

Publications

Peter Winker

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Books

- Winker, P. (2017):** *Empirische Wirtschaftsforschung und Ökonometrie*. Springer Gabler, Berlin, 4. Ed.
- Winker, P. and C. Funk (2016):** *Übungsbuch Empirische Wirtschaftsforschung und Ökonometrie*. Springer Gabler, Berlin.
- Winker, P., N. Menold, and R. Porst (Eds.) (2013):** *Interviewers' Deviations in Surveys – Impact, Reasons, Detection and Prevention*. Peter Lang, Frankfurt.
- Winker, P. (2010):** *Empirische Wirtschaftsforschung und Ökonometrie*. Springer, Heidelberg, 3. Ed.
- Kontoghiorghes, E. J., B. Rustem, and P. Winker (Eds.) (2008):** *Computational Methods in Financial Engineering*. Springer, Berlin.
- Winker, P. (2007):** *Empirische Wirtschaftsforschung und Ökonometrie*. Springer, Heidelberg, 2. Ed.
- Fitzenberger, B., W. Smolny, and P. Winker (Eds.) (2004):** *Herausforderungen an den Wirtschaftsstandort Deutschland*, Bd. 72 von *ZEW Wirtschaftsanalysen/Schriftenreihe des ZEW*. Nomos, Baden–Baden.
- Winker, P. (2001):** *Optimization Heuristics in Econometrics: Applications of Threshold Accepting*. Wiley, Chichester.
- Winker, P. (1997):** *Empirische Wirtschaftsforschung*. Springer, Heidelberg.
- Winker, P. (1996):** *Rationierung auf dem Markt für Unternehmenskredite in der BRD*. Mohr & Siebeck, Tübingen.

Refereed Journal Articles

- Funk, C., A. Sathyan, P. Winker, and L. Breuer (2020):** Changing Climate – Changing Livelihood: Smallholder’s Perceptions and Adaption Strategies. *Journal of Environmental Management*, **259**, 109702.
- Grabowski, D., A. Staszewska-Bystrova, and P. Winker (2020):** Skewness-Adjusted Bootstrap Confidence Intervals and Confidence Bands for Impulse Response Functions. *AStA Advances in Statistical Analysis*, **104**, 5–32.
- Lenz, D. and P. Winker (2020):** Measuring the Diffusion of Innovations with Paragraph Vector Topic Models. *PLoS ONE*, **15**, e0226685.
- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2020):** Constructing Joint Confidence Bands for Impulse Response Functions of VAR Models – A Review. *Econometrics and Statistics*, **13**, 69–83.
- Lagemann, M. and P. Winker (2019):** Soziale Kosten von Bildungsaspirationen bei Sekundarstufenschüler(inne)n ohne und mit Migrationshintergrund: Wenn die eigenen Aspirationen nicht denen der Freundinnen und Freunde entsprechen. *Zeitschrift für Erziehungswissenschaft*, **22**, 203–233.
- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2018a):** Estimation of Structural Impulse Responses: Short-Run versus Long-Run Identifying Restrictions. *AStA Advances in Statistical Analysis*, **102**, 229–244.
- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2018b):** Calculating Joint Confidence Bands for Impulse Response Functions using Highest Density Regions. *Empirical Economics*, **55**, 1389–1411.
- Menold, N., U. Landrock, P. Winker, N. Pellner, and C. J. Kemper (2018):** The Impact of Payment and Respondents’ Participation on Interviewers’ Accuracy in Face-to-face Surveys: Investigations from a Field Experiment. *Field Methods*, **30**, 4, 295–311.
- Sathyan, A., C. Funk, T. Aenis, P. Winker, and L. Breuer (2018):** Sensitivity Analysis of a Climate Vulnerability Index – A Case Study from Indian Watershed Development Programmes. *Climate Change Responses*, **5**, 1.
URL: <http://rdcu.be/FFP6>
- Diop, S., P. Tillmann, and P. Winker (2017):** A Monetary Stress Indicator for the Economic Community of West African States. *Journal of African Development*, **19**, 3–18.
- Grabowski, D., A. Staszewska-Bystrova, and P. Winker (2017):** Generating prediction bands for path forecasts from SETAR models. *Studies in Nonlinear Dynamics & Econometrics*, **21**.

- Mandes, A. and Winker (2017):** Complexity and Model Selection in Agent Based Modeling of Financial Markets. *Journal of Economics Interaction and Coordination*, **12**, 469–506.
- Multsch, S., D. Grabowski, J. Lüdering, A. Alquwaizany, O. Alharbi, K. Lehner, H.-G. Frede, and P. Winker (2017):** A Practical Planning Software Program for Desalination in Agriculture – SPARE:WATER^{opt}. *Desalination*, **404**, 121–131.
- Blanco-Fernandez, A. and P. Winker (2016):** Data Generation Processes and Statistical Management of Interval Data. *AStA Advances in Statistical Analysis*, **100**, 4, 475–494.
- De Haas, S. and P. Winker (2016):** Detecting Fraudulent Interviewers by Improved Clustering Methods – The Case of Falsifications of Answers to Parts of a Questionnaire. *Journal of Official Statistics*, **32**, 3, 643–660.
- Fischer, H., A. Blanco-Fernandez, and P. Winker (2016):** Predicting Stock Return Volatility: Can we Benefit From Regression Models for Return Intervals? *Journal of Forecasting*, **35**, 113–146.
- Günther, M., P. Winker, S. Wudy, and B. Brosig (2016):** New Methods in Exploring Old Topics: Case Studying Brittle Diabetes in the Family Context. *Journal of Diabetes Research*, Article ID 6437452.
- Lüdering, J. and P. Winker (2016):** Forward or Backward Looking? The Economic Discourse and the Observed Reality. *Jahrbücher für Nationalökonomie und Statistik*, **236**, 4, 483–515.
- Staszewska-Bystrova, A. and P. Winker (2016):** Improved bootstrap prediction intervals for SETAR models. *Statistical Papers*, **57**, 89–98.
- Winker, P. (2016):** Assuring the Quality of Survey Data: Incentives, Detection and Documentation of Deviant Behavior. *Statistical Journal of the IAOS*, **32**, 295–303.
- Fastrich, B., S. Paterlini und P. Winker (2015):** Constructing Optimal Sparse Portfolios Using Regularization Methods. *Computational Management Science*, **12**, 417–434.
- Lütkepohl, H., A. Staszewska-Bystrova und P. Winker (2015a):** Comparison of Methods for Constructing Joint Confidence Bands for Impulse Response Functions. *International Journal of Forecasting*, **31**, 782–798.
- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2015b):** Confidence Bands for Impulse Responses: Bonferroni versus Wald. *Oxford Bulletin of Economics and Statistics*, **77**, 800–821.
- Lyra, M., A. Onwunta und P. Winker (2015):** Threshold Accepting for Credit Risk Assessment and Validation. *Journal of Banking Regulation*, **16**, 130–145.

