



TINYTurk, a tiny model based on Turkish data

First steps to build an Inforum
model

Paul Salmon

Gazi Özhan and Meral Özhan

Initial project

- To build Inforum models for Turkey and North Cyprus
- To do so
 - Create a small research group (people, fund, contracts)
 - Set up of software for each machine
 - Teach economic model building to the research group
 - Build and manage models
- But we have a big problem with data
 - Only one Input-Output table and a partial structure for National Accounts are useable in each case
- From dream to reality

Real project

- A lot of difficulties to create a small structure for the economic modeling
- The project is limited in two « Tiny models »
 - TinyTurk
 - TinyNorthCyprus
- But this experience has shown us the way to follow and the difficulties to solve.
- The most difficult has been done : we have begun

Organization of the work

- Important problems of data
 - Input-Output tables
 - Integrated Economic Accounts
 - Disposable income
- What to do to reach our goal ?
 - Several immediate constraints
 - To teach model building to the group
 - Create a first structure of an Inforum model

Our choices

- Our sources
 - Inforum (2000)
 - Interdyme, a package of programs for building Interindustry dynamic macroeconomic model
 - Clopper Almon
 - The craft of economic modeling
 - More especially Part 3 (2008)
- Following Clopper Almon's book we decide to build « tiny models »

Priorities

- Build a « Tiny model » for Turkey (TurkTiny)
- Build a « Tiny model » for North Cyprus Republic (NorthCyprusTiny)
- Create documents for the group for learning model building from the two tiny models.

A « tiny » model

- A tiny model is a « simple input-output model using only commands available in G »
- Clopper gives us an example build with a particular set of data. The data are built from the US data.
- A tiny model is only the simplest king of Input-output model

TinyTURK

- TinyTurk is a « tiny model » as defined previously
- But
 - Data comes from Turkstat
 - The framework of data is ESA 95
 - Classification is in 59 sectors
- Thus
 - TinyTurk is an application of Tiny concepts to an ESA 95 Input-Output framework

Main differences with Tiny

- Different structure of data
 - A very simplified Input-Output table
 - A real Input-Output table in a SEC 95 Framework
- The data source files have a MS Excel structure
- Consequences
 - TinyTurk represents the first steps to build an Interindustry dynamic macroeconomic model in the ESA 95 Framework.

Philosophy of the paper

- The paper is for beginners in model building but not in Economics, not in National accounts and not in Input-Output techniques.
- A « basic » knowledge of G is compulsory.
- The paper tries to give explanations of the building of the model from scratch in a real situation.
- The paper wants to underline the relation between the information needs by G / Interdyme, the structure of an Input-Output model, computation and economics.
- The paper tries also to answer to questions the learners have asked (How do you know the contents of a Vam.cfg file ?)

TurkStat (HomePage)

Turkish Statistical Institute - Internet Explorer fourni par Dell

http://www.turkstat.gov.tr/Start.do?sessionId=2589L2cJSXWhMz esa95

PRIME MINISTRY REPUBLIC OF TURKEY

TurkStat
TURKISH STATISTICAL INSTITUTE

User Id: Password:

[Sign up](#) Enter search criteria

03 September 2008 [About Us](#) [Official Statistics Programme](#) [Info Demand](#) [Site Guide](#) [Site Map](#) [FAQ](#)

Statistics

- Agriculture
- Business Statistics
- Education, Culture & Sport
- Employment, Unemployment & Wages
- Environment & Energy
- Finance, Money, Bank & Debt
- Foreign Trade
- Income Distribution, Consumption & Poverty
- Inflation & Price
- Justice & Election
- National Accounts
- Population, Housing & Demography
- Science, Technology & Informatic
- Social Security & Health
- Tourism
- Transportation & Communication

Library

Databank

SDDS-TURCAT

News Bulletin

News Bulletin Name	Period	Date
Foreign Trade Statistics	July 2008	29/08/08
Agricultural Holdings Wage Structure	2007	29/08/08
Households Ict Usage Survey	2008	27/08/08
Cultural and Scientific Activities Survey	2007	22/08/08
Road Motor Vehicles	June 2008	21/08/08
Consumer Confidence Index	July 2008	18/08/08

[Previous news bulletin >>](#)

Graphic

Selected Series
Exports by Year (Value)

Year	Value
1996	20
1997	22
1998	25
1999	28
2000	30
2001	32
2002	35
2003	40
2004	65
2005	55
2006	50
2007	100

National Data Publishing Calendar

[Databases](#)

[Strategic Plan 2007 - 2011](#)

[Regional Statistics](#)

[International Economic Indicators](#)

[Classifications](#)

Current Summary Data

- [Inflation - Industrial Production](#)
- [Labour Force - Foreign Trade](#)
- [National Accounts](#)

Announcements

- 2008 National Data Release Calendar is now available on our web site.

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TurkStat (National Accounts)

The screenshot displays the TurkStat website interface. At the top, it features the logo for the Prime Ministry Republic of Turkey and the Turkish Statistical Institute. A navigation menu includes links for 'About Us', 'Official Statistics Programme', 'Info Demand', 'Site Guide', 'Site Map', and 'FAQ'. A sidebar on the left lists various statistical categories, with 'National Accounts' highlighted. The main content area is divided into four sections, each with a title, a small image, and a brief description:

- Gross National Product by Production Approach**: Describes how GNP is calculated by subtracting intermediate goods from total gross production value, published in current and constant prices since 1987.
- Input-Output Tables**: Explains that these tables show the inter-industry flow of goods and services, derived from supply and use tables under certain assumptions.
- Gross National Product by Income Approach**: States that GNP by income method is declared to the public by quarters and annual estimation values by current prices, with payments to production factors equal to GNP in economics.
- Gross Domestic Product by Provinces**: Notes that GNDP by province is calculated by production starting from 1987, using current questionnaire results and a deduction method.
- Rest of the World Accounts**: Describes statistical tables summarizing economic transactions between the domestic economy and the rest of the world, covering both active and passive stocks.
- Gross Domestic Product by Expenditure Approach**: Explains that GDP by expenditure method is calculated by quarters, with final demand components published by current and constant (base year 1987) prices. Total value of final demand components minus imports equals GDP in economics.

