



Tools to counter Price Volatility in the EU Dairy Sector

37th ICOS National Conference
25 November 2013



Tools to Counter Price Volatility



- Why bother

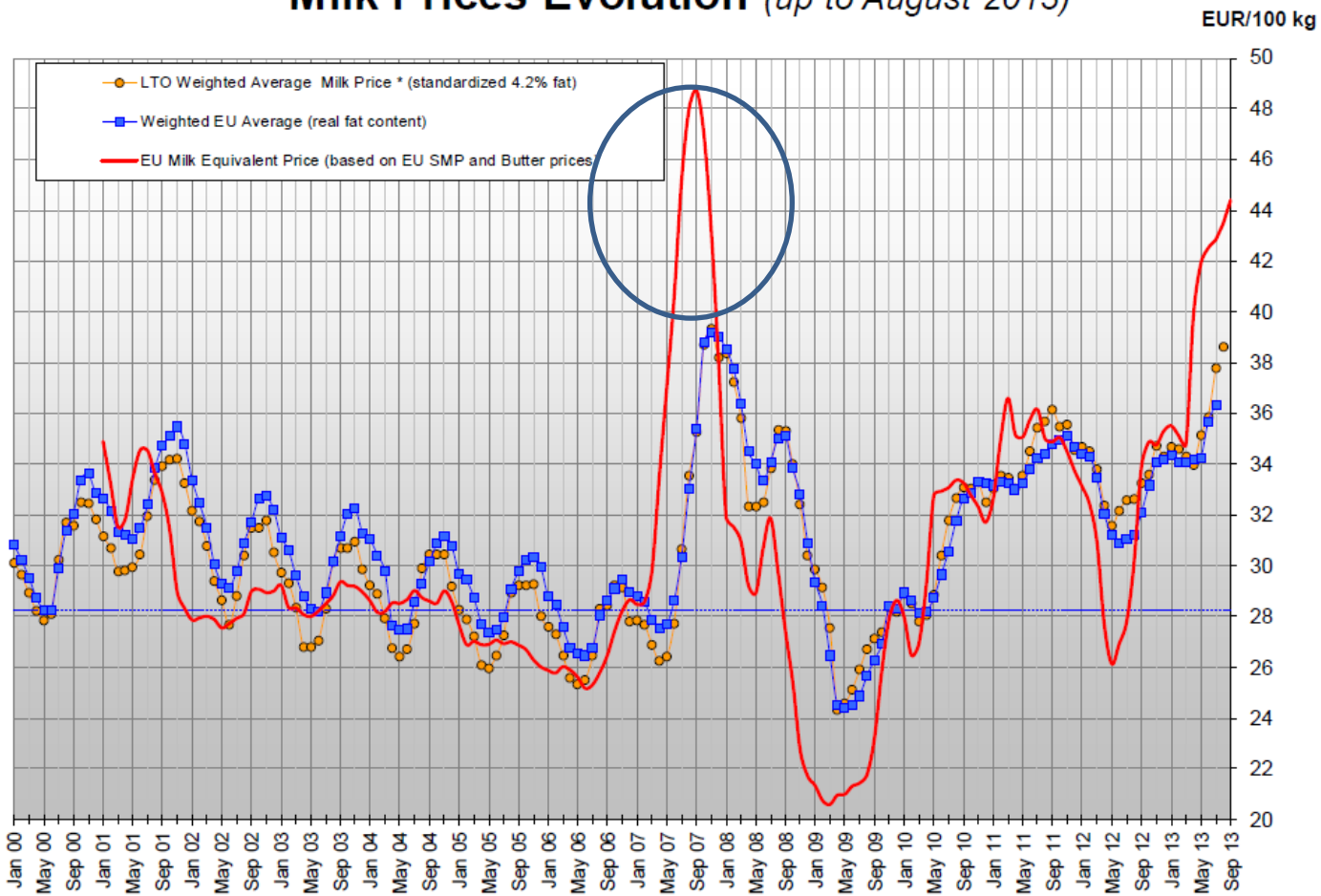


Why ?

volatility is contained by my dairy



Milk Prices Evolution (up to August 2013)



Source :MS' communications under reg. 562/2005 & 479/2010 + LTO : Land- en Tuinbouworganisatie Nederland

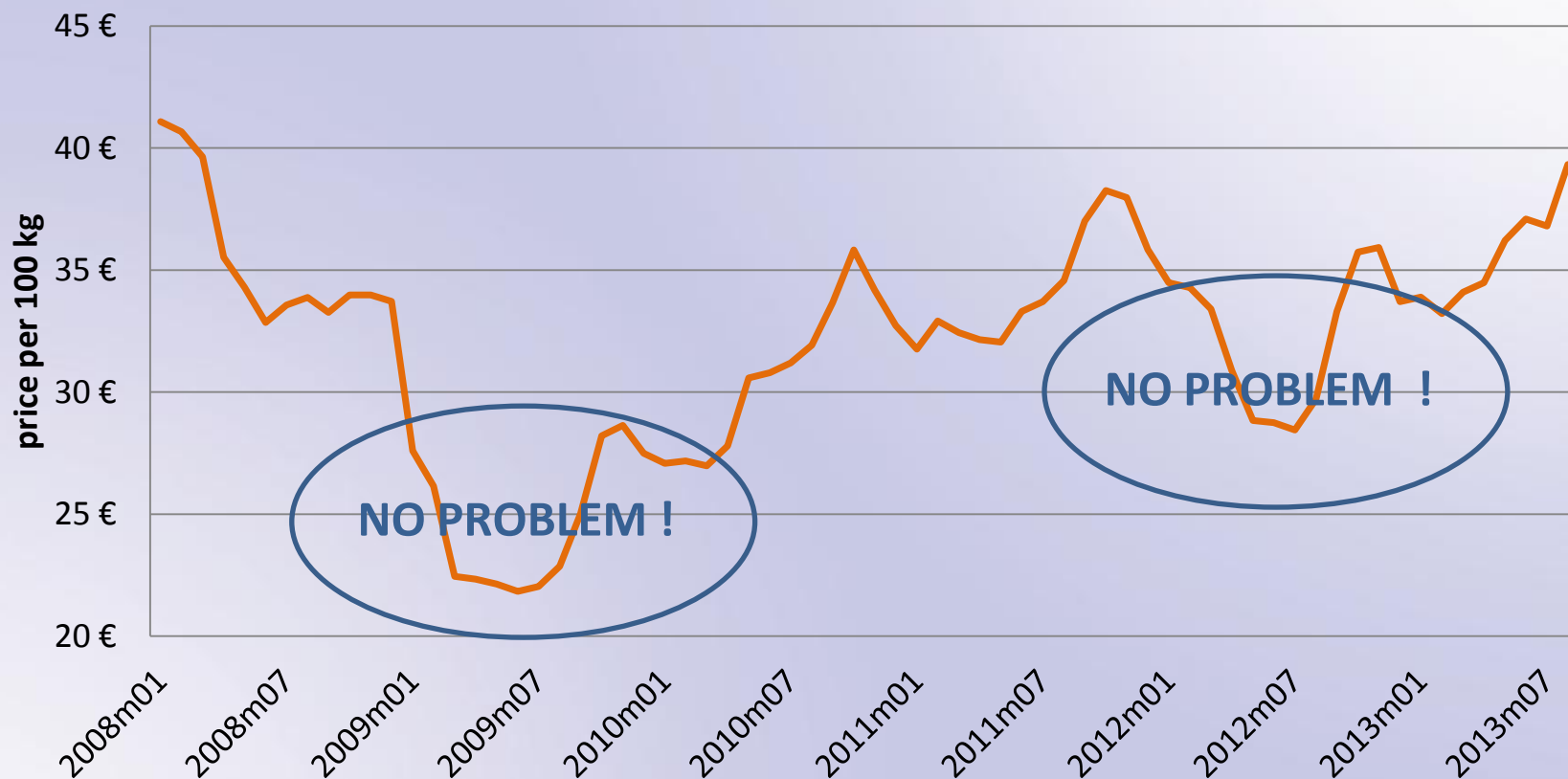


Why ?

I have no problems with price volatility



Irish Prices of Raw Milk 2008-2013



Source: EU Commission



Tools to Counter Price Volatility



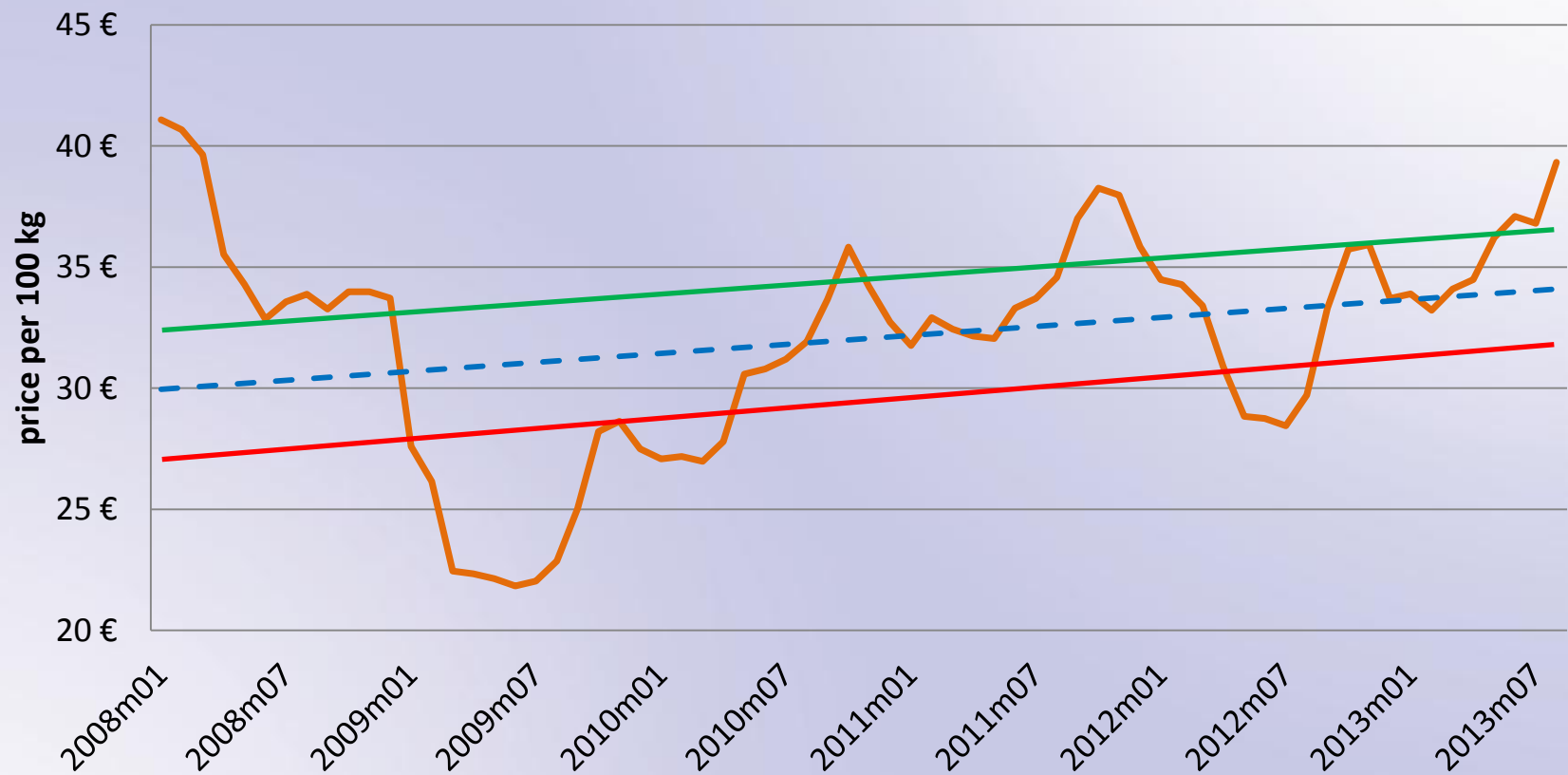
- Why bother?
- What is the purpose



What is the purpose



Irish Prices of Raw Milk 2008-2013



Source: EU Commission



Tools to Counter Price Volatility



- Why bother?
- What is the purpose?
- Dairy Futures & Options: Overview



Available Tools



- There is a wide variety of dairy futures and options contracts at various exchanges world wide.
- Chicago Mercantile Exchange contracts have been traded more than 15 years. Contracts on European (Eurex & NYSE Liffe) and NZ (NZ-X) exchanges are more recent.
- Both contracts with **physical delivery** and **cash settled** contracts are offered.



