

# Index

- Adams, Walter, 404-405  
Air France, 226  
Airline Finance and Accounting Conference, 96  
Airlines:  
  advertising costs, 95-120  
    budget relationship, 115  
    CAB policies, 96-99  
    competitive, 96  
    cost of traveling by air or auto, 97  
    effect of rates and advertising on profit, 105  
    effect on market share, 98, 106  
    institutional, 96  
    intraindustry use of, 96-97  
    in peak seasons, 99  
    ratio of advertising expense to revenue, 114-115  
    regulatory policy concerning, 99-106, 116  
    revenues, 106-116  
    selling costs, 95-96  
    size-value relationships, 113-114  
    types of advertising, 98  
  airport operations, measuring, 82  
  costs and managerial efficiency, 61-94  
    aircraft and traffic servicing, 64, 81-86  
    Boeing 707, 65, 66, 219  
    Boeing 720, 65, 66, 67, 70, 79  
    Constellation, 73, 219  
    Convair 880, 67, 70, 79  
    Convair Piston, 74  
    DC-6 and DC-7, 71, 74, 219  
    Douglas DC-8, 77, 219  
    flying operations, 64-75  
    Lockheed Electra, 69, 219  
    maintenance, 64, 75-80  
    overstaffing problem, 83-84, 88-90  
    standard cost factors, 93  
    Vickers Viscount, 67, 70  
  decline in profits, 61  
  earnings, 199  
  economies of scale, 106, 118  
  equipment price behavior, 218-220  
  fare increases, 90  
  financial and operating reports, 111  
  fleet structure, 66, 70, 79  
  freedom of entry, 377  
  jet operations, 62, 219  
  mail subsidies, 95, 104, 107  
  mergers, 61*n*, 90, 240  
  personnel utilization, 72-75, 83, 88-90, 93-94  
  pilot salaries, 64, 70, 72  
  pilot staffing, 72-73, 79  
  producers' durable equipment index, 218-220  
  rate of return, 87, 90, 223, 238-239  
  route structure, 82-83, 91  
  sales promotion, 64, 92-93  
  scheduling, 58  
  seats departing, 83, 92  
  staffing index, 73, 74-75, 79  
  technological improvements, 215  
All American Certificate Renewal Case, 102  
Alonzo, William, 248*n*, 253*n*  
American Airlines, 79, 81, 82, 83, 91, 112, 221, 223  
American Association of State Highway Officials, 301*n*, 309-312  
American Overseas Airlines, 100  
American Transportation Research Forum, 20*n*  
Anderson, F. W., 439  
Anderson, Locke, 235  
Anti-trust laws, 240  
Arpaia, Anthony F., 417  
Automobiles:  
  competition with urban transportation, 291  
  relative cost of traveling by, 97  
  use of, 279  
Averch, Harvey, 200*n*  
Avianca Airlines, 226  
Axelrod, David, 402  
  
Bandeem, R. A., 121-138  
Bankruptcy, railroads, 55  
Barge lines, 30, 368, 394  
  costs, 5  
  rate policy, 20  
Barger, Harold, 172*n*, 175, 291  
Baumol, William J., 4*n*, 11*n*  
Baylis, A. E., 44

- Beckmann, M., 192*n*  
 Behling, Burton N., 4*n*  
 Benefit-cost analysis, 206, 305-312  
 Benefit principle of taxation, 145, 161  
 Bielak, Stanley, 148*n*  
 Bluestone, David W., 398*n*  
 Board of Investigation and Research, 390  
 Boilermakers' Union, 430  
 Bonbright, James C., 4*n*  
 Bowden, W., 175  
 Boyd, Alan S., 96  
 Bradford, Charles H., 154*n*  
 Braniff Airways, 81, 91, 102  
 Breitenbach, E. V., 401*n*  
 Bressler, R. G., Jr., 93*n*  
 British Columbia, 442, 445  
 British North American Act of 1867, 444  
 Brokers, truck, 399-400, 412  
 Brown, G., 187*n*  
 Brownlee, O. H., 163-165  
 Brozen, Yale, 4*n*  
 Budget constraints, urban transportation planning, 312-315  
 Buland, George L., 395*n*  
 Burch, Philip H., Jr., 150*n*-151*n*  
 Burke, J. L., 396*n*  
 Burns, A. F., 178-179, 196  
 Buses, 279  
   commuting by, 268-272  
   operating ratio as a measure of profits, 204  
   for peak hour traffic, 304  
   rates of return, 231  
 California Public Utility Commission, 121  
 Campbell, Thomas C., 414  
 Canadian National Railways, 121-138  
 Canadian Pacific Railway Company, 121-138, 444-445  
 Canadian Royal Commission on Transportation, 123-124, 440, 446, 448-449  
 Canadian transportation, 439-451  
   canals and St. Lawrence system, 441, 442  
   cost study, 121-138  
   Freight Rates Reduction Act, 446  
   highways, 441  
   Maritime Freight Rates Act, 445, 446  
   policy, 439-451  
   public investment, 451  
   public lands, 442  
   railroads, 441-443, 449  
   Railway Act, 446  
   rates and ratemaking, 443-447  
   remedial legislation, 440  
   research, 447-451  
   Royal Commissions, 123-124, 440, 446, 448-449  
   Statutory Grain Rates, 446  
   technological changes, 448  
   truck-rail competition, 397  
 Capital:  
   budgeting decisions, 205-206  
   cost of, 128  
   defined, 239  
   "fair return" for regulated industries, 199-241  
   and labor inputs, 172  
   working, 214  
 Capital Airlines, 113  
 Carll, Richard, 297, 298, 299, 305, 320*n*, 324  
 Carnegie, Andrew, 50  
 Carr, D. W., 397  
 Carroll, Douglas, Jr., 245  
 Caves, Richard E., 62, 67*n*, 69, 90, 104*n*, 105*n*, 106*n*, 384*n*  
 Chamberlain, E. H., 117  
 Chicago:  
   automobile commuting, 264-266  
   commuting and residential decisions, 245-274  
   housing costs, 256  
   rapid-transit system, 245  
   trip-ends, 333  
 Chicago Area Transportation Study, 245, 328*n*, 329*n*, 331-332, 333*n*, 335, 336*n*  
 City planning:  
   effect of transit pricing methods on, 281  
   location of future population growth, 338-345  
   optimal city size, 346-347  
 Civil Aeronautics Act of 1938, 100*n*, 382  
 Civil Aeronautics Board, 61, 88, 90  
   historical review of airline selling costs policies, 96-99  
   price regulation, 90-91  
   regulatory policy concerning advertising, 99-106  
 Clague, Ewan, 427*n*  
 Clark, J. M., 121  
 Coastal shipping, 58  
   *See also* Water transportation  
 Coefficient of determination, 128  
 Collective bargaining, technological change and, 427-431

