

German Dairy Futures: Quality of Price Signals and Hedging Effectiveness

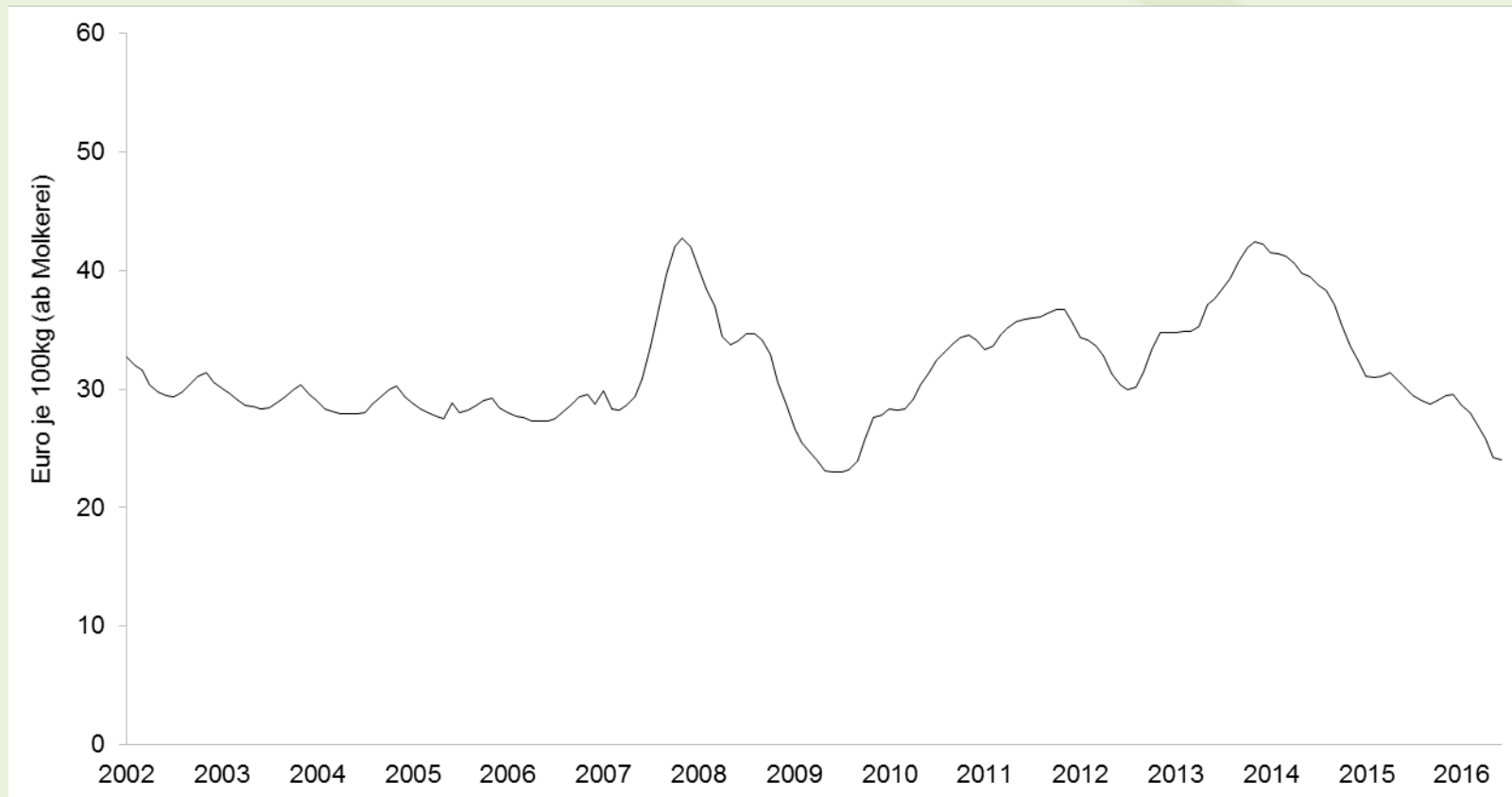
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Motivation (I)

