





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 difficiculties 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)



TurkStat (National Accounts)



TurkStat

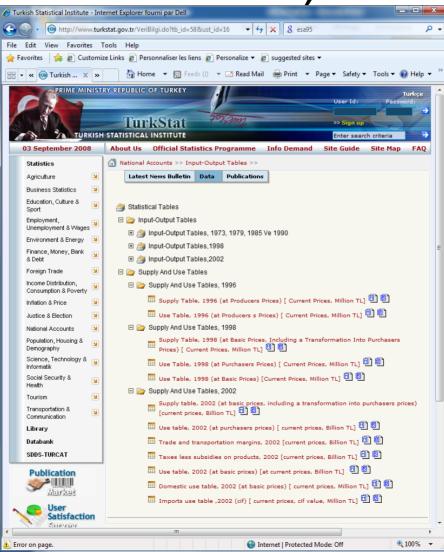
• List of the Input-Output tables published by Turkish National Institute of statistics

Date ⁹ 0	Type¤	SNA¤	Dim¤	Prices¤	Constant/Current¤	Dom /Imp.¤
1959¤	Input-output table¤	α	¤	¤	¤	۵
1963¤	Input-output table¤	α	α	α	۵	۵
1968¤	Input-output table¤	α	50¤	α	¤	۵
1973¤	Input-output table¤	68¤	64¤	market prices¤	current prices¤	No¤
1979¤	Input-output table¤	68¤	64¤	market prices¤	current prices¤	No¤
1985¤	Input-output table¤	68¤	64¤	market prices¤	current prices¤	No¤
1990¤	Input-output table¤	68¤	64¤	producers prices¤	current prices¤	No¤
1996¤	Input-output table¤	68¤	97¤	۵	α	¤
1998¤	Input-output table¤	93¤	97¤	basic prices¤	current prices¤	Yes¤
2002¤	Input-output table¤	93¤	59¤	basic prices¤	current prices¤	Yes¤

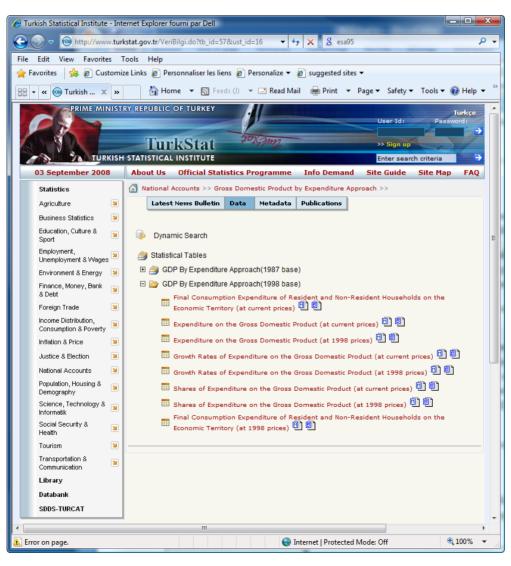
TurkStat (Input-Output tables)



TurkStat (Supply and Use Tables)



TurkStat (GDP by Expenditure)



