Index

absorptive capability, and innovation 76–9
absorptive capacity 66, 67–9
organization 78–9
academic core functions 215–16
academic research, Finland 299–300
Academy of Finland 152, 153, 160, 200, 202, 271, 289
Alasoini, T. 19, 293
Alasuutari, P. 38, 41
Allen, T. 69, 79
Antila, J. 135
Archibugi, D. 13–14, 304
Ark, B. van 132
Arrow, K. 255
Arrowian approach, competition legislation 255–7
Arthur, B.W. 4, 28
Ashton, D.N. 142
asymmetric information, pricing under 95–6
Audretsch, D.B. 8, 9, 303
Bank of Finland 271
Barbalet, J.M. 242
Barney, J.B. 169
Barras, R. 86
Bassanini, A.P. 8
Baumol, W.J. 259, 263
Becher, T. 198
Beck, U. 243
behavioural patterns 30–31
Behrens, T.R. 214
Bélanger, J. 128, 129, 130
Bell, D. 287
Benner, M. 198
‘big man theory’ 9
Bijker, W.E. 11
biotechnology 20
Finland 303
Blom, R. 135, 139
Blume, S. 19, 199, 206
Boden, M. 14, 190
Bork, R.H. 258, 264
Borrás, S. 11, 17, 170
Bosch, F. 67
Bouckaert, G. 304
Boyer 293
Brännback, M. 155
Bresnahan, T.F. 14
bridging function 10
Brodley, J.F. 257, 260
Brooks Report, OECD 271
Brousseau, E. 5
Brown, J.S. 12
Bruun, H. 20, 148, 152
business competencies 101–2
business services, and knowledge creation 87–91
Cameron, R. 219
capital markets, Finland 36–7, 59
cartelization 260–62
Castells, M. 3, 7, 10, 36, 147, 148, 170, 185, 287, 288, 297, 299, 305, 309
Cayseele, P. van 259
central incomes policy 139
centralized education model 221
Centre of Expertise programmes 154–5
Centres of Excellence programmes 185, 299, 302
Chang, H.-J. 15
‘change events’ 7–8
channelled change 4, 6
Clark, B.R. 198, 216
Clark, K. 69, 78
client relationships 89–90
clients, as a source of knowledge 91
co-operation, Finland 294–5
cognitive dissonance 31, 32
‘cognitive lock-in’ 8
Cohen, W. 66, 67, 68, 76, 77, 78, 199
Coleman, M. 256, 257, 258, 260
collaboration 78–9
collaborative research mechanisms 206
collective agreements 139
collective bargaining, Finland 139
collusion, and competition legislation 262
Commission of the European Communities 251
Community Innovation Survey 86
competence society 250–51
competition, and innovation 264–5
competition legislation 21, 254–67
Arrowian approach 255–7
collusion 262
efficiency defence rules 258
Finland 258–9
relevant markets 259–60
Schumpeterian approach 255–7, 265
Tinbergen rule 259
competition optimism 255
competition pessimism 255
competition policy 257–8
competitive advantage 131
competitive strategies 87–9
competitiveness 250
Finland 33–8
Confederation of Finnish Industry and Employers 132, 134, 294
‘contested terrain’ 12
contract research 205, 209, 213–14
financial benefits 209
knowledge transfer in 207
control rights 90, 96
Cooke, P. 147
Córdova, E. 243
corporate co-operation agreements, Finland 133
Cowen, R. 250
Cowling, K. 37
creative destruction 290
Creed, W.E.D. 29
CSC News 299
David, P. 4
‘decreasing returns’ regime 28, 31
Demsetz, H. 261
development paths, negative feedback from 13–14
DiMaggio, P.J. 29
direct technology policy 14
discursive co-ordination, Finland 304–5
Dosi, G. 4, 7, 8, 80
Duguid, P. 12
Dunning, J.H. 37, 38
Dyke, M. 250
Easterbrook, F.H. 257
Edqvist, C. 196
education and employment 244
Finland 51–2, 152–4, 159–60, 178, 224–30, 297–8
and the knowledge economy 297–8
