

Index

- 1G, 228, 316
- 2G, 228, 247, 265, 271, 316
- 3G, xxiv, 73, 117, 228, 232–4, 242, 247–53, 258, 260, 262–5, 271, 279, 316
- anti-competitive conduct, 42–3, 47, 71
- antitrust law, 15, 26–7
- apparatus licences, 270–71, 274, 279–80. *See also* licensing regimes, apparatus
- asymmetric
 - mobile termination rates, xxv, 318, 320, 323–5
 - networks, 319
 - operators, 320–21
 - regulation, xxv, 315, 317, 323–5. *See also* regulatory, asymmetry
 - termination rates, vi, xxv, 315–17, 324
- Asymmetric Digital Subscriber Line (ADSL), 117, 133, 136–37
- asymmetry
 - consumer information, 144
 - market positioning, 316
 - modeling network, 325
 - network costs, 145
- auctions, xxiv, 75, 201, 228, 240, 248–9, 258, 265, 270, 276, 279, 336
- Averch-Johnson effect, 85, 101
- base goods, xxii, 157–76, 178, 181–8
- beauty contests, 248–9, 258
- bottlenecks, xxi, 44, 46, 86, 90–97, 101, 103–5, 108, 124, 130, 140–41, 149, 154, 284, 286, 300, 303, 306, 312, 322
- broadband
 - markets, 49, 329
 - penetration, xx, 48–9, 51, 146, 196
 - policy, 26, 30, 49, 330, 341
 - services, 73, 79, 116, 151, 330
- Broadband Wireless Access (BWA), 279
- cable system, 73
- class licences, 272, 280. *See also* licensing regimes, class
- Commerce Act, 8, 11, 15, 43
- competition policy, vii, 103–6, 109, 143, 315, 317, 325
- Competitive Local Exchange Companies (CLECs), 108, 231–2
- complementary goods, xxii, 157–88, 197

- convergence
 digital, 86
 institutional, 48, 51
 market, 51, 57
 networks, vii
 regulatory, 46
 technology, 55, 201
- data
 collection, xxvi, 329, 332, 342
 historical, 330
 macroeconomic, 332
 survey, 181, 236
- Database Management Systems (DBMS), 185
- digital dividend, vi, xxiv, 48, 268–9, 278–82
- Digital Subscriber Line (DSL), xx, 35, 39, 43, 48–51, 64, 79, 92, 122, 146–7, 152, 244, 342
- Direct Broadcast Satellite (DBS), 61, 77
- economic growth, ix, 196, 203–4, 239, 328–9, 331, 335
- economies of scale, 85, 91, 160
- efficient markets, 234, 236, 315
- elasticity, 171, 184–5, 219, 300, 302–3, 312, 322
 cross-price, 300
 inverse, 295–6
 price, 288, 300, 305, 311, 322
- electronic commerce, 331, 334–6
- emerging markets, 105–6, 306
- engineering cost models, 88
- European Union (EU), xx, 7, 43–5, 49–51, 54, 105–6, 116–17, 119–21, 123, 126–8, 140, 142–4, 146–50, 152–4, 317, 322, 325
- externalities, 193–4, 202–3, 295–6, 307–8, 316, 321
 consumption, 164, 180
 inframarginal, 192–4
 Internalizing Complementary Externalities (ICE), 194
 marginal. *See* marginal, externalities
 network. *See* network, externalities
- facilities-based
 competition, 203
 market, 249
 mobile operators, 250, 262–3
- federalism, 2–3, 5–7, 18–19, 21, 23, 28–32
 cooperative, 7
 dual, 7
- Fibre to The Cabinet (FTTC), 50, 124, 130, 132
- Fibre to The Home (FTTH), xxii, xxv, 92, 108, 124, 130, 132, 134, 136–7, 151–2, 154, 322, 324
- Fibre to The Node (FTTN), 117–18, 121, 134
- Fibre to The Premises (FTTP), 117, 121, 127
- fixed operators, 123, 317, 322
- fixed-to-mobile
 calls, xxv, 149, 284–5, 311
 prices, xxv, 149, 285, 310
 termination, 284–6, 319
- General Purpose Technology (GPT), xxiii, 192, 194–7, 202, 204
- glide-path
 regime, 144
 regulation, 323
- Global System for Mobile Communications (GSM), 279, 316
- high-speed broadband, xxi, xxii, 39, 49, 116, 128–9, 132–3, 135, 151, 154

