

# CURRICULUM VITAE

## **Frank H. Westerhoff**

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## **Personal data**

Date and place of birth: 29/07/1970, Lohne, Germany  
Marital status: married, two children  
Citizenship: German

## **Academic appointments**

Professor, University of Bamberg, 10/2006-present  
Assistant Professor, University of Osnabrück, 10/2005-09/2006  
Guest Lecturer, University of Bonn, 04/2005-09/2005  
Assistant Professor, University of Osnabrück, 07/2002-03/2005  
Visiting Scholar, Hitotsubashi University, 10/1998-12/1998  
Teaching Assistant, University of Osnabrück, 07/1997-07/2002

## **University education**

Habilitation in Economics, University of Osnabrück, 11/2005  
Ph.D. in Economics, University of Osnabrück, 07/2002  
Diploma in Economics, University of Osnabrück, 03/1997

## **Research interests**

Agent-based models of financial markets and the real economy.  
Deterministic and stochastic nonlinear dynamical systems.  
Mechanisms of market instabilities and policy measures to control them.  
And some other stuff.

## **Publications**

### Articles in refereed journals

Wegener, M. and Westerhoff, F. (2011): Evolutionary competition between prediction rules and the emergence of business cycles within Metzler's inventory model. *Journal of Evolutionary Economics*, in press.

Franke, R. and Westerhoff, F. (2011): Estimation of a structural stochastic volatility model of asset pricing. *Computational Economics*, in press.

Westerhoff, F. und Franke, R. (2011): Converse trading strategies, intrinsic noise and the stylized facts of financial markets. *Quantitative Finance*, in press.

Dieci, R. and Westerhoff, F. (2010): Interacting cobweb markets. *Journal of Economic Behavior and Organization*, Vol. 75, 461-481.

Westerhoff, F. and Hohnisch, M. (2010): Consumer Sentiment and Countercyclical Fiscal Policies. *International Review of Applied Economics*, Vol. 24, 609-618.

Westerhoff, F. (2010): An agent-based macroeconomic model with interacting firms, socio-economic opinion formation and optimistic/pessimistic sales expectations. *New Journal of Physics*, Vol. 12, 075035.

Westerhoff, F. and Wieland, C. (2010): A behavioral cobweb model with heterogeneous speculators. *Economic Modelling*, Vol. 27, 1136-1143.

Hermesen, O., Witte, B.-C. and Westerhoff, F. (2010): Disclosure requirements, the release of new information and market efficiency: new insights from agent-based models. *Economics: The Open-Access, Open-Assessment E-Journal*, Vol. 4, Article ID: 2010-7.

Tramontana, F., Westerhoff, F. and Gardini, L. (2010): On the complicated price dynamics of a simple one-dimensional discontinuous financial market model with heterogeneous interacting traders, *Journal of Economic Behavior and Organization*, Vol. 74, 187-205.

Dieci, R. and Westerhoff, F. (2010): Heterogeneous speculators, endogenous fluctuations and interacting markets: a model of stock prices and exchange rates. *Journal of Economic Dynamics and Control*, Vol. 34, 743-764.

Lines, M. and Westerhoff, F. (2010): Inflation expectations and macroeconomic dynamics: the case of rational versus extrapolative expectations. *Journal of Economic Dynamics and Control*, Vol. 34, 246-257.

Dieci, R. and Westerhoff, F. (2009): Stability analysis of a cobweb model with market interactions. *Applied Mathematics and Computation*, Vol. 215, 2011-2023.

Pellizzari, P. and Westerhoff, F. (2009): Some effects of transaction taxes under different microstructures. *Journal of Economic Behavior and Organization*, Vol. 72, 850-863.

Tramontana, F., Gardini, L., Dieci, R. and Westerhoff, F. (2009): The emergence of "bull and bear" dynamics in a nonlinear model of interacting markets. *Discrete Dynamics in Nature and Society*, Vol. 2009, Article ID 310471.

Wegener, M., Westerhoff, F. and Zaklan, G. (2009): A Metzlerian business cycle model with nonlinear heterogeneous expectations. *Economic Modelling*, Vol. 26, 715-720.