- Winker, P., K.-W. Kruse, N. Menold, and U. Landrock (2015):** Interviewer Effects in Real and Falsified Interviews – Results from a Large Scale Experiment. *Statistical Journal of the IAOS*, **31**, 423–434.
- De Haas, S. and P. Winker (2014):** Identification of Partial Falsifications in Survey Data. *Statistical Journal of the IAOS*, **30**, 271–281.
- Fastrich, B. and P. Winker (2014):** Combining Forecasts with Missing Data: Making Use of Portfolio Theory. *Computational Economics*, **44**, 127–152.
- Fastrich, B., S. Paterlini, and P. Winker (2014):** Cardinality versus q-Norm Constraints for Index Tracking. *Quantitative Finance*, **14**, 2019–2032.
- Fischer, H., M. Garcia-Barzana, P. Tillmann, and P. Winker (2014):** Evaluating FOMC forecast ranges: an interval data approach. *Empirical Economics*, **47**, 365–388.
- Staszewska-Bystrova, A. and P. Winker (2014):** Measuring Forecasts Uncertainty of Corporate Bond Spreads by Bonferroni-Type Prediction Bands. *Central European Journal of Economic Modeling and Econometrics*, **6**, 89–104.
- Günther, M., P. Winker, C. Böttcher, and B. Brosig (2013):** Family System Dynamics and Type 1 Diabetic Glycemic Variability: A Vector-auto-regressive Model. *Families, Systems, & Health*, **31**, 2, 194–204.
- Savin, I. and P. Winker (2013):** Heuristic Model Selection for Leading Indicators in Russia and Germany. *Journal of Business Cycle Measurement and Analysis*, **10**, 67–89.
- Staszewska-Bystrova, A. and P. Winker (2013):** Constructing Narrowest Pathwise Bootstrap Prediction Bands Using Threshold Accepting. *International Journal of Forecasting*, **29**, 221–233.
- Bredl, S., P. Winker, and K. Kötschau (2012):** A Statistical Approach to Detect Interviewer Falsification of Survey Data. *Survey Methodology*, **38**, 1, 1–10.
- Fastrich, B. and P. Winker (2012):** Robust Portfolio Optimization with a Hybrid Heuristic Algorithm. *Computational Management Sciences*, **9**, 63–88.
- Savin, I. and P. Winker (2012):** Heuristic Optimization Methods for Dynamic Panel Data Model Selection. Application on the Russian Innovative Performance. *Computational Economics*, **39**, 4, 337–363.
- Zakaria Suliman Abdalla, S. and P. Winker (2012):** Modelling Stock Market Volatility Using Univariate GARCH Models: Evidence from Sudan and Egypt. *International Journal of Economics and Finance*, **4**, 8, 161–176.
- Winker, P. and D. Lin (2011):** Robust Uniform Design with Errors in Design Variables. *Statistica Sinica*, **21**, 3, 1379–1396.

- Winker, P., M. Lyra, and C. Sharpe (2011):** Least Median of Squares Estimation by Optimization Heuristics with an Application to the CAPM and Multi Factor Models. *Computational Management Science*, **8**, 103–123.
- Lin, D., C. Sharpe, and P. Winker (2010):** Optimized U-type Designs on Flexible Regions. *Journal of Computational Statistics and Data Analysis*, **54**, 6, 1505–1515.
- Lyra, M., J. Paha, S. Paterlini, and P. Winker (2010):** Optimization Heuristics for Determining Internal Rating Grading Scales. *Computational Statistics and Data Analysis*, **54**, 11, 2693–2706.
- Maringer, D. and P. Winker (2009):** The Convergence of Estimators based on Heuristics: Theory and Application to a GARCH model. *Computational Statistics*, **24**, 533–550.
- Savin, I. and P. Winker (2009):** Forecasting Russian Foreign Trade Comparative Advantages in the Context of a Potential WTO Accession. *The Central European Journal of Economic Modelling and Econometrics*, **1**, 111–138.
- Entorf, H. and P. Winker (2008):** Investigating the Drugs-Crime Channel in Economics of Crime Models. *International Review of Law and Economics*, **28**, 1, 8–22.
- Gatu, C., E. J. Kontoghiorghes, M. Gilli, and P. Winker (2008):** An Efficient Branch-and-Bound Strategy for Subset Vector Autoregressive Model Selection. *Journal of Economic Dynamics and Control*, **32**, 1949–1963.
- LeBaron, B. and P. Winker (2008):** Introduction to Special Issue on Agent Based Models in Economic Policy Advice. *Jahrbücher für Nationalökonomie und Statistik*, **228**, 2+3, 141–147.
- Fitzenberger, B. and P. Winker (2007):** Improving the Computation of Censored Quantile Regressions. *Computational Statistics and Data Analysis*, **52**, 1, 88–108.
- Gilli, M. and P. Winker (2007):** Editorial - 2nd Special Issue on Applications of Optimization Heuristics to Estimation and Modelling Problems. *Computational Statistics and Data Analysis*, **52**, 1, 2–3.
- Winker, P. (2007):** Book review on handbook of parallel computing and statistics edited by E.J. Kontoghiorgher Chapman & Hall/CRC, Boca Raton, 2006. *Computational Statistics and Data Analysis*, **52**, 7, 3424–3425.
- Winker, P., M. Gilli, and V. Jeleskovic (2007):** An Objective Function for Simulation Based Inference on Exchange Rate Data. *Journal of Economic Interaction and Coordination*, **2**, 125–145.
- Winker, P. and D. Maringer (2007):** The Hidden Risks of Optimizing Bond Portfolios under VaR. *Journal of Risk*, **9**, 4, 1–17.
- Chipman, J. S. and P. Winker (2005):** Optimal Aggregation of Linear Time Series Models. *Computational Statistics and Data Analysis*, **49**, 2, 311–331.

