

## Index

- Adjustment process, 11, 13, 25, 108, 131–2, 136, 141–4, 148, 151, 153–4, 181, 185, 190–1, 193, 195, 200–2, 204, 244, 256, 268–9, 272, 277, 279, 286, 302, 306, 311, 330, 338, 361, 392. *See also* Tatonnement
- Agents  
 activity in organized markets, 56  
 functions of, 83  
 intermediaries, 106  
 not in some markets, 265, 277  
 in oral pledges markets, 82  
 receive orders from clients, 56  
 represent one client at any moment, 69
- Agents de change*, 82, 98, 106  
 before their elimination, 389  
 replaced by *sociétés de Bourse*, 82n6
- A la criée*, meaning of, 84–6
- Allocation of resources, 24
- Allocation of savings via the Bourse, 92
- Applied economics and usefulness, 38
- Arbitrage model, 59–64  
 arbitrage, Walrasian, 59–65  
 contradictions in, 61–2  
 disequilibrium transactions, not occurring in, 60, 62–3  
 indirect prices, 61–3  
 principal demand of arbitragers, 61  
 supplementary demand of arbitragers, 61  
 true prices, 61
- Arrow, Kenneth, 88, 256–7, 263–4
- Auctioneer, 55, 82, 85–6, 88–9, 102, 256–7, 264–5, 267, 337
- Arrow's and Hahn's, 256–7  
 not in Walras's models, 55–6, 86–9, 266–7  
 who never auctions in Arrow's and Hahn's model, 88
- Auction markets  
 characteristics of, 87  
 Dutch, 313  
 English, 313  
 in Jaffé's translation, 84–5  
 not in Walras's models, 55–6, 86–9, 266–7  
 unlike oral pledges model, 105
- Aupetit, Albert, 424
- Auspitz, Rudolph, 132, 288–92, 295, 299
- Average cost, 23–6, 44–5, 49–50, 133–47, 152, 179, 187, 189, 191–8, 200, 205, 207, 249, 258–60, 268, 270, 272–3, 276, 278, 285–91, 297–300, 304–6, 338, 346, 360–3, 392, 404, 409–10, 421
- Barone, Enrico, 288–300, 423
- Barter  
 absurdity of assumption as basis of general equilibrium model, 257–8  
 allegation that Walras's general equilibrium model is constructed on that assumption, 339–41  
 how prices quoted in, 55  
 model of consumption, special, 118–20
- Barter model of written pledges markets, 321–71  
 agents, representatives of suppliers, 337–8  
 auctioneer not in the model, 337–8  
 a barter model, 339–45  
 barter renders economic problems insoluble, 371  
 capital goods  
 cannot be fractionated, 369  
 distribution of pledges to produce, not in the model, 368  
 not produced in disequilibrium, 332–4  
 old, not in the model, 334  
 production of, would reveal equilibrium not reached, 333  
 consumable services, no market for, 367–8. *See also* Demand  
 consumer demands, no way to satisfy, 366–7. *See also* Demand  
 consumer goods  
 no way to distribute them, 364–5  
 no way to fulfill pledges to produce them, 364–5

## 446 Index

### Barter model (*cont.*)

- deficiencies of logical structure, 370–1
- demand
  - for consumer goods, not in the model, 356–9
  - for new capital goods, not in the model, 359–60
  - not deducible from offers to supply, 357–8
  - references to, in proximity to the barter model, part of the mature models, 354–6
  - for services, not in the model, 351–6, 367–8
- disequilibrium features, 350–71
- durable and nondurable commodities in, 326
- entrepreneurs, activities in, 360–2
- equilibrium, not existing in the model, 363
- excess demands for goods, individual, not in the model, 356–60
- excess demands for services, individual, not in the model, 351–2
- general equilibrium model, absurd if based on barter, 257–8
- incomes, no way to pay, 365–6
- information mechanism, not in the model, 363–4
- inventories, not in the model, 332
- Jaffé's assertion that demand exists in the model, 357–8
- land, markets for, not in the model, 334
- Marget's misinterpretation of, 339–45
- market excess demand
  - for capital goods, not in the model, 360
  - for consumer goods, not in the model, 357
  - for services, not in the model, 353–6
- market structures in, contradictory, 345–6
- nondurable commodities only, 326
- numeraire in
  - function of, 342
  - intervention of, 342–5
  - nonmonetary nature of, 344–5
- offers to supply, not indicating demands, 357–8
- organized markets in, 337–8
- parameters of, 326–37
  - land, aggregate stock of, 328
  - personal faculties, 328
  - preferences, 328
  - production functions, 327–8
  - realistic, 327–8
- potentially endogenously variable phenomena, 328–31

- price, not known in what direction to change, 353
- price, only one value at any moment, 338
- prices of services used to produce capital goods, allegedly changed as function of excess demand for capital goods, 354–5
- primary materials, not in the model, 369
- producers and service suppliers, no meeting of, 353
- single commodity in each market, 346–7
- structure of, 324–49
- suppliers of goods allegedly meet suppliers of services, 347–8
- supply function, market, 354–6
- supply functions, individual, supposedly unchanging, 328
- volatility of, if it were a functioning system, 362
- written pledges
  - distribution and fulfillment of, not possible in the model, 364–70
  - introduced to eliminate disequilibrium phenomena, 330–2
  - not accomplishing Walras's aim, 371
  - not made by consumers for goods, 356–8
  - not made by employers for services, 353
  - why must be written, 339
- Barter of fixed total stocks, model of, 53–75
  - accomplishments in, 75
  - arbitrage in. *See* Arbitrage model
  - competition in, conditions for, 69–71
  - completeness of, 73–4
  - cumbersomeness of assumption of, 72–3
  - equilibration of, 67–8
  - equilibrium, imperfect, 59
  - general equilibrium model, incompleteness of, 74–5
  - general model, 64–8
  - market excess demand in, unknown to participants, 57
  - more than two commodities, 58–9
  - numbers of traders, 68–72
  - numeraire
    - in the general model, 64–6
    - intervention of, 65
  - physical and information-dissemination characteristics, 54–5, 58
  - prices, how quoted, 55
  - two commodities, 54–8
- Beaujon, Anthony, 288–9
- Bertrand, Joseph
  - criticism of Walras's exchange model, 95–7
  - Walras's answer to, 99–100
- Böhm-Bawerk, Eugen von, 41, 216, 424
- Bonnet, Alfred, 424

