Index

academic research 53
see also research and development; universities

aging populations 26, 27, 70–71, 95
older workers 17, 29, 158
productivity levels and 17–18, 29
retirement age 139
Alesina, A. 72
allocative efficiency 20, 21
gains in 31–2
measurement of 214–17
of research and development expenditure 10–11, 207, 214–21, 224–5, 228–30, 234–45, 246
Anderton, R. 79
apprenticeships 230, 232
see also educational levels; skill levels

Australia, labour productivity 109
Austria, employment rates 32

Barcelona Summit, 2002 (EU) 5, 9, 10, 53
see also Lisbon Strategy
Bean, C. R. 78–9
Becker, G. 128–9
Belgium
employment levels 32
income levels 141
productivity levels 103
benchmarking, in research and development 48, 49, 53
Blanchard O. 33, 36, 44, 78, 79, 80, 107, 163
Boerl, T. 82, 83, 92, 130
Bradley, J. 79, 92
Breen, R. 86
Brucker, H. 82, 83
Bruyère, M. 156
Busquin (European Commissioner) 53, 54

Canada, labour productivity 109
capital investment 28, 121
investment spending 27–8
tangible/intangible 121
capital–labour costs see labour–capital costs
Castanheira, M. et al. 41
Cecchini, P. 67
Chagny, O. 156
child-care 156
Ciccone, A. see de la Fuente, A and A. Ciccone
Cobb-Douglas technology 159–60
Coeuré, B. 26
cohesion see European integration; social cohesion/inclusion
Collignon, S. 26
Community Support Framework (CSF)
(EU) 88–9, 90, 92–5, 97
in Germany 93, 94
in Ireland 92–4, 97
in Portugal 92, 93, 94
in Spain 93, 94
competitiveness
definition 6–7
economic growth and 3–12
government policies on 3–4
indicators of 7
institutional structure for 6–7
Lisbon Strategy for see Lisbon Strategy
see also economic growth;
productivity growth
convergence see European integration
cooperation/coordination 24–6
open method of (OMC) 24–5, 26
in research and development 5–6, 9, 24–5, 49, 56, 58–61
cross-border trade see European single market; international trade

253
Index

de la Fuente, A. 92, 93, 251
de la Fuente, A. and A. Ciccone 86, 87
Denmark economic growth 7–8
employment rates 32, 148
productivity levels 31–3
deregulation 31–2, 129
employment rates and 161–4
in service industries 118–19
Derousse, S. 26
Domenech, R. 251
Dreger, C. 174–5, 176–7
Drèze, J. H. 78–9
dynamic efficiency 20, 21
see also efficiency
economic decline 26–33, 72
see also productivity decline
economic growth 16, 127–57
competitiveness and 3–12
educational levels and 227–51
employment rates and 17, 28–9, 129–30, 136–9
European integration and 66–100
government policies for 3, 4–5, 39–40, 52, 141–8
income inequality and 130, 141–8
indicators of 130–31, 141–8
institutional structure for see structural reforms
Lisbon Strategy for see Lisbon Strategy
new growth theory 21, 51–2, 181
process of 17, 66–8, 69
productivity growth and see productivity growth
research and development and 9–10, 17, 20, 21, 47–65
in United States 7–8, 107, 127–9, 131–40, 148–9, 179, 227–51
working hours and 17, 129–30, 156
economic shocks 27, 78
in Ireland 71–2
Economic and Social Research Institute (ESRI) 88, 93
education expenditure 5, 30, 49, 228–9
impact of 6, 84, 234–45, 246, 250–51
educational levels
apprenticeships 230, 232
career development 60
economic growth and 227–51
income levels and 83, 235–8
in research and development 11, 54, 60, 64, 121, 233–4, 239–46
in science and engineering 232–4, 239–46
talent scouting 54, 55, 56, 57
university (tertiary) education 227, 228, 230–33
vocational training 25
see also skill levels
efficiency allocative 10–11, 20, 21, 31–2, 207, 214–21
dynamic 20, 21
productive 20, 21, 212–14, 224–6
employment protection 8, 129, 161–2, 169
employment rates 5, 8–9, 29, 32
decline in 17–18, 32; see also unemployment
economic growth and 17, 28–9, 129–30, 136–9
European integration and 73–83, 87, 96
government policies on 147–8, 162–3, 168, 174–7
growth in 3, 8–9, 17, 21, 28–9, 31–3, 136–9
job creation 30, 32, 175
labour intensity 104–10
labour migration/mobility and 79–81, 82–3
older workers 17, 29, 158
productivity levels and 17, 28–9, 32, 104–10, 127–8
in research and development 11, 54, 55, 56, 57, 60, 64, 121, 206, 233–4, 239–46
skill levels and 36, 82–3, 84, 96, 102
structural reform and 20–22, 129–30, 158–9, 174–7
unemployment see unemployment rates for women 17, 29–30, 87, 158
employment threshold 158–78
definition 159–61
labour market regulation and 161–4
marginal intensity of 164–70
entrepreneurial activity 21, 31, 102