in the learning economy 219–24
sequential model 298
transition policies 223
and working life 249
Education at a Glance 2000 220
educational reform, Finland 224–30
Edwards, R. 251
Elam, M.J. 129
Eliasson, G. 67
employment and education 244
older workers 247–8
societal conditions 243
employment contracts 139
employment relations 138–41
endogenous change processes 8–12
entrepreneurs 8–9, 161
entrepreneurial firms 10
environmental change 30
EPOC Research group 134
eTampere Programme, Finland 185–6
Etzkowitz, H. 196, 206
EU (European Union) 48, 201
funding 201–2
research programmes 272, 279
structural funds 172, 175, 182
Eureka 272
European Commission 246
European Industrial Regions Association (EIRA) 302
Eurostat yearbook 243
Eurysice 220
Evangelista, R. 86
<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic research</td>
<td>299–300</td>
</tr>
<tr>
<td>Academy of Finland</td>
<td>152, 153, 160, 200, 202, 271, 289</td>
</tr>
<tr>
<td>Act on Restraints of Trade</td>
<td>258, 262</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>303</td>
</tr>
<tr>
<td>Biotechnology-related research</td>
<td>154</td>
</tr>
<tr>
<td>BioTurku</td>
<td>148, 151–9</td>
</tr>
<tr>
<td>BioCity building</td>
<td>152</td>
</tr>
<tr>
<td>Centre of Expertise Programmes</td>
<td>154–5</td>
</tr>
<tr>
<td>Connectivity</td>
<td>164</td>
</tr>
<tr>
<td>Education capacity</td>
<td>159–60</td>
</tr>
<tr>
<td>Education and research</td>
<td>152–4</td>
</tr>
<tr>
<td>Employment</td>
<td>161</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>161</td>
</tr>
<tr>
<td>Extra-regional collaboration</td>
<td>161–2</td>
</tr>
<tr>
<td>Organizational chart</td>
<td>168</td>
</tr>
<tr>
<td>Performance</td>
<td>159–63</td>
</tr>
<tr>
<td>Public commitment</td>
<td>162–3</td>
</tr>
<tr>
<td>Real estate development</td>
<td>157–8</td>
</tr>
<tr>
<td>Research performance</td>
<td>160–61</td>
</tr>
<tr>
<td>Strategy</td>
<td>155–6</td>
</tr>
<tr>
<td>Transparency</td>
<td>164–5</td>
</tr>
<tr>
<td>Capital markets</td>
<td>36–7, 59</td>
</tr>
<tr>
<td>Central Board of Research Councils</td>
<td>271</td>
</tr>
<tr>
<td>Central incomes policy</td>
<td>139</td>
</tr>
<tr>
<td>Centres of Excellence programmes</td>
<td>299, 302</td>
</tr>
<tr>
<td>Centres of Expertise</td>
<td>58, 184, 201</td>
</tr>
<tr>
<td>Co-operation</td>
<td>294–5</td>
</tr>
<tr>
<td>Collective bargaining</td>
<td>139</td>
</tr>
<tr>
<td>Competition</td>
<td>268</td>
</tr>
<tr>
<td>Competition Authority</td>
<td>258</td>
</tr>
<tr>
<td>Competition legislation</td>
<td>258–9</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>33–8</td>
</tr>
<tr>
<td>Confederation of Finnish Industry and Employers</td>
<td>132, 134, 294</td>
</tr>
<tr>
<td>Content-producing industries</td>
<td>51</td>
</tr>
<tr>
<td>Corporate co-operation agreements</td>
<td>133</td>
</tr>
<tr>
<td>Datatie (data carrier)</td>
<td>58</td>
</tr>
<tr>
<td>Development Plan for Education and University Research (1993)</td>
<td>201</td>
</tr>
<tr>
<td>Discursive co-ordination</td>
<td>304–5</td>
</tr>
<tr>
<td>Economic collapse (1990)</td>
<td>36</td>
</tr>
<tr>
<td>Education</td>
<td>51–2, 229, 297–8</td>
</tr>
<tr>
<td>Educational policy</td>
<td>227–8</td>
</tr>
