## INDEX-VOLUME 1A

Note: Page numbers followed by "f" and "t" indicate figures and tables respectively

ABARES. See Australian Bureau of Agricultural and firm values explicit calculation, 752 Fullerton and Rogers model, 749	
Resource Economics and Sciences consumption goods, 749	
Accelerated economic growth flat rate consumption tax, 751	
CGE model, large, 121 fundamental tax reforms, 751	
economy specific characteristics, 122 lifetime income distribution, 749–751	
equilibrium effects, 123—124 myopic expectations, 750	
government expenditures, 121–122 production goods, 749	
OECD method, 121 income groups and perfect foresight, 751	
productivity growth, 124 Flat Tax effects, 752	
public debt services, 122 X-Tax, 751	
TFP index, 122–123, 123t  Australian Bureau of Agricultural and Resource	
wage rate adjustments, 122 Economics and Sciences (ABARES), 554	
ACOR. See Average capital-output ratio  Australian Bureau of Infrastructure, Transport and	
Add-on VAT, 774–775 Regional Economics (BITRE), 599	
aid-hd scenario, 260 Average capital-output ratio (ACOR), 235–236	
Dutch Disease effect, 266	
foreign transfers in, 264	
analysis acceleration in CDR 264, 265	
poverty rate 265	
aid_infra scenario 260	_
Dutch Disease effect 266 change in spatial distribution of domestic deman	d,
foreign transfers in 264	
infrastructure 265	
poverty rate 265	
AK model. See Auerbach and Kotlikoff model	
Alternative Minimum Tax (AMT) 782 797—798 regional aggregate demand, 448—449	
AMOS model 401 regional aggregate supply, 447—448	
alternative labor market closures 403	
regional CCE models dynamics 403-404 regional labor-saving technical change, 449-457	
AMT See Alternative Minimum Tax	F, 436
for GEMPACK users 70—71	
Applications CGF model short-run	
Armey-Shelby proposal 731	
Armington specification 46–47 and long-run closure differences, 444–445	
Arrow-Debreu general equilibrium model 282–283	
Auerbach and Kotlikoff model (AK model) 747 749	
750t regional aggregate supply, 445–446	
variables, 436, 438t adding human capital, 753–755	
adding international flows 755	
CRIT 756	
mobile capital and tradable goods 755	
101 WWR1, 362—363	
Engen and Gale model 752—753	
financial markets explicit calculation, 752	

Base case (Continued)	Capital services, 669-670
projections for emissions by source in, 593–596, 594t	Capital-labor-energy-materials-services datasets (KLEMS datasets), 13
projections for macroeconomic variables, 583–585	Carbon capture and storage (CCS), 574
export and import volumes, 583–585, 584f	Cass-Koopmans theory, 478–479
real GDP and national private consumption, 583,	CBIT. See Comprehensive business income tax
584f	CCS. See Carbon capture and storage
trade terms, 584f, 585	Centre of Policy Studies (CoPS), 25, 554
projections for national industry production, 587f	CES. See Constant elasticity of substitution
air transport, 591	CET. See Constant elasticity of transformation
average growth prospects, 592–593	CEX. See Consumer expenditure survey
electricity generation-other renewable, 586–588	CGE model. See Computable general equilibrium model
forecasts for agricultural sector, 592	CGE modeling. See Computable general equilibrium
gas mining and coal mining, 592	modeling
projected growth in overall electricity supply, 590	Change and percentage change equations, 65-66
projections of growth of softwood plantations, 591	optimization problems, 66–67
rail freight transport, 591	rules for, 66t
rail passenger transport, 591	variants in equations, 67
weak growth prospects, 592	Cholesky factorization, 695
Base scenario, 241–242, 261	Climate policy evaluation
economy evolution, 262	allowance price, 527, 528f
government consumption of education and	banking emission allowance effect
non-education services, 261	allowance prices, 544, 545f
government fiscal account, 261	borrowing allowances, 543
growth, 262	household welfare effects, 548, 548f
growth rates in real GDP, 261	industry effects, 544-545, 547t
MDG targets and paths, 264f	macroeconomic impacts, 544, 546t
Yemen simulation results, 263t	safety-valve pricing, 544
Base-broadening, rate-reducing reforms (BBRR reforms),	cap- and-trade policy, 526-527
758	distributional impact
BBRR reforms. See Base-broadening, rate-reducing	full wealth, 539, 539f
reforms	household welfare effects, 539, 539f, 540f, 543t
BEA. See Bureau of Economic Analysis	household welfare effects decomposition, 541,
Bequests, 792	541f
Biases, 13	emissions abatement, 528
BITRE. See Australian Bureau of Infrastructure, Transport	greenhouse gas emission, 527, 527f
and Regional Economics	IGEM model, 529
BLS. See Bureau of Labor Statistics	impact on economic growth and industry
BOTE model. See Back-of-the-envelope model	emission demand, 538, 538f
FEDERAL model, 399	industry effect, 529, 532t
Liew's model, 398	macroeconomic impact, 529, 530t
MMRF, 400-401	output and price changes, 529, 533f
MRSMAE, 398	price-induced technical change, 534, 535f
Bradford's X-Tax, 661	real final demand, 529, 531f
Bureau of Economic Analysis (BEA), 27, 71–72	real GDP, 537, 537f
Bureau of Labor Statistics (BLS), 78	real value added, 531–533, 534f
	Closed-economy model, 21
C	Commodity groups, 668
Capital effect, 39	Commonwealth Scientific and Industrial Research
Capital income, 798	Organization (CSIRO), 599
Capital income tax add-on	Composite consumption good, 793–794
to Flat Tax effects, 765, 767-768	Comprehensive Africa Agriculture Development Program
capital income tax, 765-766	(CAADP), 293 Comprehensive business income tax (CBIT), 756
to Flat Tax reform, 767, 767t	Computable general equilibrium model (CGE model),
current federal income tax system, 766	277—278, 744
FT and AT plan, 766	277 270, 777