## Index

447

- Bortkiewicz, Ladislaus von, 41, 211–17, 219–21, 224, 226, 228, 269–72, 303, 308, 312, 424
- Bourse, 22, 24, 58, 77–8, 83, 86, 92, 98, 102, 108–9, 160–1, 167, 169, 170–80, 185–7, 208, 265–6, 268, 388–90
- Bourses, commodity, 78–9
- Budget constraint, 47–8
- Buying à l'enchère, 87–8
- Calculator of prices  
   a hypothetical authority, 98  
   not in Walras's models, 98
- Cambridge cash balances, 244
- Capital, definition of, 3. *See also* Capital goods
- Capital formation model, 6, 91, 159, 170–2, 174–6, 179–80, 233–4
- Capital goods, 3–9, 11–12, 23–5, 27, 50, 72, 83, 90–1, 114–17, 123, 125–6, 128, 150–4, 157–83, 185–91, 193–202, 204, 208–17, 219–34, 240–9, 254, 258–62, 268–9, 272, 275, 282–5, 305–7, 321, 324–6, 328–9, 331–4, 336–7, 339, 341, 344–5, 347–8, 350, 353–7, 359–61, 363, 367–8, 371–4, 376–7, 384–92, 394, 402–3, 406, 408–13, 415–17, 422–3
- Cash balances, 184, 202, 204, 236–7, 240, 242, 244–6, 248–9, 255, 307, 345, 377, 384, 387, 412, 416–7, 422
- Censorship in nineteenth-century France, 31
- Circulating balances, 184, 245
- Circulating physical capital and money in the last comprehensive model, 399–419  
   circulating capital goods, 406–12  
   defined 403–4  
   circulation, equations of, 400  
   as completing system of general equilibrium, 399  
   consumer goods, nondurable in, 404  
   contradictory markets for the same commodities, 411–12  
   disequilibrium production of nondurables, 409–11  
   inventories, 402–6  
     durable goods, not treated in the model, 405  
     new durable capital goods, Walras's defective treatment of, 402–3  
     nondurable goods, 403–5; held by businesses, 404; held by consumers, 404  
   loans, markets for, in the model, 412–13  
   long-term, 413–14  
   rate of interest in, disequilibrium values, 413  
   short-term, 413–14  
   money in the model, 412–16  
     desired balances, types of, 412  
     price of, 412–13  
     tatonnement for the price of, 414  
   not a written pledges model, 402  
   part of the last comprehensive model, 399  
   service of availability of money  
     price of, 412–13  
     redundancy of the price of, 414–16  
     tatonnement for the price of, 414  
   service of availability of new durable capital goods, 402–3  
   service of availability of nondurables, 406–7  
   services of nondurables, separate markets for, a nonsensical concept, 407–8  
   tatonnement in markets for circulating capital, 409–11  
   tatonnement in markets for services of availability, 408–9
- Clark, John Bates, 294
- Clower, Robert W., 102
- Coefficients of production, 24, 116, 125, 207  
   constant, 133, 190
- Commissaire-priseur*, 82, 89
- Commodities, defined, 325
- Comparative statics, 309
- Competition, commercial, according to Edgeworth, 294–5
- Competition, free. *See* Free competition
- Competition, imperfect, 22, 207, 314
- Competition, industrial, according to Edgeworth, 295
- Complementary exchanges, 59
- Concepts, ideal types, 40, 42
- Condillac, Etienne Bonnot de, 3
- Consumable services, 6, 114–15, 120, 126, 128, 137, 143, 147–8, 157, 159, 168, 182, 185, 188, 201–2, 212–13, 215, 230, 233, 325–6, 367–8, 371, 374, 377, 383–4, 407–8, 412, 417
- Consumer commodities  
   defined, 325  
   demand for, 40  
   goods, 6, 8, 12, 25–6, 77, 113, 115, 124–8, 134, 137–8, 143, 145, 147–50, 152–3, 157, 159–60, 164, 168–9, 175, 182–3, 185, 195–6, 199, 201, 241, 245, 260, 269, 284, 325–6, 328, 331–3, 339–40, 346–8, 351–62, 363–4, 366–8, 374, 377, 379–82, 392, 402, 404, 409, 412, 416–17  
   services. *See* Consumable services

## 448 Index

- Consumer commodities, nondurable, mature model of. *See* Mature nondurable consumer commodities model
- Consumers as service suppliers, 325
- Consumer sovereignty, 26–7
- Consumption, special barter model of, 118–20
- Contributions by Walras to the modeling of markets, 420–2
- Coulisse*, 82n6
- Counterparts in exchange, 57–8, 103, 105, 107
- Courcelle-Seneuil, Jean Gustave, 281
- Cournot, Antoine Augustin, 3, 252
- Courtiers de commerce*, 82
- Creative phase, 7–8, 29, 279, 372
- Credit, 27, 46, 81, 91–2, 157, 163, 170, 173–4, 216, 235, 238, 242, 252, 292, 298, 307, 372, 380, 413, 423
- Criée*, pricing *à la*, 84–6
- Crieurs*, 82
- Demand. *See also under specific models*  
 Cournot, A.A. and, 3  
 function, 41  
 knowledge of market, not in Walras's models, 102–3, 355  
 market demand curve, 133, 135, 190  
 Piccard, Antoine Paul, and, 41
- Disequilibrium  
 alleged neglect of, by Walras, 93  
 behavior, 25  
 characteristic of real economy, 24–5  
 consumption, 124–9  
 hiring in mature consumer commodities model, 154  
 production, 12, 124, 129, 131, 144–5, 154, 204–6, 259–60, 268, 274, 279–80, 314, 326, 329, 331, 348, 376, 394, 409, 411, 415, 417–19, 421
- Disequilibrium transactions, 95. *See also* Mature models  
 prohibited explicitly in second edition of the *Eléments*, 100–1  
 prohibited on the Bourse, 57, 99  
 rule against, in model of barter of fixed total stocks, 57  
 rule against, in oral pledges model, 96–9
- Dunbar, Charles Franklin, 34–5
- Dynamics, 308–9  
 concern with, 9  
 necessity of studying, 311
- Economic growth, 8, 199–200
- Economic policy, 47
- Economic science, goal of, 26
- Economic theory and truth, 38
- Economics, applied, 38, 40
- Edgeworth, Francis Y., 23, 24, 72, 98, 217, 219, 223–30, 257–8, 265, 267, 269–70, 272, 292–8, 300, 302–6, 308–15, 423. *See also* Entrepreneur, mature model of the behavior of; Tatonnement; Utility of new capital goods
- Bortkiewicz's opinion of, 303  
 praises Walras on exchange, 303–4  
 praises Walras on the entrepreneur, 24  
 rejects dynamics, 272
- Eléments*  
 dates of editions, 13  
 first edition, excellence of organization of, 7–8  
 fourth edition and Walras's health, 11–12, 321–2, 399–401  
 not a normative scheme, 32–52  
 third edition, place in Walras's phases of activity, 10  
 third edition and Walras's health, 322
- Empirical data as a basis of models, 81
- l'Encan*, sale *à*, 88
- l'Enchère*, buying *à*, 87–8
- Entrepreneur, 11, 15, 22–8, 40, 91, 116, 118–28, 130–1, 136–43, 145–8, 150, 152, 159, 163–4, 166, 171, 174–7, 180, 183, 185–6, 188–90, 194–5, 210, 205–7, 240–4, 247–50, 252–3, 256, 265–6, 269–70, 272–3, 275–6, 279–301, 306–7, 325, 327–8, 331, 338, 340, 346–8, 351–3, 357–63, 367, 369, 374, 379, 383, 385, 387, 389–91, 403, 413, 416, 421, 423–4
- Entrepreneur, mature model of the behavior of, 279–301  
 Auspitz's and Lieben's criticisms, 288–93  
 entrepreneur lacking motive to act in equilibrium, 292  
 rebuttal by Walras of zero-profit entrepreneur criticism, 289  
 zero-profit entrepreneur, a wrong idea, 288
- Barone's opinion of, 300–1  
 consumer sovereignty and, 288
- Continental entrepreneurial theory, Walras's model a foundation of, 300
- contributions of the model, 299–301
- defects of previous conceptions, Walras on, 280–2
- English classical economist's views, 280
- French school's inadequacies, 281
- Jevon's failure to specify role of the entrepreneur, 280–1
- Say, J.-B., lacking a definition, 281