- Fang, K.-T., D. Maringer, Y. Tang, and P. Winker (2005)**: Lower Bounds and Stochastic Optimization Algorithms for Uniform Designs with Three or Four Levels. *Mathematics of Computation*, **75**, 254, 859–878.
- Meyer, M. and P. Winker (2005)**: Using HP Filtered Data for Econometric Analysis: Some Evidence from Monte Carlo Simulations. *Allgemeines Statistisches Archiv*, **89**, 3, 303–320.
- Beck, M. and P. Winker (2004)**: Modelling Spillovers and Feedback of International Trade in a Disequilibrium Framework. *Economic Modelling*, **21**, 445–470.
- Hülsewig, O., P. Winker, and A. Worms (2004)**: Bank Lending in the Transmission of Monetary Policy: A VECM Analysis for Germany. *Jahrbücher für Nationalökonomie und Statistik*, **224**, 5, 511–529.
- Winker, P. and M. Gilli (2004)**: Applications of Optimization Heuristics to Estimation and Modelling Problems. *Computational Statistics and Data Analysis*, **47**, 2, 211–223.
- Fang, K.-T., X. Lu, and P. Winker (2003)**: Lower Bounds for Centered and Wrap-around L_2 -discrepancies and Construction of Uniform Designs by Threshold Accepting. *Journal of Complexity*, **19**, 692–711.
- Gilli, M. and P. Winker (2003)**: A Global Optimization Heuristic for Estimating Agent Based Models. *Computational Statistics and Data Analysis*, **42**, 3, 299–312.
- Li, J. and P. Winker (2003)**: Time Series Simulation with Quasi-Monte Carlo Methods. *Computational Economics*, **21**, 1–2, 23–43.
- Fang, K.-T., C.-X. Ma, and P. Winker (2002)**: Centered L_2 -Discrepancy of Random Sampling and Latin Hypercube Design, and Construction of Uniform Designs. *Mathematics of Computation*, **71**, 275–296.
- Buscher, H. S., H. Buslei, K. Göggelmann, H. Koschel, T. F. N. Schmidt, V. Steiner, and P. Winker (2001)**: Empirical Macromodels Under Test. *Economic Modelling*, **18**, 3, 455–474.
- Fang, K.-T., D. K. J. Lin, P. Winker, and Y. Zhang (2000)**: Uniform Design: Theory and Application. *Technometrics*, **42**, 237–248.
- Franz, W., K. Göggelmann, M. Schellhorn, and P. Winker (2000)**: Quasi-Monte Carlo Methods in Stochastic Simulations. *Empirical Economics*, **25**, 247–259.
- Winker, P. (2000a)**: Efficient Labour Contracts: Impediments and How to Circumvent Them. *Labour*, **14**, 3, 373–392.
- Winker, P. (2000b)**: Optimized Multivariate Lag Structure Selection. *Computational Economics*, **16**, 87–103.

- Genser, B. and P. Winker (1997):** Measuring the Fiscal Revenue Loss of VAT Exemption in Commercial Banking. *Finanzarchiv*, **54**, 4, 563–585.
- Hettich, F., S. Killinger, and P. Winker (1997):** Die ökologische Steuerreform auf dem Prüfstand. Zur Kritik am Gutachten des Deutschen Instituts für Wirtschaftsforschung. *Zeitschrift für Umweltpolitik and Umweltrecht*, **20**, 2, 199–225.
- Winker, P. (1999a):** Causes and Effects of Financing Constraints at the Firm Level: Some Microeconomic Evidence. *Small Business Economics*, **12**, 169–181.
- Winker, P. (1999b):** Sluggish Adjustment of Interest Rates and Credit Rationing. *Applied Economics*, **31**, 267–277.
- Winker, P. and K.-T. Fang (1997):** Application of Threshold Accepting to the Evaluation of the Discrepancy of a Set of Points. *SIAM Journal on Numerical Analysis*, **34**, 2028–2042.
- Winker, P. and K.-T. Fang (1999):** Zufall und Quasi-Monte Carlo Ansätze. *Jahrbücher für Nationalökonomie und Statistik*, **218**, 215–228.
- Chipman, J. S. and P. Winker (1995):** Optimal Industrial Classification by Threshold Accepting. *Control and Cybernetics*, **24**, 4, 477–494.
- Winker, P. (1995a):** Identification of Multivariate AR-Models by Threshold Accepting. *Computational Statistics and Data Analysis*, **20**, 9, 295–307.
- Winker, P. (1995b):** Die Trägheit von Zinssätzen und Kreditrationierung in der Bundesrepublik Deutschland. *Jahrbücher für Nationalökonomie und Statistik*, **214**, 2, 154–174.
- Franz, W., U. Oser, and P. Winker (1994):** A Macroeconomic Disequilibrium Analysis of Current and Future Migration from Eastern Europe into West Germany. *Journal of Population Economics*, **7**, 217–234.
- Winker, P. (1993a):** Firmenalter und Kreditrationierung. *ifo Studien*, **39**, 2, 103–126.
- Winker, P. (1993b):** Zur Messung der Lohndifferenzierung mit Entropiemaßen. *Allgemeines Statistisches Archiv*, **77**, 311–332.
- Dueck, G. and P. Winker (1992):** New Concepts and Algorithms for Portfolio Choice. *Applied Stochastic Models and Data Analysis*, **8**, 159–178.

Refereed Conference Volumes

- Bannier, C., C. Ewelt-Knauer, J. Lips, and P. Winker (2020):** Benford’s Law and Its Application to Detecting Financial Fraud and Manipulation. In: **Alexander, C. and D. Cumming** (Eds.), *The Handbook of Fraud, Misconduct and Manipulation in Financial Markets*, Wiley, Chichester, 473–504.

