

INDEX-VOLUME 1B

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

A

- Actual pension amount (APA), 1732–1733
 - and artificial income concept, 1733–1734
 - old-age dependency ratio, 1743
 - for specific year, 1733
- Adjustment factor (AF), 1746–1747
- ADLI. *See* Agriculture development led-industrialization
- AEEI. *See* Autonomous energy efficiency improvement
- AEZ. *See* Agro-ecological zone
- AF. *See* Adjustment factor
- AGE analysis, global. *See* Global applied general equilibrium analysis
- Agent-based modeling, 1378
- AgLU model, 860–861
- Agricultural incentives, distortions to, 903–904
 - national NRAs, 904–906
 - nominal rates of assistance, 906f, 907–908, 907f
 - RRA calculation, 904
 - RRA mapped on income, 905f
- Agricultural price distortions, 880–881
- Agriculture development led-industrialization (ADLI), 935–936
- Agriculture towards 2050, 960
 - baseline robustness
 - agricultural growth importance, 977
 - agricultural price elasticity, 976t, 977
 - distributional assumptions, 976, 976t
 - ENVISAGE and LEITAP, 971–972, 971t
 - ENVISAGE land supply function, 970
 - LEITAP model, 970
 - nested CET function, 970–971
 - price variability across crops, 974t, 975
 - sensitivity analysis, 972–973, 973t
 - demand-side assumptions, 965–967
 - global implications
 - agricultural growth in baseline, 969–970
 - average global producer price, 967–968, 967f
 - land supply and price growth, 969, 969t
 - productivity growth, 968–969, 968f
 - global stock-to-use ratios, 961–962, 962f
 - multiple structural factors, 961, 961f
 - supply-side assumptions
 - average productivity increase, 964t, 965
 - LEI group, 963
 - segments land, 963, 963t
- Agro-ecological zone (AEZ), 823
- AIDADS. *See* An Implicitly Directly Additive Demand System
- AIDS. *See* Almost Ideal Demand System
- AK model. *See* Auerbach and Kotlikoff model
- Almost Ideal Demand System (AIDS), 944–945
- Altertax procedure, 881–882
- An Implicitly Directly Additive Demand System (AIDADS), 830, 950–951
- AnalyseGE, 843, 1375
 - for GEMPACK users, 1370–1371
- Anderson–Neary approach
 - to aggregation, 920
 - to tariff aggregation, 922
- Anderson–Neary Trade Restrictiveness Index (TRI), 923
- APA. *See* Actual pension amount
- APEC. *See* Asia Pacific Economic Cooperation
- Apparent labor market imperfections. *See* Static macro–micro distributional models
- Applications, CGE model
 - heterogeneous firms and carbon policy
 - carbon coalitions, 1545–1546
 - CO₂ emissions, 1546, 1547f, 1547t
 - CO₂ leakage rates, 1546–1548, 1548f
 - CO₂ prices, 1546, 1547t
 - global emission distribution, 1546
 - global welfare cost, 1550–1551, 1550f
 - OECD coalition policy, 1549, 1549t
 - tariff yield, 1548, 1549t
 - policy instruments, 1540
 - production sectors, 1540–1541
 - regions, 1540, 1541t
 - trade policy applications
 - global social welfare, 1542–1543
 - liberalization, 1544
 - manufacturing tariff global welfare, 1542, 1543f
 - productivity impacts, 1543
 - trade–cost reduction regional welfare impacts, 1541–1542, 1542t
 - unilateral policy impacts, 1543f, 1544–1545, 1545f, 1546f
 - variety impacts, 1544–1545, 1545t
- Apprenticeship system, 1377
- AR4, IPCC’s, 978
- AR5. *See* Fifth Assessment Report

Armington calibration, 1533
 gravity regression, 1533–1534
 iceberg trade cost, 1533
 Armington model, 1593–1594
 Armington trade, 1519
 composite commodity, 1519
 price index, 1519–1520
 Armington trade theories, 1519–1520
 Armington-based model, 1552–1553
 Asia Pacific Economic Cooperation (APEC), 846
 Auerbach and Kotlikoff model (AK model), 1721–1722
 disadvantages, 1725
 Gauss-Seidel technique, 1721–1722
 idiosyncratic economic risk sources, 1725–1726, 1728
 LSRA, 1722
 multiregion models, 1724–1725
 retirement age, 1722
 AUSFTA. *See* Australia–US Free Trade Agreement
 Australia–US Free Trade Agreement (AUSFTA), 850
 Autonomous energy efficiency improvement (AEEI),
 954, 1013

B

Back-of-the-envelope model (BOTE model), 1301–1302
 for explaining
 CGE results, 1304–1309
 short-run, 1302–1304
 Balance-of-trade function, 922
 Bangladeshi apparel firms, 1266
 Bank's LINKAGE model, 879–880
 Bargaining theories, 1689
 Base-year household-based data, 1415–1416
 Baseline forecasting, CGE modeling, 1314
 historical and forecast simulations relationship, 1314,
 1315f
 USAGE 1998–2005 forecasts, checking of,
 1315–1316
 computers, 1320–1321
 electricity, 1321
 exogenous movements improving performance,
 1317–1319, 1317t
 forecast performance measurement, 1316
 genuine forecast overall performance, 1317, 1317t
 large-error commodity, 1322
 Mavromatis changes, 1323–1324, 1324t
 TCF sector, 1322–1323
 trend assumptions, 1319–1320
 Bayes' rule, 1473–1474
 BEA. *See* Bureau of Economic Analysis
 Bilateral trade responses, supply-side reinterpretation
 bilateral trade prediction, 1253–1254
 firm heterogeneity, 1255–1256
 homogeneous productivity, 1254
 Melitz/Chaney interpretation, 1255
 Pareto distribution productivity, 1254
 productive firms, 1254

 structural interpretation, 1257
 supply-side interpretation, 1254
 trade costs, 1255
 Binswanger's approach, 1134
 Bioenergy, 862–864
 environmental issues, 864
 ethanol using, 863
 GTAP-BIO model, 863–864
 using GTAP-BIO-AEZ model, 864
 MTBE, 863–864
 US biofuel policy formation, 863
 BLS. *See* Bureau of Labor Statistics
 Border measures, 881
 Border price, 880
 BOTE model. *See* Back-of-the-envelope model
 Bottom-up approach, 1390
 diabetes prevention campaign, 1391
 FEDERAL model, 399
 feedback, 1392
 micro-oriented policies, 1390–1391, 1391f
 Bureau of Economic Analysis (BEA), 1007–1008
 Bureau of Labor Statistics (BLS), 1007–1008

C

Calibration, 1346, 1393
 accounts and unit choice
 equilibrium, 1532
 monopolistic competition indexes, 1532–1533
 replication check, 1531
 trade calibration, 1532–1533
 Armington calibration, 1533
 gravity regression, 1533–1534
 iceberg trade cost, 1533
 issues, 1536–1537
 Krugman calibration, 1534
 benchmark firm-level pricing, 1534
 firm-level demand function, 1534–1535
 labor supply, 1675
 Melitz calibration
 benchmark productivity, 1535–1536
 firm-level quantity, 1535–1536
 sunk cost payment, 1535
 zero-cutoff-profit condition, 1535
 Capital, 1455–1456
 Carbon policy, 1545–1546
 and CO₂
 emissions, 1546, 1547f, 1547t
 leakage rates, 1546–1548, 1548f
 prices, 1546, 1547t
 Catastrophic climate change, 1118
 CDE. *See* Constant difference of elasticity
 Central bank objectives, 1486–1487
 Centre d'Etudes Prospectives et d'Information
 Internationales (CEPII), 822, 884
 CEPII. *See* Centre d'Etudes Prospectives et d'Information
 Internationales

- CET. *See* Constant elasticity of transformation
- CEX. *See* Consumer expenditure survey
- CFC. *See* Chlorofluorocarbon
- CGE econometric modeling
- biases of technical change, 1134
 - Binswanger's approach, 1134
 - CEX, 1136
 - computing confidence intervals, 1189–1201
 - consumer behavior
 - closed-form representation, 1165–1166
 - using Euler equations, 1172–1174
 - full expenditure, 1171–1172
 - indirect utility function, 1168–1169
 - Roy's identity, 1169–1170
 - demands for goods and leisure
 - budget shares, 1184, 1185t
 - estimation, 1181, 1181t
 - fitted budget shares, 1182–1183, 1183t
 - group budget shares, 1184–1186, 1185t
 - price and income elasticities, 1182, 1183t
 - rank-three model, 1182, 1210t
 - rank-two model, 1182, 1209t
 - econometric approach, 1134
 - intertemporal allocation
 - age profile, 1186–1188, 1187f, 1188f
 - cohorts, 1186, 1187t
 - of full consumption, 1186
 - parameter estimation, 1188–1189, 1189t
 - Kalman filter, 1135. *See also* Kalman filter
 - producer behavior
 - autonomous technical change, 1141
 - concavity condition, 1142
 - homogeneity restrictions, 1142
 - induced technical change, 1141
 - input groups, 1138–1139
 - sector list, 1138, 1139t
 - share elasticities, 1141
 - state-space model, 1140
 - technical change rate, 1141
 - transition equation, 1143
 - translog form, 1140
 - sensitivity analysis, 1137
 - CGE model. *See* Computable general equilibrium model
 - CGE modeling. *See* Computable general equilibrium modeling
 - CGE modeling validation, 1271–1272
 - through BOTE analysis
 - BOTE models, 1301–1309
 - qualitative validation, 1297–1298
 - quantitative validation, 1298–1301
 - code checking
 - using checking simulations, 1276–1281
 - nominal homogeneity test, 1275
 - real homogeneity test, 1275
 - through GDP identity, 1281
 - devoting space reasons, 1282
 - input-output database, 1281–1287
 - in nominal terms, 1285–1287
 - real GDP change, 1281
 - in real terms, 1287–1292
 - multiple validating procedures, 1272
 - through regression analysis
 - regression equation, 1310–1311
 - regression outcome, 1310
 - state employment effects, 1309–1310, 1310f
 - CGE monopolistic competition theory, 1514
 - applications, 1540–1551
 - calibration, 1531–1537
 - general equilibrium formulation
 - using Cobb-Douglas technology, 1526
 - expenditure function, 1525–1526
 - goal, 1525
 - multiregion general equilibrium, 1526–1527, 1528t
 - Krugman model, 1515
 - large model computation
 - computing large-scale, 1537
 - convergence report, 1539–1540, 1539f
 - decomposition algorithm, 1538–1539, 1539f
 - Dixit-Stiglitz scale, 1538
 - off-the-shelf algorithm, 1537
 - recalibration, 1538
 - Melitz structure, 1514
 - theory computation
 - Feenstra's description, 1529–1530
 - optimal tariff across structures, 1530, 1530f
 - welfare impacts across structures, 1527, 1529f
 - trade theories
 - Armington trade, 1519–1520
 - Krugman trade, 1520–1521
 - Melitz trade, 1521–1522, 1525
 - Change solution methods, 1339, 1341
 - change strategy and GEMPACK
 - complementarity equation, 1340
 - exogenous variables, 1339
 - GAMS, 1340–1341
 - modelers, 1341
 - levels strategy, 1340
 - linearized equations, 1342–1343
 - Newton–Raphson step, 1340–1341
 - Chile, 925–927
 - Chlorofluorocarbon (CFC), 1070
 - Climate and energy policy, 1012–1013, 1015–1016
 - Asian crisis
 - in Australia and in US, 1022
 - key aspects, 1021
 - risk shock, 1022
 - baseline issues, 1013
 - demographic change
 - Blanchard approach, 1025
 - policy implications, 1025–1026
 - financial crisis, 1026–1034

Climate and energy policy (*Continued*)

