

Contents

Contributors	xv
Preface	xvii
1 Introduction and outline	1
<i>James Raymer and Frans Willekens</i>	
1.1 Introduction	1
1.2 Outline	4
1.2.1 Definitions	4
1.2.2 Frequentist and Bayesian approaches	5
1.2.3 Structure of the book	5
References	7
Part I Data Issues	9
2 Counting foreign-born and expatriates in OECD countries: a new perspective	11
<i>Jean-Christophe Dumont and Georges Lemaître</i>	
2.1 Introduction	11
2.2 A new database on immigrant populations	14
2.3 Immigrant populations in OECD countries	15
2.3.1 The foreign and foreign-born populations	15
2.3.2 The geographic origin of immigrants	18
2.3.3 The educational attainment of immigrant populations	21
2.4 Expatriates of OECD member countries residing in other member countries	23
2.4.1 The extent of expatriation in OECD countries	23
2.4.2 The educational attainment of expatriates	29

2.5	Highly skilled expatriates from non-member countries in OECD countries	34
2.5.1	Introduction	34
2.5.2	Results	35
2.6	Summary and conclusions	38
	Acknowledgements	39
	References	39
3	Comparability of statistics on international migration flows in the European Union	41
	<i>Dorota Kupiszewska and Beata Nowok</i>	
3.1	Introduction	41
3.2	Empirical observations	42
3.2.1	Double entry matrices	42
3.2.2	Evolution of migration flows over time	48
3.3	Data sources and definitions	53
3.3.1	Primary data sources	54
3.3.2	Definitions	57
3.4	Secondary data sources and data availability	62
3.5	Conclusions	68
	Acknowledgements	69
	References	70
4	Evolution of international migration statistics in selected Central European countries	73
	<i>Beata Nowok</i>	
4.1	Introduction	73
4.2	Data sources and availability of statistics on international migration flows	74
4.3	Definition of international migration in official flow statistics	76
4.4	Trends in international migration flows	80
4.5	Impact of migration definition on recorded volume of international migration flows	82
4.6	Conclusions	86
	Acknowledgements	87
	References	87
5	Foreign migrants in Southern European countries: evaluation of recent data	89
	<i>Alessio Cangiano</i>	
5.1	Introduction	89
5.2	Overview of statistical sources	90
5.2.1	Italy	90
5.2.2	Spain	92

5.2.3	Portugal	93
5.2.4	Greece	94
5.3	The evolution of foreign populations	95
5.3.1	Italy	95
5.3.2	Spain	97
5.3.3	Portugal	98
5.3.4	Greece	100
5.4	Regularisation programmes	103
5.5	Estimates of irregular migrants in Italy, Spain and Greece	106
5.5.1	Italy	107
5.5.2	Spain	108
5.5.3	Greece	110
5.6	Final remarks	112
	References	112

Part II Models 115

6 Models of migration: observations and judgements 117

Frans Willekens

6.1	Introduction	117
6.2	Data types and data structure	119
6.3	Probability models: generalities	123
6.4	Probability models of migration	126
6.4.1	State probabilities	127
6.4.2	Transition probabilities	128
6.4.3	Transition rates	129
6.4.4	From transition probabilities to transition rates	136
6.5	Incomplete data	137
6.5.1	Adding statistical data	137
6.5.2	Adding judgemental data	141
6.6	Conclusion	142
	References	143

7 Bayesian estimation of migration flows 149

Matthew J. Brierley, Jonathan J. Forster, John W. McDonald and Peter W. F. Smith

7.1	Introduction	149
7.1.1	Using log-linear models to explain migration flows	150
7.1.2	Quasi-independence	150
7.1.3	A brief overview of Raymer's approach	151
7.2	A modelling framework	152
7.2.1	The initial model	153
7.2.2	The model	154
7.2.3	Markov chain Monte Carlo techniques	154

