

## Sjur Westgaard



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### Personal Information:

Name: Sjur Westgaard  
Adress: Bjørnebyveien 26, 7025 Trondheim  
Tel: +47 72563078 (private), +47 73596972 (job) 9712019 (mobile)  
Date/Place of birth: 7. November 1967 Sarpsborg, Norway  
Family: Married, two children  
Email: [sjur.westgaard@iot.ntnu.no](mailto:sjur.westgaard@iot.ntnu.no)  
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### Education:

1986-1989: Bachelor Civil Engineering - Østfold University College  
1989-1991: Master Industrial Economics - NTH  
1992-1993: Master Finance - NHH  
2002-2005: Phd – NTNU (4 essays on credit risk modelling)

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### Professional work experience:

1986-1991: Road construction – Statens vegvesen Part time work.  
1991-1992: Operational Research / Material Planning – Royal Norwegian Airforce.  
1994-1997: Portfolio Manager Bonds and FX markets - Gjensidige Investment Management.  
1997-1998: Risk analyst and project manager - SAS Institute.  
1998-2002: Credit Analyst – Fokus Bank.  
2002-: Associate Professor Department of Industrial Economics NTNU and Adjunct  
Associate Professor Trondheim Business School  
2013 Professor Department of Industrial Economics NTNU and Adjunct  
Professor Norwegian Center of Commodity Market Analysis

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**Teaching:**

- Corporate Finance
- Financial Derivatives and Real Options
- Empirical and Quantitative Methods in Finance
- Financial Risk Management (Advanced master/Phd level course)
- Energy Risk Management (Executive course with Montel)
- Empirical Analysis of Financial and Commodity Markets (given at the Norwegian Center of Commodity Market Analysis)
- Supervision all areas of finance

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**Research:**

- Main professional area: **Risk modelling of Commodity Markets**
- Supervision of 6 Phd students that has graduated
- Supervision of 3 ongoing Phd students
  
- Guest editor/reviewer
  1. Journal of Commodity Markets (co-editor)
  2. Journal of Banking and Finance (associate editor)
  3. Journal of Energy Markets (associate editor)
  4. Journal of Investing
  5. Energy
  6. Energy Economics
  7. Energy Journal
  8. Energy Policy
  9. Praktisk Økonomi og Finans
  10. Beta – Scandinavian Journal of Business Research
  
- Project manager for the following research projects:
  1. ELDEV 2008-2011 (Trønder Energi, Statkraft, Adolf Øien's fond). Total budget 9.5 Mill.
  2. ELCARBONRISK 2010-2014 (Eidsiva Energi, Tafjord Kraft, NFR). Total budget 13.5 Mill

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**Publications:****2017**

1. Westgaard S., and Steen M., 2017, Is Beta Dead for Commodities? The Journal of Investing, 26 (4): 16-26.
2. Frydenberg S., Hrafinkelsson K., Bromseth V.S., Westgaard S., 2017, Hedge Fund Strategies and Time-Varying Alphas and Betas. The Journal of Wealth Management 19 (4), 44-60.
3. Benth F.E., Eriksson M., and Westgaard S., 2017, Stochastic volatility modeling of emission allowance futures prices in the European emission trading system market. In Real Options in Energy and Commodity Markets. N. Secomandi (ed.) World Scientific – Now Publishers Series in Business: Vol 12. Chapter 3, pp. 63–115, 2017.
4. Benth F.E, Eriksson M., and Westgaard S., 2017, Optimal management of green certificates in the Swedish–Norwegian market , Journal of Energy Markets, 10 (2) , 1–39.
5. Westgaard S., Osmundsen P., Stenslet D., and Ringheim J., 2017, Modeling superior predictors for crude oil prices, Journal of Energy Markets 10 (2) , 77–99.

