



Introduction to ANARRES_t Database



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Outline

- GTAP database
 - Agents/accounts
 - Transactions
 - Elasticities
 - Satellite accounts
- ANARRES database
 - Agents/accounts
 - Transactions
 - Elasticities
 - Satellite accounts



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GTAP Database



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GTAP Agents

- 57 ‘Sectors’ (GTAP 5, 6, 7, 8, 9 & 10)
 - 14 agriculture
 - 4 minerals
 - 24 manufacturing (8 food)
 - 11 services
- 5 Factors (GTAP 5, 6, 7 & 8) (9 & 10)
 - 2 labour/5 labour
 - 2 land/natural resources
 - 1 capital
- 134 Regions (GTAP 8.1) (112 - GTAP 7.1; 129 - GTAP 8; 140 - GTAP9)
 - 25 Asia
 - 23 Americas
 - 33 ‘Europe’
 - 8 ‘FSU’
 - 13 Middle East
 - 32 Africa
- 141 Regions (GTAP 10)
 - 26 Asia
 - 27 Americas
 - 33 ‘Europe’
 - 12 ‘FSU’
 - 13 Middle East
 - 32 Africa

GTAP 11 ????



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GTAP 5 to 10

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GTAP

Description

GTAP

Description

pdr	Paddy rice	lum	Wood products
wht	Wheat	ppp	Paper products publishing
gro	Cereal grains nec	p_c	Petroleum coal products
v_f	Vegetables fruit nuts	crp	Chemical rubber plastic prods
osd	Oil seeds	nmm	Mineral products nec
c_b	Sugar cane sugar beet	i_s	Ferrous metals
pfb	Plant-based fibers	nfm	Metals nec
ocr	Crops nec	fmp	Metal products
ctl	Cattle sheep goats horses	mvh	Motor vehicles and parts
oap	Animal products nec	otn	Transport equipment nec
rmk	Raw milk	ele	Electronic equipment
wol	Wool silk-worm cocoons	ome	Machinery and equipment nec
frs	Forestry	omf	Manufactures nec
fish	Fishing	ely	Electricity
coa	Coal	gdt	Gas manufacture distribution
oil	Oil	wtr	Water
gas	Gas	cns	Construction
omn	Minerals nec	trd	Trade
cmt	Meat: cattle sheep goats horse	otp	Transport nec
omt	Meat products nec	wtp	Sea transport
vol	Vegetable oils and fats	atp	Air transport
mil	Dairy products	cmn	Communication
pcr	Processed rice	ofi	Financial services nec
sgs	Sugar	isr	Insurance
ofd	Food products nec	obs	Business services nec
b_t	Beverages and tobacco products	ros	Recreation and other services
tex	Textiles	osg	PubAdmin Defence Health Educat
wap	Wearing apparel	dwe	Dwellings
lea	Leather products		

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GTAP Factors

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GTAP 5, 6 & 7

Description

GTAP 9 & 10

Description

Land	Land	Land	Land
UnSkLab	Unskilled labour	Tech_aspros	Technical and Skilled
SkLab	Skilled labour	Clerks	Clerks
Capital	Capital	Service_shop	Service and shop workers
NatlRes	Natural Resources	off_mgr_pros	Office, Managerial & professional
		ag_othlowsk	Agriculture and Other Low Skill
		Capital	Capital
		NatlRes	Natural Resources