TurkStat

- List of the Input-Output tables published by Turkish National Institute of statistics

Date ^α	Type ^α	SNA ^α	Dim ^α	Prices ^α	Constant/Current ^α	Dom /Imp ^α
1959 ^α	Input-output table ^α	α	α	α	α	α
1963 ^α	Input-output table ^α	α	α	α	α	α
1968 ^α	Input-output table ^α	α	50 ^α	α	α	α
1973 ^α	Input-output table ^α	68 ^α	64 ^α	market prices ^α	current prices ^α	No ^α
1979 ^α	Input-output table ^α	68 ^α	64 ^α	market prices ^α	current prices ^α	No ^α
1985 ^α	Input-output table ^α	68 ^α	64 ^α	market prices ^α	current prices ^α	No ^α
1990 ^α	Input-output table ^α	68 ^α	64 ^α	producers prices ^α	current prices ^α	No ^α
1996 ^α	Input-output table ^α	68 ^α	97 ^α	α	α	α
1998 ^α	Input-output table ^α	93 ^α	97 ^α	basic prices ^α	current prices ^α	Yes ^α
2002 ^α	Input-output table ^α	93 ^α	59 ^α	basic prices ^α	current prices ^α	Yes ^α

TurkStat (Input-Output tables)

The screenshot displays the TurkStat website interface within an Internet Explorer browser window. The browser's address bar shows the URL http://www.turkstat.gov.tr/VeriBilgi.do?tb_id=58&ust_id=16. The website header features the Prime Ministry of Turkey logo and the TurkStat logo, along with a search bar and a sign-up link. The main navigation menu includes links for 'About Us', 'Official Statistics Programme', 'Info Demand', 'Site Guide', 'Site Map', and 'FAQ'. The left sidebar lists various statistical categories such as Agriculture, Business Statistics, Education, Culture & Sport, Employment, Unemployment & Wages, Environment & Energy, Finance, Money, Bank & Debt, Foreign Trade, Income Distribution, Consumption & Poverty, Inflation & Price, Justice & Election, National Accounts, Population, Housing & Demography, Science, Technology & Informatik, Social Security & Health, Tourism, and Transportation & Communication. The main content area is titled 'National Accounts >> Input-Output Tables >>' and contains a 'Latest News Bulletin' section with tabs for 'Data' and 'Publications'. Under the 'Data' tab, there are several folders for 'Input-Output Tables' for different years: 1973, 1979, 1985, 1990, 1998, and 2002. Each folder contains links to specific tables, such as 'Input-Output Table, 1973 (at Market Prices, Million TL)' and 'Input-Output table, 2002 (at basic prices) [current prices, Billion TL]'. The bottom of the browser window shows an 'Error on page.' message and the system tray with 'Internet | Protected Mode: Off' and a 100% zoom level.

TurkStat (Supply and Use Tables)

The screenshot displays the TurkStat website interface within an Internet Explorer browser window. The browser's address bar shows the URL http://www.turkstat.gov.tr/VeriBilgi.do?tb_id=58&tust_id=16. The website header features the Prime Ministry Republic of Turkey logo and the TurkStat logo. A navigation menu includes links for "About Us", "Official Statistics Programme", "Info Demand", "Site Guide", "Site Map", and "FAQ". A left sidebar lists various statistical categories such as Agriculture, Business Statistics, and National Accounts. The main content area is titled "National Accounts >> Input-Output Tables >>" and contains a "Latest News Bulletin" section with tabs for "Data" and "Publications". Under the "Data" tab, there is a "Statistical Tables" section with a tree view showing "Input-Output Tables" and "Supply And Use Tables". The "Supply And Use Tables" section is expanded to show data for 1996, 1998, and 2002. Each year has sub-sections for "Supply Table" and "Use Table" at different price levels (Producers Prices, Basic Prices, Purchasers Prices). For example, under "Supply And Use Tables, 1996", there are links for "Supply Table, 1996 (at Producers Prices) [Current Prices, Million TL]" and "Use Table, 1996 (at Producers s Prices) [Current Prices, Million TL]". The browser's status bar at the bottom indicates "Error on page." and "Internet | Protected Mode: Off".

TurkStat (GDP by Expenditure)

The screenshot shows the TurkStat website in Internet Explorer. The browser address bar displays the URL: http://www.turkstat.gov.tr/VeriBilgi.do?tb_id=57&kust_id=16. The page header includes the text "PRIME MINISTRY REPUBLIC OF TURKEY" and "TurkStat TURKISH STATISTICAL INSTITUTE". A navigation menu at the top lists: "About Us", "Official Statistics Programme", "Info Demand", "Site Guide", "Site Map", and "FAQ".