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

blo 7. Harcamala	r Yöntemiyle Ga	vri Safi Yurtici H	lasıla (cari fiyatlar	(a), 1998-2007 -	Table 7. Expen	diture on the Gro	oss Domestic Pr	oduct (at current	prices), 1998-2	2007						1		1
	Gayri Safi Yurtiçi Hasıla Gross Domestic Product	Yerleşik Hanehalklarının Tüketimi Final Consumption Expenditure of Resident Households	Yerleşik ve Yerleşik Olmayan Hanehalklarının Yurtigi Tüketimi Final Consumption Expenditure of Resident and Non- Resident and Non- Resident an the Economic Territory	Yurtiçi Tüketimi (Less) Final Consumption Expenditure of Non-Resident Households on	Yerleşik Hanehalklarını n Yurtdışı Tüketimi Final Consumption Expenditure of Resident Households in the Rest of the World	Devletin Nihai Tüketim Harcamaları Government Final Consumption Excenditure	Maaş, Ocret Compensation of Employees	Mal ve Hizmet Alımları Purchases of Goods and Services	Gayri Safi Sabit Sermaye Oluşumu Gross Fixed Capital Formation	Kamu Sektörü Public Sector	Makine- Teçhizat Machinery- Equipment	Inşaat Construction	Özel Sektör Private Sector	Makine- Teçhizat Machinery- Equipment	Inşaat Construction	(*) Stok Değişmeleri (*) Change in Stocks	Mal ve Hizmet Ihracatı Exports of Goods and Services	t (
		e - Xibernaennedete		0.0000000000000000000000000000000000000					1999-1990, DAX - 11			2010/01/10/2010	partition of the second			NORORO	11 - CS (10 A (1882)	
1998	70 203 147	46 668 561		3 472 963	447 373 104 466	7 197 730	4 651 179		16 046 649	3 219 178	907 552	2 311 627	12 827 470	8 231 200	4 596 271	-522 264	14 979 695	
lönem - 1. quarter	13 216 010 15 629 441	9 420 458		492 141 945 884	104 400	1 233 449	966 783	266 666 503 255	3 105 458 4 019 882	408 427 734 728	64 612 117 030	343 815 617 696	2 697 031 3 285 156	1 812 479	884 551 1 034 031	-346 270	2 744 731	
lönem - 2. quarter				1 306 890	139 515			569 053		883 865	233 116	650 749	3 505 684			1 270 248		
lönem - 3. quarter	20 852 112	12 885 255 14 285 121				1 793 065 2 622 180	1 224 013		4 389 549 4 531 760		492 793		3 339 600	2 221 864	1 283 820		4 335 245	
önem - 4. quarter	20 505 584	14 285 121	14 924 589	728 048	88 599	2 022 180	1 414 602	1 207 579	4 031 /00	1 192 160	492 793	699 366	3 339 000	1 945 731	1 393 868	-1 423 418	4 325 775	2
1999	104 595 916	71 641 318		3 955 789	602 711	12 791 000	8 226 319		19 809 568	4 606 657	1 425 851	3 180 806	15 202 911	8 739 969	6 462 942		20 333 328	
önem - 1. quarter	19 275 278	14 253 007	14 599 265	429 850	83 592	2 248 054	1 773 408	474 648	3 546 130	600 061	121 588	478 473	2 946 069	1 691 510	1 254 559		3 851 544	
önem - 2. quarter	23 401 020	16 125 184		804 988	243 993	2 691 883	1 856 699	835 184	4 761 849	1 236 189	392 158	844 033	3 525 660	2 135 645	1 390 015	85 828	4 642 347	
önem - 3. quarter	30 161 687	19 327 018		1 548 059	151 327	3 290 560	2 203 993	1 088 588	5 262 856	1 233 979	338 609	897 371	4 028 877	2 284 856	1 744 021	1 951 970	5 680 879	
önem - 4. quarter	31 757 931	21 936 109	22 985 203	1 172 893	123 799	4 560 503	2 392 221	2 168 283	6 238 733	1 536 428	575 499	960 930	4 702 305	2 627 958	2 074 347	-541 836	6 158 557	1
2000	166 658 021	117 499 253	124 767 959	8 324 327	1 055 622	19 542 975	11 918 856	7 624 119	33 986 629	7 749 411	2 185 555	5 563 856	26 237 218	16 935 399	9 301 819	622 907	33 494 716	6
önem - 1. guarter	33 363 460	25 523 894	26 180 319	911 715	255 290	3 475 311	2 626 377	848 934	6 147 149	1 167 505	267 046	900 459	4 979 644	3 149 665	1 829 979	-471 677	6 245 433	3
inem - 2. quarter	38 344 610	27 290 162	28 829 537	1 886 593	347 218	4 514 130	2 842 250	1 671 880	8 590 709	2 253 250	730 425	1 522 824	6 337 459	4 290 322	2 047 138	-480 305	8 188 548	8
önem - 3. quarter	48 240 935	31 795 650		3 353 278	277 276	4 932 634	3 058 583	1 874 052	9 343 010	1 927 836	382 986	1 544 850	7 415 173	4 978 780	2 438 414	2 529 874	9 850 140	
önem - 4. quarter	48 709 016	32 889 547		2 172 741	175 838	6 620 899	3 391 646		9 905 761	2 400 820	805 098	1 595 722	7 504 941	4 516 652	2 988 290	-954 986	9 210 595	
2001	240 224 083	164 318 885	180 006 529	17 790 308	2 102 665	29 778 962	17 904 108	11 874 853	38 293 820	10 165 657	2 606 819	7 558 838	28 128 163	16 289 675	11 838 488	-2 078 108	65 919 607	4
önem - 1. quarter	44 416 756	32 895 811		1 602 098	312 383	4 528 153	3 538 945		7 750 641	1 795 267	308 559	1 488 708	5 955 375	3 338 781	2 618 593	-2070 100	9 461 448	
	55 122 680	38 385 035		4 145 915	654 120	6 776 806	4 141 990	2 634 815	9 147 878	2 419 557	419 558	2 000 001	6 728 321	4 143 622	2 584 699	-2 156 967	16 135 744	
önem - 2. quarter																		
önem - 3. quarter önem - 4. quarter	71 044 318 69 640 328	44 197 380 48 840 659		8 088 585 3 955 710	798 117 338 044	7 348 382	4 629 777 5 593 396	2 718 605 5 532 225	10 665 772 10 729 529	2 745 903 3 204 930	592 475 1 288 229	2 153 428	7 919 889	4 738 831 4 072 441	3 183 037 3 452 158	3 958 649	21 344 606	
10.000	Sector Contraction																	
2002	350 476 089	238 399 083		23 886 509	2 844 442	44 615 308	26 533 445		58 601 708	15 211 265	4 353 696	10 857 569	43 390 442	25 745 309	17 645 133	3 131 331	88 380 641	
önem - 1. quarter	69 461 341	52 915 430		2 885 528	537 839	7 832 242	5 905 389	1 926 853	10 543 983	2 537 405	531 137	2 006 269	8 006 577	4 322 245	3 684 332		15 331 084	
önem - 2. quarter	78 985 100	55 571 394		4 834 046	792 561	10 184 975	6 374 294	3 810 682	13 637 347	3 479 393	704 810	2 774 583	10 157 954	6 364 431	3 793 523	-595 039	18 958 847	
önem - 3. quarter	101 975 294	62 860 842		10 811 531	981 686	10 975 489	6 555 335	4 420 155	16 254 869	4 624 921	1 357 710	3 267 212	11 629 947	7 007 280	4 622 667	6 683 128	28 868 529	
inem - 4. quarter	100 054 355	67 051 417	71 874 466	5 355 404	532 355	15 622 601	7 698 427	7 924 174	18 165 509	4 569 545	1 760 040	2 809 505	13 595 963	8 051 352	5 544 611	-882 457	25 222 181	1
2003	454 780 659	324 015 751	345 722 739	24 852 807	3 145 820	55 483 632	35 253 787	20 229 844	77 366 472	15 361 124	3 709 302	11 651 822	62 005 348	38 493 150	23 512 197	2 660 221	104 575 145	5
önem - 1. quarter	98 040 157	75 399 728	77 810 738	3 218 243	807 234	10 594 529	8 203 999	2 390 530	15 085 620	2 364 654	369 896	1 994 758	12 720 966	6 888 037	5 832 929	-452 488	22 447 246	8
önem - 2. quarter	105 708 998	76 719 389	80 846 706	4 800 997	673 680	12 945 000	8 460 608	4 484 392	17 969 889	3 847 532	829 123	3 018 409	14 122 358	8 706 913	5 415 445	256 339	24 029 766	8
önem - 3. guarter	128 512 184	84 405 857	94 707 778	11 273 967	972 048	14 259 151	9 112 668	5 148 483	20 607 865	4 209 447	804 808	3 404 640	16 398 417	10 428 461	5 969 957	5 982 585	30 583 410	0
önem - 4. quarter	122 519 320	87 490 777	92 357 520	5 559 601	692 857	17 684 951	9 476 513		23 703 098	4 939 491	1 705 475	3 234 016	18 763 607	12 469 740	6 293 867	-3 126 218	27 514 722	
2004	559 033 026	398 559 246	423 619 916	28 679 220	3 618 550	66 802 142	41 573 371	25 228 771	113 716 568	16 339 107	3 870 323	12 468 784	97 377 460	63 431 620	33 945 840	-5 319 662	131 660 988	
önem - 1. quarter	119 502 314	93 183 959		3 448 990	741 313	12 995 949	10 008 852	2 987 098	23 987 703	2 374 432	301 785	2 072 647	21 613 272	13 921 216	7 692 056	-5 058 654	23 649 945	
önem - 2. quarter	130 998 596	97 009 869		6 301 492	904 121	14 569 642	9 875 532	4 694 110	29 181 788	3 903 114	701 345	3 201 768	25 278 675	17 553 585	7 725 089		31 930 881	
önem - 3. guarter	157 689 939	104 610 840		12 777 087	1 081 465	15 803 215	10 343 631	5 459 583	30 102 129	4 415 428	751 734	3 663 695	25 686 700	16 599 684	9 087 016		39 932 942	
önem - 4. guarter	150 842 176	103 754 577	109 014 597	6 151 671	891 651	23 433 338	11 345 358		30 444 948	5 646 134	2 115 459	3 530 675	24 798 814	15 357 135	9 441 679		38 147 221	
2005	648 931 712	465 401 759		29 161 491	3 871 033	76 498 649	45 811 549		136 475 134	21 410 353	5 046 606	16 363 747	115 064 780	76 189 662	38 875 118		141 826 467	
önem - 1. quarter	141 085 930	108 128 447		3 598 134	902 118	15 002 548	10 958 422	4 044 124	29 781 889	3 507 999	368 078	3 139 921	26 273 871	17 124 370	9 149 501	-5 850 822	29 514 488	
önem - 2. quarter	153 763 755	111 834 975		6 417 693	925 272	16 756 251	10 806 529	5 949 722	34 330 426	5 162 171	835 605	4 328 585	29 168 255	20 289 895	8 898 560		34 594 981	
önem - 3. quarter önem - 4. quarter	181 572 348 172 509 679	121 934 788 123 503 549		12 922 624 6 223 040	1 023 179	19 074 005 25 665 847	12 096 558 11 950 039	6 977 447 13 715 808	35 805 666 36 557 173	5 879 179 6 861 005	1 290 768 2 552 155	4 588 411 4 308 850	29 926 487 29 696 168	19 736 692 19 058 906	10 189 795		41 004 361 36 712 637	
and the second second	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													10000000				
2006	758 390 785	534 849 206		34 025 134	3 976 846	93 525 263	52 756 008		169 044 693	25 745 598	4 551 924	21 193 674	143 299 095	92 179 719	51 119 375		171 926 483	
önem - 1. quarter	160 072 572	124 743 840		3 934 832	757 428	18 262 652	12 760 900	5 501 752	35 505 205	3 923 130	322 886	3 600 244	31 582 076	20 652 826	10 929 249		31 400 370	
önem - 2. quarter	183 652 122	132 454 172		7 503 631	1 089 069	22 397 862	13 248 008	9 149 854	42 304 772	6 363 613	687 344	5 676 270	35 941 159	24 391 082	11 550 076	-453 300	42 369 554	
innen, 9 auster	212 205 20R	120 777 200	162 739 906	15 205 221	1 242 824	22 24R 200	12 140 011	10 108 400	45 017 51R	8 942 014	1 025 001	5 017 077	20 074 ED2	24 080 704	14 005 709	10 570 507	E4 047 00/	A

