

Index

- Acs, A. *et al.* 216
- Advanced Technology Program (ATP)
12, 13, 20, 21, 23, 27, 96
impact/importance 23, 43
- aerospace industry 78, 167, 168, 170
- agglomeration economies 53, 54, 57
see also productivity levels
- Agrawal, A. 217
- agricultural research 27
- Akron University Medical Imaging
Devices, Detectors and Biosensors
Laboratory, Ohio 69
- Albu, M. 209
- American Institutes for Research 120
- AMMI (company) 91
- antitrust regulations 17
- asocial capital concept 154
- Association of University Technology
Managers (AUTM) 34, 38, 100,
199
- Atkinson, R. 159, 164
- Atlanta, Georgia: Black American
entrepreneurs in 192–3
- Audretsch, D. 27, 35–6, 43
- automobile industry 51, 167, 168, 170
patent use 77, 99
- Bach, R. L. *see* Portes, A. and R. L.
Bach
- Bakouros, Y. L. *et al.* 209–10
- banks
borrowing from 132–5
lending relationships 132, 134–5
- Bates, T.
*Race Self-Employment and Upward
Mobility...* 194, 196–7
- Baumol, W. 11
- Bayh–Dole Act 1980 18, 21, 27, 31,
36, 47
purpose/effect 40–41, 45, 199–203,
215
- Becker, G. S.
Human Capital 56
- Belgian Community Innovation
Survey 211
- Bellandi, M. 154
- Berger, A. N. 135
- Bernstein, T. 41
- Bingham, R.
Industrial Policy American Style 12
- biomedical devices 78
electromedical (EM) 96–7, 171
see also medical technology industry
- biotechnology industry 35–6, 38–9, 43,
155, 166, 214
bioMEMS network 67, 69, 74, 76–7,
79, 82, 96
government funding 200
- Black Americans
civil rights 192, 193
education for 190
as entrepreneurs 185–6, 189–94
Free Blacks 190
segregation laws 192, 193
women 195–6
- Blair, D. and D. Hitchens
Campus Companies... 35
- Bodkin, J. *see* Dimanescu, D. and J.
Bodkin
- Bok, D. 200
- Boston, T. D.
*Affirmative Action and Black
Entrepreneurship* 193
- Bozeman, B. 20–21
- brain drain
definition 102, 104–5
from developing countries 104
economic effect of 104–5
economic model of 108–10
numbers involved 104, 105–6,
110–19

- policy issues on 102, 103, 107, 110, 119–22, 124–6
- reasons for
 financial 102–3, 105–7, 108–19
 life event 103, 106, 107, 110–19
 reduction/control 1, 4, 102, 103, 119–22
 by financial aid 103, 110, 112–13, 119–21, 124–6
 return migration 103, 107, 109–10
 from universities 4, 102–26
 graduates 107, 113–16
 undergraduates 105–7, 111–13
see also labour market mobility
- Braunerhjelm, P. *et al.* 205
- Bureau of Economic Analysis 64
- business colocation/agglomeration *see* cluster-based planning
- business subsidies 50
- business support services 168–70, 208
- Butler, J. and G. Kozmetsky
Immigrant and Minority Entrepreneurship... 185
- Buttel, F. *et al.* 27
- California University 43, 44, 81
 graduates of 91–2
- Canada
 brain drain from 104–5
 science parks 209
- capital
 foreign direct investment (FDI) 211–12
 liquidity constraints 56
 private sector 24–5, 43
 social 154
 venture capital 35–6
see also government/state funding; Small Business Administration Guaranteed Loan Program
- capital intensive firms 55
- Carlsson, B. 202, 217
- Case Western Reserve University (CWRU), Ohio 69, 102, 126
 faculty members as consultants 93
 graduates of 91, 92
 licensing by 87, 88, 89
 patents owned by 83, 84, 85, 85
- Case Western Reserve University
 Microfabrication Laboratory 69
- Cassiman, B. 211
- Casson, M. 10
- Census Bureau 52, 58, 102, 110, 122, 186–7, 189, 194, 195
 ‘Black 1997’, *Survey of Minority Owned Enterprise* 193–4
- Center for Advanced Liquid Crystalline Optical materials (ALCOM), Ohio 89
- certified development companies (CDCs) 131
- Chalmers University of Technology, Sweden 204
- Charles, D. 34
- chemicals/plastics industry 167, 168–70
- Chinese immigrants: as entrepreneurs 188–9
- Choice Grants, Ohio 119–20, 125
- Cincinnati University 69
 graduates of 91
 laboratory facilities 69
 licensing by 88
 patents owned by 84, 85, 86
- Clark, B.