The main content area is titled "National Accounts >> Gross Domestic Product by Expenditure Approach >>". It features a "Latest News Bulletin" tab and a "Data" tab. The "Data" tab is active, showing a list of statistical tables under the heading "GDP By Expenditure Approach(1998 base)". The tables listed are:

- Final Consumption Expenditure of Resident and Non-Resident Households on the Economic Territory (at current prices)
- Expenditure on the Gross Domestic Product (at current prices)
- Expenditure on the Gross Domestic Product (at 1998 prices)
- Growth Rates of Expenditure on the Gross Domestic Product (at current prices)
- Growth Rates of Expenditure on the Gross Domestic Product (at 1998 prices)
- Shares of Expenditure on the Gross Domestic Product (at current prices)
- Shares of Expenditure on the Gross Domestic Product (at 1998 prices)
- Final Consumption Expenditure of Resident and Non-Resident Households on the Economic Territory (at 1998 prices)

The left sidebar contains a "Statistics" menu with categories such as Agriculture, Business Statistics, Education, Culture & Sport, Employment, Unemployment & Wages, Environment & Energy, Finance, Money, Bank & Debt, Foreign Trade, Income Distribution, Consumption & Poverty, Inflation & Price, Justice & Election, National Accounts, Population, Housing & Demography, Science, Technology & Informatik, Social Security & Health, Tourism, and Transportation & Communication. Below the menu are sections for "Library", "Databank", and "SDDS-TURCAT".

The status bar at the bottom of the browser window shows "Error on page.", "Internet | Protected Mode: Off", and "100%".

TinyTurk's data for the model

- 2002 Input-Output table in basic prices, Current prices
- GDP by expenditure for the period 1998-2007
- The two tables do not match very well
 - Revision of the GDP in March 2008
- To build our database, we use growth rate of the time series.

GDP by expenditure approach

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GDP expenditure approach

- Accounts identities

Gross Domestic Product	gdpaea	=			350476089
Final Consumption Expenditure of Resident Households	fcerrhh	+	=		238399083
Final Consumption Expenditure of Resident and Non-Resident Households on the economic territory	fcerrrhhet		+		259441149
Final Consumption Expenditure of Non-Resident Households on the economic territory	fcenrhhet		-		23886509
Final Consumption Expenditure of Resident Households in the Rest of the World	fcerrhrow		+		2844442
Government Final Consumption Expenditure (gfce)	gfce	+	=		44615308
Compensation of Employees	gfcece		+		26533445
Purchases in Goods and Services	gfcepigas		+		18081863
Gross Fixed Capital Formation	gfcf	+	=		58601768
Public Sector	pubs		+	=	15211265
→ Machinery-Equipment	pubsme			+	4353696
→ Construction	pubc			+	10857569
Private Sector	pris		+	=	43390442
→ Machinery-Equipment	prime			+	25745309
→ Construction	pric			+	17645133
Changes in stock	cis	+			3131331
Exports of Goods and Services	expgs	+			88380641
Imports of Goods and Services	impgs	-			82651981

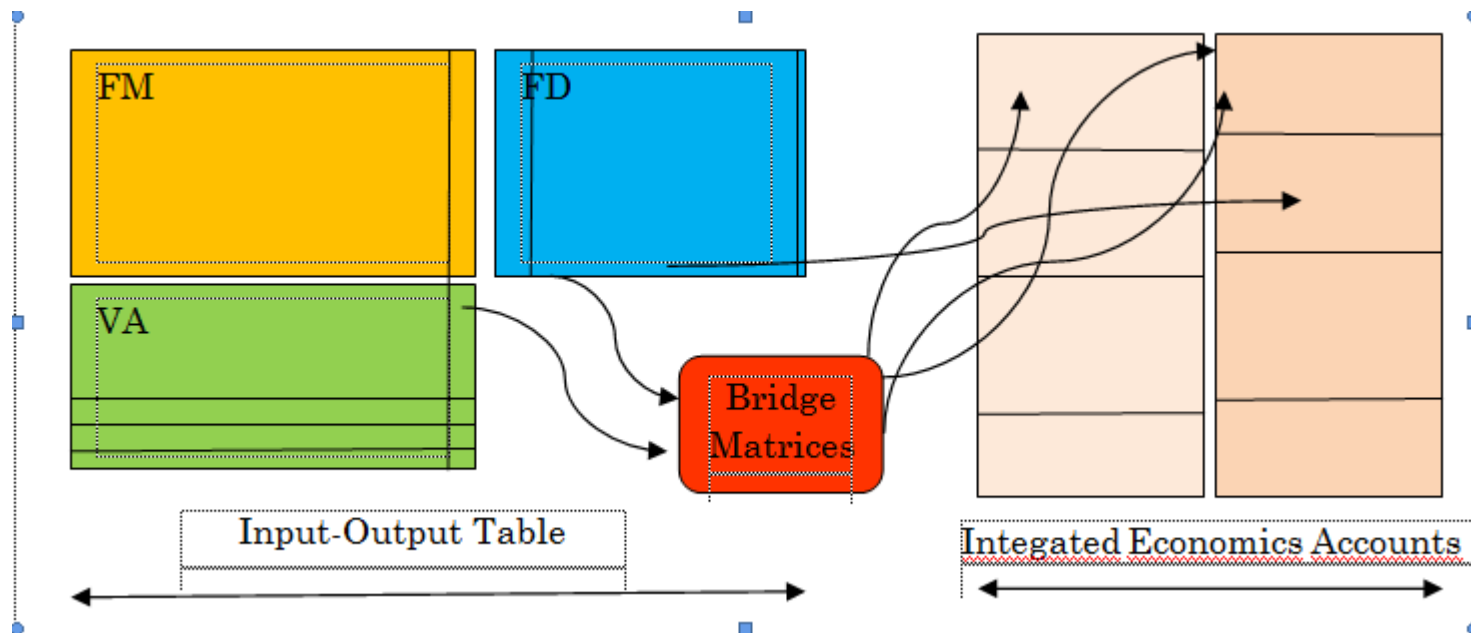
2002 Input-Output table (structure)