What contracts are available



- Chicago Mercantile Exchange

- Class III Milk
- Cheese
 - *Cheese Spot Call Blocks*
 - *Cheese Spot Call Barrels*
- Dry Whey
- Class IV Milk
- International Skimmed Milk Powder
- Nonfat Dry Milk
 - *Nonfat Dry Milk Spot Call Grade Extra*
 - *Nonfat Dry Milk Spot Call Grade A*
- Butter
 - *Butter Spot Call*



What contracts are available



- Eurex
 - EU Butter
 - EU SMP
 - EU Whey Powder
- NYSE Liffe
 - EU SMP
- NZ-X (New Zealand)
 - WMP
 - AMF
 - SMP
- OTC
 - Flexible contracts



Tools to Counter Price Volatility



- Why bother?
- What is the purpose?
- Dairy Futures & Options: Overview
- **How do Futures work**



How do Futures work

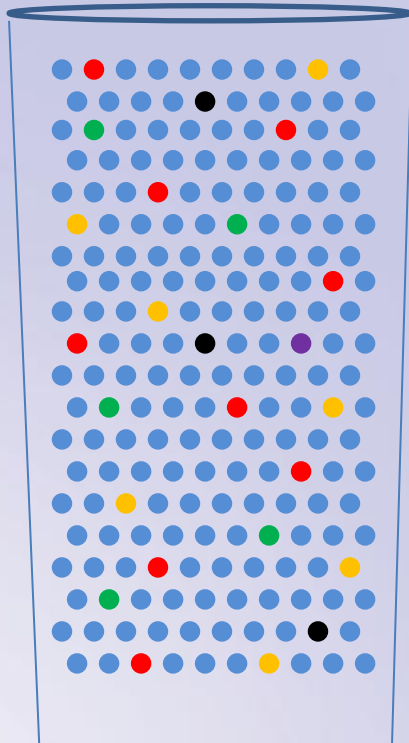
Commodity Milk Price





How do Futures work

Commodity Milk Price



Milk fat

Insoluble protein

Soluble protein

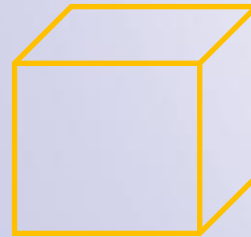
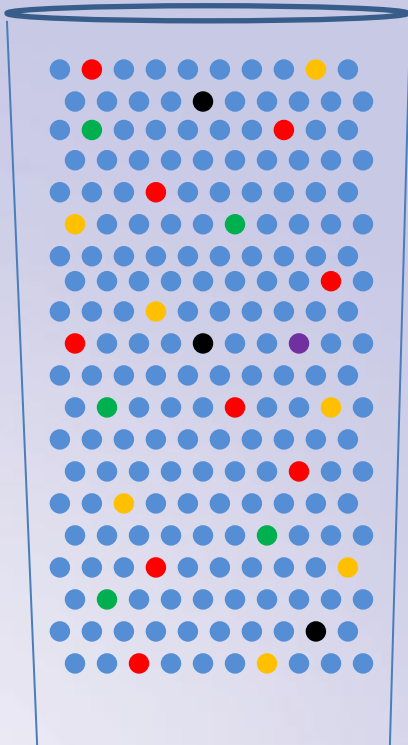
Milk sugar

Milk minerals



How do Futures work

Commodity Milk Price



Butter

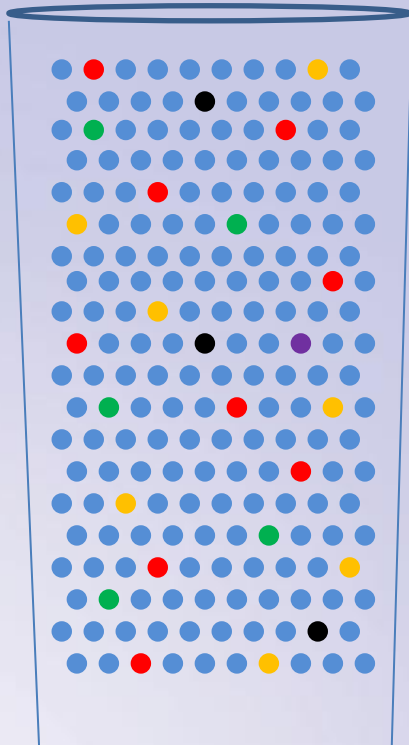


Skimmed
Milk Powder

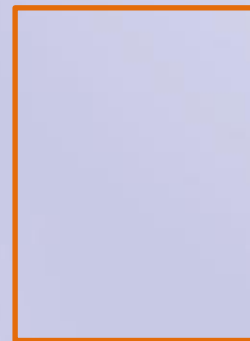


How do Futures work

Commodity Milk Price



Cheese



Whey powder



How do Futures work

Commodity Milk Price



- Butter & SMP milk price
 - Commission formula
 - Uses SMP and Butter price
 - Make allowance and composition of milk & product
- Cheddar milk price
 - based on Class III calculation
 - Uses Cheddar, Butter and Whey powder price
 - Make allowance and composition
- All standardized to milk with 4 % milk fat

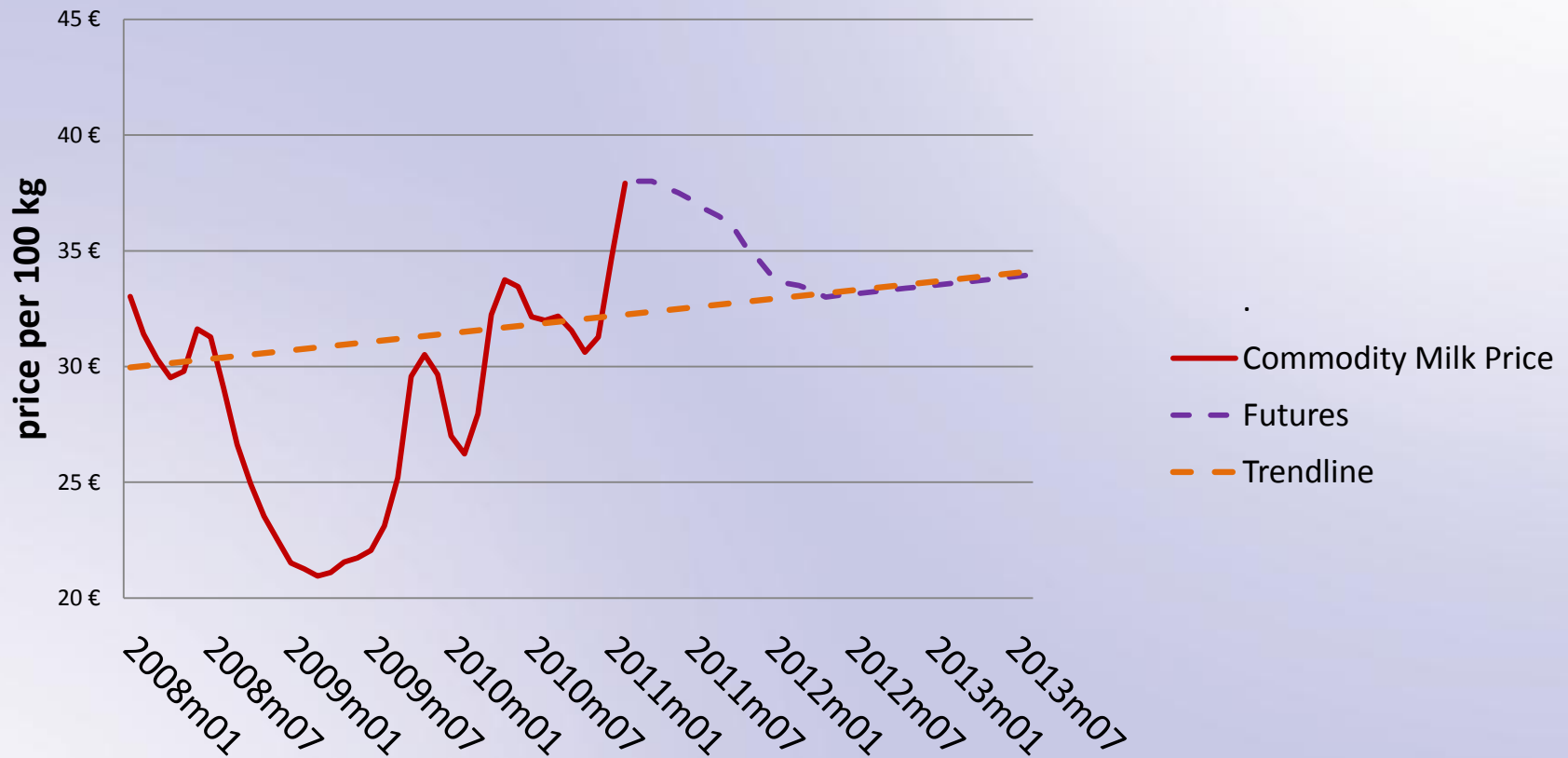


How do Futures work

Trendline



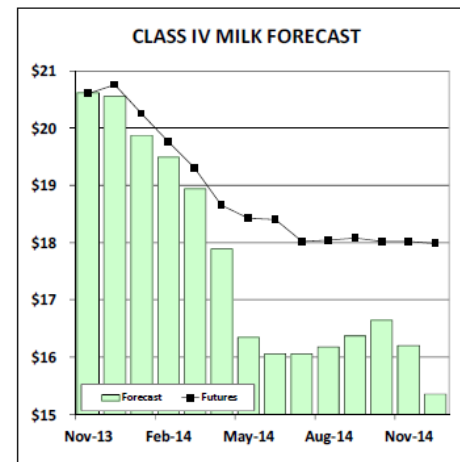
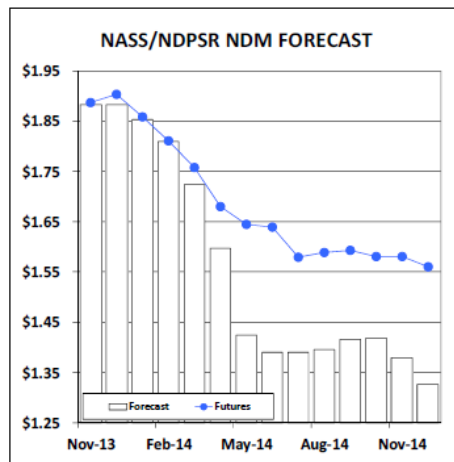
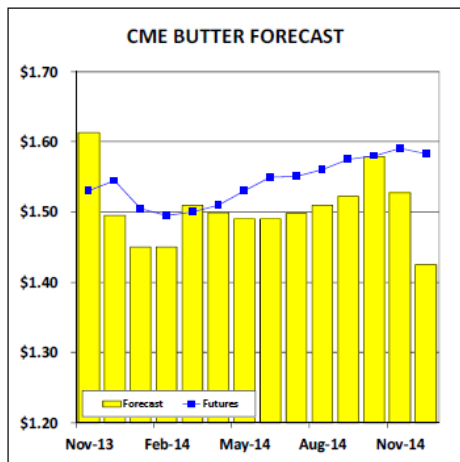
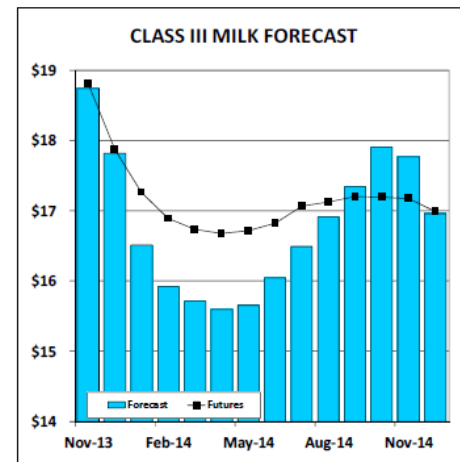
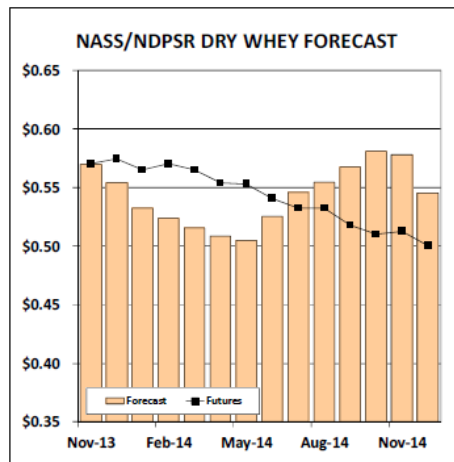
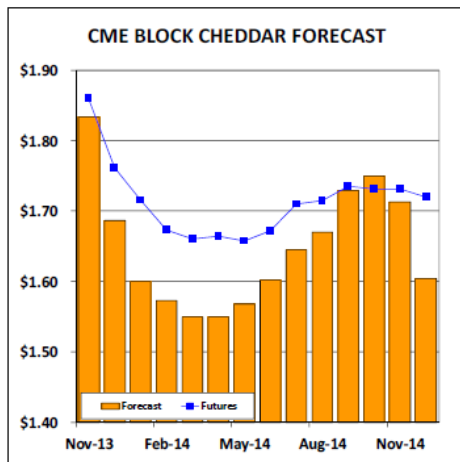
Futures prices converge to Trend line





How do Futures work

Trendline



Source: Blimling e.a.

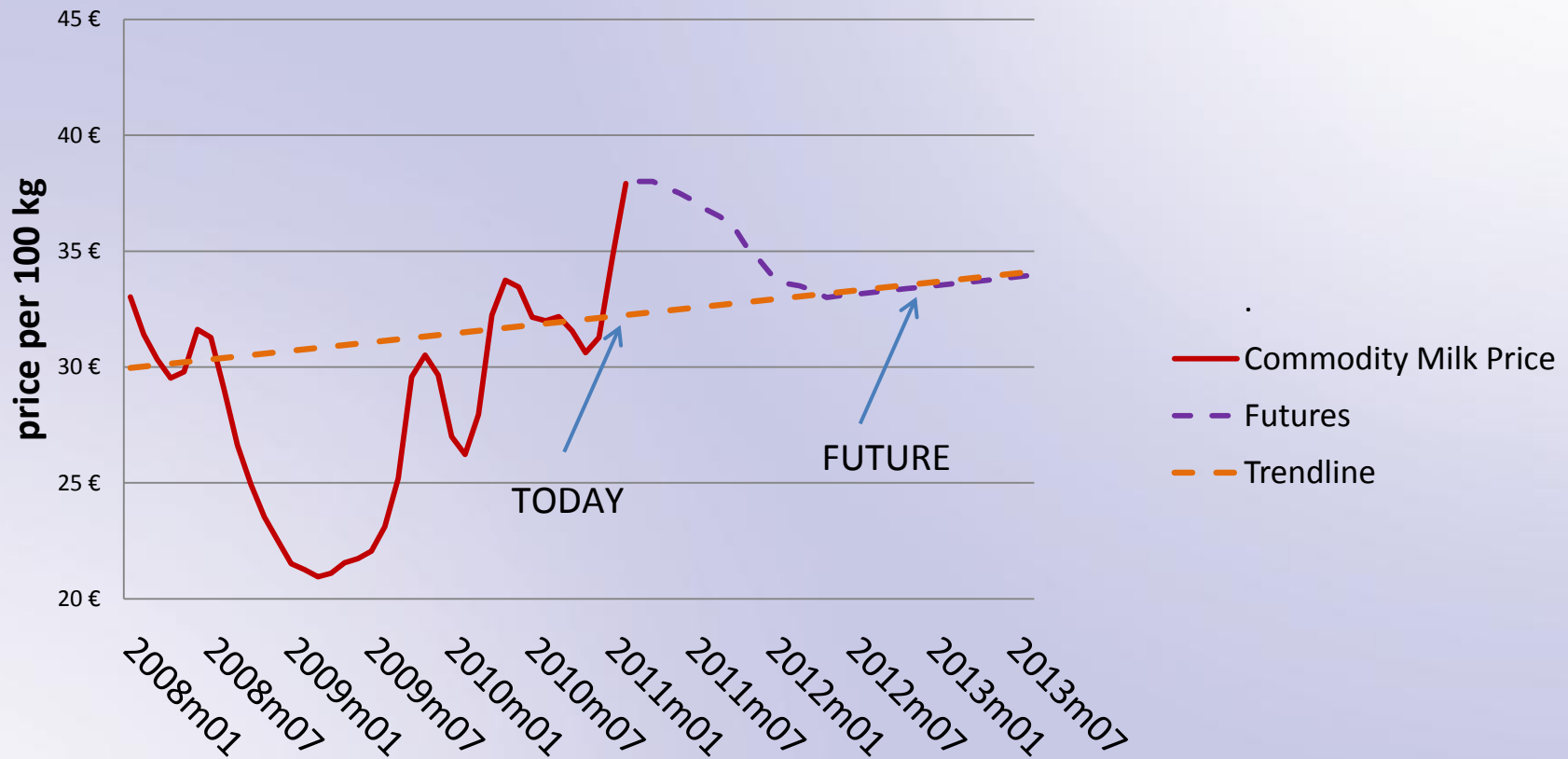


How do Futures work

Trendline



Futures prices converge to Trend line





How do Futures work

Hedging a commodity milk price



- In February 2011 you sell
 - Contract period: November 2012
 - Sell 5 MT Butter at futures price 364 €/100 kg
 - Sell 10 MT SMP at futures price 238 €/100 kg
 - This corresponds with a 115 000 kg milk at a price of 33.39 €/100 kg