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GTAP 8 Regions

GTAP	Description	GTAP	Description	GTAP	Description
aus	Australia	nic	Nicaragua	kgz	Kyrgyzstan
nzl	New Zealand	pan	Panama	xsu	Rest of Former Soviet Union
xoc	Rest of Oceania	slv	El Salvador	arm	Armenia
chn	China	xca	Rest of Central America	aze	Azerbaijan
hkg	Hong Kong	xcb	Caribbean	geo	Georgia
jpn	Japan	aut	Austria	bhr	Bahrain
kor	Korea	bel	Belgium	irn	Iran Islamic Republic of
mng	Mongolia	cyp	Cyprus	isr	Israel
twn	Taiwan	cze	Czech Republic	kwt	Kuwait
xea	Rest of East Asia	dnk	Denmark	omn	Oman
khm	Cambodia	est	Estonia	qat	Qatar
idn	Indonesia	fin	Finland	sau	Saudi Arabia
lao	Lao People's Democratic Republ	fra	France	tur	Turkey
mys	Malaysia	deu	Germany	are	United Arab Emirates
phl	Philippines	gre	Greece	xws	Rest of Western Asia
sgp	Singapore	hun	Hungary	egy	Egypt
tha	Thailand	irl	Ireland	mar	Morocco
vnm	Viet Nam	ita	Italy	tun	Tunisia
xse	Rest of Southeast Asia	lva	Latvia	xnf	Rest of North Africa
bgd	Bangladesh	ltu	Lithuania	cmr	Cameroon
ind	India	lux	Luxembourg	civ	Cote d'Ivoire
np1	Nepal	mlt	Malta	gha	Ghana
pak	Pakistan	nld	Netherlands	nga	Nigeria
lka	Sri Lanka	pol	Poland	sen	Senegal
xsa	Rest of South Asia	prt	Portugal	xwf	Rest of Western Africa
can	Canada	svk	Slovakia	xcf	Central Africa
usa	United States of America	svn	Slovenia	xac	South Central Africa
mex	Mexico	esp	Spain	eth	Ethiopia
xna	Rest of North America	swe	Sweden	ken	Kenya
arg	Argentina	gbr	United Kingdom	mdg	Madagascar
bol	Bolivia	che	Switzerland	mwi	Malawi
bra	Brazil	nor	Norway	mus	Mauritius
chl	Chile	xef	Rest of EFTA	moz	Mozambique
col	Colombia	alb	Albania	tza	Tanzania
ecu	Ecuador	bgv	Bulgaria	ugv	Uganda
pry	Paraguay	blr	Belarus	zmb	Zambia
per	Peru	hrv	Croatia	zwe	Zimbabwe
ury	Uruguay	rou	Romania	xec	Rest of Eastern Africa
ven	Venezuela	rus	Russian Federation	bwa	Botswana
xsm	Rest of South America	ukr	Ukraine	nam	Namibia
cri	Costa Rica	xee	Rest of Eastern Europe	zaf	South Africa
gtm	Guatemala	xer	Rest of Europe	xsc	Rest of South African Customs
hnd	Honduras	kaz	Kazakhstan	xrw	Rest of the World

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GTAP Data in SAM Format

	Imp	Dom	Exp	Act	Fact	Imp Duty	Exp Tax	Imp Tax	Dom Tax	Fact Tax	Trade Marg	Marg Exp	Trade	Reg III	Priv III	Prod Tax	Dir Tax	Govt	CGDS
Imp	0	0	0	VFM	0	0	0	0	0	0	0	0	0	0	0	0	0	VGM	VFM
Dom	0	0	0	VDFM	0	0	0	0	0	0	0	0	0	0	0	0	0	VXGM	VDFM
Exp	0	0	0	0	0	0	0	0	0	0	0	0	VST	VXWD	0	0	0	0	0
Act	0	VDM	VXMD + VST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fact	0	0	0	VFM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imp Duty	MTAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exp Tax	0	0	XTAXD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imp Tax	0	0	0	DTAX	0	0	0	0	0	0	0	0	0	0	0	DTAX	0	DTAX	DTAX
Dom Tax	0	0	0	DTAX	0	0	0	0	0	0	0	0	0	0	0	DTAX	0	DTAX	DTAX
Fact Tax	0	0	0	ETAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trade Marg	VTWR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marg Exp	0	0	0	0	0	0	0	0	0	0	0	VTWR	0	0	0	0	0	0	0
Trade	VXWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reg III	0	0	0	0	VOA-VDEP	MTAX	XTAXD	ITAX	DTAX	ETAX	0	0	0	0	0	PTAX	PTAX	0	0
Priv III	0	0	0	0	0	0	0	0	0	0	0	0	0	0	YP	0	0	0	0
Prod Tax	0	0	0	0	PTAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dir Tax	0	0	0	0	PTAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Govt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	YG	0	0	0	0
CGDS	0	0	0	0	VDEP	0	0	0	0	0	0	VTWR - VST	VIWS - VTWR - VXWD	SAVE	0	0	0	0	0
Tot	VIMS	VDM	VXWD	VOM	VFM	MTAX	XTAXD	ITAX	DTAX	ETAX	VTWR	VTWR	VXWD	INCOME	YP	PTAX	PTAX	YG	REGIN