Creating Entrepreneurial Universities 9
- Clark, J. 24
- Cleveland Clinic bioMEDS facility, Ohio 69
- Cleveland State University 78–9, 93
- cluster economies 53, 212, 213–14
see also productivity levels
- cluster identification 156–9, 166–79
 emerging/potential clusters 157, 166–8, 171, 175–9
- cluster-based planning 154–82
 definition 154, 155, 156
 factor analysis 157
 for the knowledge economy 4, 155, 159–80
 process of 157–9
 purpose 154
 qualitative analysis 158–9
 quantitative analysis 157–8, 159
 regional economic development and 4, 155, 159–80, 181–2
 science parks and 208–10
 value of 156, 158
- Cohen, W. *et al.*
University-Industry Research Centers... 7

- Collins, S. 43
- Colombo, M. G. 209
- commercial development: of new technologies 35, 41, 42–3, 44, 45–6, 79–81, 87, 97–8, 127, 200–201, 203–8, 210, 213–14, 216
- failure of 80–81
- see also spin-off companies; technology transfer
- communications services industry 167, 168–70, 208
- community research and development 95–6
- commuting 161, 162–3
- see also labor market mobility
- competitive advantage 17, 18–19, 21
- component manufacturing 50–65
- see also manufacturing industry
- computer industry 42, 168–70
- Consortium for Novel Microfabrication Methods..., Ohio 69
- consultants 93, 213
- Conway, C. 34
- Coughlin, J.
- The Rise of Women Entrepreneurs...* 195
- Council on Competitiveness, Washington 180
- Craig, B. 143, 147
- credit rationing/extending 132–5
- agency problems in 136
- in equilibrium 133
- lending relationships 132, 134–5
- loan repayments 133
- market imperfections in 132–4, 136, 145
- for small businesses 4, 127–8, 130–53
- see also Small Business Administration Guaranteed Loan Program
- Cuban immigrants
- in Dade County, Florida 186, 189
- as entrepreneurs 186–7, 189
- Czarnitzki, D. 208
- Davis, S. *et al.*
- Job Creation...* 127
- Davis, T. 121
- de Crevecoeur, J.
- Letters from an American Farmer* 14
- De Voretz, D. 105
- Defense Advanced Research Projects Agency (DARPA) 68, 81
- Delmastro, M. 209
- Deloitte and Touche 60
- Denison, E.
- The Sources of Economic Growth...* 27
- Department of Commerce 12, 29
- Desrochers, P. 212
- Dietz, J. 20–21
- DiGregario, D. 42, 202
- Dimanescu, D. and J. Bodkin
- The New Alliance* 16
- doctoral degrees 116, 118–19, 188–9
- see also universities
- Doloreux, D. 209
- Dubois, W. E. B.
- The Souls of Black Folk* 191, 192, 193
- economic development
- certified development companies (CDCs) and 131
- entrepreneurship and 1–3, 6–8, 9, 11, 12–15, 17–18, 27, 33
- growth theory 216
- innovation networks and 4, 66–101
- knowledge economy and 15–16
- policy issues 3, 33–4, 36–46, 53, 55–61, 63–5
- potential for 146
- public/private technology partnerships and 4, 15–20, 66–101
- regional see regional economic development
- research and development and 18–19, 67
- small businesses and 4, 127, 128, 131, 136–46, 151–3
- spin-off companies and 33–6, 45
- universities and 1–3, 7, 12–15, 203–5
- urban see urban areas
- education 188–9
- of Black Americans 190
- university level see universities
- educational funding 103, 105
- Hope Scholarships, Georgia 103, 112–13, 119

- loan forgiveness programs 120, 121
 student loans/scholarships 110, 119–20, 124–6
- Edulbheham, J. 188
- Eisinger, P.