Kod	İSIC	Sektör	GİRİŞ-ÇIKIŞ TABLOSU, 2002 (YARMIYILIYATILAR) [Input-Output Table, 2002 (Half-Yearly)]															GİRİŞ-ÇIKIŞ TABLOSU, 2002 (YARMIYILIYATILAR) [Input-Output Table, 2002 (Half-Yearly)]															GİRİŞ-ÇIKIŞ TABLOSU, 2002 (YARMIYILIYATILAR) [Input-Output Table, 2002 (Half-Yearly)]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1



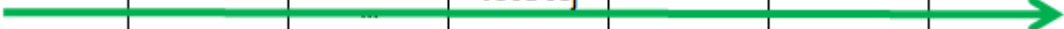
2002 Input-Output Table (characteristic)

A	B	C	D	E	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9	Kod	ÜRÜNLER (FÜB)	01	02	93	95	60	61	62	63	64	65	66	67	68	69	70	71	72	No	Code	ÜRÜNLER (CPA)	
10	01	Tarım, avcılık ve ilgili hizmet faaliyetleri	7.295.542	2.748	161	28.993.626	19.741.416	86.793	19.828.170	22.979	1.233.212	1.233.212	1.236.191	2.268.908	23.342.968	52.326.904	1	01	01	01	01	01	Products of agriculture, hunting and related services
11	02	Ormanlık, ormancılık ve ilgili hizmet faaliyetleri	2.419	11.558	863	739.408	434.699	6.862	441.561	1.243.564	80.013	80.013	12.591	504.156	1.243.564	2	02	02	02	02	02	Products of forestry, logging and related services	
12	93	Bakım, onarım, bakım ve onarım hizmetleri	268	268	268	268.422	268.422	268.422	268.422	268.422	268.422	268.422	268.422	268.422	268.422	3	93	93	93	93	93	Services of repair and other related services (products of)	
13	95	Eğlence, dinlenme, kültür ve sporla ilgili faaliyetler	108	111	12.830	2.018.755	1.618.414	1.033.867	2.672.291	4.857.958	169.952	2.842.233	4.857.958	1.191.911	4.857.958	4	95	95	95	95	95	Recreational, cultural and sporting services	
14	60	Diğer hizmet faaliyetleri	222.938	893.664	3.912	71.298	368.874	801.799	801.799	801.799	801.799	801.799	801.799	801.799	801.799	5	60	60	60	60	60	Other services	
15	61	Evlerde yapılan hizmet işleri	157.990	525.612	329.918.517	226.239.228	4.072.217	44.372.342	274.893.738	58.009.474	3.125.352	3.125.352	61.134.826	64.528.368	400.266.902	730.275.499	6	61	61	61	61	61	Private households with employed persons
16	62	Toplam	2.107.069	15.396	15.196	12.546.666	29.142.615	242.992	29.335.597	593.555	- 44.235	29.334.917	42.490.069	772.765.563	7	62	62	62	62	62	62	Total	
17	63	Ürün üzerindeki net vergiler	18.928.907	173.846	841.008	342.465.168	269.381.843	4.072.217	44.615.325	304.069.385	58.803.029	3.125.352	3.125.352	61.728.361	64.494.133	430.291.699	772.765.563	8	63	63	63	63	Taxes less subsidies on products
18	64	Oranlara yapılan ödemeler	4.737.693	254.689	102.842	50.421.092	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	4.737.693	9	64	64	64	64	64	Consumption of employees
19	65	Üretim üzerindeki diğer net vergiler	154.025	26	197	291.354	154.025	154.025	154.025	154.025	154.025	154.025	154.025	154.025	154.025	154.025	10	65	65	65	65	65	Other net taxes on production
20	66	Üretim üzerindeki diğer vergiler	136.473	27	197	716.637	136.473	136.473	136.473	136.473	136.473	136.473	136.473	136.473	136.473	136.473	11	66	66	66	66	66	Other taxes on production
21	67	Üretim üzerindeki diğer sübvansiyonlar	890.526	61	1	997.919	890.526	890.526	890.526	890.526	890.526	890.526	890.526	890.526	890.526	890.526	12	67	67	67	67	67	Other subsidies on production
22	68	Saklı sermaye tüketimi	2.169.879	37.538	16.624	75.421.692	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	2.169.879	13	68	68	68	68	68	Consumption of fixed capital
23	69	İsletme arzı, net	24.829.026	948.478	524.219	169.545.116	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	24.829.026	14	69	69	69	69	69	Operating surplus, net
24	70	İsletme arzı, brüt	26.428.026	986.026	540.843	176.214.811	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	26.428.026	15	70	70	70	70	70	Value added at basic prices
25	71	Gayrimenkul yatırım değerleri (temel fiyatlarla)	31.061.642	932.774	650.399	303.320.436	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	31.061.642	16	71	71	71	71	71	Consumption of fixed capital
26	72	Toplam üretim (temel fiyatlarla)	49.988.650	1.112.618	1.191.907	648.736.621	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	49.988.650	17	72	72	72	72	72	Output at basic prices
27	73	İthalat, c/ö	2.338.054	130.946	61	84.489.872	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	2.338.054	18	73	73	73	73	73	Imports of
28	74	Toplam arz (temel fiyatlarla)	52.326.604	1.243.564	1.191.911	730.275.499	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	52.326.604	19	74	74	74	74	74	Supply at basic prices
29	75																						
30	76																						
31	77																						
32	78																						
33	79																						
34	80	TÜRKİYE EKONOMİSİNİN ARZ-KULLANIM VE GİRDİ-ÇIKTI TABLOLARI, 2002																					TürStat, THE SUPPLY-USE AND INPUT-OUTPUT TABLES OF THE TURKISH ECONOMY, 2002

