Cambridge University Press 0521821460 - Benefit-Cost Analysis: Financial and Economic Appraisal using Spreadsheets Harry F. Campbell and Richard P. C. Brown Index More information

Index

annuity, 18, 30 factor, 31 table(s), 31, 39, 46 @RISK[©] program, 201, 209-15; see also electronic spreadsheets benefit/cost ratio (BCR),18, 20, 43; see also decision-making criteria bond finance, 225-27 deadweight loss, 225 border vs domestic prices, 183-87 foreign exchange (FOREX) market, 184, 187 LM approach, 184, 186 LMST approach, 184 official rate of exchange (OER),183 Organisation for Economic Cooperation and Development (OECD), 184 shadow-exchange rate (SER), 183 UNIDO approach, 184, 186, 187 bottom-up approach, 251-54 case studies International Cloth Products (ICP) project, 84-88 private and project analysis, 80-82 referent group analysis, 134-37 referent group net benefits, 138 - 43report on, 308-31 shadow-pricing foreign exchange, 191-93 National Fruit Growers (NFG) project, 78-80 economic efficiency analysis, 117-20 economic impact analysis, 302 - 3efficiency analysis, 113-17 incorporating distributional effects, 254-55 incorporating risk analysis, 215-19 increase in the skilled wage, 169 - 71private and project analysis, 80-84 cash flows after debt finance, 73

after tax net cash flow, 76, 77 bond rate, 78 capital cost, 72 debt finance flow, 73 depreciation, 69, 77 discounted cash flow (DCF), 36 double-counting depreciation, 70 equity, 72-76 equity capital, 78 financing flows, 72, 73 fixed investment, 69 incremental, 67-71 interest, 77 interest charges, 72 own funds, 73 private appraisal, 73 real domestic bond rate, 78 straight-line method of depreciation, 70 taxable profits, 77 taxation, 37, 62-64, 76-77 with and without, 67 working capital, 69 see also private benefit-cost analysis c.i.f. price, 172; see also traded and non-traded commodities compensating variation, 171-73 consumer surplus, 171 Marshallian demand curve, 172 normal good, 172 utility-constant demand curve, 172 see also Kaldor-Hicks criterion constant prices, 33 consumer surplus, 3, 146, 148–52, 171-73, 262, 273-76 complementary goods, 146 non-market valuation, environmental goods, 273-76 non-tradeable goods, 146 price changes, 146 real and pecuniary effects, 147 small project assumption, 146 substitute products, 146 world prices, 146 contingent valuation method (CVM), 280-82; see also nonmarket valuation corrective taxation, 111-12 ad valorem tax, 111 carbon tax, 112 externality, 111 gross of tax, 111

indirect tax, 111 cost-effectiveness analysis (CEA), 272; see also threshold analysis deadweight loss, 225; see also bond finance, tax increase on labour income decision-making criteria, 41-53 accept or reject decisions, 43 annual equivalent cost, 53 benefit-cost ratio (BCR), 41, 43 capital rationing, 50 changing the discount rate, 42 choosing or ranking alternatives, 43 indivisible projects, 51 internal rate of return (IRR), 41, 45-48 lumpiness, 51 net benefit investment ratio (NBIR), 50 net present value (NPV), 41, 49-53 profitability ratios, 50 projects with different lives, 51 decision-support tool, 304; see also report writing deliberative value assessment (DVA), 283 citizens' juries (CJ), 283 multi-criteria analysis (MCA), 283; see also non-market valuation depreciation, 67-71, 77 accounting, 32 double-counting, 70 economic, 32 straight-line method, 70; see also cash flows diminishing marginal productivity of capital, 23 discount factor, 18, 20 discount rate, 4, 18, 20, 77, 112-13 bond rate, 113 choice of discount rate, 112 nominal, 65 risk factor, 34 time value of money, 37, 38 value of information, 211 see also social rate of discount discrete choice modeling (DCM), 282-83; see also non-market valuation distributional weights, 253-54