## 2016

1. Frydenberg, Stein; Westgaard, Sjur; Osmundsen, Petter; Tjåland, Sturla. Oil and Gas Risk Factor sensitivities for U.S. Energy Companies. *Journal of Energy and Development* 2016 ;Volum 41.(1 and 2) s. 135-173
2. Hagfors, Lars Ivar; Bunn, Derek; Kristoffersen, Eline; Staver, Tiril Toftdahl; Westgaard, Sjur. Modeling the UK electricity price distributions using quantile regression. *Energy* 2016 ;Volum 102. s. 231-243
3. Hagfors, Lars Ivar; Kamperud, Hilde Hørthe; Paraschiv, Florentina; Prokozcuk, Marcel; Sator, Alma; Westgaard, Sjur. Prediction of extreme price occurrences in the German day-ahead electricity market. *Quantitative finance (Print)* 2016 ;Volum 16.(12) s. 1929-1948
4. Haugom, Erik; Ray, Rina; Ullrich, Carl J.; Veka, Steinar Svartskuren; Westgaard, Sjur. A parsimonious quantile regression model to forecast day-ahead value-at-risk. *Finance Research Letters* 2016 ;Volum 16. s. 196-207
5. Tjaaland, Sturla Horpestad; Westgaard, Sjur; Osmundsen, Petter; Frydenberg, Stein. Oil and Gas Risk Factor Sensitivities for U.S. Energy Companies. *Journal of Energy and Development* 2016 ;Volum 41.(1 and 2) s. 135-173
6. Bunn D., Andresen A., Chen D., and Westgaard S., 2016, Analysis and Forecasting of Electricity Price Risks with Quantile Factor Models, *Energy Journal*, 2016, Volume 37, Number 1
7. Hagfors L.I., Paraschiv F., Molnar P., and Westgaard S., 2016, Using quantile regression to analyze the effect of renewables on EEX price formation, *Renew. Energy Environ. Sustain.* 1, 32, 1-4.

## 2015

1. Westgaard S., 2015, Energy Spread Modeling, book chapter *Energy Pricing Models: Recent Advances, Methods, and Tools*, Palgrave Macmillan.
2. Huisman R., Stradnycy V., and Westgaard S., 2015, Renewable Energy and Electricity Prices: Indirect Empirical Evidence from Hydro Power, *Applied Economics* 2015
3. Birkelund O.H., Haugom E., Molnar P., Opdal M., and Westgaard S., 2015, A Comparison of Implied and Realized Volatility in the Nordic Power Forward Market, *Energy Economics* 48 (2015) 288–294
4. Dahlen K.E., Solibakke P.B., Westgaard S., and Næss A., 2015, On the Estimation of Extreme Values for Risk Assessment and Management: The ACER Method, *International Journal of Business*, 20(1), 33-51S
5. Huisman R., Michels D., Westgaard S., 2015, Hydro reservoir levels and power price dynamics. Empirical insight on the nonlinear influence of fuel and emission cost on Nord Pool day-ahead electricity prices, *Journal of Energy and Development* Vol. 40, Nos. 1 and 2, 149-187
6. Steen M., Westgaard S., and Gjølborg O., 2015, Commodity Value-at-Risk modeling: Comparing RiskMetrics™, historic simulation and quantile regression, *Journal of Risk Model Validation* 9(2), 49-78
7. Fleten S.E., Huisman R., Kilicz M., and Pennings E., 2015, Electricity futures prices: time varying sensitivity to fundamentals, *Journal of Energy Markets* 18(4), 1–21
8. Haugom E., Ray R., Ullrich C.J, Veka S., and Westgaard S., 2016, A Simple Quantile Regression Model to forecast dayahead Value-at-Risk, *Financial Research Letters* Dec. 2015, 1-12

## 2014:

1. Haugom E., H. Langeland, Molnár P., and S. Westgaard, 2014, Forecasting volatility of the U.S. oil market, *Journal of Banking and Finance*, 47, 1-14
2. Lien G., Haugom E., Westgaard S., and Solibakke P.B., 2014, Covariance estimation using high-frequency data: Sensitivities of estimation methods, *Economic Modelling*, 43, issue due Dec 2014
3. Westgaard S., 2014, Men ingeniørene haler innpå, *Finansavisen*, 4 August 2014
4. Frydenberg S., J. Onochie, S. Westgaard, N. Midtsund, H. Ueland, 2014, Long-term relationships between electricity and oil, gas and coal future prices — evidence from Nordic countries, Continental Europe and the United Kingdom, *Opec Energy Review*, 38-1, June 2014, 216-242

5. Haugom E., Veka S., Lien G., and Westgaard S., 2014, Estimating and evaluating Value-at-Risk forecasts based on realised variance: empirical evidence from ICE Brent Crude oil futures, *Opec Energy Review*, 39, Issue due Dec 2014
6. Westgaard S., Veka S., Haugom E., and Lien G., 2014, A note on the risk characteristics of european energy futures markets, *Beta – Scandinavian Journal of Business Research*, 28, 1-2014 s. 5–19
7. Haugom E., G.A. Hoff, M. Mortensen, P. Molnár, and S. Westgaard, 2014, The forecasting power of mid-term futures contracts. *Journal of Energy Markets*, 8,1, issue due Oct 2014

#### **2013:**

1. Arvesen Ø., V. Medbø, S.-E. Fleten, A. Tomasgard, S. Westgaard, 2013, Linepack storage valuation under price uncertainty, *Energy*, 52, 155-164
2. Frydenberg S., Reiakvam O.H., Thyness S.B., and Westgaard S., 2013, Hedge Funds—Risk Exposure in Different Quantiles and Market Sentiments, *Journal of Investing*, Fall 2013, 1-28

