

COST STRUCTURE AND THE MEASUREMENT OF ECONOMIC PERFORMANCE

Productivity, Utilization, Cost Economics,
and Related Performance Indicators

by

Catherine J. Morrison Paul
University of California at Davis



Kluwer Academic Publishers
Boston/ Dordrecht/ London

Contents

<i>Preface</i>	xi
INTRODUCTION TO THE CONCEPTUAL FRAMEWORK	1
1. What do "Economic Performance" and "Productivity" Mean?	2
2. Productivity Growth Components	5
3. Technical Change	8
4. The Cost Structure	12
5. Market and Regulatory Structure	17
6. Basics of Productivity Measurement	21
TRADITIONAL PRODUCTIVITY GROWTH MEASUREMENT	25
1. Single-Factor Productivity Measures	26
2. Multifactor Productivity Measures	31
3. Growth Accounting	36
4. Technical Change and Productivity	41
5. Primal and Dual Measures	43
6. Technical Change Determinants	46
7. Technical Change Biases	51
8. Further Remarks	55
THE SHORT RUN, CAPITAL, AND CAPACITY UTILIZATION	57
1. Short Run Fixities and CU	58
2. A Primal Economic CU Representation	63
3. A Dual CU Measure	69
4. Fixity, Adjustment Costs, and Dynamics	76
5. Capital Composition and Services	79
6. Further Remarks	86

SHORT AND LONG RUN SCALE AND OTHER COST ECONOMIES	89
1. Components of the Cost-Output Relationship	90
2. Cost Economies vs. Technical Change	94
3. Scale Biases	102
4. Cost Economies More Generally	106
4.1 multiple outputs	
4.2 multiple fixed inputs and "imperfect" input markets	
4.3 overall cost economies	
5. Further Remarks	114
INTERNAL AND EXTERNAL COST ECONOMIES, AND GROWTH	117
1. A Model with External Effects	119
2. Returns to Public Capital	123
3. "Knowledge Capital" and Spillovers	128
4. Utilization and Scale Interactions	134
5. Micro foundations and Macro Models	139
6. Further Comments	145
MARKET STRUCTURE AND ECONOMIC PERFORMANCE	147
1. Market Power Modeling	149
2. Market Power and Economic Performance Measures	156
3. Input Market Power: Monopsony	161
3.1 a parametric model	
3.2 a nonparametric model	
4. Market Power Measures and Welfare	169
5. Further Comments	173
REGULATORY STRUCTURE AND COSTS	175
1. Capital Regulations and Costs	177
2. Restrictions on Input Use: Pesticides	182
2.1 the literature	
2.2 an alternative perspective	
3. Lack of Markets: "Bad" Outputs	196
4. Regulation and Market Power	201
5. Further Comments	206
TECHNICAL EFFICIENCY	209
1. Frontier Modeling	211
2. Empirical Specification	219
3. Dual Models	228
4. Productivity and Efficiency	234
5. Further Comments	238

UNDERLYING THEORY AND IMPLEMENTATION ISSUES	241
1. The Basic Production Theory Model	242
2. Production and Cost Structure	247
3. Profit Maximization	253
4. Dynamic Adjustment	255
5. Distance and Revenue Functions	259
6. Measures Representing Firm Behavior	263
7. Further Comments	268
DATA CONSTRUCTION FOR ESTIMATION AND MEASUREMENT	269
1. Non-Capital Output and Input Data	270
1.1 output production	
1.2 labor	
1.3 materials inputs	
1.4 R&D	
1.5 service industries	
2. Capital Data Construction	281
3. Aggregation Issues	289
4. Further Comments	299
ISSUES OF ECONOMETRIC IMPLEMENTATION	301
1. Empirical Specification	303
2. Functions for Empirical Analysis	310
3. Functional Forms	313
4. Some Econometric Issues	319
4.1 systems of equations	
4.2 instrumental variables estimation	
4.3 time-series/cross-section data	
5. Further Comments	330
PULLING IT TOGETHER	331
<i>References</i>	337
<i>Index</i>	359