

Index

- AAL (avoid avoidable loss) rule
definition 4, 6, 17, 54
and learning 42, 57, 67
and macroeconomic events 108
mathematical consequences 65–7
obeying 63
and physical laws 58–61
vs. utility maximization 55–6
- Abramovitz, Moses 42
- actors *see* economic agents
- adaptive proportional coupling 84–5
- addictions 62
- aggregation *see* macroeconomic aggregation
- agriculture *see* free gifts from nature
- Albert, M. 65
- Alchian, A. A. 19, 61
- Andersen, Esben Sloth 42
- Argote, Linda 61
- Arrow, Kenneth J. 30, 61, 78, 138
- Arthur, W. Brian 43
- artisans 48
- Atkinson, Giles 118
- auction markets, and decision strategies 85–6
- Axelrod, Robert 41
- axioms 36–7
- Axtell, Robert 31
- Ayres, Clarence E. 3
- Ayres, Robert U. 13, 18, 19, 33, 40, 60, 61, 69, 76, 142, 155
- baker's dilemma 86–9
- balance equations 150–56
- Baloff, N. 61
- Bamett, Harold J. 137
- bargaining 26, 26–8
- Becker, Gary S. 3
- Bentham, Jeremy 76
- Biblical law 104
- Binswanger, Hans P. 137
- Boadway, R. 16
- Boulding, Kenneth E. 18, 20, 124
- Bowles, Samuel 3, 5, 16, 32
- Brekke, K. 16
- Bródy, András 76
- Bromley, D. W. 16
- bubbles 107–8, 145
see also South Sea Bubble
- Cambridge Capital Controversy (CCC) 113
- Candeal, Juan Carlos 67
- capital 110–14
- capital stock 113
- capitalism 110–12
- Carnot efficiency formula 79
- Cassel, Gustav 4, 18
- CCC *see* Cambridge Capital Controversy
- CGE (computable general equilibrium) models 31
- Chipman, J. 5, 39
- Clark, John 142
- Cleveland, Cutler J. 40
- Coase, Ronald H. 33
- Cobb, Clifford W. 128, 130
- Cobb, John 128, 130
- Cobb, John B. Jr. 128, 130
- common property, and physical laws 58
- competitive markets, and stability 123–4
- computable general equilibrium (CGE) models 31
- consumers, wealth of 169–70
- consumption
definition 49–50
as opposite of production 20–22
- cost minimization *see* maximization (of profit and utility)
- Costanza, Robert 13
- cowboy economy 124
- creative destruction *see* q(uasi)–cycles, negative (loss)

- Daly, Herman E. 40, 60, 128, 130
 Dasgupta, Partha 138
 David, Paul A. 43
 Day, Richard H. 34, 42
 Debreu, Gerard 21, 30, 67
 decision making 35–8
 decision making strategies *see* myopic maximization
 adaptive proportional coupling 84–5
 auction markets 85–6
 baker's dilemma example 86–9
 general case 81–3
 myopic maximization 83–4
 pair-wise exchanges 86
 production-related decisions 89–92
 trader types 80–81
 deflation 147
 demand (*L*) matrix 175–9
 dematerialization 60–61
 dictator assumption 79
 see also macroeconomic aggregation, wealth measures and GDP
 Dion, D. 41
 dissipative systems 40
 Dorfman, Robert 18
 Dosi, Giovanni 34
- economic agents 44–5
 economic entropy 76
 economic system, definition 107
 see also modeling an economic system
 Edgeworth, F. Y. 24
 Eliasson, Gunnar 34, 42
 endowment effect 28–9
 entropy *see* economic entropy; Second Law of Thermodynamics
 Epple, Dennis 61
 Epstein, Joshua 31
 equilibrium 17–19, 30–31
 and instability 98–104
 social re-stabilization 104
 see also dissipative systems
 evolutionary economics 18–20
 exergy 61, 129
 exploration 133–4
- Fabricant, Solomon 42
 Fehr, Ernst 61
 feudal system 111–12
- firms 45
 and Z-function 64
 Fisher, Irving 7, 64
 fishing *see* free gifts from nature
 flows (of goods and services) 20–22
 force law 84
 forestry *see* free gifts from nature
 free gifts from nature 48, 60, 73, 153–5
 see also natural resources
 Freeman, Christopher 142
 Frey, Bruno 65
 Friedman, Milton 19
 Frischtak, Claudio R. 142
 funds *see* stocks
- Gabel, H. Landis 2
 gambling 28–30
 games 26–8
 games-playing skills 41
 GDP
 as measure of wealth 125
 as measure of welfare 128–9
 Georgescu-Roegen, Nicholas 2, 4, 18, 21, 22, 40, 60, 61
 gifts of nature *see* free gifts from nature
 Gintis, Herbert 5, 16, 32, 41
 Glansdorff, P. 40
 Goeller, H. 138
 government, role in macroeconomic aggregation 119–20
 government agencies, and service provision 11
 Great Crash (1929) 108
 greed 15
 growth
 as a disequilibrium process 31–2
 and standard economic theory 140–41
 and Z-function 104–6
 Guha, Ashok 19
- Hahnel, R. 65
 Hansen, L. P. 16
 Hanusch, Horst 20
 Harcourt, G. C. 113
 Hardin, G. 33
 Harsanyi, John C. 41
 Hartley, K. 61
 Heal, Geoffrey 138
 Helmstaedter, E. 34
 Henrich, J. 5