<tr>
<td>Educational reform</td>
<td>224–30</td>
</tr>
<tr>
<td>Electronics industry</td>
<td>293</td>
</tr>
<tr>
<td>Employment</td>
<td>243–4</td>
</tr>
<tr>
<td>Opportunities for influencing one’s own work</td>
<td>136–7</td>
</tr>
<tr>
<td>Qualifications of the employed</td>
<td>245–6</td>
</tr>
<tr>
<td>Employment and Economic Development Centres</td>
<td>193, 302</td>
</tr>
<tr>
<td>Employment relations</td>
<td>142</td>
</tr>
<tr>
<td>Engineering</td>
<td>298</td>
</tr>
<tr>
<td>eTampere Programme</td>
<td>185–6</td>
</tr>
<tr>
<td>Exports</td>
<td>53, 65</td>
</tr>
<tr>
<td>To Russia</td>
<td>150</td>
</tr>
<tr>
<td>Federation of the Finnish Electrical and Electronics Industry</td>
<td>110</td>
</tr>
<tr>
<td>Finnforest Oy, case study</td>
<td>74–6</td>
</tr>
<tr>
<td>Finnish Industry Investment Ltd</td>
<td>59</td>
</tr>
<tr>
<td>Finnish National Fund for Research and Development (Sitra)</td>
<td>59, 183, 271, 289</td>
</tr>
<tr>
<td>Finnvera</td>
<td>183</td>
</tr>
<tr>
<td>Foreign direct investment (FDI)</td>
<td>36, 37, 296–7</td>
</tr>
<tr>
<td>Funding of university research</td>
<td>200–201</td>
</tr>
<tr>
<td>GDP</td>
<td>34, 52, 56, 69, 106</td>
</tr>
<tr>
<td>Globalization strategies</td>
<td>296–7</td>
</tr>
<tr>
<td>Government intervention</td>
<td>278–9</td>
</tr>
<tr>
<td>Government’s role</td>
<td>38</td>
</tr>
<tr>
<td>GSM (Global System for Mobile Communication)</td>
<td>58, 61</td>
</tr>
<tr>
<td>Helsinki Stock Exchange (HSE)</td>
<td>37</td>
</tr>
<tr>
<td>Helsinki University of Technology</td>
<td>73, 74, 75, 136</td>
</tr>
<tr>
<td>High technology production</td>
<td>34, 40</td>
</tr>
<tr>
<td>ICT cluster</td>
<td>18–19, 61–3, 131–2, 141, 183–4, 268, 277, 280–81, 291–2, 293, 308</td>
</tr>
<tr>
<td>Impact on economy</td>
<td>52</td>
</tr>
<tr>
<td>Structure</td>
<td>49–52</td>
</tr>
<tr>
<td>ICT sector</td>
<td>47–8, 184, 307</td>
</tr>
<tr>
<td>Imperial Telephone Decree</td>
<td>58</td>
</tr>
<tr>
<td>Industrialization</td>
<td>288</td>
</tr>
<tr>
<td>Industry-university linkages</td>
<td>301</td>
</tr>
<tr>
<td>Innovation</td>
<td>277–8</td>
</tr>
<tr>
<td>In knowledge service firms</td>
<td>96–100</td>
</tr>
</tbody>
</table>
innovation support organizations 183
internet 60
knowledge economy model 287–310
knowledge-intensive business services (KIBS) 85–105, 185, 295–6
knowledge-intensive industries 170–71
labour market 239
Linux 50
local bargaining 139
manufacturing sector 65–6
media industries 184–5
Media Tampere Ltd 181
mediated linkage mechanism 200
medium-sized companies 141–2
metal sector 140
Ministry of Education 227, 228, 238
Ministry of Finance 293, 304
Ministry of the Interior 172, 184
Ministry of Labour 191
Working Life Barometer 135
Ministry of Trade and Industry 271
mobile telecommunications 61–2
municipal sector 180–81
national development path 3
national innovation system (NIS) 141–3, 200, 273, 291
National Technology Agency of Finland (Tekes) 57, 71, 107–9, 114, 115, 122, 176, 182, 183, 200, 202–3, 272, 275–6, 279, 289, 301
networks 279–80
new mental paradigm 38–40
new production model 141–3
NMT (Nordisk Mobil Telefon) 55–6
occupational structure 245
Otawood Group 71
‘planned economy’ 39
polytechnic reform 219–42, 302