application, 278	distributional effects, 16–17
application domain, 282-285	economic issues, 20-21
characterization, 289-290	GATS, 19
change directions, 290	GIDD model, 16
comparative analysis across countries, 290	labor markets, 20
evidence to nourish public debate, 290	Lerner rule, 18-19
measurement, 289-290	Melitz specification, 18
equilibrium and domain type models	New Keynesian models, 17
applicability domain, 284	rudimentary approaches, 20
Arrow-Debreu general equilibrium model, 282-283	single-country model, 21
dynamic recursive models, 283	state-of-the-art methods, 17-18
forward-looking models, 283	four-closure approach, 87
estimation and validation, 285	connections between four modes of analysis, 89f
general equilibrium model	decomposition closure, 88
policy analysis modes, 286	forecast closure, 88
dated comparative statics, 287	historical closure, 87-88
dated-dynamic model, 289	policy closure, 88
dated-static run, 288	global models, 9
NAFTA models, 288-289	contemporary issues, 9
timeless comparative statics, 286-287	DAI database, 9–10
timeless-dynamic models, 289	DICE model, 12
policy analysis modes, 286–289	ENVISAGE model, 10
policy formulation, 278–279, 289–297	G-Cubed model, 11
agriculture, 293	GTAP, 9
climate change, 295	IAMs, 11–12
external shocks adjustment, 291	IFPRI, 10-11
human development, 293–294	RICE model, 12
international trade agreements, 294	trade liberalization simulations, 10
labor markets, 294	models, 556
poverty, 293	MONASH-style
public finance, 292–293	decomposition simulations, 91–92
trade reform, 291–292	forecast simulations, 92–93
theory and empirical models	historical simulations, 90-91
analytic model, 279	policy simulations, 93–94
1-2-3 model, 280-281	monographs and journal articles, 2
policy analysis, 279–280	questions for modelers, 554–555
reduced form model, 282	single-country models, 2
Salter-Swan model, 280	BOTE models, 5–6
theoretical issues, 280	bottom-up regional model, 7
Computable general equilibrium modeling	comparing proposals, 8
(CGE modeling), 1, 23, 28, 106	decomposition simulations, 3
See also MONASH model	Diamond-Zodrow model, 8-9
characteristic in Australia, 554	forecast simulations, 3
comparison, 1–2	general equilibrium modeling, 4
consumers' expectation, 80–81	government sector, 7–8
accurate representation of policy instruments, 81–82	historical simulations, 3
baseline forecasts, 82–84	IGEM, 6
disaggregated results, 82, 82t	involving ORANI, 2–3
disaggregation in focus area, 81–82	MAMS framework, 4–5
historical decomposition analyses, 84–87	market-based environmental policies, 6–7
percentage changes, 83f	MDGs, 4
up-to-date data, 81	MONASH projects, 2
cutting-edge methodological areas, 16	MSG projects, 2
Australia's ORANI model, 18	MSG6 applications, 3
calibration hints, 19	Norway and Australia, 2
closed-economy model, 21	OLG model, 8
croscu=cconomy mouci, 21	OLG IIIOGG, 0

Computable general equilibrium modeling	intertemporal budget constraint, 674-675
(CGE modeling) (Continued)	intertemporal welfare function, 674
policy simulations, 3	labor-augmenting productivity growth, 674
regional dimension, 5–6	local Cholesky values, 696–697, 698t
WTO, 5	logarithm form, 677—678
technical aspects, 12–13	non-tax parameters, 708t
BOTE modeling, 15	parameter estimation, 696–697, 697t
computation, 14–15	rate of return, 676
data, 14	real private rate, 693
econometric methods, 13–14	steady-state value, 693
GEMPACK and GAMS, 15–16	transition equation, 675
KLEMS datasets, 13	translog form, 677
parameter estimation, 14	value shares, 676
validation, 14–15	Consumer expenditure survey (CEX), 483
tighter border security, 29–40	Consumer price index (CPI), 178, 483
expenditure aggregates with, 32f	Consumption goods, 668
GDP and employment and capital with, 30f, 31	Consumption tax reform
GDP deviations in expenditure components, 31–33	Armey-Shelby proposal, 731
hoped-for reactions, 40–42	Hall-Rabushka proposal, 730—731
macroeconomic effects, 29–30	NRST plans, 733
occupational composition effects of legal	prepayment method, 730
employment, 33–34	Schaefer-Tauzin proposal, 731
occupational data, 34–35	subtraction method, 730
rental per unit of capital, 30–31	welfare impact, 734–735, 735t, 737t, 736, 738
unauthorized immigration effects, 33	Consumption-based tax reforms, 759—760
welfare effects of legal households, 36–40	adjustment costs effects, 765
usage, 1 Constant elasticity of substitution (CES), 46	capital income tax add-on, to Flat Tax reform, 767t
	capital stocks, 763–765
and labor supply response, 111	DZ model factors, 761
production functions, 309–310	Flat Tax, 762—763
and translog price function, 671	Flat Tax reform simulation results, 763, 764t
and utility, 405, 793	housing prices, 762
value-added functions, 178–179	one-time windfall losses, 765
Constant elasticity of transformation (CET)	potential one-time windfall loss, 760—761
cost effect, 113 in export demand, 333—334	production sectors, 763
	X-Tax, 762–763 CoPS. See Centre of Policy Studies
in Johansen's original model, 161–162	Core CGE module, 166–169
in land use, 560	See also MDG and education module; Poverty module
in production function, 322–325 Constant returns to scale (CRTS), 115t	
'Harberger constant', 307	asset stock updating and productivity block, 206–210
labor requirements, 671	elasticity parameters, 211
price function for labor input, 699	equations, 207t—209t
in production function, 498–499	evolution of labor endowments, 210
in solving Johansen models, 482	for TFP, 210–211
and tax rate, 121–122	constraints for foreign exchange, factors and
Consumer behavior, CGE econometric modeling.	commodities, 203t—205t
See also Producer behavior, CGE econometric	balance of payments, 202
modeling	labor market adjustment, 206, 206f
Consumer behavior modeling, 673	market constraints for factors, 202
See also Producer behavior modeling	domestic institution block, 186
Cholesky factorization, 695	domestic non-government institutions,
demand and supply elasticity, 703, 706t	186—194
econometric model generation, 694	equations, 187t—193t
full consumption price, 675—676	factor incomes, 186–195
Hessian transformation, 695	LES, 194
	,,

investment block, 195-200	Diamond-Zodrow model (DZ model), 8-9, 744, 756
equations, 196t—199t	applications, 759
fixed government investment value, 200	before-tax interest rate, 788-789
fixed investment values, 201	capital income tax add-on to Flat Tax effects,
government budget, 200	765-768
macroeconomic repercussions, 200-201	consumption-based tax reforms, 759-765
non-negativity constraint, 195-200	corporate income tax rate reduction, 768-773, 772
real investment in, 201	deficit-financed tax cuts, 790
total investment demand, 201	Diamond analysis, 783-784
parameters for, 171t	Diamond and Viard analysis, 787
price block, 169-178, 174t	EGTRRA, 782
production and trade block, 178-179	financing decision effects, on simulation results, 788
activities, 179-186	financing decision, macroeconomic effects, 781
domestic demanders, 186	fiscal policy responses, 783, 785-786
equations, 180t—185t	GDP, increase in, 787-788
sets for core MAMS module, 169t	JGTRRA, 782
variables for, 172t-173t	long-run gains, 789
Corporate income tax, 679	macroeconomic effects, 789
credit ITCQ, 681	net welfare effects, 784-785
rate of return, 680-681	potential tax reforms, 759
rate reduction, 771, 772t	social security and medicare programs, 786-787
BBRR corporate income tax reform, 768, 773	tax cuts, macroeconomic effects, 781-783, 785
counterarguments, 770–771	tax cuts, permanent extension of, 784t
international issues, 769	tax policy makers, 782
investment incentive approach, 769	transfer spending and government consumption,
negative macroeconomic effects, 771-772	786—787
treasury analysis, 772-773	VAT implementation for deficit reduction, 773-781
Corporate sector, 112, 802-803	asset values calculation, 759
CRTS. See Constant returns to scale	BBRR, 758
CSIRO. See Commonwealth Scientific and Industrial	differential incidence approach, 757
Research Organization	features, 756–757
	firm behavior, 802-803
D	corporate sector, 803-807
DAI. See Distortions to Agricultural Incentives	earnings in owner-occupied housing sector, 808
Debt—capital ratio, 757	housing sectors, 808
Debt—GDP ratio, 774—775	non-corporate sector, 808
	firm managers, 757
Demographic uncertainty	individual behavior
health among elderly, 143	AMT, 797-798
immigration, 140	bequests, 792
effects on age dependent determinants, 141t	capital income, 798
effects on government finances, 141, 141t, 142t	CES function, 793
effects on macroeconomic aggregates, 142t	composite consumption good, 793-794
effects on size and age composition, 140t	FR and AAKSW models, 799
macroeconomic changes, 141–142	housing services, 794
percentage deviations, 142	individual behavior, 799–802
improved service standards, 143–144	lifetime budget constraint, 795
increased household production, 143	modeling social security program, 802
increased longevity, 135	multi-income-group version, 792
under actuarial pension system, 139–140	non-housing consumption good, 794
effects of changes in demography, 138t	perfect foresight and optimize life cycles, 792–793
MSG6 simulations, 135–136	setting up life-cycle optimization problem,
payroll tax rate in different oil price scenarios, 137f	791–792
pessimistic assumption, 135	taxable labor income, 798
projected employment in public health, 135, 136f	total discretionary wealth, 796–797
tax revenue, 139	total retirement assets, 796
wage rate adjustment 137	