- FTAA, 1034–1062
- global financial crisis
 - key aspects, 1022
 - key results, 1023–1024
 - long-run implications, 1023
 - risk, 1023
- macroeconomic policy
 - global fiscal consolidation, 1020–1021
 - MSG model, 1020
 - trade imbalances, 1020
- pandemics
 - bird flu, 1024–1025
 - SARS, 1024
- policy issues
 - carbon policy, 1016
 - environmental policy, 1014
- trade liberalization, 1018
 - adjustment path, 1019
 - Australian real GDP, 1018–1019, 1018f
 - short-run adjustment process, 1019
 - trade imbalances, 1019–1020
- trade policy
 - FTAA, 1017
 - NAFTA, 1017
- Climate change
 - AR5, 978
 - baseline emissions, 981
 - carbon emissions, 981, 982f, 982t
 - climate implications, 983–984, 983f
 - economic impacts, 980, 980t
 - in different regions, 984, 985f
 - GDP, 984, 984f
 - high-income countries, 986
 - most impacted regions, 986
 - in ENVISAGE, 979
 - greenhouse gas emissions, 980
 - Hope's PAGE model, 979
 - IPCC's AR4, 978
 - Nordhaus' DICE model, 979
 - parameterization, 980
 - regional concordance, 988, 989t
- Climate policy evaluation
 - bequests, 1729–1730
 - budget constraints, 1729–1730
 - calibration
 - baseline path, 1743–1746, 1745t
 - disability risk, 1739–1740
 - income inequality measurement, 1738, 1739t
 - labor productivity, 1737–1738, 1738t, 1739f
 - normal retirement ages, 1740–1741
 - pension system, 1743
 - population structure, 1736–1737, 1737f
 - preferences, 1740
 - retirement pattern, 1742f, 1743
 - targets, 1743, 1744t
 - tax system, 1742–1743
 - demographics, 1728–1729
 - efficiency calculation, 1734–1735
 - equilibrium conditions, 1735–1736
 - intracohort heterogeneity, 1728–1729
 - pension system, 1732–1733
 - APA, 1733
 - budget, 1734
 - in German law, 1733
 - individual pension benefits, 1732–1733
 - policy reform simulation
 - funded pension system, 1747
 - pension reforms macroeconomic effects, 1747–1750, 1748t
 - pension system progressivity, 1747
 - retirement age increasing, 1746–1747
 - preferences, 1730
 - production technology, 1731
 - retire combinations, 1730–1731
 - retirement decision, 1731
 - sensitivity analysis
 - higher progressivity, 1753, 1754t
 - pension privatization, 1754–1755, 1754t
 - tax system
 - and pension system, 1732
 - taxable labor income, 1732
 - welfare and efficiency effects, 1750
 - of higher progressivity, 1751–1752, 1752t
 - of pension privatization, 1752–1753, 1753t
 - of retirement age, 1750, 1751t
 - welfare calculation, 1734
- Cobb-Douglas production function, 1083
- Cobb-Douglas technology, 1759
- Code checking
 - using checking simulation, 1276–1280
 - nominal homogeneity test, 1275
 - real homogeneity test, 1275
- Cohort model, 1411
- Collective wage bargaining, 1695
 - calibrating bargaining power parameter, 1696–1698
 - empirical implications, 1699–1700
 - general equilibrium, 1696
 - linear utility function, 1698–1699
- Collective wage-bargaining model, 1689
- Communications network, 1612–1613
- Comprehensive datasets, 1412–1413
- Computable general equilibrium model (CGE model), 878, 885–886, 1213, 1244–1245, 1386
 - accounting identities, 1563
 - Armington aggregation, 1565
 - carbon aggregate, 1565
 - import value, 1563
 - international transportation services cost, 1565
 - output value, 1563

- benchmark flows, 1563, 1564f
- general equilibrium model
 - activity levels, 1566, 1566t
 - bilateral trade flows, 1568
 - calibrated substitution elasticity, 1568
 - energy goods, 1567, 1567t
 - heterogeneous firms goods variables, 1566, 1567t
 - non-energy goods, 1568–1569
 - prices, 1566–1567, 1567t
 - set indices, 1566, 1566t
- global economic integration, 844
 - APEC, 846
 - AUSFTA, 850
 - DDA, 844–845
 - Drusilla Brown, 851
 - EU enlargement, 847
 - factor markets globalization, 855–857
 - GATT, 844
 - global CGE modeling, 853–854
 - GTAP, 848
 - GTAP-based analyses, 845
 - NUTS, 848–849
 - standard LoV specification, 852–853
 - trade facilitation, 854–855
 - USDA, 846–847
 - WTO disciplines, 845
- global environmental issues, 857
 - bioenergy, 862–864
 - fossil fuel-based climate policy analysis, 857–858
 - land use in CGE analyses of climate policy, 859–862
- GTAP version 7-based, 1562–1563
- GTAP in GAMS formulations, 1562–1563
- implementation issues, 841–844
- software, 841–844
- systematic sensitivity analysis, 840–841
- validation, 837
 - GTAP-E model, 839–840
 - NAFTA, 838
 - using policy shocks, 838
 - real business cycle literature, 839
 - replicative validity, 837
 - rule of two, 838–839
 - simulation models, 838
- Computable general equilibrium modeling (CGE modeling), 1331
 - See also* MONASH model
 - goodness-of-fit test, 1312–1313
 - historical simulation, 1313
 - time-series estimation of parameters, 1311–1312
- Computing confidence intervals, 1189–1190
 - household parameters, 1190, 1191t
 - base case values and standard errors, 1191, 1193t
 - covariance matrix, 1190, 1191t
 - Delta method and Monte Carlo result comparison, 1194, 1194f
 - Jacobian matrix, 1190, 1191t
 - sensitivity analysis relationship, 1200
 - uncertainty sources
 - contributions to variance in capital, 1197, 1198f
 - contributions to variance in carbon emissions, 1197–1200, 1199f
 - contributions to variance in leisure, 1197, 1198f
 - variance components, 1196–1197, 1196f
 - variance components for leisure, 1197, 1199f
 - variance contributions, 1195, 1195f
- Constant difference of elasticity (CDE), 829, 950–951
 - Armington assumption, 941–943, 1520
 - for CGE frameworks, common, 1214–1215
 - standardization of, 1332
 - maximizing of, 1722
 - in private consumption behavior modeling, 829
 - production functions, 1421
 - production modeling, 886
 - specifying preferences, 1515
- Constant elasticity of transformation (CET)
 - in disaggregation, 848–849
 - in fixed aggregate output, 941–943
 - in labor varieties, 1659
 - goods from destination market, 1247–1248
- Constant returns to scale (CRTS)
 - Armington formulation, 1517
 - Euler's theorem, 1328
 - flexible prices, 886
 - grain production, 1302–1303
 - MPSGE syntax, producers in, 1365
 - multisector general equilibrium (MSGE) models, early
 - generation of, 1572, 1597
 - output value, 1140
 - in production estimation, 1008
 - real homogeneity test, 1275
 - secondary energy goods, 1567
- Consumer behavior
 - See also* CGE econometric modeling
 - closed-form representation, 1165–1166
 - data issues
 - CEX, 1175–1176
 - full-time workers, 1177
 - measuring price levels, 1176–1177
 - reference worker, 1177
 - regional real wages, 1177, 1178f
 - regional wages, 1177, 1178f, 1209t
 - using Euler equations, 1172–1174
 - full expenditure, 1171–1172
 - indirect utility function, 1168–1169
 - quality-adjusted household leisure measurement
 - leisure for adults, 1179, 1180f
 - log consumption, 1179, 1180f
 - log variance, 1179, 1180f
 - for non-workers, 1179
 - quantity of leisure, 1178–1179
 - Roy's identity, 1169–1170
- Consumer expenditure survey (CEX), 1136

- Consumer heterogeneity, 1500
 - Consumer price index (CPI), 1136
 - Consumer tax equivalent (CTE), 880–881
 - Copenhagen Accord, 1071–1072
 - applications, 1095
 - carbon prices, 1100–1101, 1100f, 1100t, 1101t
 - CO₂ atmospheric concentration, 1097, 1098f, 1099f
 - CO₂ emission, 1097, 1098f
 - comparisons, 1104–1105, 1104f, 1105f
 - emissions control rate, 1101, 1102t
 - global temperature projections, 1098–1100, 1099f, 1099t
 - impact, 1106, 1106t
 - modeling, 1095–1096
 - participation rates, 1096, 1097t
 - policy options, 1096
 - results, 1097
 - Counterfactual, concern with, 902
 - See also* Price-distorting policy effects
 - agricultural policies, 902–903
 - distortions to agricultural incentives, 903–904
 - assistance to exportable, 907f
 - national NRAs, 904–906
 - nominal rates of assistance to agricultural, 906f, 907–908
 - RRA calculation, 904
 - RRA mapped on income, 905f
 - institutional history, 903
 - NRAs over time evolution, 908–909
 - complementary force, 909
 - country's tradable food products, 910
 - domestic polity, 909
 - international financial institutions, 909–910
 - PAE, 908–909
 - RIE, 908–909
 - political economy theory, 903
 - projecting cost of trade-distorting policies, 915
 - agricultural tariffs, 918–919
 - average import-weighted tariff protection rates, 916t
 - comparison, 916–918
 - global liberalization of agricultural and merchandise, 917t, 918t
 - using standard GTAP model, 915
 - projecting developing country NRAs, 910
 - farm products, 915
 - GDP, 913
 - GTAP economy-wide model, 911–913
 - NRA averages by region and product, 913, 913t
 - relationship between NRA and product's trade status, 911, 912t
 - trade-related policies, 910–911
 - projecting global commodity markets, 902
 - Counterfactual microsimulation, 1668
 - discrete-choice function, 1669
 - reproduction problem, 1669
 - switching probabilities, 1770
 - Cournot conjectural variations model, 1576–1577
 - Cournot–Nash–Armington oligopoly, 1580t
 - CPI. *See* Consumer price index
 - CRTS. *See* Constant returns to scale
 - CTE. *See* Consumer tax equivalent
- ## D
- DAI. *See* Distortions to Agricultural Incentives
 - Database, 1345
 - calibration, 1346
 - using full levels-based approach, 1347
 - using matrix function, 1347
 - monetary units, 1346
 - percentage changes, 1346
 - physical units, 1346
 - storage, 1346
 - DDA. *See* Doha Development Agenda
 - Delivery modes, 1615–1616
 - DICE. *See* Dynamic Integrated model of Climate and Economy
 - DICE/RICE models, 1078–1080
 - constant elasticity utility function, 1081–1082
 - economic variables
 - CO₂ emissions, 1086
 - Cobb–Douglas production function, 1083
 - damage function, 1084
 - emissions-reduction rate, 1086
 - features, 1085
 - global warming impact, 1084, 1085f
 - geophysical relationships, 1087
 - carbon cycle, 1087–1088
 - greenhouse gases and climate change, 1088
 - GRG algorithm, 1092
 - Negishi approach, 1092
 - objective function, 1080–1081
 - policy evaluation model, 1080
 - policy optimization model, 1080
 - PPAD graphs, 1093
 - problem solvers, 1093
 - social welfare function, 1081
 - welfare improvements, 1082
 - Discrete-choice approach, 1668
 - Discretionary fiscal stimulus, 1494
 - ARRA stimulus package, 1495–1496
 - estimated GDP effects, 1497f
 - model comparison exercise, 1496–1499
 - short-run fiscal policy, 1495
 - Distortions to Agricultural Incentives (DAI), 882
 - Dixit–Stiglitz mechanism, 1593–1594
 - Doha Development Agenda (DDA), 844, 878, 934
 - Doha negotiations, 881
 - Domestic taxes, 823–824
 - DSGE model. *See* Dynamic stochastic general equilibrium model
 - Dynamic ageing, 1409–1410
 - See also* Static aging approach
 - Dynamic general equilibrium modeling

