References

Acerbi, C. 2002. Spectral measures of risk: A coherent representation of subjective risk aversion. *Journal of Banking & Finance* 26(7): 1505–1518.

Adcock, C., and N. Meade. 1994. A simple algorithm to incorporate transactions costs in quadratic optimisation. *European Journal of Operational Research* 79(1): 85–94.

Andersson, F., H. Mausser, D. Rosen, and S. Uryasev. 2001. Credit risk optimization with conditional value-at-risk criterion. *Mathematical Programming* 89(2): 273–291.

Angelelli, E., R. Mansini, and M.G. Speranza. 2008. A comparison of MAD and CVaR models with real features. *Journal of Banking & Finance* 32(7): 1188–1197.

Angelelli, E., R. Mansini, and M.G. Speranza. 2010. Kernel search: A general heuristic for the multi-dimensional knapsack problem. *Computers & Operations Research* 37(11): 2017–2026. Metaheuristics for Logistics and Vehicle Routing.

Angelelli, E., R. Mansini, and M.G. Speranza. 2012. Kernel search: A new heuristic framework for portfolio selection. *Computational Optimization and Applications* 51(1): 345–361.

Artzner, P., F. Delbaen, J.-M. Eber, and D. Heath. 1999. Coherent measures of risk. *Mathematical Finance* 9(3): 203–228.

Baumann, P., and N. Trautmann. 2013. Portfolio-optimization models for small investors. *Mathematical Methods of Operations Research* 77(3): 345–356.

Baumol, W.J. 1964. An expected gain-confidence limit criterion for portfolio selection. *Management Science* 10: 174–182.

Bawa, V.S. 1975. Optimal rules for ordering uncertain prospects. *Journal of Financial Economics* 2(1): 95–121.

Beasley, J.E., N. Meade, and T.-J. Chang. 2003. An evolutionary heuristic for the index tracking problem. *European Journal of Operational Research* 148(3): 621–643.

Bienstock, D. 1996. Computational study of a family of mixed-integer quadratic programming problems. *Mathematical Programming* 74(2): 121–140.

Canakgoz, N., and J. Beasley. 2009. Mixed-integer programming approaches for index tracking and enhanced indexation. *European Journal of Operational Research* 196(1): 384–399.

Cariño, D.R., T. Kent, D.H. Myers, C. Stacy, M. Sylvanus, A.L. Turner, K. Watanabe, and W.T. Ziemba. 1994. The Russell-Yasuda Kasai model: An asset/liability model for a Japanese insurance company using multistage stochastic programming. *Interfaces* 24(1): 29–49.

Cariño, D.R., D.H. Myers, and W.T. Ziemba. 1998. Concepts, technical issues, and uses of the Russell-Yasuda Kasai financial planning model. *Operations Research* 46(4): 450–462.

Chang, T.-J., N. Meade, J. Beasley, and Y. Sharaiha. 2000. Heuristics for cardinality constrained portfolio optimisation. *Computers & Operations Research* 27(13): 1271–1302.

© Springer International Publishing Switzerland 2015

R. Mansini et al., *Linear and Mixed Integer Programming for Portfolio Optimization*, EURO Advanced Tutorials on Operational Research,
DOI 10.1007/978-3-319-18482-1

Chekhlov, A., S. Uryasev, and M. Zabarankin. 2005. Drawdown measure in portfolio optimization. *International Journal of Theoretical and Applied Finance* 8(1): 13–58.

Chen, A.H., F.J. Fabozzi, and D. Huang. 2010. Models for portfolio revision with transaction costs in the mean–variance framework. In *Handbook of portfolio construction*, ed. John B. Guerard, 133–151. New York/London: Springer.

Chen, A.H., F.C. Jen, and S. Zionts. 1971. The optimal portfolio revision policy. *Journal of Business* 44(1): 51–61.

Chiodi, L., R. Mansini, and M.G. Speranza. 2003. Semi-absolute deviation rule for mutual funds portfolio selection. *Annals of Operations Research* 124(1–4): 245–265.