polytechnics 224
OECD evaluation 238
post-war growth 33–4
production co-operation 133, 142
productivity growth 142
R&D 52, 54, 56, 65, 96, 107–9, 120–21, 270, 271, 300–301
business sector expenditures 289
growth of expenditure on 274–6
support for corporate R&D 270–7
R&D intensity of industries 84
Radiolinja 58, 59, 60
recession 61, 148, 149, 175, 268, 290–91
regional development 170–72
Regional Employment and Economic Development Centres 182
regional policy 301–3
Salora 55
Science Policy Council 271
science and technology policy 213, 268–82, 300–305
early years 270–72
Science and Technology Policy Council 100, 102, 200, 273, 274, 275, 278, 287, 291
Sonera 50
structural adjustment 33–8
Suomen Kaapelitehdas 55
Tampere Region 20, 170, 192
Centre of Expertise Programme 185
education and training 178
ICT sector 173, 188, 193
industrial production 173
innovation networks 189, 190
knowledge base 177–80
knowledge diffusion 180–86
knowledge use 186–90
knowledge-intensive business services (KIBS) 85–105, 185
modernization 175
output 172–33
R&D 179–80, 182
regional innovation system environment 187
socio-economic structure and development 172–4
unemployment 190–91, 193
universities 135, 177–8
value added 174
workforce 172, 174
Technical Research Centre (VTT) 71, 178, 214, 289
techo-nationalism 297
technological expertise 54
telecom competition 58–9
telecommunications equipment market 281
telephony markets 54
trade with Soviet Union 289
trade unions 139
traditional industries, restructuring 292–3
Televa 55
Turku 20, 148
life science research and the pharmaceutical industry 149–51
universities 149
Turku Bio Valley 155–6
Turku Science Park 156–7
unemployment 190–91, 246–8, 306
universities 59, 116–20, 238–9, 271–2, 289, 300, 307
external funding for research 202
funding 201
reform 299–300
University of Turku 139
Valtion Sähköpaja 55
venture capital 183
Vierumäen Teollisuus Oy, case study 72–4
vision orientation 303–4
Vocational Education and Training (VET) systems 224–7, 236–8
curriculum reform 226–7, 231–2
partners 230–31
VTT see Technical Research Centre
welfare state 288, 305–7, 309
wood products industry 65–83
see also Nokia
Finnish Forest Industry Federation 69, 70, 71, 74
Finnish National Fund for Research and Development (Sitra), Finland 59, 183, 271, 289
Finnish National Road Administration 73
Finnish Science Park Association (FISPA) 301
Finnish Wood Research Centre 73
flexible production model 128, 130, 134
Foray, D. 4
Fordist production model 128–9, 293
foreign direct investment (FDI), Finland 36, 37, 296–7
Förster, M.F. 306
Freeman, C. 5, 6, 8, 10, 14, 17, 67, 147, 190, 270, 273
Freidson, E. 86
Fyhr, P. 72
Galli, R. 8, 10
Gallouj, F. 86
Garud, R. 3, 4, 6, 9, 68, 78
Gellhorn, E. 255, 259
Gibbons, M. 196, 206, 215
global competitiveness 8
globalization 7, 130
globalization strategies, Finland 296–7
Gonäes, L. 243
government intervention, Finland 278–9
Grabher, G. 5
Grant, R.M. 92
Gray, D.O. 214
Gray, J. 249
GSM (Global System for Mobile Communication) 111, 112
Hage 13
Häikiö, M. 58, 107, 108, 109, 110, 111, 112, 122
Hakala, J. 201, 203, 213
Hälikkä, S. 101, 280
Hall, P. 147
Hämäläinen, T. 5, 8, 10, 14, 18, 32, 34, 196, 287, 304
Hamel, G. 91
Hansen, M.T. 86