- Collinearity, problem of, 120, 128  
 Colonial Airlines, 101, 102-103  
 Common carriers, 251-279  
   common law on, 352*n*  
   competition and monopoly, 351  
   exempt carriage, 370  
   freedom of entry, 376, 381-422  
   private carriage, 370  
   problem of discrimination, 378-379  
   regulation, xii, 351-379  
   socialization, 352  
   transport system, 375-376  
   trucking industry, 351-352  
   value-of-service rate structure, 352-379  
 Commuting, 245-274  
   automobile commuting, 245, 264-266  
   central business district, 245  
   consumer-choice model, 246, 247-252, 272  
   effects of racial segregation, 252-264, 272  
   location rents, 249-250  
   Negroes and whites, 252-262  
   public transit, 245, 265-267  
   relationships between housing costs and length of journey, 262-264  
   residential space consumption, 251-252, 262-264  
   selection of mode, 265-268  
   time and money expenditures in commuting, 250, 264-272  
   trade-offs between housing and travel costs, 246, 264-273  
   urban peak problems, 297-305  
 Competition in transportation, 9, 34, 347, 351  
 Congestion, 297-298  
 Consolidated Freightways, 418*n*  
 Continental Airlines, 61, 81, 86*n*, 88-89, 90, 91, 113, 115  
 Cookenboo, Leslie, Jr., 396*n*  
 Costs and costing:  
   airlines, 61-94  
 Canadian railroads, 121-138  
   comparative-statics approach to theory of, 37  
   concepts, 3-12, 39  
   incremental, 4  
   interaction of, with prices and rates of growth, 43-60  
   interrelationship of pricing, regulation, and, 3-42  
   minimum rate regulation, 16-20  
   original, 202  
   overhead, 5  
   production, 117  
   railroads, 3-12, 121-138  
   reproduction, 202-203  
   selling, 95, 100-106, 117  
   standard cost factors, 93  
   trade-offs, 246, 264-273  
   zeal for "cost-finding," 36  
 Cottrell, W., 187*n*  
 Cox, D., 180*n*  
 Cross-sectional analysis, 120  
 Cross-section regression analysis, 122, 127  
 Cullom Committee, 60  
 Currie, A. W., 441*n*  
 Davidoff, Paul, 320  
 Dean, Joel, 4*n*  
 Decision-making, urban planning, 323-325  
 Delta Air Lines, 77, 79, 91, 112, 226, 238  
 Demand:  
   curve, effect of selling costs, 95-96  
   inelastic, 27  
   measurement of, 36  
   shifts in, 27-28  
 Depreciation, 203-204  
   declining-balance method, 210  
   defined, 209-210  
   straight-line computation, 210  
 Depression of 1930's, effect on transportation, 362  
 Deregulation, transportation industries, 240-241  
 Detroit:  
   commuting and residential decisions, 245-274  
   housing costs, 256  
   parking charges, 265  
 Detroit Metropolitan Area Traffic Study, 245, 328*n*, 329*n*, 331-334  
 Differentiated oligopoly, 45, 47, 52  
 Discounted present value formula, 205  
 Discrimination control, 28-35  
 Distributed lag models, 108, 118  
 Distribution efficiency:  
   determining, 13  
   market-oriented rates and, 12-16  
   requirements, 36  
 Domar, E., 171*n*, 178*n*  
 "Doyle Report," 5, 6-8, 9*n*, 60, 399  
 Dunlop, John T., 423-436, 427*n*, 429*n*  
 Earnings-credit method of allocating highway costs, 146-147  
 Eastern Air Lines, 73*n*, 77, 81, 82, 83, 102