Elton, E., and M. Gruber. 1995. *Modern portfolio theory and investment analysis*, Portfolio management series. New York: Wiley.

Elton, E., M. Gruber, S. Brown, and W. Goetzmann. 2003. *Modern portfolio theory and investment analysis*. New York: Wiley.

Embrechts, P., C. Klüppelberg, and T. Mikosch. 1997. *Modelling extremal events: For insurance and finance*, Applications of mathematics. New York: Springer.

Espinoza, D., and E. Moreno. 2014. A primal-dual aggregation algorithm for minimizing conditional value-at-risk in linear programs. *Computational Optimization and Applications* 59(3): 617–638.

Fabian, C.I., G. Mitra, and D. Roman. 2011. Processing second-order stochastic dominance models using cutting-plane representations. *Mathematical Programming* 130(1): 33–57.

Feinstein, C.D., and M.N. Thapa. 1993. A reformulation of a mean–absolute deviation portfolio optimization model. *Management Science* 39: 1552–1553.

Fieldsend, J.E., J. Matatko, and M. Peng. 2004. Cardinality constrained portfolio optimisation. In *IDEAL*, Exeter, vol. 3177, ed. Z.R. Yang, R.M. Everson, and H. Yin. Lecture Notes in Computer Science, 788–793. Springer.

Fishburn, P.C. 1976. Continua of stochastic dominance relations for bounded probability distributions. *Journal of Mathematical Economics* 3(3): 295–311.

Fishburn, P.C. 1977. Mean-risk analysis with risk associated with below target returns. *American Economic Revue* 67: 116–126.

Fourer, R. 2013. Linear programming software survey. *OR/MS Today* 40(3): 40–53.

Gastwirth, J.L. 1971. A general definition of the lorenz curve. *Econometrica* 39(6): 1037–1039.

Guastaroba, G., R. Mansini, W. Ogryczak, and M. Speranza. 2014. Linear programming models based on Omega ratio for the enhanced index tracking problem. Tech. Rep. 2014–33, Institute of Control and Computation Engineering, Warsaw University of Technology.

Guastaroba, G., R. Mansini, and M.G. Speranza. 2009a. Models and simulations for portfolio rebalancing. *Computational Economics* 33(3): 237–262.

Guastaroba, G., R. Mansini, and M.G. Speranza. 2009b. On the effectiveness of scenario generation techniques in single-period portfolio optimization. *European Journal of Operational Research* 192(2): 500–511.

Guastaroba, G., and M.G. Speranza. 2012. Kernel search: An application to the index tracking problem. *European Journal of Operational Research* 217(1): 54–68.

Hadar, J., and W.R. Russell. 1969. Rules for ordering uncertain prospects. *American Economic Review* 59(1): 25–34.

Hanoch, G., and H. Levy. 1969. The efficiency analysis of choices involving risk. *Review of Economic Studies* 36(107): 335–346.

Hardy, G.H., J.E. Littlewood, and G. Pólya. 1934. *Inequalities*. London: Cambridge University Press.

Jobst, N., M. Horniman, C. Lucas, and G. Mitra. 2001. Computational aspects of alternative portfolio selection models in the presence of discrete asset choice constraints. *Quantitative Finance* 1(5): 489–501.

Jorion, P. 2006. *Value at risk: The new benchmark for managing financial risk*, 3rd edn. New York: Mcgraw-Hill.

Kahneman, D., and A. Tversky. 1979. Prospect theory: An analysis of decision under risk. *Econometrica* 47(2): 263–291.

Kellerer, H., R. Mansini, and M. Speranza. 2000. Selecting portfolios with fixed costs and minimum transaction lots. *Annals of Operations Research* 99(1–4): 287–304.

Konno, H., K. Akishino, and R. Yamamoto. 2005. Optimization of a long-short portfolio under nonconvex transaction cost. *Computational Optimization and Applications* 32(1–2): 115–132.

Konno, H., and A. Wijayanayake. 2001. Portfolio optimization problem under concave transaction costs and minimal transaction unit constraints. *Mathematical Programming* 89(2): 233–250.