- approaches to model comparison
 - comparable variables, 1482, 1482t
 - comparative approach, 1481
 - endogenous model variables, 1481
 - model builders, 1480–1481
 - model comparison conduct, 1483–1484
 - systematic comparisons, 1480–1481
- approaches to policy evaluation
 - comparable variables, 1483, 1483t
 - fiscal policy rules, 1483
 - model-specific equations, 1482
 - monetary policy shock, 1484–1485
 - nonlinear difference equations, 1481
 - policy rules, 1481, 1483–1484
- augmented models, 1502
 - New Keynesian model, 1503t–1504t
 - small-scale New Keynesian model, 1503t
- data sources and treatment
 - CNP16OV, 1502
 - data series, 1502
 - FEDFUNDS, 1502
 - GDPC1, 1502
 - GDPDEF, 1502
 - measurement equations, 1502
 - original data sources, 1502
- estimation challenges, 1478–1480
- macroeconomic model database, 1504
- model solution and estimation methods, 1465–1472
 - EP solution method, 1468–1470
 - linear approximation, 1466
 - linear difference equations solving, 1467–1468
 - linear quadratic dynamic programming, 1470–1471
 - perturbation methods for, 1471–1472
- New Keynesian models, 1441, 1443, 1473
 - Bayesian methods, 1473–1475
 - innovations, 1442
 - Lucas critique, 1441–1442
 - medium-scale models, 1443
 - medium-scale models for policy analysis, 1453–1454, 1458, 1464–1465
 - model with microeconomic foundations, 1444, 1448, 1450–1453
 - RBC approach, 1442–1443
 - small model, estimation of, 1475–1478
- policy evaluation and robustness, 1485
 - ARRA stimulus package, 1495–1496
 - discretionary fiscal stimulus, 1494–1499
 - model comparison exercise, 1496–1499
 - robust monetary policy rules, 1485–1494
- questions and future research, 1499
 - consumer heterogeneity, 1500
 - endogenous uncertainty, 1501–1502
 - financial intermediation, 1500–1501
 - heterogeneous expectations, 1501–1502
 - long-run growth, 1499–1500
 - producer heterogeneity, 1500
 - rational expectations vs. learning, 1501
 - regulatory policy, 1500–1501
 - using structural models, 1464–1465
- Dynamic GTAP model (G-Dyn model), 855–856
- Dynamic Integrated model of Climate and Economy (DICE), 1079–1080
 - ‘generalized consumption’, 1081
 - as IAM model, 1079–1094
 - introduction to, 1079–1080
 - purpose of, 1079
 - new feature of, 1085
 - as policy optimization model, 1080–1081
 - social welfare function, 1081
- Dynamic labor supply, 1674
 - calibrating labor supply, 1675
 - household production, 1675
 - long-term reaction consistency, 1674
 - short-term consistency, 1674
- Dynamic macro–micro modeling, 1404–1405
 - See also* Global Income Distribution Dynamic model (GIDD model); Static distribution oriented macro–micro models; Static macro–micro distributional models
 - CGE dynamic model, 1405
 - data, 1412–1413
 - dynamic microsimulation, 1405
 - crucial element in, 1406–1407
 - dynamic change sources, 1407
 - dynamic shifts in, 1407
 - DYNASIM, 1406
 - earnings determination, 1406
 - heterogeneity, 1408
 - income generation model, 1406
 - labor market participation choice, 1406
 - Markovian equation, 1407–1408
 - methodological issues of, 1408–1412
- endogenous growth, 1405
- estimation, 1412–1413
- linkages with macro models, 1414
 - issues, 1414
 - static microsimulation, 1414
- validation issues, 1412–1414
- Dynamic microsimulation, 1405
 - crucial element in, 1406–1407
 - dynamic change sources, 1407
 - dynamic shifts in, 1407
 - DYNASIM, 1406
 - earnings determination, 1406
 - heterogeneity, 1408
 - income generation model, 1406
 - labor market participation choice, 1406
 - Markovian equation, 1407–1408
 - methodological issues, 1408, 1412
 - aging, 1408–1409
 - cohort model, 1411
 - dynamic ageing, 1409–1410

Dynamic microsimulation (*Continued*)
 education decisions, 1411
 fertility decision, 1411
 mate-matching techniques, 1410
 Monte Carlo lottery, 1410
 static aging approach, 1408–1409
 survival functions, 1412
 Dynamic stochastic general equilibrium model (DSGE model)
 business cycle issues, 1647
 dynamic programming with explicit representation, 1378
 heterogeneity within, 1384–1385
 New Keynesian DSGE models, 1440
 DYNASIM, 1393

E

EAP. *See* East Asia and Pacific
 East Asia and Pacific (EAP), 955–956
 Eastman–Stykolt specification, 1575
 ECA. *See* Europe and Central Asia
 ECB. *See* European Central Bank
 Economy-wide linkages, 1606–1607
 EEX. *See* Energy-exporting region
 Efficiency wage model, 1689
 EIT. *See* Energy-intensive sector; Energy-intensive production
 ELES. *See* Extended linear expenditure system
 EMF. *See* Energy Modeling Forum
 Emissions Prediction and Policy Analysis model. *See* EPPA model
 Emissions trading scheme (ETS), 1071
 Endogenous uncertainty, 1501–1502
 Energy Modeling Forum (EMF), 936, 1078
 Energy-exporting region (EEX), 1540
 Energy-intensive industries, 1161
 Energy-intensive production, 1540–1541
 carbon border tariff yield rates, 1516
 CGE model with Melitz treatment of, 1543
 Energy-intensive (EIT) sector, 1540–1542
 Entrepreneurs, 1459–1461, 1500–1501
 Environmental Protection Agency (EPA), 823
 ENVISAGE model, 945–947
 AIDADS, 950–951
 bilateral trade, 951
 capital market, 952
 closure rules, 952–953
 flexible functional forms, 947–948
 hierarchical production nesting, 948, 948f
 nested CES approach, 948
 production factors, 951–952
 EP. *See* Extended path
 EP solution method, 1468–1470
 EPA. *See* Environmental Protection Agency
 EPPA model, 858
 Equation groups, CGE model, 1343

block equations, 1344–1345
 complicated demand systems, 1344
 cost-minimizing mix, 1343–1344
 input demands structure, 1344f
 market-clearing equations, 1344
 price equations, 1344
 SAM plus elasticities, 1345
 elasticities, 1345
 SAM structure, 1345
 storage, 1345
 transaction values matrices, 1345

Equivalent variation (EV), 1706

Ethnicity, 1681

ETS. *See* Emissions trading scheme

ETS simulation design

See also Monash Multi-Regional Forecasting model (MMRF model)

Europe and Central Asia (ECA), 955–956

European Central Bank (ECB), 1496

EV. *See* Equivalent variation

Exogenous variables, 1392–1393

Export supply, 1246

bilateral trade response supply-side reinterpretation, 1254

bilateral trade prediction, 1253–1254

firm heterogeneity, 1255–1256

homogeneous productivity, 1254

Melitz/Chaney interpretation, 1255

Pareto distribution productivity, 1254

productive firms, 1254

structural interpretation, 1257

trade costs, 1255

form schedule estimation, 1249

single exporter, 1250

single importer, 1251–1252

mechanisms

using CET framework, 1248

CET production, 1247–1248

heterogeneous firms theory, 1248–1249

using Melitz technology, 1249

NAFTA, 1249

producer behavior, 1247

single-country models, 1247

supply–demand systems

equal export supply elasticities evolution, 1252–1253

estimation strategy, 1252

export supply elasticities, 1252

inverse supply elasticities, 1253

magnitude of elasticities and large degree, 1253

Monte Carlo simulation data, 1253

Extended linear expenditure system (ELES), 827–828, 1421

Extended path (EP), 1466

F

Factor market

globalization, 855–857

- Factor markets globalization, 855–857
- Fallback option, 1695
- FAO. *See* Food and Agriculture Organization
- FDI. *See* Foreign direct investment
- Federal Reserve's FRB-US model, 1442
- Feenstra estimator, 1237
- Feenstra method problems, 1239–1240
- Fifth Assessment Report (AR5), 978
- Financial accelerator model, 1459
- Financial crisis
 - modeling approach
 - regions in aggregation, 1026, 1027t
 - risk premia, 1026–1027
 - risk in Europe, 1028
 - effective exchange rate, 1028, 1028f
 - real consumption, 1031, 1031f
 - real gross domestic product, 1031–1032, 1032f
 - real investment, 1029, 1030f
 - short-term interest rate, 1029, 1030f
 - trade balance, 1029, 1029f
 - risk in US, 1032–1033, 1033f
- Financial intermediation, 1500–1501
- Financial market frictions, 1459
 - credit market imperfections, 1459–1461
 - financial accelerator model, 1461
- Firms, 1446–1447
- Fitted budget shares, 1182–1183, 1183t
- Fixing real wages, 1687
- Food and Agriculture Organization (FAO), 939
- Foreign direct investment (FDI), 1572, 1603
- Foreign supply line (FS line), 1617
- Foreign–foreign substitution, 1228
 - price variation exploitation, 1228
 - CES preferences, 1228–1229
 - commodity level bilateral trade, 1229–1230
 - cross-product variation, 1230–1231
 - demand equation, 1230
 - expenditures and price indices, 1230
 - MFN, 1231
 - NAFTA, 1230
 - quantities, 1229
 - using Romalis approach, 1230–1231
 - time-series literature, 1231
 - problems with using trade costs
 - ad valorem* trade costs, 1232
 - using cross-sectional variation, 1231
 - drawback, 1232
 - trade cost approach, 1232
 - transportation costs, 1232
- Formal labor, 1681
- Forward-looking dynamic modeling, 1674
- Fossil fuel-based climate policy analysis, 857–858
- Four-parameter rules, 1490
- Free Trade Agreement of the Americas (FTAA), 1017, 1034
 - anticipated tariff reductions, 1056–1058, 1058f
 - carbon dioxide emissions, 1058, 1061f
 - modeling approach, 1036
 - reference case
 - bilateral trade flows, 1038
 - initial tariffs, 1037–1038, 1039t
 - simulations, 1037, 1038t
 - tariff reductions under NAFTA
 - change in aggregate trade flows, 1012t, 1051
 - FTAA-p vs. NAFTA-p, 1053, 1056f
 - NAFTA-p vs. reference case, 1050–1051, 1050f
 - tariff reform, 1045
 - trade flow value, 1045–1046
 - trade liberalization and growth, 1035
 - trade agreements indirect effect, 1036
 - trade and productivity link, 1035
- Free trade agreement (FTA), 818–819
- Free Trade Area of Americas (FTAA), 841, 1243–1244
- FS line. *See* Foreign supply line
- FTAA. *See* Free Trade Agreement of the Americas; Free Trade Area of Americas
- FTA. *See* Free Trade Agreement
- Fuhrer and Moore's model, 1442
- Full-time labor, 1680
- Fully integrated approach, 1393
 - calibration, 1393
 - specifications, 1394
 - Stone–Geary model, 1393–1394

G

- G-Cubed model, 995
 - baseline generation, 1011
 - economic agents, 998
 - financial capital, 995
 - firms, 999
 - capital stock changes, 1000
 - forward-looking Tobin's q , 1001–1002
 - goal, 1000–1001
 - goods and services purchase, 999
 - production function, 999–1000
 - at second tier, 999
 - tier-structured constant, 999
 - at top tier, 999
 - top-tier optimization problem solving, 1001
 - government, 1005–1006
 - Henderson–McKibbin–Taylor rule, 1007
 - households, 1002
 - capital services, 1004
 - financial wealth, 1003
 - human wealth, 1002–1003
 - investment decision, 1004
 - key features, 997, 997t
 - labor market, 1004–1005
 - macroeconomic theory, 996
 - numerical implementation, 1010
 - parameterization, 1007–1008, 1010
 - energy unit cost function, 1008