Zaklan, G., Westerhoff, F. and Stauffer, D. (2009): Analysing tax evasion dynamics via the Ising model. *Journal of Economic Interaction and Coordination*, Vol. 4, 1-14.

- Sushko, I., Wegener, M., Westerhoff, F. and Zaklan, G. (2009): Endogenous business cycle dynamics within the inventory model of Metzler: Adding an inventory floor. *Nonlinear Dynamics in Psychology and Life Sciences*, Vol. 13, 223-233.
- Westerhoff, F. (2008): Consumer sentiment and business cycles: A Neimark-Sacker bifurcation scenario. *Applied Economics Letters*, Vol. 15, 1201-1205.
- Zaklan, G., Lima, W. and Westerhoff, F. (2008): Controlling tax evasion fluctuations. *Physica A*, Vol. 387, 5857-5861.
- Westerhoff, F. (2008): The use of agent-based financial market models to test the effectiveness of regulatory policies. *Jahrbücher für Nationalökonomie und Statistik (Journal of Economics and Statistics)*, Vol. 228, 195-227.
- Hohnisch, M. and Westerhoff, F. (2008): Business cycle synchronization in a simple Keynesian macro-model with socially transmitted economic sentiment and international sentiment spill-over. *Structural Change and Economic Dynamics*, Vol. 19, 249-259.
- Kopel, M., Westerhoff, F. and Wieland, C. (2008): Regulating complex dynamics in firms and economic systems. *Chaos, Solitons and Fractals*, Vol. 38, 911-919.
- Westerhoff, F. (2008): Heuristic expectation formation and business cycles: A simple linear model. *Metroeconomica*, Vol. 59, 47-56.
- Hilker, F. and Westerhoff, F. (2007): Preventing extinction and mass outbreaks in irregularly fluctuating populations. *American Naturalist*, Vol. 170, 232-241.
- Hilker, F. and Westerhoff, F. (2007): Triggering crashes in chaotic dynamics. *Physics Letters A*, Vol. 362, 407-411.
- Westerhoff, F. (2007): On central bank interventions and transaction taxes. *Applied Financial Economics Letters*, Vol. 3, 11-14.
- Westerhoff, F. and Hohnisch, M. (2007): A note on interactions-driven business cycles. *Journal of Economic Interaction and Coordination*, Vol. 2, 85-91.
- Manzan, S. and Westerhoff, F. (2007): Heterogeneous expectations, exchange rate dynamics and predictability. *Journal of Economic Behavior and Organization*, Vol. 64, 111-128.
- Reitz, S. and Westerhoff, F. (2007): Commodity price cycles and heterogeneous speculators: A STAR-GARCH model. *Empirical Economics*, Vol. 33, 231-244.
- Corron, N., He, X.-Z. and Westerhoff, F. (2007): Butter mountains, milk lakes and optimal price limiters. *Applied Economics Letters*, 14, 1131-1136.
- Hilker, F. and Westerhoff, F. (2006): The paradox of simple limiter control. *Physical Review E*, Vol. 73, 052901 (3).
- Westerhoff, F. (2006): Nonlinear expectation formation and endogenous business cycles. *Studies in Nonlinear Dynamics and Econometrics*, Vol. 10, Issue 4, Article 4.
- Ehrenstein, G. and Westerhoff, F. (2006): The working of circuit breakers within percolation models for financial markets. *International Journal of Modern Physics C*, Vol. 17, 299-304.
- Westerhoff, F. (2006): Business cycles, heuristic expectation formation and contracyclical policies. *Journal of Public Economic Theory*, Vol. 8, 821-838.