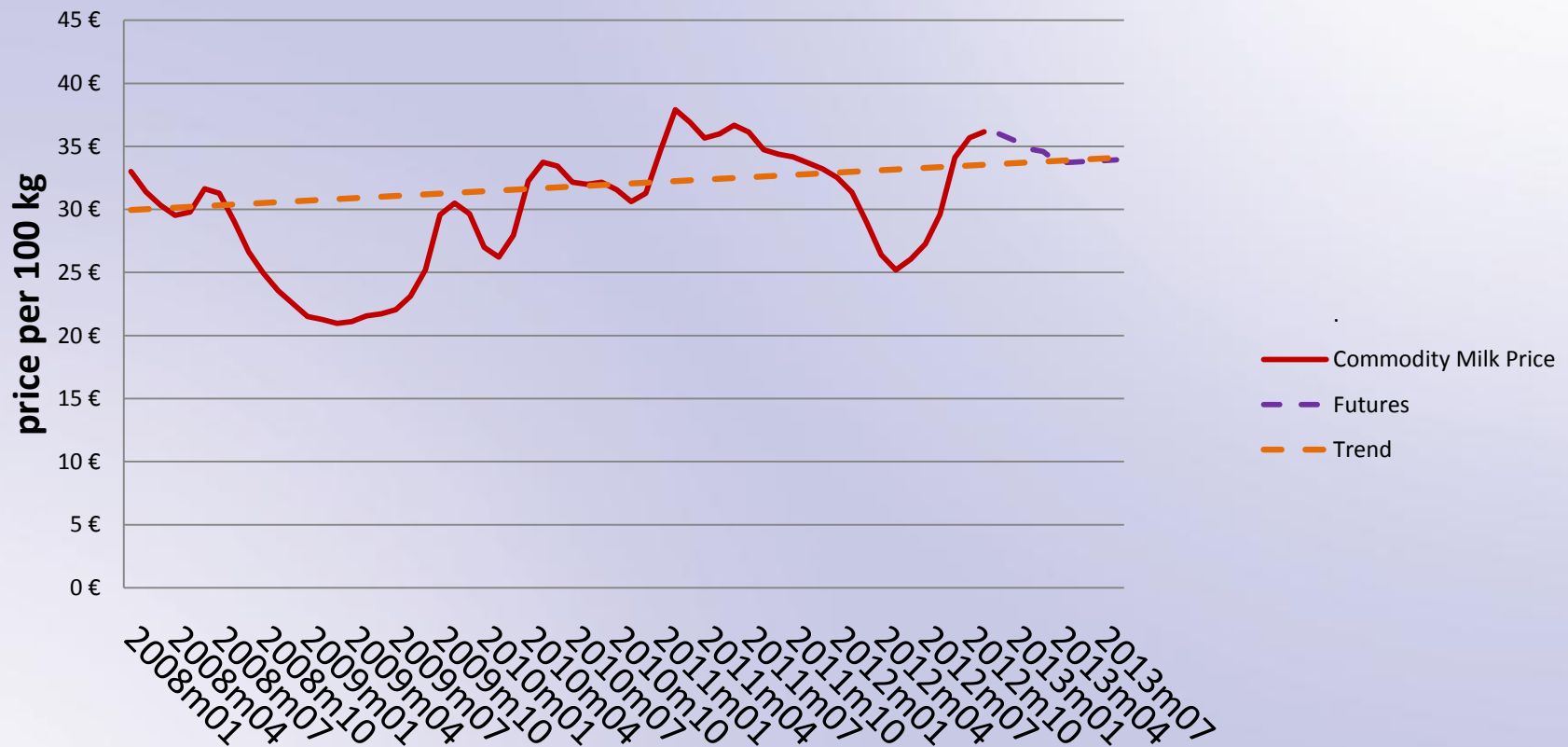


How do Futures work

Hedging a commodity milk price



Futures prices converge to Trend line





How do Futures work

Hedging a commodity milk price



- In November 2012
 - The Butter contract settles at 340 €/100 kg
You had sold 5 MT at 364 €/100 kg and therefore receive 1 200 € from the exchange
 - The SMP contract settles at 282 €/100 kg
You had sold 10 MT at 238 €/100 kg and therefore have to pay the exchange 4 400 €
 - The equivalent milk price = 36.11 €/100 kg
 - You dairy pays you 115 000 kg milk at 36.20 €/100 kg
= 41 630 €



How do Futures work

Hedging a commodity milk price



- In November 2012 (continued)
 - You supplied 115 000 kg of milk (4% fat)
 - You received from your dairy 41 630 €
 - You received from the exchange 1 200 €
 - You paid to the exchange 4 400 €
 - Balance = 38 430 €

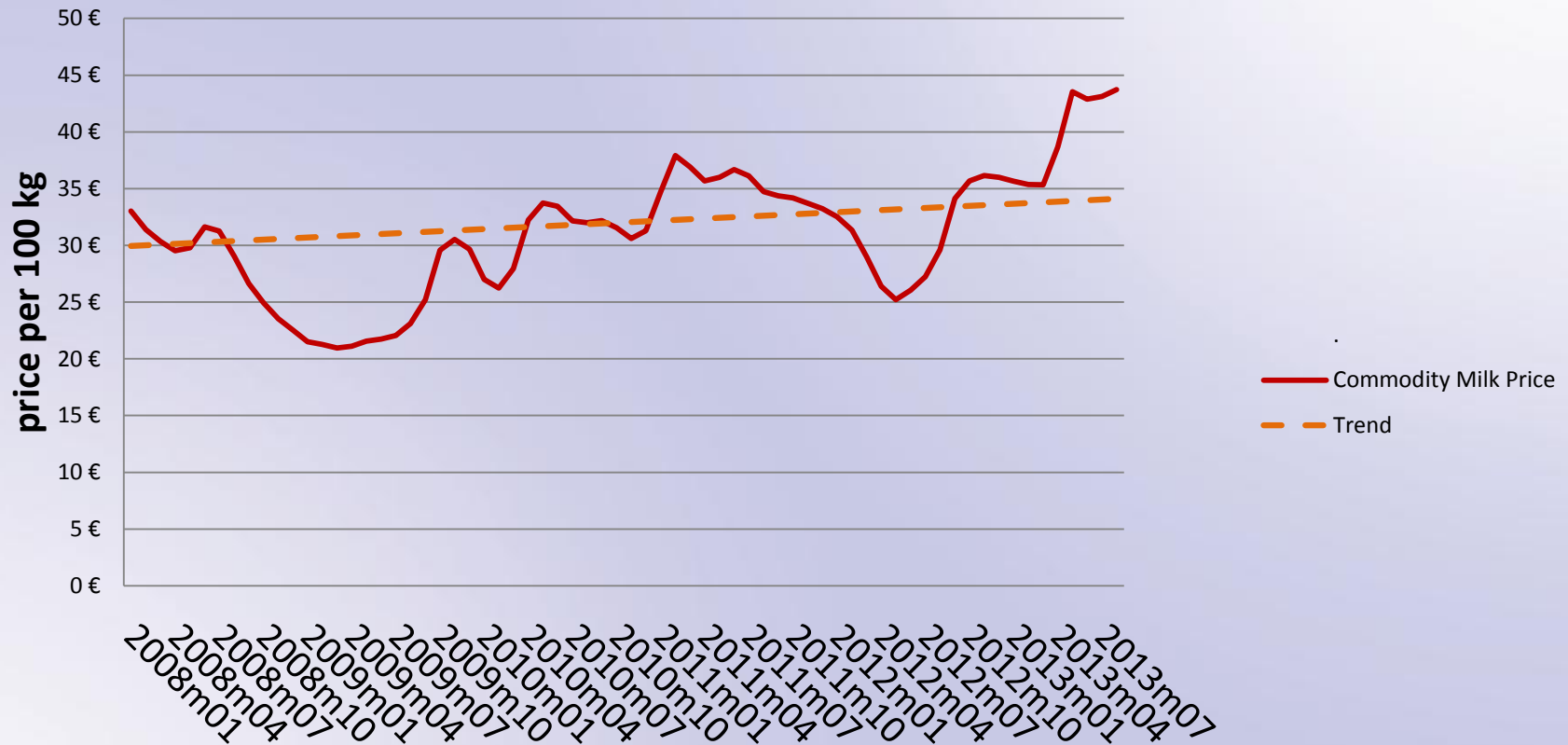
 - This gives a price of 33.42 €/100 kg
or the price you wanted in February 2011



How Futures Work



Futures prices converge to Trend line





How do Futures work

Hedging a commodity milk price



- Conclusion

If a dairy pays a milk price based on commodity prices you can hedge this milk price by selling the underlying commodities on the futures market.

The reality unfortunately is different



Tools to Counter Price Volatility



- Why bother?
- What is the purpose?
- Dairy Futures & Options: Overview
- **Irish case study**



Irish Case Study



- Actual Milk Price versus Commodity Milk Price
 - Butter & SMP
 - Cheddar
 - Mix