- Starting point of research project:
 - Political and institutional changes in the EU dairy market: Elimination of milk quota and liberalization of EU dairy markets
 - Changes in dairy world market: Reduction of demand from China, Russian import stop and reduction of commodity prices
- Effects on German dairy prices:
 - Since 2007: Price peaks, crashes and
 - ... higher volatility compared to the years before

Motivation (II)

- Monthly German dairy prices 2002 – 2016:



Motivation (III)

- Dairy futures in Germany:
 - Possible reaction to high dairy price volatility: Hedging the price risk with futures contracts
 - Eurex afterwards EEX: Since 2010 butter and skimmed milk powder contract, since 2012 whey powder contract
 - Characteristics: Relatively new, little established futures markets with low liquidity, i.e.,
 - ... low trading volume and low number of open interest compared to established futures markets

Motivation (IV)

- Research question:
 - Do the EEX dairy future markets fulfill the price discovery function and hedging effectiveness?
 - Or: Do the futures exhibit too low liquidity and cannot be used reliably as price information and as a hedging instrument?
- Contents:
 - Characteristics of German dairy market (skipped today)
 - Characteristics of three German dairy futures, discussion of the data quality

Motivation (V)

- Contents (continued):
 - Empirical evidence on price discovery and hedging effectiveness
 - Price discovery: Which market segment reacts to a new information first and transfers this information to the other market?
 - Price discovery takes predominantly place in futures markets, i.e.,
 - ... futures markets react to a new information first and transfer the information to the underlying spot market and not vice versa
 - Futures markets price discovery is seen as one characteristic of a properly working futures market

Motivation (VI)

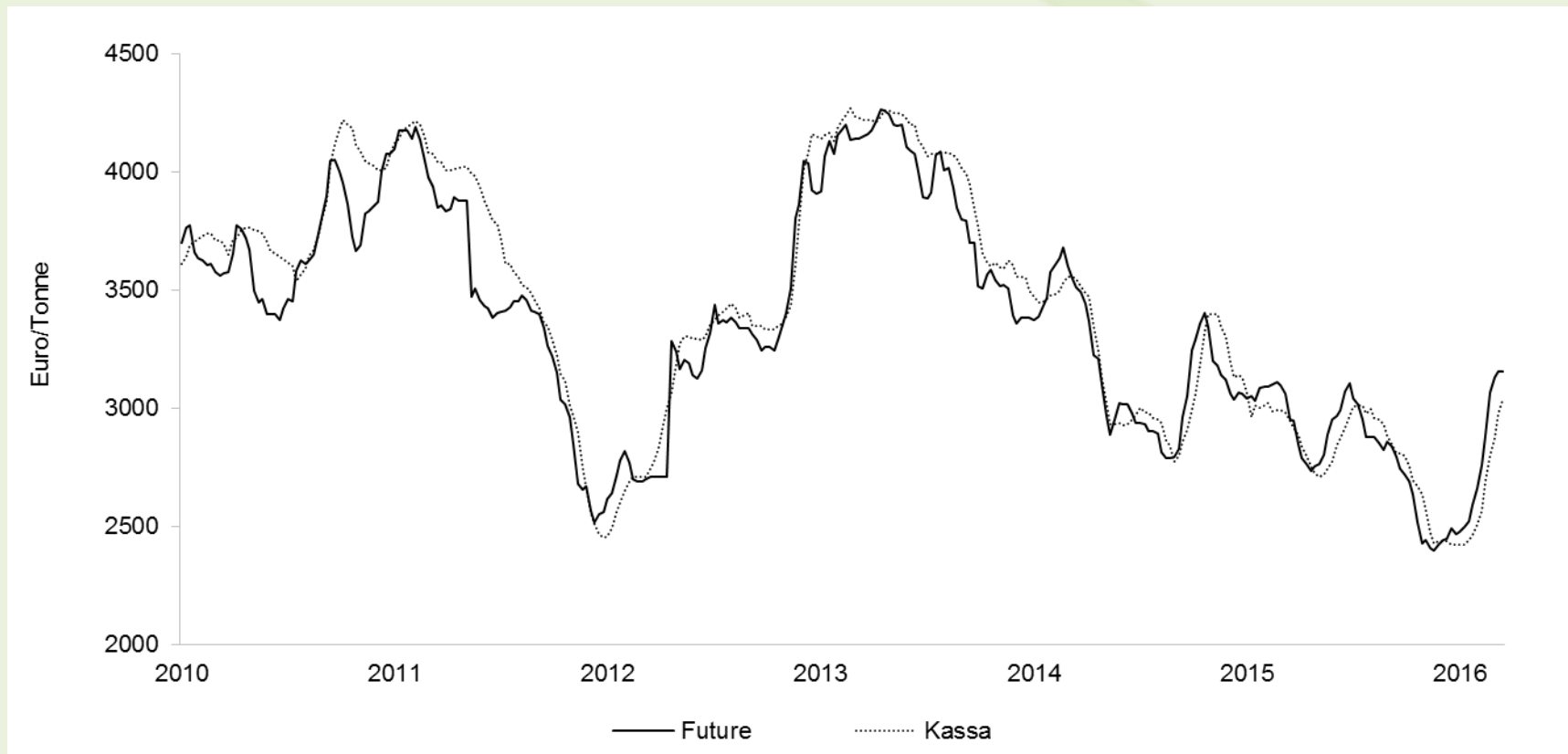
- Contents (continued):
 - Hedging effectiveness: Usefulness of futures to hedge price risk of spot market transactions
 - ... so that futures can be sensibly used as hedging instruments for practical purposes
 - Empirical findings for three EEX futures on price discovery and hedging effectiveness

