CONTENTS

	Foreword	X
	Acknowledgments	X
	Contributors	xvi
	Abbreviations and Acronyms	xix
1	Lessons from Empirical Research on International Technology Diffusion through Trade and Foreign Direct Investment Bernard Hoekman and Beata Smarzynska Javorcik	1
Part i	LITERATURE SURVEYS	
2	Econometric versus Case Study Approaches to Technology Transfer Howard Pack	25
3	Foreign Direct Investment, Linkages, and Technology Spillovers Kamal Saggi	5 1
4	Plant- and Firm-Level Evidence on "New" Trade Theories James R. Tybout	67
Part II	FOREIGN TRADE AND PRODUCTIVITY	
5	On the Quantity and Quality of Knowledge: The Impact of Openness and Foreign R&D on North-North and North-South Technology Spillovers Maurice Schiff and Yanling Wang	99

6	The Knowledge Content of Machines: North-South Trade and Technology Diffusion Giorgio Barba Navaretti, Maurice Schiff, and Isidro Soloaga	113
7	Exports and Economic Performance: Evidence from a Panel of Chinese Enterprises Aart Kraay	139
Part III	FOREIGN DIRECT INVESTMENT, TECHNOLOGY TRANSFER, AND PRODUCTIVITY	
8	Foreign Investment and Productivity Growth in Czech Enterprises Simeon Djankov and Bernard Hoekman	161
9	Technological Leadership and the Choice of Entry Mode by Foreign Investors Beata Smarzynska Javorcik	179
10	Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages Beata Smarzynska Javorcik	207
11	Product Quality, Productive Efficiency, and International Technology Diffusion: Evidence from Plant-Level Panel Data Aart Kraay, Isidro Soloaga, and James R. Tybout	241
12	Market Discipline and Corporate Efficiency: Evidence from Bulgaria Simeon Djankov and Bernard Hoekman	281
13	Innovation in Mexico: NAFTA Is Not Enough Daniel Lederman and William F. Maloney	305
	Index	339
Figure:	5	
1.1	Perceived Effects of FDI in the Czech Republic and Latvia	11
6.1	Average Unit Values in Select Countries, 1989–97	121
6D.1	Persistency of the Technology Gap with One-Year Lag	133
6D.2	Persistency of the Technology Gap with Two-Year Lag	134
6D.3 8.1	Persistency of the Technology Gap with Seven-Year Lag Labor Productivity of Czech Firms with and without	134
~	Foreign Partners, 1991	167

Contents	vii

8.2	Total Factor Productivity Growth in Czech Firms	
	with and without Foreign Partners, 1992–96	168
8.3	Training and New Technology in Czech Firms	
	with and without Foreign Partners	168
9.1	R&D Intensity and Probability of a Joint Venture: Case 1	184
9.2	R&D Intensity and Probability of a Joint Venture: Case 2	184
9.3	R&D Intensity and Probability of a Joint Venture: Case 3	185
10.1	Net FDI Inflows to Lithuania, 1993–2000	213
10.2	Change in Horizontal Measure, 1996–2000	220
10.3	Change in Backward Measure, 1996–2000	220
10.4	Change in Forward Variable, 1996-2000	221
13.1	Growth Rates of Total Factor Productivity	
	in Selected Countries and Regions, 1960–99	307
13.2	Patents per Million Workers in Selected	
	Regions, 1960-2000	308
13.3	Number of Scientific Publications and Patents in Mexico	
	Relative to Comparative Countries, 1960-2000	310
13.4	Ratio of R&D to GDP in Selected Countries	315
13.5	Innovation Inputs in Mexico	316
13.6	Efficiency of Research and Development	
	in Selected Countries, 1985–2000	322
13.7	IRCA Index in Selected Industries	
	and Countries, 1980-2000	323
13.8	Private Sector Perceptions of Quality of Scientific	
	Institutions and University-Private Sector	
	Collaboration, Selected Countries, 1994–2001	328
Table		
2.1	Technological Capabilities in Manufacturing Industry	36
5.1	Determinants of Total Factor Productivity	
	in OECD Countries	104
5.2	Determinants of Total Factory Productivity	
	in Developing Countries	108
6.1	Determinants of Total Factor Productivity	125
6.2	Choice of Technology	126
6A.1	Matching between Machines and Products	128
6C.1	Description and Source of Data for Variables	131
6C.2	Descriptive Statistics	132
7.1	Summary Statistics for Enterprise Sample	141
7.2	Distribution of Sample by Ownership and Sector, 1990	142
7.3	Summary Statistics on Exporters, 1988-92	143
7.4	Summary Statistics on Exporters by Ownership	
	and Sector, 1990	144

