### Index

**accelerator**
- and change in income 39
- as a coefficient of induced investment 20, 21, 64, 66–7
- as a coefficient of realized investment 20, 21, 64, 66
- conditions necessary for operation 67–8
- and firm behavior 68
- production function 21
- as a random variable 53
- as a structural parameter 20, 21, 64–6

**accelerator coefficient, non-linearities** 191

**accelerator coefficient** 179, 198
- aggregate 64–5
- and conditional monopoly 208
- constant 69–70
- determination of value 64, 70
- and financing of investment 72
- generation of 64–84
- negative 81, 82

**accelerator mechanism** 226

**accelerator or multiplier coefficient** 10

**accelerator process**
- explosive 246
- and industrial structure 259
- and real and monetary phenomena 258–9

**accelerator-multiplier mechanism** 7

**accelerator-multiplier models** 9–10, 15, 20–63
- alternative non-linear models 37–47
- capital stock in 28
- Goodwin model 27–37
- Hansen-Samuelson model 22–5
- Hicks type of linear model 25–7
- linear models 22–7, 258
- non-linear models 27–47, 258
- stochastic models 47–60

**accelerator-multiplier type analysis** 6
- floors and ceilings in 5
- aggregate induced investment 212–13
- aggregated models 6
- parameters 6

**Alexander, S.S.** 27, 61

**alternative market structures** 160

**alternative non-linear models** 37–47
- behavior of firms 37–8
- change in income 39, 45
- consumption function in 39
- level of income in 38
- asset properties, of money 234
- autonomous changes, in velocity 244
- autonomous investment 81, 82, 102, 179

**balance sheet deterioration** 135, 242
**balance sheet structure** 74, 85, 89, 97, 98, 140, 142
- and firm behavior 98
- and firm survival 127

**balance sheets** 129, 230, 238, 239, 253, 254
- of firms which exhibit debt instruments 135
- and investment behavior 259