- Reitz, S., Westerhoff, F. and Wieland, C. (2006): Target zone interventions and coordination of expectations. *Journal of Optimization Theory and Applications*, Vol. 128, 453-467.
- Westerhoff, F. (2006): Samuelson's multiplier-accelerator model revisited. *Applied Economics Letters*, Vol. 13, 89-92.
- Westerhoff, F. and Dieci, R. (2006): The effectiveness of Keynes-Tobin transaction taxes when heterogeneous agents can trade in different markets: A behavioral finance approach. *Journal of Economic Dynamics and Control*, Vol. 30, 293-322.
- Westerhoff, F. (2006): Technical analysis based on price-volume signals and the power of trading breaks. *International Journal of Theoretical and Applied Finance*, Vol. 9, 227-244.
- Westerhoff, F. (2005): Consumer behavior and fluctuations in economic activity. *Advances in Complex Systems*, Vol. 8, 209-215.
- Westerhoff, F. (2005): The impact of flow analysis on exchange rate dynamics. *Finance Letters*, Vol.3, Issue 3.
- Wieland, C. and Westerhoff, F. (2005): Exchange rate dynamics, central bank intervention and chaos control methods. *Journal of Economic Behavior and Organization*, Vol. 58, 117-132.
- He, X.-Z. and Westerhoff, F. (2005): Commodity markets, price limiters and speculative price dynamics. *Journal of Economic Dynamics and Control*, Vol. 29, 1577-1596.
- Manzan, S. and Westerhoff, F. (2005): Representativeness of news and exchange rate dynamics. *Journal of Economic Dynamics and Control*, Vol. 29, 677-689.
- Westerhoff, F. and Reitz, S. (2005): Commodity price dynamics and the nonlinear market impact of technical traders: Empirical evidence for the U.S. corn market. *Physica A*, Vol. 349, 641-648.
- Westerhoff, F. (2005): Heterogeneous traders, price-volume signals and complex asset price dynamics. *Discrete Dynamics in Nature and Society*, Vol. 2005, 19-29.
- Ehrenstein, G., Westerhoff, F. and Stauffer, D. (2005): Tobin tax and market depth. *Quantitative Finance*, Vol. 5, 213-218.
- Westerhoff, F. (2004): Speculative dynamics, feedback traders and transaction taxes: A note. *Jahrbuch für Wirtschaftswissenschaften/Review of Economics*, Vol. 55, 190-195.
- Westerhoff, F. and Wieland, C. (2004): Spill-over dynamics of central bank interventions. *German Economic Review*, Vol. 5, 435-450.
- Westerhoff, F. and Manzan, S. (2004): Does liquidity in the FX market depend on volatility? *Economics Bulletin*, Vol. 6, No. 10, 1-8.
- Westerhoff, F. (2004): Greed, fear and stock market dynamics. *Physica A*, Vol. 343, 635-642.
- Westerhoff, F. (2004): Market depth and price dynamics: A note. *International Journal of Modern Physics C*, Vol. 15, 1005-1012.
- Westerhoff, F. (2004): Multiasset market dynamics. *Macroeconomic Dynamics*, 8, 596-616.
- Westerhoff, F. and Reitz, S. (2003): Nonlinearities and cyclical behavior: the role of chartists and fundamentalists. *Studies in Nonlinear Dynamics and Econometrics*, Vol. 7, Issue 4, Article 3.

- Westerhoff, F. (2003): Market maker, inventory control and foreign exchange dynamics. *Quantitative Finance*, Vol. 3, 363-369.
- Westerhoff, F. (2003): Bubbles and crashes: optimism, trend extrapolation and panic. *International Journal of Theoretical and Applied Finance*, Vol. 6, 829-837.
- Westerhoff, F. (2003): Heterogeneous traders and the Tobin tax. *Journal of Evolutionary Economics*, Vol. 13, 53-70.
- Westerhoff, F. (2003): Central bank intervention and feedback traders. *Journal of International Financial Markets, Institutions and Money*, Vol. 13, 419-427.
- Westerhoff, F. (2003): Speculative markets and the effectiveness of price limits. *Journal of Economic Dynamics and Control*, Vol. 28, 493-508.
- Westerhoff, F. (2003): Anchoring and psychological barriers in foreign exchange markets. *Journal of Behavioral Finance*, Vol. 4, 65-70.
- Westerhoff, F. (2003): Speculative behavior and asset price dynamics. *Nonlinear Dynamics, Psychology, and Life Sciences*, Vol. 7, 245-262.
- Westerhoff, F. (2003): Expectations driven distortions in the foreign exchange market. *Journal of Economic Behavior and Organization*, Vol. 51, 389-412.
- Lawrenz, C. and Westerhoff, F. (2003): Modeling exchange rate behavior with a genetic algorithm. *Computational Economics*, Vol. 21, 209-229.
- Westerhoff, F. (2001): Speculative behavior, exchange rate volatility, and central bank intervention. *Central European Journal of Operations Research*, Vol. 9, 31-50.