niche markets 51

see also innovation; research and
development; technology transfer

environmental protection 3, 23, 32

Esping-Andersen, G. 143

European Commission Framework
Programme (FP) on research and
development 48, 57

European Commission QUEST model
22, 36

European Commission Spring Reports
(annual) 25, 26, 32, 38, 39–40, 42

European Council (EC)

Lisbon Strategy see Lisbon Strategy
policy priorities 25–6
role 25–6

European Council Broad Economic
Policy Guidelines 25

European Free Trade Area (EFTA) 71

European integration

domestic policies and 88–92
economic growth and 66–100, 179
employment rates and 73–83, 87, 96
European single market and 71–3
EU Structural Funds and 6, 67, 92–5
human capital and 83–8, 96
process of 68–71
productivity levels and 6, 32, 70

European Monetary Union (EMU) 16,
91

European Research Area (ERA) 48, 49,
55, 56, 57
objectives 58–61

European Research Infrastructure Fund
57

European Science Foundation 57

European single market 3, 21, 41, 67–8,
179
European integration and 71–3

European Union (EU)
membership of 67
‘new’ (accession) Member States 15,
57, 67–8
‘old’ (EU 15) Member States 15, 67
Third European Report on Science
and Technology Indicators
50–51, 62–5

see also individual countries

European Union Cohesion Funds 57

European Union Structural Funds 6, 67

Community Support Framework
(CSF) see Community Support
Framework

HERMIN impact model of 92–3
evolutionary theory, in government
policies 4, 9

financial markets 21–2

Finland
economic growth 72
employment rates 32, 136–7
productivity levels 31–3, 131–5

Fitz Gerald, J. 71, 79, 81

Foreign Direct Investment (FDI) 72–3
France

employment rates 138
productivity levels 9, 31–3, 131–5
service industries 118, 119
Fraser Institute database 167
free trade see European single market
Freeman, R. 130, 156
general-purpose technologies 4