Sketch of an Interindustry Dynamic Macroeconomic model



FM-AM

Flow Matrix	1	2	...	j	...	n-1	n	Total of rows	
1						
2						
...						
...						
i									ictotr _i
...						
...						
n-1						
n						
Total of columns				ictotc _j					ictot

$$a_{ij} = \frac{ic_{ij}}{oapb_j}$$

Final demand (FD)

Identities and relations obtained by summation of rows

$$f_{cenpish_{tot}} = \sum_{i=1}^{59} f_{cenpish_i}$$

$$f_{ceg_{tot}} = \sum_{i=1}^{59} f_{ceg_i}$$

$$f_{ce_i} = f_{cehh_i} + f_{cenpish_i} + f_{ceg_i}$$

$$f_{ce_{tot}} = \sum_{i=1}^{59} f_{ce_i}$$

$$g_{fcf_{tot}} = \sum_{i=1}^{59} g_{fcf_i}$$

$$cii_{tot} = \sum_{i=1}^{59} cii_i$$

$$civ_{tot} = \sum_{i=1}^{59} civ_i$$

$$cii_v_i = cii_i + civ_i$$

$$civ_{totapp} = civ_{tot} + civ_{tlsopfd}$$

$$cii_{totapp} = cii_{tot} + cii_{tlsopfd}$$

$$g_{cf_{totapp}} = g_{cf_{tot}} + g_{cf_{tlsopfd}}$$

$$expcob_{totapp} = expcob_{tot} + expcob_{tlsopfd}$$

$$fuabp_{tlsopfd} = fce_{tlsopfd} + g_{cf_{tlsopfd}} + expcob_{tlsopfd}$$

$$tuabp_{tlsopfd} = 0$$

$$fuabp_{totapp} = fuabp_{tot} + fuapp_{tlsopfd}$$

$$tuabp_{totapp} = ticabp_{tot} + fuabp_{tlsopfd}$$

GDP Approaches (Identities)

GDP Expenditure Excel file

	A	B	C	D	E	F	G	
1	Tablo 7. Harcamalar Yöntemiyle Gayri Safi Yurtiçi Hasıla (cari fiyatlarla), 1998-2007 - Table 7. Expenditure on the Gross Domestic Product							
2		Gayri Safi Yurtiçi Hasıla Gross Domestic Product	Yerleşik Hanehalklarının Tüketimi Final Consumption Expenditure of Resident Households	Yerleşik ve Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi Final Consumption Expenditure of Resident and Non-Resident Households on the Economic Territory	(Eksi) Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi (Less) Final Consumption Expenditure of Non-Resident Households on the Economic Territory	Yerleşik Hanehalklarının Yurtdışı Tüketimi Final Consumption Expenditure of Resident Households in the Rest of the World	Devletin Nihai Tüketim Harcamaları Government Final Consumption Expenditure	
3	1998	70 203 147	46 668 561	49 694 150	3 472 963	447 373	7 197 730	
4	1.dönem - 1. quarter	13 216 010	9 420 456	9 808 131	492 141	104 466	1 233 449	
5	2.dönem - 2. quarter	15 629 441	10 077 729	10 884 098	945 884	139 515	1 549 036	
6	3.dönem - 3. quarter	20 852 112	12 885 255	14 077 352	1 306 890	114 793	1 793 065	
7	4.dönem - 4. quarter	20 505 584	14 285 121	14 924 569	728 048	88 599	2 622 180	
8	1999	104 595 916	71 641 318	74 994 397	3 955 789	602 711	12 791 000	
9	1.dönem - 1. quarter	19 275 278	14 253 007	14 599 265	429 850	83 592	2 248 054	
10	2.dönem - 2. quarter	23 401 020	16 125 184	16 686 179	804 988	243 993	2 691 883	
11	3.dönem - 3. quarter	30 161 687	19 327 018	20 723 750	1 548 059	151 327	3 290 560	
12	4.dönem - 4. quarter	31 757 931	21 936 109	22 985 203	1 172 893	123 799	4 560 503	
13	2000	166 658 021	117 499 253	124 767 959	8 324 327	1 055 622	19 542 975	
14	1.dönem - 1. quarter	33 363 460	25 523 894	26 180 319	911 715	255 290	3 475 311	
15	2.dönem - 2. quarter	38 344 610	27 290 162	28 829 537	1 886 593	347 218	4 514 130	
16	3.dönem - 3. quarter	48 240 935	31 795 650	34 871 653	3 353 278	277 276	4 932 634	
17	4.dönem - 4. quarter	46 709 016	32 889 547	34 886 450	2 172 741	175 838	6 620 899	