- Winker, P., J. Chen, and D. Lin (2020)**: The Construction of Optimal Design for Order-of-Addition Experiment via Threshold Accepting. In: **Fan, J. and J. Pan** (Eds.), *Contemporary Experimental Design, Multivariate Analysis and Data Mining*, Springer Nature, Cham, 93–109.
- Liefner, I., S. Bredl, C. Teichert, and P. Winker (2014)**: Regionalökonomische Effekte von Hochschulen: Ein Analyserahmen für den Standort Gießen. In: **Diller, C., A. Dittmann, M. Fuchs, J.-B. Haversath, I. Liefner, and J. Luterbacher** (Eds.), *150 Jahre Geographie in Gießen*, Scientia Bonnensis, Bonn, Bd. 85 von *Giessener Geographische Schriften*, 141–162.
- Menold, N., P. Winker, N. Storfinger, and S. Bredl (2014)**: Interviewers’ Falsifications in Face-to-Face Surveys: Impact, Reasons, Detection and Prevention. In: **Engel, U., B. Jann, P. Lynn, A. Scherpenzeel, and P. Sturgis** (Eds.), *Improving Survey Methods – Lessons from Recent Research*, Taylor & Francis, New York, 86–97.
- Mandes, A., C. Gatu, and P. Winker (2013)**: Convergence of Heuristic-based Estimators of the GARCH Model. In: **Borgelt, C., M. Gil, J. Sousa, and M. V.** (Eds.), *Towards Advanced Data Analysis by Combining Soft Computing and Statistics*, Springer, 151–163.
- Menold, N., P. Winker, N. Storfinger, and C. J. Kemper (2013)**: A Method for Ex-Post Identification of Falsifications in Survey Data. In: **Winker, P., N. Menold, and R. Porst** (Eds.), *Interviewers’ Deviations in Surveys – Impact, Reasons, Detection and Prevention*, Peter Lang, Frankfurt, 25–47.
- Storfinger, N. and P. Winker (2013)**: Assessing the Performance of Clustering Methods in Falsification Identification using Bootstrap. In: **Winker, P., N. Menold, and R. Porst** (Eds.), *Interviewers’ Deviations in Surveys – Impact, Reasons, Detection and Prevention*, Peter Lang, 49–65.
- Thömmes, M. and P. Winker (2013)**: Multivariate Modelling of Cross-Commodity Price Relations Along the Petrochemical Value Chain. In: **Lausen, B., D. van den Poel, and A. Ultsch** (Eds.), *Algorithms from \mathcal{E} for Nature and Life*, Springer, 49–65.
- Gilli, M. and P. Winker (2009b)**: Heuristic optimization methods in econometrics. In: **Belsley, D. and E. Kontoghiorghes** (Eds.), *Handbook of Computational Econometrics*, Wiley, Chichester, 81–119.
- Gilli, M., D. Maringer, and P. Winker (2008)**: Applications of Heuristics in Finance. In: **Seese, D., C. Weinhardt, and F. Schlottmann** (Eds.), *Handbook of Information Technology in Finance*, Springer, Berlin, International Handbooks on Information Systems, Ch. 26, 635–653.
- Specht, K. and P. Winker (2008)**: Portfolio Optimization under VaR Constraints Based on Dynamic Estimates of the Variance-Covariance Matrix. In: **Kontoghiorghes, E. J., B. Rustem, and P. Winker** (Eds.), *Computational Methods in Financial Engineering*, Springer, Berlin, 73–94.

- Winker, P., V. Jeleskovic, and M. Gilli (2007):** Simulation Based Inference on Agent Based Models of Exchange Rate Data. In: **Gomes, M. I., D. Pestana, and P. Silva** (Eds.), *Bulletin of the International Statistical Institute 56th Session: Proceedings*, ISI, Lisboa, CD-Rom.
- Winker, P. and D. Maringer (2007):** The Threshold Accepting Optimisation Algorithm in Economics and Statistics. In: **Kontoghiorghes, E. J. and C. Gatu** (Eds.), *Optimisation, Econometric and Financial Analysis*, Springer, Berlin, Bd. 9 von *Advances in Computational Management Science*, 107–125.
- Maringer, D. and P. Winker (2006):** The convergence of optimization based GARCH estimators: Theory and application. In: **Rizzi, A. and M. Vichi** (Eds.), *COMPSTAT 2006, Proceedings in Computational Statistics*, Physica, Heidelberg, 483–494.
- Winker, P. (2006):** The stochastics of Threshold Accepting: Analysis of an application to the uniform design problem. In: **Rizzi, A. and M. Vichi** (Eds.), *COMPSTAT 2006, Proceedings in Computational Statistics*, Physica, Heidelberg, 495–503.
- Fitzenberger, B. and P. Winker (1998):** Using Threshold Accepting to Improve the Computation of Censored Quantile Regression. In: **Payne, R. und P. Green** (Eds.), *COMPSTAT 1998, Proceedings in Computational Statistics*, Physica, Heidelberg, 311–316.
- Winker, P. and K.-T. Fang (1997):** Optimal U-Type Designs. In: **Niederreiter, H., P. Hellekalek, G. Larcher, und P. Zinterhof** (Eds.), *Monte Carlo and Quasi-Monte Carlo Methods 1996*, Springer, New York, Lecture Notes in Statistics 127, 436–448.
- Winker, P. and K.-T. Fang (1996):** Approximating Uniform Designs by Threshold Accepting. In: **Prat, A. und E. Ripoll** (Eds.), *COMPSTAT 1996, Proceedings in Computational Statistics*, Generalitat de Catalunya. Institut d’Estadística de Catalunya, Barcelona, 141–143.

Other Journal Articles

- Eugenidis, D., D. Lenz, C. Leser, F. Schleer-van Gellecom, and P. Winker (2020):** Text-mining basierte Analyse der Kapitalmarktreaktionen auf Ad-hoc-Mitteilungen. *Corporate Finance*, **09-10/2020**, 282–287.
- Franz, W. and P. Winker (2013):** Guest Editorial: 150 years Journal of Economics and Statistics. *Jahrbücher für Nationalökonomie und Statistik (Journal of Economics and Statistics)*, **233**, 3, 260–265.
- Bredl, S., P. Winker, and K. Kötschau (2011):** Dem Umfragefälscher auf der Spur. *Stadtforschung und Statistik*, **2/2011**, 37–40.

