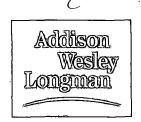
USING FOURTH EDITION ECONOMETRICS A PRACTICAL GUIDE

ŢÌ

A. H. Studenmund
Occidental College



Boston San Francisco New York
London Toronto Syndey Tokyo Singapore Madrid
Mexico City Munich Paris Cape Town Hong Kong Montreal

CONTENTS

Preface, xi

| PART I | THE BASIC REGRESSION MODEL 1 |
|-----------|---|
| Chapter 1 | An Overview of Regression Analysis 3 |
| 1.1 | What Is Econometrics? 3 |
| 1.2 | What Is Regression Analysis? 7 |
| 1.3 | The Estimated Regression Equation 16 |
| 1.4 | A Simple Example of Regression Analysis 19 |
| 1.5 | Using Regression to Explain Housing Prices 22 |
| 1.6 | Summary and Exercises 25 |
| Chapter 2 | Ordinary Least Squares 34 |
| 2.1 | Estimating Single-Independent-Variable Models with OLS 34 |
| 2.2 | Estimating Multivariate Regression Models with OLS 41 |
| 2.3 | Evaluating the Quality of a Regression Equation 47 |
| 2.4 | Describing the Overall Fit of the Estimated Model 48 |
| 2.5 | An Example of the Misuse of \bar{R}^2 53 |
| 2.6 | Summary and Exercises 56 |
| Chapter 3 | Learning to Use Regression Analysis 63 |
| 3.1 | Steps in Applied Regression Analysis 63 |
| 3.2 | Using Regression Analysis to Pick Restaurant Locations 72 |
| 3.3 | Summary and Exercises 78 |
| Chapter 4 | The Classical Model 84 |
| 4.1 | The Classical Assumptions 84 |
| 4.2 | The Normal Distribution of the Error Term 92 |
| 4.3 | The Sampling Distribution of $\hat{\beta}$ 95 |
| 4.4 | The Gauss-Markov Theorem and the Properties of OLS |
| | Estimators 103 |
| 4.5 | Standard Econometric Notation 104 |
| 4.6 | Summary and Exercises 106 |
| | |

| Chapter 5 | Hypothesis Testing 112 |
|-----------|---|
| 5.1 | What Is Hypothesis Testing? 113 |
| 5.2 | The <i>t</i> -Test 120 |
| 5.3 | Examples of <i>t</i> -Tests 128 |
| 5.4 | Limitations of the <i>t</i> -Test 139 |
| 5.5 | The F-Test of Overall Significance 142 |
| 5.6 | Summary and Exercises 145 |
| PART II | VIOLATIONS OF THE CLASSICAL ASSUMPTIONS 155 |
| Chapter 6 | Specification: Choosing the Independent Variables 156 |
| 6.1 | Omitted Variables 157 |
| 6.2 | Irrelevant Variables 165 |
| 6.3 | An Illustration of the Misuse of Specification Criteria 168 |
| . 6.4 | Specification Searches 170 |
| 6.5 | Lagged Independent Variables 176 |
| 6.6 | An Example of Choosing Independent Variables 178 |
| 6.7 | Summary and Exercises 181 |
| 6.8 | Appendix: Additional Specification Criteria 192 |
| Chapter 7 | Specification: Choosing a Functional Form 198 |
| 7.1 | The Use and Interpretation of the Constant Term 199 |
| 7.2 | Alternative Functional Forms 201 |
| 7.3 | Problems with Incorrect Functional Forms 213 |
| 7.4 | Using Dummy Variables 216 |
| 7.5 | Slope Dummy Variables 220 |
| 7.6 | Summary and Exercises 224 |
| 7.7 | Appendix: More Uses for the <i>F</i> -Test 237 |
| Chapter 8 | Multicollinearity 243 |
| 8.1 | Perfect versus Imperfect Multicollinearity 244 |
| . 8.2 | The Consequences of Multicollinearity 248 |
| 8.3 | The Detection of Multicollinearity 255 |
| 8.4 | Remedies for Multicollinearity 258 |
| 8.5 | Choosing the Proper Remedy 264 |
| 8.6 | Summary and Exercises 271 |

8.7 Appendix: The SAT Interactive Regression Learning Exercise 281

| 9.2 | The Consequences of Serial Correlation 318 |
|------------|--|
| 9.3 | The Durbin–Watson <i>d</i> Test 324 |
| 9.4 | Generalized Least Squares 329 |
| 9.5 | Summary and Exercises 33'5 |
| Chapter 10 | Heteroskedasticity 345 |
| . 10.1 | Pure versus Impure Heteroskedasticity 346- |
| 10.2 | The Consequences of Heteroskedasticity 352 |
| 10.3 | Testing for Heteroskedasticity 355 |
| 10.4 | Remedies for Heteroskedasticity 362 |
| 10.5 | A More Complete Example 369 |
| 10.6 | Summary and Exercises 375 |
| Chapter 11 | A Regression User's Handbook 389 |
| 11.1 | A Regression User's Checklist 390 |
| 11.2 | A Regression User's Guide 393 |
| 11.3 | Running Your Own Regression Project 393 |
| 11.4 | Economic Data 397 |
| 11.5 | The Ethical Econometrician 401 |
| 11.6 | Summary 403 . |
| 11.7 | Appendix: The Housing Price Interactive Exercise 403 |
| PART III | EXTENSIONS OF THE BASIC REGRESSION MODEL 409 |
| | MODEL 405 |
| Chapter 12 | Time-Series Models 410 |
| 12.1 | Koyck Distributed Lag Models 411 |
| 12.2 | Serial Correlation and Koyck Distributed Lags 417 |
| 12.3 | Granger Causality 422 |
| 12.4 | Spurious Correlation and Nonstationarity 424 |
| 12.5 | Summary and Exercises 428 |
| Chapter 13 | Dummy Dependent Variable Techniques 434 |
| 13.1 | The Linear Probability Model 434 |
| 13.2 | The Binomial Logit Model 442 |
| 13.3 | |
| 13 / | Summary and Evercises 452 |

Chapter 9 Serial Correlation 310

9.1 Pure versus Impure Serial Correlation 310

х

Appendix B Statistical Tables 605

Index 620