**banking system model** 232–3

**bankruptcy** 127, 157

**behavior of households** 10
- break even point pricing 172–3

**Bronfenbrenner, M.** 168, 175, 201, 219

**business cycle** 177
- alternative theories 1–2
- damping of 55
- ‘energy source’ 48
- and industrial structure 88
- monetary aspects 222
business cycle analysis 1–19
methodological division 2
methodology 14–18
business cycle models, and linear relationships 5
business cycle theory 1, 222
and economic policy 258–60
industrial structure variant 86
in relation to theory of the firm 85–101
capital, demand for 75
capital market 91
imperfect 98
capital stock, in accelerator-multiplier models 28–31
capital theory 181
‘capitalization of earnings’ 94
cash balance 133
ceilings 5
money supply 242–3
central banks 233
Chamberlin, E.H. 78, 91, 100, 164, 175
Chamberlin’s symmetry assumption 165
Chenery, H.B. 20, 68, 83, 212, 219
Classical Quantity Theory of Money 232–3
common pricing rule 169–71
competition 79, 86, 90
imperfect or monopolistic 91
and monopoly 77–8, 85, 93
competitive industries 180–91
behavior during business cycle 190
market demand curve 140–42
reactions to change in demand 187–8
reactions to rise in price of products 180–81
conditional monopoly 160–61, 163, 174, 199–212
and the accelerator coefficient 208
demand curve 199, 205, 206, 208
investment response 258
long run marginal cost curve 202–5
maximum price constraint case 199
planning marginal cost curve 212
and price constraint 208–10, 216
‘rent case’ 200
‘conglomerate’ firms 136
constants 5
consumer good production 68, 69
consumption classes 77
consumption demand 87
consumption-income relation 80
‘continuing inflation’ 46
contracts 130
cost conditions, plant 122
cost curves 85, 98–9, 127
average 103, 104
and investment 102–26
of plants 136
relation with balance sheets 136
short run and long run, for different rates of return 116
short term average 104, 105, 151
to investigate investment behavior 103
as transformations of a production function 121
U-shaped 89
see also long run average cost curves;
long run cost curves; long run marginal cost curves
cost plus pricing 172
damped fluctuations 48, 49
damping, of business cycle 55
deficits 46, 47
demand curve 77, 78, 79, 85, 86, 177, 185
conditional monopoly 199
discontinuous oligopoly 72, 168
for firms 90, 92, 93
firms 108–9
horizontal 92
for investment 233
objective 90
development 223, 224
direct induced investment 177
disaggregation 4
discounting process 107
disposable income, and national income 79
Domar, E. 17, 19, 21, 60
Duesenberry, A.S. 10, 14, 18, 19, 77, 84
Econometrica 68
economic policy, and business cycle theory 258–60
Edgeworth, F.Y. 7, 18
'energy source', in business cycles 48
entrepreneurial capacity 112
entrepreneurs 29, 32, 70, 79, 89, 91, 149, 151–2
envelope curves 113
'equilibrium price' 191
erratic shock-damped oscillation hypothesis 47–8
erratic shocks 47, 48
error approach 47–9
ex-ante savings 226–9, 239–40
and realized investment 259–60
ex-post savings 226–9
'excess capacity' 68
expansion path 113–14
'expectations' 181, 237
explosive accelerator process 246
factors of production 89, 107, 132
price changes in 102
financing
analysis 152–7
conditions 85
constraint 146
of investment, fixed money supply 235–6
financing sources 224–5
and liability structure of firms 230–31
firm behavior 37–8, 68–9, 70, 91, 95–6
and balance sheet structure 98
firm survival, analysis of financing 152–7
firms
accounts receivable 133
assets 93, 128–9, 133–5
balance sheet constraints 97
best attainable position 93
cash balance 133
‘conglomerate’ 136
debt 93, 97, 127, 128, 130
debt load, reducing 150–51
definition of 88
demand curve 90, 108–9
equilibrium 110
equity base 89, 90
financing 89, 96, 105
financing sources and liability structure 230–31
government bonds 133
internal instability 169
investment alternatives 98
investment decisions 102
‘investment threshold’ 103
liabilities 134, 147
liquidity and survival 98
long run survival 139
long run survival average cost curve 143
market constraints 160–76
non-competitive position 94–5
optimum methods of production 107–8, 120
owners’ equity 14, 97, 127, 136–8, 147, 200
price-quantity value 90
retained earnings 152
and rises in income 79
survival conditions 96–7, 127
survival of 127–59
total assets needed 135–6
vulnerability 95, 160–76
see also plant
Fisher, G.H. 47, 48, 62
Fisher, I. 80, 222, 251
floors and ceilings 24, 222
in accelerator-multiplier type analysis 5
in Hansen-Samuelson model 24
interest rate floor 235
money income ceiling 237
money supply ceiling 242–3
free entry assumption 91
‘freedom of entry’ 100–101
industries ranked by 94
Friedman, M. 15, 19, 107, 112, 126
Frisch, R. 24, 47, 61, 62
full cost pricing 172
function indivisibilities 162
general theory, Keynes 80
‘generating relation’ 53
gold 232
‘gold production’ theories 241
Goodwin model 27–37, 59
capital stock in 28–31
change in capital and change in income 33
deficiencies 31