- Economies of scale, airlines, 106, 118  
 Edwards, Ford K., 4*n*, 121  
 Electric utilities, 199, 204*n*, 208, 241, 301  
 Entry control to common carriage, 381–422  
   certificate of convenience and necessity, 382  
   costs associated with regulation, 413  
   economic effects of, 381–422  
   free-entry, 376–378, 414  
   freight forwarders, 389  
   “grandfather clauses,” 382, 384–386  
   ICC’s interpretation, 420–421  
   regulatory procedures, 383  
   restrictions on operating authority of regulated carriers, 389–395, 408–410  
   trucking companies, 381–422  
   water carriers, 388–389, 393, 397  
 Erie Railroad, 48  
 Expressway construction, 287
- Fabricant, S., 172, 179, 196  
 Fair return on investment for regulated industries, 199–241  
   definitional problems, 207–216  
   measures of rate of return, 202–216  
   operating ratios, 207–216  
 Featherbedding, 174, 195, 427  
 Federal aid to transport, 38, 60, 151, 153, 315–316  
 Federal Housing Authority, 256  
 Fles, J. H., 368  
 Flood Control Act of 1936, 305  
 Flott, Allan C., 401*n*, 417*n*  
 Forgash, Morris, 398*n*, 410*n*, 417*n*  
 Frankfurter, Felix, 388*n*  
 Freas, Howard, 16, 370  
 Freedom of entry:  
   common carrier and, 376  
   defined, 376  
   intermodal ownership, 376–378  
   public policy, 377  
 Freeways, 286, 287, 301*n*  
   cost of construction, 287  
   federal funds, 315–316  
 Freight Forwarder Act of 1942, 382  
 Freight forwarders, entry control, 382, 389  
 Freight transportation, 43–45  
 Fuel consumption data, 147–148  
 Fuhrman, Frederick E., 395*n*
- George, John J., 382*n*  
 Glassborow, D. W., 172*n*  
 Glauber, Robert T., 95*n*, 232*n*  
 Glazebrook, G. P. 444*n*  
 Gordon, Robert J., 61–94  
 Gould, Jay, 46, 48  
 Grand Trunk Railway, Canada, 441–442  
 Greenberg, Leon, 427*n*  
 Greiner, William R., 351–379  
 Griliches, Z., 179*n*, 118, 119
- Haber, W., 187*n*, 195*n*  
 Hamburger, M., 169  
 Harbeson, Robert W., 139–165  
 Harper, Donald V., 382*n*  
 Harriman, E. H., 48  
 Harris, Britton, 274, 292–293, 321–322  
 Harvard Computing Center, 95*n*  
 Hay, John I., Co., 394  
 Healy, James J., 428*n*  
 Healy, Kent T., 169, 181, 185, 327–348, 397*n*, 403*n*, 436  
 Hedges, Charles A., 298  
 Heflebower, Richard B., 397*n*  
 Heist, August, 383*n*  
 Henderson, Clark, 297*n*  
 Hendry, James B., 404–405  
 Herbert, John D., 248*n*  
 Highway Cost Allocation Study, 139*n*, 140, 148, 160, 306  
 Highway Research Board study, 410, 412  
 Highway Revenue Act of 1956, 140  
 Highways:  
   allocation of costs, 140, 141, 146, 161–163, 165  
   allocation problems, 139–165  
   benefit principle, 140, 141, 145, 161–163, 165  
   city vehicle licenses, 140  
   classification of roads, 151–153  
   cost of constructing, 287  
   country and township, 149  
   expenditures for, 139  
   federal-aid funds, 151, 153, 154–157, 315–316  
   Federal Highway Trust Fund, 154, 155  
   fuel consumption data, 147–148  
   interstate system, 141*n*, 154, 155, 164  
   light-traffic roads and streets, 141  
   limited access roads, 141*n*, 164  
   pricing of roadway use, 275  
   resource allocation, 140, 162  
   standard road method, 146

- state primary and secondary rural roads, 139
- state registration fees, 140
- system, 162
- toll roads, 140, 164
- traffic volume, 147-148
- user charges as source of revenue, 139, 140-141, 144, 147-148, 153-157, 276-277
  - vehicle-mile costs, 140, 151
- Hirschiefer, Jack, 206*n*
- Hoch-Smith Resolution, 359-363
- Hoffman, Fred, 250*n*
- Homburger, Wolfgang, 298, 299
- Hoover, Calvin B., 4*n*
- Hoover, Edgar M., 248*n*
- Horton, George R., 430*n*
- Housing:
  - commuting and residential decisions, 245-274
  - density-increasing conversions, 255
  - downgrading or upgrading, 249
  - influence of transportation on, 245-274
  - price ceilings, 254
  - private market renewal, 249
  - privately owned, 330
  - segregation in, 252-262, 274
  - shifts in types of, 330
  - trade-off between transportation costs and, 246, 264-273
  - wartime controls, 255
- Hultgren, Thor, 347-348, 437-438
- Huntington, S. P., 364*n*
- Hutchinson, Everett, 383*n*
  