The Rise of the Entrepreneurial State 9
- electromedical (EM) industry 96–7, 171
- Emergency Banking Act 1933 129
- enabling technologies 70, 72, 74, 78–9, 99
- endogenous growth theory 216
see also economic development
- Entrepreneurial History* 26
- entrepreneurship
 by Black Americans 185–6, 189–94
 commercialization of new technologies 35, 41, 42–3, 44, 45–6, 79–81, 87, 97–8, 127, 200–201, 203–8, 210, 213–14, 216
 cultural issues and 214–15
 definition 8–12, 28, 29
 economic development and 1–3, 6–8, 9, 11, 12–15, 17–18, 27, 33
 education/training in 26, 28
 in Europe 5, 198
 government support for 1, 15–20
 historical survey 12–15
 by immigrants 183–5, 186–9
 impact/importance 1, 13, 17–18, 28
 by minority groups 4, 183–97
 motivation for 183–4
 policy issues 1, 3, 4–5, 7–8, 15–20, 198–217
 science parks and 208–10, 217
 supply/demand issues 5, 215–17
 technology partnerships *see* public/private technology partnerships
 in universities 9, 11–15, 19, 33, 198–217
 by women 4, 194–6
see also innovation; technology transfer
- Europe
 entrepreneurship 5, 198
 intellectual property rights 198, 203
 policy issues 198
 spin-off companies 203
- technology transfer 198, 203–17
see also individual countries
- Explorations in Economic History* 27
- external economies 54
- Federal Home Loan Bank 135, 136, 147, 153
- Feldman, M. 41, 42, 43, 202, 212
- Feser, E. J. 180
- Finland: science parks in 209–10
- food industry 166, 167
- foreign direct investment (FDI) 211–12
see also capital
- France
 spin-off companies 35, 36, 43–4, 207
 technology transfer 207
- Fridh, A. 202
- funding
 of education 103, 105
 government/state *see* government/state funding
 by private sector 24–5, 43
 of public/private technology partnerships 7, 10, 11–12, 16, 19, 20–21, 23–4, 25
 of research and development *see* research and development funding
 of spin-off companies 40, 41, 42–3, 45–6
 venture capital 35–6
see also Small Business Administration Guaranteed Loan Program
- Gage, S. J. 60
- Gans, J. S. 213
- Generating Opportunity by Forgiving Education Debt for Service (GOFEDS) Act (proposed) 120–21
- Georgia *see* Atlanta, Georgia
- Germany: technology transfer in 204, 208
- Gittleman, M. 43–4
- Glennan Microsystems Initiative, Ohio 69
- globalization
 impact of 16, 51, 62, 67, 91, 156, 179
 multinational firms 211–12

- Goe, W. 44
- Goldfarb, B. 205
- Goldman, M. 36
- Gottlieb, P. 107
- government policies *see* policy issues
- government procurement 42
- government/state funding
- of biotechnology 200
 - of education 103
 - of Manufacturing Extension Partnership program 58, 59, 60
 - of manufacturing industry 12, 13, 23, 27, 50
 - of MEMS network 68, 69, 81
 - of research and development 3, 7, 11–12, 13, 16–17, 19–20, 36–9, 47–9, 176, 200
 - of technology partnerships 7, 10, 12, 16, 20–21, 23–4, 25
 - of spin-off companies 41, 42–3, 45–6
- see also* Small Business Administration Guaranteed Loan Program
- graduate employment 91–3, 97–8
- brain drain and 107, 113–16, 120–21
 - on government service 120–21
 - self-employment 116
- Grandi, A. 207
- Greece: science parks 209–10
- Grimaldi, R. 207
- Harden, B. 102
- Harris, A.
- The Negro as Capitalist* 185, 190
- Harvard University 41, 200
- Henderson, R. 217
- Henrekson, M. 205
- Hitchens, D. *see* Blair, D. and D. Hitchens
- Hochfelder, D. 99
- Honeck, J. 62
- Hope Scholarships, Georgia 103, 112–13, 119
- Hotchner, A. E. 28
- Howells, J. 211
- Hsu, D. 41
- Hughes, T.