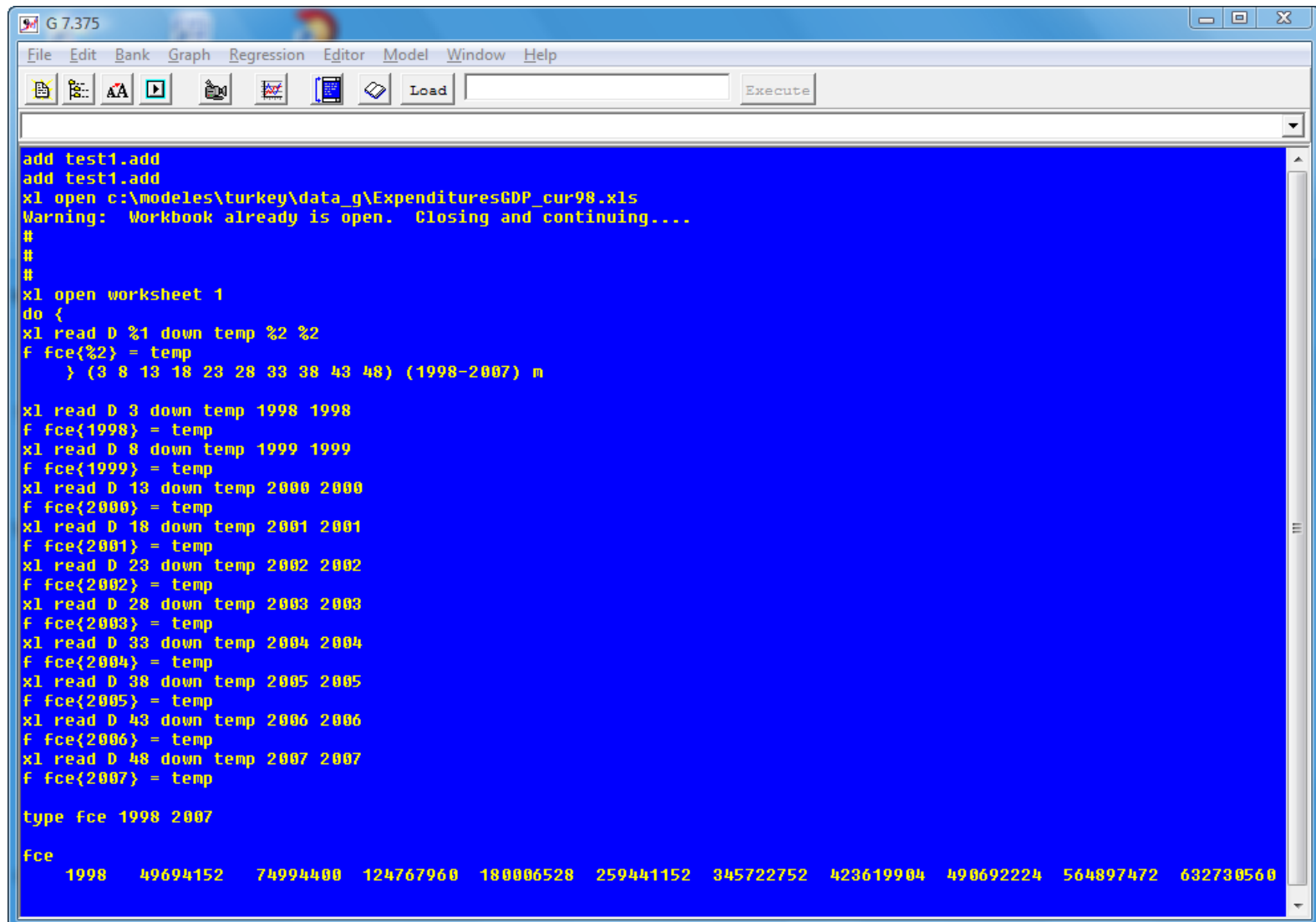
How to read ?

	A	B	C	D	E	F	G	H
1	Tablo 7. Harcamalar Yöntemiyle Gayri Safi Yurtiçi Hasıla (cari fiyatlarla), 1998-2007 - Table 7. Expenditure on the Gross Domestic Product (Current Prices), 1998-2007							
2		Gayri Safi Yurtiçi Hasıla Gross Domestic Product	Yerleşik Hanehalklarının Final Tüketimi Final Consumption Expenditure of Resident Households	Yerleşik ve Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi Final Consumption Expenditure of Resident and Non-Resident Households on the Economic Territory	(Eksi) Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi (Less) Final Consumption Expenditure of Non-Resident Households on the Economic Territory	Yerleşik Hanehalklarının Yurtiçi Tüketimi Final Consumption Expenditure of Resident Households in the Rest of the World	Devletin Nihai Tüketim Harcamaları Government Final Consumption Expenditure	Devletin Nihai Tüketim Harcamaları Government Final Consumption Expenditure
3	1998	70 203 141	46 668 561	49 694 150	3 472 963	447 373	7 197 730	
4	1.dönem - 1. quarter	13 216 010	9 420 456	9 808 131	492 141	104 466	1 233 449	
5	2.dönem - 2. quarter	15 629 441	10 077 729	10 884 098	945 884	139 515	1 549 036	
6	3.dönem - 3. quarter	20 852 112	12 885 255	14 077 352	1 306 890	114 793	1 793 065	
7	4.dönem - 4. quarter	20 505 584	14 281 121	14 924 569	728 048	88 599	2 622 180	
8	1999	104 605 011	71 641 318	74 994 397	3 955 789	602 711	12 791 000	
9	1.dönem - 1. quarter	19 275 278	14 253 007	14 599 265	429 850	83 592	2 248 054	
10	2.dönem - 2. quarter	23 401 020	16 125 184	16 686 179	804 988	243 993	2 691 883	
11	3.dönem - 3. quarter	30 161 687	19 327 018	20 723 750	1 548 059	151 327	3 290 560	
12	4.dönem - 4. quarter	31 757 931	21 956 109	22 985 203	1 172 893	123 799	4 560 503	
13	2000	100 050 011	117 499 253	124 767 959	8 324 327	1 055 622	19 542 975	
14	1.dönem - 1. quarter	33 363 460	25 523 894	26 180 319	911 715	255 290	3 475 311	
15	2.dönem - 2. quarter	38 344 610	27 290 162	28 829 537	1 886 593	347 218	4 514 130	
16	3.dönem - 3. quarter	48 240 935	31 795 650	34 871 653	3 353 278	277 276	4 932 634	
17	4.dönem - 4. quarter	46 709 016	32 885 547	34 886 450	2 172 741	175 838	6 620 899	