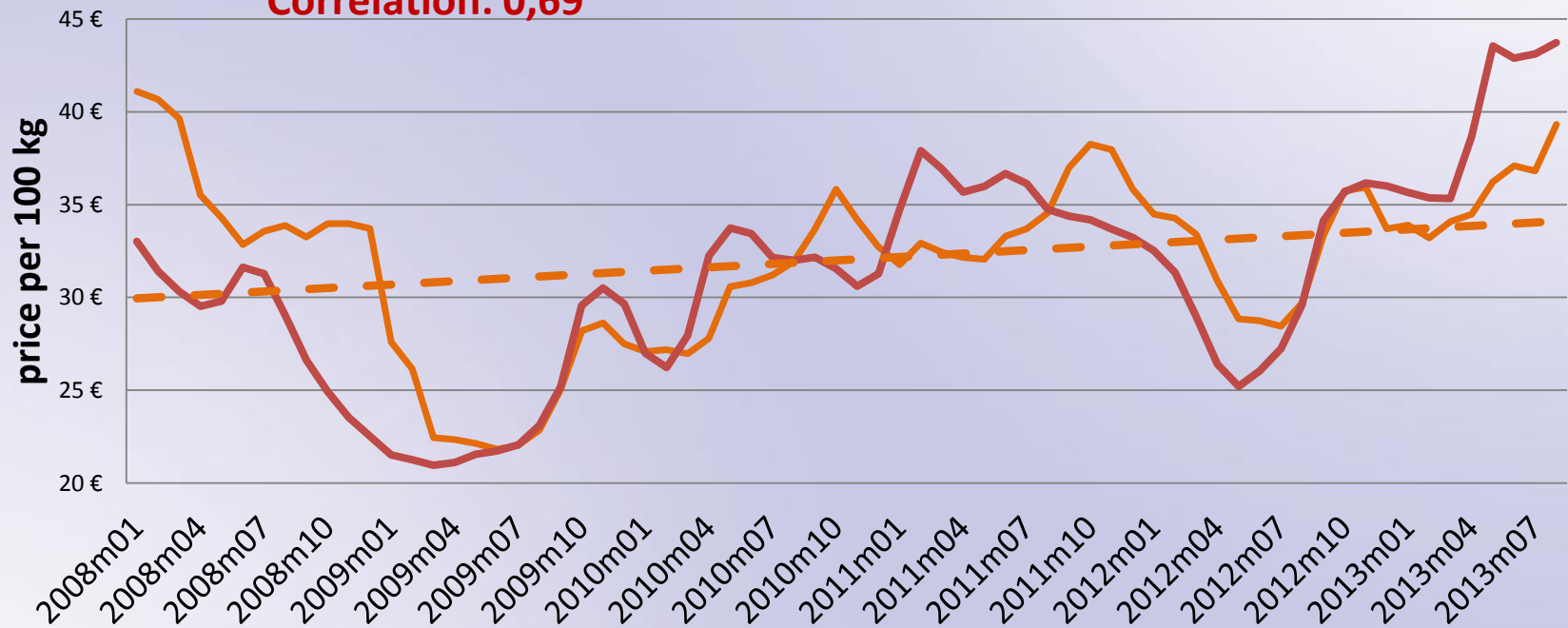
Irish Case Study Butter & SMP



Irish Prices of Raw Milk vs Commodity Based Price

synchronized

Correlation: 0,69





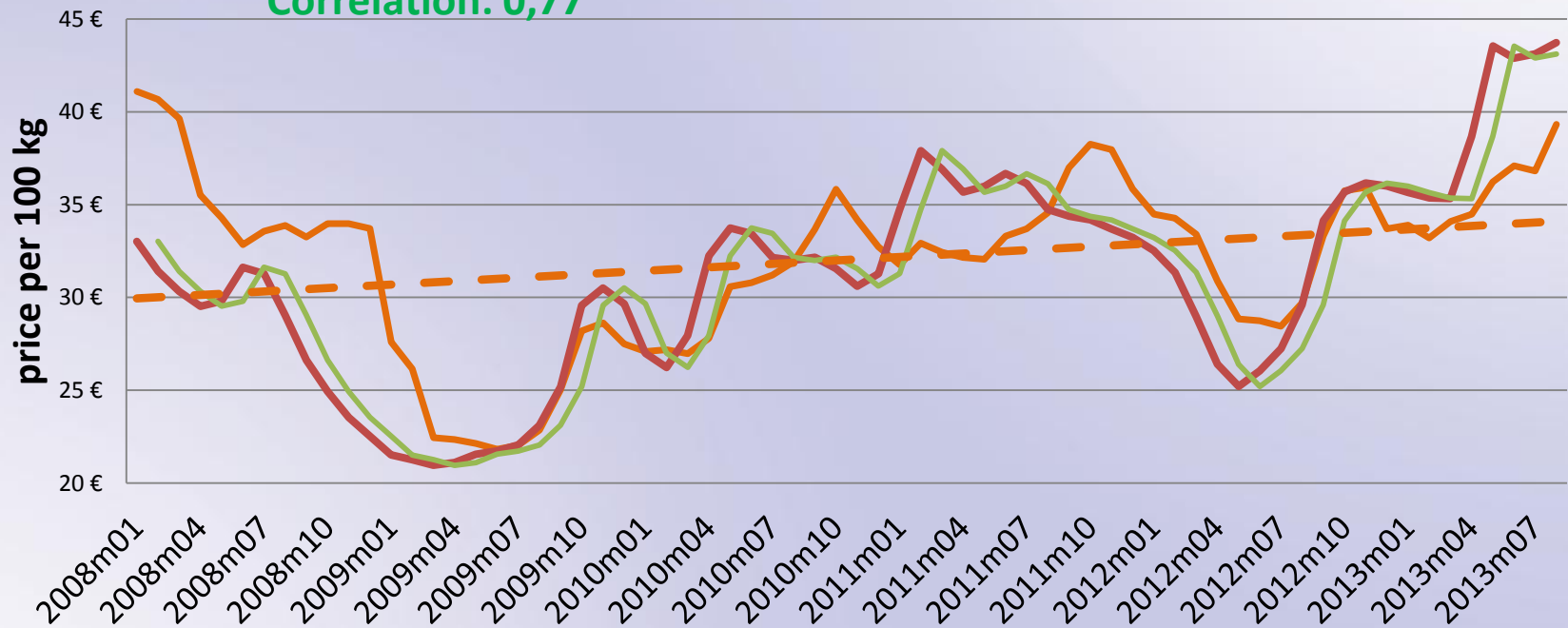
Irish Case Study Butter & SMP



Irish Prices of Raw Milk vs Commodity Based Price

+ 1 month

Correlation: 0,77





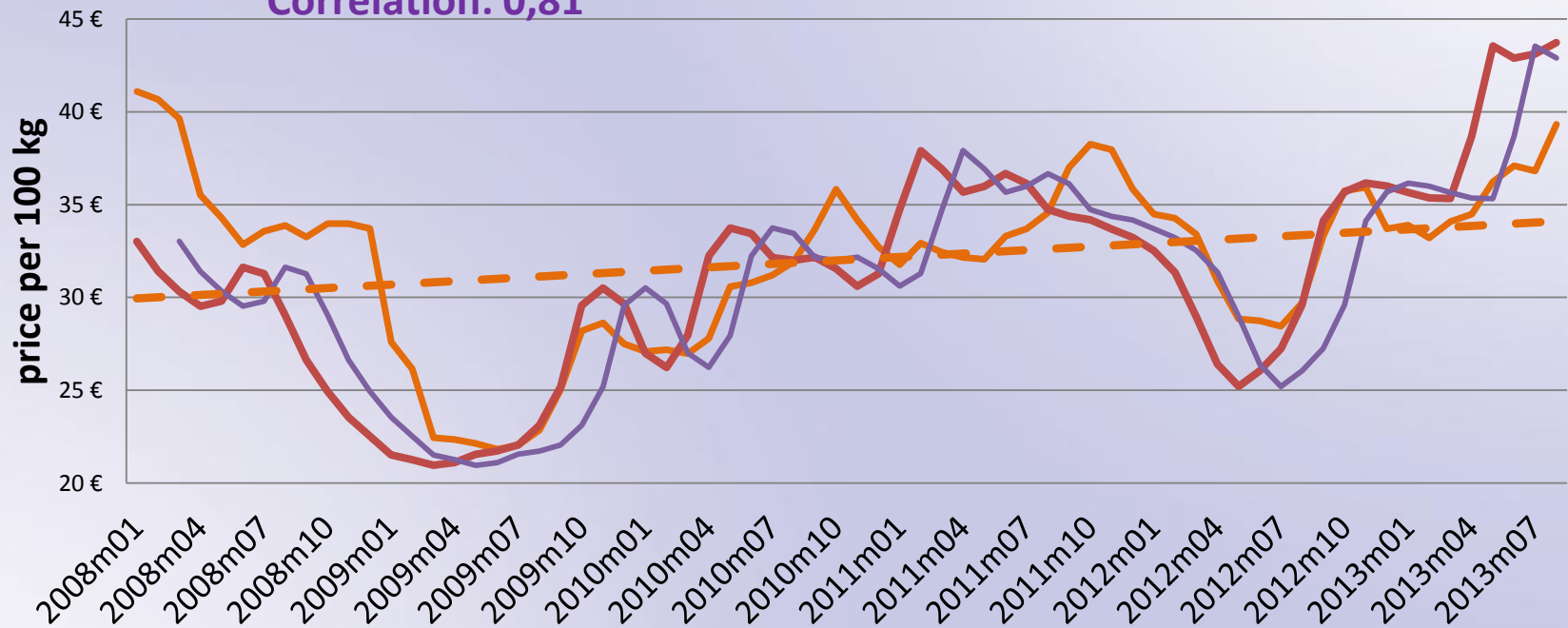
Irish Case Study Butter & SMP



Irish Prices of Raw Milk vs Commodity Based Price

+ 2 month

Correlation: 0,81





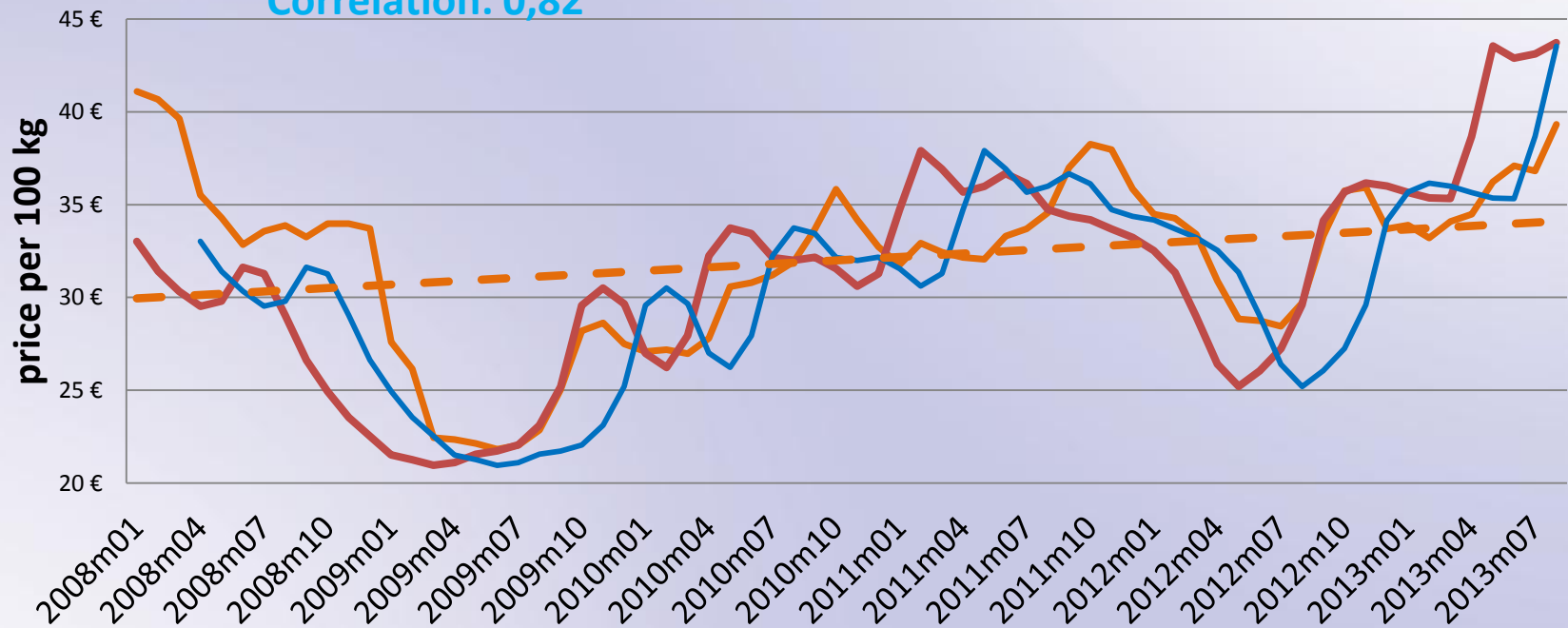
Irish Case Study Butter & SMP



Irish Prices of Raw Milk vs Commodity Based Price

+ 3 month

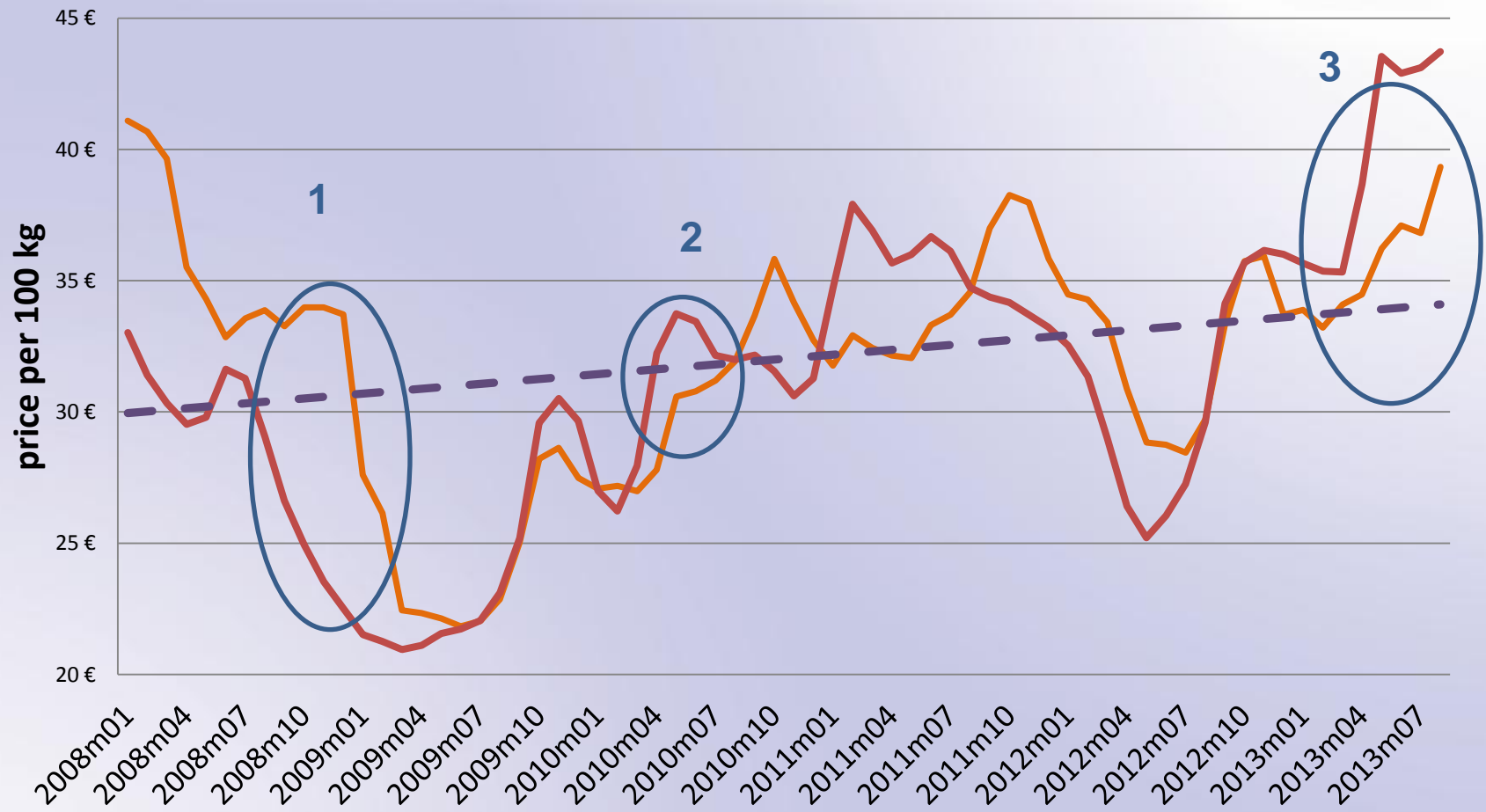
Correlation: 0,82





Butter + SMP

Hedging the Trend line





Irish Case Study Butter & SMP



- Situation 1: October 2008

Hedged Milk Price (H): 27.11 €/100kg

Settlement Milk Price (S): 24.95 €/100 kg

Paid Milk Price (P): 33.98 €/100 kg

Realized Milk Price:

$$R = (H - S) + P = 36.14 \text{ €/100 kg}$$



Irish Case Study Butter & SMP



- Situation 2: May 2010

Hedged Milk Price (H): **31.68 €/100kg**

Settlement Milk Price (S): 33.74€/100 kg

Paid Milk Price (P): 30.58 €/100 kg

Realized Milk Price: €/100 kg

$R = (H - S) + P = \mathbf{28.52 \text{ €/100 kg}}$



Irish Case Study Butter & SMP



- Situation 3: June 2013

Hedged Milk Price (H): **37.65 €/100kg**

Settlement Milk Price (S): 42.89 €/100 kg

Paid Milk Price (P): 37.10 €/100 kg

Realized Milk Price: €/100 kg

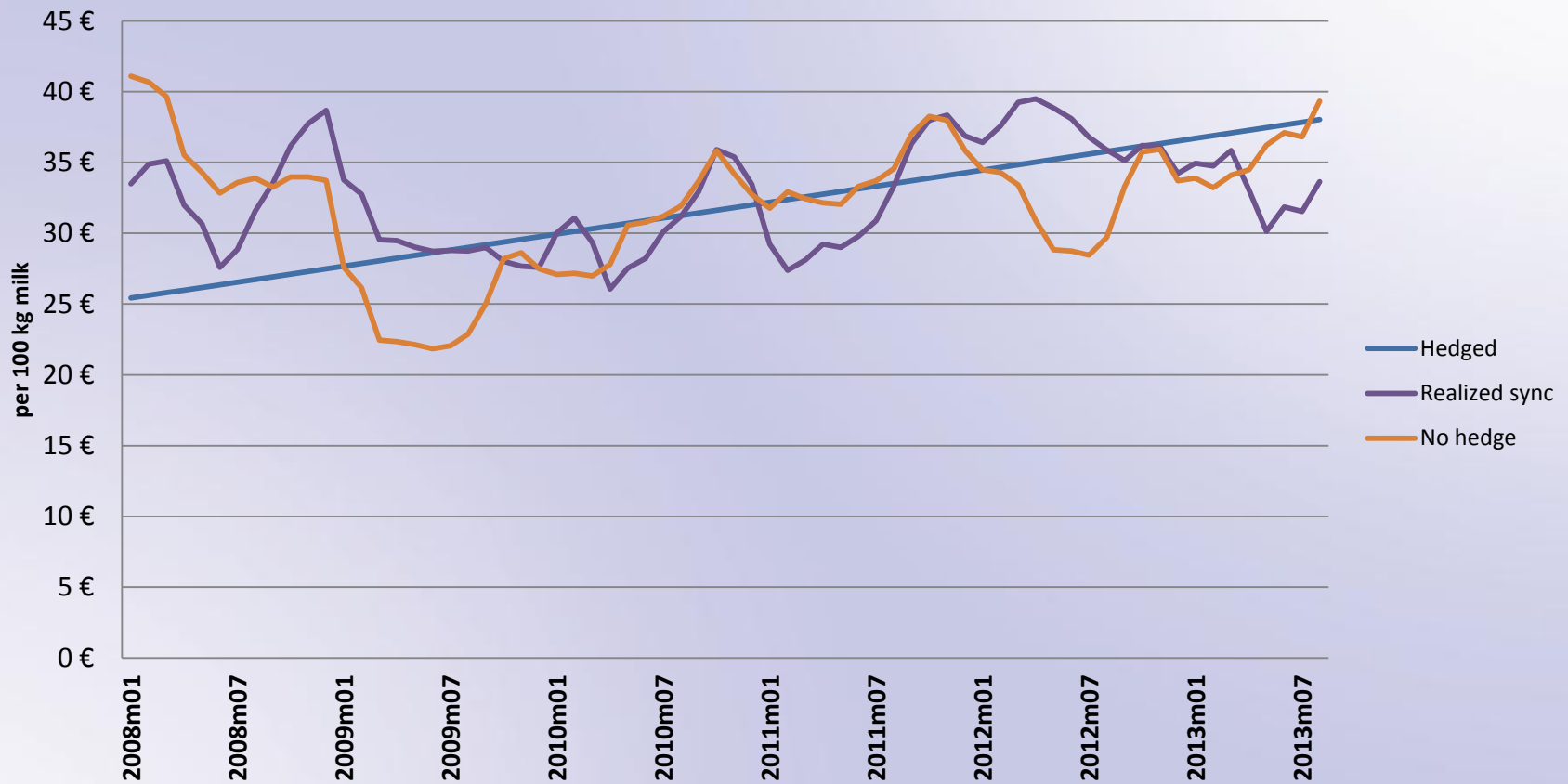
$R = (H - S) + P = 31.86 \text{ €/100 kg}$



