Index

Advanced Customer Premises Equipment 23
Advanced Digital Television System (ADTS) 24
Aeppel, T. 81
America Online, Inc., Zeran v. 120
analogue systems, mobile telecommunications 153–5
anti-competitive behavior and concentration, Internet backbone market 47–8
and e-commerce 81–2, 86–7
essential facilities doctrine 222–3
interconnection policies 43–5
and network externalities 46–7, 48–50
and proprietary standards 42, 48–9
telephone industry 39–41
Armstrong, M. 138, 168
ARPANET 29–31
Asymmetrical Digital Subscriber Lines (ADSL) 21
Asynchronous Transfer Mode (ATM) 21
AT&T 137–8, 140, 222–3, 234
auctions for licences 166, 167
online 98
Bailey, J.B. 100–101
Baran, P. 29
Baumol, W.J. 211, 219
Baylis, K. 102
Beesley, M. 200
Berners-Lee, T. 32
brand names and pricing 133–4
and promotion of e-commerce 78, 80–81, 100
broadband, see Internet access (residential demand) study
Broadband Integrated Service Data Network (BISDN) 21
broadcast regulatory model 112–13
Brown, J.R. 101
Brynjolfsson, E. 101
bundling, see product bundling
business-to-business (B2B) commerce 38, 75–6; see also e-commerce; e-commerce, and industrial organization
cable television, regulatory model 113
capital costs, and technological change 215–17
Carlton, D.W. 99
cellular technology, mobile telecommunications 152–5, 156
Centrex 23
centrifugal technologies 7, 8–10, 22–4
centripetal technologies 7–8, 10–11, 20–22
Cerf, V. 30, 31, 51
Chamberlain, E.H. 96
Child Online Protection Act 124
Children's Online Privacy Protection Act 124
circuit switching 29
Clemons, E.K. 100
Clinton Administration model, Internet regulation 113–14
coaxial cable systems 20
common carriers, and regulation 108, 111–12, 115, 118–19
common costs, and cost-based regulation 204–5, 209
communication, importance of 234–5
Communications Act (1934) 119–20
competition policy 116–17
and consumer welfare 220–28
and e-commerce 89, 114
see also network unbundling; regulation; regulation, cost-based; regulation, Internet
competitive markets, characteristics of 80
conduct regulation 40–41
consumer surplus, and market efficiency modeling 93–5
consumer welfare, and regulation 220, 221–8
contestability
definition of 80
perfect, assumption of 211
contracts, electronic 78–9
copyright, protection of 120, 124–5, 196
cost-based regulation, see regulation, cost-based
cost structures, telecommunications services 130–32
credence goods 77, 78
Cremer, H. 163
data communication, development of 8–11, 20–24
Davies, D. 29
delivery costs, online retailing 96–7
demand growth, formal analysis of firms’ response to 14–19
derived demand, price elasticity of 224–5
Digital Extended Cordless Telephony (DECT) 21
Digital Millennium Copyright Act (DMCA) 120, 124–5
digital switching 20, 21
digital systems, mobile telecommunications 153, 155–7
digital technology, market convergence 181, 182, 183–6
Dixit, A.K. 96, 218
Duso, T. 171
e-commerce 38–9
definition of 73–4
jurisdictional issues 121–3
product information 97–9, 100, 102, 103
regulation of 89, 114
size and nature of 74–6
see also retailing, online
e-commerce, and industrial organization 76, 88–9
competition/contestability 80–82, 86–7
and geographical markets 76, 83–5
intermediation services 82–3, 87–8, 98
search costs 76–8, 79
transaction costs 76–9, 96–7
see also retailing, online
e-mail 36
Ebbers, B.J. 139
economies of scale/scope 130
and cost-based regulation 204–5, 208–9
and product bundling 136–7
and technological change 5–6
digital electronic data interchange (EDI) 74
emergency communications 180–81
essential facilities doctrine, antitrust law 222–3
Ethernet 31
experience goods 77–8, 100
externalities, network 45–7, 48–50, 165, 235
extranets, development of 9–10

Federal Communications Commission (FCC) 117, 118–19
and cable television 113
current approach 201–2, 210, 219
and network unbundling 141, 201–2, 212–13, 220–22, 224, 227
and product bundling 134–5, 243–4
fiber-optic cable, and sunk costs 42
firms
response to demand growth, formal analysis of 14–19
technological change, role in 3–6, 12
fixed capital, see sunk costs; super-fixed capital
fixed costs
and cost-based regulation model 204
and incremental cost pricing 131
and online retailing 95–6
and regulation, distinction from sunk costs 205
see also economies of scale/scope; regulation, cost-based; sunk costs

