

- Preface I
- Acknowledgments II
- Overview and executive summary XII

PART 1 Investing in R&D in Europe 1

- Chapter 1 Government Budget Appropriations or Outlays on R&D – GBAORD 2
 - 1.1. Introduction 2
 - 1.2. An international perspective: EU-15, Japan and the United States 3
 - Total GBAORD 3
 - GBAORD by socio-economic objective 4
 - 1.3. A European perspective: EU-15, Candidate Countries, Iceland and Norway 6
 - Total GBAORD 6
 - GBAORD by socio-economic objective 9
- Chapter 2 R&D expenditure 14
 - 2.1. Introduction 14
 - 2.2. R&D expenditure in the EU, ACC, Japan and the United States 16
 - 2.3. R&D expenditure at the national level 18
 - R&D intensity 18
 - R&D expenditure in volume 20
 - 2.4. R&D expenditure in the European regions 23
 - Regions with high R&D intensity and regional disparities 23
 - Regions with high R&D expenditure in volume and regional disparities 28

PART 2 Human resources in R&D in Europe 31

- Chapter 3 R&D personnel 32
 - 3.1. Introduction 32
 - 3.2. R&D personnel in the EU, Japan and the United States 34
 - R&D personnel 34
 - Researchers 36
 - 3.3. R&D personnel in Europe 38
 - R&D personnel as a % of labour force 38
 - R&D personnel in full-time equivalent – FTE 42
 - R&D personnel in head count – HC 46
 - Researchers in full-time equivalent – FTE 47
 - Researchers by gender 48
 - Researchers by field of science 49
 - 3.4. R&D personnel in the European regions 50
 - Leading regions in R&D personnel 50
 - Regional disparities in R&D personnel 52

- Chapter 4 Human resources in science and technology 54
 - 4.1. Introduction 54
 - 4.2. Education inflows 56
 - Participation in tertiary education 56
 - Graduation from tertiary education 62
 - 4.3. Stocks of human resources in science and technology 68
 - HRST stocks at the national level 68
 - HRST stocks at the regional level 78

PART 3 European technological productivity and competitiveness 83

- Chapter 5 Patents 84
 - 5.1. Introduction 84
 - 5.2. International comparison: EU-15, Japan and the United States 86
 - Patent applications to the EPO 86
 - Patents granted by the USPTO 90
 - Triadic patent families 92
 - 5.3. Performance at the national level in Europe 95
 - Total patent applications to the EPO 95
 - High tech patent applications to the EPO 96
 - 5.4. Performance at the national level in the EEA 102
 - Total patent applications to the EPO 102
 - High tech patent applications to the EPO 107
- Chapter 6 Europe's high tech sectors: overview in terms of employment and trade 110
 - 6.1. Introduction 110
 - 6.2. Employment in high tech and knowledge-intensive sectors in the EU and Candidate Countries 112
 - At the national level 112
 - At the regional level 120
 - 6.3. Value added and labour productivity of high tech sectors 132
 - 6.4. International trade of high technology products 134
 - Global high tech trends 134
 - High tech trade in the EU 139
 - Extra-EU trade of high tech products 140
 - Intra-EU trade of high tech product 142
 - High tech trade flows in the Acceding Countries 144
 - Distribution by product group 145

- Methodological notes 149
- Abbreviations and symbols 167