- Winker, P. (2010):** Book review: W.O. Winkler - Interpreting Economic and Social Data - A Foundation of Descriptive Statistics. *Jahrbücher für Nationalökonomie und Statistik*, **230**, 373–373.
- Fitzenberger, B., W. Smolny, and P. Winker (2009):** Special Issue on Labour Economics: Guest Editorial. *Jahrbücher für Nationalökonomie und Statistik*, **2+3**, 1–2.
- Winker, P. (2009):** Von Hamburgern, Ameisen und dem Dollar-Wechselkurs. *Gießener Universitätsblätter*, 63–70.
- Winker, P. (2008a):** Editorial. *Jahrbücher für Nationalökonomie und Statistik*, **228**, 1, 3–3.
- Winker, P. (2008b):** Book review: G.M.P. Swann - Putting Econometrics in its Place - A New Direction in Applied Economics. *Jahrbücher für Nationalökonomie und Statistik*, **5+6**, 654–655.
- Winker, P. and C. Preußner (2008):** Solarkraftwerke in Nordafrika und Energiepartnerschaft mit Europa. *Spiegel der Forschung*, **25**, 2, 34–38.
- Winker, P. and D. Maringer (2004):** The Hidden Risks of Optimizing Bond Portfolios under VaR. Research Notes 13, Deutsche Bank Research, Frankfurt a. M.
- Winker, P. (2001):** Book review: Oppenländer, Karl Heinrich, Empirische Wirtschaftsforschung als Grundlage für unternehmerisches und wirtschaftspolitisches Handeln. *Jahrbücher für Nationalökonomie und Statistik*, **221**, 4, 453–455.
- Beck, M. and P. Winker (2000):** Europäische Handelsbeziehungen in einem Makromodell. *ZEW Konjunkturreport*, **3**, 2, 10–11.

Other Conference Volumes

- Schindler, F. and P. Winker (2012):** Nichtstationarität und Kointegration. In: **Schröder, M.** (Ed.), *Finanzmarkt-Ökonometrie*, Schäffer-Poeschel, 227–266, 2. Aufl.
- Winker, P. (2012):** Vektorautoregressive Modelle. In: **Schröder, M.** (Ed.), *Finanzmarkt-Ökonometrie*, Schäffer-Poeschel, Stuttgart, 170–226, 2. Aufl.
- Götz, G., T. Krauskopf, and P. Winker (2010):** Die Bestimmung regionaler Preisindizes - das Beispiel Österreich. In: **Möller, J., E. Hohmann, and D. Huschka** (Eds.), *Der weiße Fleck - zur Konzeption und Machbarkeit regionaler Preisindizes*, Institut für Arbeitsmarkt- und Berufsforschung, Bertelsmann, Bielefeld, Nr. 324 in IAB-Bibliothek, 353–392.

- Savin, I. and P. Winker (2009)**: Heuristic optimization methods for dynamic panel data model selection. Application on the Russian innovative performance. In: **Lavrikova, J.** (Ed.), *From the idea of academician S.S. Shatalin about system approaches to spontaneous socio-economic systems*, Institute of economics, the Urals Branch of Russian Academy of Sciences, Ekaterinburg, Bd. 1, 10–15.
- Meyer, M. and P. Winker (2005)**: Pitfalls in the Econometric Analysis of HP Filtered Data: A Monte Carlo Analysis. In: **Dreger, C. and H. P. Galler** (Eds.), *Advances in Macroeconometric Modelling*, Nomos, Baden-Baden, 109–131.
- Winker, P. (2005)**: Optimized Two-Step Sequential *U*-Type Designs. In: **Fand, J. and G. Li** (Eds.), *Contemporary Multivariate Analysis and Design of Experiments: In Celebration of Professor Kai-Tai Fang's 65th Birthday*, World Scientific, 173–184.
- Hülsewig, O., P. Winker, and A. Worms (2004)**: Bank Lending in the Transmission of Monetary Policy: A VECM Analysis for Germany. In: **Dreger, C. and G. Hansen** (Eds.), *Advances in Macroeconometric Modeling*, Nomos, Baden–Baden, Bd. 15 von *Schriften des Instituts für Wirtschaftsforschung Halle*, 239–264.
- Winker, P. (2004)**: Bankenrisiko und Risiko Bank. In: **Fitzenberger, B., W. Smolny, and P. Winker** (Eds.), *Herausforderungen an den Wirtschaftsstandort Deutschland*, Nomos, Baden–Baden, Bd. 72 von *ZEW Wirtschaftsanalysen/Schriftenreihe des ZEW*, 95–107.
- Winker, P. and D. Maringer (2004)**: Optimal Lag Structure Selection in VAR and VEC Models. In: **Welfe, A.** (Ed.), *New Directions in Macromodeling*, Elsevier, Amsterdam, 213–234.
- Entorf, H. and P. Winker (2003)**: Illegale Drogen und Kriminalität: Wie ausgeprägt ist der Zusammenhang? In: **Albrecht, H.-J. and H. Entorf** (Eds.), *Kriminalität, Ökonomie und europäischer Sozialstaat*, Physica, Heidelberg, 97–132.
- Winker, P. (2003a)**: Transmission über den Geschäftsbankensektor. In: **Schröder, M. and P. Westerheide** (Eds.), *Finanzmärkte, Unternehmen und Vertrauen*, Nomos, Baden–Baden, 71–81.
- Winker, P. (2003b)**: Aggregationsproblem in der Ökonometrie: Ein Beitrag heuristischer Optimierungsverfahren. In: **Franz, W., H.-J. Ramser, and M. Stadler** (Eds.), *Empirische Wirtschaftsforschung*, Mohr Siebeck, Tübingen, Bd. 32 von *Wirtschaftswissenschaftliches Seminar Ottobeuren*, 89–108.
- Winker, P. and M. Gilli (2002)**: How to Validate Agent Based Models of Financial Markets. In: **Welfe, W.** (Ed.), *Macromodels 2001*, Institut of Econometrics and Statistics, University of Lodz, 357–368.
- Winker, P. (2001)**: Applications of the Optimization Heuristic Threshold Accepting in Statistics. In: **Li, D.** (Ed.), *Proceedings of the 5th International Conference on Optimization: Techniques and Applications ICOTA*, Hong Kong, 1764–1783.

