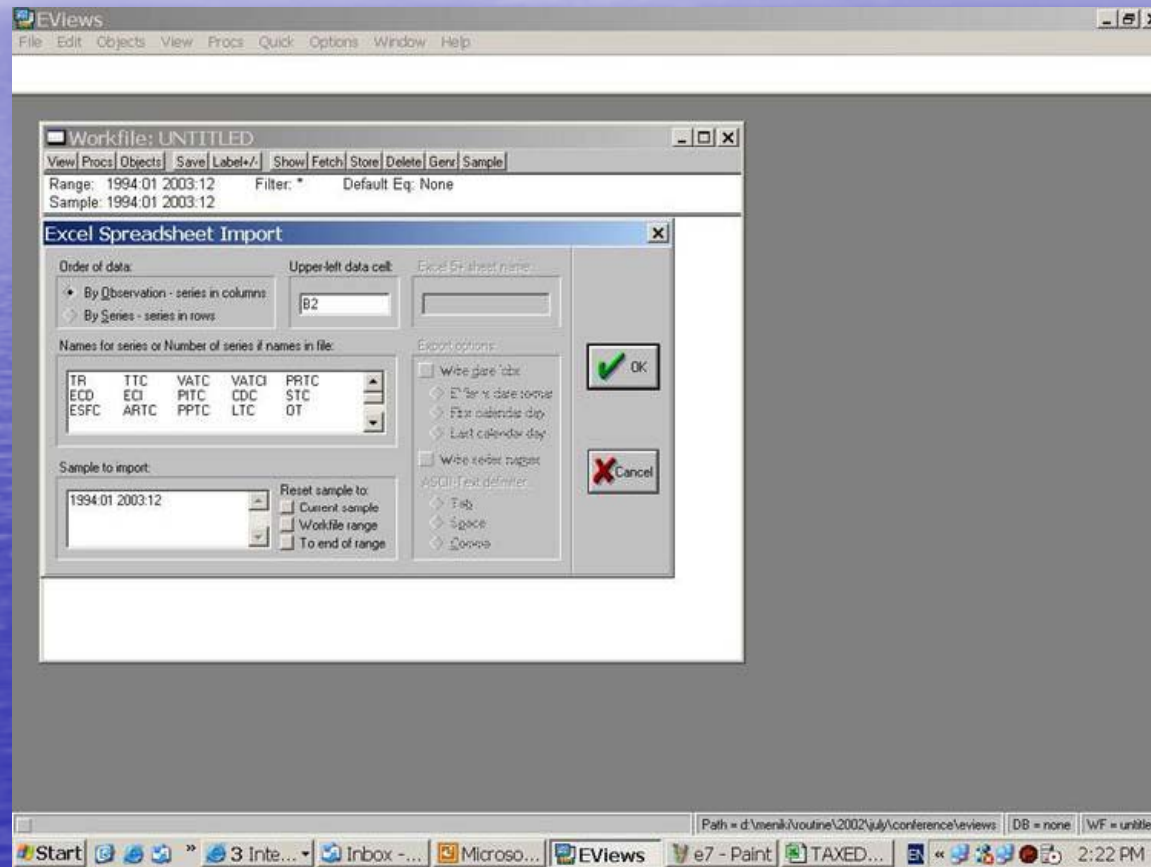
Экспорт данных из Excel



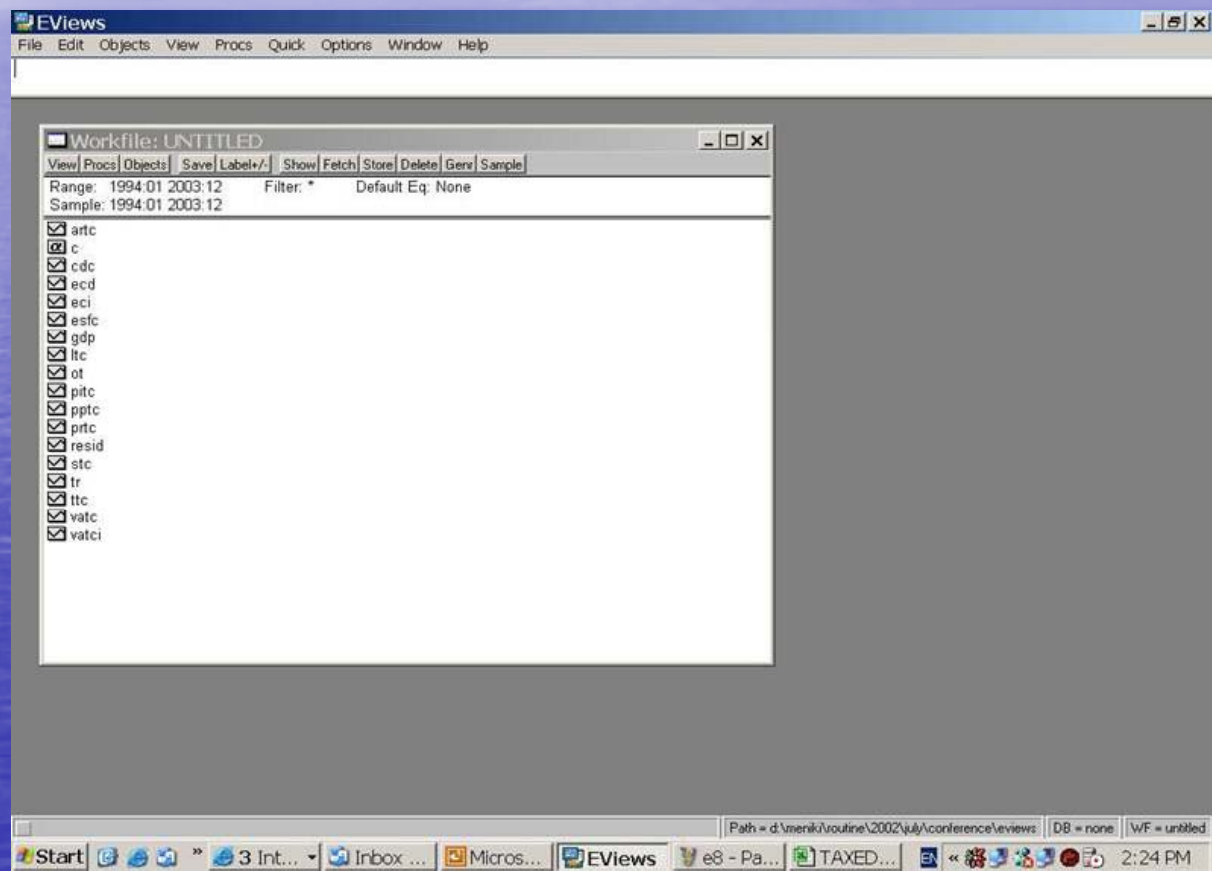
Импорт данных из Excel



Импортирование данных из Excel



Рабочий файл с импортированными данными



Анализ данных по стационарности

- Простой анализ данных
- Расширенный тест Unit-root на единичный корень

$$y_t = \mu + \rho y_{t-1} + \varepsilon_t$$

Stationary series

$$-1 < \rho < 1$$

Временные ряды в Eviews

The screenshot displays the EViews software interface. The main window shows a workfile named 'ARMA' with a range from 1994:01 to 2005:12. A list of series is visible on the left, including 'd01_1' through 'd99_11' and 'd99_12' through 'eximpe'. The 'Series: TRK' window is open, showing a table of data for the year 1994. The table includes a 'Date' column and a 'Value' column. The values for 1994 range from 88.60000 in January to 241.80000 in December. The series is updated as of 04/09/02 at 17:09. The status bar at the bottom