Harianto 67
Harrison, B. 131
Harrison, L.E. 40
Hauknes, J. 13, 86
Heilbroner, R. 29
Heiskanen, T. 251
Helkama, K. 38, 40
Helsinki Stock Exchange (HSE) 37
Helsinki University of Technology 73, 74, 75, 136
Henderson, R. 69, 78
Hermans, R. 19, 54, 58, 65, 114
Hernesniemi, H. 49
‘high road’ strategy 56
Himanen, P. 3, 36, 185, 287, 288, 297, 299, 305, 309
Hines, P. 134
Hirst, P. 15
horizontal agreements 262
Howells, J. 170, 214
Höyssä, M. 148, 151, 152
Huff, A.S. 40
Huff, J.O. 40

Index
Huhtamäki Ltd 150
human capital 248
human will 8–9
Huntington, S.P. 40
Huolman, M. 37
Husso, K. 299, 300
‘hybrid-groups’ 206
Hyytinen, A. 59, 295
ICT sector 47–8
Ilmarinen, J. 248
IMF 287
in-house technology 68
‘increasing returns’ 4, 28
industrial performance 169
information and communication technologies (ICTs) 47
information and communication technology (ICT) paradigm 6
information technology, in knowledge services 101
innovation 4, 7, 68, 69, 99, 102–4
and absorptive capability 76–9
and competition 264–5
Finland 277–8
in Finnish knowledge service firms 96–100
and market concentration 256
in services 86
innovation failures 256
innovation networks 10
innovation policy
and business competencies 101–2
in the transformation process 14–18
innovation process 256
innovation systems 215
exogenous dimension 13–14
innovation-based competition 254
institutional benchmarking 17
institutional change, in science 8, 12
institutional re-embedding 11
institutions 29
intellectual assets, rights to 90
intellectual property rights (IPR) 120, 123, 212
inter-institutional collaboration 198
International Expert Group 272
ISO 9000 standard 136
Jääskeläinen, J. 56
Jaatinen, P. 236
Jahnukainen, M. 133
Jalava, J. 293
Janasik, N. 148
Japan 67
Johnson, B. 5, 8, 17, 147
Jorde, T.M. 257, 260, 262
Kairi, M. 74, 75
Kamien, M.I. 262, 263
Kantola, A. 38
Karjalainen, S. 299, 300
Karnoe, P. 3, 4, 6, 9, 66
Kasvio, A. 290, 300
Katz, M.L. 256
Katz, R. 69, 79
Kaukonen, E. 198, 199, 200, 201, 204, 213, 294, 299
Kautonen, M. 20, 173, 174, 175, 176, 177, 181, 183, 185, 188
Kekkonen, K. 20, 298, 302
Kemp, R. 9
Kiander, J. 268
Kickert, W.J.M. 16
Klevorick, A. 67
Klijn, E.H. 16, 17
Kline, S.J. 199
Klinge, M. 289
knowledge creation, in business services 87–91
knowledge economy 190, 220
and education 297–8
Finnish model 287–310
knowledge flows 10, 221–2
knowledge production 213
knowledge services 101
knowledge transfer mechanisms 206
knowledge use 199
knowledge-intensive business services (KIBS) 10, 19
Finland 85–105, 185, 295–6
knowledge resources in 94
management of knowledge in 91–6
polities and policies of 100–104
public funding for 103
Kogut, B. 4, 28
Koistinen, P. 138, 243, 246
Koppenjan, J.F.M 16
Koski, H. 47
Koski, P. 26
labour market 20, 242–53
Finland 239
labour market changes 220–21
labour market citizenship 248, 250
Laestadius, S. 66, 67, 69, 77
Lammi, M. 49
Lamming, R. 134
Lampinen, O. 224, 228, 235
Lash, S. 190
learning 142
learning economy, education in 219–24
learning networks 221
legislation 81
Lehtisalo, L. 224
Lehto, A.-M. 135, 137
Lehtonen, H. 306, 307, 309
Leiponen, A. 10, 19, 86, 87, 90, 92, 99, 296
Lemola, T. 21, 278, 282, 289, 291
Leppä, J. 157
Leslie, L.L. 196
Levinthal, D. 66, 67, 68, 76, 77, 78
