

TABLE OF CONTENTS

LIST OF TABLES	IX
LIST OF FIGURES	XI
FOREWORD BY ZOLTAN J. ACS	XIII
PREFACE	XV
1 INTRODUCTION.....	1
2 UNIVERSITIES AND THE LOCAL HIGH TECHNOLOGY INDUSTRY: WHAT DO WE ALREADY KNOW?.....	7
2.1. INTRODUCTION	7
2.2. UNIVERSITY KNOWLEDGE EFFECTS ON THE REGIONAL ECONOMY.....	8
2.2.1. <i>Technology transfer</i>	8
2.2.2. <i>University knowledge effect on the regional economy: the experience of the well known high technology concentrations.</i>	10
2.3. UNIVERSITY EFFECT ON THE LOCATION CHOICE OF HIGH TECHNOLOGY COMPANIES	12
2.3.1. <i>Factors affecting high technology location</i>	12
2.3.2. <i>Universities and the choice of high technology location: case studies, surveys, and descriptive works on existing high technology centers.</i>	13
2.4. UNIVERSITIES AND THE SPATIAL DISTRIBUTION OF HIGH TECHNOLOGY PRODUCTION: ECONOMETRIC STUDIES	14
2.5. UNIVERSITY RESEARCH AND THE SPATIAL DISTRIBUTION OF INDUSTRIAL RESEARCH AND DEVELOPMENT	20
2.6. MODELS OF TECHNOLOGY TRANSFER: PATENTS, INNOVATIONS, AND KNOWLEDGE PRODUCTION	22
2.7. SUMMARY.....	24
3 SPATIAL DATA ANALYSIS.....	27
3.1. INTRODUCTION	27
3.2. SPACE AND DATA ANALYSIS	27
3.2.1. <i>The nature of spatial data</i>	28
3.2.2. <i>Modeling space</i>	29
3.2.3. <i>Spatial stochastic processes</i>	30
3.2.4. <i>Unsolved methodological problems</i>	31
3.3. EXPLORATORY SPATIAL DATA ANALYSIS.....	31
3.3.1. <i>Global measures of spatial association</i>	32
3.3.2. <i>Local measures of spatial association</i>	33
3.4. ESTIMATION AND HYPOTHESIS TESTING.....	35
3.4.1. <i>The spatial lag model</i>	35
3.4.2. <i>The spatial error model</i>	36
3.4.3. <i>Specification diagnostic and spatial effects</i>	37

3.5. SUMMARY.....	40
4 UNIVERSITY RESEARCH AND THE SPATIAL DISTRIBUTION OF HIGH TECHNOLOGY INNOVATIONS AND PRIVATE RESEARCH.....	45
4.1. INTRODUCTION	45
4.2. THE INNOVATION, PRIVATE RESEARCH AND UNIVERSITY RESEARCH DATA....	46
4.3. THE SPATIAL DISTRIBUTION OF HIGH TECHNOLOGY INNOVATIONS	50
4.4. THE SPATIAL DISTRIBUTION OF HIGH TECHNOLOGY R&D ACTIVITIES	55
4.5. THE SPATIAL DISTRIBUTION OF HIGH TECHNOLOGY UNIVERSITY RESEARCH AND ITS RELATION TO INNOVATIONS AND INDUSTRIAL RESEARCH.....	58
4.6. SUMMARY.....	63
5 LOCAL KNOWLEDGE TRANSFERS: STATE LEVEL ANALYSIS.....	67
5.1. INTRODUCTION	67
5.2. STATE ANALYSIS AND LOCAL KNOWLEDGE TRANSFERS: SUMMARY OF EARLIER FINDINGS.....	68
5.3. ALTERNATIVE INDICATORS OF LOCAL UNIVERSITY KNOWLEDGE TRANSFERS	72
5.4. EMPIRICAL RESULT	74
5.5. SUMMARY.....	78
6 THE SPATIAL EXTENT OF UNIVERSITY EFFECTS: MSA LEVEL ANALYSIS	81
6.1. INTRODUCTION	81
6.2. THE MODEL.....	82
6.2. ESTIMATION ISSUES	89
6.3. EMPIRICAL RESULTS	90
6.4. SUMMARY.....	97
7 FACTORS GOVERNING UNIVERSITY EFFECTS.....	101
7.1. INTRODUCTION	101
7.2. THE EMPIRICAL MODEL.....	102
7.3. REGRESSION RESULTS.....	105
7.4. SPATIAL VARIATION IN THE INTENSITY OF UNIVERSITY KNOWLEDGE TRANSFERS	107
7.5. THE “CRITICAL MASS” OF AGGLOMERATION	112
7.6. SUMMARY.....	119
8 SUMMARY AND CONCLUSIONS.....	121
APPENDIX A: DEFINING HIGH TECHNOLOGY FOR THE EMPIRICAL STUDY	127
APPENDIX B: VARIABLE DEFINITIONS AND SOURCES	131
REFERENCES	135
INDEX	149