

## Index

- allow entry, 60, 100, 160–2  
 appropriation fees, 29, 31, 32, 133, 135  
 aquifers, xiii, 1, 4, 27  
 asymmetrically informed firms, 94, 176
- backward induction, 36, 40, 54, 68, 125, 126, 141, 166, 174  
 Bayes' rule, 97–9, 128  
 Bayesian Nash Equilibrium, 83, 86, 89, 126–8, 178  
 beliefs, xvii, 96, 97, 99, 100, 107, 128  
 best response, 9–12, 15, 19, 24, 28, 30, 33, 37, 48, 49, 55, 66, 67, 83, 86–9, 91, 123, 124, 126, 127, 130, 131, 135, 136, 138–42, 144, 149, 153, 154, 158–61, 164–6, 175–7, 181, 188, 194
- certainty, 5, 61, 74, 80, 81, 84, 90, 91, 179  
 club goods, 2  
 complete information, xvi, xvii, 6, 9, 36, 54, 68, 77, 81, 90–3, 95–7, 100, 104–14, 116, 117, 128, 170, 171, 173, 174, 179–82, 184, 185, 189, 191, 192, 195  
 consumer surplus, 16, 17, 20, 48, 51, 113, 172  
 Cooperation, 5, 65, 70, 73, 76, 79, 163, 164  
 coordination of appropriation decisions, xiv, 18–20, 22  
 cost externality, 18, 22, 25, 29, 41, 81, 130, 131, 139  
 cost function, 8, 10, 22, 23, 29, 30, 35, 36, 49, 53, 54, 61–3, 114, 115, 130, 143, 144, 180, 186, 187
- demand function, 17, 20, 31, 46, 61, 94, 115, 116, 152, 176, 193  
 deviation, 73, 79, 80, 163  
 discount factor, 38, 42, 44, 51, 70, 77–80, 111, 152, 162–4, 166–9  
 dominated strategy, 65, 119–21  
 dynamic inefficiency, 148, 151  
 dynamic setting, 4, 34, 35, 40, 141
- efficiency, 93, 106, 111  
 emission fee, 27, 28, 32, 136  
 endogenous variable, 34, 54, 61  
 entrant, xv, xvii, 5, 34, 36, 40, 42, 44, 45, 52–8, 62, 95–100, 103, 104, 106, 107, 112–15, 125, 126, 154, 159, 160, 162, 180–2, 184, 185, 189, 191  
 entry cost, 45–7, 51, 54, 56, 57, 154, 157  
 entry deterrence, xv, 52, 53, 56, 59, 61–3, 97, 101, 102, 158, 162  
 equilibrium appropriation, xiv, xvi, 4, 7, 9, 11–16, 20, 22–5, 28–34, 36, 38–40, 42, 44, 46, 48–51, 62, 68, 79, 81–6, 88–91, 94, 95, 97, 99, 100, 105, 109, 115, 131, 133–8, 140, 142–5, 149, 154, 161, 171, 175, 176, 178, 179, 181, 184, 186, 193  
 equity shares, 32, 33, 138–40  
 excludable goods, 1, 2  
 exogenous variable, 32, 34, 54, 61, 138  
 Externalities, 201  
 externalities, 20, 29, 43, 130
- firm types, 99, 107, 114, 116, 127–9, 196  
 fishing quotas, 3, 26, 27  
 forests, xiii, 1, 4  
 future payoffs, xvi, 39, 44, 73, 149
- Grim-Trigger Strategy, 70–4, 79, 163, 167–9
- incentive compatibility condition, 101, 102, 108, 115, 116, 180, 183, 184, 189, 190, 192, 193, 196  
 incomplete information, xiii, xvi, xvii, 5, 6, 81–5, 90, 91, 93, 95–7, 106, 107, 109, 112, 114, 116, 127, 128, 170–4, 179, 180, 200, 201  
 incumbent, xv, xvii, 5, 6, 34–6, 38–40, 42, 44, 48–63, 95–116, 125, 126, 141–5, 149, 150, 152–5, 158–62, 174, 175, 180–97  
 inefficiency, xiv–xvi, 21, 22, 31, 34, 43, 44, 50, 51, 60–3, 67, 93, 106, 111, 112, 147–9, 151, 152, 155–8, 170–4  
 information contexts, xiii, 84, 90, 116, 179