Cambridge University Press 0521821460 - Benefit-Cost Analysis: Financial and Economic Appraisal using Spreadsheets Harry F. Campbell and Richard P. C. Brown Index

More information

Index 343

atemporal, 258 bottom-up approach, 251 composite, 258 derivation of, 245 diminishing marginal utility of consumption, 245-48 gainers and losers, 251 national parameters, 251 referent group analysis, 251 referent group benefits, 293 social net benefits, 293 threshold distributional weights, 250 top-down approach, 251 value judgement, 250 see also income distribution dose/response method, 269; see also non-market valuation economic impact analysis, 288-303 computable general equilibrium model, 288 income multiplier approach, 288 inter-industry model, 288 multiplier or flow-on effects, 288 see also inter-industry analysis efficiency benefit-cost analysis, 8, 92 - 98accounting prices, 96 average product of labour, 97 competitive equilibrium, 93 demand price, 93 developing economies, 97 economic prices, 96 externalities, 8 imperfectly competitive markets, 05 Kaldor-Hicks criterion, 92 labour supply elasticity, 96 marginal product of labour, 97 minimum wage, 96 non-market valuation, 93 opportunity cost of labour, 97 pricing rule, 93 shadow-price, 93 structural unemployment, 97 subsistence activity, 97 supply price, 93 undistorted market, 95 unemployment, 97 electronic spreadsheets, 36, 54-59; see also case studies, risk modeling employment, 299; see also interindustry analysis environmental costs and benefits, 263 - 67environmental economics, 263

environmental impact assessment (EIA), 265 externalities, 265 impure public goods, 264 internalizing externalities, 265 non-congestion public good, 264 non-excludability by consumers, 263 non-excludability by producers, 263 non-market environmental values, 263 non-market valuation methods, 263, 267-84 non-rivalry in consumption, 263 private goods, 264 public goods, 263 pure public good, 263 referent group external costs, 265 semi-public environmental goods, 2.64 semi-public goods, 264 tragedy of the common, 264 valuation methods, 263, 267-84 valuing, 263 environmental goods, 261 equivalent variation, 171, 173 excludable goods, 261 externalities corrective taxes, 111 environment, 265 internalizing, 265 negative and positive, 262 non-market goods, 262

financial analysis, *see* private benefitcost analysis financing flows, 72–76; *see also* cash flows: equity fixed investment, 67–71 f.o.b. price, 172; *see also* traded and non-traded commodities free riders, 261

general equilibrium analysis, 300–2 computable general equilibrium (CGE) model, 300

hedonic pricing method (HPM), 279–80; see also non-market valuation

import-replacing project, 179–81 border price, 179 non-traded goods, 180 official rate of exchange (OER), 180

shadow-exchange rate (SER), 181 traded goods, 180 world prices, 180 income distribution, 9, 152, 238 atemporal distribution, 238 changing, 242 compensating variation, 152 effects, 14 egalitarian distribution of income, 242 equitable income distribution, 242 fairness, 14 functional distribution concerns, 242 inter-generational distribution, 238 inter-generational equity, 238 inter-temporal distribution, 238 potential and actual compensation, 152 profit-earners, 242 progressive income tax, 242 rent-earners, 242 wage-earners, 242 weighting, 238 see also distributional weights inequality functional distribution, 242 Gini Coefficient, 241 Lorenz Curve, 240, 241 measuring degree of, 240-41 profit-earners, 242 rent-earners, 242 wage-earners, 242 inflation, 18, 33, 64-66 constant prices, 65 nominal cash flow, 65 nominal cost of capital, 65 nominal discount rate, 65 nominal IRR, 65 project appraisal, 65 project evaluation, 65 real IRR, 65 relative price changes, 66 relative prices, 66 input-output analysis, 295, 296; see also inter-industry analysis input price changes, 166 interest charges, see cash flow on equity, 72-76 inter-industry analysis, 295-300 input-output model, 295, 296 modeling inter-industry transactions, 295 multiplier model, 295