- American Genesis* 11
- immigrants
- Chinese 188–9
 - Cuban 186–7, 189
 - as entrepreneurs 183–5, 186–9
 - Indian 188–9
 - Japanese 188–9
 - Mexican Americans 186–7
- incubator facilities 41, 45, 127
- India
- brain drain from 104
 - immigrants from 188–9
- India Institute of technology (IIT) 104
- industrial liaison offices (ILOs) 204
- industrial upgrading 62
- industry
- heavy industry 167, 168, 170
 - innovation networks 3, 54
 - inter-firm networks 54, 56
 - the knowledge economy 159–80
 - manufacturing 3, 50–65
 - market failures in 55–61
 - MEMS network and 94–5
 - Original Equipment Manufacturers (OEMs) 51, 60, 61–2
 - policy issues 3, 50, 55–61, 63–5
 - productivity levels 3, 53–6, 59, 60–61
 - profit levels 53–4, 55, 65
 - research and development by 93–4
 - sales levels 54–5
 - university links 1, 2–3, 6–8, 9, 10, 22, 24–5, 78–9, 87, 89, 91, 93, 198, 203–8, 213–14
- see also* public/private technology partnerships; specific industries
- industry clustering *see* cluster-based planning
- information exchange 56, 60, 62, 74, 78–9
- know-how trading 62
 - see also* technology transfer
- information technology industry 167, 168–70, 171
- innovation 8, 22
- diffusion process 18, 22–3; *see also* technology transfer
 - by small businesses 13, 18, 19–20, 27, 127
 - see also* entrepreneurship
- innovation networks
- economic development and 4, 66–101

- as enabling 70, 72, 74, 78–9, 99
 investment in 4, 66
 in manufacturing industry 3, 54
 microelectrical mechanical systems (MEMS) networks 4, 66–101
 productivity levels and 3
 regional 5
see also technology transfer
- institutional structure: for technology transfer 199, 203–8, 212–16
- intellectual property
 in Europe 198, 203
 in Japan 39, 40, 41
 ownership issues 5, 39–40, 45, 48, 198, 199–203, 215
 types of 200
 university created 1, 3, 5, 36, 39–40, 198, 199–203, 215
see also licensing; patents; technology transfer
- interest rates 133, 134
- International Association of Science Parks 208
- inventory reduction 56, 57
- Investment Company Act 1958 130
- Ireland: technology transfer in 203–4
- Italy
 science parks 209
 technology transfer 207, 209
- Ivarsson, I. 211
- Jacob, M. 204
- Jacobs, J.
Cities and the Wealth of Nations 183
- Jaffe, A. B. 201
- Japan 68
 immigrants from 188–9
 intellectual property rights 39, 40, 41
- Jarmin, R. 27, 58–9, 60–61
- Jensen, R. A. *et al.* 202
- Jewell, J. O. 192
- job creation 19, 21, 24, 102, 121
 by small businesses 127
 by spin-off companies 34, 44
- job losses: in manufacturing industry 50, 51, 52
- Jobs Now program, Missouri 120
- John Carroll University, Ohio 125–6
- Johns Hopkins University: technology transfer policies 212–13
- Jones-Evans, D. *et al.* 203–4
- Kane, E. J. 132, 134
- Kaufman Foundation 11
- Kelley, M. 41, 42, 43
- Kennedy, Paul
The Rise and Fall of the Great Powers 18
- Kenney, M. 44
- Kent State University, Ohio 91, 99
- Kenzer, R.
Enterprising Southerners... 191
- Kihlgren, A. 210
- Kloosterman, R. and J. Rath
Immigrant Entrepreneurs... 197
- Kneller, R. 41
- know-how trading 62
- knowledge *see* information exchange; technology transfer
- knowledge economy
 cluster-based planning for 4, 155, 159–80
 definition 157
 economic development and 15–16
 growth of 155, 187–8
 industries involved in 161, 164, 165, 166–74
 policy issues 157
 requirements for 161
 as virtual 161
- Kozmetsky, G. *see* Butler, J. and G. Kozmetsky
- Krucken, G. 204
- labor market
 brain drain and 107, 113–16, 119–21
 government employment 120–21
 for graduates 91–3, 97–8, 116
 self-employment 116
- labor market mobility 43–4, 46, 56, 214
 commuting 161, 162–3
see also brain drain
- labor quality 63–4, 161
- land grants 14–15, 27, 33
- Larsen, J. *see* Rogers, E. and J. Larsen
- Laryca, S. 105
- Lerner, J. 43, 153, 201

- Leslie, L. *see* Slaughter, S. and L.
 Leslie
- Levenstein, M. 190
- Levin, S. G. 200
- Lewis, D. 184–5
- license fees 42
- licensing 3, 34–5, 38, 48, 87–9, 199, 200, 201, 213
 contract terms 202
 in Europe 198
 exclusive 40–41
see also intellectual property;
 patents; technology transfer
- Light, I.