- Hierarchy of Needs Model *see* psychological model of human behavior
- Hobsbawm, Eric 129
- Holland, John H. 41
- Homo Custodius* (the guardian) 6, 8–12, 16
- Homo Economicus* 9–10
- Homo Faber* (the maker) 6
- Homo Ludens* (the inner child) 6
- Homo Philosophicus* (the seeker) 6
- homogeneity, of Z-function 69
- Hotelling, H. 68, 137
- Howarth, Richard 16
- human behavior models
 influential models 1–4
 and maximization 4–8
 and values and bargaining 8–12
- human capital 110
- imperfect information 29–30
- induced innovation *see* innovation, scarcity induced
- information 58–9
 see also imperfect information; knowledge
- infrastructure 111
- innovation
 behavioral background 133–6
 scarcity induced 137
 see also technological change
- insatiability 14–15
 see also satiation
- instability
 and competitive markets 123–4
 and equilibrium 98–104
- integrability, principle of 7
- Intriligator, Michael D. 78
- inventors 133, 134–5
 see also innovation
- invisible hand 10, 121
- irreversibilities
 consumption 60
 knowledge creation 42
 knowledge diffusion 132
 learning 40–42
 multiple 38
 path-dependence 43–4
 physical 39–40
 production 60
 trade 61
- unsold labor 58
- wealth accumulation 38–9
- Jackson, Tim 128, 130
- Jacobs, Jane 8
- Jensen, Michael C. 1
- Jewkes, John 141
- Johnson, W. 21
- Jorgenson, Dale W. 114
- Kahneman, D. 7, 28, 33, 65
- Kaldor, Niko 18
- kamikazes 2
 see also suicide bombers
- Kimura, Motoo 19
- Kleinknecht, Alfred 42
- Kneese, Allen V. 18, 33, 60
- Knights Templars 143
- knowledge
 accumulation *see* learning from experience
 as component of wealth 37
 creation 42
 monetary value 137
 see also information
- Kondratieff, N. D. 142
- Kornai, Janos 18, 21
- Krutilla, John 138
- Kwasnicki, Witold 34
- L* matrix *see* demand
- labor supply 109–10
- Lancaster, Kelvin 22
- Lane, R. 65
- Layard, R. 65
- learning from experience
 in AAA rule 42, 57, 67
 and competitive advantage 19
 and economic agents 93–4
 and evolutionary theory 32
 irreversibility 40–42
 minimum rationality 54
 in modeling an economic system 96
 in REMM 3
 see also information; social learning
- learning-by-doing 40–42, 109, 138
- Lehnert, D. 34
- Levitical law 104
- lexicographic preferences 2
- Limits to Growth* report 138

- linearity *see* homogeneity, of Z-function
 LINEX form of Z-function 167–9
 lock-in *see* path-dependence
 Lorenz, H. W. 34
 losses, responses to 93–4
 lotteries 30
 see also gambling
 Lucas, Robert E. 16
 Lucas, Robert E. Jr. 14, 133