indicates the path 'd:\menik\routine\2002\july\conference\views', database 'DB = none', and workfile 'WF = arma'. The taskbar shows the Start button and several open applications, including '3 Int...', 'Inbox ...', 'Micros...', 'EViews', 'e9 - Pa...', and 'TAXED...'. The system clock shows 2:28 PM.

Date	Value
1994:01	138.5000
1994:02	88.60000
1994:03	136.3000
1994:04	124.0000
1994:05	134.0000
1994:06	208.7000
1994:07	110.7000
1994:08	131.0000
1994:09	133.6000
1994:10	154.1000
1994:11	117.5000
1994:12	241.8000

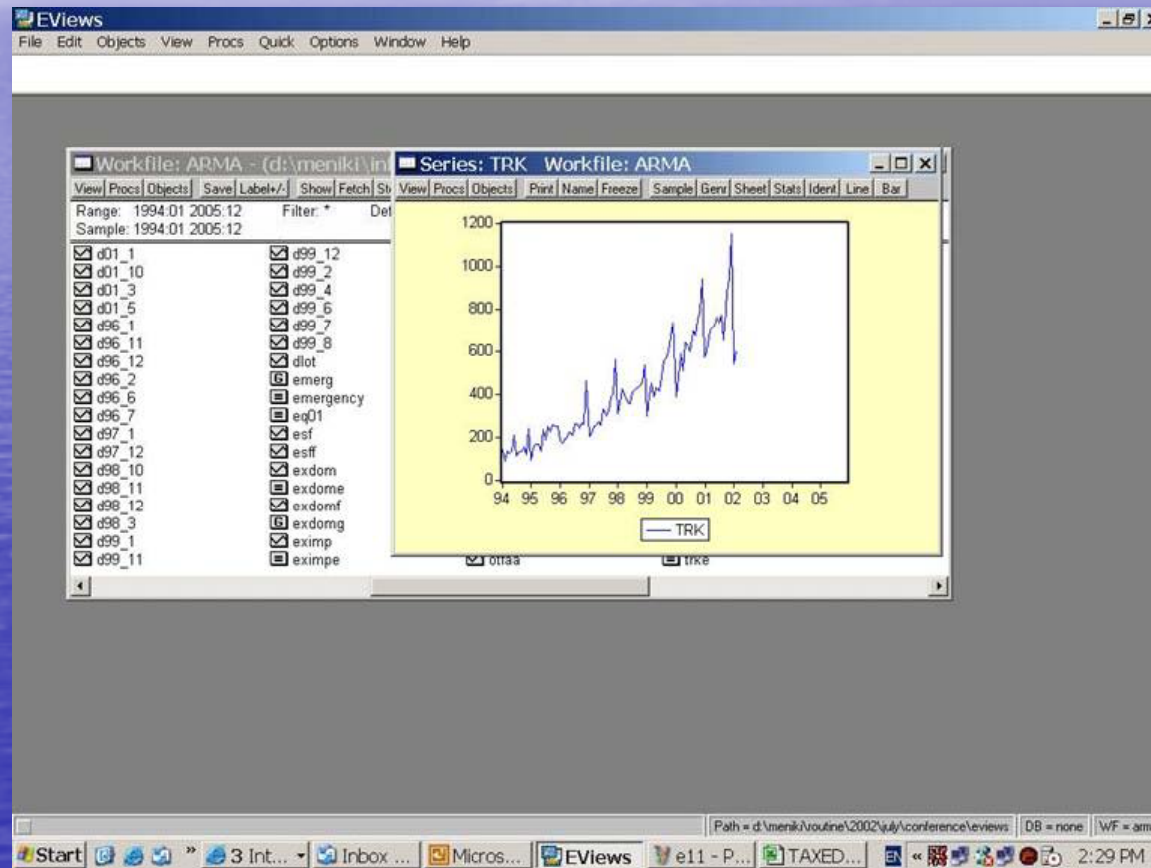
Временные ряды в Eviews

The screenshot displays the EViews software interface. The main window shows a list of objects in the 'Workfile: ARMA - (d:\menik\in)' with a range of 1994:01 to 2005:12. A context menu is open over the 'TRK' series, offering options such as 'Line Graph', 'Bar Graph', 'Descriptive Statistics', and 'Unit Root Test...'. A small data table is visible at the bottom of the menu.