Irish Case Study Butter & SMP



Milk Price Realized through Hedging

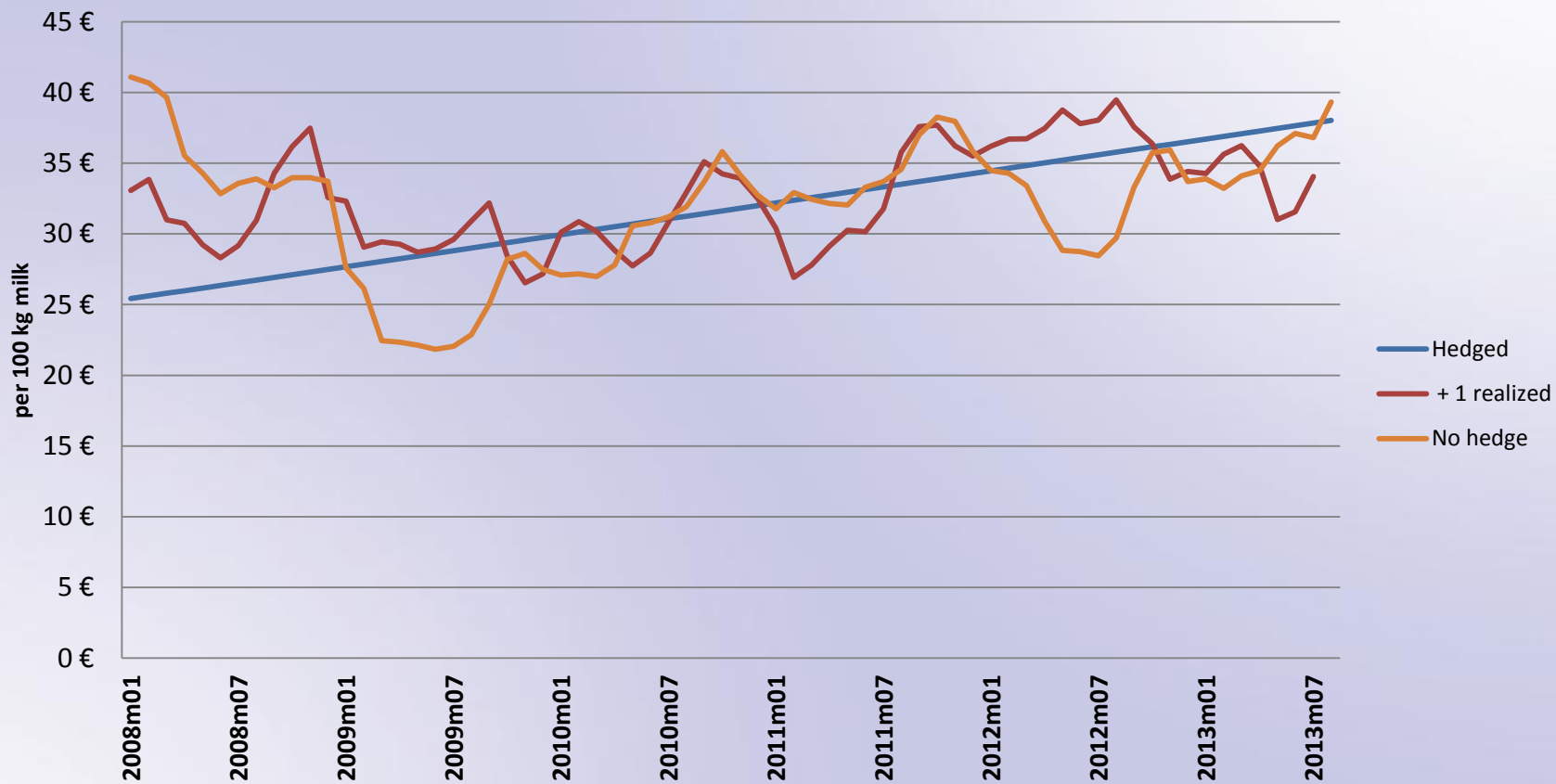




Irish Case Study Butter & SMPork



Milk Price Realized through Hedging

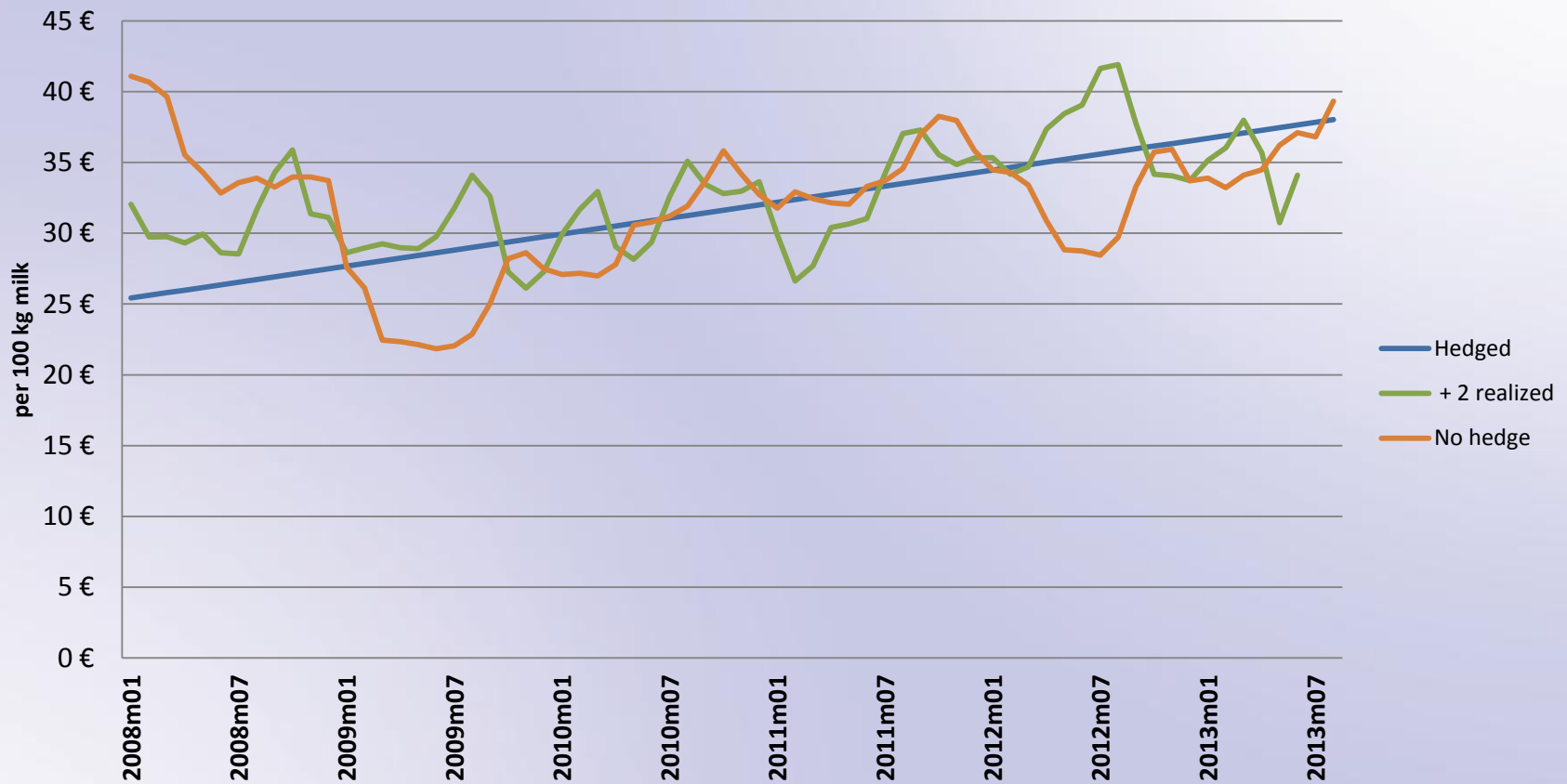




Irish Case Study Butter & SMP



Milk Price Realized through Hedging

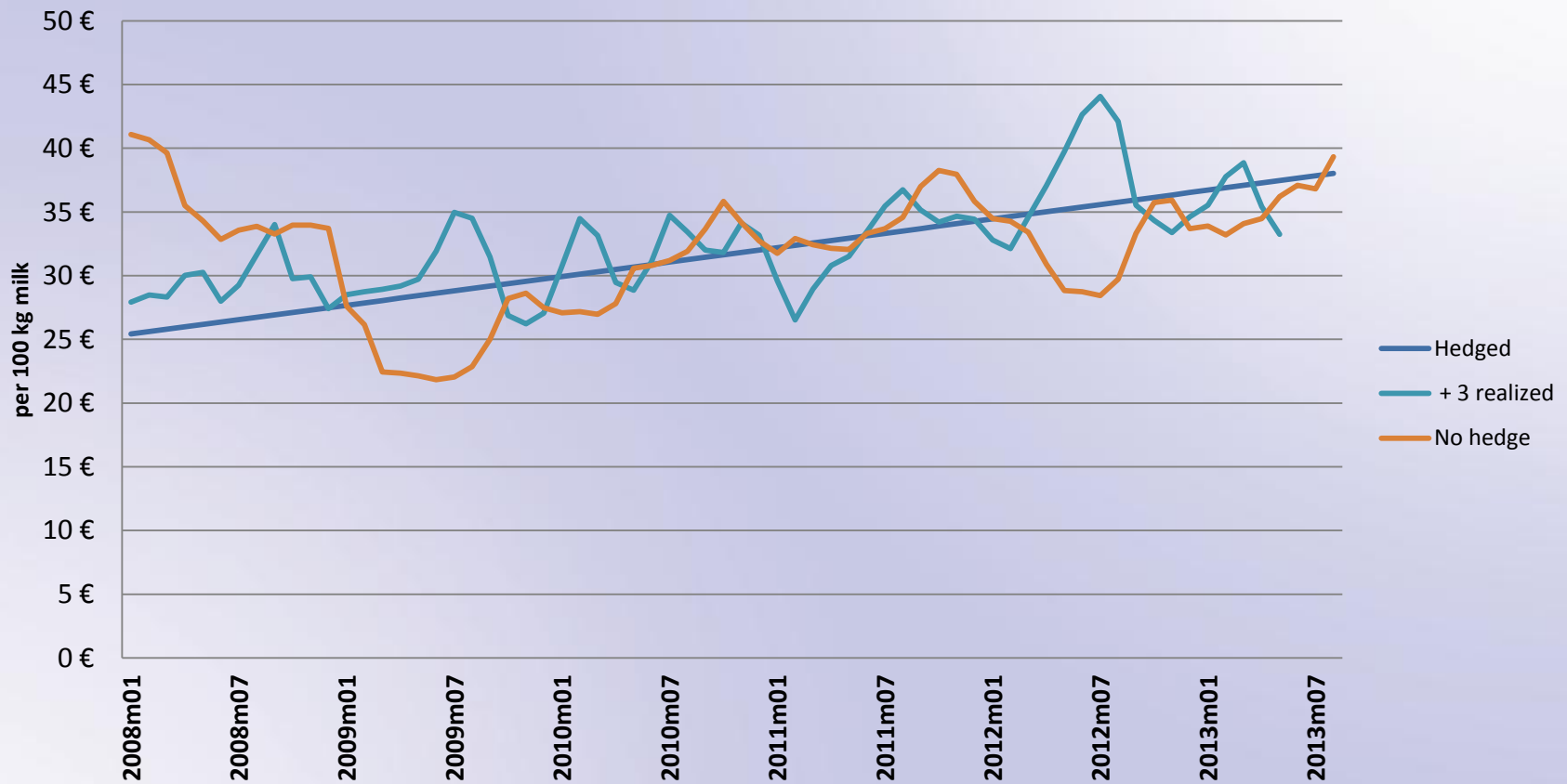




Irish Case Study Butter & SMP



Milk Price Realized through Hedging





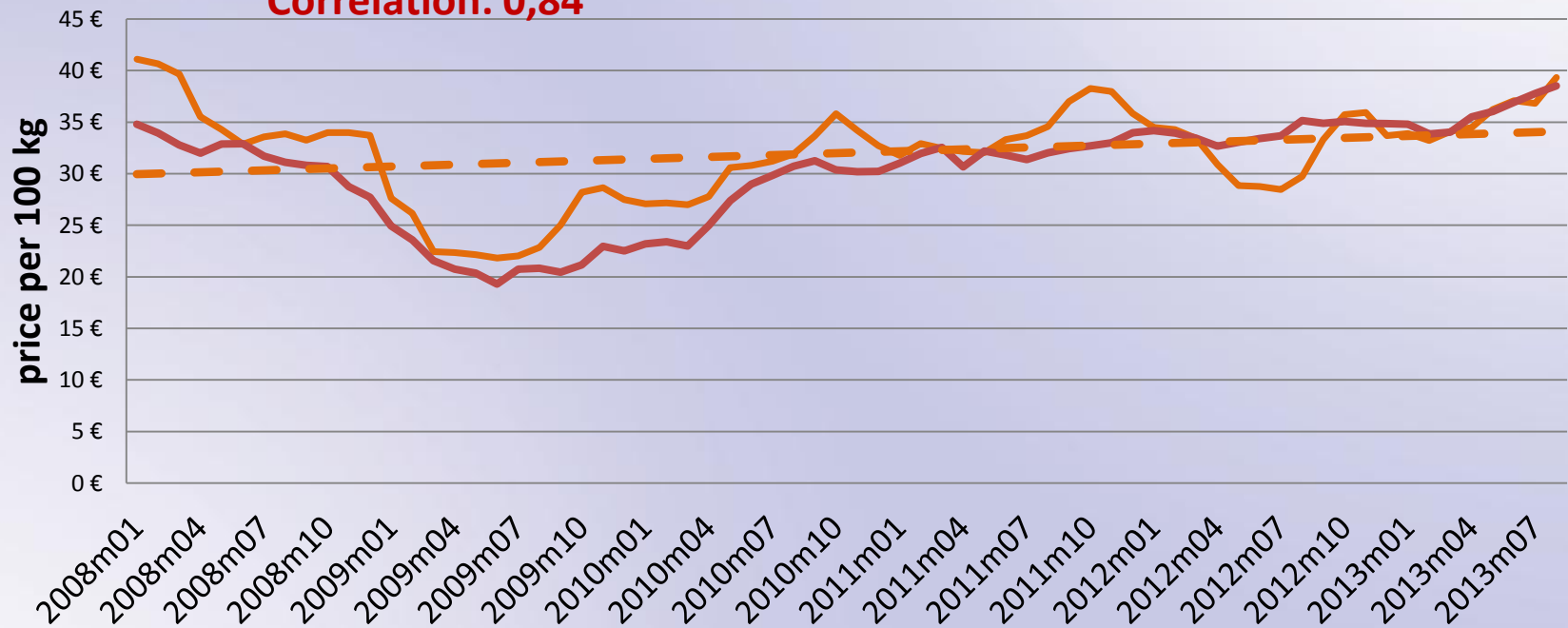
Irish Case Study Cheddar



Irish Prices of Raw Milk vs Cheddar Based Price

in sync

Correlation: 0,84





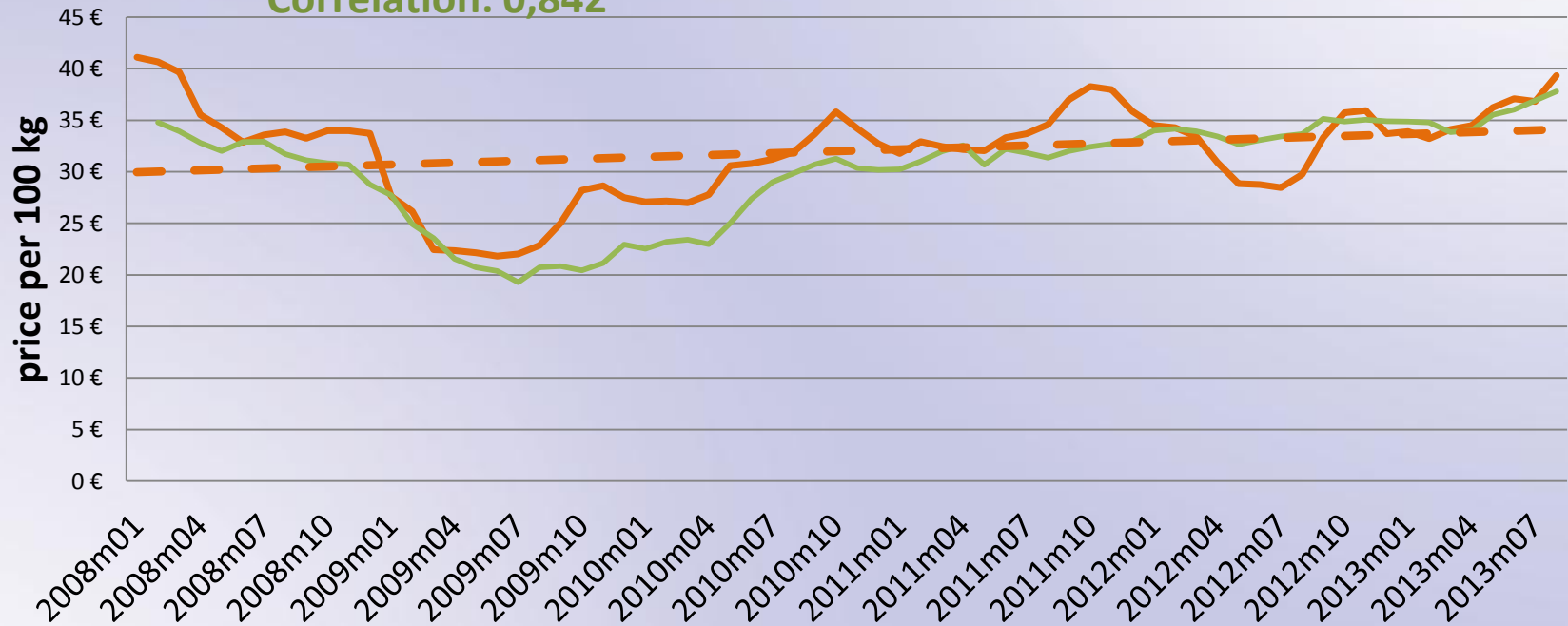
Irish Case Study Cheddar