- G-Cubed model (*Continued*)
 - input-output transactions, 1007–1008
 - materials unit cost function, 1008
 - physical capital, 995
 - regions and sectors, 998, 998t
 - trade imbalances, 1006–1007
 - versatility, 996–997
- G-Dyn model. *See* Dynamic GTAP model
- GAMS. *See* General Algebraic Modeling System
- GATS. *See* General Agreement on Trade in Services
- GATT. *See* General Agreement on Tariffs and Trade
- Gauss–Seidel iterative solution technique, 1720–1722
- Gauss–Seidel technique, 1721–1722
- GCM. *See* Global circulation model
- GDP from expenditure side (GDPEXP), 1287
- GDP from income side (GDPINC), 1287
- GDPEXP. *See* GDP from expenditure side
- GDPINC. *See* GDP from income side
- GEMPACK. *See* General Equilibrium Model PACKage
- Gender, 1681
- General Agreement on Tariffs and Trade (GATT), 844, 878
- General Agreement on Trade in Services (GATS), 1602
- General Algebraic Modeling System (GAMS), 935, 1333–1334
 - special syntax, 1335
- General Equilibrium Model PACKage (GEMPACK), 843, 1334–1336
 - scales, 1374
 - special syntax, 1335
- General equilibrium trade models, 1557–1562
- General-purpose software, 1335–1336
 - change solution methods, 1339
 - change strategy and GEMPACK, 1341–1343
 - levels strategy and GAMS, 1340–1341
 - linearized equations enable substitution, 1342–1343
- GEMPACK IDE's, 1338
- input intelligible to modelers, 1335
 - GEMPACK, 1335–1336
 - Leontief equation, 1335
- insulate modelers
 - CGE modelers, 1337
 - endogenous variables, 1337
 - GEMPACK, 1337
 - iterative methods, 1337
 - Newton–Raphson method, 1337
 - programming approaches, 1337
 - solver, 1337
- run on different computers, 1338–1339
- wide range of models, 1336
 - aggregation levels, 1336–1337
 - MPSGE, 1336
- Windows programs
 - to control simulations, 1338
 - to examine data, 1338
 - IDE programs, 1339
 - to results, 1338
- Generalized method of moments (GMM), 1233–1234
- Generalized reduced gradient algorithm (GRG algorithm), 1092
- GIAM. *See* Global integrated assessment model
- GIDD model. *See* Global Income Distribution Dynamic model
- Gigatons of carbon (gtC), 981
- Global 1–2–3 model
 - bilateral trade volume, 943–944
 - climate modules, 954
 - emissions, 954
 - ENVISAGE model, 945–946
 - extensions, 946–947
 - model dynamics, 953–954
 - nested CES structure, 944–945
 - price transmission notion, 945
- Global applied general equilibrium analysis (AGE analysis, global), 815–816
 - CGE modeling of global environmental issues, 857–864
 - future directions, 864–867
- GTAP, 815–816
 - modeling framework standard, 825–837
 - model validation and systematic sensitivity analysis, 837–841
 - software and implementation issues, 841–844
- Global Bank, 834
- Global CGE modeling
 - See also* Post-1990s CGE modeling; Regional CGE modeling
 - applications, 940
 - DDA analysis, 937
 - difficulties, 935–936
 - extensions, 937–938
 - FUND model, 939–940
 - global economic prospects, 938
 - GTAP database, 936–937
 - model inter-comparison, 936
 - PAGE model, 939–940
 - at World Bank, 935
- Global circulation model (GCM), 980
- Global economic integration, 844
 - APEC, 846
 - AUSFTA, 850
 - DDA, 844–845
 - EU enlargement, 847
 - factor market globalization, 855–857
 - GATT, 844
 - global CGE modeling, 853–854
 - GTAP, 848
 - GTAP-based analyses, 845
 - NUTS, 848–849
 - standard LoV specification, 852–853

- trade facilitation, 854–855
- USDA, 846–847
- WTO disciplines, 845
- Global economic welfare, 888
 - global merchandise trade liberalization, 888
 - using standard GTAP price distortion database, 891–892
 - terms-of-trade effect, 891
- Global environmental issues, 857
 - bioenergy, 862–864
 - fossil fuel-based climate policy analysis, 857–858
 - land use in CGE analyses of climate policy, 859–862
- Global forward looking
 - core drivers, 955–956
 - elderly dependency ratio, 957–959, 958f
 - food demand implication, 956
 - income growth rates, 959, 960f
 - labor force growth, 956–957
 - population, 955–956, 955f
 - working age population, 956–957, 956f
 - youth dependency ratio, 957–959, 957f
- Global goods markets, price distortions in
 - Altertax procedure, 881–882
 - border measures, 881
 - CEPII, 882
 - DAI database, 882
 - DAI rates, 885
 - ITC, 882
 - producer price distortion structure in, 883t
- Global Income Distribution Dynamic model (GIDD model), 1385–1386, 1414
 - See also* Dynamic macro–micro modeling; Static distribution oriented macro–micro models; Static macro–micro distributional models
- motivation and originality, 1415
 - base-year household-based data, 1415–1416
 - household surveys, 1415
- policy simulations, 1425–1427
 - agricultural incomes, 1429
 - agricultural population in, 1428f
 - climate change, distributional impacts, 1430–1431
 - free trade in agriculture, 1427–1428
 - free trade in global poverty, 1427t, 1429–1430
 - global incidence of climate change damages, 1431f
 - regional growth incidence curves, 1429f
 - removal of agricultural distortions, 1429
- potential difficulties, 1422–1423
- scenario and global distribution
 - business-as-usual scenario, 1423
 - changes in inequality, 1424–1425
 - global income inequality, 1423t
 - GMC, 1425
 - income distribution, 1424
- solution algorithm, 1416–1417
 - demographic changes, 1418–1419
 - demographic projections, 1419t
 - educational change, 1418–1420
 - four age/education groups, 1420
 - LAVs, 1417–1418
 - macroeconomic changes, 1420–1421
 - methodological framework, 1417f
 - microeconomic changes, 1421–1423
 - population coverage by region, 1415t
- Global integrated assessment model (GIAM)
 - See also* ETS simulation design
- Global middle class (GMC), 1425
- Global Trade Analysis Project (GTAP), 815–816, 879, 933–934, 1218, 1332, 1516–1517
 - database, 816–817, 821, 825
 - CEPII, 822
 - EPA, 823
 - global migration, 823–824
 - GTAP database philosophy, 822
 - GTAP version 5 database, 824–825
 - IFPRI, 822
 - multilateral trade liberalization, 822
 - OECD, 822–823
 - open-sourcing model, 824
 - problem in, 821
 - SALTER project, 824
 - as economic model, 825
 - FTAs, 818–819
 - growth measures in, 816, 817f
 - GTAP Advisory Board, 818
 - institutional innovation, 816–817
 - network, 818–820
 - through Internet, 819–820
 - pricing strategy, 817–818
 - rock star status, 821
 - standard GTAP modeling framework, 826
 - Global Bank, 834
 - global trade, 835
 - guiding principles, 825–827
 - modeling private consumption behavior, 829
 - regional household, 827–828
 - regional welfare decomposition, 830
 - regional welfare measurement, 830
 - transport sector, 835
 - treatment of imports, 835–836
- Global Trade and Environment Model (GTEM)
 - See also* Monash Multi-Regional Forecasting model (MMRF model)
- GMC. *See* Global middle class
- GMM. *See* Generalized method of moments
- Gov demands, 1348
- Government fiscal balances, 886–887
- GRG algorithm. *See* Generalized reduced gradient algorithm
- Group budget shares, 1184–1186, 1185t
- GTAP. *See* Global Trade Analysis Project
- GTAP philosophy, 825–826
- GTAP-BIO model, 863
- GTAP-BIO-AEZ model, 864

GTAPeGEMPACK marriage, 842–843
 gtC. *See* Gigatons of carbon
 GTEM. *See* Global Trade and Environment Model

H

Habit formation, 1457–1458
 Harmonized system (HS), 849
 Harris–Todaro approach, 1703, 1704
 Hazard functions. *See* Survival functions
 Henderson–McKibbin–Taylor rule, 1007
 Heterogeneity within aggregate households, 1666
 Heterogenous firm models, 1594–1595
 HIC. *See* High-income
 High-income (HIC), 955–956
 regional concordance, 989t
 Home–foreign substitution
 CGE practitioners, 1224
 contemporaneous trade response, 1224
 domestic production, 1223
 middle tier and estimate substitution, 1222–1223
 relative demand curves, 1223
 time-series variation, 1223–1224
 triple-nested utility function, 1222
 two nests, 1222
 Hotelling rents, 1091
 Hou demands, 1348
 Household composition, 1662–1663
 Household-specific expenditure structures, 1673
 consumption structures, 1674
 savings, 1673–1674
 HS. *See* Harmonized system
 HS6 products, 924
 Hump-backed wage profile, 747–748

I

IAC. *See* Industries Assistance Commission
 IAM. *See* Integrated assessment model
 IAM research issues, 1106–1107
 carbon prices, 1107, 1108t
 complexity, 1109–1110
 discount rate
 alternative assumptions, 1115, 1115t
 descriptive approach, 1114
 generational discount rate, 1113
 problem, 1116
 Ramsey equation, 1113–1114
 Ramsey–Koopmans–Cass model, 1113
 real return on capital, 1112–1113
 modeling technological change
 global warming models, 1126
 LBD model, 1125
 research model, 1124–1125
 positive vs. normative models, 1110–1111
 SCC, 1107
 strategic relationship, 1123
 difficulty, 1123–1124
 Nash non-cooperative equilibrium, 1123
 non-cooperative framework, 1123
 transparency, 1109
 uncertainty, 1116–1117
 catastrophic climate change, 1118
 in climate change, 1117
 extreme values, 1119, 1121t
 fat tails, 1118
 policy failure, 1119
 tail event, 1118
 thin-tail uncertainty, 1117
 IDE. *See* Institute for Developing Economies; Integrated development environment
 IFPRI. *See* International Food Policy Research Institute
 IGEM. *See* Intertemporal General Equilibrium Model
 IIASA. *See* International Institute for Applied Systems Analysis
 IIP. *See* Implied inflation variability premium
 IMF. *See* International Monetary Fund
 Implied inflation variability premium (IIP), 1490
 Import demand elasticities
 Armington assumption, 1217–1218
 CGE models, 1220
 CGE practitioner, 1222
 equation systems without instruments
 data clouds, 1235f, 1236–1237, 1236f
 errors in supply and demand equation, 1238
 Feenstra estimator, 1237
 hyperbola equation, 1235
 identifying import demand elasticities, 1234
 import demand equation, 1237–1238
 using insight and points out, 1237
 Leamer hyperbola, 1238
 median elasticities, 1238–1239
 supply and demand system equation, 1234–1235
 time-series data, 1235–1236
 external validity, 1242–1243
 point estimation and standard errors, 1243–1244
 product composition and aggregation, 1244–1245
 variable elasticities, 1245–1246
 foreign–foreign substitution, 1228
 exploiting price variation, 1228–1231
 using trade costs in, problems with, 1231–1232
 goal, 1220
 GTAP model, 1218
 home–foreign substitution
 CGE practitioners, 1224
 contemporaneous trade response, 1224
 domestic production, 1223
 middle tier and estimate substitution, 1222–1223
 relative demand curves, 1223
 time-series variation, 1223–1224
 triple-nested utility function, 1222
 two nests, 1222
 instrumental variable approaches, 1233

