The Conquest of American Inflation

Thomas J. Sargent



PRINCETON UNIVERSITY PRESS, PRINCETON, NEW JERSEY

Contents

Preface		
1. THE RISE AND FALL OF U.S. INFLATION	1	
Facts	1	
Two interpretations	1	
The triumph of natural-rate theory	2	
The vindication of econometric policy evaluation	3	
Readers's guide	6	
The Lucas critique	6	
Time-consistency and credible plans	6	
Adaptive expectations and the Phelps problem	7	
Equilibrium under misspecification	7	
Two types of self-confirming equilibria	8	
Adaptive expectations	9	
Empirical vindication	11	
Raw and filtered Data	11	
Demographic adjustment and drift	13	
2. IGNORING THE LUCAS CRITIQUE	14	
The Lucas critique	14	
Outline	14	
The appeal to drifting coefficients	15	
A loose end	16	
Parameter drift as point of departure	17	
Relevance of the critique	17	
Rational expectations models	19	

...

Contents

3.	The Credibility Problem	20
	Introduction	20
	One-period economy	20
	Least squares learning converges to Nash	25
	More foresight	27
	Appendix on stochastic approximation	28
4.	CREDIBLE GOVERNMENT POLICIES	31
	Perfection	31
	Historical antecedents	33
	The method of Abreu-Pearce-Stacchetti	35
	Examples of recursive SPE	38
	Infinite repetition of Nash outcome	39
	Infinite repetition of a better-than-Nash outcome	39
	Something worse: a stick and carrot strategy	41
	The worst SPE	42
	Multiplicity	44
	Attaining the worst, method 1.	45
	Attaining the worst, method 2.	45
	Attaining the worst, method 3.	46
	Numerical examples	46
	Interpretations	48
	Remedies	49
5.	Adaptive Expectations (1950's)	50
	Adaptive expectations	50
	The original Phelps problem	50
	Phelps problem: general version	53
	Testing the natural-rate hypothesis	55
	Disappearance of beliefs as state variable	57
	Subversion of Phelps's model	57

viii

Contents	ix
6. Optimal Misspecified Beliefs	59
Equilibrium with mistakes	59
An experiment in Bray's lab	60
Misspecification	62
Lessons	67
7. Self-Confirming Equilibria	68
Two literatures	68
Directions of fit	68
Imperfect (1970's) rational expectations equilibria	69
Self-confirming equilibria	69
Objects in Phelps problem	69
Elements of self-confirming models	70
The actual Phillips curve	70
Self-confirmation	71
Direction of minimization	72
Vanishing parameters	73
Self-confirmation under classical direction	74
Moment formulas	74
Keynesian direction of fit	75
Government beliefs and behavior	75
Calculation of S	76
Special case by hand	77
Why not Ramsey?	79
Direction of minimization: caution	80
Equilibrium computation	80
Messages	81
Equilibrium with misspecified beliefs	81
An erroneous forecasting function	82
Approaching Ramsey	84
Grounds for optimism	86

x	Contents	
8.	. Adaptive Expectations (1990's)	87
	Least squares adaptation	87
	Primer on recursive algorithms	88
	Iteration	89
	Stochastic approximations	90
	Mean dynamics	90
	Constant gain	91
	Escape routes	92
	Simplification of action functional	93
	From computation to adaptation	94
	Adaptation with the classical identification	95
	The government's beliefs and behavior	95
	RLS and the Kalman filter	96
	Private sector beliefs	97
	System evolution	98
	Mean dynamics	98
	Stochastic approximation	99
	Adaptation with Keynesian identification	101
	Government beliefs and behavior	101
	Technical details	102
	Simulations	102
	Classical adaptive simulations	103
	Relation to equilibria under forecast misspecification	110
	Simulation with Keynesian adaptation	111
	Role of discount factor	114
	Conclusions	114
	Appendix A: RLS and the Kalman filter	115
	The Kalman filter	115
	Recursive least squares	116
	Matching RLS to the Kalman filter	117
	Initial conditions for simulations	118
	Appendix B: Anticipated utility	119
	Boiler plate recursive rational expectations model	119
	1 1	

Contents	xi
9. ECONOMETRIC POLICY EVALUATION	122
Introduction	122
Likelihood function	122
Estimates	124
Interpretation	127
Appendix on likelihood function	128
10. TRIUMPH OR VINDICATION?	130
Expectations and the Lucas critique	130
Reservations	133
GLOSSARY	135
References	137
AUTHOR INDEX	145
Subject Index	147

7