Global Positioning System 24
Global System for Mobile Communication 24
Goolsbee, A. 95, 101, 102
Government Paperwork Elimination Act 124
Greenberg, L. 81
Gruber, H. 157, 158–9, 170
Hausman, J.A. 130, 137, 157, 170, 222
Hausman–Sidak test 226–7
high altitude platform systems (HAPS) 188
Hoskens, D. 101
Huber, P.E. 142
hypertext 32
Hypertext Transfer Protocol (HTTP) 32
illegal activity, see regulation, Internet industry group Web sites 81–2
Integrated Services Data Network (ISDN) 21
intellectual property rights, protection of 120, 196
Intelligent Antennas 24
intelligent networks 20–21
interactive communication technology 22
interconnection
Internet backbone market 43–5
mobile telecommunications 167–70
intermediation services, and e-commerce 82–3, 87–8, 98
Internet 27–9
access methods 33
applications of 36
definition of 28
future of 51
history of 29–32
mobile access 157
network externalities 45–7, 48–50
proprietary standards 42, 48–9
and satellites 195
and telephone industry regulation 39–41
telephony, and regulation 117–19
usage of 35–9
see also Internet backbone market; Internet Backbone Providers (IBPs); Internet Service Providers (ISPs); regulation, Internet
Internet access (residential demand) study 55
access models 60–63
conclusions 70–71
data 63–4, 65
demographic profiles 56–60
empirical results 64–70
Internet backbone market barriers to entry/expansion 41–3
competition in 41–5, 48–50
concentration, and government intervention 47–8
interconnection policies 43–5
network externalities 48–50
Internet Backbone Providers (IBPs) 33–5, 36
Internet Service Providers (ISPs) 33–4
as common carriers 108, 111–12, 115
liability for content transmitted 107–8, 111–13, 119–20
see also Internet backbone market; regulation, Internet
Internet Tax Freedom Act 124
intranets, development of 8–9
irreversible capital stock, see super-fixed capital
Kahn, R. 30, 31
Katz, M.L. 165
Kauffman, R.J. 101
Kleinrock, L. 29
labor costs, and Marxian theory of value 207
Lach, S. 101
Latour, B. 2
Lee, M.J. 101
Lerner index 94
licensing, auctions v. beauty contests 166–7
List, J. 98
Littlechild, S. 200
local exchange carriers (LECs) 39–40, 134–5, 137–40
competition/pricing 141–4
innovation, and cost-based regulation 213–15
network unbundling 201–2, 220–28
localized knowledge, and technological change 4–6, 12
Lucent Technologies 239
Lucking-Reiley, D. 98
Lukas, A. 95

MacDonald, R. 218
market convergence, and digital technology 181, 182, 183–6
market efficiency, modeling 93–5
market failure, and Internet regulation 110–11
market power
and network externalities 46–7, 48–50
tests for 225–6, 227
Marxian theory of value 207
MCI 138, 139, 222–3
MCI Communications Corporation v. American Telephone & Telegraph Company 222–3
McLure, C.E. Jr 95
Merger Guidelines (1992) 225–6
Metcalf, R. 31
microwave radio systems 23
Mobile Application Part 24
mobile telecommunications 151–2, 171–2
coverage 161
demand/usage 157–9
and fixed services, convergence with 161–4
interconnection 167–70
licensing 166–7
market structures 159, 161
pricing 159–60, 162–3, 168–9, 170–71
regulation 164–71, 172
roaming services 169–70
standards 152, 155–6, 157, 164–5, 170
supply issues 159–64
technology 10, 22, 23–4, 152–7
telephony, development of 10, 22, 23–4
see also satellite communications services
monopolies, technological innovation by 7–8
MOSAIC 32
Moving Pictures Expert Group 22
multi-homing 42–3

navigation systems, satellite 193
network access points (NAPs) 34
network externalities 45–7, 48–50, 165, 235
network unbundling 141–4, 201–2, 210–13, 220–28
non-substitution model, Samuelson–Mirrlees non-substitution model
one-stop shopping, see product bundling
optical fiber technology 20, 22, 42
Oxman, J. 111, 118–19
packet switching, development of 29–32
Parker, P.M. 171
peering (Internet networks) 34, 44–5
perfect contestability, assumption of 211
Personal Communication Networks (PCN) 24
Picot, A. 81
Png, I. 101
political participation, and universal service 234–5
Power-Line 24
price elasticity of derived demand 224–5
prices/pricing 129
and brand identity 133–4
and cost structures 130–32
demand, relationship to 206, 208–10
and e-commerce 81–2, 83–4, 86, 99, 100–102
and market power 225–6
and Marxian theory of value 207
mobile telecommunications 159–60, 162–3, 168–9, 170–71
and product bundling 134–5, 136–40, 244
profitable, requirements for 132–6
and quality attributes 134
retail/wholesale services 132, 135–6, 140–44
satellite communications services 193–5
see also regulation; regulation, cost-based; retailing, online
privacy
children 124
and online retailing 98–9
producer surplus, and market efficiency
modeling 93–4
product bundling 129
fixed and mobile services 163–4
and pricing 134–5, 136–40, 244
rationale for 136–7
recent examples 137–40
and universal service 243–4
product information, and e-commerce
97–9, 100, 102, 103
productivity growth, as response to
increased demand 14–19
publishers, freedom of expression 113
quality assurance, and online retailing
99–100
real estate market 86–7
regulation
and interconnection policies 45
mobile telecommunications 164–71, 172
and new technology 111–13, 118–19
of prices 131, 132, 142–4, 170–71, 200–201
product bundling 243–4
regulatory asymmetry 114–16
satellite communications services
190–91, 194–5
telephone industry 39–41, 43
see also Federal Communications
Commission (FCC); regulation, Internet
regulation, cost-based 199–202
assumptions used 199–200, 203–4, 206, 208–10, 215–19
basic model 203–5
cost without demand, economic
analysis 206–10
fixed/sunk costs 210–19
and innovation 213–15
negative effects 200, 201–2
and network unbundling 210–13, 220–28
price reductions and new entrants, problem of 200
regulation, Internet 107–8, 124
alternative models 108–10
attitudes towards 121
Clinton Administration model
113–14
and concentration, Internet
backbone market 47–8
consistency of 117
jurisdictional issues 121–3
legislation, recent 119–20, 124–5
loopholes, exploitation of 116–17
and market failure 110–11
regulatory asymmetry 114–16, 117–20
regulatory opportunism 116
safeguards, legal/regulatory 119–20, 124–5
traditional regulatory constructs 111–13
retailing, online 74–5, 92–3, 102–3
market efficiency, modeling 93–5
and off-line markets 102
price search effects 100–102
product information 97–9, 100, 102, 103
quality assurance 99–100
retailing costs 95–6
transaction costs 96–7
see also e-commerce; e-commerce,
and industrial organization
sales taxes, and online retailing 95
Samuelson, T.A. 219
Samuelson–Mirrlees non-substitution
model 206
assumptions used 208–10
satellite communications services
180–82, 197
challenges facing 191–3, 194
demand/growth 188–90
economic issues 191–6
institutional environment 190–91
market structures 183–6
pricing/service issues 193–6
regulation 190–91, 194–5
revenues 189, 190
standards 187–8
technology 23, 24, 186–8
Sawhney, H. 237
Scott Morton, F. 101
search costs 76–8, 79, 100
Index