GDP expenditure approach

• Accounts identities

Gr	oss Domestic Product¤	gdpaea¤	<u>=</u>	ä	ä	350°476 · 089¤
Fin	nal Consumption Expenditure of Resident Households ¤	fcerhh¤	+9	=	a	<i>238399</i> 083¤
α	$\begin{array}{l} Final \cdot Consumption \cdot Expenditure \cdot of \cdot Resident \cdot and \cdot Non \cdot \\ Resident Households on the economic territory ^{\square} \end{array}$	fcernrhhet¤	ä	<u>+</u> s	ä	<i>259441149</i> ¤
۵	$\begin{array}{llllllllllllllllllllllllllllllllllll$	fcenrhhet¤	ä	å	ä	<i>23886509</i> ¤
a	Final Consumption Expenditure of Resident Households in the Rest of the World $\mbox{\tt m}$	fcerhhrow¤	ä	∰	ŝ	<i>2844442</i> ¤
Go	vernment Final Consumption Expenditure gfce)¤	gfce¤	+:	8 <u>11</u>	ä	<i>44615308</i> ¤
α	Compensation of Employees ¤	gfcece¤	ä	+	ä	<i>26533445</i> ¤
α	Purchases in Goods and Services ¤	gfcepigas¤	ä	3	ä	<i>18081863</i> ¤
Gr	oss Fixed Capital Formation ¤	gfcfa	+:	8 <u>11</u>	ä	<i>58601768</i> ¤
α	Public Sector ¤	pubs¤	ä	<u> </u>	Ĩ	<i>15211265</i> ¤
α	→ Machinery-Equipment ^α	pubsme¤	ä	ø	+0	<i>4353696</i> ¤
α	→ Construction ¤	pubc¤	ä	ğ	+0	<i>10857569</i> ¤
α	Private Sector ¤	pris¤	ä	<u>۲</u>	Ē	<i>43390442</i> ¤
α	→ Machinery-Equipment ^α	prime¤	ä	ŝ	+0	<i>25745309</i> ¤
α	→ Construction ¤	pric¤	ä	ä	+1	<i>17645133</i> ¤
Ch	anges in stock ¤	cis¤	+:	ä	ä	<i>3131331</i> ¤
Ex	ports of Goods and Services ¤	expgs¤	<u>+</u> ¢	ä		<i>88380641</i> ¤
Im	ports of Goods and Services ¤	impgs¤	-0	ä	ä	<i>82651981</i> ¤