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Global Values Only

- } **High?**
- } **??**
- } **Zero (in database)**



GTAP Satellite Accounts

- Energy use data
 - Volumes (mtoe)
- Emissions
 - CO2, N2O, CH4, F-gases
- GTAP Power
 - Generation technologies
- GMig2
 - Migration and remittances
- Land Use
 - GHG emissions
- Biofuels
 - Ethanol
 - ...
- ETC



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ANARRES Database



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ANARRES Accounts

- Same as GTAP (basically)
 - More labels due to SAM format
 - Regional household removed
 - Commodity taxes different
- Account groups
 - Sectors – commodities & activities
 - Factors – factor use and factor use taxes
 - Regions – trade, trade taxes, trade margins



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ANARRES Indexing

Set ordering – row, column, region

follows from the SAM basis

Accounts – based on GTAP sector, factor, and region labels

Prefixes used: *c* – commodities
a -activities
ff – factors
h - households
*t** - taxes
**tp* - margins
w –trade partners
r - regions



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ANARRES Sets 1

Sets	Description	GTAP basis	Prefix
sac(*)	SAM accounts		
c(sac)	commodity accounts	Sectors	c
a(sac)	activity accounts	Sectors	a
ff(sac)	factor accounts	Factors	ff
tmr(sac)	tariff accounts	Regions	tm
ter(sac)	export susidy accounts	Regions	te
tfl(sac)	factor use tax accounts	Factors	tf
h(sac)	household accounts		
g(sac)	government accounts		
i(sac)	investment accounts		
owatpmarg(sac)	Trade and transportation margin services	Regions & Margins	owatp
w(sac)	Rest of world trade partners	Regions	w
r	SAM regions	Regions	

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ANARRES Sets 2

Sets	Subsets	Description	Sets	Subsets	Description
Commodities			Activities		
c(sac)	cagr(c)	Agricultural commodities	a(sac)	aagr(a)	Agricultural activities
	cnat(c)	Natural resource commodities		anat(a)	Natural resource activities
	cfid(c)	Food commodities		afid(a)	Food activities
	cind(c)	Industrial commodities		aind(a)	Industrial activities
	ccns(c)	Construction commodities		acns(a)	Construction activities
	cuti(c)	Utility commodities		auti(a)	Utility activities
	cser(c)	Service commodities		aser(a)	Service activities
	cagg	Aggregate commodity groups		aagg	Aggregate activity groups
Factors			Trade Partners		
ff(sac)	l(ff)	Labour Factors	w(sac)	wagg	Aggregate region groups
	ls(l)	Skilled Labour Factors		wgn(w)	Rest of world without Globe
	lu(l)	Unskilled Labour Factors	Regions		
	k(ff)	Capital Factors	r	ragg	Aggregate region groups
	lnd(ff)	Land factors		rgn(r)	SAM Regions without Globe
	fag(ff)	Aggregate factors		ref(r)	Reference region

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ANARRES t Africa SAM

AFR	cagr	cnres	cmanu	cserv	aagr	anres	amanu	aserv	fland	fcap	flskl	flskl	tmufr	tmoeed	tmrow	teufr	teoeed	terow	tfland	tfcap	tfllskl	tfllskl	owatp	owatp	owatp	wufr	woeod	wrow	wglo	hous	saltax	produt	dntax	govt	i_s	total
cagr	0	0	0	0	###	78	###	8,694	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,888	###	7,627	0	###	0	0	0	102	3607	###	
cnres	0	0	0	0	0	27	7,862	###	1,402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,812	###	###	0	1,139	0	0	1	189	###		
cmanu	0	0	0	0	###	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	###	###	0	###	0	0	6,588	###	###		
cserv	0	0	0	0	###	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,570	###	###	6,583	###	0	0	###	###	###		
aagr	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
anres	0	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
amanu	0	0	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
aserv	0	0	0	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
fland	0	0	0	0	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
fcap	0	0	0	0	###	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
flskl	0	0	0	0	###	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
flskl	0	0	0	0	958	3,251	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
tmufr	179	90	2,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2727	
tmoeed	1,119	22	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
tmrow	657	202	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
teufr	0	35	866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	901	
teoeed	0	433	1,063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1497	
terow	0	343	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	798	
tfland	0	0	0	0	298	964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1262	
tfcap	0	0	0	0	508	1,653	1,674	3,539	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7373
tfllskl	0	0	0	0	2,191	417	2,509	4,020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9137
tfllskl	0	0	0	0	20	72	513	3,018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3624
owatpaf	346	782	2,635	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3763	
owatpoe	820	225	8,196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9241	
owatprow	546	902	8,139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9586	
wufr	2,888	6,812	###	1,570	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
woeod	8,489	2,089	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
wrow	5,688	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
wglo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
hous	0	0	0	0	0	0	0	0	###	###	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###
saltax	777	-5	###	8,023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
produt	0	0	0	0	1,261	4,229	###	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###
dntax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
govt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###	
i_s	0	0	0	0	0	0	0	0	0	###	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	###
total	###	###	###	###	###	###	###	###	###	###	###	###	2727	###	###	901	1497	798	1262	7373	9137	3624	3763	9241	9586	###	###	###	###	###	###	###	###	###	###	