- using GDP revenue function approach, 1234
 - OECD, 1233–1234
 - OLS, 1233
 - structural parameter estimation, 1233
 - using UN Comtrade data, 1234
- magnitudes
 - cross-section and panel, 1240–1241
 - using instrumental variables, 1241
 - low elasticities, 1242
 - using macroeconomic time-series context, 1241–1242
 - preferential commitments, 1242
 - time-series estimation, 1241
 - time-series papers, 1241
- monopolistic competition models, 1217
- price elasticity estimation, 1220–1222
- problems with Feenstra method, 1239–1240
- problems with time-series estimation, 1224
 - attenuation bias, 1225
 - category-specific unit values, 1225
 - non-classical measurement error, 1226
 - prices, 1225
 - sector price, 1225
 - significant measurement error, 1225–1226
 - simultaneity, 1227
- prominent trade policy-focussed models, 1221t
- single-country trade models, 1219
- substitution possibilities, 1220
- trade elasticities, 1217–1218
- Income distribution in CGE modeling
 - DSGE, 1384–1385
 - dynamic macro–micro modeling, 1404–1405
 - data, estimation and validation issues, 1412
 - dynamic microsimulation, 1405
 - linkages with macro models, 1414
 - methodological issues, 1408
- GIDD model, 1414
 - demographic and educational changes, 1418
 - distributional impacts of climate change, 1430
 - free trade in agriculture and global poverty, 1427
 - macroeconomic changes, 1420–1421
 - microeconomic changes, 1421
 - motivation and originality, 1415
 - policy simulations, 1425
 - scenario and global distribution, 1423
 - solution algorithm, 1416–1417
- macro-oriented policies, 1384
- micro-oriented policies, 1384
- policy analysis, 1384
- static distribution oriented macro–micro models, 1387
 - bottom-up approach, 1390
 - fully integrated approach, 1393
 - recursive two-way linkage, 1392
 - top-down approach, 1387
- static macro–micro distributional models, 1394
 - final reflections on, 1404
 - household income generation on labor market, 1399
 - modeling rationing on labor market, 1399
 - random changes or reweighting, 1395
 - rational individual choice of employment sector, 1396
- Income generation model, 1406
- Income–expenditure condition, 922
- Independence Chain MH algorithm, 1475
- Industries Assistance Commission (IAC), 1338–1339
- Informal labor, 1681
- Input-output balance conditions, GDP identity, 1285–1287
- Input-output database
 - for CGE model, 1282–1285, 1283t
- Institute for Developing Economies (IDE), 835–836
- Instrumental variables (IV), 1233
 - using GDP revenue function approach, 1234
 - OECD, 1233–1234
 - OLS, 1233
 - structural parameter estimation, 1233
 - using UN Comtrade data, 1234
- Integrated assessment model (IAM), 979, 1069–1070
 - development, 1078
 - DICE and RICE models, 1078–1079
 - organization sponsorship, 1078, 1078t
 - previous surveys, 1074, 1074f
 - simplification, 1093–1094
 - tax system, 1094
- Integrated development environment (IDE), 1338
- Integrated economic and climate modeling
 - climate change problem, 1072
 - climate monitoring, 1070
 - framework convention, 1071
 - greenhouse gas emission, 1070
 - Kyoto Protocol, 1071
- Copenhagen Accord, 1071–1072
- economic modeling, 1072
 - climate damages, 1073–1074
 - corn production, 1073
 - unit of account, 1072–1073
- energy modeling, 1077
- IAM, 1069–1070
- MRG modeling approach, 1077
- necessity, 1075–1076
- policy optimization models, 1075
- Interest rate rules, 1486
- Intergovernmental Panel on Climate Change (IPCC), 936, 1070
- International Food Policy Research Institute (IFPRI), 822, 953
- International Institute for Applied Systems Analysis (IIASA), 963
- International Monetary Fund (IMF), 1083–1084, 1496, 1604–1605

International Standard Classification of Education (ISCED), 1736
 International Trade Center (ITC), 882
 International Trade Commission (ITC), 846–847
 Intertemporal General Equilibrium Model (IGEM), 1078–1079
 Inv demands, 1348
 Investment goods, 1348
 Involuntary unemployment, 1688
 bargaining theories, 1689
 calibration, 1694
 collective wage-bargaining model, 1689
 efficiency wages, 1689, 1693
 search-and-matching model, 1688, 1689, 1690
 IPCC. *See* Intergovernmental Panel on Climate Change
 ISCED. *See* International Standard Classification of Education
 ITC. *See* International Trade Center; International Trade Commission
 IV. *See* Instrumental variables

J

Jordan canonical form, 1467

K

Kalman filter, 1135, 1143–1145
 application, 1143
 asymptotic variance, 1149
 concavity constraints equation, 1146
 explanatory variables, 1146
 filtering, 1144
 likelihood ratio, 1151
 observation equation, 1144
 over-identification test, 1204t
 smoothing, 1144
 specification test, 1150
 state equation, 1144
 two-step, 1147
 validity test, 1205t
 Krugman calibration, 1534
 benchmark firm-level pricing, 1534
 firm-level demand function, 1534–1535
 Krugman trade, 1520
 Dixit-Stiglitz price index, 1520–1521
 at firms, 1521
 Krugman trade, 1520–1521
 Krugman-based model, 1553–1555
 Kyoto greenhouse gases, 954
 Kyoto Protocol, 1014–1015
 in developed countries, 858
 EU ETS, 1100–1101
 first international treaty, 978
 Framework Convention in, 1071
 G-Cubed, 1016
 in Japan, 936

L

Labor demand, 1676
 functional implementation
 free parameters, 1678
 labor demand estimations, 1676
 nested CES function, 1677f, 1677
 NNCES approach, 1678
 NNCES setup of production function, 1678f, 1678
 using Translog production function, 1677
 labor demand heterogeneity dimensions,
 1679
 ethnicity, 1681
 formal labor, 1681
 full-time labor, 1680
 gender, 1681
 informal labor, 1681
 occupation, 1680
 part-time labor, 1680
 rural labor, 1681
 skill type, 1679–1680
 urban labor, 1681
 labor heterogeneity in, 1682
 cross-classifying all dimensions, 1682
 demand elasticities, 1684
 finding labor demand parameters, 1682
 one-to-one relationship, 1683
 Rimmer and Dixon dimensions, 1682
 two-level nesting options, 1683f, 1683
 Labor market coordination
 collective wage bargaining, 1695
 calibrating bargaining power parameter,
 1696–1698
 empirical implications, 1699–1700
 general equilibrium, 1696
 linear utility function, 1698–1699
 dual labor market, 1701–1704
 Harris–Todaro approach, 1703, 1704
 informal sector, 1701–1704
 involuntary unemployment, 1688
 bargaining theories, 1689
 calibration, 1692, 1694–1695
 collective wage-bargaining model, 1689
 efficiency wage model, 1689
 efficiency wages, 1693
 search-and-matching model, 1688, 1689,
 1690
 long-term trends
 non-proportionality effects, 1701
 secular upwards trend, 1700
 unemployment benefits, 1700
 market scope, 1684
 crucial empirical question, 1686
 efficiency weighting, 1685
 follow-up problems, 1685
 homogenizing forces, 1686

- one-way transformation, 1686
- prima facie*, 1685
- questions, 1684
- wage curve as calibration target, 1704
 - efficiency wage formation, 1705
 - estimations, 1704
- wage-forming mechanism, 1687
 - CPI, 1687
 - dominant type of literature, 1688
 - fixing real wages, 1687
 - structural parameters focus, 1688
 - wage curve, 1687
- Labor market in CGE models
 - labor demand, 1676–1684
 - functional implementation, 1676–1679
 - labor demand heterogeneity dimensions, 1679
 - labor heterogeneity in several dimensions, 1682–1684
 - labor market coordination
 - collective wage bargaining, 1695–1700
 - informal sector and dual labor market, 1701–1704
 - involuntary unemployment, 1688, 1690–1692, 1694–1695
 - long-term trends in unemployment, 1700–1701
 - market scope, 1684–1687
 - wage curve as calibration target, 1704–1706
 - wage-forming mechanism, 1687–1688
 - labor supply, 1650–1676
 - dynamic, 1674–1676
 - household-specific expenditure structures, 1673, 1674
 - microsimulation, 1666–1673
 - several representative households, 1660–1666
 - single representative household, 1651–1660
- labor–market related questions, 1651–1653
 - location of initial shock, 1648
 - outcome variables of interest, 1649
 - typical studies classification, 1649–1650
- question-driven approaches, 1646
- welfare analysis, 1706
 - for microsimulated households, 1709–1710
 - for representative households, 1706–1709
 - utility weighting, 1710–1711
- Labor supply, 1645, 1650
 - dynamic labor supply, 1674
 - calibrating labor supply, 1675
 - household production, 1675
 - long-term reaction consistency, 1674
 - short-term consistency, 1674
 - household-specific expenditure structures, 1673
 - consumption structures, 1674
 - savings, 1673–1674
- microsimulation, 1666
 - counterfactual, 1668–1670
 - data adjustments, 1672, 1673
 - data consistency between modules, 1672–1673
 - data discrepancies, 1672
 - data inconsistency issues, 1672
 - integrated model 1671
 - iteration in soft link, 1671
 - macro modules linkage, 1670
 - micro modules linkage, 1670
 - micro labor supply, 1667–1668
 - motivation for, 1667
 - one-way linkage, 1670
 - residual household, 1672
- several representative households, 1660, 1661
 - age, 1665
 - elasticity estimation sources, 1665–1666
 - heterogeneity within aggregate households, 1666
 - household composition, 1662, 1663
 - income class, 1664
 - income types, 1664
 - occupation, 1663
 - sectoral employment, 1663
 - skill type, 1661–1662
 - wage level, 1665
- single representative household, 1651
 - different labor varieties, 1659
 - hours of work, 1651
 - income elasticity, 1653
 - participation, 1656–1659
 - wage elasticity, 1654, 1656
- Labor–market related questions, 1648
 - location of initial shock, 1648
 - outcome variables of interest, 1649
 - typical studies, 1649–1650
- Land use in CGE analyses, climate policy, 859
 - AgLU model, 860–861
 - critical issue, 861
 - GTAP compatible, 859
 - GTAP-based CGE models, 862
 - homogeneity issue, 859–860
 - LEITAP model, 859
 - physical characteristics, 859
 - problems and challenges, 861
 - residential and commercial lands, 862
 - risk aversion, 860
- Latin America and Caribbean (LAC), 955–956
- LAV. *See* Linkage aggregate variable
- LBD model. *See* learning by doing model
- Learning by doing model (LBD model), 1125

LEITAP model, 859
 Leontief equation, 1335
 LES. *See* Linear expenditure system
 LES/ELES. *See* Linear and extended linear expenditure systems
 Linear and extended linear expenditure systems (LES/ELES), 950–951
 Linear approximation, 1466
 first-order Taylor series, 1466
 percentage deviation, 1466
 Linear expenditure system (LES), 829
 Linear quadratic dynamic programming, 1470
 linear constraints, 1471
 Riccati equation, 1471
 unique solution, 1471
 value-function iteration, 1471
 Linkage aggregate variable (LAV), 1417–1418
 LINKAGE model of global economy, 885–886
 aggregation involving, 887
 using CES functions, 886
 comparative static version, 887
 government fiscal balances, 886–887
 production structures, 886
 Log-linearized system, 1448–1450
 Long-term labor supply, 1674
 LSRA. *See* Lump-sum redistribution authority
 Lucas critique, 1464–1465
 Lump-sum redistribution authority (LSRA), 1722