Konno, H., and R. Yamamoto. 2005. Global optimization versus integer programming in portfolio optimization under nonconvex transaction costs. *Journal of Global Optimization* 32(2): 207–219.

Konno, H., and H. Yamazaki. 1991. Mean–absolute deviation portfolio optimization model and its application to tokyo stock market. *Management Science* 37: 519–531.

Koshizuka, T., H. Konno, and R. Yamamoto. 2009. Index-plus-alpha tracking subject to correlation constraint. *International Journal of Optimization: Theory, Methods and Applications* 1: 215–224.

Kouwenberg, R., and S. Zenios. 2001. Stochastic programming models for asset liability management. In *Handbook of asset and liability management*, ed. S. Zenios, W. Ziemba, 253–299. Amsterdam: North-Holland.

Krejić, N., M. Kumaresan, and A. Rožnjik. 2011. VaR optimal portfolio with transaction costs. *Applied Mathematics and Computation* 218(8): 4626–4637.

Krokhmal, P., J. Palmquist, and S. Uryasev. 2002. Portfolio optimization with conditional value-at-risk objective and constraints. *Journal of Risk* 4(2): 11–27.

Krzemienowski, A. 2009. Risk preference modeling with conditional average: Anăapplication to portfolio optimization. *Annals of Operations Research* 165(1): 67–95.

Krzemienowski, A., and W. Ogryczak. 2005. On extending the LP computable risk measures to account downside risk. *Computational Optimization and Applications* 32(1–2): 133–160.

Kumar, R., G. Mitra, and D. Roman. 2010. Long-short portfolio optimization in the presence of discrete asset choice constraints and two risk measures. *Journal of Risk* 13(2): 71–100.

Le Thi, H.A., M. Moeini, and T.P. Dinh. 2009. DC programming approach for portfolio optimization under step increasing transaction costs. *Optimization* 58(3): 267–289.

Lee, E.K., and J.E. Mitchell. 2000. Computational experience of an interior-point SQP algorithm in a parallel branch-and-bound framework. In *High performance optimization*, vol. 33, ed. H. Frenk, K. Roos, T. Terlaky, S. Zhang. Applied Optimization, 329–347. Boston: Springer US.

Levy, H. 2006. *Stochastic dominance: Investment decision making under uncertainty*, 2nd edn. New York: Springer.

Levy, H., and Y. Kroll. 1978. Ordering uncertain options with borrowing and lending. *Journal of Finance* 33(2): 553–574.

Li, D., X. Sun, and J. Wang. 2006. Optimal lot solution to cardinality constrained mean–variance formulation for portfolio selection. *Mathematical Finance* 16(1): 83–101.

Lim, C., H.D. Sherali, and S. Uryasev. 2010. Portfolio optimization by minimizing conditional value-at-risk via nondifferentiable optimization. *Computational Optimization and Applications* 46(3): 391–415.

Lintner, J. 1965. The valuation of risky assets and the selection of risky investments in stock portfolios and capital budget. *Review of Economics and Statistics* 47: 13–37.

Liu, S., and D. Stefek. 1995. A genetic algorithm for the asset paring problem in portfolio optimization. In *Proceedings of the first international symposium on operations research and its application (ISORA)*, Beijing, 441–450.

Lobo, M., M. Fazel, and S. Boyd. 2007. Portfolio optimization with linear and fixed transaction costs. *Annals of Operations Research* 152: 341–365.

Mansini, R., W. Ogryczak, and M.G. Speranza. 2003a. LP solvable models for portfolio optimization: A classification and computational comparison. *IMA Journal of Management Mathematics* 14: 187–220.

Mansini, R., W. Ogryczak, and M.G. Speranza. 2003b. On LP solvable models for portfolio optimization. *Informatica* 14: 37–62.

Mansini, R., W. Ogryczak, and M.G. Speranza. 2007. Conditional value at risk and related linear programming models for portfolio optimization. *Annals of Operations Research* 152: 227–256.