Diamond-Zodrow model (DZ model) (Continued)	BE, 682-683
market equilibrium, 758-759, 809	CE, 685
parameter value uses, 760t	GDP, 686
timing conventions, 791	government budget, 685
DICE. See Dynamic Integrated model of Climate and	government expenditures, 685-686
Economy	government revenue, 686
Direct tax revenue, 430–431	income from equity, 682
Disability pensions, 109	interest income, 682
Distortions to Agricultural Incentives (DAI), 9-10	tax revenues, 683
Dixit-Stiglitz mechanism, 306	market equilibrium
to capture agglomeration economies, 405-406	demand total value, 691
endogenous productivity effects, 306-307	full consumption, 691-692
in imperfectly competitive goods sectors, 330	labor value, 690
large welfare gains, 317	private investment, 689
DSGE model. See Dynamic stochastic general equilibrium	producer and consumer relationship, 689
model	supply and demand balance, 689
Dutch Disease effect, 266	value of excess demand, 691
Dynamic Integrated model of Climate and Economy	national income
(DICE), 12	GDP, 687-688
Dynamic recursive models, 283	saving, 688
Dynamic stochastic general equilibrium model (DSGE	VR, 688
model)	producer behavior, 670
neoclassical dynamic CGE models, 283	advantage, 671
DZ model. See Diamond-Zodrow model	labor input value, 670
	logarithm form, 673
E	price function, 671
Economic Growth and Tax Reduction Reconciliation Act	rate of productivity growth, 672
(EGTRRA), 782	translog form, 673
Economic growth modeling	rest-of-the-world sector, 687
commodities	eff-hd scenario, 260
asset classification, 669	comparison with aid scenarios, 266
capital services, 669–670	growth acceleration in GDP, 265
commodity groups, 668	eff-infra scenario, 260
consumption goods, 668	annual growth in GDP, 265
household sector, 667	comparison with aid scenarios, 266
investment goods, 668	EGTRRA. See Economic Growth and Tax Reduction
labor services, 670	Reconciliation Act
	EIT. See Energy-intensive production
long-lived assets, 668–669 short-lived assets, 668–669	EITEI. See Emissions-intensive trade-exposed industry
consumer behavior, 673	Electricity-generation industries, 557t, 566
	Electricity generation-other renewable, 621, 630,
full consumption price, 675—676 intertemporal budget constraint, 674—675	586-588
intertemporal welfare function, 674	Emissions trading scheme (ETS), 554
labor-augmenting productivity growth, 674	Emissions-intensive trade-exposed industry (EITEI), 555
logarithm form, 677–678	Endogenous productivity effects
rate of return, 676	Dixit-Stiglitz mechanism, 306
transition equation, 675	total factor productivity, 306-307
*	Energy-intensive industries, 501
translog form, 677 value shares, 676	Energy-intensive production, 621
	Engen and Gale model, 752-753
corporate income tax, 679	Equilibrium and domain type models
credit ITCQ, 681	applicability domain, 284
rate of return, 680–681	Arrow-Debreu general equilibrium model, 282–283
government revenue, 678	dynamic recursive models, 283
lagged values, 679	forward-looking models, 283
property taxes, 678–679	ETS. See Emissions trading scheme
individual income tax, 682	

ETS economic effects	Australia's allocation of permits, 601-602
affected regions, 631f	Australia's terms of trade, 607f
employment by region and industry, 629, 630f	capacity for gas generation, 602
geographic dispersion of employment effects, 632, 632f	carbon price, 605
impact interpretation, 611t	electricity inputs from Frontier WHIRLYGIG,
industries in Hunter region, 630	602-605, 603f
industry sector groups, 629	forestry land and biosequestration inputs, 606, 607f
macroeconomic variables, 612t	generation sent out by generator type, 604t
MMRF result interpretation, 609	permit price, 599
national variables, 612-625	road transport inputs, 605-606
CO <sub>2</sub> -e emissions by source category for Australia,	trade variables, 606
626t-627t	Euler equation, 807
deviations in capital stock and real cost of capital, 614f	European-style valueadded tax, 661
deviations in employment and real wage rates, 613,	
613f	F
deviations in main expenditure components of real	Factor market
GDP, 621f	regional, 422-427
deviations in production of electricity generation	FCU. See Foreign currency units
industries, 624, 624f	FDI. See Foreign direct investment
deviations in production of metal manufacturing	FEDERAL model, 399–400
industries, 624f, 625	Firm managers, 757
emissions and permit allocation and permit imports,	Fiscal adjustments, 118
618, 618f	Fiscal policy, 117
emissions from most sources fall, 625	Fiscal sustainability, CGE assessments, 106
ETS depressing economy-wide labor/capital ratio,	CGE and microsimulations, 147–148
614-615	demographic uncertainty
falling in real GDP at factor cost, 615, 616f	immigration, 140
HDI and real private consumption reduction,	improved health among elderly, 143
618-620, 619f	improved neutral among criteriy, 110
household income, consumption, savings and	increased household production, 143
investment, 620t	increased longevity, 135, 139
national industry output, 621	empirical large-scale models, 107
real GDP at market prices falling, 616-617	exogenous assumptions, 115–117
real gross national expenditure, 620	average annual growth, 117–118
relative to base case increment, 621-625	employment, in public goods production sectors, 117
regions' base-case growth prospects, 631	endogenous pay-as-you-go adjustments of payroll
scale issue, 630	tax rate, 117
state variables	fiscal policy, 117
ACT, 628	government petroleum revenues, 116
deviations in real GSP, 628f	public welfare policies, 116–117
real gross state product falling, 625	total factor productivity, 116
ETS simulation design	total labor supply, in baseline scenario, 116
See also Monash Multi-Regional Forecasting model	world prices, 116
(MMRF model)	expansionary fiscal policy, 120
answer for policy makers and stakeholders, 634-636	fiscal adjustments, 118–120
assumptions for macroeconomy in policy scenarios	gloomy fiscal prospects, 147
government consumption and fiscal balances, 609	GPF/GDP ratio, 118, 120
labor markets, 608	growth in government primary expenditures, 119t
private consumption and investment, 608-609	lack of transparency, 107–108
production technologies and household tastes, 609	long-run empirical models, 106
inputs to MMRF policy simulation, 599	model structure, 108
key findings, 633-634	CES, 111
result interpretation, 636-637	demography, 108
scheme design, 600t	government consumption, 109
assumptions about gas reserves and gas prices,	labor force, 109—111
606-607	microsimulation model MOSART structure, 110f
	incrosmitulation model ivicostict structure, 1101