- Incumbent Local Exchange
Companies (ILECs), 231–2
- industrial policy, 128, 136
- Information and Communication
Technology (ICT), ix, xx, 39,
46, 48, 51, 196, 200, 242, 330,
332, 334, 340
- Information Technology (IT),
xviii, 39, 196, 227, 328, 330
- infrastructure
communication, 234
innovations, 99. *See also*
infrastructures, innovative
investments, xxi, 74, 86–7, 93,
95–6, 100–102, 106–8, 126,
146, 151, 217, 221, 224
- infrastructure-based
competitor, 120
MNOs, 317
- infrastructures
innovative, 94, 102–7. *See also*
infrastructure, innovations
institutional, 18, 30
legal, 19, 22
network. *See* network,
infrastructures
- innovations
electronic, 231
genuine, 107
infrastructures. *See*
infrastructure, innovations
legal, v, xix, 1, 3, 6–8, 21, 23,
28, 30
technological, xx, xxiv, 1, 20,
31, 56, 241, 243
- integration, 62, 76, 126
economic, 142
market, 144
vertical, 64, 137
- International Telecommunication
Union (ITU), 72, 196, 242,
244, 247–8, 265, 268, 270
- Internet
access, 55, 57, 59, 64–5, 67–
70, 73–4, 76, 79, 82, 194,
204, 215, 232, 241, 330,
336–41, 343
auctions, 336
economy, xxvi, 342
policy, viii, 65, 67–8, 79, 81
Internet Protocols (IP), 57, 67, 74,
115, 151, 197, 325
Internet Service Providers (ISPs),
xviii, xxii, xxiii, 57, 65, 71, 74,
191–5, 197, 200, 203–4, 213–
14
interstate commerce, 3, 4, 7–8,
10–13, 15–17, 21, 26, 30
investment incentives, v, xxi, 86–
7, 97, 99, 101, 106, 108–9,
126, 135, 140–45, 151, 154,
214
investments
cost-reducing, 89
infrastructure. *See*
infrastructure, investments
innovative, xxi, 86–7, 103,
105, 136
network. *See* network,
investments
- ladder-of-investment approach,
91–2, 98, 108. *See also*
stepping-stone hypothesis
- laissez-faire*
approach, 49
attitude, 67
ideals, 9
policy, xix, 30
- Law of One Price, 236
- liberalisation, xx, 40, 42, 142,
315–16, 321
- licensing approaches
device-centric, 270
fee-based, 275
membership-based, 275
space-centric, 271