Irish Prices of Raw Milk vs Cheddar Based Price

+ 1 month

Correlation: 0,842



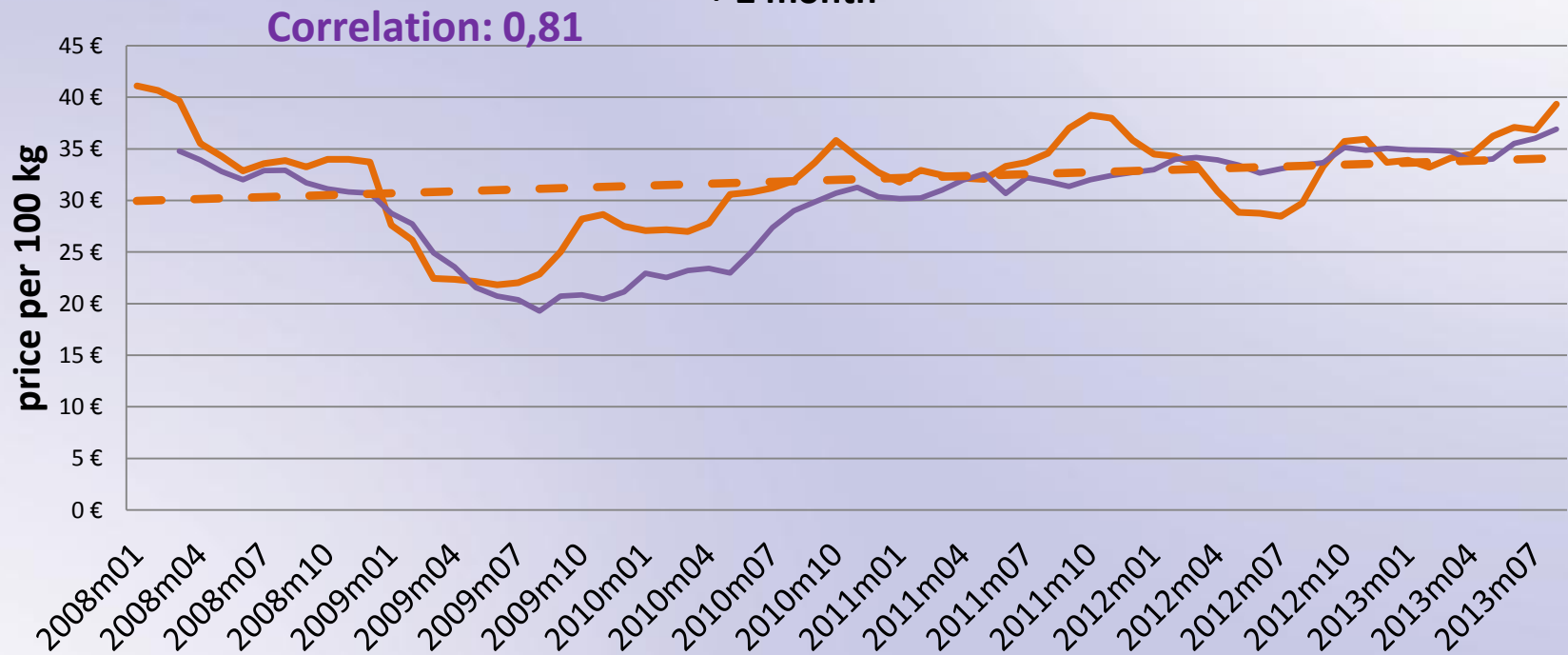


Irish Case Study Cheddar



Irish Prices of Raw Milk vs Cheddar Based Price

+ 2 month



Source: EU Commission

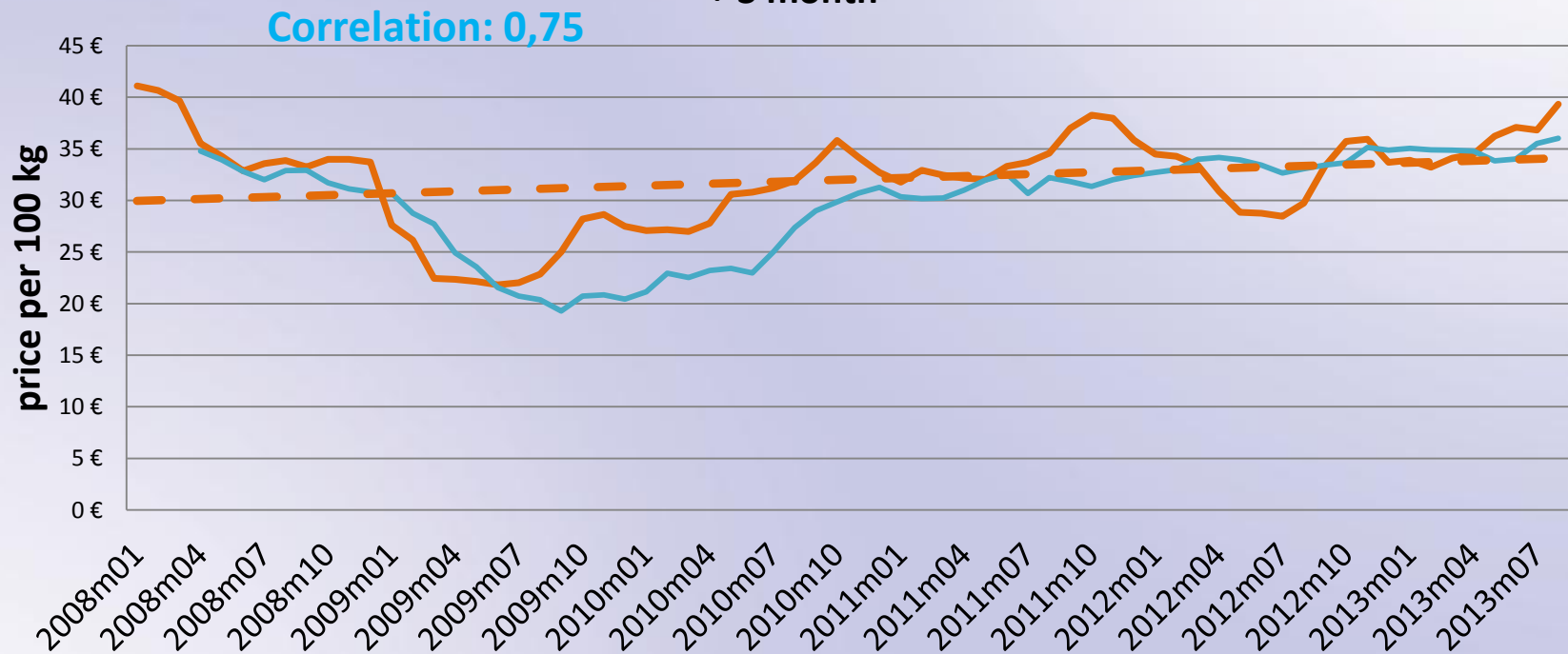


Irish Case Study Cheddar



Irish Prices of Raw Milk vs Cheddar Based Price

+ 3 month

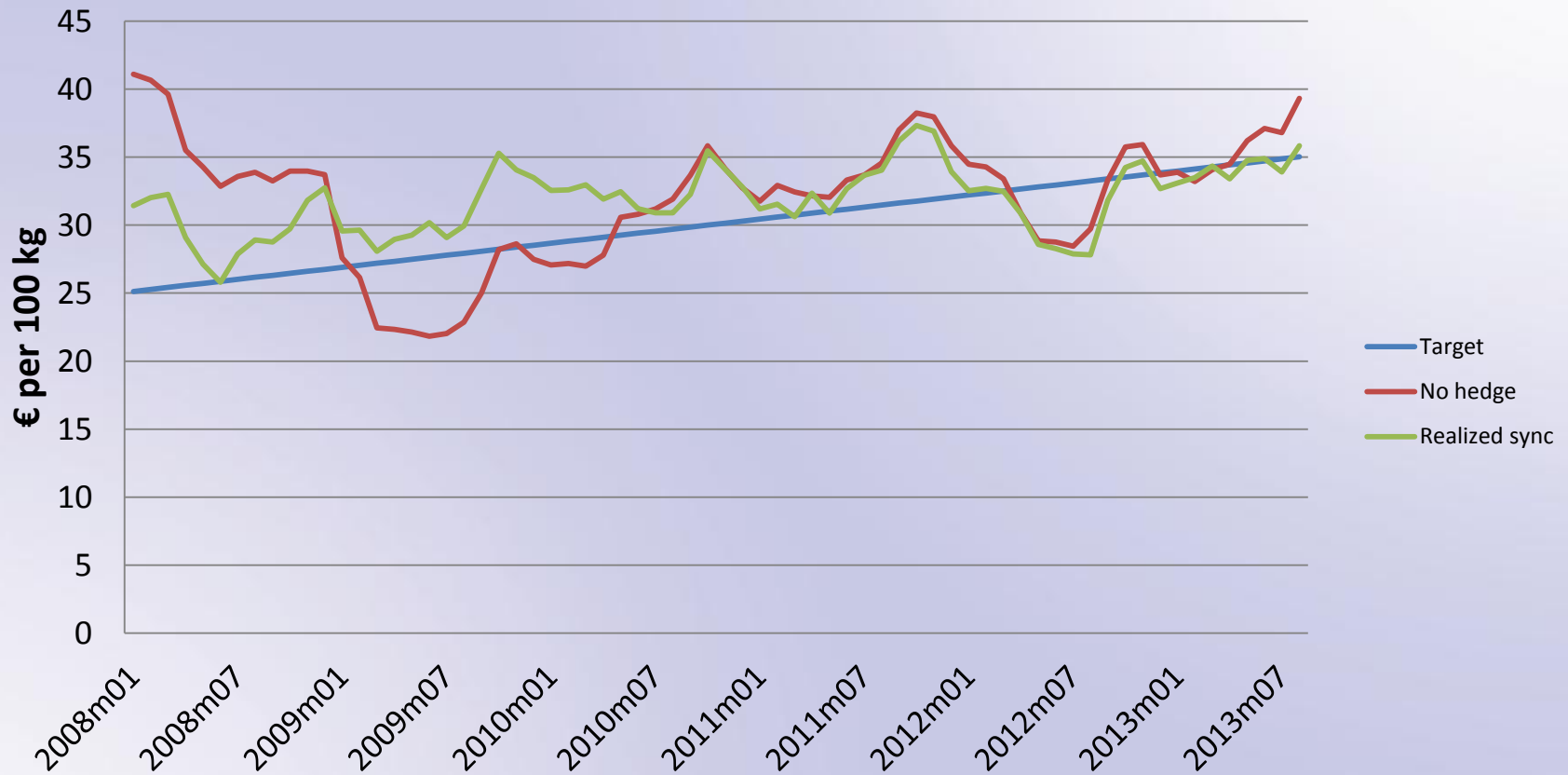




Irish Case Study Cheddar



Milk Price Realized Through Hedging Cheddar

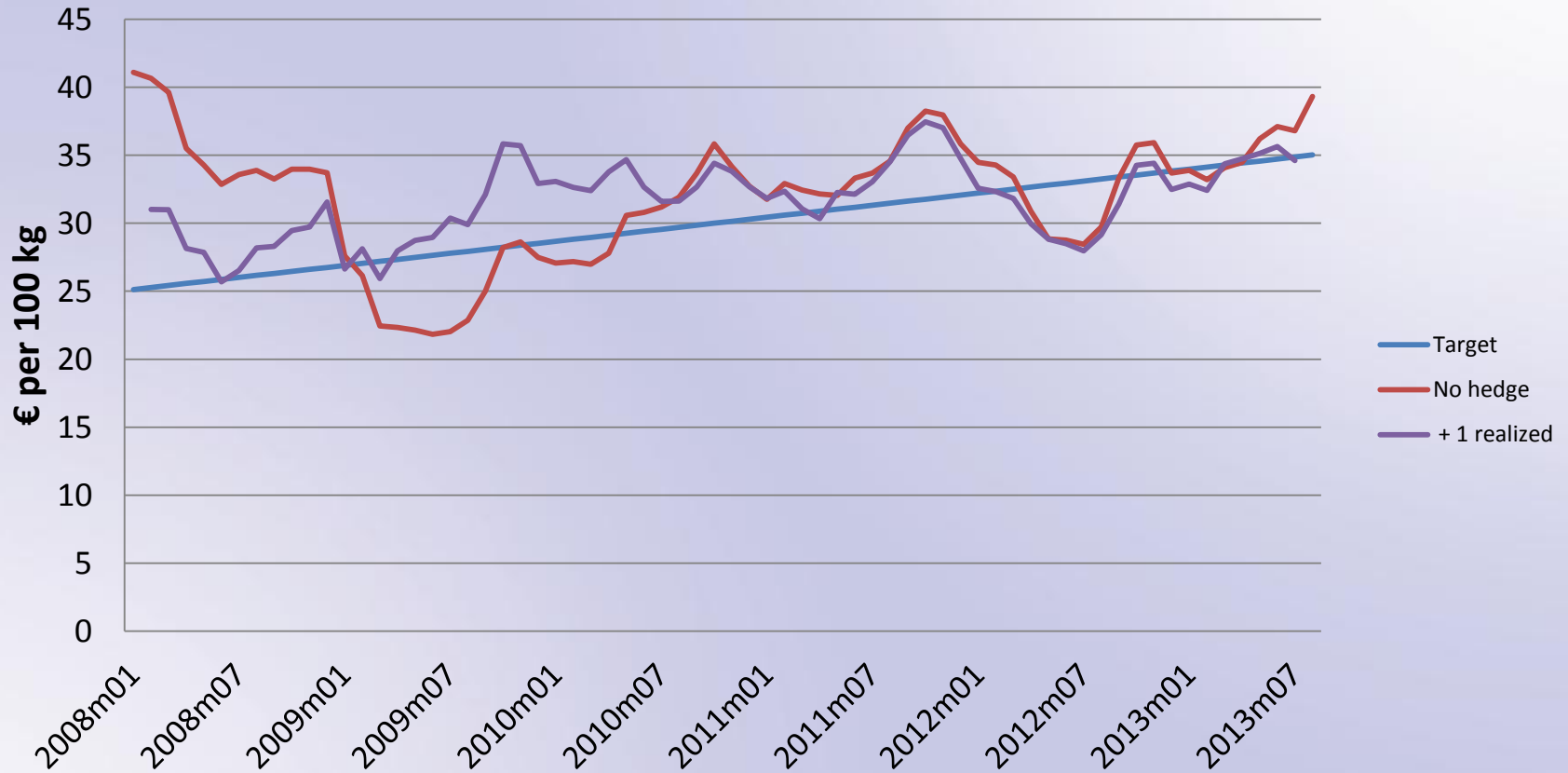




Irish Case Study Cheddar



Milk Price Realized Through Hedging Cheddar

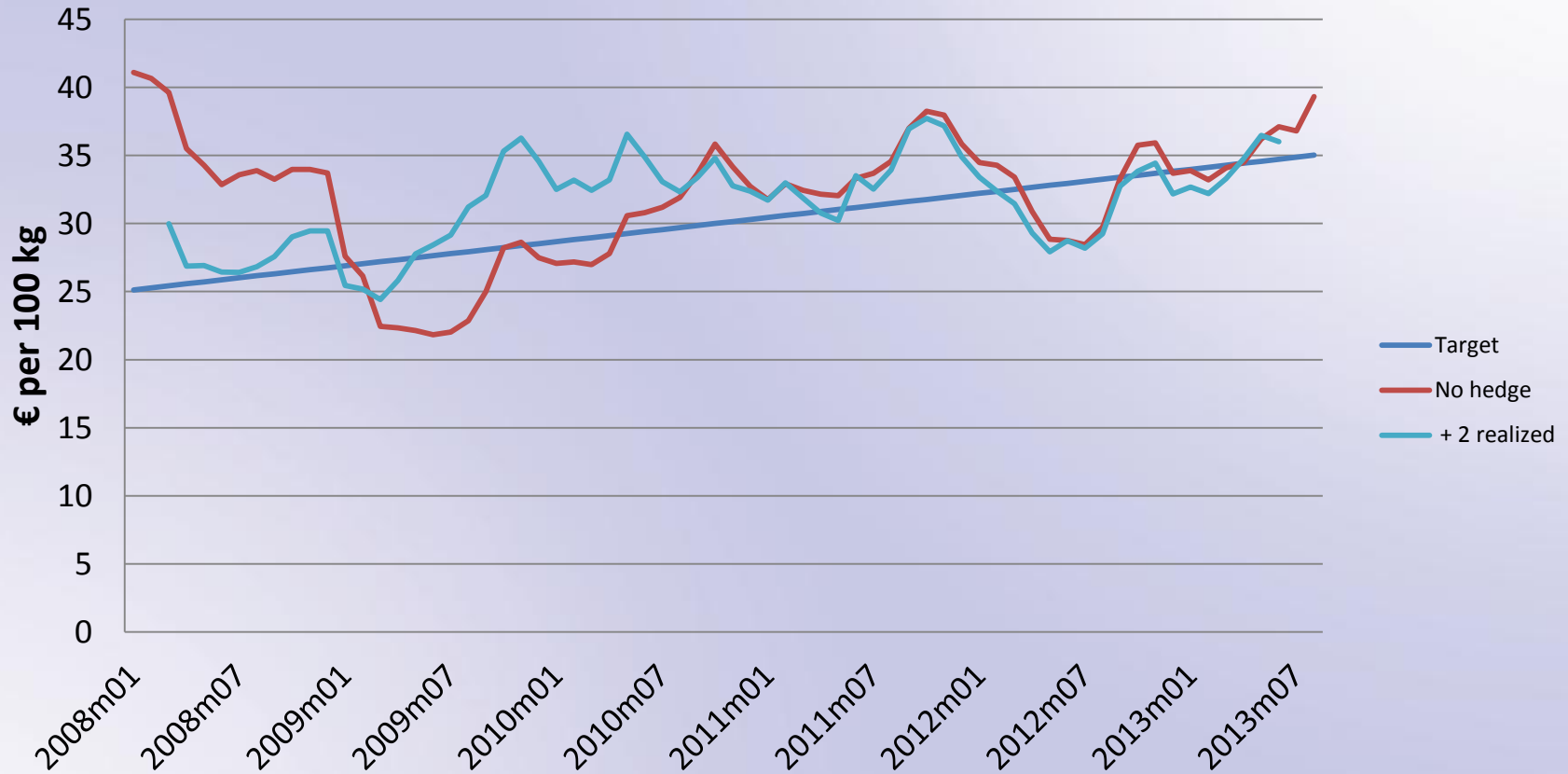




Irish Case Study Cheddar