Fiscal sustainability, CGE assessments (Continued)	G
MOSART, 109-110	G-Cubed model, 11
MSG6 overview, 111-112	GATS. See General Agreement on Trade in Services
public pensions, 109, 111	GATT. See General Agreement on Tariffs and Trade
MSG model, 107	GDI. See Gross domestic income
MSG6 picture, 148	GDP. See Gross domestic product
aggregation, 148-149	GEMPACK. See General Equilibrium Model PACKage
exports, 150	General Agreement on Tariffs and Trade (GATT), 320
household behavior, 149-150	General Agreement on Trade in Services (GATS), 19, 304
imports, 150–151	General Equilibrium Model PACKage (GEMPACK), 68
market structure, 150	See also MONASH model
producer behavior, 150	database creation, 71
NMF, 107	BEA input-output data, 71-72, 73f
Norwegian public pension reform, 129	imports, 74–75
average growth rates in period, 134, 134t	investment by investing industry, 77
decomposition of reform effects in, 132-133, 132t	public sector demands, 75-77
fiscal effects, 130-131	valuation and treatment of indirect taxes, 73-74
main reform elements, 129-130	GEMPACK solution, 68, 69f
public old-age pension expenditures, 133, 133t	subprograms, 70
public pension system, 129–130	supplementation, 70-71
qualifications, 134–135	TABLO code, 68-69, 70t
reform and no-reform scenarios, 131f	value added and self-employment and capital stocks,
reform effects, 131-132, 131t	77-78
payroll tax rate, 118, 118f	construction, 78–79
prefunding increment	revisiting self-employment issue, 79-80
using fiscal policy rule, 144–145	USAGE database, 78
GPF, 146	GIAM. See Global integrated assessment model
payroll tax adjustments requirement, 145-146,	GIDD model. See Global Income Distribution Dynamic
145f	model
petroleum wealth accrues, 145	GIT. See Growth and Investment Tax
U-shaped curve, 144	Global 1-2-3 model
sensitivity of fiscal prospects	Global Income Distribution Dynamic model (GIDD
accelerated economic growth, 121-124	model), 16
higher returns to foreign investments, 128	Global integrated assessment model (GIAM), 637
increased petroleum wealth, 124-128	See also ETS simulation design
U-shaped time profile, 118-120	Australia-focused IAM construction, 638
Fiscal sustainability problem, 106	damage function output, 638
Flat Tax, 661	structure, 637–638, 638f
Forecast simulations, 3	Global Trade Analysis Project (GTAP), 9, 24
Foreign currency units (FCU), 179-186	Global Trade and Environment Model (GTEM), 556
Foreign direct investment (FDI), 195, 304	See also Monash Multi-Regional Forecasting model
See also Liberalizing barriers impact to FDI	(MMRF model)
Forward-looking models, 283	cost-minimizing capital creator, 570-571
Four-closure approach, 87	environmental enhancements, 571
connections between analysis modes, 89f	export response, 573f
decomposition closure, 88	for exports, 570
forecast closure, 88	import supply, 570
historical closure, 87-88	industries and regions in, 569t
policy closure, 88	inter-regional linkages, 570
Fullerton and Rogers model, 749	linking export variables, 572
consumption goods, 749	linking MMRF to, 568–569
flat rate consumption tax, 751	WHIRLYGIG, 575
fundamental tax reforms, 751	capacity changes, 576
lifetime income distribution, 749-751	changes in capacity, 574-575
myopic expectations, 750	ETS modeling, 578
production goods, 749	information transfer to MMRF, 577t

land use in forestry, 581	expenditures and household budget shares, 491, 491t
linking with, 574, 576—578	household leisure, 490
non-combustion emission abatement, 579-581	price and income elasticities, 491, 491t
policy detail, 575	tier structure, 487–489, 488t
sector detail, 575	intertemporal optimization
shielding, 578–579	using Euler equation, 487
technological detail, 574	utility function, 486
transitional arrangements, 578	leisure and household disposable income
GMC. See Global middle class	capital income, 496
Government and rest of world, IGEM	labor income, 496
government revenues and expenditures	leisure demand, 495
capital income tax, 511	Tornqvist index, 495—496
consumption, 512	Household Budget Survey (HBS), 308–309
expenditures categories, 512	Household disposable income (HDI), 560
tax on production, 510–511	Household equivalent members, 524
Government budget, 685	Housing services, 794
Government expenditures, 685—686	Human Development Index (HDI), 254
Government Pension Fund (GPF), 117	Hump-backed wage profile, 747–748
Government revenue, 678, 686	
lagged values, 679	
petroleum revenues, 116	IAC. See Industries Assistance Commission
property taxes, 678–679 GPF. See Government Pension Fund	IAM. See Integrated assessment model
Gross domestic income (GDI), 663	discount rate
Gross domestic product (GDP), 663	modeling technological change
	IFPRI. See International Food Policy Research Institute
deviations in expenditure components, 31 and employment and capital with tighter border	IGEM. See Intertemporal General Equilibrium Model
security, 30f, 31	IMF. See International Monetary Fund
Gross regional product (GRP), 629	IMPACT Project, 25
Gross state product (GSP), 625	arrangements for, 25
Growth and Investment Tax (GIT), 765	establishment, 24–25
GRP. See Gross regional product	success factors, 25–26
GSP. See Gross state product	Imputed corporate investment tax credit rate. See ITCQ
GTAP. See Global Trade Analysis Project	Income distribution in CGE modeling
GTEM. See Global Trade and Environment Model	Income groups, 779—780
	add-on VAT diverts, 780
Н	International Monetary Fund, 780–781
	Income tax reform
Hall-Rabushka proposal, 729—730	income taxation efficiency, 728, 728t
HBS. See Household Budget Survey	advantage, 728
HDI. See Household disposable income	tax burdens equalization, 728–729, 729–730
See also Human Development Index Hessian transformation, 695, 700–701	tax law
Higgs method, 397	capital consumption allowance value, 722, 722t
Home—foreign substitution	inflation, 722, 723t tax rates, 721–722, 721t
Hoped-for reactions, 40	tax vedge elimination, 723
effects of demand restriction, 40	corporate tax integration, 725—727
guest-worker question, 40–41	interasset and intertemporal, 724, 725t
well-directed questions, 41	steady state, 724, 724t
Horridge's model, 406	welfare effects, 724, 727–728, 726t
Household behavior, IGEM, 486	Increased petroleum wealth, 124
commodities demand allocation, 493–495	avoiding Dutch disease, 124–125
goods and leisure	macroeconomic development, 125—126, 126t
CEX and PCE measure difference, 492–493	MSG6 simulations, 125
classification system and PCE differences, 489	naïve estimation, 125
demographic groups, 490, 491t	Norwegian policy debate, 124
effective leisure 490	navroll tax rate in oil price scenarios 126f 126t