- Illinois Central Railroad, 394
- Industrial locations, 41-42
- Innovation, 35, 181-184
- Institute for Regional and Urban Studies, Wayne State University, 245
- Institute of Transportation and Traffic Engineering, University of California, 298
- International Commercial Airlines Organization, 223
- Interstate Commerce Act, 363
  - National Transportation Policy amendment, 374*n*
- Interstate Commerce Commission:
  - Board of Investigation and Research, 390
  - common carrier regulation, 351-379
  - costing procedures, 122
  - decisions in rate reduction cases, 18-19
  - economic planning, 359
  - entry control in surface transport, 381-422
  - fair return on fair value rule, 357-358
  - Hoch-Smith Resolution, 359-363
  - internal subsidy, 367
  - long- and short-haul clause, 353
  - Motor Carrier Act, 364
  - motor carrier cost studies, 407
  - rate indexes, 21
  - ratemaking role, 357-359
  - regulation costs, 16-20, 413
  - revenue contribution studies, 30
  - value-of-service rates, 367, 370-371
  - water transportation, 364-365
  - waybill data, 31-33
- Interstate Highway System, 307, 315-316
- Inventions:
  - defined, 178
  - interfirm rates of diffusion, 184-187
  - timing of, 178-181
- Investments:
  - benefit-cost analysis, 305-306
  - benefit-cost ratio approach, 206
  - capital budgeting approaches, 205-207
  - fair return on, for regulated industries, 199-241
  - present value formula, 205
  - problems, 41-42
  - rate-of-return approach, 206
  - urban transportation, 305-316, 319-321
  
- Jakubauskas, E., 195*n*
- Jalonen, John W., 403*n*
- Johnson, Leland L., 200*n*
- Johnson, M. Bruce, 276
- Johnston, J., 109*n*
- Jones, Eliot, 396*n*
- Jureen, L., 113
  
- Kain, John F., 245-274
- Kalecki, M., 50
- Kaplan, Jair S., 398*n*
- Kaysen, C., 62*n*
- Kendrick, J. W., 171*n*, 172, 173*n*
- Kennedy, John F., 418*n*
- Keyes, Lucile S., 384*n*
- King, David C., 298, 299*n*
- Klein, L., 111, 176*n*
- KLM Royal Dutch Airlines, 221

- Knowles, Henry P., Jr., 395  
 Koplín, H. Thomas, 62*n*  
 Koyck, L. M., 109, 118  
 Kraft, Gerald, 95-120  
 Kuh, E., 232*n*  
 Kuhn, Tiilo E., 297-325  
 Kuznets, S., 178, 179, 196
- Labor:  
   airlines, 93  
   technological change and collective bargaining, 427-431  
   work rule problems, 427-431  
   *See also* Manpower, railroads
- Ladd, William M., 256*n*  
 Lake Central Airlines, 102  
 Lancaster, R. K., 145  
 Land, 46, 289-290, 328  
 Landis, James M., 413*n*  
 Lansing, J., 97*n*  
 Laurenti, Luigi, 256*n*  
 Lave, Lester B., 95*n*  
 Lee, Commissioner, 386*n*  
 Leonard, W. N., 397  
 Levy, F., 169  
 Lincoln Tunnel, 287-288  
 Linear regression, 123  
 Lipsey, R. G., 145  
 Livernash, Robert E., 428*n*  
 Load factors, 58  
 Local transportation, coordination of, 278  
 Locklin, D. P., 361*n*, 362*n*  
 Locomotives, technical changes, 54, 191  
 Lorimer, T., 97*n*  
 Lowry, Ira South, 248*n*
- Managerial efficiency:  
   airlines costs and, 61-94  
   measuring, 62-64  
   multiple regression analysis, 62
- Mann-Elkins Act of 1910, 355*n*  
 Manpower, railroads, 427-431  
   attrition policy, 434-435  
   changes in hours of work, 434  
   in operating classifications, 423-436  
   rate of job abolition and, 434-435  
   retirement policies, 433  
   retraining programs, 434  
   seniority districts, 433  
   technological change and collective bargaining, 427-431  
   transfer of displaced workers, 430, 435
- Mansfield, Edwin, 169-197, 172*n*, 183, 184*n*, 185*n*, 187*n*, 188*n*, 190*n*, 192*n*
- Manufacturing industries, rates of return, 231-238, 240  
 Marglin, S., 206*n*  
 Market-oriented rates, 12-16, 35  
 Martin, Chester, 442*n*  
 Maxwell, W. David, 405*n*  
 Mayer, Albert, 245  
 McBrian R., 191*n*  
 McCallum, W. R., 148*n*  
 McGuire, C., 192*n*  
 McKie, James W., 37-40  
 Mergers, 240, 404-405  
 Meters, on automobiles, 277-278, 286  
 Metropolis:  
   decentralization, 328  
   geographical pattern, 327-334  
   intensity of land use, 328  
 Metropolitan areas:  
   alternative locations of future, 338-345  
   spatial arrangement, 327-334  
   transport studies, 328, 336  
 Meyer, John R., 5, 7*n*, 9, 10*n*, 30, 95*n*, 199-241, 232*n*, 327*n*, 337*n*, 396*n*, 397*n*, 398*n* 407, 409, 411*n*  
 Mid-Continent Airlines, 100*n*  
 Miller, Merton, 29*n*  
 Miller-Wadsworth Amendment, 365-367  
 Mitchell, Commissioner, 407  
 Morgan, Charles S., 401*n*, 407*n*  
 Morowitz, M., 195  
 Moses, Leon, 250*n*, 284  
 Motor Carrier Act of 1935, 364, 420  
   entry control provisions, 382  
 Motor carriers, *see* Trucking industry  
 Mueller, E., 97*n*  
 Multicollinearity, 109, 112  
 Multiple regressions analysis, 62  
 Munby, D., 172*n*
- National Airlines, 81, 113, 238  
 National Resources Committee, 429  
 National Resources Planning Board, 400  
 National Science Foundation, 95, 169  
 Negroes, housing-market discrimination, 252-262  
 Nelson, James C., 172*n*, 187*n*, 240, 393*n*, 401*n*, 406*n*  
 Nelson, James R., 40, 41, 43-60  
 Nelson, Robert A., 230, 251-279, 405*n*, 408, 411*n*  
 Nerlove, 118  
 Netzer, D., 144*n*