More information

344 Index

inter-industry analysis (cont.) see also economic impact analysis, employment, national income multiplier internal rate of return (IRR), 18, 20, 45-48 calculating, 45 incremental project, 48 inflation, 65 interpolation, 45 mutually exclusive projects, 47 nominal, 65 real, 65 switching, 47 use of annuity tables, 46 see also investment decisionmaking criteria interpersonal distribution, 238-39; see also income distribution inter-sectoral distribution, 239-40; see also income distribution inter-temporal distribution, 255-59 atemporal distributional weights, 258 composite distributional weights, 258 critical consumption level, 258 inter-temporal production possibilities curve (IPPC), 23 market rate of interest, 256 premium on savings, 256 shadow-price on savings, 256 social discount rate, 256 social time preference rate, 256 see also income distribution investment appraisal personal viewpoint, 18-21 principles of, 18 investment decision-making criteria, 41-53; see also decision-making criteria Kaldor-Hicks criterion, 4, 92-98, 149 compensating and equivalent variation, 173 compensating variations, 149 Hicksian demand curve, 149 income effect, 149 Marshallian demand curve, 149 substitution effect, 149 Lorenz Curve, 240, 241; see also inequality

LM, LMST approach, see border vs domestic prices, shadow-prices

marginal productivity of capital, 18, 20 market failure, 261 Marshallian demand curve, 171 monopoly power, 104 marginal product of labour, 104 marginal revenue product curve (MRP), 104 monopolist, 104 monopsony power, 105-7 marginal factor cost (MFC), 105 market power, 106 monopsonist, 105 monopsony power, 105 open-access, 106 regulatory distortions, 106 tax, 106 theory of second best, 106 multiplier analysis, 288–95 balanced budget multiplier, 292 circular flow of income, 289 consumption function, 290 equilibrium level of income, 289 leakage of income, 292 marginal propensity to save, 290 national income multiplier, 290 national income multiplier, 298-99 inter-industry analysis, 298 see also inter-industry analysis net benefit stream, 25 net present value (NPV) decision criterion, 49–53 annual equivalent cost, 53 capital rationing, 50 indivisible projects, 51 lumpiness, 51 net benefit investment ratio (NBIR), 50

problems with, 49 profitability ratios, 50 projects with different lives, 51 non-excludable goods, 261 non-market valuation, 9, 267-84 methods of, 268 opportunity cost method, 268, 269 preventative cost method, 268, 269 production approach, 268 utility approach, 273 non-marketed goods and services, 261-63 non-referent group, 10 non-referent group benefits, 123; see also referent group benefit-cost

analysis

non-rival goods and services, 262 non-traded commodities, see traded and non-traded commodities normal good, 172

open economy, 293–95 import function, 293 multiplier for behavioural relations, 293 tax function, 293 tax leakage, 293 traded and non-traded commodities, 177

Pareto improvement, 4 perpetuity, 31 private benefit-cost analysis, 6–11, 62–78; *see also* case studies, cash flows private investment appraisal, 6 producer surplus, 4, 152 project appraisal, 64–66 project benefit-cost analysis, 6–11; *see* also case studies project evaluation, 15, 64–66 public projects, rationale of, 13

Random Utility Method (RUM), 278; see also non-market valuation real rate of interest, 33 real vs pecuniary effects, 147 referent group benefit-cost analysis, 8. 122-26 company tax, 124 direct tax revenues, 124 disaggregated analysis, 122 examples of referent group net benefits, 126-34 foreign firms, 124 indirect tax revenues, 124 net benefits, 123 private sector stakeholders, 124 public sector, 124 referent group benefit-cost account, 122 sales tax, 124 shadow-price, 124, 125, 126 stakeholder, 124 tariffs, 124 tax and financing flows, 124 tax or subsidy flows, 124 regulated utility, 103 rent control, 99 report writing, 304-7 revealed preference method, 276 risk and uncertainty, 194-219 @RISK[©] program, 201

Cambridge University Press 0521821460 - Benefit-Cost Analysis: Financial and Economic Appraisal using Spreadsheets Harry F. Campbell and Richard P. C. Brown Index