Increased petroleum wealth (Continued)	government and rest of world
reduced labor supply, 127-128	government revenues and expenditures,
Scandinavian model, 127	510-512
Indirect tax revenue, 430–431	total government accounts and deficits, 512-513
Individual income tax, 682	household behavior, 486
BE, 682-683	demand allocation for commodities,
CE, 685	493-495
GDP, 686	goods and leisure, 487-493
government budget, 685	intertemporal optimization, 486-487
government expenditures, 685-686	leisure and household disposable income,
government revenue, 686	495-496
income from equity, 682	imports, 514-515
interest income, 682	industry output, energy use and historical growth, 483,
tax revenues, 683	484t
Induced technical change (ITC), 533-534	investment by commodity, 508-510
Industries Assistance Commission (IAC), 24	producer behavior and endogenous technical change
Input-output database, 61, 62f	commodities, industries and output taxes, 505-506
absorption matrix, 61-62	lower-tier production function, 504-505
connection equations, 64	top-tier production function, 498-503
equations for domestic ratio, 65	total supply function, 514
joint-production matrix, 62-64	Investment goods, 668
payments by industries, 63	ISIM-MAMS, 165–166, 238–239
vector of import duties, 64	application operation, 239
Integrated assessment model (IAM), 11–12	base scenario, 241-242
Inter-regional migration	changing substitution elasticity, 241f
GEMR and regional migration income relationship,	database selection, 240
427-428, 428f	error messages, 244
GEMR <sub>o, d</sub> movements, 429	input validation, 244
migration income, 427	installation, 239
year-on-year simulations, 428	LOG/LST file viewer, 245f
Interest income, 682	MAMS results, 244f
International Food Policy Research Institute (IFPRI),	model version, 240
10-11, 293	new application dialog box, 240f
Intertemporal equilibrium and economic growth, 519	processing of simulation results, 243
base case, 521	reference scenario, 240-241
commodity outcomes, 521t, 522	ribbon, 239f
domestic industry, 521t, 522	scenario manager, 242, 242f
macroeconomic outcomes, 521-522, 521t	shock to world price of exports, 243f
capital market equilibrium, 517-518	validation errors in, 245f
capital rental price, 518	ITC. See Induced technical change
commodity markets, 517	ITCQ (imputed corporate investment tax credit rate),
economy-wide wage rate, 518-519	679—681
exogenous projections, 520-521	
savings and investment equilibrium, 518-519	J
solution algorithm, 519-520	JGTRRA. See Jobs and Growth Tax Relief
Intertemporal General Equilibrium Model (IGEM), 6,	Reconciliation Act
479, 483	Jobs and Growth Tax Relief Reconciliation Act
account balance calculation, 515-516	(JGTRRA), 782
aggregate investment and cost of capital	Johansen model, 1–2, 42
Euler equation, 507—508	See also MONASH model
price of capital stock, 507	agricultural employment, 44
rental payment, 508	BOTE model, 43
stock of capital, 506-507	closure flexibility in, 48–50
commodity supply, 514	Cobb-Douglas relationship, 42—43
emissions, 516	complex functional forms in, 50
exports, 515	CRESH cost-minimizing problem, 50

exogenous variables, 42–43	demand structure modification, 331
input demand functions, 51	TFP elasticity, 330–331
Leontief's input-output model, 44	expatriate labor share, 347—348
output supply functions, 51	export demand, 333–334
validation test, 45	key data
Johansen/Euler solution method, 52–54 convergence proposition for, 96–99	ad valorem equivalents of barriers to FDI, 334—335, 336t
Johansen solution, 55f	expatriate labor share, 337
linearization error, 54–55, 57	export tax data, 338
linking periods, 58	input-output table, 338
percentage changes, 57–58	tariff data, 337–338
Richardson's extrapolation, 99–100	large-group monopolistic competition model, 334
sequence of solutions, 58f, 59	manufacturing sector expansion, 341
solution development from input-output data,	model convexity, 331–332
60-61	excluding Dixit-Stiglitz productivity gain, 332-333
start-of-year capital stock, 59	sector-specific factors, 332
two-step, 55-56, 56f	substitution difference elasticity, 333
year-on-year evolution, 60	piecemeal sensitivity analysis, 345-347
	Russian WTO accession, 320-321
K	FDI liberalization impact, 341
KLEMS datasets. See Capital-labor-energy-materials-	impact on economy-wide variables, 338, 339t
services datasets	improved market access impact, 340
Krugman specification, 18	tariff reduction impact, 340
Kyoto Protocol, 11	welfare effect aggregation, 340
climate policies and their likely effects, 11–12	sensitivity analysis
beginning of, 554	CRTS model, 344
	dissipation, 343–344
L	long-run comparative steady-state, 344—345
Labor costs, 109	model assumptions, 343–345
Labor markets, 294	sector-specific labor, 344
Labor services, 670	SOE model formulation, 322
LAC. See Latin America and Caribbean	competitive goods and services sectors, 322–325 goods produced subject to increasing returns to scale,
Lagged values, 679	325
Large Group case of Monopolistic Competition (LGMC),	production and allocation of output, 327f
113	services sectors production, 325–326
Large-group monopolistic competition,	structure of value added in Russia, 323t–324t
311-312	value-added and producer services, 326
LBD model. See learning by doing model	systematic sensitivity analysis
LCU. See Local currency units	employment impacts, 348–350
Legal-employment effect, 39	frequency distributions, 349f, 350f
Lerner rule, 18-19	probability distributions, 348
LES. See Linear expenditure system	Liew's model, 398
LES/ELES. See Linear and extended linear expenditure systems	Linear expenditure system (LES), 194, 567–568 Living Standards Measurement Surveys (LSMS),
LGMC. See Large Group case of Monopolistic	355—356
Competition	Local currency units (LCU), 178
Liberalizing barriers impact to FDI	Long-lived assets, 668–669
business services sectors, 342–343	Long-run percentage effects, 37t
comparative steady-state formulation, 328	LSMS. See Living Standards Measurement Surveys
declining manufacturing sectors, 342	Lucas critique, 17
empirical basis for modeling assumptions, 328	1,47, 2,
additional varieties on productivity, impact of, 330	M
barriers reduction effect against FDI, 329-330	
barriers to FDI in Russian services sectors, 328-329	Magasanik and Associates (MMA), 556
business services sectors, 329	MAMS. See Maquette for MDG Simulations  Magnette for MDG Simulations (MAMS) 4 160—161