- licensing regimes
 apparatus, 269–70. *See also*
 apparatus licences
 class, 269, 272, 280, 282. *See also*
 class licences
 private park. *See* private park
 licences
 spectrum, x, 248, 269–71, 275,
 279–80. *See also* spectrum,
 licences/licensing
- local loop, xxi, 90, 92, 115–17,
 123–5, 135–7, 141–2, 145–6,
 152
 fixed-line, 142
 monopoly, 122
 unbundled. *See* Unbundled
 Local Loop (ULL)
- Long-Run Average Incremental
 Cost (LRAIC), 91–2, 97, 108
- marginal
 consumer, 161–2, 165–6, 172,
 292
 cost, 96, 149, 188, 193, 295,
 312
 externalities, 194
 incentive, 176
 revenue, 165
 subscriber, 299, 303, 312
 utility, 160–61
- market structures, xii, xxii, xxv,
 42, 147, 157–8, 168, 173, 176,
 182, 214, 248–9, 281, 324
- m-banking, 236, 238, 242
- m-commerce, 236, 238
- m-currency, 236, 238
- mix and match models, 159
- mobile
 communications, 240, 325
 deployment, 241
 operators, xviii, xxv, 123, 150,
 236, 240, 284–6, 288, 291,
 293, 296–7, 299, 308, 312,
 317, 318, 320, 322, 324. *See also*
 Mobile Network
 Operators (MNOs)
 penetration, 43, 285, 291, 299,
 303, 306, 311
 subscribers, 148–9, 284–8,
 290–91, 293–5, 297–300,
 301–4, 306–11, 319, 321
- Mobile Network Operators
 (MNOs), xxv, 247, 251, 317–
 25. *See also* Mobile, operators
- Mobile Termination Rates
 (MTR), xxv, 316–25
- Mobile Virtual Network
 Operators (MVNOs), 316
- mobile-to-mobile
 calls, xxv, 285, 311–12
 prices, 285, 312
 termination. *See* termination
 charges/rates, mobile-to-
 mobile
- monopolists
 independent, 158, 162, 167–
 70, 172, 174–6, 178, 186,
 188
 joint, 158–9, 161, 165–6, 168–
 70, 172–80, 182, 187–8
 patent-holding, 159
 regional statutory, 40
- Multi-channel Video
 Programming Distributor
 (MVPD), 76–7
- Nash equilibrium, 163, 169, 172
- National Regulatory Authorities
 (NRAs), xx, xxiv, 56–57, 71–
 2, 247–51, 253, 255, 263–6,
 317–8, 322–3
- neoclassical economics, 30
- network
 architectures, 118, 135
 effects
 direct, xxii, 157, 197, 200
 indirect, xxii, 157–60, 185–
 6, 197–200

- externalities, 128, 187, 198–9, 285, 296
- industries, x, xiii, 85–6, 140, 147, 154, 315
- infrastructures, v, ix, xix, xxv, 1–2, 7, 18–20, 22–4, 30, 58, 108, 135, 209, 211, 218, 324
- investments, 85, 90, 151, 213–14, 219, 221–2
- neutrality, v, x, xii, xxii, xxiii, 3, 23, 26–9, 69, 71–2, 191–3, 200, 204, 209–14, 219, 223–4
- operators, xxiii, 134, 209, 212–6, 219–20, 224, 247, 316–7
- networks
 - broadband, xix, 28, 49, 118, 121, 133, 141, 151
 - copper, 117, 122–4, 126–7, 135–6
 - fibre, xxii, 85, 121–2, 124, 132–3, 136, 152, 154
 - fixed, 93, 120, 124, 286, 317, 322, 325
 - inter-exchange, 115
 - international backbone, 117
 - mobile, xviii, 39, 44, 73, 117, 124, 132, 147, 149–50, 238–9, 247, 266, 285, 288–90, 297–8, 307–8, 312–3, 316–7, 321–2
- Next Generation Networks (NGNs), v, xxi, 85, 115, 127, 142, 147, 152
- next generation wireless networks, v, xx, 55
- oligopolistic, 96, 159
- Organisation for Economic Co-operation and Development (OECD), 39
- Original Equipment Manufacturers (OEMs), 179, 188
- patent citations, 202
- penetration
 - broadband. *See* broadband, penetration
 - geographic, 50
 - mobile. *See* mobile, penetration
- Personal Computers (PCs), 56, 158, 180, 182, 185, 332, 339
- Personal Telecommunications Service (PTS), 271
- prisoner's dilemma game, 204
- private park licences, 274, 280
- privatisation, xiii, 40, 127, 140, 328
- productivity, xii, 98–9, 143, 151, 193, 196, 200–201, 203, 235, 328–9, 331–6, 341
- Public Switched Telephone Network (PSTN), 40, 44, 58, 146
- random-coefficients discrete choice model, 185
- real options, xii, 85, 91–2, 97, 103
- regulations
 - competition-enhancing, 86, 90
 - cost-based, 88, 304
 - cost-plus, 88
 - ex-ante, 98
 - ex-post, 98
 - intermediate, 97–8, 100–101, 106–7
 - price-cap, 86, 89, 97, 101
 - profit-sharing, 89–90, 97, 108
 - rate-of-return, 85, 88–90, 97, 99, 101, 106, 108–9
 - sector-specific, 104, 317
 - soft, 88, 94–101, 107
 - yardstick, 86, 89