Ethnic Enterprise 186
- Lindelöf, P. 208
- Link, A. N. 208
- liquid crystal research 91, 99
- loan forgiveness programs 120, 121
see also student loans/scholarships
- localization economies *see* regional economic development; urban areas
- Lockett, A. *et al.* 42, 206
- Löfsten, H. 208
- Lowe, R. 43
- Luger, M. 180
- Luria, D. 55, 59, 61, 64
- McDougall, W.
Freedom Just Around the Corner 27
- Malkiel, B. G. 132, 134
- Malone, R. 41
- Manufacturing Extension Partnership (MEP) program 12, 13, 23, 27, 50, 51, 57, 58
 criticism of 61
 funding levels 58, 59
 performance analysis of 55, 58–61, 62, 63, 64–5
 purpose 58
 for small firms 60
- manufacturing industry
 component manufacturing 50–65
 innovation networks 3, 54
 inter-firm networks 54, 56
 job losses 50, 51, 52
 market failure in 55–61
 microelectronics 4, 66–101
 policy issues 3, 50, 55–61, 63–5
 productivity levels 3, 53–6, 59
 profit levels 53–4, 55, 65
 sales levels 54–5
 subsidies available to 3, 50, 56, 58, 60, 61
 in urban areas 3, 50–51, 52, 53–4, 55–6, 57, 62
 wage levels 3, 54–5, 57
- market failure
 in credit market 132–4, 136, 145
 in manufacturing industry 55–61
 of new technologies 80–81
- Marshall, A. 54, 154
- Massachusetts Institute of Technology (MIT) 34, 35, 36, 41, 71
 patents owned by 87, 217
- medical services industry 167, 168–70
- medical technology industry 166, 167, 168–70, 174, 175
 biomedical devices 78
 electromedical (EM) 96–7, 171
- Mehregany, M. 91
- Mexican Americans: as entrepreneurs 186
- Miami University 105, 106
- Michigan Manufacturing Technology Center Performance Benchmarking Service 50, 52, 63
- microelectrical mechanical systems (MEMS) network
 bioMEMS 67, 69, 74, 76–7, 79, 82, 96
 commercialization of new technologies by 79–81
 economic development and 4, 66–101
 as enabling 70, 72, 74, 78–9, 99
 funding of 4, 66, 68, 69, 70, 81
 as geographically concentrated 70–71, 72–4
 growth of 70–71
 industry, cooperation with 94–5
 as innovative 81–95
 patents generated by 70, 71, 78, 92, 99
 performance analysis 70–77, 81–95
 research and development by 68–98
 structure/organization 81–95
 as university-based 68, 99
 microelectronics industry 4, 66–101

- migration *see* brain drain; job mobility
- Miller, M. 100
- minority groups
 as entrepreneurs 4, 183–97
 women 4, 184, 195–6
- Monjon, S. 207
- Moore, K. 184–5
- Mora-Valentin, E. M. *et al.* 207–8
- Mowery, D. 20, 200, 201
- Mueller, S. L. 214–15
- Muller, T.
 Immigrants and the American City
 185
- multinational firms 211–12
 see also globalization
- Mustar, P. 35, 36
- NASA 69
- National Association of
 Manufacturers 58
- National Consortium of
 Entrepreneurial Centers 9
- National Institute of Standards
 and Technology (NIST) *see*
 Manufacturing Extension
 Partnership programs
- National Institutes of Health (NIH)
 39, 81
- National Science Foundation (NSF) 68
- National Venture Capital Association
 (NVCA) 152
- Nedeva, M. 211
- Negro Business League 190
- Nelson, R. R. 199, 217
- Nerkar, A. 213
- networks
 iCleveland 121
 for innovation 3, 45, 54, 66–101
 inter-firm 54, 56
 microelectrical mechanical systems
 (MEMS) 4, 66–101
 Ohio MicroMD 69–70
- new economy *see* knowledge economy
- North Carolina: Black entrepreneurs
 in 191–2
- North Carolina Research Triangle
 159–64, 166
 cluster-based planning 155, 164–80,
 182
 definition/purpose 180
- North Carolina University (UNC) 166
- Northeast Ohio Council on Higher
 Education (NOCHE) 30
- Oberlin College, Ohio 105
- Ohio
 brain drain from 102–26
 reduction/control of 4, 102, 103,
 110, 112–13, 119–22, 124–6
 MEMS network in 66–101
 Ohio Instructional Grant 125
 Ohio MicroMD network 69–70
 Ohio State University 69, 81, 105
 bioMEDS facility 69
 licensing by 87, 88
 patents owned by 83, 84, 85, 86
 Omnibus Trade and Competitiveness
 Act 1988 23
 Original Equipment Manufacturers
 (OEMs) 51, 60, 61–2
 Owen-Smith, J. 201, 213
- partnerships *see* public/private
 technology partnerships
- patents 21, 38, 39, 48, 66
 in automobile industry 77, 99
 cited patents 83, 86, 87, 92, 97, 98,
 217
 in microelectrical mechanical sys-
 tems (MEMS) 70, 71, 78, 92, 99
 university owned 83–7, 91, 99, 199,
 201, 203, 213, 217
 value/importance 83, 201
 see also intellectual property;
 licensing; technology transfer
- Perez, M. P. 205–6
- Petersen, M. A. 132, 134–5
- pharmaceutical industry 166, 167,
 168–70, 174, 175
- Phillips, S. A. M. 210
- Pierce, J. A.