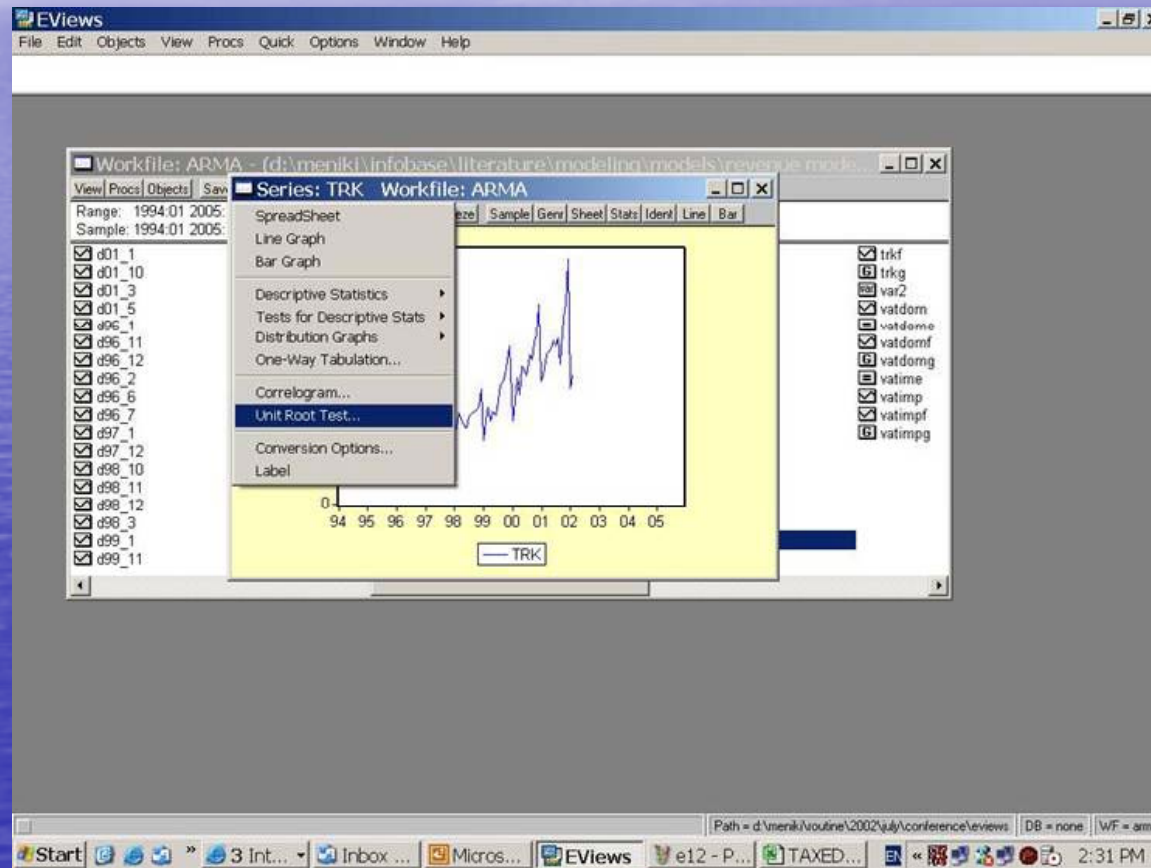
Label	
1994:09	133.6000
1994:10	154.1000
1994:11	117.5000
1994:12	241.8000
1995:01	

The Windows taskbar at the bottom shows the Start button, several open applications (3 Int..., Inbox..., Micros..., EViews, e10 - P..., TAXED...), and the system clock indicating 2:28 PM on 04/09/02.