Levinthal, D.A. 199
Leydesdorff, L. 196, 206
lifelong learning 249–50, 251, 298
Lilja, K. 138, 139, 140, 288, 289, 290, 292
linkages 10
Linnakangas, R. 20, 247
Lipponen, P. 306
Lipsy, R. 28, 278
Lister, R. 249
local bargaining, Finland 139, 140
localized learning 9
‘lock-in’ phenomenon 3, 4–6
‘cognitive lock-in’ 6, 8
‘political lock-in’ 6
Lundvall, B.-A. 4, 11, 12, 13–14, 17, 141, 142, 147, 170, 220, 273, 304
Luukkanen, S. 101
Luukkonen, T. 280, 299
Luukkonen-Gronow, T. 270
Määttä, K. 13, 21, 255, 256, 260
Mäkinen, M. 55
Mäkynen, J. 74
market concentration 256
market niches 9
market-oriented policy 39
Marshall, T.H. 242
Martin, B. 198
Marvel, H.P. 264
Maskell, P. 66
Mathewson, G.F. 264
Mayntz, R. 16, 198
McCafferty, S. 264
McGuckin, R.H. 132
McHugh, P. 130
mechanical learning markets model 221
Media Tampere Ltd, Finland 181
mediated linkage mechanism, and policy 200
‘mental paradigms’ 5, 30–31, 32, 33, 38–40
Metcalf, S. 4, 5, 11, 15, 254
Meyer-Kramer, F. 214, 215
Miettinen, R. 196, 302
Milberg, W. 29
Miles, I. 14, 86, 185, 190
mobile telecommunications 61–2
Morgan, K. 147
motivation, and skills 93–5, 96
Mowery, D.C. 86
MTI 38, 40
Muller, E. 262, 263
Myllyntaus, T. 297
national development paths 3, 4–5, 7
national innovation system (NIS), Finland 141–3, 200, 273, 291
National Technology Agency of Finland (Tekes), Finland 57, 71, 107–9, 114, 115, 122, 176, 182, 183, 200, 202–3, 272, 275–6, 279, 289, 301
Nayyar, P. 68, 78
negative feedback information 31
Nelson, R.R. 4, 68, 273
network extension 210
network externalities theory 256
network model 6–7
network policies 148
networks 196, 214–15, 294
Finland 279–80
and project design 208–9
as a resource 207–9
and trust 208
virtual 256
new organization model 5
new production model, Finland 141–3
niche concept 9
Nieminen, M. 199, 201, 204, 213, 294, 299
Nieuwenhuis, L. 223
Niininen, P. 101
Niskanen, P. 198
Nissinen, M. 198
NMT (Nordisk Mobil Telefon) 55–6
Nohria, N. 86
Nokia 19, 50, 51, 52, 55, 57, 60, 61, 65, 106–27, 171, 188, 269, 276–7, 281, 282
diffusion of know-how in universities 116–20
Finland’s investments in 107–12
and the Finnish innovation system 106, 112–21
partner network 12–13
public R&D funding 124–5
R&D 110, 113, 192
R&D funding by Tekes 107–9, 122
and the Tampere Region 177–8, 178–9
non-academic research collaboration 196–7
Nonaka, I. 92
Nordflex project 137, 142
Nordic Adviser Group 151, 164
Nordic Industrial Fund 73
Nordic Timber Council 74
Nowotny, H. 196
NUTEK 137, 138, 142
Brooks Report 271
evaluation of Finnish polytechnics 238
Jobs Study 274
OECD countries, structural competitiveness 35
O’Gorman, C. 173, 185, 188
Oliver, C. 32
Olson, M. 31
on-the-job learning 237
Opetusministeriö 228
Ordover, J.A. 259, 263
organizational change 5
organizational paradigm 7
organizational strategies 30
organizational trajectory 5
Orion Corp 150
Ormala, E. 289
Ormond, D. 304
Orsili, M. 66, 68
outsourcing 90–91
overall competitiveness index 34
Paajanen, T. 71
Paija, L. 18, 134, 287
Pajarinen, M. 36, 37, 59, 268, 295
Pakkari, T. 299, 300
Palmberg, C. 10, 19, 65, 294
Parkinson, D. 28
Parsons, T. 32
path creation 3, 9, 14, 15, 22
path dependency 3, 4–6, 9
Pavitt, K. 5, 7, 66, 68, 198, 199, 215
Peldán, K. 150
