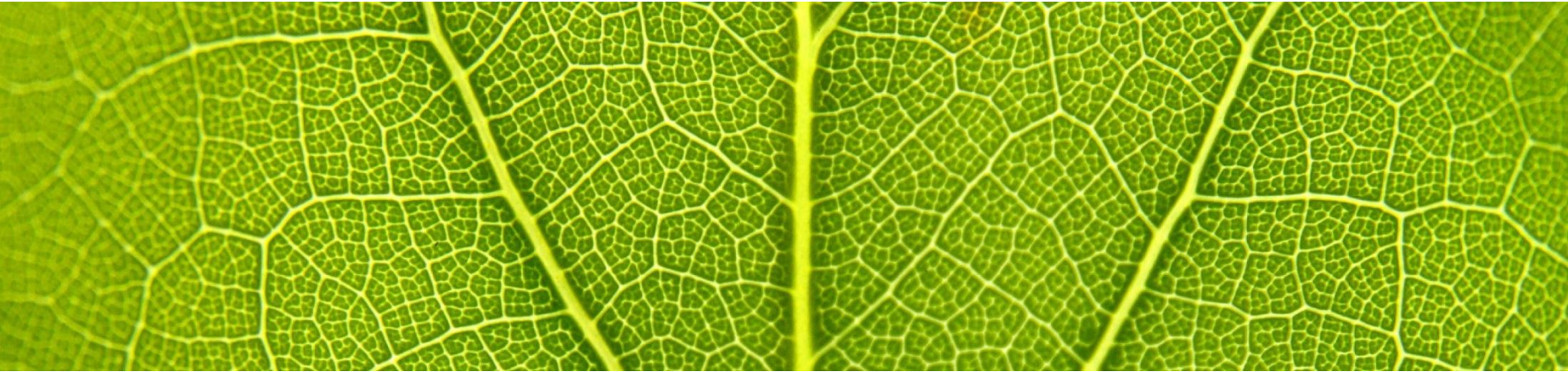


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Assessment of industrial energy prices