see also knowledge distribution

Germany
economic growth 227–51
educational expenditure 227, 229
educational levels 11, 83, 227–51
employment rates 32, 80
income levels 83, 141, 234–8
investment spending 28
productivity levels 9, 31–3
research and development 11, 239–46
research and development expenditure
229–30, 244
service industries 118, 119
Geroski, P. 21
globalisation 26, 110
of research and development 5–6, 9,
24–5, 47, 48–9, 53, 54–5, 56,
58–61, 200–204
Gordon, R. J. 33, 36, 44, 107
Görg, H. 72
government policies
on competition 3–4
for economic growth 3, 4–5, 39–40,
52, 141–8
on employment 147–8, 162–3, 168,
174–7
European integration and 88–92
evolutionary theory in 4, 9
horizontal policies 121
international collaboration on 39–40,
42–3
on patents 3–4
on productivity growth 120–22
on productivity levels 7, 9–10
on research and development 4, 9, 10,
180, 206
Greece
economic growth 72, 73
educational levels 84–8
employment rates 32, 69, 74, 96
EU Community Support Framework
(CSF) in 93, 94
integration process 6, 66, 67, 68–70,
71–4, 88–92, 94–5
political structure 71
productivity levels 31–3, 70
public investment in 88–92, 94–5,
96–7
research and development expenditure
206
Griliches, Z. 114, 212
Groningen Growth and Development
Centre database 110–11, 153–5,
164, 183
Hall, B. H. 212
Harhoff, D. 208
Hausman, J. 212
Honohan, P. 71
Hore, J. 79, 81
household consumption 27–8
household production 135–6
housing stock 90–92
human capital, investment in 6, 7, 21,
83–8, 96
see also educational levels; skill
levels
Hungary, Foreign Direct Investment in
73
income inequality 129–30, 236–7
economic growth and 130, 141–8
in United States 129, 130, 139–40
income levels 6, 7–8, 73–7, 78–9, 81–3
economic reforms and 20–22
educational levels and 83, 235–8
negotiations on 8, 21, 80, 81–2, 161,
162, 168
productivity levels and 103, 104–10,
131–40
in United States 7–8, 131–40, 234–8
working hours and 135–6, 148–9
income tax 136, 140
see also taxation systems
industrial decline 72
see also economic decline;
productivity decline
industrial structure 31
high-tech sectors 31
manufacturing sector 9–10, 83–6,
187–96
privatisation 31–2, 129
productivity growth and 103, 110–13,
120–22
service industries 102, 103, 113–19
information and communication
technology (ICT) 21, 30, 36, 101,
103, 111–13, 139
in service industries 102, 114
use of 7, 30, 101, 102, 103, 110,
111–13, 114
see also knowledge economy/society
innovation 5, 11, 20, 31
economic analysis of 51, 59, 211–21
measurement of 205–26, 243–5
national innovation systems 9, 55, 59
patents as indicators of 209–21,
224–6, 243–5
product/process 115–17
in service industries 115–17
types of 115–16, 181–3
see also patents/patent protection;
research and development;
technology diffusion/transfer
institutional structure
for competitiveness 6–7
for economic growth 8, 15, 19–24,
130, 139–40
for economic growth and 130, 141–8
integration see European integration
internal market see European single
market
international trade 21
free trade see European single market
technology transfer and 182–3
investment
capital 27–8, 121
Foreign Direct 72–3
see also research and development
expenditure
investment spending 27–8
Ireland
economic crises 71–2
economic growth 71, 72–3, 88–92
educational levels 84–8
employment rates 69, 74, 80, 82, 96, 137, 138
EU Community Support framework (CSF) in 92–4, 97
Foreign Direct Investment in 72–3
income levels 74–7, 79, 80–83, 131–5
integration process 6, 66, 67, 68–97
labour migration 79, 80
productivity levels 70, 103, 127
public investment in 88–92, 94–5, 96–7
research and development expenditure 206
taxation system 79
unemployment 77
Italy
educational levels 85
employment levels 32
income levels 141
productivity levels 32
Jacquemin, A. 21
Japan
economic growth 179
patent production 209
productivity growth 106, 109
Jimeno, J. 78, 79
job creation 30, 32, 175
see also employment rates
Kaldor, N. 160
knowledge distribution 3–4, 5, 9, 50, 51–2
general-purpose technologies 4
see also research and development; technology transfer
knowledge economy/society 5, 26, 32, 47–8, 49, 60
definition 50
European weaknesses in 48–9, 180
see also information and communication technology; research and development
Kok, W. 4, 38, 41, 44, 102
Kok Commission (Lisbon Strategy High Level Group) (EC) 5, 38, 39, 41, 42, 43
Knueger, D. 228, 232
Kumar, K. B. 228, 232
labour intensity 131
productivity growth and 104–10
Labour Market Institutional Data Base (LMIDB) 166–7
labour markets see employment rates
labour migration/mobility 79–81, 82–3
labour productivity see productivity levels
labour taxes 163, 168–9
see also taxation systems
labour–capital costs, productivity levels and 7, 36
Langedijk, S. 26
Lanjouw, J. O. 208
Layard, R. 130
leisure time, working hours and 33, 36, 37, 135–6, 156
action programmes on 5; see also implementation
assessment of 15–16, 38–45, 221–2
benefits of 43–4, 73
communication problems on 43–4
drivers to reform identified by 41–2, 44
Guidelines package 39, 42
implementation 4–5, 15, 19–26, 41–5
objectives 3, 5, 11, 15, 22–3, 32, 87, 88, 128–9, 159, 180
open method of coordination (OMC) 24–5, 26, 42–3
ownership problems 41, 44–5
priorities 40–42
progress indicators 26–34
rationale for 15, 16–19
strengths 38–40, 44–5
structural reforms proposed by 15, 19–24, 38–9, 43–5
Index