 Negro Business and Business
 Education 192–3
- Pirnay, F. *et al.* 205
- policy issues
 on brain drain control 102, 103, 107,
 110, 119–22, 124–6
 in economic development 3, 33–4,
 36–46, 53, 55–61, 63–5
 regional 4, 155, 157

- for entrepreneurship 1, 3, 5, 7–8, 15–20, 198–217
- in Europe 198
- for the knowledge economy 157
- on labor market mobility 43–4
- on land/agriculture 14–15, 27
- in manufacturing industry 3, 50, 55–61, 63–5
- on public/private technology partnerships 22–6
- in research and development 15–16
- for small businesses 3, 50, 55–61, 63–5, 127, 129–30, 146, 147
- for spin-off companies 36–46, 47–9
- on tax incentives 3, 50, 56, 58, 61
- in technology transfer 18, 48, 205, 212–17
- Pollard, S. 9
- Porter, M. 164, 166
Clusters of Innovation... 155, 161, 180, 181
The Competitive Advantage of Nations 155
- Portes, A. and R. L. Bach
Latin Journey 186
- Powell, W. W. 213
- Pressman, L. 34, 35, 41
- private sector funding 24–5, 43
- productivity levels: in manufacturing industry 3, 53–5, 59, 60–61
- profit levels: in manufacturing industry 53–4, 55, 65
- Progressive Policy Institute (PPI), Washington 159
- proprietary rights 200
see also intellectual property
- public/private technology partnerships 2–3, 6–8, 9–12, 29–32, 121
- cut backs in 23–4
- economic development and 4, 15–20, 66–101
- funding of 7, 11–12, 16, 19, 20–21, 23–4, 25
- future of 22–6
- growth of 15–20
- historical survey 12–13
- impact/importance 20–22, 23, 24, 78–9
- innovation networks 4, 66–101
- policy issues 22–6
- types of 16, 20–22
see also research and development; universities
- Putnam, R. D.
Making Democracy Work 154
- Raghuram, G. R. 134–5
- Rath, J. *see* Kloosterman, R. and J. Rath
- Reconstruction Finance Corporation (RFC) 129
see also Small Business Administration
- regional economic development 4, 30–31, 35–6, 44, 54–6, 63–5
- Black Americans and 185–6, 189–94
- cluster economies 53, 212, 213–14
- cluster-based planning 4, 155, 159–80, 181–2
- cultural issues 214–15
- immigrants and 183–5, 186–9
- innovation networks and 4, 66–101
- minority groups and 183–97
- policy issues 4, 155, 157
- reasons for 184–5
- women and 4, 194–6
see also economic development; urban areas
- Regional Economic Issues (REI) Center, Cleveland 30–31
- regional economics: differences in 159–64
- regional innovation networks 5
- regions: definition of 155
- reputational rights 200
see also intellectual property
- research and development (R&D)
- academic *see* universities
- agricultural 27
- community based 95–6
- criticism of 18, 19
- economic development and 18–19
- growth of 16–20
- historical survey 12–15
- industrial 93–4
- in microelectrical mechanical systems (MEMS) 68–98
- policy issues 15–16
- technology partnerships *see* public/private technology partnerships

- in universities 2–3, 6–8, 12–13, 24–5,
27, 36, 99, 176
see also entrepreneurship
- research and development funding 7,
11–12, 13, 16–17, 19–20, 24–5,
36–9, 47–8, 176, 205
in biomedicine/biotechnology 206
returns from 67, 98
research quality 200–201
risk-taking *see* entrepreneurship
- Roberts, E. 41
Rogers, E. and J. Larsen
Silicon Valley Fever... 187
- Romijn, H. 209
Rosenberg, N. 20
Royal Society, London 104
RTI International (RTII) 166, 176, 178
Russia: science parks 210
- Sadowski, B. M. *et al.* 209
Saez, C. B. *et al.* 207
salaries *see* wage levels
sales levels: in manufacturing industry