ENERDAY

9th Conference on Energy Economics and Technology

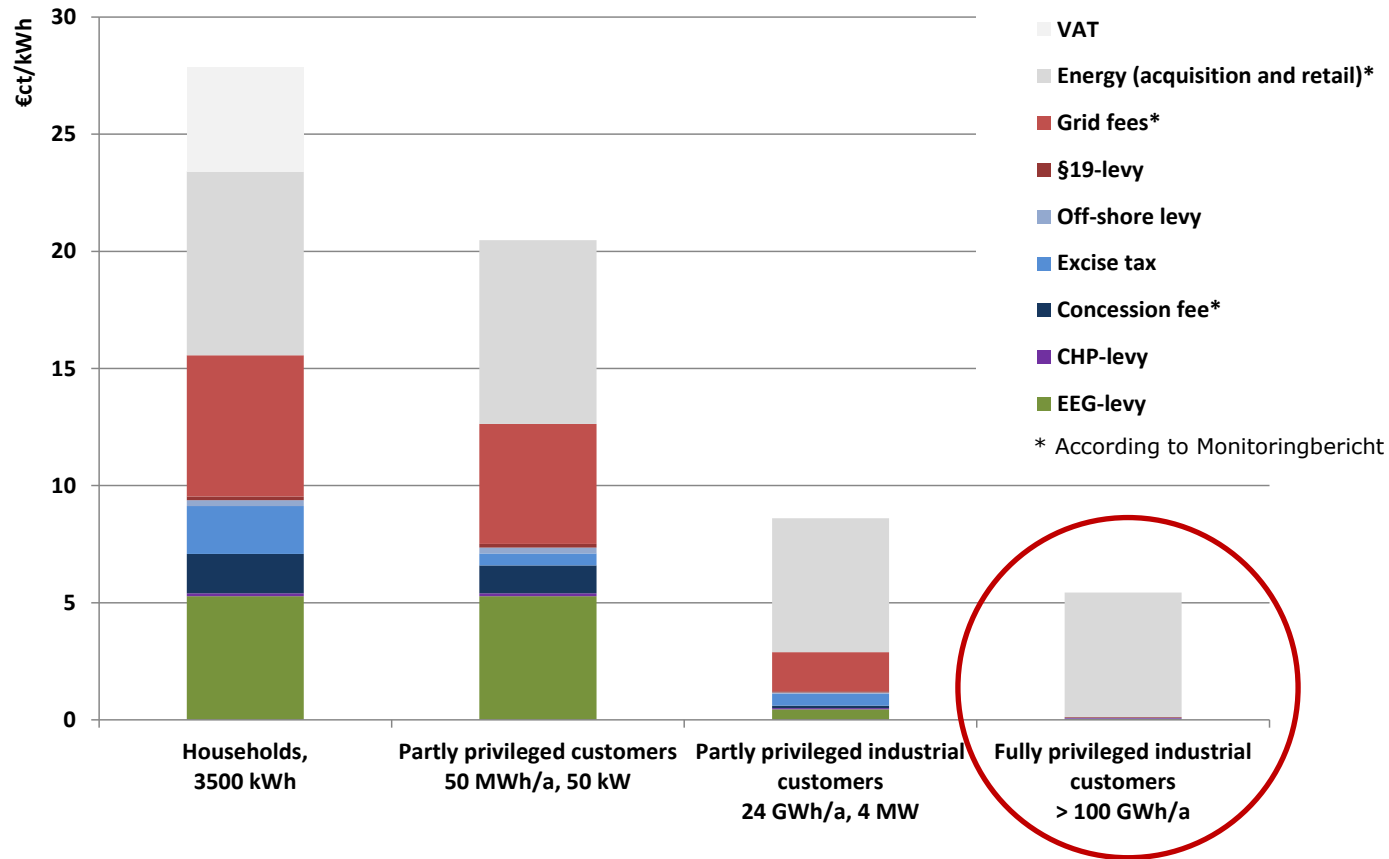
09/04/2014

Katharina Grave and Dr. Martin Pudlik

Agenda

- Motivation
- Acquisition strategies
- Methodology for estimations
- Results
- Conclusions

Motivation: Studying Electricity price components in Germany 2013



In contrast to household prices, the energy component is the main driver of electricity prices for industrial customers.

Data: 19 interviews with representatives from energy intensive industries

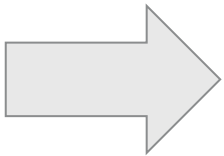
Acquisition strategies in energy intensive industries:

- **Autogeneration:** Especially in the chemical sector, companies generate power and heat in their own CHP-plants
- **Long term contracts:** companies in power intensive sectors like aluminum and copper have long term contracts with power suppliers, prices depend on wholesale prices for coal and gas
- **Full supplier:** Smaller companies, e.g. textile producers, buy their electricity from retailers and only have limited influence on their acquisition strategy
- **Forward contracts:** Stock exchanges provide forward products, so companies can plan their electricity costs in advance
- **Spot market:** some companies buy at the day ahead market
- **Mixed strategies:** Most power intensive industries combine different acquisition strategies to hedge the risks of price variations