## Index

449

- disequilibrium production in, 279–80  
 disutility of labor in relation to equilibrium, 294–5  
 Edgeworth's criticisms, 293–8, 303  
   commercial competition, 294–5  
   industrial competition, 295  
   Walras's opinion of, 302–3  
   Walras's rebuttal, 296–8  
   zero-profit entrepreneur, a wrong idea, 293–4  
 entrepreneur in  
   acts continuously in disequilibrium and in equilibrium, 289  
   acts only in disequilibrium, according to Jaffé, 298  
   adjusts rates of production, 286–7  
   allocates resources, 24, 285–6  
   balance sheet of, 163  
   definition of, 282–3  
   equilibrium situation of, 287  
   functions of, 23–4, 282–3  
   income of, classified, 297–8  
   intermediary, 287–8  
   managerial functions of, 282, 299  
   relates input and output markets, 23, 284–5  
   repays services with services, 118  
   role in economic adjustments, 283–7  
   roles in different markets, 283–4  
   stripped of functions in the models of the phase of decline, 280  
   supervisory and coordinating functions, 299  
 a long-run model, 289  
 obscured by misunderstandings and neglect, 279  
 Say, J.-B., on the entrepreneur, 281–2  
 Walker, F.A., contrary opinion on the French school, 281  
 Equations and their referents in a model, 376  
 Equilibration, 10, 51, 67, 129, 146, 157, 204, 237, 245, 267, 392  
 Equilibrium, *see also under specific models*  
   automatic convergence to, 25  
   existence of, 71, 270, 300, 421  
   imperfect, in barter of fixed total stocks, 59  
   never reached in reality, 25–6  
 Ethics, applied, 40  
 Excess demand, market. *See* Market excess demand  
 Excess demand, market-oriented individual, 57, 103–4, 146, 268, 305, 351, 379  
 Excess demand functions, *see under specific models*. *See* Excess demand, market-oriented individual; Market excess demand  
 Exchange  
   concern of all models, 5  
   equations of, 47  
   model, 5–6  
 Existence of equilibrium, 71, 270, 300, 421  
 Experimental phase, 7  
 Experimental science, 38  
 Ferbach, Célestine Aline, 2  
 Fisher, Irving, 288–9, 424  
 Fixing of price of silver, 98  
 Foxwell, Herbert S., 214, 224, 226  
*Francis Sauveur*, 1, 33  
 Free competition, 21–2, 25, 27–9, 36–7, 45–8, 50–2, 68–72, 74–7, 79–81, 93, 101, 103, 105–7, 109, 125–8, 130, 137–9, 141, 145, 153, 161, 170, 179, 188, 190, 194, 197, 206, 216, 219, 228, 244, 247, 256, 262–9, 271, 273–4, 276, 283, 291, 297, 312–14, 337–8, 351, 378, 381, 389  
   in barter of fixed total stocks, conditions for, 69–71  
   contrasted with perfect competition, 79–80  
   defined, 80  
   deviations from, 51–2  
   exemplified in the Bourse, 265  
   justification for assuming, 313–14  
   maximizes utility, 45  
   meaning of, 22  
   prevalence of, 21  
   principal mode of exchange in reality, 313  
   self-driving mechanism and automatic regulator, 27  
 Galiani, Abbe Fernandino, 3  
 Garegnani, P., 30  
 General equilibrium analysis, value of, 314  
 General equilibrium model based on barter, absurdity of, 257–8  
 Gide, Charles, 302, 424  
 Goal of economic science, 26  
 Gold market, 109  
 Goodwin, Richard W., 93, 256, 258–9, 263–4  
   allegation that traders are always price takers, 264  
   mathematical iteration ideas, 259  
 Gossen, H.H., 41, 48–9  
 Growth, model of, 8, 199–200  
 Hahn, Frank H., 256  
 Health, 12, 34, 119, 321–2, 400. *See also* Walras, Léon  
 Hicks, John R., 101, 236, 245, 314  
 Hildenbrand, W., 55, 68