Pennings 67
Perez, C. 5, 6, 8, 11, 12
performance problems 31
Peters, G. 304
pharmaceutical industry, Finland 150
Pirhonen, P. 150
‘planned economy’ 39
Pohjola, M. 29, 33, 289, 293
policy 79–81
and mediated linkage mechanism 200
policy experimentation 17
policy learning 17–18
policy networks 16–18
polytechnics 20, 224
academic drift 235
co-operation with local business 233–4
further degrees 235
multidisciplinary teaching 332–3
R&D 234
reform 219–42, 302
in regional networks 233–4
regional role 234
Porter, M.E. 18, 49, 147, 169, 170
positive externalities 4
Posner, R.A. 253, 261
post-industrial society 287
Powell, W.W. 29
power, fragmentation of 16
pragmatism 256
Prahalad, C.K. 91
price competition 254
price-fixing 263
pricing, under asymmetric information 95–6
Prihti, A. 277, 294, 301
production co-operation 130–34
public funding agencies 214
Pulkkinen, M. 37
Purchasing Power Parity 34
R&D 67–8, 78, 80, 90
   Finland 52, 54, 56, 65, 96, 107–9, 120–21, 270, 271, 274–6, 276–7, 289, 300–301
   funding 200–201
   polytechnics 234
   Tampere Region, Finland 179–80
Raivola, R. 224, 297, 298
Rakennustaito 75
Rallet, A. 5
Räsänen, K. 290
reflexive (or intelligent) benchmarking 18
regional innovation networks 147–68
regional knowledge economy 170
regionalization 169–70
regulation, and technological development 258
resale price maintenance (RPM) 264
research
   external funding 203–6, 213, 214
   ‘interactive research mode’ 215
research joint ventures (RJVs) 262, 263
Reynolds, P.D. 300
rights to intellectual assets 90
Rinne, R. 250
Rip, A. 148
Romanainen, J. 56
Rönkkö, P. 59
Rosenberg, N. 76, 77, 199
Rosenfeld, S. 223
Rouvinen, P. 18, 36, 37, 47, 268, 287
Rowthorn, B. 15
Russia, Finnish imports 150
Ruuska, P. 38
Sabattini, P. 259
Sabel, C.F. 8, 14, 17
Salmi, E. 250
Salminen, H. 226, 228
Salomon, J.-J. 270
Salter, J.A. 198
Sandström, U. 198
Saraste, M. 153
Sauramo, P. 306
Savola, M. 224
Saxenian, A. 301
Schienstock, G. 9, 10, 14, 15, 18, 20, 21, 32, 131, 179, 188, 190, 196, 262, 287, 293, 294, 303, 304
Schimank, U. 198
Schmid, G. 243
Schmoch, U. 214, 215
Schumpeter, J.A. 8, 68
Schumpeterian approach, competition legislation 255–7
science, institutional change in 8, 12
science and technology policy defined 269
   Finland 213, 268–82, 300–305
Science and Technology Policy Council of Finland 100, 102, 200, 273, 274, 275, 287, 289, 291
science-industry linkages 197–9
Scott, A.J. 169
Scott, R.W. 29, 32
Semlinger, K. 131
Senge, P. 142
Sengenberger, W. 246
Senker, J. 199
Seo, M. 29
Seppälä, R. 174, 175
sequential model of education 298
service innovation, incentives and support 102–4
Shapiro, C. 256
‘shareholder value’ approach 37
Sheremata, W.A. 254, 257
Silvennoinen, H. 250
‘skill-biased technical change’ 14
skills 102, 110
   and motivation 93–5
   shortage 80
Slaughter, S. 196
SMEs (small and medium-sized enterprises) 115-16, 131, 133–4, 182, 263, 295, 296
social capital 239, 303
social constraints 33
social discourse 15–16
social exclusion 14, 190, 244
social innovation 29, 30–33, 41
‘social practice’ concept 12
Soete, L. 7, 190, 270
Sölvell, O. 169, 170
Sörensen, K.H. 11
Sotarauta, M. 147, 170
Soviet Union, trade with Finland 289
space of flows 147, 170
special interest groups 31