Index

weaknesses 40–45
Lisbon Strategy High Level Group
  (Kok Commission) 5, 38, 39, 41, 42, 43
Lisbon Strategy, Sapir report on 4
living standards 20, 28–9, 33, 43–4, 66, 67
housing stock 90–92
  see also social cohesion/inclusion
Lucas, R. E. 227
Luxemburg 32
manufacturing sector 183–6
  research and development in 9–10, 187–96
  see also industrial structure
market entry 21
market reforms see structural reforms
national innovation systems 9, 55, 56
  see also innovation; research and development
Netherlands
  economic growth 7–8, 131–5
  employment rates 133, 136
  income levels 141
  productivity levels 131–5
new growth theory 21, 51–2, 181
  see also economic growth
Nickell, S. 130, 146–7, 166, 167
Nijkamp, P. 52, 251
Norway, economic growth 7–8
Nunziata, L. 166
OECD STAN database 183
open method of coordination (OMC) concept 24–5, 26, 42–3
patent offices (PTOs) 207, 208, 224
  patents/patent protection 9, 182
  government policies on 3–4
  home advantage bias 207
  innovation, patents as indicators of 209–21, 224–6, 243–5
  numbers of patents 9, 10, 180, 206, 239–43
  timeliness problems 208–9
  triadic patent families 207–8, 209, 224, 225
  see also innovation; research and development
Pelkmans, J. 21
pension provision 25
  see also social welfare
performance measurement, of research and development workers 10–11, 65, 187–96, 239–40
Perotti, R. 72
Phillips-Perron Test 238–9
Pisani-Ferry, J. 26
Poland
  educational levels 84
  Foreign Direct Investment in 73
  income levels 82–3
Poot, J. 52
Portugal
  economic growth 71, 72, 88–92
  educational levels 83, 84–8
  employment rates 32, 69, 74, 82, 96
  EU Community Support Framework (CSF) in 92, 93, 94
  income levels 74–7, 78, 79, 80–83
  integration process 6, 66, 67, 68–97
  labour migration 78–9, 82
  political structure 71
  productivity levels 32, 70, 103
  public investment in 88–92, 94–5, 96–7
  research and development expenditure 206
  taxation system 79
  unemployment rates 77, 78
Portugal, P. 80
privatisation 31–2, 129
  see also industrial structure
productive efficiency 20, 21
  of research and development expenditure 212–14, 224–6
  productivity decline 33, 34–7
  see also economic decline; industrial decline
  productivity gap 15, 16–17, 29–31, 36–7, 131
  productivity growth 7, 17, 18, 21, 27, 31–3, 101–24
  in EU countries 103, 105–6
  EU policies on 120–22
  industrial structure and 103, 110–13, 120–22
Index