### Miscellaneous

- Tramontana, F., Gardini, L. and Westerhoff, F. (2010): Intricate asset price dynamics and one-dimensional discontinuous maps. In: Puu, T. and Panchuck, A. (eds): *Advances in nonlinear economic dynamics*. Nova Science Publishers, in press.
- Westerhoff, F. (2010): A simple agent-based financial market model: direct interactions and comparisons of trading profits. In: Chiarella C., Bischi G.I., Gardini L. (eds.): *Nonlinear dynamics in economics, finance and the social sciences*. Springer, 313-332.
- Tramontana, F., Gardini, L., Dieci, R. and Westerhoff, F. (2010): Global bifurcations in a three dimensional financial model of "bull and bear" interactions. In: Chiarella C., Bischi G.I., Gardini L. (eds.): *Nonlinear dynamics in economics, finance and the social sciences*. Springer, 333-352.
- Westerhoff, F. (2009): Agentenbasierte Finanzmarktmodelle. *uni.vers*, Vol. 15, 8-11.
- Lux, T. and Westerhoff, F. (2009): Economics crisis. *Nature Physics*, Vol. 5, 2-3.
- Westerhoff, F. (2009): Exchange rate dynamics: A nonlinear survey. In: Rosser, J.B. (ed): *Handbook of Research on Complexity*. Edward Elgar, Cheltenham, 287-325.

Lines, M. and Westerhoff, F. (2006): Expectations and the multiplier-accelerator model. In: T. Puu and I. Sushko (eds): *Business Cycles Dynamics. Models and Tools*. Springer-Verlag, Berlin, 255-276.

Westerhoff, F. (2005): *Regulation and control of financial markets*. Kumulative Habilitationsschrift, Department of Economics, University of Osnabrück.

Westerhoff, F. and Wieland, C. (2004): Central bank interventions, chartists and the FX markets. *The Technical Analyst*, Vol. 1, Issue 2, 36-37.

Westerhoff, F. (2002): *Chartists, fundamentalists and exchange rate fluctuations*. Shaker-Verlag: Aachen.

Westerhoff, F. (1999): Japan in der Krise. In: Wacker, G. and C. Müller-Hofstede (Eds.): *Asienkrise, Demokratie, Nationalismus. Neue Wechselwirkungen zwischen Politik und Ökonomie in Ostasien*. Bundesinstitut für ostwissenschaftliche und internationale Studien: Köln, 23-28.

### Current working papers

Dieci, R. and Westerhoff, F. (2011): On the inherent instability of international financial markets: natural nonlinear interactions between stock and foreign exchange markets. BERG Working Paper No. 79, University of Bamberg.

Franke, R. and Westerhoff, F. (2011): Structural stochastic volatility in asset pricing dynamics: estimation and model contest. BERG Working Paper No. 78, University of Bamberg.

Gardini, L., Tramontana, F. and Westerhoff, F. (2011): A simple financial market model with chartists and fundamentalists: market entry levels and discontinuities.

Lines, M. and Westerhoff, F. (2009): Effects of inflation expectations on macroeconomic dynamics: extrapolative versus regressive expectations.

Tramontana, F., Gardini, L. and Westerhoff, F. (2010): Heterogeneous speculators and asset price dynamics: further results from a one-dimensional discontinuous piecewise-linear map.

Franke, R. and Westerhoff, F. (2009): Validation of a structural stochastic volatility model of asset pricing.