## 450 Index

- Ideal concepts, types, 40, 42
- Imperfect competition, 22, 207, 314
- Imperfect equilibrium in barter of stocks, 59
- Income commodities, 127
- Information dissemination, 58, 69, 74, 86, 364, 370, 392, 416
- Institutional content, 9
- Institutions, 22, 24, 32, 46, 53, 58, 71–7, 79, 92–3, 96, 98, 102, 107, 111, 151, 157, 159, 167, 169, 173–4, 184–5, 235, 238, 306, 324, 330, 337, 348, 375, 394, 419
  - argument that Walras incorporated them into his models, 9, 76
  - argument that Walras neglected them, 76
- Interest. *See* rate of, *under specific models*
- Interest, rate of, disequilibrium values, 413
- Interest in relation to profits in Marshall's and Walras's models, 297–8
- Internationale, 33
- Interpretations of Walras's work, differing, xi–xii
- Interrelatedness of economic activities, 22, 36
- Inventories, 6–7, 123, 127, 136, 149–50, 154, 158–9, 172, 181–5, 198–9, 202–4, 250, 329, 332, 339, 341, 344–72, 374, 391, 402–6, 412, 417
- Isnard, Achylle-Nicolas, 4, 35–6
- Jaffé, William, 11, 14–15, 29–32, 34–7, 40–9, 51–2, 63–4, 76, 82, 84–5, 87, 93, 96, 105, 161–2, 169–70, 206, 217–19, 221–3, 257–8, 267, 269–70, 272, 276, 298, 331–2, 335–7, 345, 357, 366, 382–3, 423
  - on Bertrand, 96
  - on tatonnement, xii
  - translation of the *Eléments*, xii–xiii, 14–15, 64, 82, 84–5, 335, 345, 382
- Jevons, William Stanley, 8, 35, 41, 71–2, 216, 270–1, 280–1, 308, 321, 422–3
- Just economy, 43
- Justice, 37–9, 46, 49, 51
- Keynes, John Maynard, 98, 101, 235–6, 238, 245, 247, 314
- Kirman, A.P., 55, 68
- Kompas, Tom, 64–5, 383
- Kuenne, Robert E., 30
- Land, 3, 5, 12, 22–3, 25, 32–3, 40, 114–15, 120, 125–6, 128, 130, 144, 147–8, 151–4, 160–1, 164–5, 168, 179, 182, 197, 200, 208, 246, 249, 265, 269, 282–3, 285, 289, 292, 298, 326, 328, 333–4, 336–7, 346–8, 353, 360, 367, 371, 392, 408, 410, 416–17
  - state ownership of, 32
- Lange, Oskar, 47, 76, 267
- Last comprehensive model, xii, 372–419. *See also* Circulating physical capital and money in the last comprehensive model; Written pledges markets in the last comprehensive model
  - circulating physical capital and money, 399–419
  - defects of, 416–17, 419
  - equations, evaluation of, 418–19
  - health of Walras, influence on composition of, 400
  - justification for name, 399
  - loans of money for long terms, not in a written pledges market, 387
  - outlined, 12–13
  - submodels in, contradictions with the mature comprehensive model, 417–18
  - Walras's difficulties in finishing the model, 400–1
  - written pledges markets in, 372–95
- Leijonhufvud, Axel, 102
- Leontief, Wassily, 314
- Lexis, Wilhelm, 41, 424
- Lieben, Richard, 132, 288–9, 290–2, 295, 299
- Losses, 24, 27–8, 123–4, 132, 136–7, 140–2, 189–90, 193–5, 249, 260, 270, 275, 285–6, 288–92, 297–9, 305–6, 362, 410
- Louis Philippe, 31
- Mailly, Leonide Désirée, 2
- Marget, Arthur W., 65, 236, 245, 249, 339–44, 418
  - mistaken opinion of the mature monetary model, 236–7
  - mistaken opinion of the written pledges barter model, 339–44
- Marginal productivity, 42
  - theory of, 206–7
- Marginal utilities, proportional, 41
- Marginal utility, 9, 22, 41, 52, 60, 67, 191, 210, 227, 231–2, 247, 294, 300, 310
- Marigny, Jules Mesnil du, 36
- Market used to mean many markets, 15
- Market demand curve, 133. *See also* Particular equilibrium analysis
  - continuity of, 70
- Market economy, Walras's concept of
  - general features, 21–3
  - special features, 23–7
- Market excess demand, 22, 49, 57, 88, 94,

## Index

451

- 102–5, 108–10, 112, 149, 188, 192, 268, 305, 351, 353–7, 359–60, 364, 380, 385, 388
- unknowable in the barter model of written pledges markets, 364
- unknowable in the last comprehensive model, 419
- unknown by participants
  - in barter model of fixed total stocks, 57
  - in the mature nondurable consumer commodities model, 146
  - in oral pledges model, 103–4
- Market-oriented individual excess demand, 103–4, 146, 268, 305, 351, 379
- Market price lists, 86
- Market supply and demand not known by participants, 57, 103–4
- Marshall, Alfred, 111, 283, 295–8, 306, 360, 423
- Marshallian stability process, Walras's priority in describing, 360
- Mathematical iteration, 144–5, 256, 258–61, 274–7
- Mathematical method, 36–7, 46, 52, 256, 302
- Mathematics and economic modeling, 27, 36
- Mathematics used after economic foundations are established, 375
- Mature comprehensive model, 5, 157–207
  - adjustments between loan and rental markets for capital goods, 187–8
  - Bourse, organized and freely competitive, 161
  - Bourse as the market for capital goods, 161
  - capital, fixed, 183–4
  - capital formation, model of, 171–5
    - weakness of exposition, 172
  - capital goods
    - already produced, 171–2
    - defined, 160, 171–4
    - demand for, expressed in numeraire, 163
    - entrepreneurs as purchasers of, 176
    - equilibration of market for, 185–96
    - equilibrium price of, where determined, 177–9
    - gross income of, 165
    - lending of, in kind, 177
    - maintained, 165
    - markets, conditions of equilibrium, 196–8
    - net income of, 165
    - new, 167–75
    - new, defined, 171–4
    - new and existing, 172–4
    - not constant, 201–3
    - planned, 172–4
    - prices of old and new, 166
    - prices of physical items not determined on the Bourse, 178–9
    - projected income of, 172–3
    - properly speaking, defined, 160
    - reasons to buy and sell, 166
    - rental market for, alleged to be key to the theory of capital, 177
    - rental of, 175–9
    - represented by certificates, 160–1, 170
    - savers, as lenders of financing of, 176
    - savers, as purchasers of, 176
    - a supposed parameter, 200–1
    - used, characteristics of, 165–6
  - capital goods, new, market equilibration, 185–96
    - adjustments when price exceeds average cost, 191–3
    - adjustments when price is less than average cost, 193–5
    - changes of prices, 187–9
    - particular-equilibrium supply and demand functions, 190–5
    - suspension of production when losses occur, 194
  - capital stock, components of, 181–4
  - characteristics of model, 204
  - circulating capital
    - business, 183
    - defined, 182
    - held by entrepreneurs, 183
  - commodities, each sold in its own market, 160
  - consumer goods, durable, considered as capital goods, 160
  - contrasted with the written pledges model, 204–5
  - credit in, 163
  - disequilibrium production and sales, 204–5
  - disequilibrium rates of production, changes of, 189–90
  - dissaving in, 166
  - economic growth, 199–200
    - model is one of economic growth, 199
    - saving, net, always assumed positive, 199
    - saving and investment equal, 199
  - entrepreneur in. *See* Entrepreneur, mature model of the behavior of
  - entrepreneurs create and abandon firms in disequilibrium, 206
  - equations distinguished from the model, 184–5, 200–4
  - equations not descriptive of model, 203
  - equilibrium, 196–200
    - conditions in all markets, 195–6



## 452 Index

### Mature comprehensive model (*cont.*)

- prices and rates of output not given by equations, 201–3
- includes all basic components, 157
- incomplete submodels in, 158
- inventories, 182, 202–3
  - introduced in, 158
  - in relation to equation system, 184
- land and personal faculties in, 164–5
- loan and rental markets, adjustments between, 185–6
- markets, functioning systems in, 159–60
- markets for used resources in, 164–7
- mature model of the money market, 235–55. *See also* Money market, mature model of
- model distinguished from the equations, 184–5, 200–4
- monetary nature of, 161–4
- money, included in wealth, 182
- money balances in relation to equation system, 184
- money balances introduced in, 158
- money market, 235–55. *See also* Money market, mature model of
- numeraire
  - part of circulating capital, 182
  - silver or gold, 182
- numeraire capital, plan to leave aside, 177–8
- numeraire capital in, 162
  - lent by the banking system, 163
  - meaning money, 163
  - not different from money capital, 162–3
- outline of, 10–11
- parameters of, 159
- path-dependency, 201–3
- poorly understood, 158
- profits in disequilibrium, 205–6
- questions posed regarding the model, 159
- rate of interest
  - compared with rate of net income, 167
  - defined, 167
- rate of net income
  - defined, 165
  - where determined, 166–7
- savers
  - submodel in which they lend money, 176
  - submodel in which they purchase securities, 175–6
- saving function, individual, empirically based, 169
- savings
  - borrowed in the form of money capital, 163
  - defined, 168