information and communication technologies (ICT) and 101, 102, 103
labour intensity and 104–10
rate of 113–19
research and development and 181–3
in service industries 103, 113–19
in United States 7, 17, 30, 33, 101–2, 104–10, 120, 121–2, 127
productivity levels 4–5, 127–8, 130, 131–40, 148–9
aging populations and 17–18, 29
employment rates and 17, 28–9, 32, 104–10, 127–8
European integration and 6, 32, 70
government policies on 7, 9–10
human capital investment and 6, 7, 21
income levels and 103, 104–10, 131–40
labour–capital costs and 7, 36
measurement of 7, 159–61, 183–6
research and development and 7, 9–10, 179–204
total factor productivity (TFP) 7, 9–10, 120–21, 181, 183, 184–5
in United States 4, 7–8, 9, 10, 15, 16–17, 36–7, 128, 130–40, 148–9, 183–6
working hours and 17, 28–9, 33, 36, 37, 44–5, 130, 156
see also economic growth
Programme for International Student Assessment (PISA) 227
regulation see deregulation
Reitzig, M. 208
research and development (R&D) 47–65, 186
academic 53
benchmarking of 48, 49, 53
capacity building for 54, 55, 56
collaborative programmes see globalisation of
decline in 53–4
economic growth and 9–10, 17, 20, 21, 47–65
entrepreneurial activity 21, 31, 102
European Research Area (ERA) 48, 49, 55, 56, 57
globalisation of 5–6, 9, 24–5, 47, 48–9, 54–5, 56, 58–61, 200–204
government policies on 4, 9, 10, 180, 206
institutional structure 5, 9
knowledge distribution 3–4, 5, 9, 50, 51–2
niche markets for 51
process of 3–4, 9
productivity growth and 181–3
productivity levels and 7, 9–10, 179–204
Technology Platforms 55
see also innovation; patents/patent protection; technology transfer
research and development (R&D) expenditure 5, 10, 30, 48, 49, 63–4, 182
decline in 54, 244
EC Framework Programme (FP) on 48, 57
European initiatives on 55–6, 57, 59, 60
impact/effects of see allocative efficiency
increase in 3, 24–5, 180, 197, 205–6, 211–22
international collaboration on 5–6, 24–5
productive efficiency of 212–14, 224–6
public/private 10–11, 52, 63–4, 205–6, 207, 208, 210–11, 217–26, 250–51
total factor productivity (TFP) and 181
in United States 10–11, 205, 206, 209, 210, 229–30
research and development (R&D) intensity 186, 187–96, 200–204
research and development (R&D) workers 11, 64, 206
career development 60
educational levels 11, 54, 55, 60, 121, 233–4, 239–46
performance measurement 10–11, 65, 187–96, 239–40
talent scouting for 54, 55, 56, 57
research excellence 54, 56, 60
research facilities 55, 57, 60
retail trade see service industries
retirement age 139
see also aging populations
Roller, L. 51
Romer, P. M. 227
Ruane, F. 72
Sapir, A. 4
saving rate 27–8
Schankerman, M. 208
Scherer’s user-producer matrix 182
see also technology diffusion/transfer
Schettkat, R. 156
Schumpeterian economics 21
service industries
deregulation of 118–19
information and communication technology (ICT), use of 102, 114
innovation in 115–17
output measurement 114–15
productivity growth 103, 113–19
in United States 116, 117, 119
see also industrial structure
Science and Policy Research Unit (SPRU) (UK) 50
Shortall, S. 86
single market see European single market
Sinn, H.-W. 83
skill biased technological change (SBTC) 236
skill levels 36, 82–3, 84, 96, 102, 228, 236–7
apprenticeships 230, 232
see also educational levels
social cohesion/inclusion 32, 129
advances in 3, 25, 43–4
funding for 57
living standards 20, 28–9, 33, 43–4, 66, 67, 90–92
social security benefits 8, 129, 141, 149, 156
improvements in 20–22
pensions 25
as sustainable 27
unemployment benefits 8, 78, 129–30, 139, 142, 144–5, 147, 157, 162
Spain
economic growth 71, 72, 73, 88–92
educational levels 84–8
employment rates 32, 69, 74, 80, 82, 96
EU Community Support Framework (CSF) in 93, 94
Foreign Direct Investment in 72
income levels 74–7, 78, 79, 80–83
integration process 6, 66, 67, 68–97
labour migration 79
political structure 71
productivity levels 32, 70, 103
public investment in 88–92, 94–5, 96–7
taxation system 79
unemployment 77–8
spillovers see technology diffusion/transfer
Stability and Growth Pact (SGP) 89, 90
structural reforms
drivers to reform identified by 41–2, 44
for economic growth 15, 19–24, 37, 38–9, 43–5
employment rates and 20–22, 129–30, 158–9, 174–7
Lisbon Strategy proposals for 15, 19–24, 38–9, 43–5
macroeconomic conditions for 23–4
social welfare and 20–22
see also institutional structure
Sweden
employment rates 32, 148
productivity levels 31–3
tax wedge 144, 145, 147–8, 157
taxation systems 78–9, 129, 156, 157
income tax 136, 140
labour taxes 163, 168–9
technological distance 182
technology diffusion/transfer 6, 7, 30–31, 181–3, 187
international trade and 182–3
knowledge distribution 3–4, 5, 9, 50, 51–2
knowledge spillovers 181–2
rent spillovers 181, 182
Index

