

# Contents

<i>List of Illustrations</i>	<i>page</i>	ix
<i>List of Tables</i>		xv
<i>Notes on Contributors</i>		xviii
<b>Introduction</b>		1
<b>Part One Theory</b>		9
<b>1 Industrial Structure and the Macroeconomy: A Few Premises for a Macromodel</b>		11
1.1 Introduction		11
1.2 Why a New Theoretical Approach		12
1.2.1 Microfoundation		14
1.2.2 Market Structure		19
1.2.3 Expectations and Implications for the Simulations		23
<b>2 Industrial Structure and the Macroeconomy: The Macroeconomic Model and Its Algebraic Framework</b>		26
2.1 Introduction		26
2.2 The Algebraic Derivation of the Aggregate Demand		28
2.3 The Firms		39
2.4 The Incentive Compatible Wage, the Probability of Entry and Exit and the Employment Level		48
2.5 A Digression on the Link Between the Labor Market Equilibrium, the Firm's Output and the Entry Decision		55
2.6 Interpreting the Nature of the Equilibrium in the Oligopolistic Market		63
2.7 A Few Equations Summarizing the Model for the Agent-Based Simulations		67
2.8 Concluding Remarks		68
2.9 Technical Specifications – Entry and Output Determination: The Existence of a Cournot-Nash Equilibrium		70

Part Two	Model	75
3	A Computable Market Model: The Structure of the Agent-Based Simulation	77
3.1	A Scheme to Start	77
3.1.1	SLAPP – Swarm-Like Agent Protocol in Python	78
3.1.2	The Structure of the Simulation Model	79
3.1.3	What Is a Cycle and What Are Sub-Steps?	84
3.1.4	Item 1: Reset Action	84
3.2	Item 2: <i>makeProductionPlan</i> or <i>adaptProductionPlan</i>	84
3.2.1	<i>makeProductionPlan</i>	84
3.2.2	<i>adaptProductionPlan</i>	85
3.3	Item 3: <i>hireFireWithProduction</i>	87
3.4	Item 4: <i>produce</i>	87
3.4.1	Item 4, Continuation: <i>workTroubles</i>	88
3.5	Item 5: <i>planConsumptionInValue</i>	88
3.6	Item 6: <i>setInitialPricesHM</i>	89
3.7	Item 7: <i>actOnMarketPlace</i>	92
3.8	Item 8: <i>setMarketPrice</i>	96
3.9	Item 9: <i>evaluateProfit</i>	97
3.10	Item 10: <i>nextSellPriceJumpFHM</i> and <i>nextSellPricesQHM</i>	98
3.10.1	Item 10–full: <i>nextSellPriceJumpFHM</i>	98
3.10.2	Item 10–quasi: <i>nextSellPricesQHM</i>	99
3.11	Item 11: <i>toEntrepreneur</i> and <i>toWorker</i>	102
3.11.1	Item 11: <i>toEntrepreneur</i>	102
3.11.2	Item 11: <i>toWorker</i>	102
3.12	Item 12: <i>On wages: fullEmploymentEffect</i> and <i>incumbentAction</i>	103
3.12.1	Item 12: <i>fullEmploymentEffectOnWages</i>	103
3.12.2	Item 12: <i>incumbentActionOnWages</i>	103
4	The Results of the Simulation Agent-Based Model, in SMAC and ASHAM Modes	106
4.1	Initial Results, Cases 0a (g in Figure 4.17) and 0b (b in Figure 4.17)	106
4.2	Synopsis of SMAC Experiments, from Atomistic to Oligopolistic Markets	112

4.2.1	Case 1 ( <i>a</i> in Figure 4.17): 100 Entrepreneurs and 100,000 Workers	112
4.2.2	Case 2 ( <i>b</i> in Figure 4.17): 1,000 Entrepreneurs and 100,000 Workers	115
4.2.3	Case 3 ( <i>c</i> in Figure 4.17): 10 Entrepreneurs and 100,000 Workers	117
4.2.4	Case 4 ( <i>d</i> in Figure 4.17): 20 Entrepreneurs and 100,000 workers	120
4.2.5	Case 5 ( <i>e</i> in Figure 4.17): 50 Entrepreneurs and 100,000 Workers	123
4.2.6	Case 6 ( <i>f</i> in Figure 4.17): 50 entrepreneurs and 10,000 workers	125
4.2.7	Summarizing Countercyclical Markup Presence in Cases 0a to 6	127
4.2.8	Synopsis of Cases from 0a to 6, in the SMAC Economy	127
4.3	A Qualitative Analysis of ASHAM Experiments	136
4.4	<i>Full</i> ASHAM	138
4.4.1	Case 7: 10 Entrepreneurs and 10,000 Workers, in a <i>Stable</i> Economy, with an <i>Increasing Number of Firms</i>	138
4.4.2	Case 8: 10 Entrepreneurs and 10,000 Workers, in a <i>Stable</i> Economy, with <i>Firm</i> <i>Dynamic</i>	144
4.5	<i>Quasi</i> ASHAM, with the <i>Unsold</i> Option	147
4.5.1	Case 9: 10 Entrepreneurs and 10,000 Workers, in a <i>Nearly Stable</i> Economy, with a <i>Final Tight Oligopolistic Structure</i>	147
4.6	<i>Quasi</i> ASHAM, with the <i>randomUp</i> Option	153
4.6.1	Case 10: 10 Entrepreneurs and 10,000 Workers, in a <i>Stable</i> Economy, with <i>Information Shocks</i> and a <i>Stable</i> <i>Oligopolistic Structure</i>	154
4.7	<i>Quasi</i> ASHAM, with the <i>Profit</i> Option	158
4.7.1	Case 11: 10 Entrepreneurs and 10,000 Workers, in a <i>Stable</i> Economy, with a <i>Stable Oligopolistic Market</i>	159
4.8	Synopsis of Cases from 7 to 11, in the ASHAM Economy	163

4.9	Random Values On and Off, a Test in the ASHAM Environment	163
5	The Model Facing Empirical Data	168
	Conclusions	176
	Appendices	179
<i>Appendix A</i> The Structure of an Atomistic Simplified Hayekian Market		181
A.1	The Structure of the Model and the <i>Warming Up</i> Phase	181
A.2	The Atomistic Hayekian Version	182
A.3	The Unstructured Version	185
A.4	Two Triple Cases of Not Balancing Numbers of Buyers and Sellers	185
A.4.1	Case $nBuyers \gg nSellers$	185
A.4.2	Case $nBuyers \ll nSellers$	192
A.5	Activating Idle Agents	196
A.5.1	Corrupting the Simplified Hayekian Market Model	196
A.5.2	A Fundamental Unexpected By-Product	200
<i>Appendix B</i> The Acrostics of the Simulation Model and Its Parameters		203
<i>Appendix C</i> How to Run the Oligopoly Model with SLAPP		210
C.1	Time Management	213
C.1.1	The <i>Schedule.xls</i> Formalism	214
C.1.2	The <i>observerActions</i> and <i>modelActions</i> as High Level Schedule Formalisms	217
C.2	Running a Specific Experiment, with Backward Compatibility	218
C.3	Running the Code Directly Online	220
	<i>References</i>	221
	<i>Author Index</i>	227
	<i>Subject Index</i>	228