7.2.4	The updating equations	155
7.2.5	Generating the proposals	156
7.3	Results of the initial simulation	157
7.4	Adding noise to the observations	159
7.4.1	Generating observations with $\sigma = 0.03$	159
7.4.2	The priors for σ^2 and τ^2	161
7.5	Introducing a contiguity parameter	163
7.5.1	Introducing some noise into the reported values	163
7.5.2	Where some of the y_{ij} are assumed known	165
7.6	Northern European migration	165
7.6.1	Overview of Raymer's estimation strategy	166
7.6.2	Using the reported immigration data to generate estimates from the Bayesian model	167
7.6.3	Assumptions about the error of the reported values	170
7.6.4	Altering the Lithuanian margins	171
7.6.5	Assessing the model performance	172
7.7	Conclusion	173
	References	174
8	Applying model migration schedules to represent age-specific migration flows	175
	<i>James Raymer and Andrei Rogers</i>	
8.1	Introduction	175
8.2	Conceptual framework: regularities in the age patterns of migration	177
8.2.1	Explaining the regularities	177
8.2.2	Describing the regularities: interstate migration in the US West, 1985–1990	179
8.3	Fitting multi-exponential model schedules to age patterns of migration	181
8.4	Modelling families of age-specific migration	183
8.5	Discussion and conclusion	188
	Acknowledgements	190
	References	190
9	Models for migration age schedules: a Bayesian perspective with an application to flows between Scotland and England	193
	<i>Peter Congdon</i>	
9.1	Introduction	193
9.2	Parametric vs dynamic general linear model approaches	194
9.3	Pooling strength over different schedules	196
9.4	Case study: Scotland to England migration, 1990–1991	197
9.5	Multivariate (multiple schedule) model estimates	201
9.6	Discussion and conclusions	204
	References	204

Part III	Current Estimates	207
10	Obtaining an overall picture of population movement in the European Union	209
	<i>James Raymer</i>	
10.1	Introduction	209
10.2	Migration data	210
	10.2.1 Data typologies	210
	10.2.2 Missing and inadequate data	212
	10.2.3 The data collected for this study	212
10.3	Modelling approach	217
	10.3.1 Multiplicative component model	217
	10.3.2 Log-linear model	219
	10.3.3 Applying the multiplicative component and log-linear models to estimate international migration flows in Europe	220
10.4	Estimation	222
	10.4.1 Immigration and emigration totals	222
	10.4.2 International migration flows	225
	10.4.3 Age-specific flows	227
10.5	Conclusion	232
	Acknowledgements	232
	References	232
11	A simple method for inferring substitution and generation from gross flows: asylum seekers in Europe	235
	<i>Leo van Wissen and Roel Jennissen</i>	
11.1	Introduction	235
11.2	Asylum applications in European countries, 1985–2002	236
11.3	A method for measuring generation and substitution	237
11.4	Generation and substitution in twelve European countries	243
11.5	Substitution and asylum policies	246
11.6	Conclusions	249
	References	250
Part IV	Forecasting	253
12	Bayesian methods in international migration forecasting	255
	<i>Jakub Bijak</i>	
12.1	Introduction	255
12.2	Uncertainty and subjectivity in migration forecasting and in Bayesian statistics	256
	12.2.1 Uncertainty and subjectivity in migration forecasting	256
	12.2.2 Bayesian statistics: introductory notes	258

7.2.4	The updating equations	155
7.2.5	Generating the proposals	156
7.3	Results of the initial simulation	157
7.4	Adding noise to the observations	159
7.4.1	Generating observations with $\sigma = 0.03$	159
7.4.2	The priors for σ^2 and τ^2	161
7.5	Introducing a contiguity parameter	163
7.5.1	Introducing some noise into the reported values	163
7.5.2	Where some of the y_{ij} are assumed known	165
7.6	Northern European migration	165
7.6.1	Overview of Raymer's estimation strategy	166
7.6.2	Using the reported immigration data to generate estimates from the Bayesian model	167
7.6.3	Assumptions about the error of the reported values	170
7.6.4	Altering the Lithuanian margins	171
7.6.5	Assessing the model performance	172
7.7	Conclusion	173
	References	174
8	Applying model migration schedules to represent age-specific migration flows	175
	<i>James Raymer and Andrei Rogers</i>	
8.1	Introduction	175
8.2	Conceptual framework: regularities in the age patterns of migration	177
8.2.1	Explaining the regularities	177
8.2.2	Describing the regularities: interstate migration in the US West, 1985–1990	179
8.3	Fitting multi-exponential model schedules to age patterns of migration	181
8.4	Modelling families of age-specific migration	183
8.5	Discussion and conclusion	188
	Acknowledgements	190
	References	190
9	Models for migration age schedules: a Bayesian perspective with an application to flows between Scotland and England	193
	<i>Peter Congdon</i>	
9.1	Introduction	193
9.2	Parametric vs dynamic general linear model approaches	194
9.3	Pooling strength over different schedules	196
9.4	Case study: Scotland to England migration, 1990–1991	197
9.5	Multivariate (multiple schedule) model estimates	201
9.6	Discussion and conclusions	204
	References	204