More information

Index 345

distributions, 201 cumulative probability distribution, 202 Monte Carlo analysis, 203 probability, 195 risk analysis, 195 risk modeling, 195, 198-204 risk premium discount rate, 196 sensitivity analysis, 195 subjective risk, 195 risk averse behaviour, theory of, 205 - 9beta coefficient, 209 degree of risk, 207 diminishing marginal utility of wealth, 205 expected utility hypothesis, 206 financial derivatives, 209 gamble, 205 indifference map/curve, 207 market price of risk, 209 portfolio risk, 208 risk aversion, 205 utility, 205 variance of wealth, 207 wealth portfolio, 207 risk modeling, 198-204 correlated variables, 197, 199 cumulative distribution, 210 discrete probability distributions, 198 expected value, 198 histogram, 210 joint probability distributions, 199 random walk, 215 uncorrelated variables, 199 using @RISK[©] program, 201, 209-15 sensitivity analysis, 13, 195-98 correlated variables, 196 correlation, 196 sensitivity analysis discount rate, 196 shadow-exchange rate (SER), 187 accounting exchange rate, 189 export subsidies, 188 fixed exchange rate, 188 subsidies, 188 tariffs, 188 traded and non-traded commodities, 179 shadow-prices, 13, 93, 96-108, 261 savings, 256 see also border vs domestic prices,

continuous probability

efficiency benefit-cost analysis social accounting, 4 social opportunity cost of public funds, 223-29 bond and tax finance, 224 bonds, 224 deadweight loss, 225 marginal cost of funds, 224 marginal cost of public funds, 224 tax system, 224 see also deadweight loss social rate of discount, 4, 221–23 consumption rate of interest, 223 future generations, 223 shadow-rate of interest, 223 utility discount factor, 223 utility growth factor, 223 see also discount rate social time preference, 221 spreadsheets, see electronic spreadsheets stated preference method, 276; see also non-market valuation subsidy, 102 monopoly output, 107 tariffs, 100, 171-74, 179 import duty, 100 small country assumption, 100 tax increase on labour income, 227-29; see also deadweight loss taxes, 9, 108-10 after-tax wage, 108 corrective taxation, 109, 111-12 distortionary taxes, 108 gross of tax (net of subsidy), 109 import-replacing project, 109 monopsony power, 106 negative tax, 108 net of tax (gross of subsidy), 109 sales tax, 109 see also cash flows threshold analysis, 271 cost-effectiveness analysis (CEA), 272 natural capital, 271 preventative cost method, 272 replacement cost method, 273 see also distributional weights time value of money, 37-39 discount factor, 38 discounting, 37 net cash flow (NCF), 39 present values, 38 total economic value, 266-67 anthropogenic values, 266

bequest value, 267 direct uses, 266 existence value, 267 indirect uses, 266 irreversibility, 266 non-use value, 266 option value, 266 quasi-option value, 267 uncertainty, 266 traded and non-traded commodities, 177 - 79c.i.f. price, 178 exchange rate, 177 f.o.b. price, 178 open economy, 177 shadow-exchange rate (SER), 179 tradeable and non-tradeable goods, 177 traded commodities, 177 traded goods, 177 valuing, 178 Travel Cost Method (TCM), 276-78; see also non-market valuation utility approach, 273 consumer surplus, 273 willingness-to-pay (WTP), 273-76 see also non-market valuation utility-constant demand curve, 171 UNIDO approach, see border vs domestic prices value of information, 221 cost of public funds, 211 discount rate, 211 market rate of interest, 211 option value, 230-32 social opportunity cost, 211 social time preference, 221 value of life, 261, 284-86 cost-effectiveness analysis (CEA), 284 revealed preference approach, 284 value of time, 98 leisure time, 98 travel time, 98 weighting, 238; see also income distribution, distributional weights willingness-to-pay (WTP), 3, 148-52, 262, 273-76 with-and-without approach, 2

working capital, 71