

Multi-Criteria Capital Budgeting with Incomplete Preference Information

Pekka Mild, Juuso Liesiö and Ahti Salo

Systems Analysis Laboratory

Helsinki University of Technology

P.O. Box 1100, 02015 HUT, Finland

pekka.mild@hut.fi, juuso.liesio@hut.fi, ahti.salo@hut.fi

Abstract: We extend the use of preference programming to capital budgeting problems where the decision maker chooses a portfolio of multicriteria projects subject to resource constraints. Specifically, algorithms for the computation of non-dominated portfolios are presented, and comparative indicators for both projects and portfolios are derived from an analysis of all non-dominated portfolios. For instance, these indicators convey which projects should surely be started or excluded in view of incomplete preference information. An application based on real data on road pavement projects is presented to illustrate that substantially improved decisions can be reached especially when the number of project proposals is high.

Keywords: Capital budgeting, preference programming, multiobjective knapsack problems.