Spender, J.-C. 91, 92
standardization 81
state, role in transformation process 14–16
Statistics Finland 96, 172, 180, 188, 226, 242
Quality of Work Life Survey 135
Storper, M. 17
Strambach, S. 5, 10, 16
structural adjustment, Finland 33–8
structural adjustment capacity 28–9
structural change 32, 40
structural competitiveness, OECD countries 35
Sugden, R. 37
Suikkanen, A. 20, 242, 243, 244, 245, 247, 298, 306
Sundbo, J. 86
Sung, J. 142
sustainability 14
Sutela, H. 135, 137
Sutton, J. 256
Sweden 69, 138, 271
Symeonidis, G. 262
systemic vision 15
systemic change processes 28
systemic transformation approach 287, 288
systems approach 3
systems of innovation framework 3, 11, 21
tacit knowledge 210, 214
Tainio, R. 37, 289, 290
Tampere University of Technology (TUT) 177–8
Taylor-Gooby, P. 249
teamwork 134–8, 142
technical paradigm 7
Technical Research Centre (VTT), Finland 71, 178, 214, 289
techno-nationalism, Finland 297
techno-organizational paradigm 6
technological change, continuity 4
technological development, and regulation 258
technological gatekeepers 69, 79
technological opportunities 6, 7
Teece, D.J. 256, 257, 258, 260, 262
telecommunications industry, research 109
Telia 50
Telser, L.G. 264
Teubal, M. 8, 10, 11
Thompson, G. 15
Tierney, T. 86
Tinbergen rule 259
Toivola, K. 55, 58
Tomlin, R. 153
Tomlinson, M. 10, 141, 142
Tordoir, P.P. 86
Torvalds, L. 299
Toulmin, S.E. 18
Touraine, A. 190
trade
horizontal restraints 262–3
vertical restraints 264
trade unions 139, 141, 142–3
training 88–9
transformation process 12
industrial and company levels 18
innovation policy in 14–18
role of state 14–16
transformative capability 68
transition policies, education 223
Tregaskis, O. 246
Tulkki, P. 179, 237, 250, 294, 303
Tuomi, I. 12
Tuominen, C. 136
Turpeinen, O. 58
Tushman, M. 69, 79
Umnavanta, H. 139, 140, 142
Index

UMTS (Universal Mobile Telecommunications System) 62
uncertainty 15, 243
uncertainty-reducing strategies 32
underemployment 242–4
unemployment, Finland 190–91, 246–8
universities
  Finland 59, 116–20, 149, 177–8, 202, 238–9, 271–2, 289, 299–300, 300, 307
  reform 20
research
  benefits of co-operation 209–11
  funding 200–201
  knowledge effects of co-operation 210
  problems in collaboration 211–12
  and science-industry relationships 196–218
University of Tampere 135
University of Turku 139
unlocking 3, 22
US, Forest Products Laboratory 74
users 11–12

Valtioneuvoston kanslia 171, 172
value chains 133
Van der Muelen, J.R. 148
Van Meerbeck, W. 259
venture capital, Finland 183
Vepsäläinen, A.P.J. 133
Viinamäki, I. 242
Virtanen, S. 268
virtual networks 256
vision 15
vision orientation, Finland 303–4
Vocational Education and Training (VET) systems 221, 223, 224–7, 236–8
vocational training 223–4
Walden, P. 37
Webster, F. 298
welfare state, Finland 288, 305–7, 309
Willig, R.D. 263
Wilts, A. 198
Winter, R.A. 264
Winter, S. 68
Wired magazine 47
wireless local area networks (WLANs) 62
wood products and glue-lam timber industry
  Finland 69–76
  glue-lam timber bridges 72–4
  laminated veneer lumber 74–6
work organization 134–8
work regulations 7
World Employment Report 243
Yin, R. 76
Ylä-Anttila, P. 36, 37, 47, 49
Ylöstalo, P. 135, 139
Zang, I. 262, 263