desired growth of capital 31

modifications 35–6

non-linear accelerator in 32–3

technological progress in 31

Goodwin, R.M. 7, 18, 21, 28, 29, 30, 31, 47, 59, 61, 61–2, 62, 63, 220, 251

Goodwin’s Hypothesis 34

government bonds 133

government deficit financing 246

government prices 87

growth, equivalent rate 21

Haavelmo, T. 48, 49, 63

Haberler, G. 1, 4, 17, 18, 19, 222, 226, 237, 251, 253

Hall, R.H. 91, 100

Hansen-Samuelson model 8, 10–12, 22–5, 34

accelerator coefficient in 13–14

assumptions in 8–9

consumption coefficient 12–13

definition of income in 22

floors and ceilings 24

national income in 8

output and capital stock in 13, 14

Robertsonian relation 22

state of the economy in 22–4

time series 11–12

types of behavior in 22–3

Harrod, R.F. 21, 22, 60, 61, 67, 82, 118, 126, 193, 218, 219

Harrod-Domar case 27

Harrod-Domar models 21–2, 61

Hawtrey 72

Hicks, J.R. 2, 5, 6, 8, 18, 48, 61, 62, 75, 81, 83, 220, 222, 225, 251

Hicks’ Trade Cycle Model 2–3, 44, 81, 226

Hicks’ type

accelerator model 240–41

linear model 25–7, 47

state of economy in 25–6

Hitch, C.J. 91, 100

horizontal demand curve 92

households, behavior 10

imperfect or monopolistic competition theory 91

income

change in 58, 70, 77

and investment 85

and induced investment 79

investment as a determinant 17

level of 15–16

income generating function 55

income variables, Keynesian analysis of 3

induced disinvestment 68, 210

induced investment 50, 51–2, 81, 82, 102

aggregate 212–13

definition 82

direct 177

effect of market structure on 177–219

lagged and immediate 229

and market rate of interest 214

and monetary behavior 220–58

realized 102

and rises in income 79

schedule 178

industrial structure 86, 93

and the accelerator process 259

and business cycles 88

industries, ranked by ‘freedom of entry’ 94

industry demand curves 52

inherent stability 222

inner-circle relations 3, 4, 6

innovation, and investment 260

innovational investment 82

installation costs 93, 100

interest rate–investment graph 254

interest rates 150, 230, 234, 235

and demand cure for investment 233

floor 235

interest rate–investment relation 80–81, 213–17

internal instability 169

internal rate of return 114

internal-external rate of return 82

investment

and change in income 85

and cost curves 102–26

as a determinant of income 17

financing of investment and fixed money supply 235–6

and innovation 260
Index

and output 68
see also realized investment
investment behavior, and balance sheets 239
investment behavior models 13
investment decisions 80, 102, 120
investment demand 87
investment demand schedule 178–9
investment goods
demand for 66
industries 220
investment relation 50
‘investment threshold’ 103, 104
iso-product curve 115, 121
iso-product map 120
iso-profit curves 160, 162
iso-return curves 113

Kalecki, M. 146, 159
‘The Principle of Increasing Risk’ 147
Keynes 3, 18, 80
general theory 80
Keynesian analysis, of income variables 3
Keynesian consumption function 22
Keynesian Liquidity Preference Theory of Money 232
Keynesian liquidity trap 236–7, 240
Keynesian models 16
Klein, L.R. 76, 84, 96, 101

Lange, O. 91, 100
Leontief, W.W. 4, 18
Lerner, A.P. 113, 118, 126
Lester, R.A. 91, 100, 169, 175
liabilities 134, 147
linear models 22–7
linear process models 5
liquidity preference 16, 225–6, 234, 244–5
liquidity preference relation 233
long run average cost curves (LRAC) 103, 104, 113, 114–15, 119, 144, 146, 149, 154, 155, 157
long run cost conditions 124
long run cost curves 89, 118
long run cost relations 123
long run marginal cost curves (LRMC) 113, 114–15, 119, 125, 144–6, 148, 154, 179
conditional monopoly 202–5
types of 121
long run supply curve 113
long run survival average cost curve 143
Lundberg, O. 50, 63
Lutz, F. 181, 218
Lutz, V. 181, 218

macroeconomic business cycle theory 3–4
macroeconomic model, variables in 7
marginal analysis 90–91
marginal cost curve 142
Marginal Cost equals Marginal Revenue 109
marginal propensity to consume 76
marginal revenue curve 179
jump 168
market constraints 160–76
market demand curves 78, 140–142, 189
market rate of interest 215
and induced investment 214
market share rule 78
market structure 85, 86, 87–8
effect upon induced investment 177–219
varying 105
markets 17
non-competitive 93
Marshall, A. 14, 19, 90, 100, 160, 161, 175
Marshallian industry 14, 16, 50, 78–9, 90
maximization principles 181, 192, 199
maximum price 170, 172
mechanical interrelation model 7
mechanical pendulum business cycle models 75
Metzler, L. 6, 18, 177, 218
Mints, L. 222, 251
Mitchell, W.C. 2, 15, 18, 19, 76, 83, 88, 100
Modigliani, F. 14, 19
monetary behavior, and induced investment 220–58
monetary changes 229–33
monetary systems 231–3
changes in quantity and velocity of money 243–6
quantity of money changes 238–43
quantity of money constant: change in velocity 233–8
money, asset properties 234
money income ceiling 237
money market 87, 134
effect on plant size 146–52
money supply 230, 233, 239, 242
ceiling 242–3
money-interest rate relation 80
monopolistic control of prices 86
monopolistic firm, equilibrium 163–4
monopoly 86, 87, 95
and competition 77–8, 85, 93
conditional 160
monopoly firms 191–8
optimum equity base 194
plant 194
monopoly profit 164, 193
‘monopsonistic’ supply curve 147
monopsony, absence of 93
multi-plant firms 162

National Bureau of Economic Research 88
national income
change in 85–6, 102
and disposable income 79
negative accelerator coefficients 81, 82
non-competitive markets 93, 94–5, 109
non-linear models 27–47
alternative 37–47
non-linear and stochastic assumptions, combination 59
non-linear theory 7
non-linearity 7
normal profit 103, 105
normal rate of return 111–12

Ohlin, B. 227, 251
oligopoly 85, 92, 160
operating losses 128
optimum plant 214–15
output
and investment 68
short run and long run change 71
owners’ equity 127, 136–8, 144, 147
rate of return on 200
zero rate of return 97