Data (I)

- Time series:
 - Eurex/EEX launched in 2010 butter and skimmed milk powder futures, and in 2012 whely powder futures
 - Time series availability: Weekly data on spot prices and daily futures prices as well as
 - ... data on trading volume and open interest

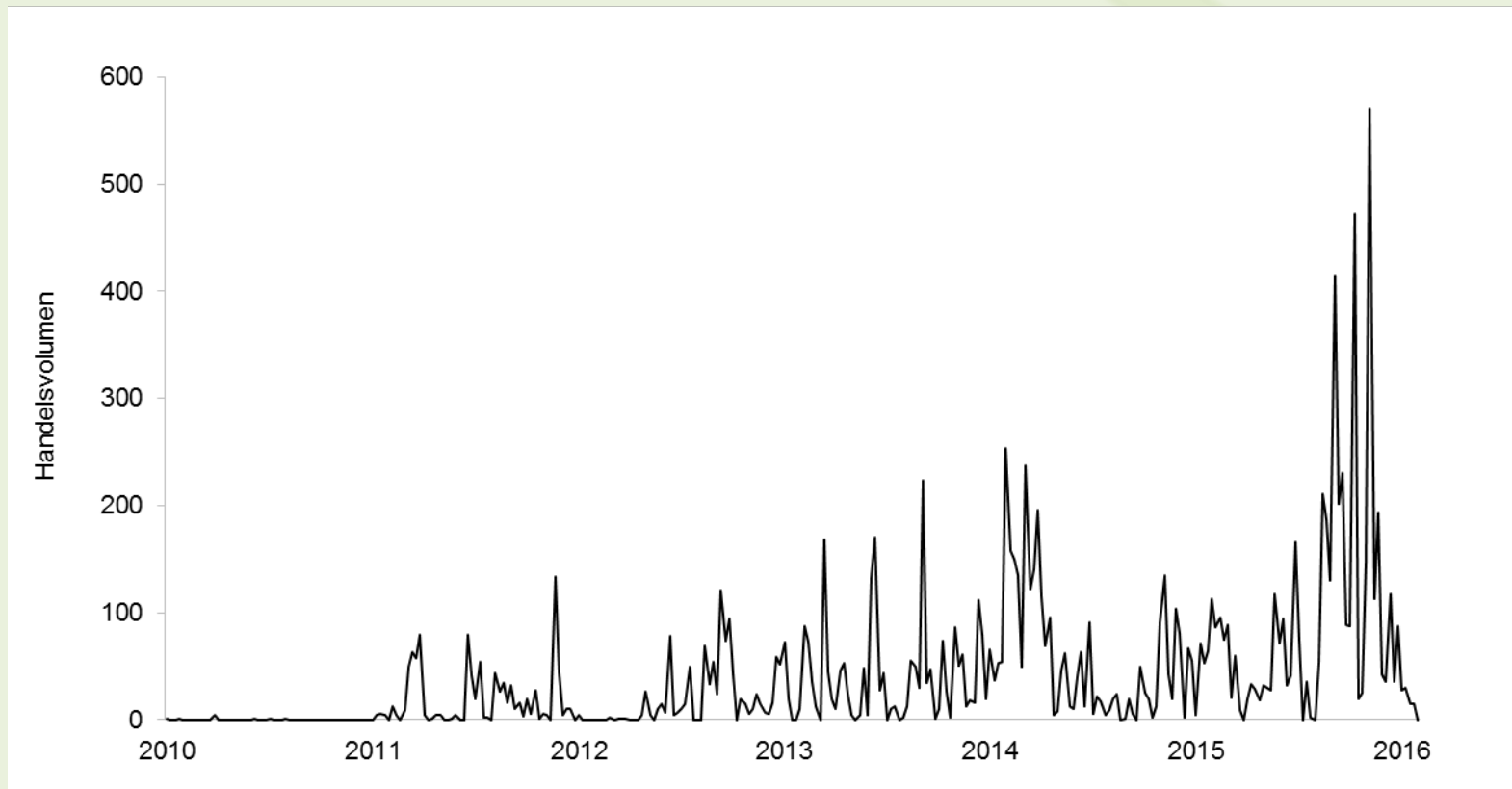
Data (II)