Mansini, R., W. Ogryczak, and M.G. Speranza. 2014. Twenty years of linear programming based portfolio optimization. *European Journal of Operational Research* 234(2): 518–535.

Mansini, R., W. Ogryczak, and M.G. Speranza. 2015. Portfolio optimization and transaction costs. In *Quantitative financial risk management: Theory and practice*, ed. C. Zopounidis and E. Galariotis, 212–241. Oxford: Wiley.

Mansini, R., and M.G. Speranza. 1999. Heuristic algorithms for the portfolio selection problem with minimum transaction lots. *European Journal of Operational Research* 114(2): 219–233.

Mansini, R., and M.G. Speranza. 2005. An exact approach for portfolio selection with transaction costs and rounds. *IIE Transactions* 37(10): 919–929.

Markowitz, H.M. 1952. Portfolio selection. *Journal of Finance* 7: 77–91.

Markowitz, H.M. 1959. *Portfolio selection: Efficient diversification of investments*. New York: Wiley.

Mausser, H., D. Saunders, and L. Seco. 2006. Optimising omega. *Risk Magazine* 19(11): 88–92.

Meade, N., and J.E. Beasley. 2011. Detection of momentum effects using an index out-performance strategy. *Quantitative Finance* 11(2): 313–326.

Michalowski, W., and W. Ogryczak. 2001. Extending the MAD portfolio optimization model to incorporate downside risk aversion. *Naval Research Logistics* 48(3): 185–200.

Mossin, J. 1966. Equilibrium in a capital asset market. *Econometrica* 34: 768–783.

Müller, A., and D. Stoyan. 2002. *Comparison methods for stochastic models and risks*. New York: Wiley.

Nawrocki, D.N. 1992. The characteristics of portfolios selected by n-degree lower partial moment. *International Review of Financial Analysis* 1(3): 195–209.

Neumann, J.V., and O. Morgenstern. 1947. *Theory of games and economic behavior*, 2nd edn. Princeton: Princeton University Press.

Ogryczak, W. 1999. Stochastic dominance relation and linear risk measures. In *Financial modelling – Proceedings of the 23rd meeting EURO WG financial modelling, 1998*, Cracow, ed. A.M. Skulimowski, 191–212. Progress & Business Publisher.

Ogryczak, W. 2000. Multiple criteria linear programming model for portfolio selection. *Annals of Operations Research* 97(1–4): 143–162.

Ogryczak, W., and A. Ruszczyński. 1999. From stochastic dominance to mean-risk models: Semideviations as risk measures. *European Journal of Operational Research* 116(1): 33–50.

Ogryczak, W., and A. Ruszczyński. 2001. On consistency of stochastic dominance and mean-semideviation models. *Mathematical Programming* 89(2): 217–232.

Ogryczak, W., and A. Ruszczyński. 2002a. Dual stochastic dominance and quantile risk measures. *International Transactions in Operational Research* 9(5): 661–680.

Ogryczak, W., and A. Ruszczyński. 2002b. Dual stochastic dominance and related mean-risk models. *SIAM Journal on Optimization* 13(1): 60–78.

Ogryczak, W., and T. Śliwiński. 2011a. On dual approaches to efficient optimization of LP computable risk measures for portfolio selection. *Asia-Pacific Journal of Operational Research* 28(1): 41–63.

Ogryczak, W., and T. Śliwiński. 2011b. On solving the dual for portfolio selection by optimizing conditional value at risk. *Computational Optimization and Applications* 50(3): 591–595.

Pflug, G.C. 2000. Some remarks on the value-at-risk and the conditional value-at-risk. In *Probabilistic constrained optimization: Methodology and applications*, ed. S. Uryasev, 272–281. Boston: Kluwer.

Pflug, G.C. 2001. Scenario tree generation for multiperiod financial optimization by optimal discretization. *Mathematical Programming* 89(2): 251–271.

Pogue, G.A. 1970. An extension of the Markowtiz portfolio selection model to include variable transaction costs, short sales, leverage policies and taxes. *Journal of Finance* 25(5): 1005–1027.