Data: 19 interviews with representatives from energy intensive industries

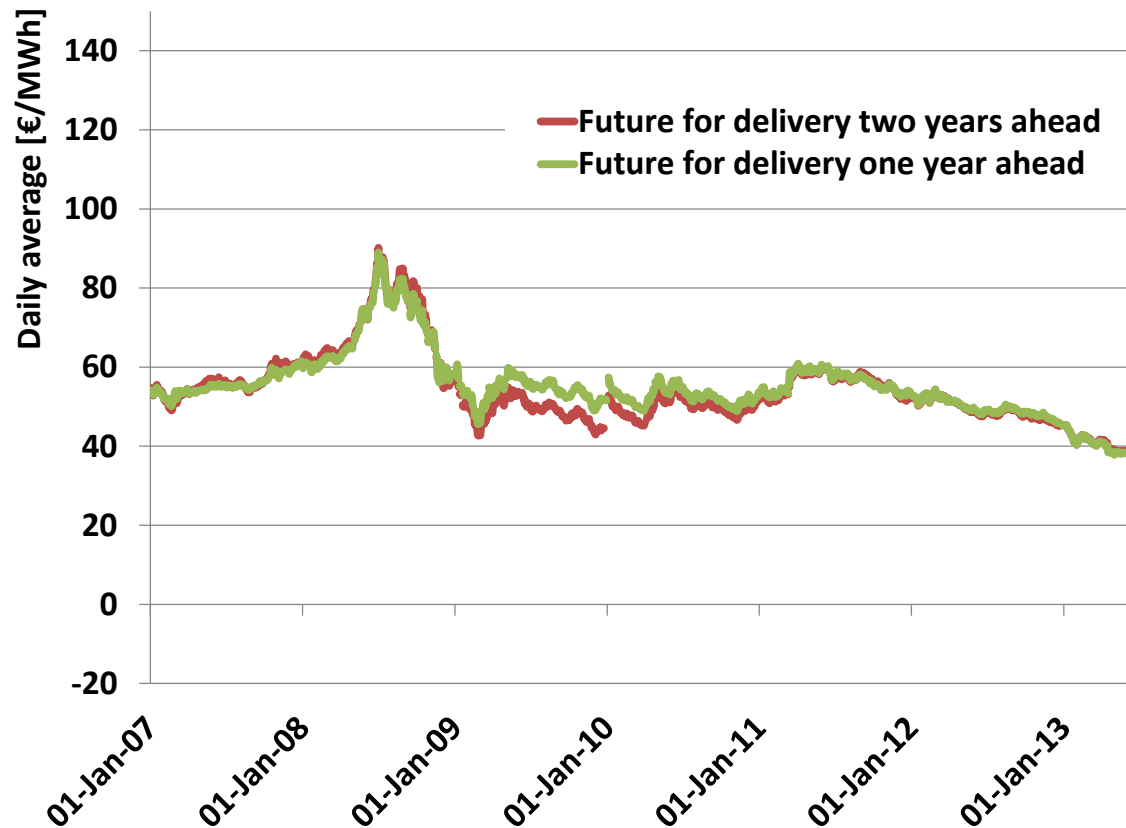
Mixed strategies: Most power intensive industries combine different acquisition strategies to hedge the risks of price variations

Most companies indicate a planning horizon of about two years.



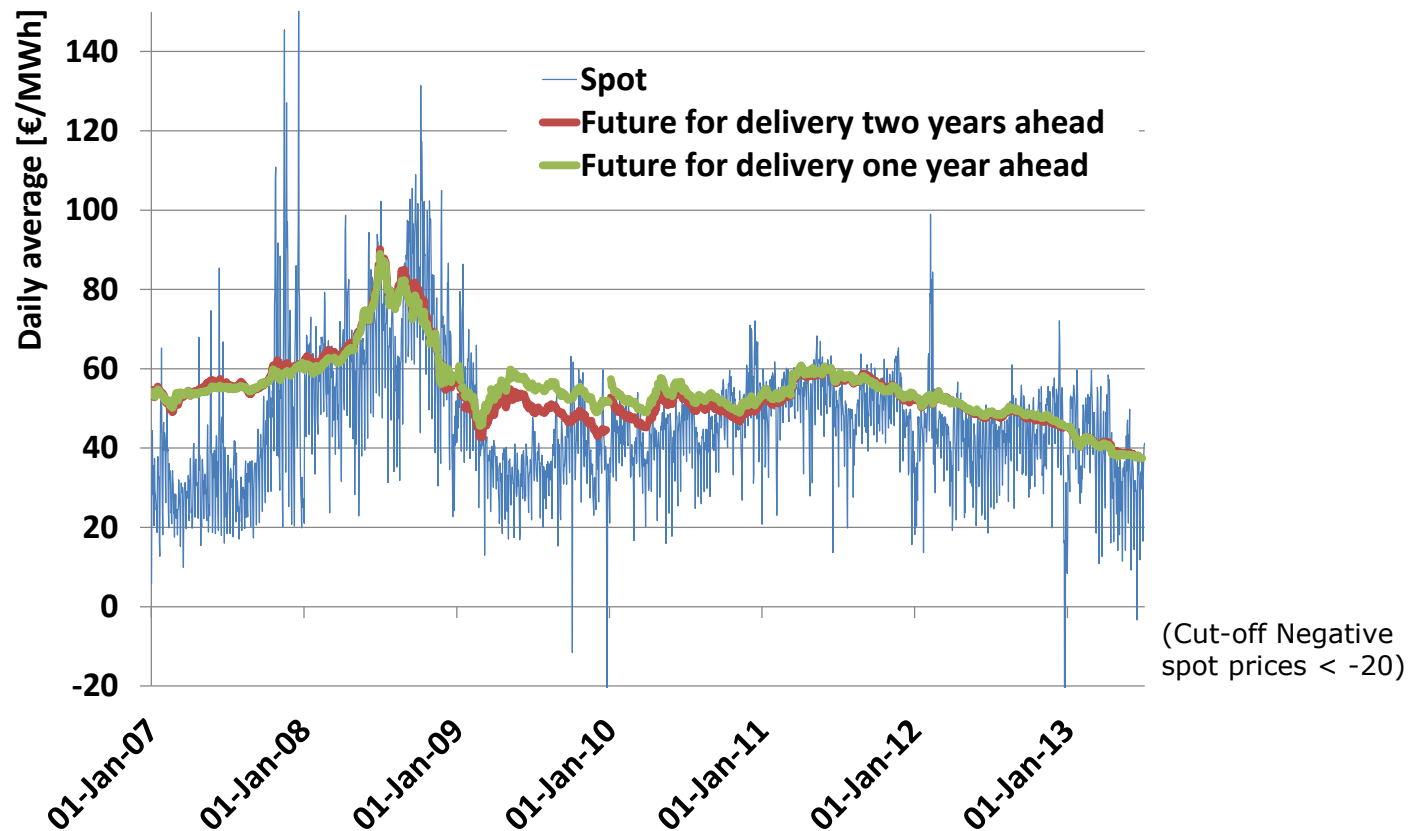
Calculations for outcomes of acquisition strategies based on spot and forward prices.