2002 Input-Output table (structure)

4 4	0	-10	æ	64	ΔT.	44	Ш.	200	- 101	av.	άZ	- 64	89	90	80		8	80	- 94		а.	ж.	8.	2).	21	80	9	90	98	86	
2						_	_		Gindi-Çıktı Tabica (cari fiyatlarla, M	u, 2002 (tamel flyad	erta)							Girdi-Çıktı Tablı (cari fiyatlarla)	onu, 2002 (tette Mitrar TL)	ni flyaclaria)									Girdi-Çıktı Tablo [cari fiyatlarla, li	u, 2002 (terrel f) Iver TL1	yarlarla)
-										, 2002 (arbasic pric	44)			L. wax				ingus-OugurTa		tic prices)									Input-Output Tab	. 2002 (arbasic) Billon TL1	(ricas)
	ບໍ່ຂັບການສະຫຼາຍ		RÜNLER (FÜS) -	PRODUCTS(CRU	0					Y		OROWU	R(FÜS) - PRODU	CTS(CPI)				ORO	NUCR (FÜS) - P	RODUCTS(CS	άį.			sh	AIKULLANBLAR	- FINUL LISES	Y			dap/scittants	LAR-F
7	undintus () dus	Suyoti taximacity	Havayala taqmacilg	Descelikeyici ve yardınızı ulaştırma faaliyeslert acercelerinin faaliyesleri	Posta ve telekortinikae yon	Sigarta va amakilik fanlari hariq, nail aracı kurulaşların faaliyaclari	Zoruniu Aokyol gOvenik haric, algorta va amaktilik fontan ile ligit faaliyecler	Hallaracı İsandaşlara yandıncı faaliyaclar	Gayrimerical Paallyecleri	Operasõivella maidoe ve techizas le kiejsel ve ev égyalarno kitalannae	Giglexyar ve ligit faailyecker	Araacama ve galistime hizmetleri	Digaria faaliywlad	Kamu yönethilve Asvunna, sossalu asayal gövenik	Egitin hizmecleri	Sagik kiariva adayaihtmeda		Daska yerde emfandnina me, Dye okran kunske jarm faaltyecieri	Egience, driarone, kökör ve sporta igil faallyeder	Diğerhizmet fazilyetleri	Dviende yaponian hizmeciajeri	Toplam	Hanahalisten nihal tölsetin harcanaas		Devletin nihal tilketin harcanaes	Nihai tikatin Turcamaa	Gayrikafi kabit semoye akaçımı	Degerllerd eki deglelm	Szaktardaki dağlalm	Dağaril ve azəktərdəki dağlıştırı	5 2 3 2
		Water state port	il' tanaport	Supporting and auxiliary transport activities activities travel agencies	Petrand elecommunica one		funding, except compulsory	och the surflery Is francial Insimediator	Rasiacon activitae	Ranting of machinery and equipments/thour operator and of genatorial and household goods		Recearch and development	Other business activities	Public administration and defence; compulsory/social security	Education	Health and social work	Sevage and refuse disposel, sanitation and similar activities		Recreational, cultural and sporting activities	Other service activities	Pricase households with employed persons	Tanai	Final consumption angenditure by households	Final consumption expanditure by non-profit organizations zerving households (NPSH)	Final consumption expenditure by government	Final consumption expenditure	Gross fixed capital formation	Changes In Valuables	Changes In Inventories	Changes in Invertories and valuables	Gras Bri
10 No 14	a urunuzr (rus)			4	7 8		1	6	70		3					2	2		1				y 4	7 62	-		45		é7	40	
-2 02 00	Ormancilik, termukçuluk ve ilgili hizmer faaliyerie			1.266	18	(-		12-606	120	402	475	2211		4.812	642	1	419	1.150	200		T99-609 251-625	604.689 \$22.540		0.002				\$0.019 7.000	\$0.015 7.994	
	Galikali, balk üneme ve yerledme oftikerinin Haden könürü, inyit ve tarba çıkarmı	19			1249	20 440	9 501	121	92 643 92 643 12 793		31	1997	27 5 0 9	96+95	943 27 443	10 \$10		19 994	2452	15-165		1 560 563	1 271 219		67 999	1,959,165		1	- 69 799	- 69 799	
10 06 913	Tatilik va arama haric, hamperrol va dogalgaz ci Uranyumva toryum cavivari madenciigi		•••••	ļ		••••••	<u>.</u>		1			14,799	9.04			••••••						8-521 979						••••••	1748700	1,748,700	1000
10 700 71	Taxocakciig va digermadanciik		••••••		•	1 386	Te Te	226	4.090 97.696		45 199	9110 16190	44 2 67	10.668	2144	494		145	112			659 (63 9 (41 126	•					•	8748 -1 270 602	9749 -1 270 603	
20 10 10	 Guda Drümlari va Izacali: Imalati Türün Grümlari Imalati 	99 995 1 995	7.619	10.005	282	99790		1.105	199-691	1 897	890	25 099	89.55	209.549	29.979	111.990	ŧ	19 217	20 545	1 599		12 659 922	1777745		500 021	30 80¢ 144 1,777 715		•	2 945 199 490 191	2 643 163 660 191	
21 11 11	Tekszőlürünleri intelez: Giyim esysel intelez: kürkün islemmest ve bayann	6.995	60.966	19.514	247	976 1 910	10 110	124 214	178.304	2118 1969	482 	100 569	91 14 90 42	\$2.191 17.045	\$ 965 22 Te-	18910 29 015		9,211 1,405	2757	7 Teo T 164		22 884 783 1 858 029	6010101 9300691		476415	6 010 701 9 909 109	+\$0723 114\$16		2 540 404	2 360 600	
22 713 719	Derbin tabaldarmas, klennest; bavul el carcas Agas, ve menter Orbiter Instan, mabiya haris;; h			176	20	19	11	20 40	9.591	79	250 9 2 4 5	6.608	572 2920	94 049	2449	77	1	204 20 951	6321	25		1 654 509	1 91 4 995		49.940	1 967 795		1	2990 9905 2119 4660	200.025	
25 15 2	Kağır ve kağır ürünleri inaları	2024	3276	\$7 224	19:00	240.294	20 064	903 32.434	61 634	1454	10 399	23.911	702-19	162734	109 531	76 15		12 999	51 531	9 902		6 971 953	854 848			954 BCS	ŝ		- \$14 174	219 486 - 614 174	
21 17 2	Datamine gaging plak, kasat vila kayati medyanin Kak kömörü, rafine edinte perral ürünleri ve nöld Könyasal madde ve ürünlerin imaları	1 223	240 912 626				947	12 400	20140 25110	5 915 19 990	11 606 1 650	9 994 14 949	500 61- 67 200	142.949 185-494	72 966 94 229	45 90 44 97		66 (* 8 28 543	6745	2 726 10 995		2 579 091 9 199 505	999-001 9 004 910		1 297 60 777	1 006 588 9 085 587			- 402 409	- 402 403	
28 10 20	: Kingasal madde ve Grünierin Instan Staarle ve kouzuk Grünieri Instan	19212	9.045	6* 296 *86 294			1594	4 803	554 220 547 173	9 529 5 401	12.074 2.291	94.997 25.244	\$10 \$20 \$1 \$90	140 039	112474 12474	909 690 19 999		90.050 \$.7c7	92.054 9.579	41 225 1 262		20 879 599 7 591 499	0.955 117 1.019.070		655-006	7010523		ļ	- 252 630 - 949 797	- 252 690 - 646 767	
20 Y 20 Y 20	Plantik ve konstak ürünleri inalatı Metalik olmayan diper mineral ürünlerin imalatı Ana metali sanayıl	49	•	2 090 91 957	2	\$154	244	62		1.609	429	20,294	148 66 169 10	619 094	107.914	200 22	:	40.949	9 2 9 0	276		9 099 654 19 795 797	500.676 8.500			590 676 9 500		¢	- 929 595	- 609 993 - 722 617	
A		294	191	20 564	2.59	6112	860	1124	275611		6.945 6.925	10004	122 21	9 891 29 471	79 495	19 26	2	6110	4 729	1 825	••••••	6 069 TS6	666 191			669 191	1 229 127		- 722 817 - 224 079	- 226 079	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	 Digue, makine ve nachizer imakeri Digue, makine ve nachizer imakeri Dino, makse ake ve bigi islam makimelari imakeri Dino, akemidi sakimelari akemidi sakimelari 	72 665 2 610	(45)	10-483	54.15		16 2 925	0 115	92994** 9.999	4.919 2.439	422 50739	21658 2367	125 86	562 556 56 627	90.011 21.736		0: TT	3968	5 992 5 209	11 711		2 000 000 400 000	2010054 214 214		7 110	2 610 954	606 770	1	- 215 204 25 200	- 315 360 35 386	
	Q.y.a. elektriki makine ve cihaziarn imalan Radyo, televizyon, haberlearne techizati ve cihat	27 676	SO TRE	97-194 201	277 42			11	T0 69		7011	10.074 17.900	99.49	291 499	19.643	10 990		4 994	1.614	48 202		4 100 994 2 997 794	899 149 2 200 504			893149 2,099594			- 500 520 - 727 050	- 586 520 - 727 050	
ST 27 2	Tobl alecier: haakaa ve optik alecier le kaat inale Motoriu kara taytt, rönerk ve yav-rönerk inalec	25 125		104	29 14 91	64 50 544	482	2.571	9796 22.69	129 11 921	43	1919 1919	60.990 (7.77) 96.97	20 000	17691 4943	148 Te-	1	415 585 19 495		1140		550 566 5 039 766	499 450 2 692 239		72196	971 565 2 692 233			201 267 - 526 376	201 267 - 529 379	
30 7 30 7 3	Diger ubermanaciarron intelati	719.041		17.914		1	1		2766	1 590	90 1 676	2.626	26	719445	291 17 610	10 65	1	11 060	2 665	228		1919140	251474		666	255 161	1140.693		- 668 528	- 668 525	
