

Markus Frolich

Programme Evaluation and Treatment Choice



Springer

Table of Contents

Introduction	1
Programme Evaluation and Treatment Choice - An Overview	7
2.1 Introduction in Programme Evaluation	7
2.1.1 Potential Outcomes	7
2.1.2 Stable-Unit-Treatment-Value Assumption	8
2.1.3 Average Treatment Effects and Selection Bias	10
2.1.4 Identification of Average Treatment Effects	12
2.1.5 Estimation of Mean Counterfactual Outcomes	29
2.2 Optimal Treatment Choice	43
2.2.1 Definition of Optimal Treatment	44
2.2.2 Profiling and Targeting of Programmes in Practice	47
2.2.3 Estimating the Optimal Treatment	49
2.3 Nonparametric Regression	50
2.3.1 Nearest Neighbours and Local Polynomial Regression	51
2.3.2 Properties of Local Polynomial Regression	54
Nonparametric Covariate Adjustment in Finite Samples	61
3.1 Potential Efficiency Gains of Local Polynomial Matching	62
3.1.1 Simulation Results at the Optimal Bandwidth Value	64
3.1.2 Sensitivity to the Bandwidth Value	67
3.2 Approximation to the MSE and Bandwidth Choice	69
3.2.1 Bandwidth Choice	69
3.2.2 MSE Approximation of Local Polynomial Matching	70
3.2.3 Approximation Accuracy in Finite Samples	72
3.3 Data-driven Bandwidth Choice by Cross-Validation	74
3.4 Matching with Unknown Propensity Score	76
Semiparametric Estimation of Optimal Treatment Choices	81
4.1 Estimation of Conditional Expected Potential Outcomes	81
4.1.1 Semiparametric GMM Estimator	86
4.1.2 Monte Carlo Simulation	87
4.2 Optimal Choice and Swedish Rehabilitation Programmes	94
Conclusions	103

A	Appendix	107
B	Appendix	111
C	Appendix	115
	C.1 MSE-Approximation for Local Polynomial Matching	115
	C.2 Additional Tables to Chapter 3	120
D	Appendix	135
	D.1 Simulated Mean Squared Error for Sample Size 40	135
	D.2 Simulated Mean Squared Error for Sample Size 200	139
	D.3 Simulated Mean Squared Error for Sample Size 1000	143
	D.4 MSE Approximation: Kernel Matching, Sample Size 200	147
	D.5 MSE Approximation: Kernel Matching, Sample Size 1000	151
	D.6 MSE Approximation: Local Linear, Sample Size 200	155
	D.7 MSE Approximation: Local Linear, Sample Size 1000	159
E	Appendix	163
	E.1 Asymptotic Properties of the GMM Estimator	163
	E.2 Power of the J-tests - Additional Monte Carlo Results	175
	E.3 Additional Tables to Swedish Rehabilitation Programmes	176
	References	185