Временные ряды в Eviews



Тест стационарность



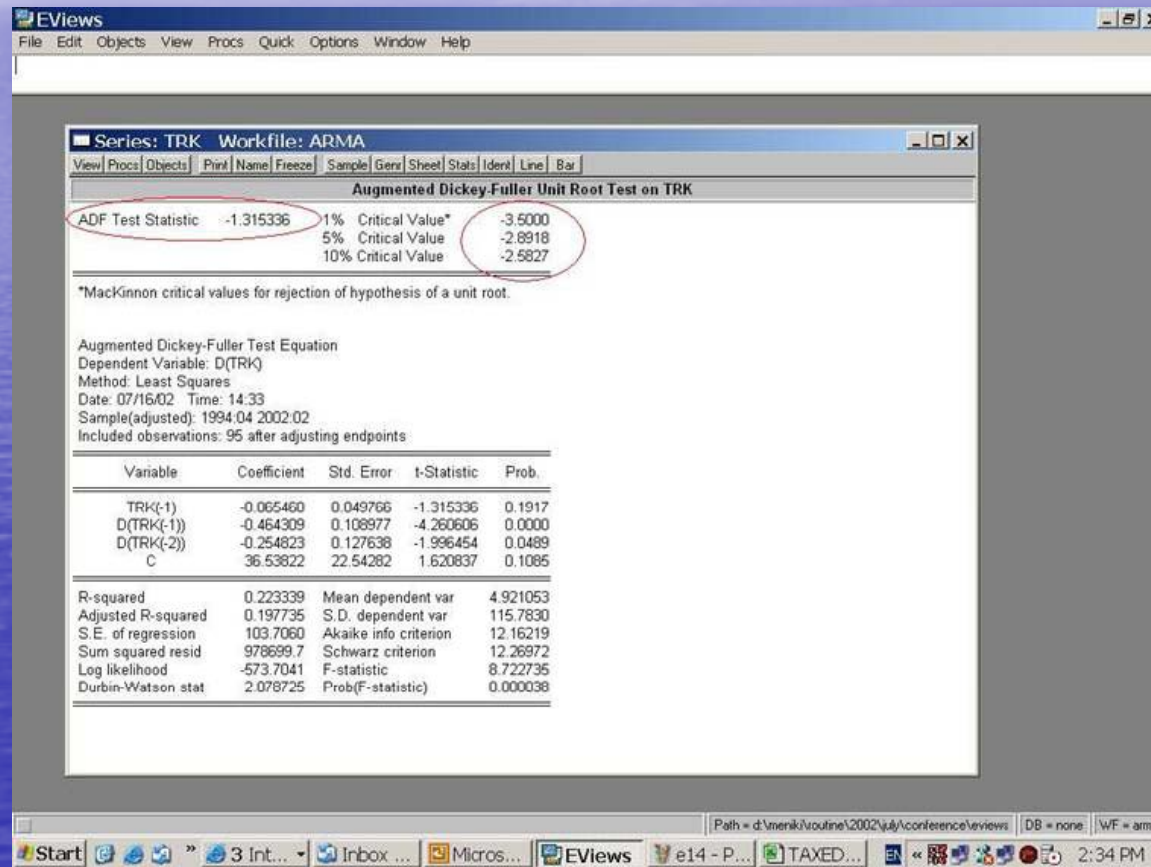
Тест стационарность

The screenshot displays the EViews software interface. The main window shows a workfile named 'ARMA' with a series 'TRK'. A time series plot is visible, showing data points from 1994 to 1996. A 'Unit Root Test' dialog box is open, allowing the user to select the test type and options. The dialog box includes the following settings:

- Test Type:** Augmented Dickey-Fuller (selected), Phillips-Perron
- Test for unit root in:** Level (selected), 1st difference, 2nd difference
- Include in test equation:** Intercept (selected), Trend and intercept, None
- Lagged differences:** 2

The dialog box has 'OK' and 'Cancel' buttons at the bottom. The background plot shows a time series with a sharp spike in 1996. The EViews window title bar indicates the path: 'd:\menik\infobase\literature\modeling\models\newgate mode...'. The Windows taskbar at the bottom shows the Start button, several open applications (3 Int..., Inbox..., Micros..., EViews, e13 - P..., TAXED...), and the system clock showing 2:32 PM.

Тест стационарность



Тест стационарность

Series: TRK Workfile: ARMA

View Procs Objects Print Name Freeze Sample Genr Sheet Stats Ident Line Bar

Augmented Dickey-Fuller Unit Root Test on TRK

ADF Test Statistic	-1.315336	1%	Critical Value*	-3.5000
		5%	Critical Value	-2.8918
		10%	Critical Value	-2.5827

*MacKinnon critical values for rejection of hypothesis of a unit root

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TRK)
Method: Least Squares
Date: 07/16/02 Time: 14:33
Sample(adjusted): 1994:04 2002:02
Included observations: 95 after adjusting endpoints

Variable	Coefficient	Std. Error
TRK(-1)	-0.065400	0.049700
D(TRK(-1))	-0.464309	0.108977
D(TRK(-2))	-0.254823	0.127638
C	36.53822	22.54282

R-squared 0.223339 Mean dependent var 4.921053
Adjusted R-squared 0.197735 S.D. dependent var 115.7830
S.E. of regression 103.7060 Akaike info criterion 12.16219
Sum squared resid 978699.7 Schwarz criterion 12.26972
Log likelihood -573.7041 F-statistic 8.722735
Durbin-Watson stat 2.078725 Prob(F-statistic) 0.000038

Unit Root Test

Test Type:
 Augmented Dickey-Fuller
 Phillips-Perron

Include in test equation:
 Intercept
 Trend and intercept
 None

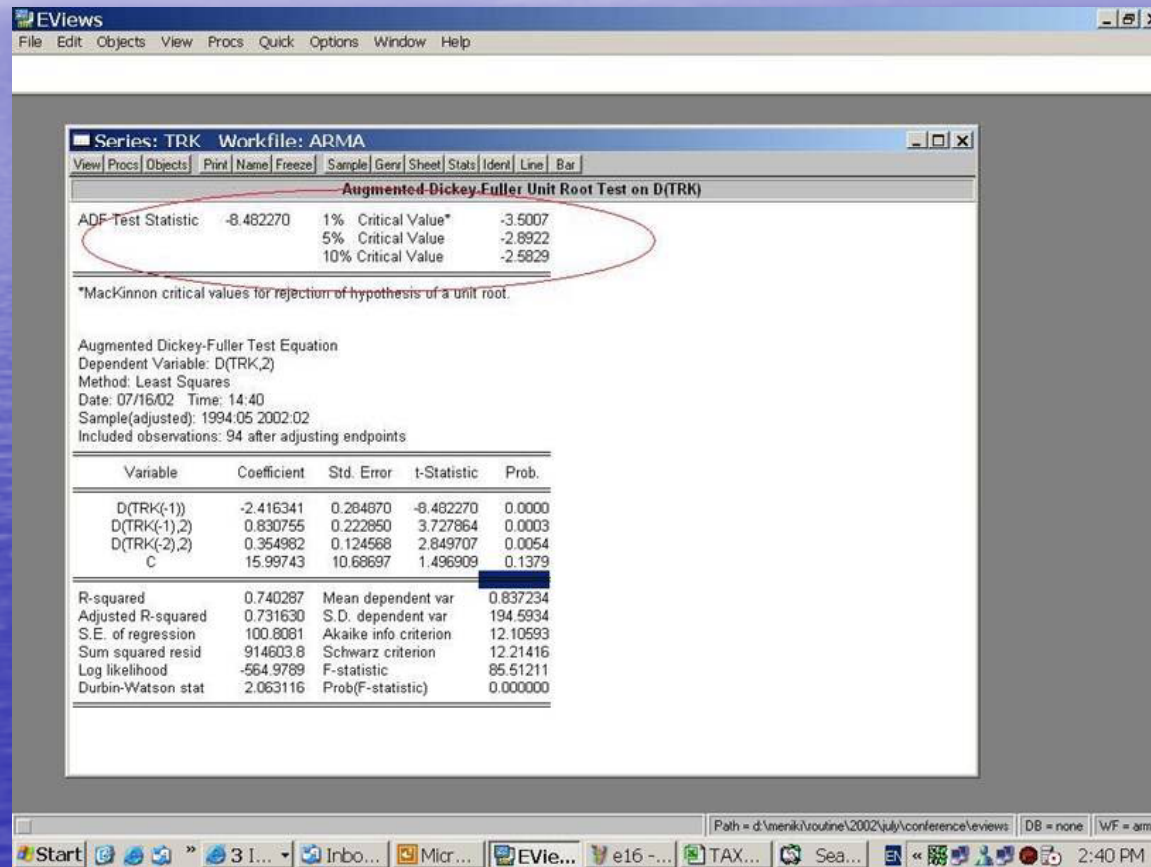
Test for unit root in:
 Level
 1st difference
 2nd difference