Dieci, R. and Westerhoff, F. (2010): A simple model of a speculative housing market.

Hilker, F. and Westerhoff, F. (2005): Simple models of controlling chaotic population dynamics.

### **Services as referee**

#### Editorial boards

Journal of Economic Behavior and Organization, Associate Editor, since 10/2008

Economics: The Open-Access, Open-Assessment E-Journal, Associate Editor, since 11/2009

Journal of Economic Dynamics and Control, Associate Editor, since 01/2010

### Journal articles

American Economic Review, Applied Mathematical Finance, Applied Mathematics and Computation, Computational Economics, Computational Statistics and Data Analysis, Discrete Dynamics in Nature and Society, Economica, Economic Journal, Economic Modelling, Economics, European Economic Review, European Journal of Finance, European Physical Journal B, Europhysics Letters, Fluctuations and Noise Letters, Macroeconomic Dynamics, Nonlinear Dynamics, IEEE Transactions on Evolutionary Computation, Information Sciences, International Economics and Economic Policy, International Review of Applied Economics, International Review of Economics, Journal of Artificial Societies and Social Simulation, Journal of Banking and Finance, Journal of Economic Behavior and Organization, Journal of Economic Dynamics and Control (Outstanding Referee 2006, 2008), Journal of Economic Interaction and Coordination, Journal of Economics and Statistics (Jahrbücher für Nationalökonomie und Statistik), Journal of Empirical Finance, Journal of Evolutionary Economics, Journal of International Economics, Journal of International Financial Markets, Institutions and Money, New Journal of Physics, Open Economies Review, Oxford Economic Papers, Physica A, Structural Change and Economic Dynamics, Studies in Nonlinear Dynamics and Econometrics, The Economics of Transition

### Book chapters and book proposals

Cambridge University Press, de Gruyter, Elsevier, Idea, North-Holland, Springer, Routledge, World Scientific Press

### Science foundations

FES - Friedrich-Ebert-Stiftung (Vertrauensdozent), Germany

FWF - Austrian Science Fund, Austria

NSF - National Science Foundation, USA

NWO - Netherlands Organization for Scientific Research

ÖAW - Austrian Academy of Science, Austria

SNF - Swiss National Science Foundation, Switzerland

### Conference program committees

Workshop on Managing Financial Instability in Capitalistic Economies, Reykjavik, 2010

Workshop on Economics with Heterogeneous Interacting Agents, Alessandria, 2010

Workshop on Interacting Agents and Nonlinear Dynamics in Macroeconomics, Udine, 2010

Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics, Amsterdam, 2010

Workshop on Managing Financial Instability in Capitalistic Economies, Reykjavik, 2009

Agent-Based Approaches in Economic and Social Complex Systems, Taiwan, 2009

Workshop on Computational Intelligence in Economics and Finance, Taiwan, 2006

International Conference on Simulated Evolution and Learning, Hefei, 2006

Workshop on Computational Intelligence in Economics and Finance, Salt Lake City, 2005