M

MAcMaps, 882
 Macro-oriented policies, 1384
 Macroeconomic changes, 1420–1421
 Macroeconomic model database, 1504
 Magic bullets, 1216
 Magnitudes
 cross-section and panel, 1240–1241
 using instrumental variables, 1241
 low elasticities, 1242
 using macroeconomic time-series context, 1241–1242
 preferential commitments, 1242
 time-series estimation, 1241
 time-series papers, 1241
 Market access, CGE modeling, 1602–1603
 challenges, 1603–1604
 conceptual issues, 1606
 aggregate productivity, 1613
 commercial services, 1607t
 communications network, 1612–1613
 delivery modes, 1615–1616
 direct cost channels, 1606–1607
 downstream linkages, 1606–1607, 1610–1612
 intermediation, 1607–1610, 1612
 machinery sector, 1610, 1612
 market access channels, 1615–1616
 market service productivity, 1614f
 OECD regulatory indexes, 1614–1615, 1614f
 productivity channels, 1612
 productivity-enhancing role, 1613
 service sector productivity, 1614
 value-added content of final demand, 1609t
 data issues, 1604
 balance trade data, 1605
 deepen coverage, 1605
 FDI data, 1605–1606
 IMF data, 1604–1605
 services trade data, 1604–1605
 trade in services, 1604
 GATS, 1602
 implementation issues
 modeling changes in policy, approaches to, 1619–1622
 change effects in policies, 1620–1621
 focus on cross-border delivery of services, 1619–1620
 quantifying policies, 1616–1619
 whether models, 1621–1622
 sector specificity modes, 1627–1628
 services liberalization models
 modeling regional services liberalization, 1625–1627
 pioneering work, 1622
 post-1990s CGE modeling, 1623
 setting future research priorities, 1634
 discriminatory policies, 1637
 distribution margin estimations, 1635
 international trade, 1636
 market power, 1635
 theoretical structure development, 1635–1636
 supply modes, 1627–1628
 value-added linkages, 1628–1629
 database aggregation, 1630, 1632t
 Italian regulatory policy, 1634
 macroeconomic impact, 1632t, 1633–1634
 MFP, 1630
 PMR index, 1630
 productivity and regulation in services, 1631t
 regression analysis–MFP and regulation, 1631t
 value-added composition of economy, 1629t, 1633t
 value-added share comparison, 1633t
 Market access channels, 1615–1616
 Market clearing, 1289–1290
 equations, 1344
 Markov Chain Monte Carlo method (MCMC method), 1474
 Markup rates, 1574–1575
 Master program, 1378
 Mate-matching techniques, 1410
 Mathematical Programming System for General Equilibrium analysis (MPSGE), 1334
 special syntax, 1335
 Maximum likelihood estimator (MLE), 1144

- McKibbinSachs Global model (MSG model), 1020
- MCMC method. *See* Markov Chain Monte Carlo method
- Medium-scale models for policy analysis, 1453–1454
- capital, 1455–1456
 - capital accumulation, 1455
 - financial market frictions, 1459
 - basic financial accelerator model, 1461
 - credit market imperfections, 1459–1461
 - first-generation New Keynesian model, 1454–1455
 - habit formation, 1457–1458
 - investment, 1455–1456
 - Lucas critique, 1464–1465
 - model dynamics, 1461–1462
 - government sector, 1464
 - monetary policy shock in, 1462f
 - Smets–Wouters model, 1461–1462
 - two medium-scale DSGE models, 1462–1463, 1463f
 - price indexation, 1458
 - sticky wages, 1458–1459
 - SVAR model, 1454
- Melitz calibration
- benchmark productivity, 1535–1536
 - firm-level quantity, 1535–1536
 - sunk cost payment, 1535
 - zero-cutoff-profit condition, 1535
- Melitz model, 1265–1266, 1594
- Melitz structure, 1514
- Melitz trade, 1521–1522
- CES-weighted average productivity, 1524
 - Dixit–Stiglitz price index, 1522
 - Pareto distribution, 1523
 - productivity, 1522
 - supply, 1525
- Melitz trade theories, 1521–1522, 1525
- Melitz-based model, 1555–1557
- Methyl tert-butyl ether (MTBE), 863–864
- MFN. *See* Most favored nation
- MFP. *See* Multifactor productivity
- Micro datasets, 1404
- Micro labor supply, 1667–1668
- Micro-oriented policies, 1384
- Microeconomic changes, 1421–1423
- Microeconomic foundations, simple model with, 1444
- firms, 1446–1447
 - government, 1447–1448
 - spending shock, 1453f
 - households, 1444–1446
 - log-linearized system, 1448–1450
 - model dynamics, 1450–1453
 - monetary policy, 1448
 - government spending shock, 1453f
 - monetary policy shock, 1451f
 - technology shock, 1452f
- Middle East and North Africa (MNA), 955–956
- Missing price-distorting measures, concern with, 880
- agricultural price distortions, 880–881
 - effects of global removal, 887–888
 - on agricultural and food output and trade, 895, 895t
 - agricultural and food self-sufficiency liberalization, 895–896, 897t
 - agricultural and merchandise trade liberalization, 899t
 - effects on poverty using elasticities approach, 900
 - effects on product prices, 896
 - effects on sectoral value added, 897–898
 - impact of full trade reform, 893–895
 - global economic welfare, 888–892
 - using GTAP database, 898–900
 - national economic welfare, 888–892
 - quantities produced and traded, 893
 - regional and sectoral distribution of welfare effects, 892–893
 - share of agricultural and food production, 896t
 - shares of global output exported, 894t
- global goods markets, price distortions in
- Altartax procedure, 881–882
 - border measures, 881
 - CEPII, 882
 - DAI database, 882
 - DAI rates, 885
 - ITC, 882
 - producer price distortion structure in, 883t
- LINKAGE model of global economy, 885–886
- aggregation involving, 887
 - using CES functions, 886
 - comparative static version, 887
 - government fiscal balances, 886–887
 - production structures, 886
 - non-tariff farm policy measures, 881
 - WTO's Doha negotiations, 881
- MLE. *See* Maximum likelihood estimator
- MMRF model. *See* MONASH Multi-Regional Forecasting model
- MNA. *See* Middle East and North Africa
- Mobile capital, 1365
- Model builders, 1480–1481
- Model-specific rules, 1488
- four-parameter rules, 1490
 - IIP, 1490t
 - robustness, 1490–1492, 1491t, 1492t
 - Taylor principle, 1488–1489
 - three-parameter rules, 1489–1490
 - two-parameter rules, 1488–1489
- Modeling regional service liberalization, 1625–1627
- Modeling Resource Group (MRG), 1077
- MONASH Multi-Regional Forecasting model (MMRF model), 858
- See also* Computable general equilibrium modeling (CGE modeling)

- Monetary policy, 1448
 - Monetary units, 1346
 - Monopolistic competition, 1583–1585
 - calibration, 1588t–1589t
 - using Dixit–Stiglitz preferences, 1583
 - efficiency, 1584–1585
 - fixed CDRs, 1587–1590
 - fixed costs, 1585–1587
 - framework choice, 1590–1592, 1594
 - heterogenous firm models, 1594–1595
 - industry-level scale economies, 1592–1593
 - large groups, 1590–1594
 - markups, 1584–1585
 - Melitz model, 1594
 - scale, 1583–1585
 - SDS preferences, 1583
 - small groups, 1590–1593
 - specification, 1588t–1589t
 - stepwise solution with local linearization, 1592f
 - variety, 1584–1585
 - Most favored nation (MFN), 937, 1231
 - MPSGE. *See* Mathematical Programming System for General Equilibrium analysis
 - MPSGE code, 1369–1370
 - MRG. *See* Modeling Resource Group
 - MSG model. *See* McKibbinSachs Global model; Multisectoral growth model
 - MSG model. *See* Multisector general equilibrium model
 - MTBE. *See* Methyl tert-butyl ether
 - Multifactor productivity (MFP), 1630
 - Multilateral organizations, 878
 - Multilateral policy reform simulation
 - See also* Multiregional world model
 - macroeconomic effects
 - consumption tax rates, 1785–1786
 - government expenditures hike, 1786
 - healthcare benefits, 1785
 - privatization, 1785
 - transition path debt levels, 1786
 - welfare effects
 - government expenditures hike, 1789
 - healthcare benefits, 1789
 - of multilateral reforms, 1786
 - Multiregional CGE models, 1373
 - Multiregional world model
 - calibration
 - actual and simulated population comparison, 1763, 1764t
 - age-specific productivity, 1766
 - baseline path, 1767–1768, 1767t
 - benchmark population, 1762
 - country-specific simulation, 1768, 1769t
 - debt-to-GDP levels, 1766
 - demographic structure, 1763
 - factor prices, 1771–1772, 1772t
 - GDP and components, 1769–1770, 1770t
 - health expenditures, 1766–1767
 - low-skill intensive goods, 1772
 - policy parameters, 1765–1766, 1765t
 - population age structure, 1763
 - preference, 1765–1766, 1765t
 - production, 1763–1765, 1764t
 - production and trade balance, 1772, 1773t
 - tax rates, 1771
 - year-specific productivity, 1766
 - closed and open economy differences, 1790–1791
 - computational approach
 - non-traded goods sectors, 1762
 - for solving dynamic world equilibrium, 1761–1762
 - demographics
 - immigration treatment, 1756
 - individual life cycle, 1755, 1756f
 - government sector
 - age-specific health, 1761
 - employee payroll tax rate, 1760
 - expenditures, 1761
 - pension benefit, 1761
 - progressivity, 1760
 - household sector
 - asset endowment, 1757–1758
 - consumption and leisure, 1759
 - consumption utility, 1757
 - gross labor income, 1758
 - lifetime utility, 1756–1757
 - total asset, 1759
 - production sector, 1759–1760
 - Multisector general equilibrium model (MSG model), 1571–1572
 - model selection and validation, 1595–1596
 - general equilibrium literature thrives, 1596–1597
 - market structure and free trade impact, 1596, 1596t
 - monopolistic competition, 1583
 - choice of framework, 1590–1592
 - fixed CDRs, 1587–1590
 - fixed costs, 1585–1587
 - groups large, 1590–1592
 - groups small, 1590–1592
 - variety, efficiency, markups and scale, 1583
 - oligopoly, 1573
 - entry, 1577
 - exit, 1577
 - fixed incumbents, 1574
 - market power aspects, 1581–1582
 - reduced-form collusion, 1574
 - Multitemporal CGE models, 1373
- ## N
- NAFTA. *See* North American Free Trade Agreement
 - NAICS. *See* North American Industry Classification System
 - NAIRU. *See* Non-accelerating inflation rate of unemployment

- Nash function, 1695
 - National economic welfare, 888
 - liberalization of global merchandise trade, 888
 - using standard GTAP price distortion database, 891–892
 - terms-of-trade effect, 891
 - National governments, 878
 - National Income and Product Account (NIPA), 1007–1008
 - Negishi algorithm, 1089
 - Nested CES approach, 948
 - New Keynesian economics, 1439–1440
 - New Keynesian models, 1441, 1443, 1465–1466, 1473
 - Bayesian methods, 1473
 - Bayes' rule, 1473–1474
 - Independence Chain MH algorithm, 1475
 - MCMC method, 1474–1475
 - posterior covariance matrix, 1475
 - posterior distribution, 1474–1475
 - using Random Walk Chain MH algorithm, 1475
 - EP solution method, 1468–1470
 - estimation challenges, 1478–1480
 - prior and posterior distribution, 1479f
 - prior and posterior distributions comparison, 1480
 - lack of identification, 1480
 - innovations, 1442
 - linear approximation, 1466
 - first-order Taylor series, 1466
 - percentage deviation, 1466
 - solving linear difference equations, 1467–1468
 - linear quadratic dynamic programming, 1470
 - linear constraints, 1471
 - Riccati equation, 1471
 - unique solution, 1471
 - value-function iteration, 1471
 - Lucas critique, 1441–1442
 - medium-scale models, 1443, 1453–1454, 1458, 1464–1465
 - microeconomic foundations, simple model with, 1444, 1448, 1450–1453
 - perturbation methods, 1471–1472
 - quadratic approximations, 1472
 - second-order Taylor series, 1472
 - univariate problem, 1472
 - RBC approach, 1442–1443
 - small new Keynesian model
 - using Bayesian approach, 1476
 - data series, 1476
 - prior distribution, 1477, 1477t, 1478t
 - DSGE models, 1475–1476
 - using DYNARE software package, 1477–1478
 - New Keynesian Phillips curve, 1476
 - Newton–Raphson step, 1340–1341
 - NGO. *See* Non-governmental organization
 - Negishi approach, 1092
 - NIPA. *See* National Income and Product Account
 - NNCES. *See* Non-separable, nested CES
 - Nomenclature d'unités territoriales statistiques (NUTS), 848–849
 - Nominal rates of assistance (NRA), 880–881
 - over time evolution, 908–909
 - complementary force, 909
 - country's tradable food products, 910
 - domestic polity, 909
 - international financial institutions, 909–910
 - PAE, 908–909
 - RIE, 908–909
 - Non-accelerating inflation rate of unemployment (NAIRU), 562, 1278
 - Non-classical measurement error, 1226
 - Non-corporate sector, 802–803
 - Non-export final demanders, 1348
 - Non-governmental organization (NGO), 878
 - Non-pecuniary conditions, 1685
 - Non-separable, nested CES (NNCES), 1678
 - Non-tariff farm policy measures, 881
 - Nordhaus' DICE model, 979
 - North American Free Trade Agreement (NAFTA), 838, 1017, 1230
 - tariff reductions
 - change in aggregate trade flows, 1012t, 1051
 - NAFTA-p vs. reference case, 1050–1051, 1050f
 - tariff reform, 1045
 - value of trade flows, 1045–1046
 - North American Industry Classification System (NAICS), 1138
 - NRA. *See* Nominal rates of assistance
 - NUTS. *See* Nomenclature d'unités territoriales statistiques
- ## O
- Off-the-shelf algorithm, 1537
 - OLG model. *See* Overlapping generation model
 - Oligopoly, 1573–1574
 - using CES function, 1577–1579
 - Cournot conjectural variations model, 1576–1577
 - Cournot–Armington model, 1580–1581, 1580t
 - Eastman–Stykolt specification, 1575
 - entry, 1577
 - exit, 1577
 - fixed incumbents, 1574
 - heterogenous cost structure, 1580
 - market power aspects
 - labor market effects, 1582
 - OECD, 1581–1582
 - markup rates, 1574–1575
 - reduced-form collusion, 1574
 - single ex-factory price, 1579
 - OLS. *See* Ordinary least squares
 - On-line forums, 1377
 - Open-sourcing model, 866–867
 - Ordinary least squares (OLS), 1233, 1393–1394
 - coalition policy, 1545–1546, 1549, 1549t
 - commodity level bilateral trade flows for, 1233–1234