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ANARRES_t Africa SAM

	afr	cagr	cnres	cmanu	cserv
aagr		259,635	0	0	0
anres		0	320,141	0	0
amanu		0	0	973,797	0
aserv		0	0	0	933,002
tmufr		179	90	2,458	0
tmoeed		1,119	22	13,692	0
tmrow		657	202	14,427	0
teufr		0	35	866	0
teoeed		0	433	1,063	0
terow		0	343	455	0
owatpaf		346	782	2,635	0
owatpoe		820	225	8,196	0
owatprow		546	902	8,139	0
wufr		2,888	6,812	36,931	1,570
woeod		8,489	2,089	160,336	49,102
wrow		5,688	12,832	124,064	21,305
wglo		0	0	0	0
saltax		777	-5	33,893	8,023
total		281,143	344,903	1,380,952	1,350,02

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ANARRES_t Africa SAM

afr	owatpafr	owatpoecd	owatprow	wafr	woecd	wrow	wglo
cagr	0	0	0	2,888	11,559	7,627	0
cnres	0	0	0	6,812	163,412	73,690	0
cmanu	0	0	0	36,931	88,080	37,491	0
cserv	0	0	0	1,570	39,545	17,808	6,583
owatpafr	0	0	0	0	0	0	0
owatpoecd	0	0	0	0	0	0	0
owatprow	0	0	0	0	0	0	0
wafr	0	0	0	0	0	0	0
woecd	0	0	0	0	0	0	0
wrow	0	0	0	0	0	0	0
wglo	3,763	9,241	9,586	0	0	0	0
i_s	0	0	0	0	-82,579	27,273	16,007



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SAM for Globe Region

afr	cserv	wafr	woecd	wrow	total
cserv	0	22,590	267,320	252,140	542,049
wafr	6,583	0	0	0	6,583
woecd	307,616	0	0	0	307,616
wrow	227,851	0	0	0	227,851
i_s	0	-16,007	40,296	-24,289	0
total	542,049	6,583	307,616	227,851	



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ANARRES_t Elasticities

- GTAP import elasticities
 - Relabelled to match ANARRES SAM
 - Aggregated using region specific weights
 - Region and commodity specific elasticities
- GTAP production elasticities
 - Relabelled to match ANARRES SAM
- Available to ANARRES as output from SAM compilation codes
 - Details later in the course



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ANARRES_t Satellite Accounts

- Energy use data
 - Relabelled to match ANARRES SAM
 - Available to ANARRES as output from SAM compilation
- Emissions
 - Relabelled to match ANARRES SAM
 - Available to ANARRES as output from SAM compilation
- GMig2
 - Can be relabelled to match ANARRES SAM
 - Can be available to ANARRES as output from SAM compilation



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ANARRES: ‘accuracy’

- GTAP data (all releases)
 - Millions USD (\$) at 6 decimal places
 - Sub matrices with nonzero TVs are ‘full’
 - Row and column totals NOT identical
 - Some applied tax rates > 1,000%
- ANARRES data
 - Millions USD (\$) at user set decimal places
 - cgemod use 1 or 2 decimal places
 - Sub matrices with nonzero TVs can be ‘sparse’
 - Row and column totals ARE identical
 - Anomalous applied tax rates eliminated
 - Satellite data made consistent with TV data



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Introduction to ANARRES Database

The End



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