Data: Future prices in Germany



Future prices develop similarly.

Data: Future prices in Germany

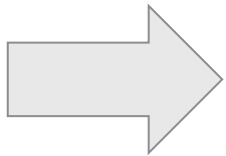


Future prices develop similar to spot prices.

Methodology: combining future and spot prices according to acquisition strategies

Mixed strategies: Most power intensive industries combine different acquisition strategies to hedge the risks of price variations

Most companies indicate a planning horizon of about two years.



We combine the future prices from two previous years with spot market prices

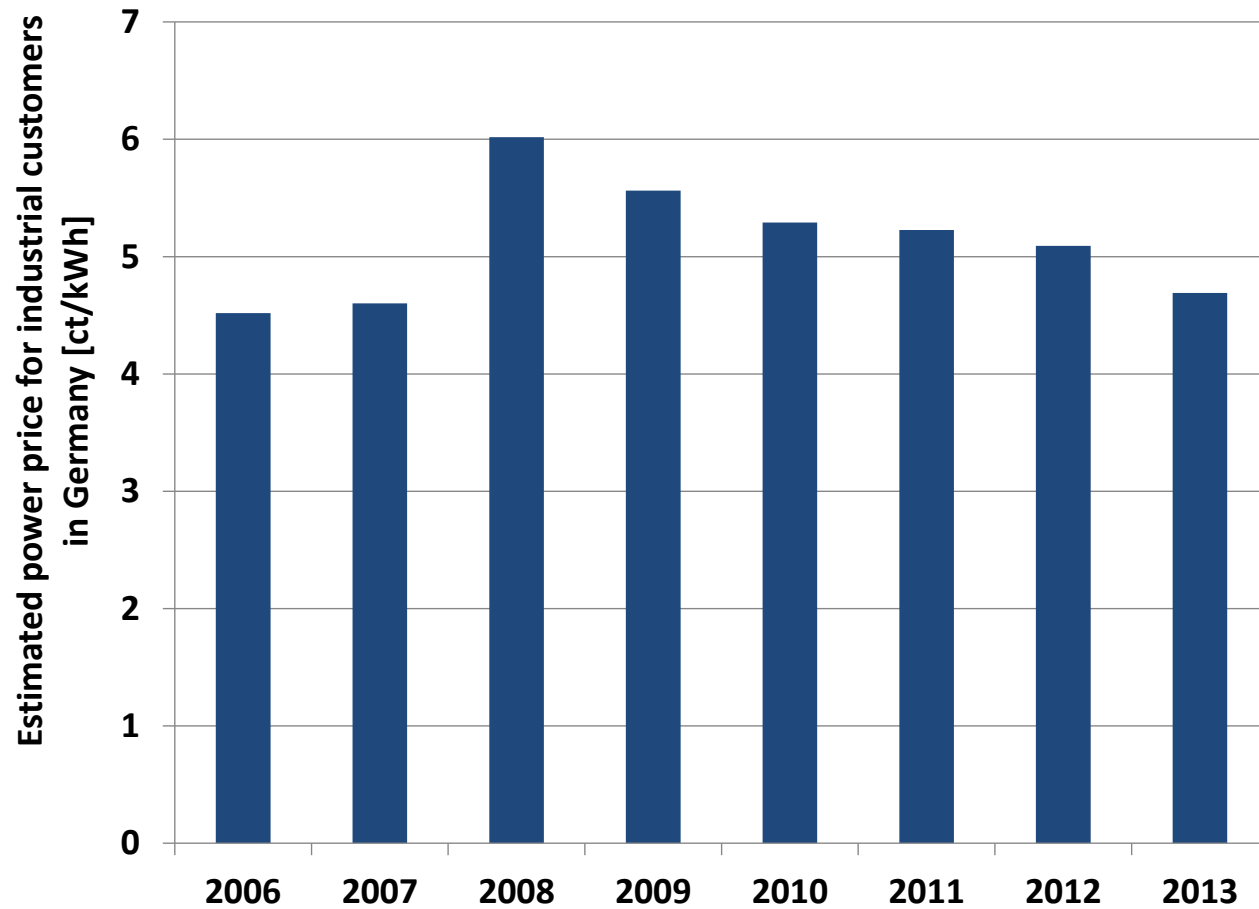
Assumptions:

Companies trade continuously

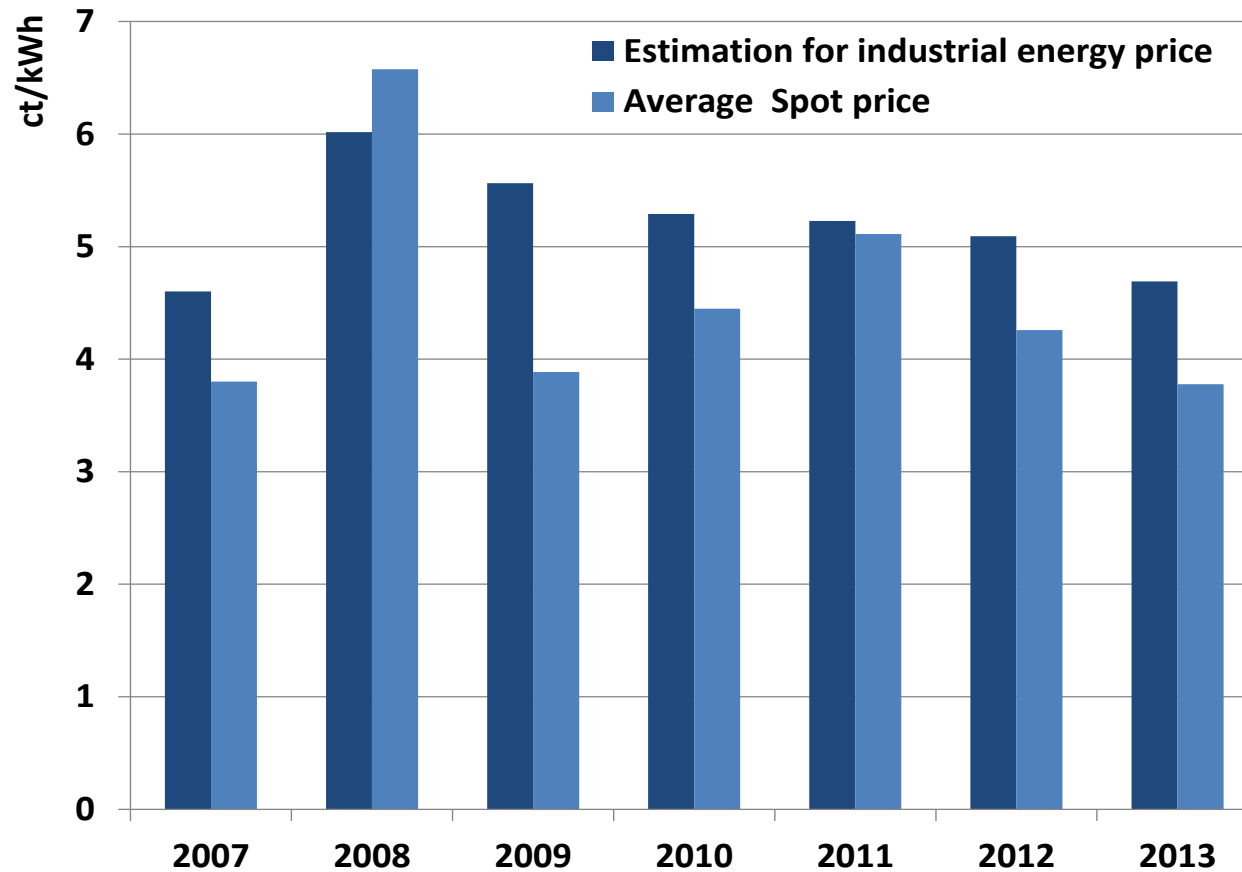
Equal volumes for future products

Demand for base load – flat demand curve

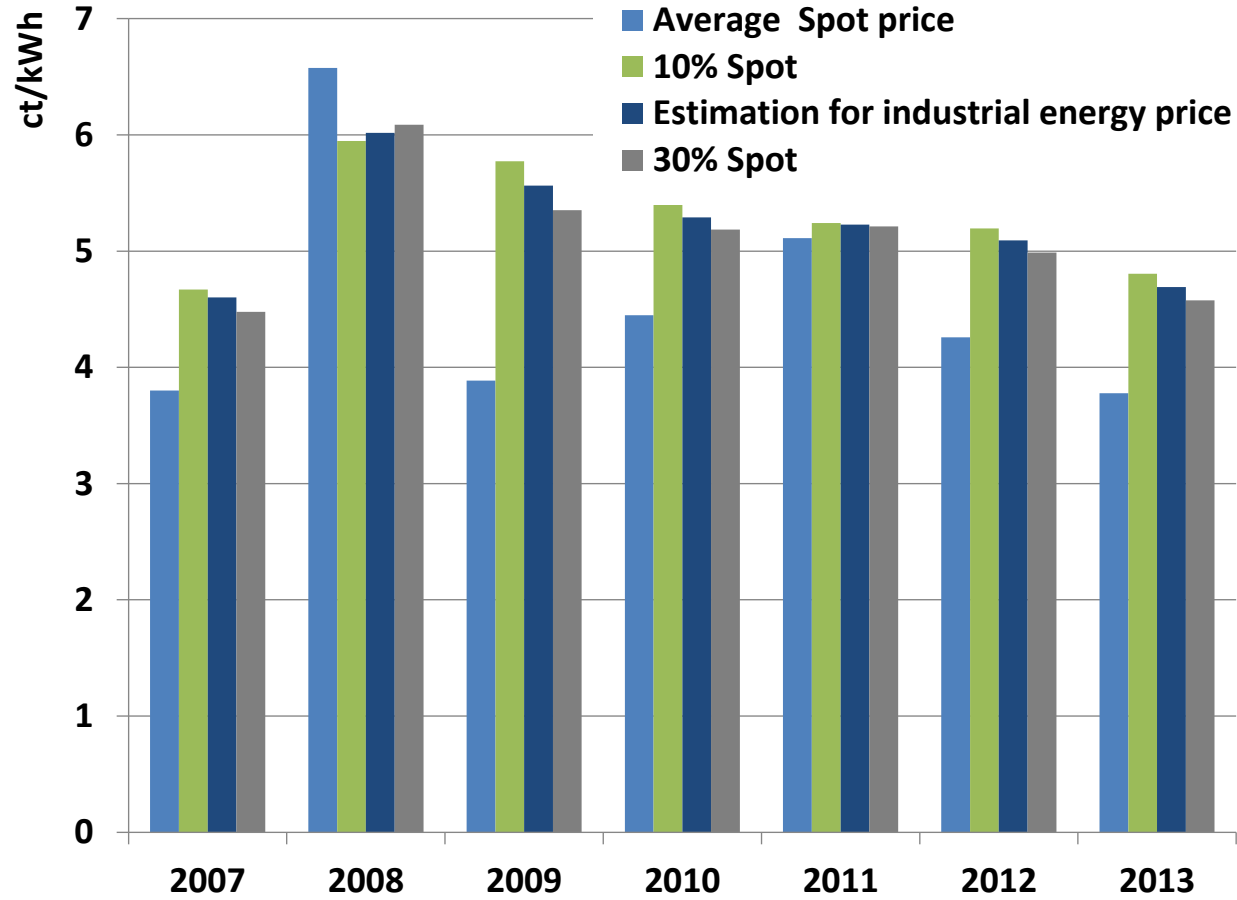
Results: Average industrial electricity prices from 2006 - 2013