- determinants of, 168
  - in the market for loans, 174
  - money, 163
    - money, borrowed by entrepreneurs, 174
    - money, used to buy already produced capital goods, 175
  - securities, new, sold to finance planned investment, 173
  - securities prices, in equations of equilibrium, 170–1
  - separate markets in, for each commodity, 160–1
  - shares, adjustments in the market for, 186–7
  - shares, prices of, confused with prices of capital goods, 178–9
  - silver and gold erroneously classified with circulating capital, 182–3
  - simultaneity of price and production changes, 190
  - speculators, 173–4
  - stability of. *See* Tatonnement in the mature comprehensive model
  - stability of, studied, 421
  - stocks and bonds
    - market for, incorporated into model, 169–71
    - used to finance capital formation, 175
  - strengths of model, 204
  - tatonnement. *See* Tatonnement in the mature comprehensive model
  - three stages of the model, 157–8
  - utility maximization and equilibrium, 197–8
  - wealth produced by the economy, 182
- Mature models, greatness of achievement in, 420–2
- Mature nondurable consumer commodities model, 113–54
- adjustments when there are losses, 140–1
  - adjustments when there are profits, 138–40
  - budget equation for a consumer, 146
  - business inventories, 136
  - capital goods
    - characteristics of, 115
    - indestructible, 115
    - nonspecific, 151
    - stock, 150–1
      - constant, 115
  - commodities produced, all nondurable, 127
  - constancy of parameters examined, 148–53
  - demand for productive services, 150
  - demand functions for commodities, 149
  - disequilibrium hiring in, 154
  - disequilibrium phenomena, 124



## Index

453

- disequilibrium production of the numeraire, 141–2
- disequilibrium sales, 134
  - of goods in relation to general equilibrium, 144
  - in markets for productive services, 143
  - of the numeraire, 141–2
  - of services, 130–1
- entrepreneurs
  - operate with money, 122
  - organize production in, 127
  - sell products in, 127
- equations, relation to the model, 145–7
- equilibrium, Walrasian, 147
- equilibrium conditions, 147–8
- excess demand, individual market-oriented, 146
- exchange of goods only at market-day equilibrium prices, 137, 142–3
- existence of equilibrium, 145
- goods in the model, 127–8
- inventory accumulation, 136
- land and capital goods, sales of eliminated, 151–2
- market demand curve in, 133, 135
- market-oriented individual excess demand, 146
- market supply and demand, known only to the theoretician, 146
- market supply and demand functions, particular equilibrium, 135
- mathematical iteration by the theorist, 144–5
- money in, 116–24
  - circulating balances of, 117
  - a medium of exchange, 121
  - used in a central model, 120
  - used in a market for shoes, 122
- numeraire
  - adjustments in its market, 141–2
  - disequilibrium production of, 141–2
  - intervention of, 121
- offers, not all-or-none, 131–2
- parameters
  - affecting demand, 114
  - affecting supply, 114–16
- participants quote and change the price, 134–5
- path dependency not in the model, 152–3
- price and output as independent variables, 137–42
- price as independent variable, 134–6
- price equal to average cost, 147
- prices changed by participants, 129–30
- price tatonnement, 137
- production functions not homogeneous of the first degree, 133
- production tatonnement, 137–8
- profits not a source of path-dependency, 152
- profits or losses made in disequilibrium, 123
- services, defined
  - consumable, 126
  - productive, 124
- services and goods markets, contrasted, 142–3
- services and products, separate markets, 120
- stability, 144
- supply and demand curves used in the model, 132–4
- supply curve, forward falling, long-run, 143
- supply curve of an industry, 133
- supply functions for productive services, 149
- tatonnement, price, 137
- tatonnement, production, 137–8
- utility functions in, 115–16, 148
- Mature phase of theoretical activity, xi, 7–12, 17, 21, 29, 50–1, 53, 128, 153, 157–8, 162, 179, 204, 206, 208, 229–30, 236, 271, 367, 418, 421
- Maximum satisfaction in barter of fixed total stocks model, 67
- Maxium social satisfaction, 44
- Maximum utility of new capital goods, theorem of. *See* Utility of new capital goods
- May, Melle Dick, 4
- Mechanics, 36
- Menger, Carl, 41
- Method, literary, 36–7
- Mill, John Stuart, 3, 80, 287, 313, 420
- Modeling of markets, Walras's contributions to, 420–2
- Models
  - features not added successively, 6–7
  - of the mature phase, outlined, 10–11
  - mixture of, in the *Eléments*, 340–1
  - of the phase of decline, outlined, 12–13
  - wide variety of types, 5
- “Model” used rather than “theory,” xi, 15
- Money. *See also under specific models*
  - applied theory of, 238–9
  - cash balances equations, 238
  - content of lesson on, in mature model, 237–9
  - currency arbitrage, 238
  - function of, 344

## 454 Index

### Money (*cont.*)

- international settlements with, 238
- intervention of, meaning of, 65–6, 342–4

### Money market, mature model of, 235–55

- cash balance approach in, and J.M. Keynes, 245

- distinct from description of real economy, 239

- elimination of the model from the fourth and fifth editions of the *Eléments*, 236

### fiat money model, 239–47

- adjustment processes in, 244–7
- balances of fiat money, 239–41

- banks in, 248

- Cambridge cash balances theorists, 244

- cash balances: aggregate desired real, 246; consumer's desired, determinants of size, 240; demand for money, components of, 243; desired, effects of changes of, 246–7; desired, real, 240, 244, 246–7, 253; entrepreneurs' desired, determinants of size, 240; idle, 248; nominal, 244–6, 253, 255

- equilibrium, conditions of, 249

- equilibrium of circulation, 249

- fiat money held for utilities it can buy, 240

- interest, on fixed and circulating capital, 242

- money, changes in the quantity of, 245–6

- money, velocity of circulation of, 245, 248

- money market, structure of, and simplifying assumptions, 242–4

- money market same as loan market, 235
- period analysis, 244–5

- rate of interest and rate of net income in, 247–8

- rate of interest in, 245–6, 249

- reservation demand for money, initially none in the model, 243

- reservation demand for money introduced, 248

- savings, money: lent to finance circulating capital, 241; lent to finance fixed capital, 241; used by capitalists to buy durable capital goods, 241; used by capitalists to make loans, 241; used for both durable and nondurable goods, 241