Patinkin, D. 17, 19
Pigou, A.C. 17, 19, 233, 252
Pilvin, H. 21, 60
planning curves 118, 179, 195, 215, 242, 244
planning marginal cost curve 150, 212
planning rate 116, 117
plant 105
average cost curve 139–40
cost conditions 122
cost curves 136
cost schedules 109
definition of 88
flexible vs. inflexible 124
modification 120, 123–4
modification vs. additional 123
monopoly firms 194
optimum 214–15
scale of 89, 106, 119, 132, 150
short run output cost relations 109–10
short term average cost curves 104
plant factors 113
plant size 181, 186
effect of money market on 146–52
Poisson type distributions 63
portfolio money 234
price constraint, and conditional monopolies 216
price flexibility 87, 88
price flexibility theory 87
price leadership 170–71
price level, and savings coefficient 246–51
price policy, regulated monopoly 174
price rigidities 86, 87
price theory 90
price-quantity value, firms 90
prices
governmentally regulated 87
monopolistic control of 86
‘The Principle of Increasing Risk’ 147
probability distribution 49–50, 55, 56
product demand curves 79
product markets, with few firms 167
product price rise, reactions to 183–4
production conditions, modification of existing plant 120
production function 89, 106
definitions 89–90
productive capacity 21
profit
in the investment function 69
monopoly 164
normal 103
profit maximization 89, 90, 91–2, 93, 95, 99, 201
constraints on 92
long run conditions 117
Marginal Cost equals Marginal Revenue 109
and monopolized industries 198
planning rate 117, 118
traditional diagram 111
profit rate 162
profitability 80
‘Propagation Problems and Impulse Problems’ 24
quasi-cartels 78, 79
quasi-rent doctrine 113
random process approach 50
random shocks 48
random variable 53
‘random variable’ model 54
rate of return 183, 187, 192, 212
internal 114
normal 111–12
on owners’ equity 200
and short run and long run cost curves 116
and short term marginal cost curve 115
realized investment 66, 76, 227, 230, 231, 237, 238, 249
and ex-ante savings 259–60
Reder, M.W. 93, 100, 160, 175
regulated monopoly, price policy 174
renting or hiring 130–31
replacement costs 93
resources, employed and unemployed 86
retained earnings 152
Ricardian Rent 112, 126, 185, 193
risk 104, 105, 148, 149, 157
risk premium 98, 131, 149–50
‘riskless’ competitive world 182–3
Robertsonian relation 22
Robinson, J. 91, 100, 163, 164, 175
‘sampling problem’ 40
Samuelson, P.A. 8, 18, 22, 61
saving 230, 250
savings 221, 223
ex-ante and ex-post 226–9
Robertsonian definition 73–4
savings coefficient, and price level 246–51
Schumpeter, J.A. 222, 223, 229, 231, 238, 251, 252, 253
Schumpeterian hypothesis 47
Schumpeterian innovation hypothesis 24
‘secular stagnation’ 46
short run marginal cost (SRMC) 136, 143, 188, 197, 198
short term average cost curve 104, 105, 151
short term marginal cost curve, and rate of return 115
standard price theory 108
Stigler, G. 118, 126, 163, 175, 187, 218
‘stochastic energy source’ 25
stochastic models
error approach 47–9
probability distribution 49–50
stochastic variables 49–60
stochastic and non-linear assumptions, combination 59
supplementary relations 6–7
supply curve, ‘monopsonistic’ 147
‘supplying a market’ behavior 202
survival constraints 163
survival cost curve 142
survival of firms 127–59
long run 139
Sweezy, P.M. 168, 175
tangency solution 164–6
technological progress, in Goodwin model 31
time series 48, 55, 60, 67
Tinbergen, J. 2, 3, 4, 6, 18, 37–8, 62, 67–8, 69, 76, 82, 83
Trade Cycle 25, 81

Index
Tsiang, S.C. 9, 18, 69, 70, 72, 75, 80, 83, 84
turning points 4, 5, 6, 24
unemployment 220–21
United States, cyclical behavior 44
‘value of market position’ 93
‘value of the organization’ 93
variables, in macroeconomic model 7
velocity 230, 231
autonomous changes in 244
change in 233–8
of circulation 232
of money 243–6

Viner, J. 86, 87, 99, 100, 102, 112, 115,
118, 119, 125, 126, 185, 218
price flexibility theory 87
vulnerability conditions 105
vulnerability of firms 95, 160–76

Wang 118, 126
wealth 16–17
‘welfare economics’ 160
Wilson, T. 65, 66, 82
zero return
curve 148
on owners’ equity 97
on total investment 119