- Franz, W., K. Göggelmann, and P. Winker (2000):** Employment Effects of Restructuring the German Tax System: A Macroeconometric Disequilibrium Model for an Open Economy in Action. In: **Vosgerau, H.-G.** (Ed.), *Institutional Arrangements for Global Economic Integration*, Macmillan, Basingstoke, 251–276.
- Radowski, D., W. Smolny, and P. Winker (2000):** Modeling German Unification in a Disequilibrium Framework. In: **Welfe, W. and P. Wdowinski** (Eds.), *Macromodels '99*, Absolwent, Lodz, 229–255.
- Winker, P. (2000):** Quasi-Monte Carlo Policy Simulations. In: **Welfe, W. and P. Wdowinski** (Eds.), *Modelling Economies in Transition*, Absolwent, Lodz, 446–466.
- Winker, P. (1999a):** Quasi-Monte Carlo Policy Simulations in a Macroeconometric Disequilibrium Model. In: **Chen, H.-F., D.-Z. Cheng, and J.-F. Zhang** (Eds.), *Proceedings of the 14th World Congress International Federation of Automatic Control*, Elsevier, Oxford, Bd. M, 45–50.
- Winker, P. (1999b):** Financing Constraints, Output and Employment. In: **Filc, W. and C. Köhler** (Eds.), *Macroeconomic Causes of Unemployment: Diagnosis and Policy Recommendations*, Duncker & Humblot, Berlin, 143–161.
- Chipman, J. S. and P. Winker (1998):** Optimal Industrial Classification: An Application to the German Industrial Classification System. In: **Istituto Nazionale di Statistica** (Ed.), *Data Science, Classification and Related Methods*, 62–65.
- Franz, W., K. Göggelmann, and P. Winker (1998):** Ein makroökonomisches Ungleichgewichtsmodell für die deutsche Volkswirtschaft 1960 bis 1994: Konzeption, Ergebnisse und Erfahrungen. In: **Heilemann, U. and J. Wolters** (Eds.), *Gesamtwirtschaftliche Modelle in der Bundesrepublik Deutschland: Erfahrungen und Perspektiven*, Duncker & Humblot, Berlin, Bd. Heft 61 von *Schriftenreihe des RWI Neue Folge*, 115–165.
- Fang, K.-T., F. J. Hickernell, and P. Winker (1996):** Some Global Optimization Algorithms in Statistics. In: **Du, D.-Z., X.-S. Zhang, and W. Wang** (Eds.), *Operations Research and Its Applications*, World Publishing Coporation, Beijing, *Lecture Notes in Operations Research* 2, 14–26.
- Chipman, J. S. and P. Winker (1995a):** Optimal Industrial Classification. In: **Tiit, E.-M., T. Kollo, and H. Niemi** (Eds.), *New Trends in Probability and Statistics*, TEV, Vilnius, Bd. 3, 229–234.
- Chipman, J. S. and P. Winker (1995b):** Optimal Industrial Classification with Heteroskedasticity Correction. In: **Kharin, Y. S.** (Ed.), *Computer Data Analysis and Modeling: Proceedings of the International Conference. Vol. I.*, BSU, Minsk, 22–29.

Winker, P. and K.-T. Fang (1995): Generation of Uniform Designs by Threshold Accepting. In: **Research, S. and C. Unit** (Ed.), *Proceedings of the International Workshop on Quasi-Monte Carlo Methods and Their Applications*, Hong Kong Baptist University, Hong Kong, 246–256.

Schellhorn, M. and P. Winker (1994): Stochastic Simulations of a Macroeconometric Disequilibrium Model for West Germany. In: **Welfe, W.** (Ed.), *Macromodels: Proceedings of MACROMODELS '94*, Absolwent, Łódź, 31–47.

Discussion Paper

Kinne, J., M. Krüger, D. Lenz, G. Licht, and P. Winker (2020a): Corona pandemic affects companies differently – Daily updated website analysis on the reaction of companies to the Corona pandemic in Germany. ZEW-Kurzexpertise 20-04, ZEW – Leibniz Centre for European Economic Research in Mannheim.

Kinne, J., M. Krüger, D. Lenz, G. Licht, and P. Winker (2020b): Corona-Pandemie betrifft Unternehmen unterschiedlich – Tagesaktuelle Webseiten-Analyse zur Reaktion von Unternehmen auf die Corona-Pandemie in Deutschland. ZEW-Kurzexpertise 20-05, ZEW – Leibniz-Zentrum für europäische Wirtschaftsforschung Mannheim.

Lenz, D. and P. Winker (2018): Measuring the Diffusion of Innovations with Paragraph Vector Topic Models. Joint Discussion Paper Series in Economics 15-2018, MAGKS, Marburg.

Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2018): Constructing Joint Confidence Bands for Impulse Response Functions of VAR Models – A Review. Discussion Papers 1762, DIW, Berlin.

Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2017): Estimation of Structural Impulse Responses: Short-Run versus Long-Run Identifying Restrictions. Discussion Paper 1642, DIW, Berlin.

Lüdering, J. and P. Winker (2016): Forward or Backward Looking? The Economic Discourse and the Observed Reality. Joint Discussion Paper Series in Economics 07-2016, MAGKS, Marburg.

Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2016): Calculating Joint Confidence Bands for Impulse Response Functions using Highest Density Regions. Discussion Paper 1564, DIW, Berlin.

Bredl, S., I. Liefner, C. Teichert, and P. Winker (2014): Effekte der Hochschulen am Standort Gießen aus regionalökonomischer Sicht. Joint Discussion Paper Series 33-2014, MAGKS.

- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2014):** Confidence Bands for Impulse Responses: Bonferroni versus Wald. Discussion Paper 1354, DIW, Berlin.
- Lütkepohl, H., A. Staszewska-Bystrova, and P. Winker (2013):** Comparison of Methods for Constructing Joint Confidence Bands for Impulse Response Functions. Discussion Paper 1292, DIW, Berlin.
- Fastrich, B., S. Paterlini, and P. Winker (2012):** Constructing Optimal Sparse Portfolios Using Regularization Methods. Discussion paper, SSRN.
- Fischer, H., M. Garcia-Barzana, P. Tillmann, and P. Winker (2012):** Evaluating FOMC forecast ranges: an interval data approach. Joint Discussion Paper Series 12-2012, MAGKS.
- Storfinger, N. and P. Winker (2011):** Robustness of Clustering Methods for Identification of Potential Falsifications in Survey Data. Discussion Paper 57, ZEU.
- Lyra, M., A. Onwunta, and P. Winker (2010):** Threshold Accepting for Credit Risk Assessment and Validation. Working Paper WPS-039, COMISEF.
- Savin, I. and P. Winker (2010):** Heuristic Optimization Methods for Dynamic Panel Data Model Selection. Application on the Russian Innovative Performance. Working Paper WPS-027, COMISEF.
- Götz, G., T. Krauskopf, and P. Winker (2009):** Die Bestimmung regionaler Preisindizes: Das Beispiel Österreich. Working Paper 75, Rat für Sozial- und Wirtschaftsdaten, Berlin.
- Lin, D., C. Sharpe, and P. Winker (2009):** Optimized U-type designs on flexible regions. Working Paper WPS-013, COMISEF.
- Savin, I. and P. Winker (2009):** Forecasting Russian Foreign Trade Comparative Advantages in the Context of a Potential WTO Accession. Joint Discussion Paper Series in Economics 14-2009, MAGKS.
- Bredl, S., P. Winker, and K. Kötschau (2008):** A Statistical Approach to Detect Cheating Interviewers. Discussion Paper 39, ZEU, Giessen.
- Gilli, M. and P. Winker (2008):** A Review of Heuristic Optimization Methods in Econometrics. Research Paper 08-12, Swiss Finance Institute, Geneva.
- Winker, P., M. Gilli, and V. Jeleskovic (2007):** An Objective Function for Simulation Based Inference on Exchange Rate Data. Research Paper No. 07-01, Swiss Finance Institute, Geneva.
- Winker, P. and V. Jeleskovic (2007):** Dependence of – and Long Memory in – Exchange Rate Returns: Statistics, Robustness, Time Aggregation. CCFEA Working Paper Series WP011-07, University of Essex, Colchester.

- Büttner, T., A. Dehne, G. Flaig, O. Hülsewig, and P. Winker (2006):** Berechnung der BIP-Elastizitäten öffentlicher Ausgaben und Einnahmen zu Prognosezwecken und Diskussion ihrer Volatilität. ifo Forschungsberichte 28, Institut für Wirtschaftsforschung an der Universität München.
- Winker, P. and V. Jeleskovic (2006):** The Unconditional Distribution of Exchange Rate Returns: Statistics, Robustness, Time Aggregation. CCFEA Working Paper Series WP008-06, University of Essex, Colchester.
- Winker, P. and D. Maringer (2006):** The Threshold Acceptance Optimization Heuristic in Economics and Statistics. CCFEA Working Paper Series WP009-06, University of Essex, Colchester.
- Winker, P. (2005):** The Stochastics of Threshold Accepting: Analysis of an Application to the Uniform Design Problem. Diskussionspapier 2005-003E, Staatswissenschaftliche Fakultät, Universität Erfurt.
- Winker, P. and D. Maringer (2005):** The Convergence of Optimization Based Estimators: Theory and Application to a GARCH-Model. Diskussionspapier 2005-004E, Staatswissenschaftliche Fakultät, Universität Erfurt.
- Winker, P. and F. Rippin (2005):** Hedonic Regression for Digital Cameras in Germany. Diskussionspapier 2005-005E, Staatswissenschaftliche Fakultät, Universität Erfurt.
- Meyer, M. and P. Winker (2004):** Using HP Filtered Data for Econometric Analysis: Some Evidence from Monte Carlo Simulations. Diskussionspapier 2004-001E, Staatswissenschaftliche Fakultät, Universität Erfurt.
- Maringer, D. and P. Winker (2003):** Portfolio Optimization under Different Risk Constraints with Memetic Algorithms. Diskussionspapier 2003-005E, Staatswissenschaftliche Fakultät, Universität Erfurt.
- Gilli, M. and P. Winker (2002):** A Global Optimization Heuristic for Estimating Agent Based Models. Working Paper 12/2002, International University in Germany, Bruchsal.
- Scrieciu, S. S. and P. Winker (2002):** The Romanian Economy in Transition: Developments and Future Prospects. Working Paper 13/2002, International University in Germany, Bruchsal.
- Beck, M. and P. Winker (2001):** Modelling Spillovers and Feedback of International Trade in a Disequilibrium Framework. Working Paper 07/2001, International University in Germany, Bruchsal.
- Entorf, H. and P. Winker (2001a):** The Economics of Crime: Investigating the Drugs-Crime Channel. Working Paper 02/2001, International University in Germany, Bruchsal.

- Entorf, H. and P. Winker (2001b):** The Economics of Crime: Investigating the Drugs–Crime Channel. Discussion Paper 01–37, Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Hülsewig, O., P. Winker, and A. Worms (2001):** Bank Lending in the Transmission of Monetary Policy: A VECM Analysis for Germany. Working Paper 08/2001, International University in Germany, Bruchsal.
- Winker, P. (2001):** Applications of the Optimization Heuristic Threshold Accepting in Statistics. Working Paper 05/2001, International University in Germany, Bruchsal.
- Winker, P. and M. Gilli (2001a):** Indirect Estimation of the Parameters of Agent Based Models of Financial Markets. Research Paper 38, FAME, Université de Genève.
- Winker, P. and M. Gilli (2001b):** Indirect Estimation of the Parameters of Agent Based Models of Financial Markets. Working Paper 03/2001, International University in Germany, Bruchsal.
- Buscher, H. S., H. Buslei, K. Göggelmann, H. Koschel, T. F. N. Schmidt, V. Steiner, and P. Winker (2000):** Empirical Macromodels under Test. Discussion Paper 575–00, Institut für Volkswirtschaftslehre und Statistik, Universität Mannheim.
- Li, J. and P. Winker (2000):** Time Series Simulation with Quasi–Monte Carlo Methods. Working Paper 9–00–1, Economic Department, Pennsylvania State University.
- Winker, P. and M. Beck (2000):** International Spillovers and Feedback: Modelling in a Disequilibrium Framework. Discussion Paper 00–36, Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Fang, K.-T., C.-X. Ma, and P. Winker (1999):** Centered L_2 –Discrepancy of Random Sampling and Latin Hypercube Design, and Construction of Uniform Designs. Technical Report MATH–233, Hong Kong Baptist University, Hong Kong.
- Fitzenberger, B. and P. Winker (1999):** Improving the Computation of Censored Quantile Regressions. Discussion Paper 568–99, Institut für Volkswirtschaftslehre und Statistik, Universität Mannheim.
- Radowski, D., W. Smolny, and P. Winker (1999):** Investment and Employment Adjustment after Unification. Discussion Paper 99–56, Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Smolny, W. and P. Winker (1999):** Employment Adjustment and Financing Constraints. A Theoretical and Empirical Analysis at the Micro Level. Discussion Paper 573–99, Institut für Volkswirtschaftslehre und Statistik, Universität Mannheim.
- Buscher, H. S., H. Buslei, K. Göggelmann, H. Koschel, F. Ramb, T. F. N. Schmidt, V. Steiner, and P. Winker (1998):** Empirical Macromodels under Test – A Comparative Simulation Study of the Employment Effects of a Revenue

Neutral Cut in Social Security Contributions. Discussion Paper 98–40, Zentrum für Europäische Wirtschaftsforschung, Mannheim.