- New York Central, 48–49  
 New York City, 286  
   expressway construction, 287–288  
   peak demand patterns, 298*n*–299*n*  
   rapid-transit system, 245  
 Nicholson, Howard, W., 41–42, 59–60  
 Norfolk & Western Railway Co., 49  
 Northeast Airlines, 72, 79, 112–113  
 Northern Pacific Railway, 444  
 Northwest Airlines, 69, 83, 226, 238  
 Nuclear power plants, 44
- Ohio, growth of metropolises, 341–342  
 Oi, Walter Y., 118–120  
 Oil pipeline industry, 382, 394, 396, 420  
 Operating ratios:  
   definitional problems, 207–216  
   depreciation charges, 211–212  
   as a measure of profits, 204–205  
 Opinion Research Corporation, 97–98  
 Opportunity cost of land, 289–290  
 Optimal resource allocation, 162  
 Original cost, 202, 214  
 Output:  
   measures of, 215  
   per total factor input, 172–173  
 Owen, Wilfred, 144*n*
- Pacific railway, Canada, 442–443  
 Pan American World Airways, 102  
 Panama Canal Act, 382, 394, 397  
   Parking:  
     fees, 290  
     meters, 278, 291  
 Parsonage, Noble C., 20*n*  
 Passenger-mile, 337–338  
 Paul, M. E., 172*n*  
 Peak traffic, 278–280, 298–305  
   charging peak users, 303  
   differential in transit fares, 280  
   investment approaches, 316–317  
   planning peak service facilities, 303–304  
   space and time economies, 304  
   staggered working hours, 304  
   statistical definitions and concepts, 299  
   substitutes for peak movements, 304–305  
   urban transportation, 297–305  
   use of efficient buses, 304  
 Peck, Merton J., 5*n*, 199–241, 396*n*  
 Pegrum, Dudley F., 4*n*, 374–379, 398  
 Pennsylvania Railroad, 48  
 Petroleum Carriers Division *v* A.T. & S. F. Ry. Co., 369*n*
- Phillips, C., 169  
 Piggyback service, 40  
 Pittsburgh Area Transportation Study, 297, 328*n*, 329*n*, 331–333  
 Planning, urban transportation, 297–325  
 Population, alternative locations of future, 338–345  
 Port of New York Authority, 288  
 Present value formula, 205, 239  
 Presidential Railroad Commission, 423–427, 434*n*, 435  
 Pricing of transportation, 275–296  
   alternative transit service, 288  
   benefit-cost calculations, 292  
   charging system, 276–278  
     collection of charges, 276–277  
     cost of processing and billing, 278  
     peak and off-peak charges, 278–279  
     scanning and processing equipment, 278  
   cost-benefit analysis, 281–282  
   cost concepts, 3–12  
   cost-of-service pricing, 37  
   cost of traffic delays, 282–283  
   cost-related pricing, 60  
   demand pricing, 9  
   differential principles and techniques, 296  
   differentiated highway charges, 280–281  
   effect of demand patterns, 286  
   effect on city planning, 281  
   in England, 281  
   freeways and expressways, 286, 287–288  
   full-cost doctrine, 6  
   going market price, 209  
   incremental costs and, 4  
   indexes:  
     consumer or cost of living, 217–218, 239  
     producer's durable equipment, 217–218, 239  
   interactions of, with costs and rates of growth, 43, 60  
   intermodal price relations, 12  
   interrelationship of costs, regulation, and, 3–42  
   long-run and short-run costs, 284–285  
   manipulation of transit fares, 284  
   marginal cost of highway used, 282, 287–290, 294–295  
   market-oriented, 35–36  
   mechanisms, 286  
   meters on cars, 286