Ordinary least squares (OLS) (*Continued*)
 distribution markups with four-region MSGE model,
 1581–1582
 for domestic support estimation, 822–823
 Output, inputs and technology variables percentage
 changes relationship, 1327–1328
 Overlapping generations model (OLG model), 1378, 1721

P

PAE. *See* Poor agrarian economy
 PAGE model, Hope's, 979
 Part-time labor, 1680
 Partial equilibrium trade models
 Armington-based model, 1552–1553
 Krugman-based model, 1553–1555
 Melitz-based model, 1555–1557
Pcom, 1350
 Perturbation methods, 1471–1472
 quadratic approximations, 1472
 second-order Taylor series, 1472
 univariate problem, 1472
 Petri model, 1622
 PMR. *See* Product market regulation
 Policy optimization models, 1075
 Policy quantification, 1616
 discriminatory market access barriers, 1617, 1618f
 GATS, 1619
 non-discriminatory regulatory barriers, 1617–1619,
 1618f
 price-and cost-based estimation, 1616
 Policy simulations, 1425–1427
 agricultural distortions, removal of, 1429
 agricultural incomes, 1429
 agricultural population in, 1428f
 climate change
 distributional impacts of, 1430–1431
 damages, global incidence of, 1431f
 free trade
 in agriculture, 1427–1428
 in global poverty, 1427t, 1429–1430
 regional growth incidence curves, 1429f
 Polynomial parity arguments on directed (PPAD) graphs,
 1093
 Poor agrarian economy (PAE), 908
 Population ageing, 106
 Post-1990s CGE modeling, 1623
 comparison, 1623–1624
 Dixit–Stiglitz structure, 1624–1625
 using FDI data, 1624
 improvements in, 1623
 petri-type FDI, 1625
 Poverty module
 using elasticities approach, 900
 global liberalization of merchandise trade reform,
 901t
 proportionate decline, 900–902

PPAD graphs. *See* Polynomial parity arguments on
 directed graphs
 PPP. *See* Purchasing power parity
 Price indexation, 1458
 Price variation exploitation, 1228
 CES preferences, 1228–1229
 commodity level bilateral trade, 1229–1230
 cross-product variation, use of, 1230–1231
 demand equation, 1230
 expenditures and price indices, 1230
 MFN, 1231
 NAFTA, 1230
 quantities, 1229
 using Romalis approach, 1230–1231
 time-series literature, 1231
 Price-distorting policy effects
 GTAP, 879
 missing price-distorting measures, concern with,
 880–902
 effects of global removal, 887–888
 effects on poverty, using elasticities approach, 900
 effects on product prices, 896
 effects on sectoral value added, 897–898
 global and national economic welfare, 888
 global goods markets, price distortions in, 881
 LINKAGE model of global economy, 885–886
 quantities produced and traded, 893
 regional distribution of welfare effects, 888
 sectoral distribution of welfare effects, 888
 OECD, 879
 Producer behavior
 See also CGE econometric modeling
 autonomous technical change projection rate,
 1163–1164, 1175f
 capital input
 projection of bias of technical change, 1162,
 1171f
 share change, 1151, 1152f
 share change price effect, 1151, 1156f
 technical change bias, 1152, 1160f
 energy input
 share change, 1151, 1154f
 share change price effect, 1151, 1158f, 1159f
 technical change bias, capital input, 1161, 1168f
 technical change bias, labor input, 1152, 1162f
 induced technical change
 projection rate, 1163–1164, 1174f
 rate of, 1156–1157, 1166f
 Kalman filter application, 1143–1145
 filtering, 1144
 observation equation, 1144
 smoothing, 1144
 state equation, 1144
 labor input
 share change, 1151, 1153f
 share change price effect, 1151, 1157f

- technical change bias, 1152, 1161f, 1162, 1172f
 - log relative output price
 - price effect, 1165f
 - reduction of, 1154–1155, 1164f
 - material input
 - share change, 1151, 1155f
 - technical change bias, 1152, 1162, 1163f, 1173f
 - Producer heterogeneity, 1500
 - Product market regulation (PMR), 1614
 - Productivity channels, 1612
 - Public transport type passenger vehicles, 1245
 - Purchasing power parity (PPP), 1072–1073
- R**
- R&D. *See* Research and development
 - Ramsey equation, 1113–1114
 - prescriptive view, 1114
 - Stern review, 1114
 - Ramsey-Koopmans-Cass model, 1113
 - Random changes. *See* Reweighting
 - Random Walk Chain MH algorithm, 1475
 - RBC approach. *See* Real business cycle approach
 - Real business cycle approach (RBC approach), 1442–1443
 - and modern New Keynesian models, 1440, 1443
 - Real exchange rate (RER)
 - and capital flows, 1028
 - after FTAA implementation, 1057–1058
 - Real GDP identity, 1287, 1290–1292
 - cost minimization, 1288
 - interpretation, 1292–1293
 - measurement, 1293
 - sales tax change effects, 1294–1295, 1294f
 - sales tax removal effects, 1296–1297, 1296f
 - technology terms, 1293
 - margin services, 1288–1289
 - market clearing, 1289–1290
 - production function, 1288
 - technical change, 1288
 - zero pure profits, 1288
 - Recursive two-way linkage, 1392
 - calibration, 1393
 - DYNASIM, 1393
 - exogenous variables, 1392–1393
 - fully integrated approach, 1393
 - macro policies, distribution effects of, 1392f
 - recursive procedure converges, 1393
 - standard Stone–Geary model, 1393–1394
 - theoretical specifications, 1394
 - Recursive-dynamic models, 1376
 - Reduced-form cost function, 1587–1590
 - Regional CGE modeling
 - See also* Global CGE modeling; Post-1990s CGE modeling
 - Regional distribution of welfare effects, 892–893
 - global gains, 893
 - sources of welfare gains, 892t
 - Regional Integrated model of Climate and the Economy (RICE), 1078–1080
 - family of models, 939–940
 - ‘generalized consumption’, 1081
 - as IAM model, 1079–1094
 - introduction to, 1079–1080
 - purpose of, 1079
 - new feature of, 1085
 - offshoot, 979
 - as policy optimization model, 1080–1081
 - social welfare function, 1081
 - Regional welfare, 830
 - Regression equation, 1310–1311
 - sample for, 911
 - state employment effects, 1310f
 - USAGE employment results, 1311
 - Regulatory policy, 1500–1501
 - Relative rate of assistance (RRA), 904
 - RES. *See* Resource factor
 - Research and development (R&D)
 - learning by doing (LBD) model, 1126
 - and production, 969–970
 - Resource factor (RES), 1541
 - Reweighting procedure, 1395–1396
 - Riccati equation, 1471
 - RICE. *See* Regional Integrated model of Climate and the Economy
 - RICE-2010 model, 1089
 - decarbonization, 1090, 1091f
 - economic growth rate, 1090, 1090t
 - Hotelling rents, 1091
 - Negishi algorithm, 1089
 - objective function, 1091
 - structure, 1089
 - Rich industrial economy (RIE), 908
 - RIE. *See* Rich industrial economy
 - Risk aversion, 860
 - Robust monetary policy rules, 1486
 - central bank objectives, 1486–1487
 - characteristics of simple rules, 1489t
 - interest rate rules, 1486
 - model averaging, 1492–1493
 - characteristics, 1493t
 - optimized model-averaging rules, 1494t
 - using TAY, CEE/ACEL and SW models, 1493–1494
 - two-parameter rule, 1493
 - model-specific policies, 1486
 - model-specific rules, 1488–1490
 - robustness of, 1490–1492
 - range of estimated models, 1487–1488
 - Taylor-style rules, 1485–1486

Rock star status, 821
 Roy model, 1396
 Roy's identity, 1169–1170
 RRA. *See* Relative rate of assistance
 Rural labor, 1681
 Rybczynski's theorem, 1797

S

SA. *See* South Asia
 SALTER project, 824
 SARS. *See* Severe acute respiratory syndrome
 SCC. *See* Social cost of carbon
 SDS preferences. *See* Spence–Dixit–Stiglitz preferences
 Sea-level rise (SLR), 1084
 Search-and-matching model, 1688
 Sector-specific capital, 1365
 Sectoral distribution of welfare effects, 892–893
 global gains, 893
 sources of welfare gains, 892t
 Services liberalization models
 modeling regional services liberalization, 1625–1627
 pioneering work, 1622
 post-1990s CGE modeling, 1623
 Severe acute respiratory syndrome (SARS), 1024
 Short-run fiscal policy, 1495
 Significant measurement error, 1225–1226
 SIMPLE model, 1348
 checking models, 1374–1375
 checking process, 1350
 debugging models, 1374–1375
 dimensionality
 GEMPACK scales, 1374
 multiregional CGE models, 1373
 policy-oriented CGE modelers, 1372
 skilled practitioner, 1373
 solution time vs. number of sectors, 1372–1373,
 1372t, 1373f
 straight GAMS user, 1374
 example model, database for, 1348, 1349t
 in GAMS, 1356
 GEMPACK modeler, 1364
 GMS input file for, 1356
 in GEMPACK, 1350
 algebraic substitution, 1354
 command file for, 1355t
 data arrays, 1350
 Dixonian form, 1354
 equation for real GDP, 1353
 equations, 1350, 1353
 FACTOR indication, 1350, 1354
 Pcomp, 1350
 in service labor productivity, 1357t
 SIMPLE. TAB, 1354
 simulation, 1354–1356
 TABLO input file for, 1351t–1353t

 in MPSGE, 1365
 \$demand, 1365, 1369
 entity types, 1365
 GMS input file for, 1366t–1369t
 mobile capital, 1365
 percentage-change results, 1370
 \$Prod section, 1365
 sector-specific capital, 1365
 nominal value aggregation, 1348
 non-export final demand structure, 1348, 1349f
 non-export final demanders, 1348
 results, 1370–1371
 Simultaneity, as time-series estimate, 1227
 Simultaneous approach. *See* Fully integrated approach
 Single exporter, reduced form schedules, 1250
 Single importer, reduced form schedules, 1251–1252
 Single-country 1–2–3 model, 940
 SITC 78520 bicycles, 1245
 64-bit Windows, 1339
 Skilled practitioner, 1373
 SLR. *See* Sea-level rise
 Small new Keynesian model
 using Bayesian approach, 1476
 data series, 1476
 DSGE models, 1475–1476
 using DYNARE software package, 1477–1478
 New Keynesian Phillips curve, 1476
 prior distribution, 1477, 1477t, 1478t
 Smets–Wouters model, 1461–1462
 Smoothing, 1144
 Social cost of carbon (SCC), 1107, 1108t
 Socio-Economic Panel (SOEP), 1736
 SOEP. *See* Socio-Economic Panel
 Solution software for CGE modeling, 1331–1332
 CGE model features, 1343
 code features, 1347–1348
 database, 1345–1348
 equation groups, 1343–1345
 CGE pioneers, 1331
 complementary techniques
 apprenticeship system, 1377
 on-line forums, 1377
 supplied documentation, 1377
 training courses, 1377
 computational challenges, 1377–1378
 links to models, 1378
 OLG model, 1378
 GAMS, 1333–1335
 GEMPACK, 1334–1335
 general-purpose software, 1335–1339
 change solution methods, 1339–1343
 GEMPACK IDE's, 1338
 input intelligible to modelers, 1335–1336
 insulate modelers, 1337
 run on different computers, 1338–1339
 wide range of models, 1336–1337