viii Contents

7.5	Size of Exporters and Nonexporters, 1988–92	145
7.6	Persistence and Volatility of Export Status	145
7.7	Performance of Exporters and Nonexporters	147
7.8	Basic Model Results	150
7.9	Export Histories	152
7.10	Basic Model Controlling for Export Histories	153
8.1	Descriptive Statistics of the Sample	166
8.2	Revenue Shares of Inputs, Mark-Up, and Scale	
	Estimates by Sector	171
8.3	Panel Regression Estimates	172
8.4	Spillover Effects on Firms without Foreign Linkages	173
8.5	Spillover Effects on Firms without FDI	174
9.1	Entry Modes Chosen by Investors in the Sample, by Country	188
9.2	Entry Modes Chosen by Investors in the Sample, by Industry	189
9.3	Probit Model with Firm- and Industry-Level	
	R&D and Advertising Intensities	192
9.4	Classification of Industries by Technology Level	193
9.5	R&D Intensity of FDI Projects in Three-Digit SIC Industries	194
9.6	Probit Model with Relative R&D and Advertising Intensities	197
9.7	Bivariate Probit with Sample Selection	199
9.8	Marginal Effects of Bivariate Probit with Sample	
	Selection: Entry Mode Equation	200
10.1	FDI Inflows to Central and Eastern European	
	Countries, 1993–2000	214
10.2	Distribution of Firms with Foreign Capital,	
	by Industry, 2000	215
10.3	Summary Statistics	219
10.4	Additional Summary Statistics for Spillover Variables	219
10.5	OLS with Lagged and Contemporaneous	
	Spillover Variables	222
10.6	Comparison of Coefficients from OLS	
	and Olley-Pakes Regressions	226
10.7	Results of OLS and Olley-Pakes Regressions in First,	
	Second, and Fourth Differences	228
10.8	Share of Foreign Ownership and Productivity Spillovers	231
10.9	Concentration of Downstream Sectors	
	and Productivity Spillovers	233
11A.1	Colombian Chemical Industries: Dynamic Model	260
11A.2	Moroccan Chemical Industries: Dynamic Model	262
11A.3	Mexican Chemical Industries: Dynamic Model	264
11A.4	Colombian Chemical Industries: Static Model	266
11A.5	Moroccan Chemical Industries: Static Model	268
11A.6	Mexican Chemical Industries: Static Model	270

11B.1	Activity Dynamics in the Colombian Chemicals	
	Industry: Descriptive Evidence	272
11B.2	Activity Dynamics in the Moroccan Chemicals	
	Industry: Descriptive Evidence	273
11B.3	Activity Dynamics in the Colombian Chemicals	
	Industry: Econometric Results	274
11B.4	Activity Dynamics in the Moroccan Chemicals	
	Industry: Econometric Results	276
12.1	Performance Statistics, 1991–96	286
12.2	Descriptive Statistics	288
12.3	Pearson Correlation Table	296
12.4	Estimation Results	297
12.5	Estimation Results: Random-Effects Model	300
13.1	Determinants of Patent Counts	320
13.2	Structure of R&D Effort in Selected	
	Countries, 1995-2000	327

Contents

ix