Maquette for MDG Simulations (MAMS) (Continued)	core CGE module, 166–169
accounts in Yemen, 256t	mathematical statement, 168
aid-hd scenario	MDG module, 166-168
Dutch Disease effect, 266	model applicability, 168
foreign transfers in, 264	poverty module, 167, 259
growth acceleration in GDP, 264-265	model design, 164
poverty rate, 265	ensuring robustness, 165-166
aid-infra scenario	ISIM-MAMS, 165–166
Dutch Disease effect, 266	MDG version, 165
foreign transfers in, 264	net primary completion rate, 259
infrastructure, 265	SSELMA, 162-163
poverty rate, 265	for Yemen, 255-257
applications, 245	MDG. See Millennium Development Goal
domestic financing vs. foreign aid, 268	MDG and education module, 211
foreign aid and Dutch Disease, 268	data requirements, 236-237
government efficiency, 268	definitions for, 224
income distribution, 267	determinants of non-poverty MDGs, 223t
initial country conditions, 266-267	education block
institutional context, 246	educational quality, 224
MAMS modification, 252-253	labor force participation rate, 227
model structure evolution, 251-252	logistic function for, 225-226, 226f
policy issues, 246, 254-255	parameters selection, 226
and references, 246-251, 247t	shares, 226-227
spending on human development vs. infrastructure,	equations for, 217t-222t
267	MDG outcomes, 216–223
World Bank-led applications, 253-254	non-education MDG block, 227
base scenario, 261	parameters for, 215t
economy evolution, 262	as production functions, 216-223
government consumption of education and	sets for, 212t-214t
non-education services, 261	treatment, 223
government fiscal account, 261	variables for, 216t
growth, 262	Medicare programs, 786
growth rates in real GDP, 261	Medium- to large-scale DSGE models, 17–18
MDG targets and paths, 264f	Melitz specification, 47
Yemen simulation results, 263t	MFN. See Most favored nation
context, 161–162	Millennium Development Goal (MDG), 4, 159–160, 284
contributions, 163–164	MMA. See Magasanik and Associates
database, 229-230, 257	MMRF model. See MONASH Multi-Regional
data requirements, 236–237	Forecasting model
data sources, 237	Modern multiregional CGE model, 408
development, 255–257	commodity demand
non-SAM data, 235–236	as margin services, 419-420
SAM, 230–235	for private consumption, 417–418
disaggregation, 167	for public consumption purposes, 419
education and health, 162–163	commodity market clearing conditions, 420
eff-hd scenario, 260	export demands, 418
comparison with aid scenarios, 266	government accounts, 430-431
growth acceleration in GDP, 265	direct tax revenue, 431
eff-infra scenario, 260	indirect tax revenue, 430–431
annual growth in GDP, 265	income and expenditure accounts, 410f
comparison with aid scenarios, 266	input demand
elasticities for MDG determinants, 258t	to capital formation, 417
implementation of simulations, 260–261	to current production, 408, 416
labor types, 257	inter-regional migration, 427–429
limitations, 164	MRIO database, 409f
mathematical structure, 166	regional factor markets, 422-427

regional household income and expenditure,	land use in forestry, 581
429-430	non-combustion emission abatement in, 581
regional industry output commodity composition, 416	projection comparison, 649
zero-pure-profit conditions	long-run impacts, 652-653, 655
capital unit cost, 421-422	short-run impacts, 649-652, 654-655
commodity purchases, 420-421	summary reduced-form expressions, 654
on current production, 420	values for variables, 650t
MONASH model, 24, 52, 407	role in CGE modeling, 556
change and percentage change equations, 65-66	shift in export demand in, 573f
optimization problems, 66–67	MONASH-style
rules for, 66t	decomposition simulations, 91-92
variants in equations, 67	forecast simulations, 92–93
IMPACT Project, 25	historical simulations, 90-91
arrangements for, 25	policy simulations, 93–94
establishment, 24–25	MOSART, 109
success factors, 25-26	Most favored nation (MFN), 337-338
input-output database, 61, 62f	Motor vehicles and parts (MVP), 84
absorption matrix, 61–62	Australian MVP industry output, 85t
connection equations, 64	changes
equations for domestic ratio, 65	in import/domestic preferences, 86
joint-production matrix, 62–64	in protection, 85
payments by industries, 63	in required rates of return, 86
vector of import duties, 64	decomposition simulations, 86–87
Johansen/Euler solution method, 52–54	growth in aggregate employment, 86
Johansen solution, 55f	protection, 87
linearization error, 54–55, 57	shifts in foreign demand curve positions, 85
linking periods, 58	technical change throughout economy, 85–86
percentage changes, 57–58	MRIO system. See Multiregional input-output system
sequence of solutions, 58f, 59	MRSMAE. See Multi-Regional Multi-Sectoral Model of
solution development from input-output data,	Australian Economy
60-61	MSG model. See Multisectoral growth model
start-of-year capital stock, 59	MSG6 picture, 111–112, 148
two-step, 55–56, 56f	aggregation, 148-149
year-on-year evolution, 60	applying wage rate determination, 114
ORANI, 24	CET function, 113
uses, 26	comparison with standard model, 115t
MONASH Multi-Regional Forecasting model	corporate sector, 112
(MMRF model), 556-559	direct and indirect share, 112
See also Computable general equilibrium modeling	exports, 150
(CGE modeling)	full consumption concept, 113
environmental enhancements, 562	household behavior, 149–150
carbon taxes and prices, 565-566	import protection, 114
emissions data for Australia, 563t-564t	imports, 150–151
energy and emissions accounting, 562–565	LGMC, 113
energy-using equipment services, 567–568	market structure, 150
interfuel substitution, 566–567	Norwegian exports and imports, 114
NEM, 567	producer behavior, 150
general equilibrium core	separability assumptions, 113
demands for inputs, 559–560	standard version, 112
domestic final demand, 560	Multi regional database construction
foreign demand, 560	behavioral parameters, 434–435
lagged adjustment process, 562	regional data limitations, 432
nature of markets, 559	structural data, 432
physical capital accumulation, 561–562	advantages, 434
regional labor markets, 561	Horridge procedure, 433
industries in, 557t, 559	LMPST method, 432–433
maasares m, 55/t, 55/	LIVII 01 Incinou, 702 700

Multi regional database construction (Continued)	0
off-diagonal elements, 433–434	Occupation-mix effect, 38
Multi-Regional Multi-Sectoral Model of Australian	OECD. See Organization for Economic Cooperation and
Economy (MRSMAE), 398	Development
Multiregional input-output system (MRIO system), 394	Old-age pensions, 109
Multiregional model mechanism	OLG-CGE modeling, 744-745, 790
BOTE model, 436—443	AK model extensions, 749
demand-side shock, 435	adding human capital, 753–754
supply-side shock, 435	adding international flows, 755
Multisectoral growth model (MSG model), 2, 107	AK model revisiting, 751
Murray-Darling basin, 389	Engen and Gale model, 752-753
MVP. See Motor vehicles and parts	firm values and financial markets calculation,
	752
N	Fullerton and Rogers model, 749
	early models, 745
N-sectors. See Non-traded goods	Harberger model, 745
NAIRU. See Non-accelerating inflation rate of	many-period life-cycle model, 746
unemployment	two-sector model, 745
National competition policy (NCP), 388–389	variable capital stock, 745
National Electricity Market (NEM), 567	seminal model of AK, 747
National Income and Product Account (NIPA), 71–72,	consumption-based tax system, 748
487, 668	exogenous labor supply, 747–748
National Retail Sales Tax (NRST), 661	increasing business tax incentives, 748
NCI. See Non-comparable import	myopic expectations, 747
NCP. See National competition policy	VAT, 748–749
NEM. See National Electricity Market	Summers OLG model, 746
Net present value (NPV), 634	human wealth effect results, 746
NGO. See Non-governmental organization	inelastic labor supply and wages, 746-747
NIPA. See National Income and Product Account	One country, two activities, three commodities model
NMF. See Norwegian Ministry of Finance	(1-2-3 model), 280
Non-accelerating inflation rate of unemployment	ORANI model, 24
(NAIRU), 562	See also Johansen model
Non-combustion emission abatement, 579—581	Armington specification, 46-47
emissions intensity as real carbon price function, 580f	creation, 45-46
intensity function for emissions, 579–581 marginal abatement curve, 580f	import/domestic substitution elasticities, 46-47
in MMRF, 581	incorporation of policy-relevant detail, 47-48
Non-comparable import (NCI), 483	Johansen framework
Non-corporate sector, 802–803	closure flexibility in, 48-50
Non-export final demanders, 1348	complex functional forms in, 50
Non-governmental organization (NGO), 233, 878	CRESH cost-minimizing problem, 50
Non-housing consumption good, 794	input demand functions, 51
Non-tradable intermediate goods, 306	output supply functions, 51
Non-traded goods, 122	ORANI Regional Equation System (ORES), 394
Norwegian Ministry of Finance (NMF), 107	ORES. See ORANI Regional Equation System
Norwegian public pension reform, 129	Organization for Economic Cooperation and
average growth rates in period, 134, 134t	Development (OECD), 105–106
decomposition of reform effects in, 132–133, 132t	agricultural subsidies effects, 294
fiscal effects, 130–131	differences in aggregate productivity levels and growth
main reform elements, 129-130	rates, 305–306
public old-age pension expenditures, 133, 133t	_
public pension system, 129–130	P
qualifications, 134–135	PCE. See Personal consumption expenditures
reform and no-reform scenarios, 131f	Perpetual inventory method (PIM), 235–236
reform effects, 131–132, 131t	Personal consumption expenditures (PCE), 487, 730
NPV. See Net present value	Piecemeal sensitivity analysis, 345–347, 366
NRST. See National Retail Sales Tax	PIM. See Perpetual inventory method