Part III	Current Estimates	207
10	Obtaining an overall picture of population movement in the European Union	209
	<i>James Raymer</i>	
10.1	Introduction	209
10.2	Migration data	210
	10.2.1 Data typologies	210
	10.2.2 Missing and inadequate data	212
	10.2.3 The data collected for this study	212
10.3	Modelling approach	217
	10.3.1 Multiplicative component model	217
	10.3.2 Log-linear model	219
	10.3.3 Applying the multiplicative component and log-linear models to estimate international migration flows in Europe	220
10.4	Estimation	222
	10.4.1 Immigration and emigration totals	222
	10.4.2 International migration flows	225
	10.4.3 Age-specific flows	227
10.5	Conclusion	232
	Acknowledgements	232
	References	232
11	A simple method for inferring substitution and generation from gross flows: asylum seekers in Europe	235
	<i>Leo van Wissen and Roel Jennissen</i>	
11.1	Introduction	235
11.2	Asylum applications in European countries, 1985–2002	236
11.3	A method for measuring generation and substitution	237
11.4	Generation and substitution in twelve European countries	243
11.5	Substitution and asylum policies	246
11.6	Conclusions	249
	References	250
Part IV	Forecasting	253
12	Bayesian methods in international migration forecasting	255
	<i>Jakub Bijak</i>	
12.1	Introduction	255
12.2	Uncertainty and subjectivity in migration forecasting and in Bayesian statistics	256
	12.2.1 Uncertainty and subjectivity in migration forecasting	256
	12.2.2 Bayesian statistics: introductory notes	258

14.4	The international migration component in national and multinational population dynamics models	313
14.4.1	The incorporation of international migration into population dynamics models	314
14.4.2	Subnational allocation of international migrants	316
14.4.3	Issues concerning international migration data	317
14.5	MULTIPOLES: a model with a multilevel treatment of international migration	319
14.5.1	General description and comparison with earlier models	319
14.5.2	An outline of MULTIPOLES structure, data requirements and applications	320
14.6	Conclusion	321
	Acknowledgements	322
	References	322
15	What happens when international migrants settle? Projections of ethnic groups in United Kingdom regions	329
	<i>Philip Rees</i>	
15.1	Introduction	329
15.1.1	Migrant and ethnic classifications	329
15.1.2	Ethnic groups	330
15.1.3	The topic and its importance	330
15.1.4	Aims of the chapter	331
15.2	Issues and approaches to the projection of ethnic group populations	332
15.2.1	Trends in international migration	332
15.2.2	From international immigrants to settled UK residents	334
15.2.3	Population projection models: key features and choices	334
15.2.4	Critical issues for projecting ethnic group populations	337
15.3	A projection model for ethnic groups at region scale	338
15.3.1	Choices of projection models	338
15.3.2	The projection model	339
15.4	Estimation of projection inputs	340
15.4.1	Ethnic groups	340
15.4.2	Estimation of single-year ethnic group populations	340
15.4.3	Estimation of single-year survival probabilities	342
15.4.4	Estimation of age-specific fertility rates for ethnic groups	342
15.4.5	Migration variables	342
15.4.6	International migration datasets and trends	343
15.4.7	The 2001 Census of population: migration data for ethnic groups	344

15.4.8	Estimation of internal migration and immigration by ethnicity	344
15.5	Projection assumptions	345
15.6	Projection results, 2010 and 2020	347
15.6.1	How much is each group projected to change from 2001 to 2020?	347
15.6.2	How do these results vary across regions of the UK?	349
15.7	Comparisons, evaluations and adjustments	351
15.8	Lessons and further research	352
15.8.1	Areas where there is agreement	352
15.8.2	Areas where there is disagreement	354
15.8.3	Areas that need further study	354
	Acknowledgements and disclaimer	355
	References	355
16	Conclusion	359
	<i>Frans Willekens and James Raymer</i>	
16.1	Early concerns	359
16.2	More recent concerns	361
16.3	This book's contributions	365
	References	368
Index		371