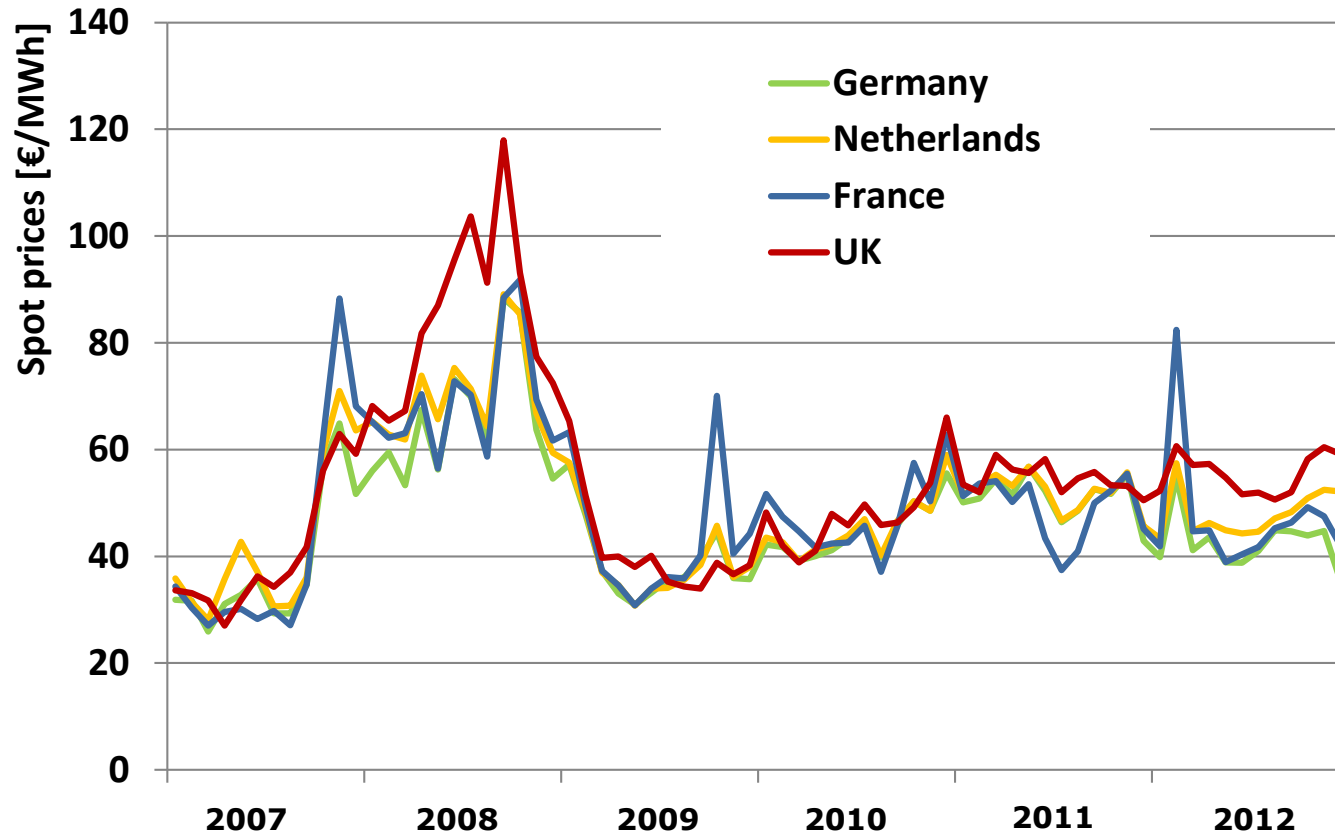
Results: Comparison to average spot prices