- supply of money, components of, 243–4
- temporary equilibrium, 245

- utility not yielded by fiat money, 240

- velocity of circulation of money, 245, 248

### nonfiat money models, 249–54

- bimetallism, 254

- equilibrium characteristics of, 250–1

- metallic money, changes in the quantity of, and changes in prices, 253

- money substitutes, 251–3; bank notes, 251–2; bank operations, 252; bills of exchange, 251–2; book credit, 252; cash balance, aggregate desired and, 252–3; checks, 252; clearing houses, 252; fiduciary money, 251; paper money, 251

- one commodity money, 249–51

- settlements made with cash, 252–3

- two commodity moneys, 254

- reasons for studying the models, 235–6

### Monopoly, 3, 21, 290, 295, 299–300, 313

### Monopoly profit, 299–300

### Moore, Henry L., 424

### Moral science, 39

### Morishima, Michio, 30, 82, 264, 267, 383

### Napoleon III, 31–2

### Natural science, 39

### Net advantages, doctrine of, 296

### New York Stock Exchange, 69, 83, 108–9, 264, 346

### Nondurable consumer commodities, mature model of. *See* Mature nondurable consumer commodities model

### Normative and positive economics, 39–40, 46

### Normative economics not the purpose of the *Eléments*, 37

### Normative ideas, explicit, 32–5

### Normative point of view, 39, 47

### Normative scheme, Jaffé's thesis about, 29–30

### Numbers of traders in barter of fixed total stocks model, 68–72

### Numeraire. *See also under specific models* and Auguste Walras, 3

- intervention of, meaning of, 65–6, 342–4
- not present in the arbitrage model, 64–5

### Oral and written pledges, similarities, 370

### Oral pledges, 5, 10, 14, 56, 63, 67, 75–107, 109–12, 338, 351, 369, 375, 378–9, 383, 389–90, 418, 420

- defined, 84

- realistic, 81

### Oral pledges model, 76–112

- complete structure, 92

- counterparts in, 107

- economic functions of markets, 89–92

- equilibrium, 107–8

## Index

455

- evaluation of, 108–12
- excess demand, market-oriented individual, 103–4
- general equilibrium in, 108
- market-oriented individual excess demand in, 103–4
- not a general equilibrium model, 110
- parameters, changes of, 97
- participants in, 81–3
- particular equilibrium, imperfect, 108
- preferences in, 95
- pricing process in, 104–5
- reasons for studying, 77–8
- significant achievement, 111
- sources for, 78–9
- a special case, 109–10
- structure, complete, 92
- trading, signal for, 107
- Organized markets, 10, 22, 50, 53, 56, 68–9, 71–2, 75–9, 81–6, 92, 94, 96, 100, 103, 106–7, 109, 111, 126–8, 139, 153, 161, 170, 179, 188, 235, 265, 268, 305, 337–8, 346, 348, 351–2, 358–9, 365, 369–70, 378, 381, 384, 386, 414
- Palgrave, R.H. Inglis, 423
- Pantaleoni, Maffeo, 423
- Pareto, Vilfredo, 205, 234, 257, 262, 267, 279, 294, 300, 303, 312, 314, 422–4
- Particular equilibrium analysis, 73–4, 108, 132–3, 135–6, 138–41, 153, 190–4, 351
  - in Edgeworth's work, 314
  - value of, 314
- Path dependency
  - in the mature comprehensive model, 201–3
  - not in the mature nondurable consumer commodities model, 152–3
- Patinkin, Don, 30, 267, 334–5, 369–70, 383
- Perfectly organized markets, 79–80
- Personal faculties, 114, 159–60, 164–5, 167–8, 197, 200, 328, 333–4, 337, 408
- Phase of decline, 11–13, 280, 317, 420
- Phases of theoretical activity, 7–13
- Physical features of markets, 79
- Physical features of the barter of fixed total stocks model, 54–5
- Piccard, Antoine Paul, on demand, 41
- Pledges, oral and written in real markets, compared, 389n5
- Poincaré, Louis
  - book on statics, 4
  - influence on Walras, 35–6
- Policy, economic, 38
- Population, 115, 328
- Positive and normative economics, distinguished, 34
- Positive economics, 38
- Price
  - empirically determined by free competition, 271
  - how known it should be changed, 102–4
  - indirect, in arbitrage model, 61–3
  - lists of, 86, 110–11
  - quoted and changed by traders, 55–6, 85–9, 101–2, 264–6
  - single value at any moment, 44–6, 49, 105–7
  - true, in arbitrage model, 61
- Price discrimination, 49
- Price of silver, fixed, 98
- Price quotations, published, 86, 110–11
- Price takers, 101–2, 264, 266
- Price-taking only up to a point, 101–2
- Pricing, Walrasian, 22, 50, 57, 59, 61–2, 67, 80, 95, 102, 108, 111, 137, 154, 188, 191, 249, 266, 268, 272, 278, 287, 291, 311, 313, 355, 364, 379, 406, 409
- Production functions, 25, 116, 128, 133, 148, 150, 152, 159, 172, 206, 325, 327, 352, 404
- Production model, terminology about, 6
- Productive services, 6, 10, 23–6, 40, 42, 47, 113, 115, 118–20, 122, 124–5, 127, 130, 133, 138, 140, 143–4, 146–8, 157, 162, 166, 179, 182, 185, 191, 202, 208–9, 214, 216, 232–3, 258, 260–1, 266, 272–3, 281–3, 285, 287, 291, 296, 298, 306–7, 325, 329–31, 335, 345, 351, 357–8, 361, 368–9, 372, 374, 378, 380, 383, 390, 403, 412, 416–17
- Products, 22, 23–4, 26–7, 40, 42, 44, 81, 90, 114–16, 118–20, 121, 122–3, 127, 130–3, 134, 137–40, 143, 145–7, 150, 152, 162, 171, 176–7, 182–3, 188–9, 195–6, 206, 209, 238, 242–3, 258, 261, 268–9, 270, 272–3, 275–7, 281–8, 290–1, 298, 308, 311, 325, 329–31, 337–8, 342, 344–8, 350–2, 356–9, 362, 364, 366–8, 370, 381–2, 385–6, 390–1, 393, 407, 411
- Profits, 23–4, 27–8, 90, 95, 116, 123–4, 132, 136–9, 141–2, 148, 152, 189, 194–5, 218, 249, 270, 279, 281, 285–6, 288–93, 295–301, 305–7, 361, 410, 421
  - cannot materialize in the written pledges models, 205–6
  - Marshall's definition of, 296–7
  - Walras's definition of, 297–8