Basic code to read

```
xl · open · \modeles\turkey\data_g\ExpendituresGDP_cur98.xls¶  
do · {¶  
xl · open · worksheet · 1¶  
xl · read · C · %1 · down · fce · %2 · %2¶  
· · } · (3 · 8 · 13 · 18 · 23 · 28 · 33 · 38 · 43 · 48) · (1998–2007) · m¶  
type · fce · 1998 · 2007¶  
α
```


Result of corrected code



```
G 7.375
File Edit Bank Graph Regression Editor Model Window Help
[Icons] Load [Execute]

add test1.add
add test1.add
xl open c:\modeler\turkey\data_g\ExpendituresGDP_cur98.xls
Warning: Workbook already is open. Closing and continuing....
#
#
#
xl open worksheet 1
do {
xl read D %1 down temp %2 %2
f fce(%2) = temp
} (3 8 13 18 23 28 33 38 43 48) (1998-2007) m

xl read D 3 down temp 1998 1998
f fce{1998} = temp
xl read D 8 down temp 1999 1999
f fce{1999} = temp
xl read D 13 down temp 2000 2000
f fce{2000} = temp
xl read D 18 down temp 2001 2001
f fce{2001} = temp
xl read D 23 down temp 2002 2002
f fce{2002} = temp
xl read D 28 down temp 2003 2003
f fce{2003} = temp
xl read D 33 down temp 2004 2004
f fce{2004} = temp
xl read D 38 down temp 2005 2005
f fce{2005} = temp
xl read D 43 down temp 2006 2006
f fce{2006} = temp
xl read D 48 down temp 2007 2007
f fce{2007} = temp

type fce 1998 2007

fce
1998 49694152 74994400 124767960 180006528 259441152 345722752 423619904 490692224 564897472 632730560
```

GDP Expenditure identities

```
#
#-----
#   ExpGDP98_identities.add
#-----
#
#   This file contains the statement to compute the
#   identities of ExpendituresGDP_cur98.xls
#
#-----
#
#   Final Consumption of resident Households
#
# f fcerhh = f cfernrrhhet - f cfernrhhet + f cferhhrow
#
#   Government Final Consumption Expenditure
#
# f gfce = gfcece + gfcepigas
#
#   Gross Fixed Capital Formation - Public Sector
#
# f pubs = pubsme + pubsc
#
#   Gross Fixed Capital Formation - Private Sector
#
# f pris = prisme + prisc
#
#   Gross Fixed Capital Formation
#
```

Preparation to read IO table

<u>Name</u>	<u>Type</u>	<u>Location in the worksheet</u>
FM	Matrix	D11:BJ69
<u>fcehh</u>	Vector	BL11:BL69
<u>fcenpish</u>	Vector	BM11:BM69
<u>fcegov</u>	Vector	BN11:BN69
<u>gfcf</u>	Vector	BP11:BP69
<u>civ</u>	Vector	BQ11:BQ69
<u>cii</u>	Vector	BR11:BR69
<u>expfob</u>	Vector	BU11:BU69
<u>tlsop</u>	Vector	D71:BJ71
<u>compemp</u>	Vector	D73:BJ73
<u>ontop</u>	Vector	D74:BJ74
<u>otop</u>	Vector	D75:BJ75
<u>osop</u>	Vector	D76:BJ76
<u>cofc</u>	Vector	D77:BJ77
<u>osn</u>	Vector	D78:BJ78
<u>impcf</u>	Vector	D82:BJ82

Reading of the IO table

```
# Creation of the Vam file and definition of default vam bank
#
vamcreate vam_iot2002_bp.cfg hist2002
vam hist2002 b
dvam b
#
# Opening the Excel file
#
xl open \modeles\turkey\data_G\IOT2002_BP.xls
xl open worksheet 1
xl replace 0.0
#
# Reading the components of Value added
#
ic Read a full matrix for Excel, store in Vam Matrix
xl matread c(4-62) r(11-69) b.FM c(1-59) r(1-59) 2002
#
# VAB
#
do{
  xl read BL %2 down b.fcehh%1 2002 2002
  xl read BM %2 down b.fcenpish%1 2002 2002
  xl read BN %2 down b.fcegov%1 2002 2002
  xl read BP %2 down b.gfcf%1 2002 2002
  xl read BQ %2 down b.civ%1 2002 2002
  xl read BR %2 down b.cii%1 2002 2002
  xl read BU %2 down b.expfob%1 2002 2002
} (1-59) (11-69) m
```

```
#
# Reading the components of Final Demand
#
# Taxes less subsidies on products
#
xl read D 71 right b.tlsop1 2002 2002
xl read E 71 right b.tlsop2 2002 2002
...
xl read BI 71 right b.tlsop58 2002 2002
xl read BJ 71 right b.tlsop59 2002 2002
#
# Compensation of employees
#
xl read D 73 right b.compemp1 2002 2002
xl read E 73 right b.compemp2 2002 2002
...
xl read BI 73 right b.compemp58 2002 2002
xl read BJ 73 right b.compemp59 2002 2002
..
```