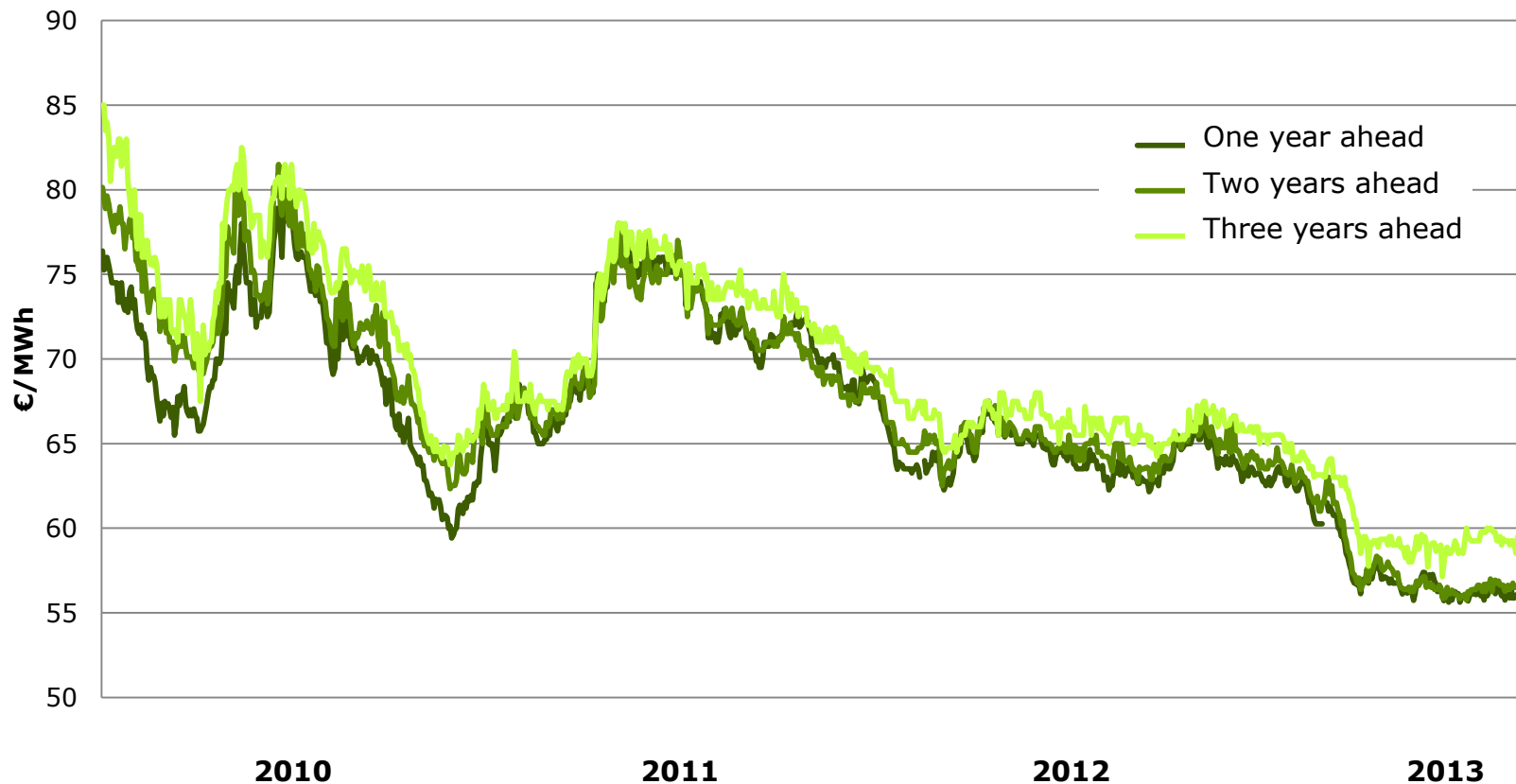
Results: Comparison of different acquisition strategies



Outlook: Wholesale prices in neighbouring countries



Outlook: Forward prices in France



Conclusions

General results

- Future and spot market prices are decreasing
- Futures are converging to the spot market price
- Procurement costs for the energy intensive industry are lowering considering the hedging strategies researched during the interviews
- The calculated price had been verified based on interviews and workshop discussions

Main weaknesses and future improvements:

- The reasons for the decreasing had been not looked at during the analysis so far (i.e. RE, fuel prices, CO₂-prices)
- Price components had been used at a very aggregated level; improvement of the regional resolution might change the results significantly (i.e. transmission costs)
- OCT / bilateral contracts not considered

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