41 × 10 × 10	Diger ubern anschmen Insten Roblys mater: bys. diger inster Verlden degeriendinge	760	1	21 621	1	1		1913	255		4	2 2 1 2 2 2 4	54.91 9	59.654		1942	1	\$ 919		29.011		1 201 195 19 196	4 957 749		899		1 1 0 1 0 1 0 1 0 C		201 651 - 5 260	501.651 - 5 265	ė
42 32 34	Claimfic car, bubar ve ascale au Bracini ve dadem	1401	7:53	26 2 ⁷⁷ 22 914				10.913	159.004	4 059 2 204	9213 1,950	20 384 2 120	61 76 16 621	942 919 92 220	223 765 76 963	20549		27 999 9 495	60 591 14 999	99.949 99.719		15 054 673 1 557 490	9735.609 609 738			9795.609 699739					ł
4 3 4	Sagun taplarmaa, antimaa va dageimaa. Daam Moorlu taatiir va roosa Matiarn aata, baloon v	+04	25 160.656	9 905	6916			940		1 655	2919 5014		11 65	669 681 157 179	41 560 54 560	66 201 21 17	6: 36.695		8775 7400	701 5459		2 609 997	55 C54		11 100	55 054 9 794 904			104 525	104 \$25	
a 14 15	Monoriu maanier ve monoelikierieren aenen, bakere v Nonoriu maanier ve monoelikierier deunde kolen no	66 167 19 565	(2.22)	Se se s		150 656	8 666	19 604			40 591 11 509	\$1 420 94 902	245 45 252 04	\$00 190 209-671	104 949 60 976	292100	4.015	27 222	25 197	20 44*		15 804 784	9 769 199 7 779 795 12 191 670	•	120-606 219-172		1 chiù hil	°	694.411 754.241	604 411 754 241	
ca 7 30 72	Nonoriu caastler ve motoalitietier deutola isalan pe I Citeller ve lokantaler	19972	185 491	544 286	1419	122 666	1 590			15 916	5114	1678	49.090	50 SGT	44.954	197 97 27 99		49 090		2146		10199995 2199145	14.079.991			14072991	1 580 595				
50 7 40 7 61	Kara taartaciigi ve boru hattyla taartaciik Su yolu taartaciigi	142 271	60 606 9 565	27 521	ece	T0 944 11 013	1465	16915 1965	464.194 \$7.95	3730	17 535 1 666	0910	247 64 90 20	973 809 203 034	105 254	168710 1090	0 9993 5 70	0000	35 590	12.049		10 202 278 6 202 421	23 074 584 579 009		145 676 11 621	200.043	224 225		266 500 52 697	São SOC S2 GOT	
22 42 44	 U svayolu tasimaciigi Destaidayici va yardingi ulastimia fasilystiari; si 	91 666 677 790	160 909			1 640	1 244	2 545 1 914	14 044	5 (85 76 592	7 095 20 995	2.979 8.414	25 97 104 12	629-694 275-109	16 257 67 571	10 296 299 TO	165	25 584 16 91 4	20 799 95 449	300 7.045		1 677 666 10 669 150	2 003 614 2 049 999			2029-914 2049-999		÷			
52 7 43 7 64	 Poata ve telekontinikasyon Sigorta ve eneldiik fordan haris, mail arası kurulu 	8117 50 50	95 554	107000				69 975 207 696		16 066 92 661	94.070 22.410	5005 23,550	299 190 292 971	1 000 794	69 993 150 495	64.17	6226	60 995	02 000 129 044	17 227		6718-623 19939-670	5 790 BcG 6 666 156			5 T60 649 6 666 150					
SE 7 45 7 4	Zoruhlu sosyal güvenik haric, sigorta ve emekili	24.64*		40.419			1915	29154	49165	6115	1 2003	1692	20.64	59.602	8.947	10 90		1990	11 625	844		899143 1059201	555 657	•		\$55 457	•				
I 10 10	 Nati anaci kurulustara yardınıcı faalyetler Layrimericul faalyetler Coaradiraliz makina va nachizat le klaket ve ev 	24.768	12 000	141.766	+1591	1129.999		66-694 22.014	276 024		19953	\$ 126	144.08	208.24*	70117	260.95	6916		66 296	29 691		6 295 903	20 603 666			52 622 666	9 900				
20 49 49	Digissysr ve ligil fasilyetier	15543 68	19 563	16 491 1 979	609 12414		19100	10 1691	8.734 8.931	e bes e see	2949 10402	1.970 2.992	90 39 15 14	7 900 291 293	2 400 60 900	4 701 24 910	5: 0: 261	8 021 12 615	27 738 36 904	456 642		000 000 994 114	277 704 617 099			217 T01 617 066	190 795				·
60 20 77	Arasımu və gələrimə hizməsləri Diğərlə faaliyəsləri	156 19 699	260 29.229	\$ 059 292 977	289	1051655	50.685	50.000	19 293 259 744	209 60 196	165 176.939	6 240 22 569	122.67 T-07.00	605746	\$1.676 629.760	74 24 424 290	1 0 6.005	912 524	207154	(7394		1 979 599 14 959 909	1 409 043			1 409 043	12.941				ļ
82 7 32 7 73	Kamu yönecimi ve kavunma, zoruniu kosyal göve Egitim hizmetleri		9166	5.276	544	6991		9.001	274	49 514	4 +97	225 1 590	90) 11 Sei	42.991 79.991	8 36- 58 9-5	1 24	2:	6192 49.909	21 455 2 306	2 420		85 901 597 c19	242 499	150 609	25 200 001 9 239 692	25 442 494 11 954 994					
44 51 10	Sablic lalari ya apayal hizmatlar		2:177	1.729	2.95				9.740 212.996	207	75	1 548	776	1116	21.92	208 50		12.848		1 226		500 525	2218079	271 276	5674695 149691			1			
. Ya Ya	Kanalizasyon, cóp ve atiktarn toplanmas, hitsu Dagio yarda amflandmintama (iya olanan kuruli	11048	ê	40.641 7.554	7.04	68196		1 613	11.636		1 544	605	29 60 21 66	1.046	2271	707		729 929		9 479		906 494 1 990 979		9949125	163 170	3 854 750		••••••			
SA 7 50 79.	: "Cglenca, dinlerma, kültür ve aporta igil faaliyetle : Diger hizmer faaliyetleri	143	9.697	7 250	248.27	851 859	12 085	8.594	10010 2.666		e 209 9	2012 597	21 89 12 99	29-476 69.995	997 8 094	345 41 10		10 924		12 660 29 119		2015 T55 222 995	1 616-614 693 664	9912	1 050 667 71 266	2 672 291 999 974		•			
70 60	Dvierde yaponian hizmet isleri Toplara	2014718		7,209,929	6 991 69	Testest	205 644	609 056	8008043	ereettjes	Scenal peso	929 225	Sacant	9 853 691		6.045+5	242.054	2 999 949	2015000	\$25 B12		328 919 517	501 799 229 239 229		44 972 942	501 799 274 999 799	50009474		9125352	9105950	
71 61	Örün üzərindəki nəz vərgilər Təşiləmərə tükətim inital tükətim (ələz fiyatləriyi	290 909	972790 9166972	229,699	90.58		10 255	18216	205 003	22 329	7 660 554 059	19 490	120 45	911 649 10 165 994	94,956 2,705,754		1 299		24 902	15190		12 546 666			242 992 44 915 925	29 395 397	589 555		9 125 962	3125 252	
22 4	Çalaşınlara yapılan Edemələr Oracim Ozərindəki diğər mət vərgilər	522 946 579		1 686 686	1755.90	2719397		24.197 2.295	679.65 59.165	109 802	178 016		160280	14 001 001			2; 64734	2749.067	1 902 790	102942	501 798	82 431 083									
75 65	Unem izzemiseli digerne vergler Unem izzemiseli diger vergler Drem izzemisleli diger altavanøyartar	713		11 204	17 62			2228	62.60		40	421 696	32.05	18.893 18.893	42 919 42 919	24 66 24 66		21 199	129 726	157		- 391 983 719 991		•							
76 66 17 67	Sabit Aermaye tüketini	- 204 Ste270	190745	- 592 - 591 045	1 695 62	662 091	27 879	18226	- 9-69 969-054	- 1 207 55 707	- 50 79-600	50 C25	- 279 940 04	567 026	221 656	66896	29,954	45 444	190 (79	15 622		- 697919 25007609		•			•				·····
78 60	alarma artigi, nar alarma artigi, gayria.afi	1 860 348	669 939	447506	219505	8 903 759		986 981 410 915	20 505 20	909 290 264 997	669 766 776 166	190 977	8 050 50 8 579 56	547 004	1 094 397	1.954 971	151634	1 045	865-660	590 276 547 900		105969115					•				
80 70	Gayrisafi katma dagar (tamai fiyatlaria) Toplam Bratim (tamai fiyatlaria)	2900.074	1217643	8799 405	\$76991	19.974.999	699.091	697.047 + 059.924	91 950 964	491 979	955 990 1 910 045	447 924	10 295 716	14 997 909	8506660	4 567 191	2 249 390		2418412	950 999 + 191 907	S01 799	909 920 495 645 785 621		-			-				=
	i fopuler under (skring rejustaria) i traiar, cif	1075070	160.091			21 160 461 820 500		1000.00		35 994	24 992		590 934		12262412	-	1		267 790	1	and the	64 469 876									
84	- Incompany of the second second		1.00.000	14 619 089	10 806.28	ALCON BY	1998 121	1 048 201	40.4	10.00	1 202 52	- Treat	19 799 29	a marte	1777419	a sec été	CH		SIN'INT	T INTERNE	AND THE	- Contraction									
85	TÜK, TÜRKİYE DI ONONİSİNİN ARZ-KULLANIN	RONCINTIAL	OLARI, 2002										Turk Stat, THE SL	PPLY-USE UND INPU	T-OUTPUT TABLE	A OF THE TURKS	BH BC ON ONLY, 2002	TUR, TURKING	DIONOMENI	ARZ-RULLA	NIN VEGROI-C	RITABLOLAR	1,2002								
27	N 50 +20 01	-		1					1		_	U				1	1.000	1		_		_	_					_			1