 M1/M2/M3 *see* money supply
 macroeconomic aggregation
 economic feedback 107–9
 government role 119–20
 of labor to labor supply 109–10
 market prices 121–4
 of money 114–16
 of producer goods to capital 110–14
 of resource inputs 116
 in sectors and along chains 116–19
 wealth measures and GDP 124–8
 of welfare 128–9
 Maddison, Angus 113
 mafioso *see* *Homo Custodius*
 Mankiw, N. Gregory 62, 89
 Mansfield, Edwin 137, 142
 marginal demand 175
 market price mechanisms 121–4
 market saturation 131–2
 markets, definition 22–3
 Marks, Nick 128, 130
 Marshall, Alfred 17
 Martinás, Katalin 5, 24, 38, 61, 69, 76,
 78
 Marx, Karl 112
 Maslow, Abraham H. 2
 material capital 111
 see also capital
 maximization (of profit and utility) 4–8
 see also myopic maximization; wealth
 maximization
 Meadows, Donella H. 138
 Meckling, William H. 1
 Menger, Carl 2, 18, 39
 minimum rationality 54
 mining *see* free gifts from nature
 Mirowski, Philip 7, 21, 36, 61, 78, 113
 Mississippi Bubble 145, 148
 modeling an economic system
 equations 94–6
 example 96–8
 see also economic system, definition
 monetary capital 111
 see also capital
 monetization 115–16
 money
 in balance equations 155–6
 determining subjective value of 75–7
 history of 143–5
 role of 46
 see also money supply
 Money Maximizing Model *see* neoclas-
 sical economic model of human
 behavior
 money supply 114–16, 145–8
 monopolies 132
 Moore, J. A. 5, 39
 Morgenstern, Oskar 26, 41
 Morse, Chandler 137
 Mosaic law 104
 Murota, Yasuhiro 114
 myopic maximization 83–4

 Nair, Indira 40
 Nash, John F. 27
 national wealth, and human capital 110
 natural resources 122
 nature *see* free gifts from nature
 negative feedback situations 107–8
 Nelson, Richard R. 20, 31, 32, 41, 44,
 55, 59, 142
 neoclassical economic model of human
 behavior 1, 14–15
 Newbery, David 16
 Ng, Yew-Kwang 16, 65
 Nicolis, Gregoire 40
 Nordhaus, William 128, 130, 141

 Pareto-optimality 24
 path-dependence 43–4
 Pearce, David W. 118
 Perez, Carlotta 142
 Perfect Agent Model *see* political model
 of human behavior
 Perlman, M. 34
 perpetual inventory method (PIM) 113
 Perrings, Charles 40
 Pezzey, John 118
 physical irreversibilities 39–40
 physical laws

- and AAL rule 58–61
- and common property 58
- and goods 150
- Pigou, A. C. 33
- PIM (perpetual inventory method) 113
- political model of human behavior 2
- Pontryagin, Lev Semenovich 78
- price-earnings ratio 145–6
- price mechanisms *see* market price mechanisms
- Prigogine, Ilya 40
- principal–agent model 2
- prisoner’s dilemma 33
- privatization 11
- process chain 52, 117–18
- production
 - in balance equations 152–5
 - and decision–making strategies 89–92
 - definition 48–9
 - as opposite of consumption 20–22
- profit maximization *see* maximization (of profit and utility)
- progress function 76
- proportional coupling *see* adaptive proportional coupling
- psychological model of human behavior 2
- public goods 23
- public-sector capital *see* infrastructure

- q(uasi)–cycles
 - definition 51–2
 - negative (loss) 52–5
 - uni-directionality 57
- Quakers 9–10

- Radner, Roy 61
- Rapping, Leonard 61
- rational expectations theory 16
- rationality 15–17, 23–6, 27–9, 37–8
 - see also* minimum rationality
- recycling *see* dematerialization
- REMM *see* Resourceful, Evaluative, Maximizing Model
- reservation price 73
- Resourceful, Evaluative, Maximizing Model (REMM) of human behavior 3
- risk premium 36–7
- risk-taking 132–3, 134
- Robinson Crusoe situations 117–18
- Robinson, Joan 113
- Romer, Paul M. 14, 133
- Rosen, S. 61
- Rosenberg, Nathan 137, 142
- Ross, S. 2
- Rostow, W. W. 142
- Ruth, Matthias 40
- Ruttan, Vernon 137