- Windows programs, 1338
- model-specific programs, 1333
- MPSGE, 1334–1335
- SIMPLE model, 1348–1371
 - checking models, 1374–1375
 - complementarities, 1377
 - debugging models, 1374–1375
 - dimensionality curse, 1372–1374
 - distributing models to non-licensees, 1377
 - example simulation, 1354–1356
 - in GAMS, 1356–1364
 - GAMS and GEMPACK feature comparison, 1375–1377
 - in GEMPACK, 1350–1354
 - in MPSGE, 1365–1370
 - optimization, 1376
 - training and documentation, 1377
 - understanding results, 1370–1371
- special-purpose programs, 1333
- standardization, 1332
- transferring models between software platforms, 1379
- South Asia (SA), 1429
- Spence–Dixit–Stiglitz preferences (SDS preferences), 1583
- SSA. *See* Sub-Saharan Africa
 - See also* Systematic sensitivity analysis
- Standard GTAP modeling framework, 826
 - allocative efficiency gains from, 833f
 - equations, 831–832
 - Global Bank, 834
 - global trade, 835
 - guiding principles, 825–827
 - imports treatment, 835–837
 - modeling private consumption behavior, 829
 - ORANI model, 834
 - regional household, 827–828
 - regional welfare
 - decomposition, 830
 - measurement, 830–831
 - transport sector, 835
 - Walras' law, 833–834
- Standard Stone–Geary model, 1393–1394
- Standardized modeling packages, 1379
- Static aging approach, 1408–1409
 - See also* Dynamic ageing
- Static distribution oriented macro–micro models, 1387
 - See also* Dynamic macro–micro modeling; Global Income Distribution Dynamic model (GIDD model)
- bottom-up approach, 1390
 - diabetes prevention campaign, 1391
 - feedback, 1392
 - micro-oriented policies, 1390–1391, 1391f
- fully integrated approach, 1393
 - calibration, 1393
 - standard Stone–Geary model, 1393–1394
 - theoretical specifications, 1394
- recursive two-way linkage, 1392
 - DYNASIM, 1393
 - exogenous variables, 1392–1393
 - macro policies, distribution effects of, 1392f
- top-down approach, 1387–1389
 - aggregation properties, 1389
 - using CGE model, 1388
 - macro policies distribution effects, 1388f
 - social welfare, 1389–1390
 - WTO, 1390
- Static macro–micro distributional models, 1394
 - See also* Dynamic macro–micro modeling; Global Income Distribution Dynamic model (GIDD model)
- A and B sectors, 1395
- final reflections
 - microsimulation, 1404
 - representative household approach, 1404
 - time dimension, 1404
- household income generation on labor market
 - a priori probability, 1401–1402
 - employment allocation, 1403
 - equation, 1401
 - individual labor force participants, 1400
 - using micro–macro modeling approach, 1399–1400
 - perfect competition framework, 1399
 - rigorous treatment, 1400–1401
 - Roy model, 1399
 - shock, 1400
 - simple model directions, 1402
 - top-down links, 1402–1403
- linkage variables, 1395
- market imperfections types, 1395
- rational individual choice of employment sector, 1396–1397
 - earners, 1397–1398
 - labor across sectors, 1399
 - using Roy model, 1396, 1398
 - sector allocation rule, 1397
 - static multisectoral model, 1398–1399
 - reweighting procedure, 1395–1396
- Sticky wages, 1458–1459
- Stochastic model
 - dynamic microsimulation, 1674
 - household problem solving, 1791–1792
 - macroeconomic computational algorithm, 1792
- Straight GAMS user, 1374
- Structural vector autoregression model (SVAR model), 1454
- Sub-Saharan Africa (SSA), 955–956
- Supply–demand systems
 - estimation strategy, 1252
 - elasticities
 - of export supply, 1252–1253

Supply—demand systems (*Continued*)
 of inverse supply, 1253
 magnitude of, 1253
 large degree of, 1253
 Monte Carlo simulation data, 1253
 Survival functions, 1412
 SVAR model. *See* Structural vector autoregression model
 Systematic sensitivity analysis (SSA), 840, 1243, 1376

T

Tariff aggregation, 919
See also Price-distorting policy effects
 Anderson—Neary approach, 922
 balance-of-trade function, 922–923
 Chile, 925–927
 HS6 products, 924
 impacts on real incomes of, 925, 926t
 income—expenditure condition, 922
 marginal impacts of tariff reductions, 921–922, 921f
 OTRI approach, 919–920
 reform involving, 920
 structural economic models, 920
 substitution levels, 924–925, 925f
 tariff revenue aggregator, 923
 using three-tier strategy, 923–924
 traditional trade-weighted averages, 920–921
 TRI, 923
 uniform tariff measures, 920
 Tariff rate quota (TRQ), 848–849, 884
 Tariff revenue aggregator, 923
 Taylor principle, 1488–1489
 Taylor-style rules, 1485–1486
 Taylor's model, 1442
 TCF sector. *See* Textile, clothing and footwear sector
 Textile, clothing and footwear sector (TCF sector),
 1322–1323
 Thin-tail uncertainty, 1117
 Three-parameter rules, 1489–1490
 Time-series data, 1235–1236
 Top-down approach, 1387–1389
 aggregation properties, 1389
 using CGE model, 1388
 macro policies distribution effects, 1388f
 social welfare, 1389–1390
 WTO, 1390
 Trade elasticity parameters for CGM model
 CES, 1213
 export supply, 1246–1257
 mechanisms, 1247–1249
 reduced form schedules estimation, 1249–1252
 supply—demand systems, 1252–1253
 supply-side reinterpretation, 1253–1257
 gravity, trade costs and structural estimation,
 1257–1258
 from firm-level data, 1264–1266
 identification approaches, 1258

outside estimation imposing methods, 1258–1260
 price data exploitation methods, 1260–1261
 structural estimation of theories, 1261–1264
 import demand elasticities, 1220–1246
 Feenstra method problems, 1239–1240
 foreign—foreign substitution, 1228–1232
 home—foreign substitution, 1222–1224
 instrumental variables approaches, 1233–1234
 problems with time-series estimates, 1224–1227
 systems of equations without instruments,
 1234–1239
 simple partial equilibrium diagram, 1214f,
 1215
 single-country trade models, 1219
 Trade facilitation, 854–855
 Trade Restrictiveness Index (TRI), 923
 Trade theories
 Armington trade, 1519
 composite commodity, 1519
 price index, 1519–1520
 Krugman trade, 1520
 Dixit—Stiglitz price index, 1520–1521
 at firms, 1521
 Melitz trade, 1521–1522
 CES-weighted average productivity, 1524
 Dixit—Stiglitz price index, 1522
 Pareto distribution, 1523
 productivity, 1522
 supply, 1525
 variables, 1518t
 TRI. *See* Trade Restrictiveness Index
 TRQ. *See* Tariff rate quota
 Two-parameter rules, 1488–1489
 Two-step Kalman filter, 1147
 instrumental variables, 1203f, 1203t

U

UN Conference on Trade and Development (UNCTAD),
 822
 UNCTAD. *See* UN Conference on Trade and
 Development
 Unilateral policy reform simulation
See also Multiregional world model
 government expenditures hike
 by debt, 1780, 1782t
 by taxes, 1780, 1781t
 macroeconomic effects
 factor prices in alternative policy paths, 1774
 limiting growth in healthcare benefits, 1774–1776,
 1777t
 pension system privatization, 1774, 1775t
 public expenditure debt financing, 1778, 1779t
 tax policy, 1776–1778
 welfare effects
 government expenditures hike, 1784
 healthcare benefits, 1784

- privatization, 1780–1784
 - of unilateral reforms in USA, 1780, 1783t
- Urban labor, 1681
- US Department of Agriculture (USDA), 846–847
- USDA. *See* US Department of Agriculture

V

- Validation through BOTE analysis, CGE modeling
 - BOTE model, 1301–1302
 - for explaining CGE results, 1304–1309
 - for explaining short-run, 1302–1304
 - qualitative validation, 1297–1298
 - quantitative validation, 1298
 - CO₂ result, 1298
 - productivity Commission's estimation, 1300
 - source locating reasons, 1300–1301
 - tariff-cut result, 1299
- Value-added linkages, 1628–1629
 - comparison of value-added shares, 1633t
 - database aggregation, 1630, 1632t
 - detailed value-added composition, 1633t
 - Italian regulatory policy, 1634
 - macroeconomic impact, 1632t, 1633–1634
 - MFP, 1630
 - PMR index, 1630
 - productivity and regulation in services, 1631t
 - regression analysis—MFP and regulation, 1631t
 - value-added composition of economy, 1629t
- Value-added tax (VAT), 1582
- Value-function iteration, 1471
- Variable elasticities, 1245–1246
- Variety-scaled output, 1585–1587
- VAT. *See* Value-added tax
- ViewHAR, 1375
- ViewSQL, 1375

W

- Wage curve, 1687
- Wage level, 1665
- Wage-forming mechanism, 1687
 - CPI, 1687

- dominant type of literature, 1688
- fixing real wages, 1687
- structural parameters, 1688
- using theories, 1688
- wage curve, 1687
- Wage-generating mechanism, 1649
- Walras' law, 833–834
- Welfare analysis, 1706
 - utility weighting, 1710–1711
 - welfare measurement
 - for microsimulated households, 1709–1710
 - for representative households, 1706–1709
- Welfare measurement
 - for microsimulated households, 1709–1710
 - for representative households, 1706–1709
- WHO. *See* World Health Organization
- Windows BATch language, 1375
- Windows programs, 1338
 - to control simulations, 1338
 - to examine data, 1338
 - IDE programs, 1339
 - to results, 1338
 - to run on different computers, 1338–1339
- World economy's dynamic equilibrium computation, 1792
 - capital and labor input-output coefficients, 1794
 - capital for traded goods, 1793–1794
 - excess demand, 1796
 - factor input-output ratios, 1795
 - labor input-output coefficients, 1794
 - Rybczynski's theorem, 1797
 - skill-specific labor supply, 1793–1794
- World Health Organization (WHO), 1024
- World Trade Organization (WTO), 878, 1390
 - Doha negotiations, 881
- WTO. *See* World Trade Organization

Z

- Zero-cutoff-profit condition, 1535
- Zero-interest-paying asset, 1468–1469