## 456 Index

- Property, theory of, 39, 43  
 Proudhon, P.J., 1, 31–3, 43  
 Purchasing power, 44, 82, 87, 89–90, 164, 175, 378, 412, 416
- Quesnay, François, 3–4
- Rabais*, selling *au*, 39  
 Rational explanation, 42  
 Reality, concern with, 43, 52, 261–3, 267–9, 270, 273, 277  
 Reasons for studying the history of economic thought, xii  
 Recontracting, 310  
   not occurring in real markets, 101  
 Reform, social, 43  
 Renard, Georges, 424  
 Risk and uncertainty, 32, 94–5, 165, 171–4, 224, 281, 299, 304  
 Rist, Charles, 424  
 Robertson, D.H., 236, 245  
 Ruchonnet, Louis, 2, 33
- Sainte Beuve, Louise Aline de, 1  
 Satisfaction, maximum total, 44  
 Saving. *See also specific models*  
   aggregate, in the first edition, 209  
   important for economic growth, 24  
   individual, in the first edition, 208  
   in the mature comprehensive model, 168–9  
   transformed into capital goods, 90–1  
 Saving and investment, 24  
 Savings balances, 182, 184, 241, 245, 255, 340, 413  
 Say, Jean-Baptiste, 3–4, 287  
   on the entrepreneur, 281–2  
 Schumpeter, Joseph, 47, 79, 101, 176, 258, 300–1, 382–3
- Science  
   applied, 40  
   natural, 39  
 Scientific character of various theories, 42  
 Scientific concepts, 40  
 Securities  
   new, 91, 95  
   operations with, 84  
   types sold on the Bourse, 83–4  
   uncertain future dividends from new issues, 95  
 Securities market, model of, 79–81, 169–70.  
   *See also* Bourse; Oral pledges  
   model  
 Selling *au rabais*, 87–8  
 Services. *See specific models. See* Consumable services; Productive services
- Simiand, François, 424  
 Simultaneous equations systems, 36  
 Smith, Adam, 3, 86, 281  
 Social economics, 45  
 Social economics and justice, 38  
 Socialism, Walras's variety, 33  
 Social justice, 34  
 Solutions to equations not the equilibrium  
   variables in the mature comprehensive  
   model, 326  
 Specialist, 98, 109, 265  
 Speculation, 95  
   economic functions of, 90–1  
   and efficiency, 89  
 Stability. *See under specific models*  
 Stability of the real economy, 145  
 Statics and dynamics distinguished by Walras, 308–9
- Tasks of the book, general, xi–xii  
 Tatonnement, 9, 11, 15, 25–7, 49–51, 55, 74, 80, 98, 131, 137, 145, 147, 190, 194, 199–200, 206–7, 256–78, 285, 302–9, 311–15, 326, 330–1, 336, 354, 370, 377, 379, 381, 390, 393–4, 408–10, 413–14, 421, 423  
   and J.S. Mill, 313  
   no such process in the written pledges models, 394  
   and realism, 50–1  
 Tatonnement in the mature comprehensive  
   model, 256–78. *See also specific mature models*  
   alleged a mathematical technique by Jaffé, 257  
   alleged a virtually timeless event, 257  
   auctioneer, not in the model, 266–7  
   average cost equal to price in equilibrium, 269  
   average cost not equal to price in disequilibrium, 268–9  
   behavioral basis of model of iterative pricing, 263–6  
   Bortkiewicz's interpretation, 269–72  
   capital goods market tatonnement, 306  
   convergent pricing, 274–5, 278  
   disequilibrium hiring, production and sales, 269  
   disequilibrium model, 259  
   dynamic character a myth, according to Jaffé, 257–8  
   dynamics, concern with, 50, 271–2  
   dynamics, rejected by Edgeworth, 270, 272  
   economic, 263, 274–5  
   efficiency of, 277  
   identified, 257

## Index

457

- involving disequilibrium production and sales, 268–9
- in the mature models, 206–7, 267–75, 304–15
- mirrors reality, 263
- not the same as recontracting, 310–11
- Edgeworth's criticisms, 302–15
- Bortkiewicz's defense of Walras, 312
- capital market tatonnement redundant, 305
- dynamics not part of the discipline, 309–10
- knowledge of dynamics impossible in principle, 310
- Pareto's defense of Walras, 312
- statics and dynamics alleged to be confused by Walras, 308
- tatonnement not the only way of equilibrating, 311–14
- too prolix, 304
- Edgeworth's view of the dynamic character of the model not a myth, 267
- entrepreneur's role in, 207, 272–3
- excess demand, market-oriented individual, 268
- Gauss-Seidel algorithm and, 257
- improvement over previous work on tatonnement, 258–9
- iteration
  - mathematical, 259–61, 274–5
  - mathematical and economic, distinguished, 275–7
- Jaffé's interpretation of Bortkiewicz's position, 269
- market-oriented individual excess demand, 268
- in markets without agents or criers, 265, 277
- mathematical, 257
- mature model contrasted with absence of tatonnement in written pledges model, 394
- method of successive approximations, 262
- money market, tatonnement in, 307
- not a complete dynamic system, 277
- not a policy proposal, 49–51
- not intended to be realistic, according to Jaffé, 257
- participants in tatonnements not always price takers, 265–6
- price and production tatonnements, 270, 306
- prices changed by participants, 264–5
- prices determined empirically by free competition, 271
- pricing, convergent, 274–5, 278
- process involving disequilibrium hiring, production, and sales, 269
- quasi-instantaneous operation according to Jaffé, 258
- realism of the model claimed by Walras, 277
- realistic intent of model, 267–9, 273
- reallocation of resources part of the process, 273
- real markets, concern with, 261–3
- Schumpeter, Joseph A., on Walras's alleged disinterest in dynamics, 258
- short side of the market, 264
- simultaneity of adjustments in different markets, 276–7
- solution of equations meaning equilibrating process, 261, 277
- stability of equilibrium, 272, 274, 304–5
- stable, real market alleged to be, 274
- tatonnement alleged to be mathematical method, 256
- temporal sequence not implied according to Jaffé, 257
- Walrasian pricing in, 270, 272
- Walras's opposition to Edgeworth's rejection of dynamics, 272
- Technology, 74, 116, 153, 159, 184, 217, 238, 327–8, 375, 395, 419
- Terminological conventions in this book, 13–15
- Theorem of equivalent redistributions, 335–6
  - Jaffé's view regarding, 335–7
- Theorem on the maximum utility of capital goods. *See* Utility of new capital goods
- Théorie de la monnaie*, 236
- Trading, signal for, 107
- Trading bodies in Jevons's model, 71
- Treasury bills market, 98
- Turgot, A.R.J., 3–4
- Uncertainty and profits and losses, 299. *See also* Risk and uncertainty
- Underwriters, 91
- Unifying content of models, 5
- Utilities, independent, 22
- Utility, extensive, 3
- Utility, marginal. *See* Marginal utility
- Utility maximization, 22–3, 27, 41
  - and allocation of savings, 91
- Utility of new capital goods, theorem on the maximum
  - agent to whom the theorem refers, 222
  - amortization and insurance in one model but not in the other, 224