- Pricing of transportation (*continued*)  
 peak and off-peak hours, 294–295  
 peaking factor, 280, 285–286, 295–296  
 policy, 41, 60, 288  
 pride structure, 282  
 regulatory, 3  
 revenue-cost calculations, 292  
 service offerings, 295  
 street use:  
   charging for, 276–279  
   by private automobiles, 276  
 tolls, 276–277, 288  
 as a tool in coordination of transportation, 275–296  
 user charges, 292  
 value of service pricing, 9, 37–39, 353
- Productivity in railroad industry, 171–174
- Profits:  
 capital gains problem, 208  
 control by regulatory commissions, 199  
 definitional problems in computing rates of return and operating ratios, 207–216  
 gross returns on, 207  
 measures of the rate of return, 202–207
- Projects:  
 ranking and budget constraints, 312–315  
 selection criteria, 308–312
- Public policy issues, 351–451  
 Canadian, 439–451  
 freedom of entry, 377  
 objectives, 352  
 political bias, 345  
 urban transport, 327–348
- Public utility industries:  
 profit control by regulatory commissions, 199  
 rates of return, 231  
 regulatory practices, 204
- Racial discrimination, in commuting and housing, 252–262
- Railroads:  
 accounting methods, 46  
 bankruptcy, 38, 55  
 Boilermakers' Union, 430  
 branch systems, 38  
 Brotherhoods, 428  
 Canadian, 121–138, 441–443  
 commodity discrimination, 355–356  
 common carrier regulation, 351–379  
 commuter services, 38  
 competition, 9  
 costs and pricing, 3–12  
   Canadian study of, 121–138  
   car repair expense, 126–127  
   discrimination control, 28–35  
   dispatching and station employee expenses, 137  
   equipment investment, 138  
   equipment maintenance, 136  
   fences, snow sheds, and signals, 136  
   fixed, 4  
   freight-train car repairs and depreciation, 137  
   fuel expenses, 127  
   fully distributed, 5, 6–7, 8  
   history of, 121–123  
   incremental, 4  
   ICC studies, 30, 122  
   locomotive repairs and depreciation, 136  
   marginal, 6–7, 10, 11, 123  
   minimum rate regulation and, 16–20  
   operating expense accounts, 126, 128  
   overhead accounts, 137  
   physical work requirements, 124  
   regression analysis, 127, 134  
   research program, 123, 134  
   road maintenance, 135–136  
   roadway property investment, 128, 138  
   social efficiency, 10  
   special services, 127  
   track maintenance and depreciation, 135  
   train expenses, 138  
   transportation superintendence, 137  
   variable unit costs, 124, 126–133  
   yard expenses, 126, 137–138  
   *See also* Costs and costing  
 demand for service, 41  
 differentiated oligopoly, 45, 47  
   discrimination control, 34–35  
 earnings, 45  
 economic position, 45–51  
 effect of Depression on, 362, 363  
 engineers and firemen, 425–426, 430, 436, 437  
 entry control, 381, 394  
 equipment price behavior, 221  
 equipment utilization, 221  
 express lines, 58  
 featherbedding, 174, 195, 427  
 freedom of entry, 376–377

- freight transportation, 43–45
- government:
  - financial help, 38
  - receivership, 40
  - growth of, 45–53
- innovations, 181–184
- interactions of prices, costs, and rates
  - of growth, 43–60
- interdependence, 45–51, 57
- interregional traffic, 356
- inventions, 178–181
- investments, 45–51, 192–195
- labor requirements, 52, 196
- long- and short-haul clause, 364
- manpower, 51–52, 192–195, 423–436
  - adjusting to technological change, 432–436
  - attrition program, 434–435
  - changes in hours of work, 434
  - decline in employment, 424, 427
  - length of service of employees, 426–427
  - median age, 425–426
  - profile, 424
  - retirement policies, 433–434
  - retraining programs, 434
  - separation rates, 427
  - technological change and collective bargaining, 427–431
  - transfers, 430, 435
- mergers, 240
- monopolies, 47–48
- operating efficiency, 221
- output:
  - per man-hour (1889–1953), 170, 195
  - per total factor input, 172–173
  - passenger travel, 38, 43, 56
- permanent way, 57
- piggyback service, 37*n*, 40, 370
- price-cost relations, 3
- price discrimination, 354–355
- pricing:
  - cost-of-service, 40, 56
  - discrimination control, 28–35
  - discriminatory policies, 41, 55–56
  - effect on profitability, 27
  - flexible, 40
  - full cost, 11
  - marginal cost pricing, 55
  - market-oriented rates, 12–16
  - rate reduction, 26–27
- production function, 174–177
- productivity, 171–174
- profits, 199
- public policy, 197
- rates and ratemaking:
  - changes, 5
  - cost-plus-service-advantage, 38–39
  - discriminatory policies, 41
  - effect of changes on revenue, 26–27, 30
  - geared to demand conditions, 20–28
  - history of, 356–357
  - interagency competition, 38
  - minimum-volume, 40
  - reductions in, 26–27, 36, 40, 41
  - See also* Rates and ratemaking
- rates of return, 227–231, 238
- regulation, 59–60, 351–375
- reorganizations, 38, 49
- retirement system, 424, 433–434
- spur lines, abandonment of, 38
- subsidies, 35
- technical changes, 169–197
  - centralized traffic control, 192
  - chronology or railroad patents, 195
  - collective bargaining, 427–431
  - defined, 171, 174
  - electronics, 191–192
  - interfirm rates of diffusion, 184–187, 187–190
  - investment and prospective employment, 192–195
  - locomotives, 191
  - mechanization of maintenance of way, 192
  - production function, 174–177
  - productivity increase, 171–174
  - rate of, 177, 184–190
  - rolling stock, 191
  - size of innovators, 181–184
  - timing of invention, 178–181
  - use of computers, 192
- traffic, 34, 353
- unions, 430–431
- volume measure, 37
- water competition, 364
- “weak” roads, 48
- Rapid-transit system, 279
- Rapping, L., 169
- Rate base, 202, 212–214
- Rate of return:
  - biases, 200
  - definitional problems, 207–216
  - depreciation charges, 209–211
  - financial, 205–207, 211
  - inflation, 200–201
  - manufacturing industries, 240
  - measures of, 202–207
  - net return on average investment, 212