Policy analysis modes	logarithm form, 673
dated comparative statics, 287	non-tax parameters, 708, 709t, 711
dated-dynamic model, 289	parameter estimation, 703, 704t
dated-static run, 288	price function, 671
NAFTA models, 288-289	productivity growth rate, 699-700
timeless comparative statics, 286-287	rate of productivity growth, 672
timeless-dynamic models, 289	translog form, 673
Policy simulations, 3	Productivity services
climate change	availability impact, 305
free trade	liberalization impact, 305–306
Population ageing, 106	Progressive Consumption Tax, 751
Poverty module, 228, 259	Property taxes, 678-679
See also Core CGE module; MDG and education	Public finance, 292-293
module	Public welfare policies, 116-117
advantage, 228–229	Public-expenditure effect, 39
data requirements for, 236	
microsimulation model use, 229	R
synthetic household survey, 228	
Prepayment method, 730	R&D. See Research and development
Price-distorting policy effects	RBC approach
Producer behavior, CGE econometric modeling	timeless-dynamic models, example of, 289 Real exchange rate (RER), 643–644
See also Consumer behavior; CGE econometric	
modeling	depreciation
capital input	and net trade volume, 332
energy input	in stylized system, 653
induced technical change	'Dutch Disease' effect, 281
labor input	long-run increase in, 33 MMRF's definition of, 644
log relative output price	
material input	in MVP industry, 85
Producer behavior and endogenous technical change,	in Salter—Swan model, 280
IGEM	simple 1—2—3 model, 290 in stylized system, 643—644
commodities output tax, 505-506	Turkey, CGE models in, 291
cost of capital, 497	WTO accession, impact of, 357t
industry output tax, 505-506	Yemen simulation results, 263t
lower-tier production function	appreciation of, 264
econometric method, 504	Reference scenario, 240–241
latent variables, 504	Regional CGE modeling, 380–381
state-space model, 505	agglomeration, 404–405
translog price function, 504	bottom-up models, 398—401
production sector output, 498	Dixit-Stiglitz approach, 405—406
top-tier production function, 499t	dynamics, 403–404
advantage, 500	fiscal federalism, 384–385
bias changes, 501, 502t	forecasting and historical analyses, 393
energy-intensive industries, 501	government finances, 404
level of technology, changes, 502-503, 503t	Horridge's model, 406
production inputs, 498	
translog price function, 500	inter-regional migration, 402 alternatives, 403
Producer behavior modeling, 670	responsiveness, 403
See also Consumer behavior modeling	intergovernmental finances, 404
advantage, 671	MONASH model, 407
Cholesky factorization, 701-702	
demand and supply elasticity, 707, 707t	Murray-Darling basin, 389 purpose module embedding, 407
econometric model generation, 699	
Hessian transformation, 700-701	regional effects national shock range, 383—384
labor input value, 670	on US states, 381–383
local Cholesky values, 703, 705t	regional events, 388
	regional events, 200

Regional CGE modeling (Continued)	not modeled terms, 362, 364
regional infrastructure development	389 piecemeal sensitivity analysis, 366
regional labor markets, 402-403	policy impacts, 368-370
regional policies, 385, 387	real household model, 352
regional transport, 389	sensitivity analysis
single-region models, 401-402	data reconciliation and welfare impacts, 363t
top-down models, 394-397	gains and biases decomposition, 364-365
transport, 404–405	HBS data reconciliation, 365–366
Regional factor markets	national account reconciliation, 365
baseline simulation, 422–423	single representative agent model
long-run	HBS data reconciliation, 355–359
capital stocks, 425	household consumer demand, 354
industry investment, 425–426	households, 355
regional employment, 422	national account data reconciliation, 355–359
regional wages, 423	systematic sensitivity analysis, 366–367, 367f
natural resource	tariff reduction impact, 340
comparative static models, 426	trade policy, impact on poverty, 352–353
quantity, 426	welfare effect aggregation, 340
rental price, 426	welfare gain distribution, 359f, 361, 361f
policy simulation, 422–423	wenare gain distribution, 35%, 361, 3611
short-run	
capital stocks, 425	S
industry investment, 425	SAE. See Small area estimation
regional employment, 422	Salter—Swan Australian model, 280
regional wages, 423	SAM. See Social accounting matrix
Regional Integrated model of Climat	
model (RICE model), 12	Schaefer-Tauzin proposal, 731
for Millennium Development Goal	
vs. regional CGE model, 382–383	CRTS model, 344
using RLMS data, 355	data reconciliation and welfare impacts, 363t
in simulation results, 390	
RER. See Real exchange rate	dissipation, 343–344
Research and development (R&D)	gains and biases decomposition, 364–365 HBS data reconciliation, 365–366
accelerated depreciation allowances	
OECD countries, 330–331	model assumptions, 343—345
RICE model. See Regional Integrated	
and Environment model	sector-specific labor, 344
Richardson's extrapolation, 99–100	Services liberalization models, 304–305
RLMS. See Russian Longitudinal Mo	
Russian Longitudinal Monitoring Sur	(0.7.1.0) 255
Russian WTO accession, 320–321	rey (RLMS), 355 small gains, from trade, 307 Short-lived assets, 668–669
economy-wide variables, impact or	
estimated impacts	HBS data reconciliation, 355–359
household model, aggregate resu	
in household model, 357t	<u> </u>
piecemeal sensitivity analysis, 340	householde 255
wage rate of skilled labor, 360 FDI liberalization impact, 341	liberalization impact, 370—371
household survey integration, 353	multiregion trade model, 370
improved market access impact, 34	national account data reconciliation, 355–359
-	preferential trade arrangements, 371 Single-country model, 21
mean welfare gain estimation, 353	· ·
model extensions	Single-region models, 401–402
heterogeneous firms, 371	Small Open Economy model (SOE model) 114, 316
liberalization impact, 370–371	Small Open Economy model (SOE model), 114, 316
multiregion trade model, 370 preferential trade arrangements, 3	competitive goods and services sectors, 322–325
preferential trade arrangements,	71 formulation, 322