54–5
- Sampat, B. N. 199
Sanchez, A. M. 205–6
Saxenian, A. 188
Regional Advantage... 187
- Schultz, G. 23
Schumpeter, J. 8, 9, 17, 18–19, 26, 27
science parks 208–10, 217
Scott, J. 22
Scott, J. T. 208
self-employment 116
see also labor market
- semiconductor industry 77–8
service industries 167, 168–70, 208
Shane, S. 42, 201, 202, 213
Shapira, P. 27, 61
Shearmur, R. 209
Siegel, D. S. *et al.* 202, 208–9
Siler, P. *et al.* 211–12
Silicon Valley, California 182, 187
immigrant entrepreneurs in 188–9
impact/importance 187–8, 214
- Simmel, G. 183–4, 185, 186, 188
Singapore: science parks 210
Slaughter, S. and L. Leslie
Academic Capitalism 9
- Small Business Administration (SBA)
19, 29, 128
certified development companies
(CDCs) and 131
credit/loan programs 130–31; *see also*
SBA Guaranteed Loan Program
function 128, 132, 146, 147, 151
historical survey 129–30, 146, 151
- Small Business Administration
Guaranteed Loan Program
amounts involved 127–8, 131, 132,
148–50
definition 130–31
economic development and 127, 128
impact of 127–8, 135–45, 151–3
numbers of loans 127–8
regression analysis of 139–45, 146
- Small Business Innovation Research
(SBIR) program 13, 19–20, 21, 23,
27, 43, 152
- Small Business Investment Company
(SBIC) Program 130, 151–2
- Small Business Technology and
Development Center (SBTDC),
North Carolina 166, 179
- small businesses
credit rationing/extending for 4,
127–8, 130–53
economic development and 4, 127,
128, 131, 136–46, 151–3
equity issues 202
in Europe 203–8
importance of 129–30
innovation by 13, 18, 19–20, 27, 127
job creation by 127
in manufacturing 3, 50–65
market failures in 55–61
minority groups as owners of 186–7
policy issues 3, 50, 55–61, 63–5, 127,
129–30, 146, 147
spin-off companies *see* spin-off
companies
tax incentives for 3, 50, 56, 58, 61
in urban areas 3, 50–51, 52, 53–4,
55, 62
wage levels 3, 54–5, 57, 63
- Smith, A.
Wealth of Nations 183
social welfare issues 55, 57–8, 61

- Sommers, D. 123–4
- Sorenson, O. 214
- Spain: technology transfer 205–6, 207–8
- Spielkamp, A. 208
- spin-off companies 1, 3, 5, 9, 19, 33, 37–8, 47–9, 90
 creation of 40–42, 70, 89, 202, 205–8
 economic development and 33–6, 45
 equity issues 42, 44, 45, 202
 in Europe 34, 35, 36, 42, 43–4, 203–10
 evaluation of 89
 in France 35, 36, 43–4
 funding of 40, 45
 government/state 41, 42–3, 45–6
 job creation by 34, 44
 labor market mobility and 43–4, 46
 multinational 211–12
 multiplier effects from 35
 path dependencies in 206–7
 policy issues 36–46, 47–9
 in United Kingdom 34, 35, 42
 university facilities, use of 41–2
see also small businesses
- Stanford University 41, 44
- start-up companies *see* spin-off companies
- state funding *see* government/state funding
- Stephan, P. 35–6, 39
- Stern, S. 213
- Stiglitz, J. E. 132–4
- Storey, D. J. 210
- Stough, R. R. *et al.* 157
- strangers: definition of 183–4
see also immigrants
- strategic research partnerships
see public/private technology partnerships
- Stuart, T. 214
- student loans/scholarships 103, 110, 112–13, 119–20, 124–6
 loan forgiveness programs 120, 121
- Sumell, A. *et al.* 107, 116
- Sweden 39
 science parks 208
 technology transfer 203–4, 205, 211
- tax incentives: for small businesses 3, 50, 56, 58, 61
- technological innovation *see* innovation
- technology partnerships *see* public/private technology partnerships
- technology transfer 5, 99
 Bayh–Dole Act, effect on 199–203