## 458 Index

- Utility of new capital goods (*cont.*)  
 Bortkiewicz's observations, 211–17  
 amortization and insurance of capital goods, 212  
 relation of sinking funds to maximization of utility, 215  
 theorem not normative, 216–17  
 time of receipt of utility, 215–16  
 utility a function of net income of capital goods, 212–14  
 correct interpretation, 219  
 cumbersome procedure in the phase of decline, 230n10  
 Edgeworth's criticisms, 217, 224–9  
 no meeting of minds, 229–30  
 Walras's response, 227–8  
 initial statement of theorem, 209–11  
 Jaffé's interpretation of, 217–19  
 mature theorem, 230–3  
 capital goods not productive of consumable services, 232  
 capital goods that yield consumable or productive services, 232–3  
 how consumer distributes income among services of different capital goods, 230–1  
 how society distributes savings to obtain production of different capital goods, 231–2  
 Pareto optimum, 234  
 theorem as explaining how the kinds and amounts of new capital goods are determined, 233–4  
 owner of capital goods, 223–4  
 pure consumer, 222–3  
 pure producer, 222  
 quantities of capital goods vs. quantities consumed of their services, 224–7  
 quantity of services as equaling quantity of capital goods, 225–6  
 Edgeworth's refusal to accept, 225–7  
 redundancy of the theorem alleged by Edgeworth, 227  
 saving function in  
 aggregate, in the first edition, 209  
 individual, in the first edition, 208  
 second model, with perishable capital goods, 220–1
- Vacherot, Etienne, 32
- Walker, Francis A., 23, 281–3, 286
- Walras, Antoine Auguste, 1  
 warning to Léon about social issues, 31–2
- Walras, Léon  
 abandons theoretical construction, 13, 401
- American Economic Association honorary member, 424
- analytical powers, weakening of, 205, 321–3, 345, 374, 390
- biographical sketch, 1–5
- ceases to read economics, 401n2
- children, 2
- contributions to the modeling of markets, 420–2
- creative phase, 7–8, 29, 279, 372
- death, 5
- development of his father's ideas, 3
- division of his life's work, 2–3
- education, 1
- English attitude toward, 422–3
- experimental phase, 7
- French attitude toward, 422
- health, influence on work, 5, 12, 34, 119, 321–3, 399–401
- hired at Academy of Lausanne, 2
- influence on the discipline of economics, 422–4
- influences on his work, 2–4
- journalist, 1
- jubilee, 424
- lecture on social topics, 2
- Le Travail*, 2
- literary efforts, 1
- marriages, 2
- mature phase of theoretical activity, 7–10, 12, 17, 21, 29, 50–1, 53, 113, 128, 153, 157–8, 162, 179, 204, 206, 208, 229–30, 236, 271, 367, 418, 421
- opinion of English economists, 422–3
- professional satisfactions, 423–4
- renunciation of the problems of mathematical economics, 401
- retirement, 5, 321
- as teacher, 5
- true achievement in general equilibrium modeling, 425
- wives, 1, 2
- Walrasian pricing. *See* Pricing, Walrasian
- Welfare optimum, 27
- Wicksell, Knut, 314, 424
- Wicksteed, P.H., 227, 258, 423
- Workers' cooperatives, 1, 33
- Written pledges, 5, 9–14, 77, 96, 162, 204–7, 255, 319, 321, 323–7, 330–42, 344–90, 392–5, 399–400, 402, 406, 409–14, 416–17, 419–20. *See also specific models with written pledges*
- erroneous belief that demanders make them, 382–3
- first introduction of, 323n1, 400
- Jaffé's belief, 382



## Index

459

- Kompas's belief, 383
- not used in much of the last comprehensive model, 400
- Patinkin's belief, 383
- revision of *Eléments* with, only partially carried out, 323
- Schumpeter's belief, 382–3
- to supply products, 331
- to supply services, 332
- why assumed, 376–7
- why they must be written, 332, 370
- Written pledges markets in the last comprehensive model, 372–95
  - agents
    - act on behalf of producers of consumer goods, 381
    - cry prices for service suppliers, 378
  - capital goods, new
    - input markets for, 384–92; demands for services used to make capital goods not in the model, 385; monetary markets, 385; not explicitly mentioned, 384; pricing process in, not in the model, 385
    - output markets for, 385–90
  - capital goods, old, not in the model, 392
  - consumable services, market for, not a functioning system, 384
  - consumer goods, 377–84
    - input markets for, 377–81; demand equations for inputs not part of written pledges model, 380–1; written pledges not used to buy services, 379–80; written pledges used to pledge the supply of services, 377–8
    - output markets, 381–4; organized and competitive, 381; written pledges not used to demand consumer goods, 381–3; written pledges used to pledge the supply of consumer goods, 381
  - demand functions
    - individual, for new capital goods, not in the model, 387–8
    - market, for new capital goods, not in the model, 388
    - market, knowledge of, not in the model, 355
    - not in the model, 394
    - for services used to make capital goods, not in the model, 385
  - dynamic phase, 390–1
  - equations
    - not related to the model, 394
    - presented as related to the model, 372–3
  - excess demand functions
    - individual, for consumer goods, not in the model, 381–3
    - individual, of producers, not in the model, 388
    - market, for new capital goods, not in the model, 388
    - not in the model, 392
  - fulfillment of written pledges not possible, 393–4
  - loans, long-term, not in the model, 392
  - loans, market for short-term, 390
  - markets, organized and competitive, 378–9
  - model of the Bourse and written pledges
    - model of the market for new capital goods, contrasted, 388–90
  - models of monetary written pledges markets
    - displaced the mature money model, 373
    - largely vacuous, 375
    - money and the numeraire in, 378
  - money not used in the static phase, 391–2
  - money used in the markets for capital goods, 385–6
  - money used in the model, 378
  - organized and competitive markets, 378–9
  - payments made in money, 378
  - phases of the model, flawed specification of, 390–2
  - pledges made for the supplies of services used to make capital goods, 385
  - pricing process, not occurring in the model, 392
  - primary materials, not in the model, 392
  - savers not making pledges to purchase new capital goods, 387–8
  - savings not occurring in disequilibrium, 387
  - scanty references to written pledges, 374–5
  - securities not in the model, 392
  - static phase, 390
  - statics and dynamics defectively contrasted, 391
  - structural features, incompletely specified, 386
  - submodels all monetary, 373
  - supply functions for goods, individual and market, exist in the model, 388
  - supply functions for services, individual and market, exist in the model, 385
  - tatonnements, preliminary, 377, 390
  - terminology used in the model, 374
  - why written pledges are assumed in the model, 376–7