- Samuelson, Paul 59
- Sargent, T. J. 16
- satiation 131–2
 - see also* insatiability
- scarcity 137–8
- Schumpeter, Joseph A. 18, 19, 42, 53, 132
- Schwefel, Hans-Paul 41
- Scitovsky, T. 33
- Second Law of Thermodynamics 40
- sectorization 116–19
- Shoemaker, Paul 7
- Shubik, Martin 41
- Silverberg, Gerald 20, 34
- Simon, Herbert A. 19, 23
- Sinclair-Desgagnes, B. 2
- skills *see* knowledge, accumulation
- Smith, Adam 10
- Smith, V. Kerry 138
- social choice, and the demand matrix 176–9
- social learning 37
- Social Victim Model *see* sociological model of human behavior
- Society of Friends 9–10
- sociological model of human behavior 1–2
- Solow, Robert M. 17, 18, 30, 42, 118, 138
- Solow’s trinity 15–19
- South Sea Bubble 145, 148
- spaceship economy 124
- spillovers 131, 133
- stability *see* instability
- Stern, David I. 13
- Stiglitz, Joseph 16, 138
- Stiroh, Kevin J. 114
- Stock Market Crash (1929) 108
- stock market fluctuations 146

- stocks (of goods and services) 20–22, 47–50, 150–56
- Stokey, Nancy L. 61
- Stutzer, A. 65
- subjective values *see* Z-function (wealth measure), and subjective values
- suicide bombers 2, 11, 13
- supply–demand curves 170–73
- Suzumura, K. 16
- Takase, Kae 114
- tâtonnement* 98, 121
- taxes 120
- technological change
 - deliberate search 139–40
 - and irreversibility 41
 - at macro level 131
 - and rational behavior 140–41
 - standard microeconomic theory 136–9
- temperature analogy 79
- Templars 143
- time-dependency 21
- Tobin, James 128, 130
- Toman, Michael A. 118
- trade 47–8, 152
- trust, as basis of money and credit 144–5
- Tversky, A. 7, 28, 33
- ultimatum game 33
- unavoidable losses *see* q(uasi)–cycles, negative (loss)
- uncertainty 29–30
- unit economic processes 35–6
- unit operations
 - definition 47
 - irreversibility 57
- utility maximization (UM)
 - vs. AAL rule 55–6
 - and rationality 24–6
 - see also* maximization (of profit and utility)
- value, as substance 20–22
- van den Bergh, Jeroen C. J. M. 5
- van der Zwan, A. 142
- Verspagen, B. 20, 34
- voluntary gifts 50
- von Neumann, John 18, 26, 41
- Vromen, Jack J. 6
- Waller, John 61
- Walrasian auctioneer *see* *tâtonnement*
- Walrasian equilibrium 30–31, 94
- Walter, Jean-Luc 34
- wealth 45–7, 69, 76–7
- wealth accumulation 38–9
- wealth maximization 77–8
 - see also* maximization (of profit and utility)
- wealth measure *see* Z-function
- Weatherford, Jack 143
- Weinberg, Alvin 138
- welfare function 76
- Wicksteed, Philip Henry 21, 29
- Wiener, Norbert 33
- Winter, Sidney G. 19, 20, 31, 32, 41, 42, 44
- Wright, T. P. 61
- Yergin, Daniel 149
- Z-function (wealth measure)
 - as consequence of AAL rule 65–7
 - and consumers 169–70
 - definitions 22, 46, 77
 - existence of 63–5
 - vs. GDP 125–8
 - LINEX form 167–9
 - for money 75–7
 - properties 68–70
 - and subjective values 73–5
 - supply–demand curves 170–73
 - time-dependence 70–73
 - and wealth maximization 77–8
 - see also* modeling an economic system
- Z-function explicit cases
 - when contributions to wealth are independent 163–6
 - general goods traders 157–63
 - for interdependent stocks 166–9