H ↓ ▶ N 58_t20 2

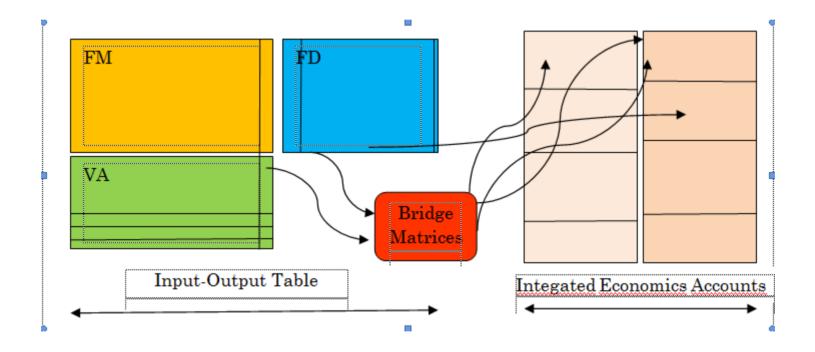
2002 Input-Output Table (characteristic)

	A B	0	D	E	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX BY	BZ C
1			Oliver out to block	and descel finalized	-1										su, 2002 (temel fly	-Hardel					
2			Girdi-Çıktı Tablosu, 2 (oari fiyatlaria, Milyar		a)									joari fiyatiaria, N		auaria)					
3			Input-Output Table, 2		-1										iliyar ity de, 2002 (at basic	ndiner)					
-			at current prices, Bill		•/									at current prices		prices/					
-	_				0.000		Proto and											100.01	Product of		
6			ORONLER (FO 8) - P	HODUCTS (CPA)	ORONLE	K (FU8) -	Toplam		NIH	A) KULLANIMLAR	- FINAL USES	v			(IAH) KULLANIML	AR - FINAL USES		Nihal	Toplam		
7			Agriculture, hunting and related service activities	Forestry, logging and related service activities	Other service activities	Private households with employed persons	Total	Final consumption expenditure by households	Final consumption expenditure by non-profit organisations serving households (NPISH)	Final consumption expenditure by government	Final consumption expenditure	Gross fixed capital formation	Changes in valuables		Changes in Inventories and valuables	Gross capital formation	Exports, fob	Final uses at basic prices	Total use at basic prices		
8	Kod	ÜRÜNLER (FÜ 8)	01	02	93	95							•••••••	•						Code	PRODUCTS (CPA)
9	No		01	02	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	No	
10	01 01	Tarım, avçılık ve ligili hizmet faailyetleri	7 296 542	2 748	161		28 983 636	19 741 416		86 753	19 828 170	22 979		1 233 212	1 233 212	1 256 191	2 258 608	23 342 968	52 326 604	1 01	Products of agriculture, hunting and related services
11	02 702	Ormanoilik, fomrukçuluk ve ilgili hizmet faaliyet	2 419				739 408	434 699		6 862	441 561			50 013			12 581	504 156	1 243 564	2 02	Products of forestry, logging and related services
12	03 05	Balıkolik, balık üreme ve vetiştirme olfilklerini	235				251 423	522 540			522 540			7 996			65 597	596 133	847 556	3 05	Fish and other fishing products: services incidental of fi
66	67 782	Eğlence, dinlenme, kültür ve sporia ligili faaliye	106	11	12 880		2 015 755	1 618 414		1 053 867	2 672 281		1				169 952	2 842 233	4 857 988	57 92	Recreational, cultural and sporting services
67	68 983	Diğer hizmet faailyetieri		7	39 119		222 935	893 664					••••••	•			102	968 977	1 191 911	58 93	Other services
68	68 785	Evlerde yaptınları hizmet işleri						501 799			501 799							501 799	501 799	59 95	Private households with employed persons
69	60	Toplam	16 819 838	157 950	525 812		329 918 517	226 239 228		44 372 342				3 125 352	3 125 352	61 134 826	64 538 368		730 275 499	60	Total
		Ürün üzerindeki net vergiler	2 107 069				12 546 668	29 142 615		242 982	29 385 597					593 555		29 934 917		61	Taxes less subsidies on products
71		Toplam ara tüketim / nihal tüketim (alıcı fiyatlarıy)	18 926 907				342 465 185	255 381 843	4 072 217	44 615 325				3 125 352	3 125 352	61 728 381	64 494 133	430 291 899	772 765 568	62	Total Intermediate consumption/Final use at purchasers'
		Çalışanlara yapılan ödemeler	4 787 663			501 799							1							63	Compensation of employees
		Üretim üzerindeki diğer net vergiler	- 154 056				- 281 382						:							64	Other net taxes on production
	86	Üretim üzerindeki diğer vergiler	136 473				716 537					:								65	Other taxes on production
75	88	Üretim üzerindeki diğer sübvansiyonlar	- 290 528	- 6			- 997 919						:	:						66	Other subsidies on production
76		Sabit sermaye tüketimi	2 169 879		15 622		25 227 609					:								67	Consumption of fixed capital
	88	lsletme artiği, net	24 258 155				185 943 115					1	:							68	Operating surplus, net
78	89	İşletme arbğı, gayrisafi	26 428 035				211 170 724					:	1	1						69	Operating surplus, gross
		Gayrisafi katma değer (temel fiyatlaria)	31 061 643			501 799														70	Value added at basic prices
80		Toplam üretim (temel flyatlaria)	49 988 550	1 112 618	1 191 907	501 799	645 785 621													71	Output at basic prices
		Ithalat, oir	2 338 054				84 489 878													72	imports, cif
82	78	Toplam arz (temel flyatlaria)	52 326 604		1 191 911	501 799														73	Supply at basic prices
83 84		TÜİK, TÜRKİYE EKONOMİSİNİN ARZ-KULLANIM V	/E GÌRDÌ-ÇIKTI TABLO	OLARI, 2002														TurkStat, THE S	SUPPLY-USE /		OUTPUT TABLES OF THE TURKISH ECONOMY, 2002

2002 Input-Output Table (characteristic)

	FM.	totr	fcehh	fcenpish	fceg	fce	gfcf	civ	cii	ciiv	gcf	expfob	fubp	tubp
totc														
tlsop														
ticupp														
coe														
ontop														
otop														
osop														
cofc														
osn														
osg														
vaabp														
oabp														
impcif														
sabp														

Sketch of an Interindustry Dynamic Macoreconomic model



FM-AM

Flow Matrix	1	2	 j	 n-1	n	Total of rows
1						1
2						
i			 ic _{ij}			ictotr _i
n-1						
n			 ↓			V
Total of			ictotc _j			ictot
columns					-	

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

Final demand (FD)

Identities and relations obtained by summation of rows

 $\frac{fcenpish_{tot} = \sum_{\substack{i=1\\59}} fcenpish_i \mathtt{m}}{}$ $fceg_{tot} = \sum_{i=1}^{n} fceg_i a$ $fce_i = fcehh_i + fcenpish_i + fceg_i$ $fce_{tot} = \sum_{\substack{i=1\\ \leq 0}} fce_i \bowtie$ $\frac{gfcf_{tot} = \sum_{\substack{i=1\\59}}^{n} gfcf_i \alpha}{59}$ $cii_{tot} = \sum_{\substack{i=1\\59}}^{59} cii_i ¤$ $civ_{tot} = \sum_{i=1}^{35} civ_i a$ $ciiv_i = cii_i + civ_i a$

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

 $ciiv_{totapp} = ciiv_{tot} + ciiv_{tlsopfd}$ ¤

 $gcf_{totapp} = gcf_{tot} + gcf_{tlsopfd}$ ¤

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

 $fuabp_{tlsopfd} = fce_{tlsopfd} + gcf_{tlsopfd} + expcob_tlsopfd$ ¤

 $tuabp_{tlsopfd} = x$

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

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

GDP Approaches (Identities)