- Spot and futures prices of butter contract:



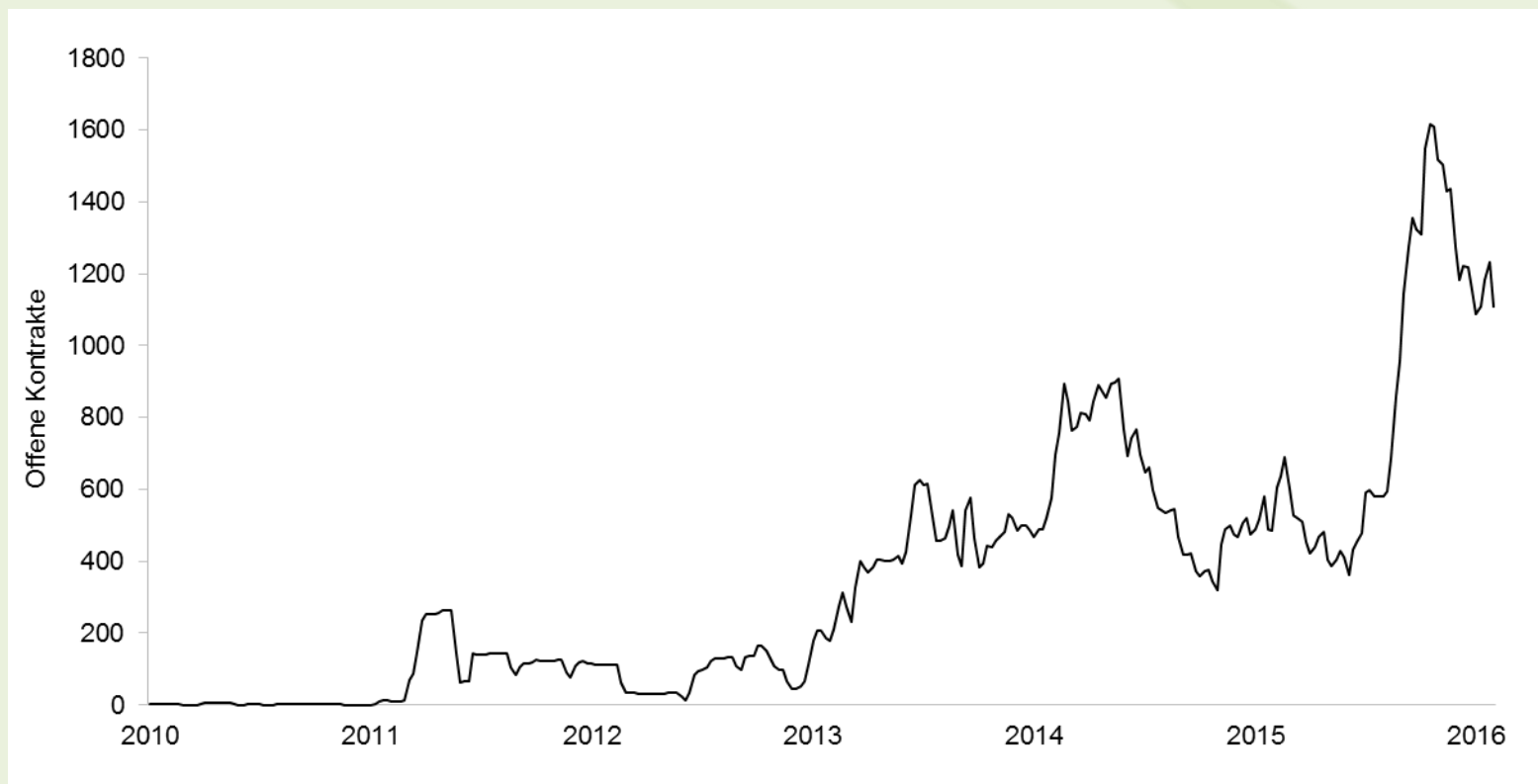
Data (III)