## **Presentations**

### Conferences and workshops

Nonlinear Economic Dynamics and Financial Market Modelling, Guangzhou, 2011  
Quantifying and Understanding Dysfunctions of Financial Markets, Leuven, 2010  
Artificial Economics 2010, Treviso, 2010  
International Conference of the Society for Computational Economics, London, 2010  
Workshop on Interacting Agents and Nonlinear Dynamics in Macroeconomics, Udine, 2010  
Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics, Amsterdam, 2010  
Workshop on Nonlinear Economic Dynamics, Jönköping, 2009  
Workshop on Agent Based Models in Economic Policy Advice, Mannheim, 2009  
Conference on Heterogeneous Agents in Financial Markets, Rotterdam, 2009  
Workshop on Nonlinear Economic Dynamics and Financial Market Modeling, Beijing, 2008  
Fifth Workshop "Modelli Dinamici in Economia e Finanza", Urbino, 2008  
Workshop on Nonlinear Economic Dynamics, Bielefeld, 2007  
Workshop on Economics with Heterogeneous Interacting Agents, Bologna, 2006  
Third International Meeting on Complexity, Aix-en-Provence, 2006  
Workshop on Computational Political Economics, Bielefeld, 2006  
Workshop on Bubbles, Herding and Market Crashes, Kiel, 2005  
Ausschuss für Makroökonomik, Bonn, 2005  
Workshop on Agent-Based Models for Economic Policy Design, Bielefeld, 2005  
Workshop on Economics with Heterogeneous Interacting Agents, Essex, 2005  
Society for Nonlinear Dynamics and Econometrics, London, 2005  
New Economic Windows, Salerno, 2004  
International Conference of the Society for Computational Economics, Amsterdam, 2004  
Workshop on Nonlinear Dynamics in Economics, Trieste, 2004  
Annual Congress of the European Economic Association, Stockholm, 2003  
International Conference of the Society for Computational Economics, Seattle, 2003  
Workshop on Economics with Heterogeneous Interacting Agents, Kiel, 2003  
Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics, Vienna, 2003  
Second International Meeting on Complexity, Aix-en-Provence, 2003  
Society for Nonlinear Dynamics and Econometrics, Florence, 2003  
Bundesbank Workshop on Computational Economics and Finance, Eltville, 2002  
CeNDEF Workshop on Economic Dynamics, Leiden, 2002

Jahrestagung des Vereins für Socialpolitik, Magdeburg, 2001  
International Conference of the Society for Computational Economics, New Haven, 2001  
CeNDEF Workshop on Economic Dynamics, Amsterdam, 2001  
ZEI Summer School on International Finance, Bad Honnef, 2000  
International Conference of the Society for Computational Economics, Barcelona, 2000  
Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics, Vienna, 2000  
CeNDEF Workshop on Economic Dynamics, Amsterdam, 2000  
ZEI Summer School on International Macroeconomics, Bad Honnef, 1999  
Nachwuchstagung Asienkrise, Demokratie, Nationalismus, Brühl, 1999  
Young Economist Meeting, Amsterdam, 1999

#### Invited talks

2010: University of Bielefeld, Katholieke Universiteit Leuven. 2006: University of Bamberg, University of Nürnberg, University of Leipzig, University of Göttingen. 2005: University of Mainz, Technical University of Braunschweig, University of Essen, Technical University of Dresden, University of Bremen, Technical University of Berlin, University of Münster, University of Bonn, University of Cologne. 2004: University of Bielefeld, University of Hanover. 2003: University of Amsterdam. 2002: University of Kiel, University of Prague, University of Münster

#### **University services (selection)**

Chairman of the Board of Examiners, University of Bamberg  
Member of the Board of Examiners, University of Bamberg  
Member of the Faculty Committee, University of Osnabrück  
Chairman of Chair Search Committees, University of Bamberg  
Member of Chair Search Committees, Universities of Bamberg and Osnabrück  
PhD committees, Universities of Bamberg, Leuven and Nijmegen

#### **Teaching experience**

##### Lectures at undergraduate level

Macroeconomics I (University of Bamberg)  
Macroeconomics II (University of Bamberg)  
Monetary Policy of the ECB (University of Bamberg)  
Empirical Macroeconomics (University of Bamberg)

Lectures at graduate level

Economic Dynamics (Universities of Bamberg and Osnabrück)

Financial Market Dynamics (Universities of Bamberg, Bonn and Osnabrück)

Regulation of Financial Markets (Universities of Bamberg, Bonn and Osnabrück)

Tutorials at undergraduate level

Macroeconomics I (University of Bamberg)

Macroeconomics II (University of Bamberg)

Deductive Statistics (University of Osnabrück)

Inductive Statistics (University of Osnabrück)

Seminars at undergraduate level

Various seminars on European Economic Issues (University of Bamberg)

Various seminars on Quantitative Economics (University of Bamberg)

Seminars at graduate level

Various seminars on International Economics (University of Osnabrück)

Various seminars on Economic Policy (University of Bonn)

Various seminars on Quantitative Economic Policy (University of Bamberg)

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