Acronyms

• Worksheet to build the acronyms for the I-O

_	+	h																	
6) 🖬 🤊	▼ (°≝ ▼) ₹				and the second		an and	/erifCalcul.xlsx - N	Microsoft Exce	el								X
ſ	Accuei	il Inserti	on Mise e	en page	Formules	Données	Révision	Affichage Dé	veloppeur C	ompléments								0 -	₫ X
	F6 ▼ (
	B C D E F G H I J K L M N O P Q R S																		
1	0	U U	0	L				fcenpisb	fcegov	fce	gfcf	civ		ciiv	gcf	expcob	fuabp	tuabp	
2	fd	ci	1		59		61		-		-								72
3		ci	ci1.1		ci1.59		fcehh1	fcenpisb1	fcegov1	fce1	gfcf1	civ1	cii1	ciiv1	gcf1	expcob1	fuabp1	tuabp1	
4																			
5	totr		ci59.1		ci59.59	totr59	fcehh59	fcenpisb59	fcegov59	fce59	gfcf59	civ59	cii59	ciiv59	gcf59	expcob59	fuabp59	tuabp59	
6	_tot	totc	totc1		totc59	totalrc	fcehh_tot	fcenpisb_tot	fcegov_tot	fce_tot	gfcf_tot	civ_tot	cii_tot	ciiv_tot	gcf_tot	expcob_tot	fuabp_tot	tuabp_tot	
7	_tlsopfd	_tot	tlsopci1		tlsopci59			fcenpisb_tlsopfd			gfcf_tlsopfd		cii_tlsopfd	ciiv_tlsopfo	gcf_tlsopfd	expcob_tlsopfo	fuabp_tisop	tuabp_tisopf	fd
	_totapp	_tot	totcipp1		totcipp59		fcehh_totapp	fcenpisb_totapp	fcegov_totapp	fce_totapp	gfcf_totapp	civ_totapp	cii_totapp	ciiv_totapp	gcf_totapp	expcob_totapp	fuabp_tota	tuabp_totapr	р
<u> </u>	coe	_tot	coe1		coe59	coe_tot													
	ontop	_tot	ontop1		ontop59	ontop_tot													_
	otop	_tot	otop1			otop_tot		tisopci											_
	osop cofc	_tot tot	osop1 cofc1		osop59 cofc59	osop_tot cofc_tot		totcipp											
<u> </u>	osn	_tot	osn1			osn_tot													
<u> </u>	osg	tot	osg1		osg59	osg_tot													
	vaabp	tot	vaabp1		vaabp59	vaabp tot													
<u> </u>	oabp	_tot	oabp1		oabp59	oabp_tot													
<u> </u>	impcif	_tot	impcif1		impcif59	impcif_tot													
19	sabp	_tot	sabp1		sabp59	sabp_tot													
н	↔ H NomIO TotrTotc 🖓																		
Prê	t 🞦																35 % 🕞		.,
			-	1000	-	-	-												<u> </u>

VAM.CFG

#¶ #
#% #¶
#···Vam.cfg·file·for·the·Input-Output·Table·2002 ·- ·Basic ·Prices ·- ·Current¶
#¶
#¶
P # 9
1998·2020¶
#···Matrices¶
FM·····59·59·0·sectors02.ttl sectors02.ttl f ·Intermediate consumption matrix¶
AM·····59·59·0·sectors02.ttl·sectors02.ttl·#·Intermediate·coefficient·matrix 1
LINV····59·59·0·sectors02.ttl·sectors02.ttl·#·Leontief·Inverse¶
#···Vectors·¶
¶ # ¶
#1 #···Final·Demand¶
totr·····59··1·0·sectors02.ttl··#·60·Total·Intermediate·consumption·row¶
fcehh ·····59 ··1 ·0 ·sectors02.ttl ··# ·61 ·Final ·consumption ·expend. ··by ·households¶
fcenpish591.0.sectors02.ttl#.62.Final.consumption expenditure by ¶
······································
fcegov ····59··1·0·sectors02.ttl ··#·63·Final consumption expenditure¶
······································
fce······59··1·0·sectors02.ttl··#·64·Final·consumption·expenditure¶
gfcf ······59··1·0·sectors02.ttl ··#·65·Gross·fixed capital formation¶
civ·····59··1·0·sectors02.ttl··#·66·Changes·in·valuables¶
cii ······59··1·0·sectors02.ttl ··#·67·Changes ·in ·inventories¶
aiiu

GDP Expenditure Excel file

	A	В	С	D	E	F	G	
1	Tablo 7. Harcamalar	Yöntemiyle Gayr	i Safi Yurtiçi Has	ala (cari fiyatlarla)	, 1998-2007 - Ta	ble 7. Expenditur	e on the Gross D	Dor
				Yerleşik ve	(Eksi) Yerleşik Olmayan	Yerleşik Hanehalklarının		
				Yerleşik Olmayan	Hanehalklarının	Yurtdışı		
				Hanehalklarının	Yurtiçi Tüketimi	Tüketimi		
			Yerleşik	Yurtici Tüketimi	(Less) Final	Final		
			Hanehalklarının	Final Consumption	Consumption	Consumption	Devletin Nihai	
			Tüketimi	Expenditure of	Expenditure of	Expenditure of	Tüketim	
		Gayri Safi	Final Consumption		Non-Resident	Resident	Harcamaları	
		Yurtiçi Hasıla	Expenditure of	Resident	Households on	Households in	Government Final	
		Gross Domestic	Resident	Households on the	the Economic	the Rest of the	Consumption	C
2		Product	Households	Economic Territory	Territory	World	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	5
6	3.dönem - 3. quarter	20 852 112	12 885 255	14 077 352	1 306 890	114 793	1 793 065	i
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	ł
10	2.dönem - 2. quarter	23 401 020	16 125 184	16 686 179	804 988	243 993	2 691 883	3
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	5
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	ł
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		\bigcirc	D	E	F	G	
1	Tablo 7. Harcamalar	Yöntemiyle Gayri	i Sa	i Yurtiçi Has	ala (cari fiyatlarla)	, 1998-2007 - Ta	ble 7. Expenditur	e on the Gross D)on
			Ha Fina	Yerleşik ehalklarının Tüketimi Consumption penditure of Resident	Yerleşik ve Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi Final Consumption Expenditure of Resident and Non- Resident Households on the	(Eksi) Yerleşik Olmayan Hanehalklarının Yurtiçi Tüketimi (Less) Final Consumption Expenditure of Non-Resident Households on the Economic	Yerleşik Hanehalklarının Yurtdışı Tüketimi Final Consumption Expenditure of Resident Households in the Rest of the	Devletin Nihai Tüketim Harcamaları Government Final Consumption	
2		Product	_	ouseholds	Economic Territory	Territory	World	Expenditure	
3456	1.dönem - 1. quarter 2.dönem - 2. quarter 3.dönem - 3. quarter	10 200 1 13 216 010 15 629 441 20 852 112	-	46 668 561 9 420 456 10 077 729 12 886 255	49 694 150 9 808 131 10 884 098 14 077 352	3 472 963 492 141 945 884 1 306 890	104 466 139 515 114 793	7 197 730 1 233 449 1 549 036 1 793 065) 5 5
89	4.dönem - 4. quarter 1000 1.dönem - 1. quarter	20 505 584		14 20121 71 641 318 14 253 007	14 924 569 74 994 397 14 599 265	728 048 3 955 789 429 850	602 711	2 622 180 12 791 000 2 248 054)
10 11 12	2.dönem - 2. quarter 3.dönem - 3. quarter 4.dönem - 4. quarter	23 401 020 30 161 687 31 757 931		16 125 184 19 327 018 21 32 109	16 686 179 20 723 750 22 985 203	804 988 1 548 059 1 172 893	151 327	2 691 883 3 290 560 4 560 503)
13 14 15 16 17	1.dönem - 1. quarter 2.dönem - 2. quarter 3.dönem - 3. quarter 4.dönem - 4. quarter	100 050 01 33 363 460 38 344 610 48 240 935 46 709 016	*	117 499 253 25 523 894 27 250 162 31 755 650 32 3 547	124 767 959 26 180 319 28 829 537 34 871 653 34 886 450	8 324 327 911 715 1 886 593 3 353 278 2 172 741	255 290 347 218	19 542 975 3 475 311 4 514 130 4 932 634 6 620 899) 1