Lagged differences:
2

OK Cancel

Path = d:\menik\routine\2002\july\conference\evIEWS DB = none WF = arma
2:39 PM

Тест стационарность



Модель

The screenshot displays the EViews software interface. At the top, the main menu bar includes 'File', 'Edit', 'Objects', 'View', 'Procs', 'Quick', 'Options', 'Window', and 'Help'. Below the menu, a toolbar contains icons for 'LS', 'DLOG(VATIMP)', 'LOG(VATIMP(-1))', 'DLOG(VATIMP(-12))', 'LOG(GDPK(-12))', and 'DLOG(GDPK(-12))'. The main window title is 'Workfile: ARMA - (d:\meniki\infobase\literature\modeling\mod...)'. The toolbar for this window includes 'View', 'Procs', 'Objects', 'Save', 'Label+/-', 'Show', 'Fetch', 'Store', 'Delete', 'Genr', and 'Sample'. The main area shows the workfile details: 'Range: 1994.01 2005.12', 'Filter: *', 'Default Eq: cite1', and 'Sample: 1994.01 2005.12'. A list of objects is displayed in a grid format, with columns for object names and checkboxes. The object 'pitf' is highlighted. The taskbar at the bottom shows the Start button, several open applications (4 Int..., Inbox..., Micros..., EViews, e18 - P..., TAXED...), and the system clock showing 3:55 PM.

Object Name	Checked
c	<input checked="" type="checkbox"/>
cd	<input checked="" type="checkbox"/>
cdf	<input checked="" type="checkbox"/>
cit	<input checked="" type="checkbox"/>
cite1	<input checked="" type="checkbox"/>
citf	<input checked="" type="checkbox"/>
citf1	<input checked="" type="checkbox"/>
citg	<input checked="" type="checkbox"/>
custom	<input type="checkbox"/>
customg	<input checked="" type="checkbox"/>
d00_1	<input checked="" type="checkbox"/>
d00_10	<input checked="" type="checkbox"/>
d00_12	<input checked="" type="checkbox"/>
d00_2	<input checked="" type="checkbox"/>
d00_3	<input checked="" type="checkbox"/>
d00_4	<input checked="" type="checkbox"/>
d00_6	<input checked="" type="checkbox"/>
d00_8	<input checked="" type="checkbox"/>
d01_1	<input checked="" type="checkbox"/>
d01_10	<input checked="" type="checkbox"/>
d01_3	<input checked="" type="checkbox"/>
d01_5	<input checked="" type="checkbox"/>
d96_1	<input checked="" type="checkbox"/>
d96_11	<input checked="" type="checkbox"/>
d96_12	<input checked="" type="checkbox"/>
d96_2	<input checked="" type="checkbox"/>
d96_6	<input checked="" type="checkbox"/>
d96_7	<input checked="" type="checkbox"/>
d97_1	<input checked="" type="checkbox"/>
d97_12	<input checked="" type="checkbox"/>
d98_10	<input checked="" type="checkbox"/>
d98_11	<input checked="" type="checkbox"/>
d98_12	<input checked="" type="checkbox"/>
d98_3	<input checked="" type="checkbox"/>
d99_1	<input checked="" type="checkbox"/>
d99_11	<input checked="" type="checkbox"/>
d99_12	<input checked="" type="checkbox"/>
d99_2	<input checked="" type="checkbox"/>
d99_4	<input checked="" type="checkbox"/>
d99_6	<input checked="" type="checkbox"/>
d99_7	<input checked="" type="checkbox"/>
d99_8	<input checked="" type="checkbox"/>
d1ot	<input checked="" type="checkbox"/>
emerg	<input checked="" type="checkbox"/>
emergency	<input checked="" type="checkbox"/>
eq01	<input checked="" type="checkbox"/>
eq02	<input checked="" type="checkbox"/>
esf	<input checked="" type="checkbox"/>
esff	<input checked="" type="checkbox"/>
exdom	<input checked="" type="checkbox"/>
exdome	<input checked="" type="checkbox"/>
exdomf	<input checked="" type="checkbox"/>
exdomg	<input checked="" type="checkbox"/>
eximp	<input checked="" type="checkbox"/>
eximpe	<input checked="" type="checkbox"/>
eximpf	<input checked="" type="checkbox"/>
eximpg	<input checked="" type="checkbox"/>
gdpk	<input checked="" type="checkbox"/>
gdpke	<input checked="" type="checkbox"/>
gdpkf	<input checked="" type="checkbox"/>
gdpkg	<input checked="" type="checkbox"/>
landtax	<input checked="" type="checkbox"/>
lcd	<input checked="" type="checkbox"/>
m2k	<input checked="" type="checkbox"/>
m2ke	<input checked="" type="checkbox"/>
m2kf	<input checked="" type="checkbox"/>
m2kg	<input checked="" type="checkbox"/>
ntr	<input checked="" type="checkbox"/>
ot	<input checked="" type="checkbox"/>
otar	<input checked="" type="checkbox"/>
oteq	<input checked="" type="checkbox"/>
otf	<input checked="" type="checkbox"/>
otfaa	<input checked="" type="checkbox"/>
pit	<input checked="" type="checkbox"/>
pite1	<input checked="" type="checkbox"/>
pitf	<input checked="" type="checkbox"/>
pitg	<input checked="" type="checkbox"/>
resid	<input checked="" type="checkbox"/>
roadg	<input checked="" type="checkbox"/>
roadt	<input checked="" type="checkbox"/>
roadtax	<input checked="" type="checkbox"/>
roadtaxf	<input checked="" type="checkbox"/>
stax	<input checked="" type="checkbox"/>
staxe	<input checked="" type="checkbox"/>
staxf	<input checked="" type="checkbox"/>
staxg	<input checked="" type="checkbox"/>
t	<input checked="" type="checkbox"/>
taxes	<input checked="" type="checkbox"/>
trev	<input checked="" type="checkbox"/>
trk	<input checked="" type="checkbox"/>
trke	<input checked="" type="checkbox"/>
trkf	<input checked="" type="checkbox"/>
trkg	<input checked="" type="checkbox"/>
var2	<input checked="" type="checkbox"/>
vatdom	<input checked="" type="checkbox"/>
vatdomf	<input checked="" type="checkbox"/>
vatdomg	<input checked="" type="checkbox"/>
vatime	<input checked="" type="checkbox"/>
vatimp	<input checked="" type="checkbox"/>
vatimpf	<input checked="" type="checkbox"/>
vatimpg	<input checked="" type="checkbox"/>