#### **2012:**

1. Berg T., Westgaard S., 2012, Risk reporting to the board of directors – A comparison between Norwegian Power Companies and Banks, *Journal of Energy Markets*, Vol. 5, No. 3
2. Veka S., Lien G., Westgaard S., Higgs H., 2012, Time-varying dependency in European energy markets: an analysis of Nord Pool, European Energy Exchange and Intercontinental Exchange energy commodities, *Journal of Energy Markets*, Volume 5, Number 3
3. Gudbrand Lien, Erik Haugom, Sjur Westgaard and Per Bjarte Solibakke, Covariance Estimation Using High-Frequency Data: An Analysis of Nord Pool Electricity Forward Data, *Journal of Energy and Power Engineering* 6 (2012) 570-579
4. Veka S., Lien G., Westgaard S., Higgs H., 2012, Time varying dependency in European energy markets: An analysis of Nord Pool, EEX, and ICE energy markets, *Forthcoming Journal of Energy Markets* 2012

#### **2011:**

1. Haugom E., Westgaard S., Solibakke P.B., Lien G., 2011, Realised volatility and the influence of market measures on predictability: Analysis of Nord Pool forward electricity data, *Energy Economics*, 33, 1206-1215.
2. Haugom E., Westgaard S., Solibakke P.B., Lien G., 2011, Modelling day-ahead Nord Pool forward price volatility: Realised volatility versus GARCH models, *International Research Journal of finance and Economics*, 67, 31-45.
3. Westgaard S., Estenstad M., Seim M., Frydenberg S., 2011, Co-integration of ICE Gas oil and crude oil futures, *Energy Economics*, 33, 311-320
4. Sandvik S., Frydenberg S., Westgaard S., Heitman R.K., 2011, Hedge fund performance in bull and bear markets: Alpha creation and risk exposure, *Journal of Investing*, Spring, 1-26
5. Solibakke P.B., Westgaard S., Lien G., 2011, Conditional stochastic volatility model estimation and inference: Forecasting (un) conditional moments, *Economics and Finance Review*, 1(6), 69-93.

#### **2010:**

1. Haug E.G., Frydenberg S., Westgaard S., 2010, Distribution and statistical behaviour of implied volatilities, *Business Valuation Review*, 29,4, 186-199
2. Myklebust J., Tomasgard A., Westgaard S., 2010, Forecasting gas component prices with multivariate structural time series models, *OPEC Energy Review*, June, 82-106
3. Andresen A., Koekebakker S., Westgaard S., 2010, Modeling electricity forward prices using the multivariate normal inverse Gaussian distribution, *Journal of Energy Markets*, 3,3, 1-23

**2009:** No published papers.

#### **2008:**

1. Frydenberg S., Lindset S., Westgaard S., 2008, Hedge fund return statistics 1994-2005, *Journal of Investing*, Spring, 7-21.
2. Westgaard S., Faria E., Fleten S-E., 2008, Price dynamics of natural gas components: empirical evidence, *Journal of Energy Markets*, 1,3,37-68
3. Westgaard S., Eidet A., Frydenberg S., Grosås T.C., 2008, Investigating the capital structure of UK real estate companies, *Journal of property research*, March, 25, 1, 61-87
4. Talberg M., Winge C., Frydenberg S., Westgaard S., 2008, Capital structure across industries, *International journal of economics and business*, 15,2, July, 181-200
5. Helbæk M., and Westgaard S., 2008, *Statistikk kort og godt*, Universitetsforlaget

**2007 and earlier:**

1. Frydenberg S., Grøneng M.S., Nygård G.Ø and Westgaard S., 2006, Hedgefond – Sett i et norsk perspektiv, *BETA Scandinavian Journal of Business Research* 2/06
2. Westgaard S., 2005, What can modern statistical and mathematical techniques add to the analysis and prediction of bankruptcy, *BETA Scandinavian Journal of Business Research* 2/05
3. Westgaard S. and Wijst N., 2001, Default probabilities in a corporate bank portfolio: A logistic model approach, *European Journal of Operational Research*, 135, 338-349
4. Rystad K.M., Vestrum G. and Westgaard S., 1998, Styring av markedsrisiko i finansielle organisasjoner, *Magma* 1 (3), pp76-87.
5. Høyland K, Ranberg E., Wallace S. W., Westgaard S, 1997, Kapitalforvaltning i et livselskap, *Praktisk Økonomi og ledelse*, 2, pp.71-84