- Rate of return (*continued*):  
 ratio of net profits to net fixed assets, 212-213, 235  
 regulated industries, 199-241  
 transportation industries, 240
- Rates and ratemaking:  
 agricultural products, 358-360, 362-363, 370-371  
 based on ability to pay, 358  
 Canada, 443-447  
 ceilings, 30  
 Commission decisions in rate reduction cases, 18-19  
 compensatory, 18  
 Congressional intent, 359-362  
 continuance of regulation, 371  
 costs:  
   and discrimination control, 28-35  
   and minimum rate regulation, 16-20  
   role of, 16-20  
 determining most efficient carrier, 18  
 discriminatory rate structure, 360  
 division of traffic between modes, 369-370  
 fair return on fair value rule, 357-358, 363  
 interagency competition, 38  
 internal subsidy, 367, 371, 373, 379  
 ICC, 18, 357-358  
 price discrimination, 378-379  
 railroads:  
   effectiveness of policy, 20-28  
   ICC indexes, 21  
   market-oriented, 12-16  
   rate equalization, 367  
   uniform rate scale and uniform classification, 367  
   value-of-service rates, 36, 352-379
- Regression analysis:  
 cross-sectional, 127  
 linear multiple, 134  
 multiple, 62  
 railway costs, 127
- Regulated industries:  
 attracting capital, 201  
 control of pricing, 200  
 fair return on investments, 199-241  
 measures of rate of return, 202-207  
 policy of deregulation, 199-200  
 profit control by regulatory commissions, 199  
 rates of return, 223-238  
 regulation as a substitute for competition, 201
- Reiner, Thomas A., 320*n*  
 Reproduction costs, 202-203, 214-215  
 Residential decisions of workers, 245-274  
 Ries, Richard S., 417*n*  
 Riley, J. O., 401*n*  
 Ripley, W. Z., 356*n*  
 Roadbuilding, cost of, 287  
 Roads, *see* Highways  
 Roberts, Merrill J., 3-42, 4*n*, 9*n*, 16*n*, 21*n*, 38, 39, 40, 41, 42, 407*n*  
 Rodwin, Lloyd, 318*n*  
 Roth, G. J., 276, 291  
 Royal Commission on Transportation, 123-124  
 Russell, D. J., 192*n*
- St. Clair, G. P., 148*n*  
 St. Lawrence waterway system, 441, 442  
 Saltzman, Frank R., 409, 409*n*  
 Samuelson, Paul A. 10*n*  
 Santa Fe, 49  
 Scheduling, 58  
 Schmookler, J., 169, 178, 179, 180, 195, 196  
 Schumaier, C. P., 399*n*, 400*n*, 410, 411*n*, 412  
 Schumpeter, Joseph A., 181  
 Securities and Exchange Commission, 232  
 Selling costs, airline industry, 95-96  
 Senate Committee on Interstate and Foreign Commerce, 5  
 Senate Small Business Committee, 393, 404, 407-409, 413, 415, 417  
 Sharfman, I. L., 356*n*, 358*n*, 360*n*  
 Simpson, H. D., 146  
 Slichter, Summer H., 428*n*, 432*n*  
 Smith, C. R., 91  
 Smith, Vernon L., 175, 239-241  
*Smythe v. Ames*, 354*n*, 362  
 Socialization, 352-353  
 Solomon, Ezra, 206*n*  
 Solow, R., 174, 195  
 Southern Pacific, 394  
 Southern Railway, 18  
 Southwest Airways Company, 102  
 Sparkman, John, 368*n*  
 Standard road method of allocating highway costs, 146-147  
 Steele, C. A., 148*n*  
 Steele, H. Ellsworth, 430*n*  
 Steiner, Peter O., 160-163  
 Stenason, John P., 5, 396*n*  
 Stenason, W. J., 121-138