Оценка модели

Workfile: ARMA - (d:\menik\infobase\literature\modeling)

Equation: UNTITLED Workfile: ARMA

Dependent Variable: DLOG(VATIMP)
Method: Least Squares
Date: 07/16/02 Time: 15:56
Sample(adjusted): 1997:08 2002:02
Included observations: 55 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(VATIMP(-1))	-0.334966	0.109590	-3.056552	0.0036
DLOG(VATIMP(-12))	0.408041	0.117073	3.485351	0.0010
LOG(GDPK(-12))	0.196303	0.064762	3.031130	0.0038
DLOG(GDPK(-12))	0.072272	0.195131	0.370377	0.7126

R-squared: 0.459233
Adjusted R-squared: 0.427423
S.E. of regression: 0.296776
Sum squared resid: 4.491888
Log likelihood: -9.152468

Mean dependent var: 0.019804
S.D. dependent var: 0.392204
Akaike info criterion: 0.478272
Schwarz criterion: 0.624259
Durbin-Watson stat: 2.320798

Для оценки

Прогноз

Прогнозирование

The screenshot displays the EViews software interface. The main window shows a workfile named 'ARMA' with several variables listed, including LOG(VATIMP(-1)), DLOG(VATIMP(-12)), LOG(GDPK(-12)), and DLOG(GDPK(-12)). A 'Forecast' dialog box is open, allowing the user to specify the forecast for the variable 'VATIMP'. The dialog includes options for the forecast method (Dynamic or Static), the forecast name (VATIMPF), and the sample range for the forecast (1994:01 to 2005:12). The 'Output' section is checked for 'Do graph' and 'Forecast evaluation'. The background window shows a list of variables with checkboxes, and the taskbar at the bottom indicates the system time as 4:04 PM.

Workfile: ARMA - (d:\menik\infobase\literature\modeling\mod...)

Equation: UNTITLED - Workfile: ARMA

Dependent Variable: DLOG(VATIMP)

Method: Least Squares

Date: 07/16/02 Time: 16:11

Sample(adjusted): 1997:01-2005:12

Included observations: 55

Forecast of:

- VATIMP
- DLOG(VATIMP)

Series names:

Forecast name: VATIMPF

S.E. (optional):

GARCH (optional):

Sample range for forecast:

1994:01 2005:12

Insert gchals for out-of-sample

Method:

- Dynamic
- Static

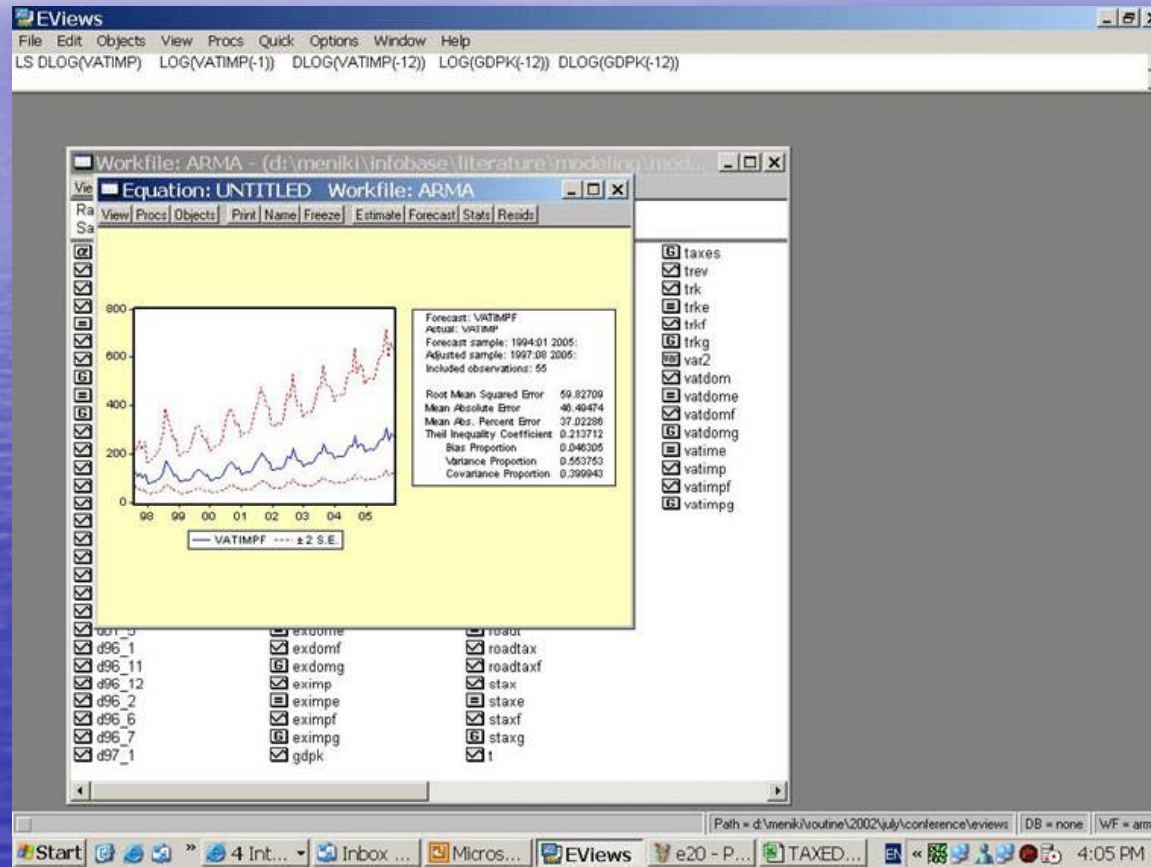
Output:

- Do graph
- Forecast evaluation

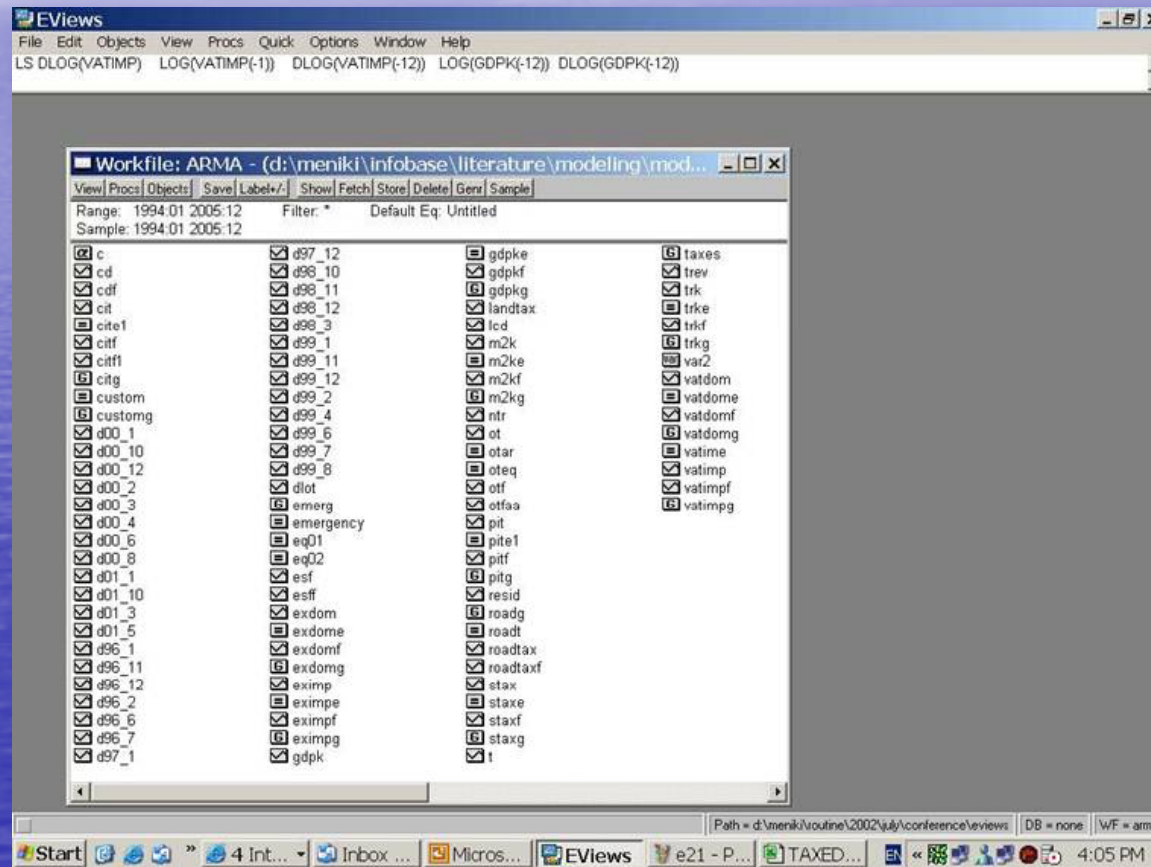
Variables in background window:

- taxes
- trev
- trk
- trke
- trkf
- trkg
- var2
- vatdom
- vatdome
- vatdomf
- vatdomg
- vatime
- vatimp
- vatimpf
- vatimpg
- exdome
- exdomf
- exdomg
- eximp
- eximpe
- eximpf
- eximpg
- gdpk
- roadt
- roadtax
- roadtaxf
- etax
- staxe
- staxf
- staxg
- t