Identities of the IO tables

```
# ROW
#
# Intermediate consumption (total rows)
#
getsum FM c totc
#
# Total intermediate consumption
#
vc totic = totc + tlosop
#
# Operating surplus, gross
#
vc opg = cofc + opn
#
# Value added at basic prices
#
vc vaabp = compemp + ontop + otop + osop + opg
#
# Output at basic prices
#
vc outputbp = totic + vaabp
#
# Supply at basic prices
#
vc supplyabp = outputbp + impcif
```

```
#
# COLUMNS
#
# Intermediate consumption (total Columns)
#
getsum FM r tottr
#
# Final Consumption Expenditure
#
vc fce = fcehh + fcenpish + fcegov
#
# Changes in inventories and valuables
#
vc ciiv = cii + civ
#
# Gross Formation capital
#
vc gcf = gfcf + ciiv
#
# Final uses at basic prices
#
vc fuabp = fce + gcf + expfob
#
# Total uses at basic prices
#
```

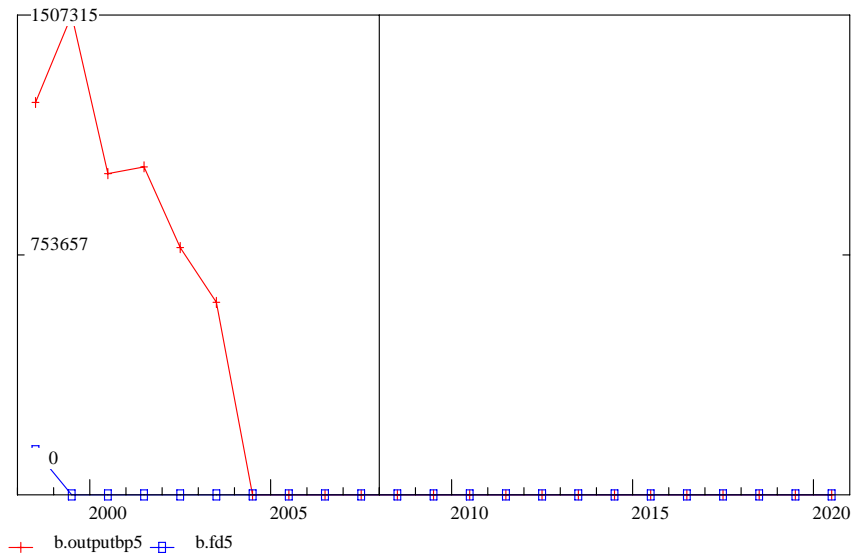
```
vc tuabp = tottr + fuabp
#
```

TurkTiny (code)

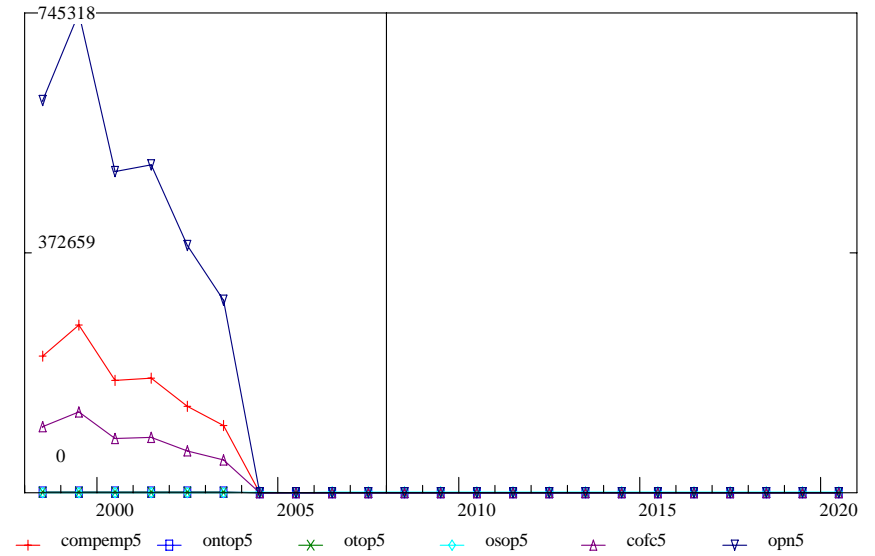
- [TurkModel.txt](#)

Troubles

5 - Crude petroleum and natural gas
Output and Final demand



5 - Crude petroleum and natural gas
Components of Value Added



Conclusion

- Negative
 - Lack of data
 - Revision of the SNA 93
 - Are national accounts for model builders ?
- Positive
 - Availability of data in the next years in ESA 95 Framework
 - Creation of a model building structure
 - Dissemination of the basic knowledge

During all the preparation of this paper, we have discussed with TurkStat, we have discovered the entire problem that exists from the statistical point of view to integrate European Union. This exercise is a very good practice to become a model builder if you are a beginner and a very good way to think of your practice and your knowledge if you are an advanced model builder.

If it is not yet possible now to build a complete Inforum model for Turkey, it will be possible to do it in a near future.

This paper comes in addition of the Clopper Almon's work with a European touch.