Basic code to read

Result of the basic code

9 G 7.375	
<u>File E</u> dit <u>B</u> ank <u>G</u> raph <u>R</u> egression E <u>d</u> itor <u>M</u> odel <u>W</u> indow <u>H</u> elp	
\min 🛍 🖬 🚺 🙀 🔛 🖉 Load Execute	
	•
add test.add add test.add x1 open c:\modeles\turkey\data_g\ExpendituresGDP_cur98.x1s Warning: Workbook already is open. Closing and continuing # # # x1 open worksheet 1 do { x1 read D %1 down fce %2 %2 } (3 8 13 18 23 28 33 38 43 48) (1998-2007) m x1 read D % down fce (1998) (1998)	
xl read D 8 down fce 1999 1999 xl read D 13 down fce 2000 2000	
xl read D 18 down fce 2001 2001 xl read D 23 down fce 2002 2002	E
x1 read D 28 down fce 2003 2003	
xl read D 33 down fce 2004 2004 xl read D 38 down fce 2005 2005	
xl read D 43 down fce 2006 xl read D 48 down fce 2007 2007	
type fce 1998 2007 fce	
1998 -0.000001 -0.000001 -0.000001 -0.000001 -0.000001 -0.000001 -0.000001 -0.000001 -0.000001	632730560

Result of corrected code

G 7.375 G 7.375 G	
<u>File E</u> dit <u>B</u> ank <u>G</u> raph <u>R</u> egression E <u>d</u> itor <u>M</u> odel <u>W</u> indow <u>H</u> elp	
🛅 🏗 🕰 🔃 🎥 🧱 🧱 🖉 Load	
	-
add test1.add add test1.add	Â
xl open c:\modeles\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	
x1 read D 13 down temp 2000 2000	
F Fce{2000} = temp	
xl read D 18 down temp 2001 2001 F fce{2001} = temp	E
x1 read D 23 down temp 2002 2002	
f fce{2002} = temp	
x1 read D 28 down temp 2003 2003 f fce{2003} = temp	
x1 read D 33 down temp 2004 2004	
f fce{2004} = temp	
xl read D 38 down temp 2005 2005 F fce{2005} = temp	
x1 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 fcerhh = fcernrhhet - fcenrhhet + fcerhhrow Government Final Consumption Expenditure qfce = qfcece + qfcepiqas f Gross Fixed Capital Formation - Public Sector pubs = pubsme + pubsc f Gross Fixed Capital Formation - Private Sector f pris = prisme + prisc Gross Fixed Capital Formation

Preparation to read IO table

Name	Туре	Location in the worksheet
FM	Matrix	D11:BJ69
fcehh	Vector	BL11:BL69
fcenpish	Vector	BM11:BM69
fcegov	Vector	BN11:BN69
gfcf	Vector	BP11:BP69
civ	Vector	BQ11:BQ69
cii	Vector	BR11:BR69
expfob	Vector	BU11:BU69
tlsop	Vector	D71:BJ71
compemp	Vector	D73:BJ73
ontop	Vector	D74:BJ74
otop	Vector	D75:BJ75
osop	Vector	D76:BJ76
cofc	Vector	D77:BJ77
osn	Vector	D78:BJ78
impcif	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
#
  open \modeles\turkey\data G\IOT2002 BP.xls
xl
xl open worksheet 1
xl replace 0.0
                                                     #
#
  Reading the components of Value added
                                                        Reading the components of Final Demand
                                                     #
                                                     #
ic Read a full matrix for Excel, store in Vam Matrix
                                                     #
                                                        Taxes less subsidies on products
xl matread c(4-62) r(11-69) b.FM c(1-59) r(1-59) 2002
                                                     #
#
                                                     xl read D 71 right b.tlsop1
                                                                                        2002 2002
#
   VAB
#
                                                     xl read E 71 right b.tlsop2
                                                                                        2002 2002
do{
                                                     ....
   xl read BL %2 down b.fcehh%1
                                2002 2002
                                                     xl read BI 71 right b.tlsop58
                                                                                        2002 2002
  xl read BM %2 down b.fcenpish%1 2002 2002
                                                     xl read BJ 71 right b.tlsop59
                                                                                        2002 2002
  xl read BN %2 down b.fcegov%1 2002 2002
                                                     #
                                2002 2002
  xl read BP %2 down b.qfcf%1
                                                     #
                                                        Compensation of employees
  xl read BO %2 down b.civ%1
                               2002 2002
                                                     #
  xl read BR %2 down b.cii%1
                               2002 2002
                                                     xl read D 73 right b.compemp1
                                                                                         2002 2002
  xl read BU %2 down b.expfob%1 2002 2002
                                                     xl read E 73 right b.compemp2
                                                                                         2002 2002
  }(1-59)(11-69) m
                                                     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 + tlsop
#
# 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
```

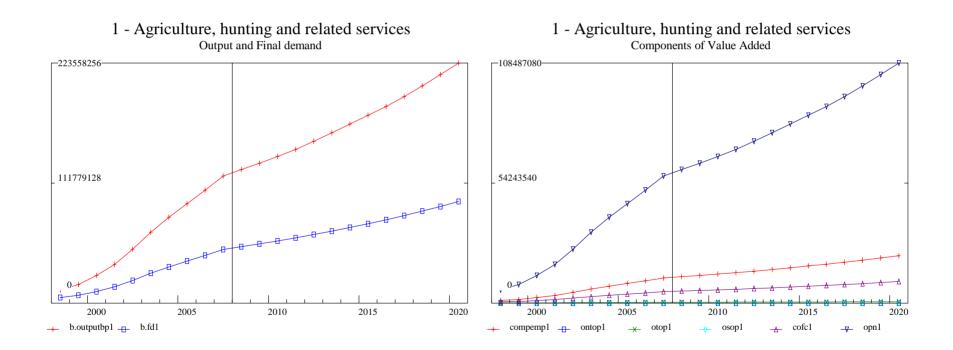
```
# COLUMNS
#
# Intermediate consumption (total Columns)
#
getsum FM r totr
#
# Final Consumption Expenditure
#
vc fce = fcehh + fcenpish + fcegov
#
# Changes in inventories and valuables
#
vc ciiv = cii + civ
#
# Gross Formation capital
#
vc qcf = qfcf + ciiv
#
# Final uses at basic prices
#
vc fuabp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

 \underline{vc} \underline{tuabp} = \underline{totr} + \underline{fuabp}

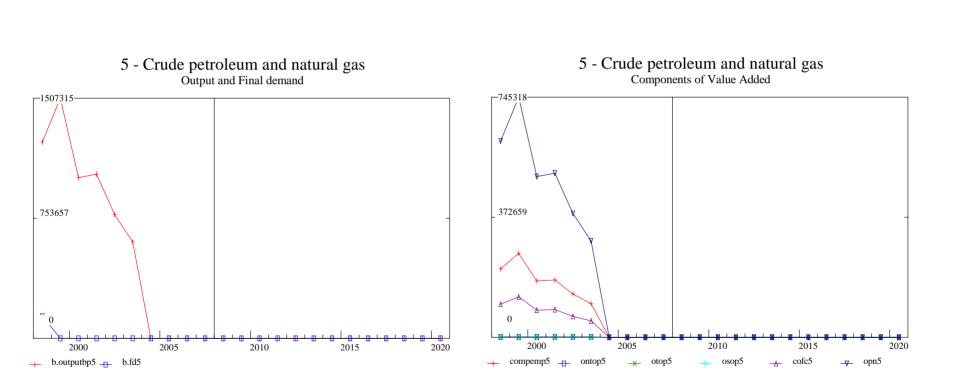
TurkTiny (code)

• TurkModel.txt

Results



Troubles



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.