List of Figures

3.1 Stylized nonlinear model of monetary dynamics. 63
3.2 Endogenous fluctuations: example of a limit cycle. 64
3.3 Endogenous fluctuations: example of a stable equilibrium. 64

4.1 Exponential average—spot weightings. 69
4.2 Function $\Psi(Z)$: Psychological transformation of calendar time and relative desired balances. 75
4.3 Function $\Psi(Z)$, for $a = b = 1$, relative desired balances/psychological transformation of calendar time. 77
4.4 HRL formulation elasticities. 85
4.5 HRL formulation elasticities. 86

5.1 Elementary period of reference. 97
5.2 Stable equilibrium with pseudo-periodic convergence. 104
5.3 Unstable equilibrium with limit cycle. 104
5.4 Echo bubble. 110
5.5 Exponential path with near-zero money growth. 111

6.1 Interdependence of the HRL formulation of the demand for money and of the fundamental equation of monetary dynamics. 116
6.2 Japan 1955–2006, joint test of the HRL formulation and the FEMD. 124
6.3 Japan 1955–2006, joint test of the HRL formulation and the FEMD. 124
7.1 Zimbabwe: asymptotic convergence of the perceived rate of inflation toward the instantaneous rate of inflation. 135
7.2 Zimbabwe: perceived rate of inflation and distribution of forecasting errors. 139
7.3 S&P 500 daily returns: distribution of forecasting errors. 141
7.4 Brazil: perceived rates of inflation and money depreciation. 147
7.5 Rate of memory decay, perceived growth rate (dynamic equilibrium rate) and elasticity as functions of $z$. 149
7.6 Time needed to converge toward the average annualized rate. 149
7.7 Two artificial time series differing only by their volatility. 150
7.8 Sensitivity of the perceived rate of growth to the volatility of inputs. 150

8.1 US AAA corporate bond yields and the HRL formulation. 160
8.2 Yield on British Consols and the HRL formulation. 169

9.1 S&P 500 and margin debt. 187
9.2 NASDAQ and margin debt. 187
9.3 Margin debt and perceived equity returns: a nonlinear relationship. 190
9.4 Bank debits in New York City and the present value of past equity returns. 191
9.5 Margin debt and the present value of equity returns. 192
9.6 Empirical demand curves for risky assets. 196
9.7 Perceived excess returns over the policy rate. 198

10.1 Bernoullian cardinal utility. 205
10.2 Allais’s 1943 conjecture on cardinal utility. 207
10.3 Cardinal utility functions defined up to a linear transformation and local linearity. 208
10.4 Distribution parameters of a constant-gain, variable-probability prospect. 214
10.5 Distribution parameters of a constant-loss, variable-probability prospect. 215
List of Figures  xvii

10.6 Comparison of the moments of two risky prospects. 218
10.7 Representation of observed cardinal utility on a lin-log graph. 227
10.8 Empirical invariant cardinal utility: rescaled observations. 228
10.9 Allais’s invariant cardinal utility function for gains. 230
10.10 Allais’s invariant cardinal utility function. 231
10.11 Finetti’s answers to questions 71 to 78. 234

11.1 United States: corporate bonds yields ratio and the perceived risk of loss on equities. 246
11.2 S&P 500: implied volatility, estimate based on the S&P 500 perceived upside and downside volatilities. 247
11.3 Cumulative drawdowns on the Tokyo Stock Exchange Price Index (TOPIX) and the perceived risk of loss in the Japanese equity market. 248
11.4 Perceived return and risk of loss in the Japanese bubble. 249
11.5 Perceived risk of loss on US equities, Cowles commission stock index chained with S&P 500 after 1928. 249
11.6 S&P 500: cyclically adjusted PE and perceived risk of loss. 250
11.7 S&P 500: cumulative drawdowns and perceived risk of loss. 251
11.8 S&P 500 and NASDAQ perceived returns. 252
11.9 Perceived risk of cash flow (EBITDA) shortfall. 252
11.10 The mother of all expectations. 262

E.1 Discount factor under different discounting models. 332
E.2 A 1-year discount rate. 335
E.3 The hyperbolic discounting hypothesis. 336
E.4 Rebased cardinal utility function. 337
E.5 Marginal utility. 338