- Trading volume of butter futures:



Datenmaterial (IV)

- Open interest of butter futures:



Data (V)

- Two observations:
 - Extent of speculative activities are very low, because speculation ratio (trading volume/open interest) very low
 - Trading volume during the first months of futures trading is extremely low or even zero so that
 - ... reliable estimation results cannot be expected
 - Sample beginning: Limit of 30 bis 40 weekly traded futures contracts on average (Adämmer, Bohl and Groß 2016) as solution

Econometric methods (I)

- Assessment:
 - Application of modern econometric tools provides valid and reliable conclusions
- Quality of price discovery function:
 - Error correction models quantify, to what extent market information are processed by the futures market and
 - ... then be passed through to the spot market

Econometric methods (II)

- Hedging effectiveness:
 - By using error correction models, the coverage of synchronism of price developments between futures market and spot market is quantifiable
 - The more yields of the futures market and the spot market do correlate,
 - ... the more futures are suitable for hedging

Empirical findings (I)

- Price leadership of futures contracts:
 - Futures processes new market-related data and transfer these data to the spot market with a time lag
 - Price data of futures can be used as a valid source for business decisions
- Hedging effectiveness:
 - Futures contracts are suitable for hedging of spot transactions

Empirical findings (II)

- Hedging effectiveness (*cont.*):
 - Futures are suitable for managing the private price risk
- Conclusions from the empirical results:
 - Functioning of the three dairy futures despite of low liquidity at the EEX

Policy implications (I)

- Milk price volatility:
 - Significant market price changes do pertain to economic reality
 - Empirical evidence: despite low liquidity German dairy futures do fulfil price leadership and
 - ... are suitable for hedging the price risk
 - Dairy futures contracts at the EEX could make substantial contribution to the private risk management
 - Share of speculation is too low at dairy futures markets

Policy implications (II)

- Fundamental recommendations with regard to spot market's data:
 - Data availability and quality should be further improved by
 - ... implementing EU-wide uniform definitions,
 - ... minimizing ...
 - a) ... time lags of publication of market data and
 - b) ... number and frequency of data revisions,
 - ... closing gaps of market observation

Policy implications (III)

- Spot market indices (EEX):
 - Instead of using equal weights of German, French and Dutch dairy prices do better use weighted price indices
 - Improving consistency of futures and spot market prices by applying daily data of the spot market instead of weekly prices
- Liquidity improvement:
 - Increasing speculation of financial investors is to be welcomed
 - Possible starting point: adjustments of the fee structure and positively worded campaign

Conclusions (I)

- Functionality of EEX dairy futures:
 - Because of an effective price discovery function and a high degree of hedging effectiveness
 - ... managing price risk is always possible at the EEX
- Improving functionality:
 - Creating incentives for financial investors to improve liquidity

Conclusions (II)

- Improving functionality: (*cont.*):
 - Discussions and information about speculation and its market function
 - Increasing acceptance and application of futures for purposes as risk management instrument in the dairy sector
 - Additional private risk management actions



Many thanks for your kind attention!