Прогнозирование



Прогнозирование

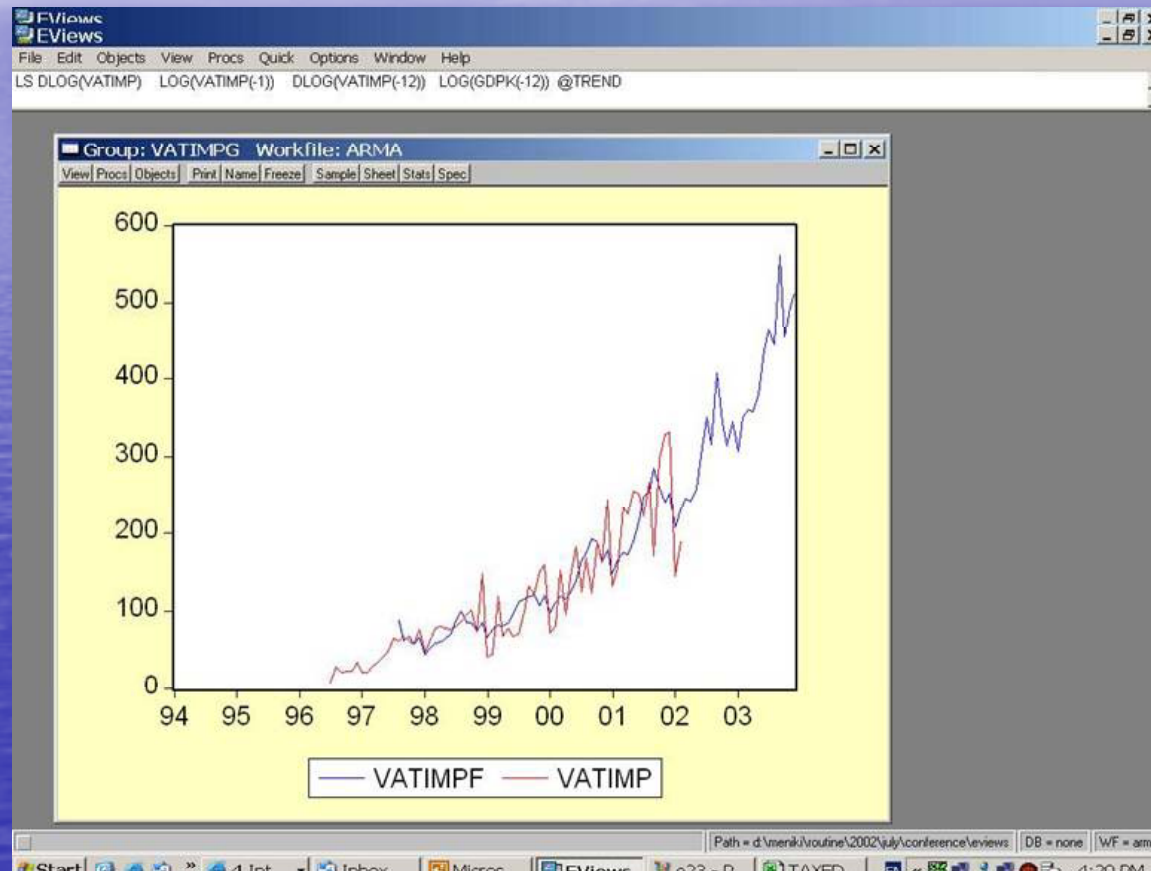


Прогнозирование

The screenshot displays the EViews software interface. The main window shows a data table with the following columns: 'obs', 'VATIMPF', and 'VATIMP'. The data spans from 1999:08 to 2002:01. The table is titled 'Group: VATIMPG Workfile: ARMA'. The status bar at the bottom indicates the path 'd:\menik\routine\2002\july\conference\reviews', database 'DB = none', and workfile 'WF = arma'. The taskbar shows the Start button and several open applications including '4 Int...', 'Inbox ...', 'Micros...', 'EViews', 'e23 - P...', and 'TAXED...'. The system clock shows 4:10 PM.

obs	VATIMPF	VATIMP
1999:08	133.7942	98.10000
1999:09	132.5130	132.4000
1999:10	124.1739	122.1000
1999:11	107.0406	151.9000
1999:12	112.2054	159.1000
2000:01	99.08729	72.60000
2000:02	92.18470	81.50000
2000:03	99.36905	152.4000
2000:04	97.83924	95.20000
2000:05	102.2214	142.9000
2000:06	112.7604	183.4000
2000:07	134.9971	124.4000
2000:08	151.5596	167.9000
2000:09	164.3295	123.6000
2000:10	157.1089	188.6000
2000:11	136.6129	162.4000
2000:12	140.5992	243.3000
2001:01	115.2624	132.5000
2001:02	117.7788	154.8000
2001:03	124.9591	233.2000
2001:04	122.2771	225.2000
2001:05	129.8570	255.9000
2001:06	145.8885	251.6000
2001:07	170.6170	222.1000
2001:08	183.8790	267.2000
2001:09	201.7997	171.1000
2001:10	185.9858	296.8000
2001:11	167.4944	328.4000
2001:12	164.6314	331.0000
2002:01		

Результаты прогноза



Перенос спрогнозированных результатов

The screenshot displays the EViews software interface. A 'SaveAs' dialog box is open, showing the file name 'Forecast.xls' and the save type 'Excel.xls'. The dialog box is positioned over a data table. The table contains the following data:

Year	Value 1	Value 2
1999:10	120.7274	122.1000
1999:11	107.0258	151.9000
1999:12	120.1249	159.1000
2000:01	98.65492	72.50000
2000:02	111.6305	81.50000
2000:03	118.8854	152.4000
2000:04	115.2027	95.20000
2000:05	123.7066	142.9000
2000:06	138.9811	183.4000
2000:07	165.0411	124.4000
2000:08	173.3486	167.9000
2000:09	192.9131	123.6000
2000:10	188.2824	188.6000
2000:11	163.7818	162.4000
2000:12	178.4185	243.3000
2001:01	147.9764	132.5000
2001:02	165.8336	154.8000
2001:03	175.6154	233.2000

Перенос спрогнозированных результатов

The screenshot displays the EViews software interface. At the top, the menu bar includes File, Edit, Objects, View, Procs, Quick, Options, Window, and Help. Below the menu, the command line shows: `LS DLOG(VATIMP) LOG(VATIMP(-1)) DLOG(VATIMP(-12)) LOG(GDPK(-12)) @TREND`. The main window shows a data table with columns for observations (obs), VATIMPF, and VATIMP. The data spans from 1998:11 to 2001:03. An "Excel Spreadsheet Export" dialog box is open in the foreground, with the following settings:

- Order of data: By Observation - series in columns; By Series - series in rows
- Upper-left data cell: B2
- Series to write: VATIMPG
- Sample to export: 1994:01 2003:12
- Export options: Write date/obs; Write series names

obs	VATIMPF	VATIMP
1998:11	75.27831	73.70000
1998:12	85.29417	148.5000
1999:01	65.95631	42.20000
1999:02	77.03509	4
1999:03	82.79847	1
1999:04	81.12967	6
1999:05	85.03503	7
1999:06	94.82072	6
1999:07	111.3914	7
1999:08	115.6713	9
1999:09	118.0428	1
1999:10	120.7274	1
1999:11	107.0258	1
1999:12	120.1249	1
2000:01	98.65492	7
2000:02	111.6305	8
2000:03	118.8854	1
2000:04	115.2027	9
2000:05	123.7066	1
2000:06	138.9811	1
2000:07	165.0411	1
2000:08	173.3486	1
2000:09	192.9131	123.6000
2000:10	188.2824	188.6000
2000:11	163.7818	162.4000
2000:12	178.4185	243.3000
2001:01	147.9764	132.5000
2001:02	165.8336	154.8000
2001:03	175.6154	233.2000