- regulatory
 - asymmetry, 317–18, 322. *See also* asymmetric, regulation
 - costs, 315
 - frameworks, 15, 21, 23, 28, 120, 123, 142–6, 154, 248, 317
 - holidays, 86, 104, 106–7, 109, 136
 - interventions, xviii, 64, 98, 126, 135, 150, 209, 211–12, 269, 271, 286
 - regimes, 24, 44, 46, 55–7, 72, 116, 120, 122, 131, 213, 278
 - resilience, 1–2
 - sunset clauses, 92
 - trade-off, 136
- spectrum
 - allocations, 46, 240, 243, 318, 325
 - licences/licensing, xxiv, 141, 271–5, 279, 281–2. *See also* licensing regimes, spectrum
 - management, xx, 47, 51, 269–70, 272–3, 275–6, 280
 - policy, x
 - regulation, 281
 - rights, xxiv, 268, 281
- spectrums
 - 3G, 249
 - dividend, 268, 279
 - electromagnetic, 240, 242
 - frequency, 247, 268
 - geographical, 275
- spillovers, xxii, 109, 191–6, 198–204
- statistical agencies, 333, 337, 339, 342
- statutory
 - framework, 17, 21, 26–7
 - monopolies, 39, 40, 42–3
 - regimes, 24–5
 - regulations, 15
- stepping-stone hypothesis, 91. *See also* ladder-of-investment approach
- structural
 - changes, 41
 - model, 184, 186
 - separation, 50, 123, 134, 144
- Subscriber Identity Module (SIM), 63, 241, 244
- sunk-cost model, 89
- sustainability, 1–3, 7, 18–19, 23, 25–6, 28–30
- symmetric regulation, xxv, 324–5
- termination charges/rates
 - asymmetric. *See* asymmetric, termination rates
 - cost-based, 144, 303, 307, 311
 - equilibrium, 285, 291–8, 303, 305–7, 310
 - fixed, 318
 - mobile. *See* Mobile Termination Rates (MTR)
 - mobile-to-mobile, 285, 319
 - monopoly, 303–5, 311–13
 - regulations, 318
 - welfare maximizing, 289, 303, 305–7, 310
- termination-based price discrimination, 321
- Total Element Long-Run Incremental Cost (TELRIC), 91–2, 97, 108
- Trade Practices Act, 47
- Transmission Control Protocol (TCP), 66, 80, 197
- two-sided markets, xii, 284, 321
- Ubiquitous Deployment of the Postal System (USPS), 20, 28
- Unbundled Local Loop (ULL), 117, 126

- Universal Service Obligations (USOs), 41, 43, 45, 47, 49–50
- utility functions, xxii, 157, 159–61, 164, 166–7, 287, 310, 312
- consumers, 159, 186
- public, 25

- Very-High-Data-Rate Digital Subscriber Line (VDSL), 92, 108

- Voice over Internet Protocol (VoIP), 43, 57–8, 65, 73, 79, 81

- waterbed effect, 284, 291, 323

- Weighted Average Cost of Capital (WACC), 91, 101, 103, 109

- Wi-Fi, 63, 243, 276, 337
- wireless
 - access, xx, xxv, 56, 274, 281
 - broadband, 48–50, 59, 74, 76, 119, 213, 232, 242, 244
 - carriers, xx, xxi, 55–60, 62–4, 67, 70–72, 75
 - handsets, xx, 55–7, 62, 65
 - industry, x, 64
 - operators, 59, 64, 70
 - services, 59, 63–4, 72, 75, 78–9, 116
 - technologies, 73, 117, 126, 128
- wireline
 - broadband, 242
 - carriers, 58, 63
 - networks, 63
 - telephones, xxiii, 23, 64, 79, 228, 231, 239, 241

- World Wide Web (WWW), xviii, 72, 117, 201, 241