goods produced subject to increasing returns to scale,	comparative static results, 317
325	imported primary inputs, 317-318
production and allocation of output, 327f	labor and capital, real prices of, 318
services sectors production, 325-326	large welfare gains, 317
value-added and producer services, 326	product differentiation generates trade, 318-319
value added in Russia, structure of, 323t-324t	reversal of comparative advantage, 318
SMDB. See Southern Murray-Darling Basin	intermediate inputs, 309-310
Social accounting matrix (SAM), 186, 230, 285	CES function, 310
non-SAM data, 235-236	composite foreign variety, cost of, 313
for stylized small CGE model, 313-314	domestic, 310
accounts and cell entries in, 232t	large-group monopolistic competition, 311-312
activity accounts, 230-232	small country assumption, 313
cell for net borrowing, 234-235	trade balance, 311
institutional capital account, 234	lowering barriers, impact of, 316t, 317
institutions, 233	model calibration, 313-314
investment and stock change accounts, 235	modeling issues
row entries of factor accounts, 232-233	bang-bang solutions, 314-315
stylized macro model, 231t	firm-level product differentiation, 314
Social development indicators, 254–255	initially inactive activities, 314
Social security, 786	policy simulations, 315-316
Social Security, Education, Labor and the Macroeconomy	services liberalization, 319
(SSELMA), 162–163	Subtraction method, 730
SOE model. See Small Open Economy model	Supply—demand systems
Southern Murray-Darling Basin (SMDB), 389	elasticities
competitiveness, 391	supply-demand balance, 6-7
cost impacts, 392-393	Systematic sensitivity analysis (SSA), 366-367, 367f
farm activity, 390-391	employment impacts, 348-350
SSA. See Sub-Saharan Africa	frequency distributions, 349f, 350f
See also Systematic sensitivity analysis	probability distributions, 348
SSELMA. See Social Security, Education, Labor and the	
Macroeconomy	T
Stylized model, 639	T-sectors. See Traded goods
coefficients and parameters in, 647t	TABLO code, 68–69, 70t
equations, 640t-643t	Tax reform economic impact
linearized form in changes of variables, 645, 646t,	computational algorithm, 715
648-649	computing market equilibrium, 716
MMRF projection comparison, 649	economy evolution, 715
long-run impacts, 652-653, 655	labor income tax adjustment, 719—720
reduced-form expressions, 654	nominal interest rate, 717—718
short-run impacts, 649-652, 654-655	nominal private return rate, 718
values for variables 650t	producers' price of investment goods, 717
non-linear form in levels of variables	transition path, 715
consumption price, ratio of, 644	perfect foresight dynamics, 711–713, 712f
economy's private consumption function, 643	welfare levels comparison, 715
economy's production function, 639	equivalent variation in full wealth, 714–715
government consumption, value of, 643	intertemporal expenditure function, 713—714
prices and quantities of capital and labor, 644	Tax revenues, 683
real GDP at market prices, 639	Taxable labor income, 798
total emissions, 639-643	TERM. See The Enormous Regional Model
Stylized one-sector version of MSG6 standard version	Terms of trade (TOT), 39–40, 644
aggregate industries, behavior of, 152-154	TFP. See Total factor productivity
firms, behavior of, 152-154	The Enormous Regional Model (TERM), 400–401
consumer behavior, 151-152	Theory and empirical models
equilibrium, 154—156	analytic model, 279
Stylized small CGE model	1-2-3 model, 280—281
barriers, 315	policy analysis, 279–280
	Policy alialysis, 217 200

Theory and empirical models (Continued)	rates of return, 4/8
reduced form model, 282	US economy slowdown, 478
Salter-Swan model, 280	US VAT, 775
theoretical issues, 280	User-friendly interface, 238
Tighter border security, 29–40	See also Maquette for MDG Simulations (MAMS)
expenditure aggregates with, 32f	ISIM-MAMS, 238–239
GDP, employment and capital with, 30f, 31	application operation, 239
GDP deviations in expenditure components, 31–33	base scenario, 241–242
hoped-for reactions, 40–42	changing substitution elasticity, 241f
macroeconomic effects, 29–30	database selection, 240
legal employment, occupational composition effects of,	error messages, 244
33-34	input validation, 244
occupational data, 34–35	installation, 239
rental per unit of capital, 30–31	LOG/LST file viewer, 245f
unauthorized immigration effects, 33	model version, 240
welfare effects of legal households, 36–40	new application dialog box, 240f
Top-down models, 394	reference scenario, 240–241
advantage, 394—395	results, 244f
drawbacks, 394–396	ribbon, 239f
Higgs method, 397	scenario manager, 242, 242f
local industries, 394	shock to world price of exports, 243f
national industries, 394	simulation results, processing of, 243
ORES, 394 TOT. See Terms of trade	Validation errors in, 245f
Total discretionary wealth, 796	V
Total factor productivity (TFP), 116, 168–169, 330–331,	V
496–497	Validation through BOTE analysis, CGE modeling
Total labor supply, 116	Value-added tax (VAT), 292-293, 748-749
Total retirement assets, 796	add-on VAT, 775
Trade elasticity parameters for CGM model	effects, 776–777, 776t
Traded goods, 122	administration proposals, 774
TRI. See Trade Restrictiveness Index	broader VAT, 778
TRQ. See Tariff rate quota	broader-base VAT distributional effects, 778–779, 779
	debt-GDP ratio, 774-775
U	for deficit reduction, 773–774
	distributional effects, 777
UN. See United Nations	factors, 777—778
UN Department of Economic and Social Affairs	government debt falls, 778
(UN-DESA), 160—161	steady-state equilibrium, 774
UN-DESA. See UN Department of Economic and Social Affairs	US VAT, 775 VAT. See Value-added tax
UNCTAD. See UN Conference on Trade and	VIII. See Value-added tax
Development	W
Unilateral policy reform simulation	
government expenditures hike	Welfare effects of legal households, 36–37
macroeconomic effects	capital effect, 39
welfare effects	demand for and supply of illegal immigrants, 38f
United Nations (UN), 159–160	direct effect, 37–38
US economic growth, 477	legal-employment effect, 39
calibration approach, 481	long-run percentage effects, 37t
Cass-Koopmans theory, 478—479	occupation-mix effect, 38
end-of-pipe abatement, 481–482	public-expenditure effect, 39
exact aggregation approach, 483	terms-of-trade effect, 39–40
fixed coefficient approach, 480	Welfare measurement
forward-looking behavior, 479	full wealth, 525—526
input-output approach, 480	household equivalent members, 524
Johansen approach, 481	intertemporal budget, 525–526

## WHIRLYGIG, 575

capacity changes, 574–576
ETS modeling, 578
information transfer to MMRF, 577t
land use in forestry, 581
linking with, 574, 576–578
non-combustion emission abatement, 579–581
policy detail, 575
sector detail, 575
shielding, 578–579

technological detail, 574 transitional arrangements, 578 World prices, 116 World Trade Organization (WTO), 5 GATS, 304 WTO. See World Trade Organization

## Χ

X-Tax, 751