 commercial development and 35, 41, 87, 97–8, 127, 200–201, 203–8, 210, 213–14, 216
 in Europe 198, 203–17
 by graduate employment 91–3, 97–8
 historical survey 27
 information exchange 56, 60, 62, 62
 innovation networks and 3, 54, 67, 81
 institutional structure for 199, 202–8, 212–16
 international 16, 207, 211–12
 licensing and 3, 34–5, 38, 40–41
 multinational firms and 16, 211–12
 policy issues 18, 48, 205, 212–17
 process of 82–3
 science parks and 208–10, 217
 to spin-off companies *see* spin-off companies
- from universities 1, 3, 7, 12, 31, 37–8, 39, 48–9, 82–94, 198–208
see also entrepreneurship;
 intellectual property; patents
- technology transfer offices (OTTs) 199, 202–3
- Tether, B. S. 210
- Thomas, A. S. 214–15
- Thomson, J. 143, 147
- Thursby, J. G. and M. C. Thursby 200
- Tornatzky, L. *et al.* 42, 43
- training: in entrepreneurship 26, 28
- training expenditure 56
- training subsidies 3, 57, 58, 60, 61
see also Manufacturing Extension Partnership (MEP) programs
- transportation/shipping industry 167, 168, 170
- Udell, G. F. 135
- United Kingdom (UK)
 brain drain from 104
 economic decline 17–18
 science parks 208–9
 Scotland 211–12
 spin-off companies 34, 35, 42, 206–7, 211–12

- universities
- brain drain from 4, 102–26
 - doctoral degrees 116, 118–19, 188–9
 - economic development and 1–3, 7, 12–15, 23–5
 - as entrepreneurial 9, 11–15, 19, 33, 198–217
 - entrepreneurship programs 26, 28
 - in Europe 198
 - graduate employment 91–3, 97–8, 107, 113–16, 120–21
 - immigrant students 188–9
 - industry links 1, 2–3, 6–8, 9, 10, 22, 24–5, 78–9, 87, 89, 91, 93, 198, 203–8, 213–14
 - intellectual property created by 1, 3, 5, 36, 39–40, 198, 199–203, 215
 - leave of absence from 44, 46
 - MEMS networks in 68
 - patents owned by 83–7, 91, 99, 199, 201, 203, 213, 217
 - research and development by 2–3, 6–8, 12–13, 24–5, 27, 36–9, 99
 - agricultural 27
 - student loans/scholarships 103, 110, 112–13, 119–20, 121
 - technology partnerships *see* public/private technology partnerships
 - technology transfer from 1, 3, 7, 12, 31, 37–8, 39, 48–9, 82–94, 198–203
 - undergraduates 105–6, 119–20
 - university spin-offs (USOs) *see* spin-off companies
 - University–Industry Research Centers (UIRC)s 89, 91, 92
 - see also* public/private technology partnerships
- urban areas
- economic development 30–31, 35–6, 44, 54–6, 63–5
 - manufacturing industry 3, 50–51, 52, 53–4, 55–6, 57, 62, 63–5
 - wage levels 55, 57, 63, 65
- see also* regional economic development
- US News and World Report 105, 106
- venture capital 35–6
- see also* Small Business Administration Guaranteed Loan Program
- Veugelers, R. 211
- Vohora, A. *et al.* 206
- Waelbroeck, P. 207
- wage levels 176, 177
- in small businesses 3, 54–5, 57, 63
 - in urban areas 55, 57, 63, 65
- Wakoh, H. 43
- Washington, B. T. 190, 191
- wealth creation *see* economic development
- Weber, M.
- The Protestant Ethic...* 184
- Weiss, A. 127, 132–4
- Wiarda, E. 61, 64
- Wickstead, S.
- The Cambridge Phenomenon* 36
- Wildavsky, A. 161, 164
- wine industry 182
- Winfield, D. *see* Witsil, A. and D. Winfield
- Winter, S. 26
- Wisconsin Manufacturers' Development Consortium (WMDC) 60
- Witsil, A. and D. Winfield
- R&D Inventory and Growth Opportunity Analysis* 180
- women
- Black 195–6
 - as entrepreneurs 4, 194–6
 - gender roles 195
- Yeung, H. W. C. 210
- Zhou, M.
- Chinatown...* 189