search goods 77–8, 100
Service Control Point 22
Shapiro, C. 50, 131, 165
Shew, W.B. 171
Smith, A.T. 135
social constructionism 2
social participation, and universal service 235
Solomon, S. 80
Spence, M.A. 96
Sprint 139
stockbrokers/stock exchanges 84–5, 86, 87
sunk costs 130, 205
and e-commerce 80–81
experience goods 78
Internet service provision 42
and regulation 201, 202, 205, 210–19
see also fixed costs
super-fixed capital 3
and firms’ response to demand growth 14–19
and switching costs 4–5, 17–18
Swire, P.P. 123
switching costs 4–5, 17–18
Synchronous Digital Hierarchy 22
Tardi, T.J. 134, 135, 137, 142
target marketing 98
taxation
Internet 124
sales, and online retailing 95
TCI 137
technological change 1
and capital costs 215–17
dynamics of 6–11, 13
main developments 7–11, 20–24
market construction of 2–6, 12–13, 14–19
nature of process 12–13
Telecommunications Act (1996) 116–17, 139, 210
and common carriers 112
network unbundling/consumer welfare 141, 220–28
and product bundling 134–5
telephone industry
convergence of mobile and fixed services 161–4
interconnection policies 44
network unbundling 141–4
product bundling 134–5, 137–40, 163–4, 243–4
regulation of 39–41, 43
regulatory asymmetry 115–16
restructuring/company mergers 238–9
see also mobile telecommunications; universal service
telephone penetration rates 237–8, 239–41
television
Advanced Digital Television System (ADTS) 24
cable, regulatory model 113
integration with telecommunications 22
Time Division Multiple Access 24
Total Access Communication System 23–4
total service long-run incremental cost (TSLRIC) 201, 202, 212–13
calculation of, assumptions made 215–19
and innovation 213–14
transaction costs, and e-commerce 76–9, 96–7
transistor systems 20
transit payments (Internet networks) 44–5
Transmission Control Protocol/Internet Protocol (TCP/IP) 22, 28, 31–2
unbundling, network 141–4, 201–2, 210–13, 220–28
uncertainty, and sunk costs 217–18
universal access, definition of 235–6
universal connectivity, Internet 49–50
Universal Mobile Telecommunications Systems (UMTS) 22, 156–7
universal service 234–5
benefits of 234–5, 237
bundled services 243–4
case studies 239–40
company mergers/restructuring 238–9
Index

core principles 246
definition of 235–6
informed choice model 246–7
local considerations 244–6
measurement of 236–8
open competition/consumer choice 241–3, 246–7
policies 236–7, 244–7
telephone penetration rates 237–8, 239–41

Valletti, T.M. 161
Varian, H.R. 101, 131
vertical integration
benefits of 136–7
recent examples 137–40
see also product bundling
Voice on the Internet (VOI) technology 22

Ward, M.R. 100, 101, 102
Wavelength Division Multiplexing technology 22
Weaving the Web 32
wholesale telecommunications services
mandatory v. voluntary access 141–3
pricing of 132, 135–6, 140–43
Wireless Application Protocol (WAP) 157
World Wide Web (WWW)
history of 32
size of 37
usage of 35–9
WorldCom 47–8, 138, 139
Xavier, P. 237

Zeran v. America Online, Inc. 120