## 204 INDEX

- information transmission, 129  
 initial stock, 5, 7, 36, 37, 39, 43, 44, 49, 53,  
 57, 60, 62, 96, 106, 115, 143, 144, 146,  
 186  
 iterative deletion of strictly dominated  
 strategies, 120–5  
 joint profits, 3, 16, 18, 22, 25, 79, 136  
 marginal cost, 10, 18, 23, 24, 28, 36, 131,  
 144, 145, 150  
 market power, 14, 31, 94, 115, 116, 176,  
 178–80, 193  
 monopoly, 125, 149  
 Nash Equilibrium, 9, 11, 12, 15, 66, 67, 69,  
 74, 77–9, 122–5, 127, 128, 164–6  
 negative externality, 3, 34, 131  
 nonexcludable goods, 1–3  
 nonrival goods, 2  
 number of firms, 12, 13, 28–31, 44–7, 49–51,  
 78, 85, 132–4, 146, 147, 149, 151, 168,  
 173, 174  
 off-the-equilibrium behavior, 40, 99, 100,  
 128  
 overexploitation, 5, 35  
 Perfect Bayesian Equilibrium, 97, 99, 128,  
 129  
 policy instruments, 3, 26  
 pooling effort, 110, 111, 193  
 pooling equilibrium, 99, 109, 110, 113,  
 115–17, 191, 196  
 private goods, 2  
 probability distribution, 81, 127  
 producer surplus, 17, 21, 22, 31, 40, 46,  
 48, 67  
 public goods, 3  
 regeneration, 35–7, 39, 40, 43, 49, 54, 57, 62,  
 68, 94, 105, 106, 109, 111, 115, 144, 174,  
 176, 186  
 regulation, 3, 17, 21, 26–9, 31, 32, 44, 51, 78,  
 112–14, 133, 137, 150, 152, 157, 158, 164  
 repeated game, 64, 69, 70, 73, 74, 76, 166  
 rival good, 1–3  
 separating effort, 104, 105, 110, 111,  
 185, 186  
 separating equilibrium, 99, 101, 102, 104–7,  
 113–16, 180, 183, 184, 187, 189, 190  
 sequential-move game, 34, 36, 54, 68, 96, 97,  
 125, 126  
 Signaling Games, 202  
 signaling games, 104  
 simultaneous-move game, 9, 127  
 social welfare, xiv, xvii, 4, 6, 16–18, 20, 22,  
 25, 31, 32, 40–2, 44, 46, 47, 50, 51, 62,  
 67, 93, 96, 112–14, 116, 117, 147, 152,  
 155–8, 170, 171, 200  
 socially excessive appropriation, xiv, 4, 23,  
 26, 31, 34, 43, 106, 138  
 socially excessive entry, 44, 47, 51  
 socially insufficient appropriation, 106, 138  
 socially optimal appropriation, xiii, xiv, xvi,  
 4, 7, 16, 17, 20, 21, 24, 30, 32, 40, 43,  
 49–51, 63, 67, 93, 131, 132, 136, 137,  
 146–8, 150–2, 156–8, 170–2  
 static inefficiency, 147, 151  
 static setting, 7, 130  
 strategic substitutes, 91, 130, 135  
 Subgame Perfect Equilibrium, 36, 40, 54,  
 68–70, 73, 77, 78, 125, 126, 165,  
 166  
 Subsidy, 200  
 subsidy, 29, 138  
 symmetrically uninformed firms, 82, 94  
 tragedy of the commons, xiii, 4, 5, 20, 33,  
 140, 200, 201  
 type-dependent strategy, 128  
 type-independent strategy, 129  
 uncertainty, xvi, 5, 81, 82, 84, 92–4, 96, 174,  
 199, 202  
 under-exploitation, 200  
 underexploitation, 104, 106, 111  
 unrepeated game, xvi, 64, 67, 74, 77, 79, 165,  
 166