skill biased technological change (SBTC) 236
weighting schemes in 182
see also innovation; research and development
Technology Platforms 55
Temple, J. 234
total factor productivity (TFP) 7, 9–10, 120–21, 181, 183, 184–5
see also productivity levels
trade see international trade
unemployment benefits 8, 78, 139, 157
duration of payments 129–30, 140, 144–5, 147, 157, 162
level of payments 78, 140, 142, 144–5, 162
see also social security benefits
unemployment rates 6, 8, 17, 74, 77–8, 96, 107, 127, 128, 138–9, 158–9
reduction in 87, 158
United Kingdom (UK) 41
educational levels 84, 85
employment rates 32
income inequality 129
income levels 141
productivity levels 9, 31–3
service industries 118, 119
United States (US)
economic growth 7–8, 107, 127–9, 131–40, 148–9, 179, 227–51
educational expenditure 229
educational levels 11, 84, 227–51
employment rates 127–8, 129
income inequality 129, 130, 141
income levels 131–40, 234–8
investment spending 28
patent production 209
productivity growth 7, 17, 30, 33, 101–2, 104–10, 120, 121–2, 127
productivity levels 4, 7–8, 9, 10, 15, 16–17, 36–7, 128, 130–40, 148–9, 183
research and development 239–46
research and development expenditure 10–11, 205, 206, 209, 210, 229–30
service industries 116, 117, 119
working hours 7–8, 17, 129, 133–5
universities, research and development by 53
university students 227, 228, 230–33
see also educational levels
user-producer matrix 182
see also technology diffusion/transfer

Veerdoorn’s law 159–60, 174
Verspagen, B. 188, 200
vocational training 25
see also educational levels
wage negotiations 80, 81–2
wages see income levels
Walsh, B. 71
Waverman, L. 51
welfare see social security benefits
Werding, M. 83
Wolfers, J. 163
women, employment rates for 17, 29–30, 87, 158
working hours 5, 133–5
economic growth and 17, 129–30, 156
income levels and 135–6, 148–9
leisure time and 33, 36, 37, 135–6
productivity levels and 17, 28–9, 33, 36, 37, 44–5, 130, 156
in United States 7–8, 17, 129, 133–5
World Trade Organization (WTO) 41
Yale matrix 182
see also technology diffusion/transfer
Young, A. 227
Zuckerman, M. B. 127, 129