Chan, L.-Y., K.-T. Fang, and P. Winker (1998): An Equivalence Theorem for Orthogonality and D-Optimality. Technical Report MATH–186, Hong Kong Baptist University, Hong Kong.

Fang, K.-T. and P. Winker (1998): Uniformity and Orthogonality. Technical Report MATH–176, Hong Kong Baptist University, Hong Kong.

Franz, W., K. Göggelmann, M. Schellhorn, and P. Winker (1998): Quasi–Monte Carlo Methods in Stochastic Simulations. Discussion Paper 98–03, Zentrum für Europäische Wirtschaftsforschung, Mannheim.

Winker, P. (1998): Quasi–Monte Carlo Policy Simulations in a Macroeconometric Disequilibrium Model. Forschungsbericht 9816, Ludwig Boltzmann Institut, Wien.

Genser, B. and P. Winker (1997): Measuring the Fiscal Revenue Loss of VAT Exemption in Commercial Banking. Diskussionsbeiträge des SFB 178, Nr. 342, Universität Konstanz, Konstanz.

Fang, K.-T., F. J. Hickernell, and P. Winker (1996): Some Global Optimization Algorithms in Statistics. Technical Report MATH–123, Hong Kong Baptist University, Hong Kong.

Fang, K.-T. and P. Winker (1996): Optimal U–Type Designs. Technical Report MATH–117, Hong Kong Baptist University, Hong Kong.

Franz, W., K. Göggelmann, and P. Winker (1996): Ein makroökonomisches Ungleichgewichtsmodell für die deutsche Volkswirtschaft 1960 bis 1994: Konzeption, Ergebnisse und Erfahrungen. Diskussionsbeiträge des SFB 178, Nr. 327, Universität Konstanz, Konstanz.

Hettich, F., S. Killinger, and P. Winker (1996): Die ökologische Steuerreform auf dem Prüfstand. Zur Kritik am Gutachten des Deutschen Instituts für Wirtschaftsforschung. Diskussionsbeiträge des SFB 178, Nr. 311, Universität Konstanz, Konstanz.

Winker, P. (1996a): “Bündnis für Arbeit”: Eine Randnotiz. Diskussionspapier 34, CILE, Universität Konstanz.

Winker, P. (1996b): Causes and Effects of Financing Constraints at the Firm Level: Some Microeconomic Evidence. Diskussionsbeiträge des SFB 178, Nr. 292, Universität Konstanz, Konstanz.

Winker, P. (1996c): A Macroeconometric Disequilibrium Model of the German Credit Market. Diskussionsbeiträge des SFB 178, Nr. 302, Universität Konstanz, Konstanz.

Winker, P. and K.-T. Fang (1995): Application of Threshold Accepting to the Evaluation of the Discrepancy of a Set of Points. Technical Report MATH–067, Hong Kong Baptist University, Hong Kong.

- Chipman, J. S. and P. Winker (1994):** Optimal Industrial Classification. Diskussionsbeiträge des SFB 178, Nr. 236, Universität Konstanz, Konstanz.
- Schellhorn, M. and P. Winker (1994):** Stochastic Simulations of a Macroeconometric Disequilibrium Model for West Germany. Diskussionsbeiträge des SFB 178, Nr. 235, Universität Konstanz, Konstanz.
- Winker, P. (1994a):** Identification of Multivariate AR-Models by Threshold Accepting. Diskussionsbeiträge des SFB 178, Nr. 224, Universität Konstanz, Konstanz.
- Winker, P. (1994b):** Credit Rationing at the Firm Level. Diskussionsbeiträge des SFB 178, Nr. 223, Universität Konstanz, Konstanz.
- Winker, P. (1994c):** Eine makroökonomische Analyse von Kreditmarkt und Kreditrationierung. Diskussionsbeiträge des SFB 178, Nr. 220, Universität Konstanz, Konstanz.
- Franz, W., U. Oser, and P. Winker (1993a):** A Macroeconometric Disequilibrium Analysis of Current and Future Migration from Eastern Europe into West Germany. Diskussionspapier 6, CILE, Universität Konstanz.
- Franz, W., U. Oser, and P. Winker (1993b):** Migratory Movements in a Disequilibrium Macroeconometric Model for West Germany. Diskussionsbeiträge des SFB 178, Nr. 202, Universität Konstanz, Konstanz.
- Winker, P. (1993a):** Die Trägheit von Zinssätzen und Kreditrationierung in der Bundesrepublik Deutschland. Diskussionsbeiträge des SFB 178, Nr. 208, Universität Konstanz, Konstanz.
- Winker, P. (1993b):** Firmenalter und Kreditrationierung. Diskussionsbeiträge des SFB 178, Nr. 206, Universität Konstanz, Konstanz.
- Chipman, J. S. and P. Winker (1992):** Optimal Aggregation by Threshold Accepting. Diskussionsbeiträge des SFB 178, Nr. 180, Universität Konstanz, Konstanz.
- Winker, P. (1992):** Some Notes on the Computational Complexity of Optimal Aggregation. Diskussionsbeiträge des SFB 178, Nr. 184, Universität Konstanz, Konstanz.
- Winker, P. (1991):** Zur Messung der Lohndifferenzierung mit Entropiemaßen. Diskussionsbeiträge des SFB 178, Nr. 158, Universität Konstanz, Konstanz.
- Dueck, G. and P. Winker (1990):** New Concepts and Algorithms for Portfolio Choice. Technical Report 90.06.006, IBM Germany, Heidelberg Scientific Center, Heidelberg.