Quiggin, J. 1982. A theory of anticipated utility. *Journal of Economic Behavior & Organization* 3(4): 323–343.

Quirk, J.P., and R. Saposnik. 1962. The efficiency analysis of choices involving risk. *Review of Economic Studies* 29(2): 140–146.

Rockafellar, R., S. Uryasev, and M. Zabarankin. 2006. Generalized deviations in risk analysis. *Finance and Stochastics* 10(1): 51–74.

Rockafellar, R.T., and S. Uryasev. 2000. Optimization of conditional value-at-risk. *Journal of Risk* 2: 21–41.

Roman, D., K. Darby-Dowman, and G. Mitra. 2007. Mean-risk models using two risk measures: A multi-objective approach. *Quantitative Finance* 7(4): 443–458.

Rothschild, M., and J.E. Stiglitz. 1970. Increasing risk: I. A definition. *Journal of Economic Theory* 2(3): 225–243.

Roy, A. 1952. Safety-first and the holding of assets. *Econometrica* 20: 431–449.

Shadwick, W., and C. Keating. 2002. A universal performance measure. *Journal of Portfolio Measurement* 6(3 Spring): 59–84.

Sharpe, W.F. 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance* 19: 425–442.

Sharpe, W.F. 1971a. A linear programming approximation for the general portfolio analysis problem. *Journal of Financial and Quantitative Analysis* 6: 1263–1275.

Sharpe, W.F. 1971b. Mean-absolute deviation characteristic lines for securities and portfolios. *Management Science* 18: B1–B13.

Shorrocks, A.F. 1983. Ranking income distributions. *Economica* 50(197): 3–17.

Smith, K.V. 1967. A transition model for portfolio revision. *Journal of Finance* 22(3): 425–439

Speranza, M.G. 1993. Linear programming models for portfolio optimization. *Finance* 14: 107–123.

Speranza, M.G. 1996. A heuristic algorithm for a portfolio optimization model applied to the Milan stock market. *Computers & Operations Research* 23(5): 433–441.

Stone, B.K. 1973. A linear programming formulation of the general portfolio selection problem. *Journal of Financial and Quantitative Analysis* 8: 621–636.

Tobin, J. 1958. Liquidity preference as behavior towards risk. *Review of Economic Studies* 25(2): 65–86.

Topaloglou, N., H. Vladimirou, and S.A. Zenios. 2002. CVaR models with selective hedging for international asset allocation. *Journal of Banking & Finance* 26(7): 1535–1561.

Valle, C., N. Meade, and J. Beasley. 2014a. Absolute return portfolios. *Omega* 45: 20–41.

Valle, C., N. Meade, and J. Beasley. 2014b. Market neutral portfolios. *Optimization Letters* 8: 1961–1984.

Whitmore, G.A. 1970. Third-degree stochastic dominance. *American Economic Review* 60(3): 457–459.

Woodside-Oriakhi, M., C. Lucas, and J. Beasley. 2013. Portfolio rebalancing with an investment horizon and transaction costs. *Omega* 41(2): 406–420.

Xidonas, P., G. Mavrotas, and J. Psarras. 2010. Portfolio construction on the Athens Stock Exchange: A multiobjective optimization approach. *Optimization* 59(8): 1211–1229.

Yaari, M.E. 1987. The dual theory of choice under risk. *Econometrica* 55(1): 95–115.

Yitzhaki, S. 1982. Stochastic dominance, mean variance, and Gini's mean difference. *American Economic Review* 72: 178–185.

Young, M.R. 1998. A minimax portfolio selection rule with linear programming solution. *Management Science* 44(5): 673–683.

Zenios, S., and P. Kang. 1993. Mean-absolute deviation portfolio optimization for mortgage-backed securities. *Annals of Operations Research* 45(1): 433–450.

Zhu, S., and M. Fukushima. 2009. Worst-case conditional value-at-risk with application to robust portfolio management. *Operations Research* 57(5): 1155–1168.