- Stevens, Benjamin H., 248*n*  
 Stone, Richard, 120  
 Street use, 279, 291  
 Survey Research Center, Institute for Social Research, University of Michigan, 97*n*  
 Systems Analysis and Research Corp., 95*n*, 98*n*, 104*n*, 106*n*
- Taxation, benefit principle of, 145, 161  
 Taylor, George, 429  
 Technological changes:  
   Canadian transport, 448  
   collective bargaining and, 427-431  
   railroad industry, 169-197  
     *See also* Railroads, technical changes  
   resistance to, 429  
 Telephone industries:  
   earnings, 199  
   rates of return, 231  
   regulation, 241  
 Test, Robert J., 409  
 Textile industries, rates of return, 237  
 Theil, H., 109*n*, 119  
 Thomson, J. M., 291  
 Tilley, Samuel Leonard, 442-443  
 Tolls, 290, 292  
 Trans World Airlines, 79, 81, 83, 91, 102  
 Transatlantic Final Mail-Rate Case, 101  
 Transit service:  
   advertising, 97-98  
   competition, growth of, 347  
   demand characteristics, 30  
   growth of government and taxation, 347  
   output per man hour, 170  
   price comparison between alternative forms of, 97-98, 288  
   price indexes for, 217-223  
   pricing as a tool, 275-296  
   public policy, 352  
   rates of return, 231  
   scheduling, 58  
   urban, *see* Urban transportation  
 Transportation Act of 1920, 396-397  
   amendments, 363  
   entry control established by, 381  
 Transportation Act of 1940, 364-366, 421  
   administering, 369  
   entry control provisions, 382  
   objectives, 366-367  
   regulation of trucking, 367-368
- Transportation industries:  
   competition, 200  
   deregulation, 240  
   rates of return, 237, 238, 240  
 Trips from home, 328  
 Troxel, E., 105*n*  
 Trucking industry:  
   brokers, 399-400, 412  
   common carrier regulation, 351-379  
   contract carriers, 386  
   costs and minimum rate regulation, 5, 19-20  
   effect of Depression on, 362  
   effects of regulation on service, 418-419  
   entry control, 381-422  
     *See also* Entry control  
   equipment price behavior, 222  
   ICC motor carrier cost studies, 407  
   ICC regulation, 363-364, 368-369  
   illegitimate operations, 370  
   investment turnover, 10  
   leased trucks, 417-418  
   market structure, 406-407  
   mergers, 404-405  
   operating ratio approach, 204-205  
   price discrimination, 56  
   private trucks, 417-418  
   profits, 199  
   rates, 38, 40, 369, 414  
     market-oriented, 12-16  
     of return, 231  
     value-of-service, 373  
   return-haul restrictions, 408-410  
   service, 412-416  
 Turner, D., 62*n*  
 TWA, *see* Trans World Airlines
- Ulmer, Melville, 46, 175*n*  
 Union Pacific, 49  
 United Air Lines, 81, 83, 90, 91, 113, 223  
   cost of operations, 61  
 United Kingdom, 441  
 United States:  
   Air Force Academy, 245  
   Bureau of the Census, 331*n*, 338*n*  
   Bureau of Labor Statistics, 174  
   Bureau of Public Roads, 139*n*, 140, 160  
   Department of Agriculture studies, 399-400  
   Department of Commerce, 176  
   Senate Interstate and Foreign Commerce Committee, 364  
   Supreme Court, 201*n*, 354, 357

- Urban transportation:
- central business district problem, 327-334
  - commuting and residential decision, 245-274
  - competition of private auto with, 291
  - congestion problem, 297-298, 301
  - decentralizing factors, 333
  - decision-making, 320, 323-325
  - fare payments, 334
  - federal aid, 315-316
  - goals, 319-320
  - housing requirements, 330-331
  - investment analyses, 305-312, 315-321
    - peak problems, 316-317
    - project selection criteria, 308-312
    - ranking and budget constraints, 312-315
    - terminology, 305-308
  - land-use characteristics and, 329
  - location of future population growth, 338-345
  - metropolitan area transport studies, 328, 336
  - organizations supplying, 334-337
  - passenger-mile as measure of service, 337-338
  - peak problems, 297-305
    - charging peak users, 303
    - investment approaches, 316-317
    - planning peak service facilities, 303-304
    - solutions, 303-305
    - statistical definitions and concepts, 299
  - planning:
    - economics of, 297-325
      - goals, choices and investment analysis, 319-321
    - policy formation, 272, 327-348
      - changing functions of central city, 332-333
      - patterns of organization, 334-337
      - population growth, 331
      - residential location, 329-332
      - spatial arrangement of the metropolitan area, 327-334
  - pricing:
    - methods of, 290
    - as a tool in coordination, 275-296
  - private transport, 335
    - research, 323-324
    - residential density, 328
    - suboptimization, 323
    - taxes, problem of allocation, 335-336
    - trips to and from home, 328
    - trips to or through central district, 328-329, 333-334
  - User charges, 335, 347
  - Utilization of existing facilities, 60
  - Value-of-service rate structure, 352-379
  - Vanderbilt, Commodore, 48
  - Vernon, Raymond, 248*n*, 332*n*
  - Vickrey, William, 140*n*, 160*n*, 162, 275-296, 322-323
  - Von Thunen-Lösch type of model of spatial economics, 289
  - Wadsworth, James W., 365-366
  - Wallace, John S., 409*n*
  - Water resources, 344
  - Water transportation, 60, 364-365
    - entry control, 388-389
    - freedom of entry, 376-377
    - rates, 38, 40
    - regulation of, 368
  - Wein, H., 172*n*, 192*n*
  - Welland Canal, 441
  - West Shore-South Pennsylvania, 49
  - Western Airlines, 81, 83, 86, 91, 113, 115, 226, 238
  - Wheeler, Burton K., 364-365, 368, 368*n*
  - Wien Alaska Airlines, 101-102
  - Willens, Alan R., 95*n*
  - Williams, Ernest W., Jr., xiv, 4*n*, 398*n*
  - Williamson, Harold F., Jr., 250*n*
  - Williamson, O., 169
  - Wilson, George, 5, 8, 9*n*, 345-347, 407, 436
  - Windom Committee, 59-60
  - Winfrey, Robley, 148*n*
  - Wingo, Lowdon, Jr., 248, 253*n*
  - Winsten, C., 192*n*
  - Wisconsin, population distribution, 343
  - Wohl, Martin, 293-296
  - Wold, H., 113*n*
  - Wolf, J., 178
  - Woll, Matthew, 432
  - Zettel, Richard M., 147*n*, 297, 298*n*, 305, 316*n*, 320*n*
  - Zwick, Charles J., 5*n*, 92-94, 117-118, 396*n*