Milk Price Realized Through Hedging Cheddar

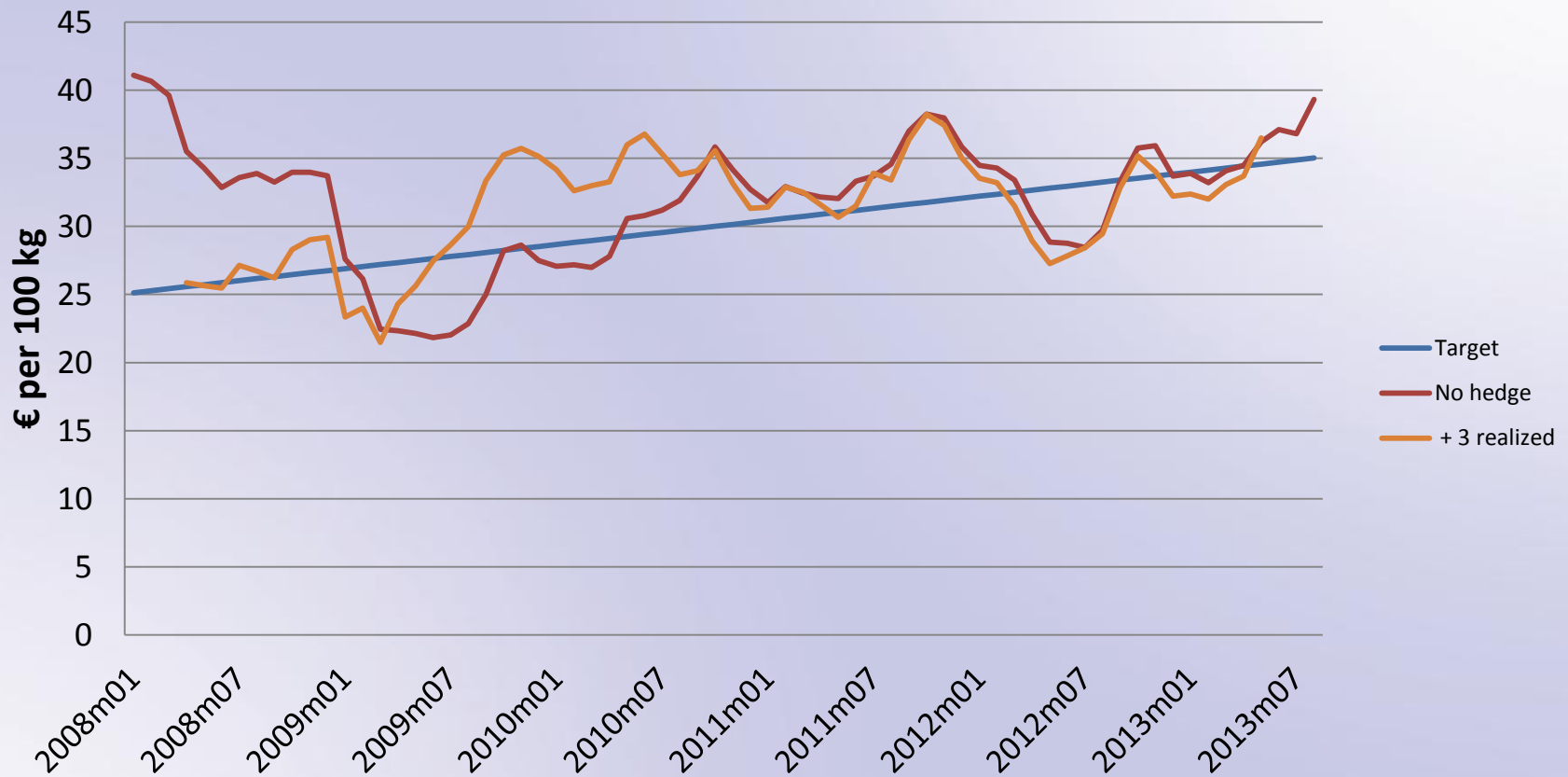




Irish Case Study Cheddar



Milk Price Realized Through Hedging Cheddar





Irish Case Study : Mix Cheddar + Butter & SMP



Irish Prices of Raw Milk vs 70/30 Mix Commodity Based Price

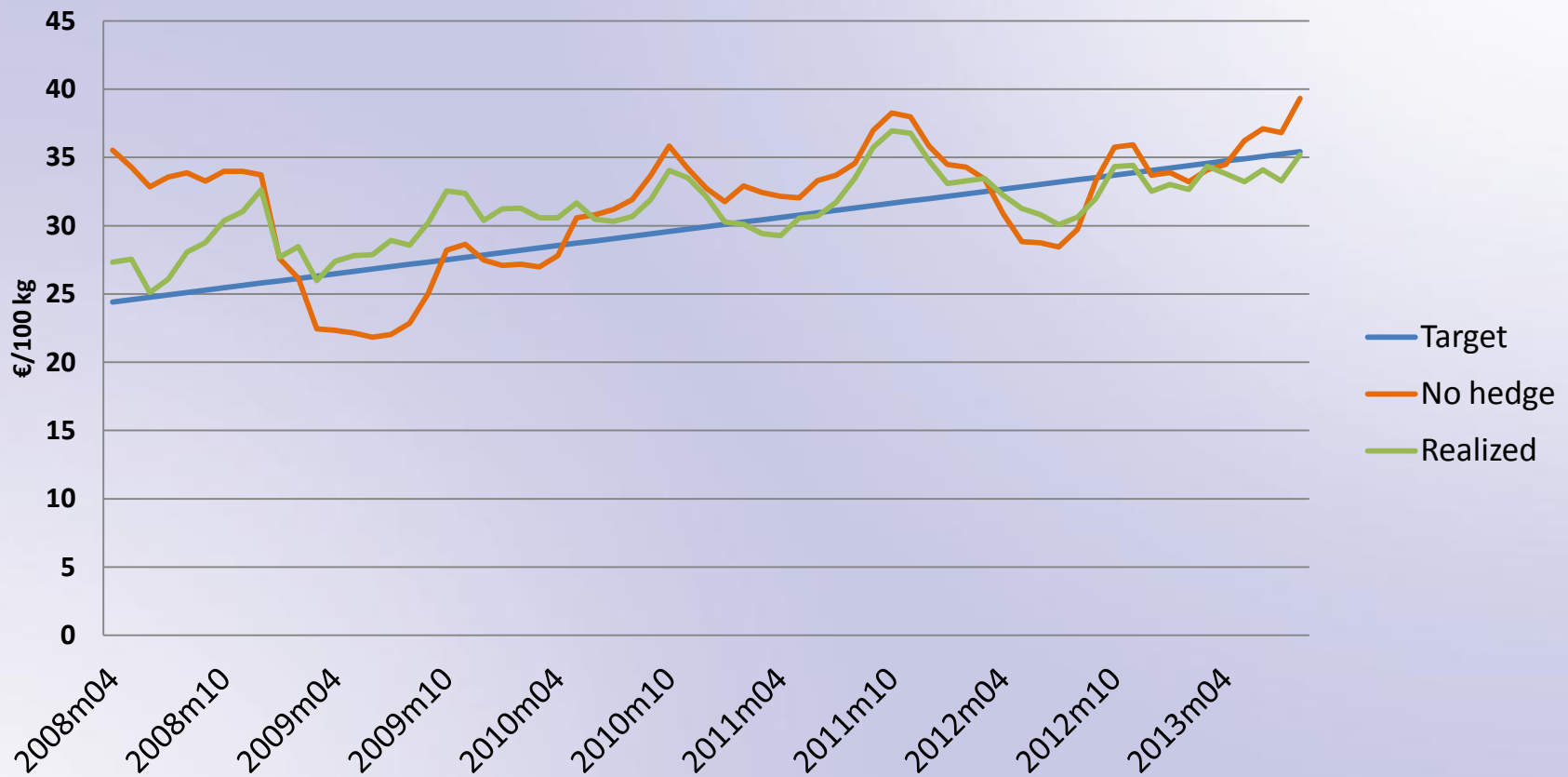




Irish Case Study: Mix Cheddar + Butter & SMP



Milk Price Realized Through Hedging Mix

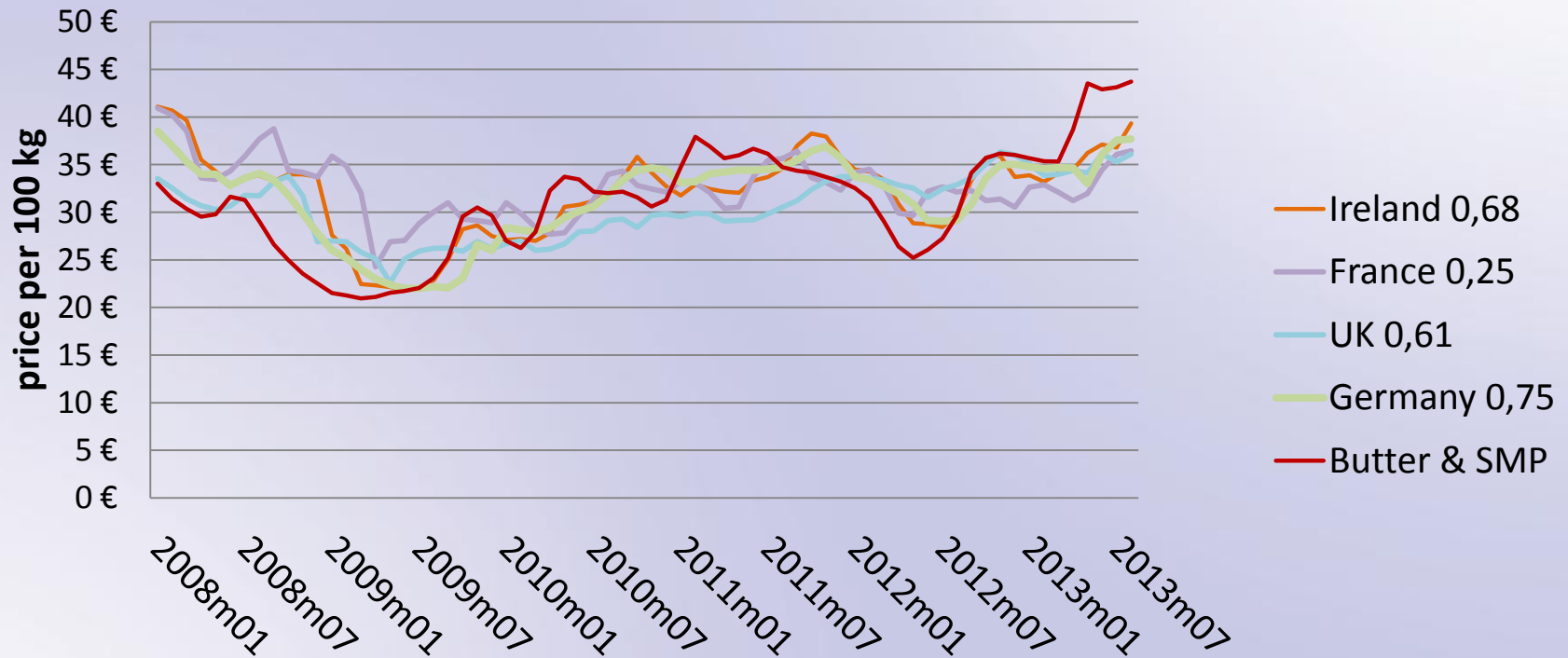




Comparison with other countries



Irish Prices of Raw Milk vs France - UK - Germany

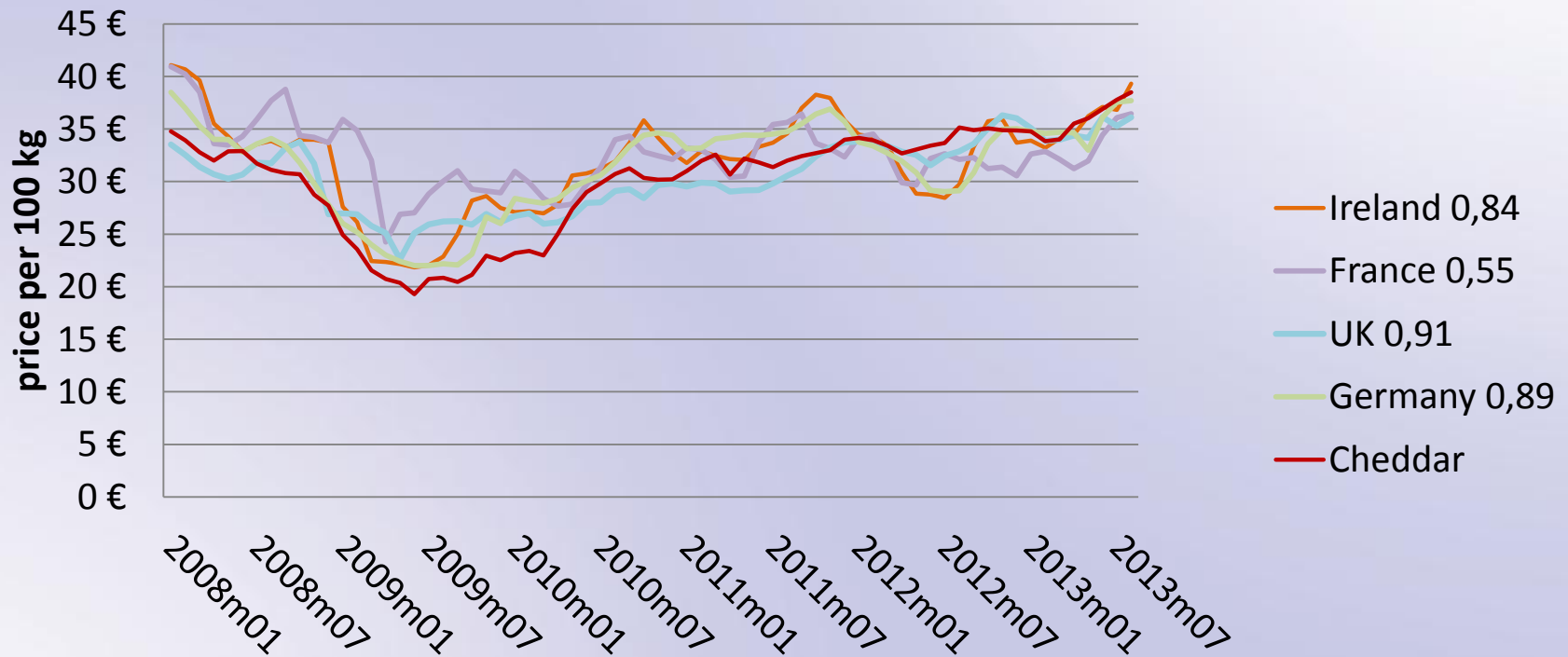




Comparison with other countries



Irish Prices of Raw Milk vs France - UK - Germany

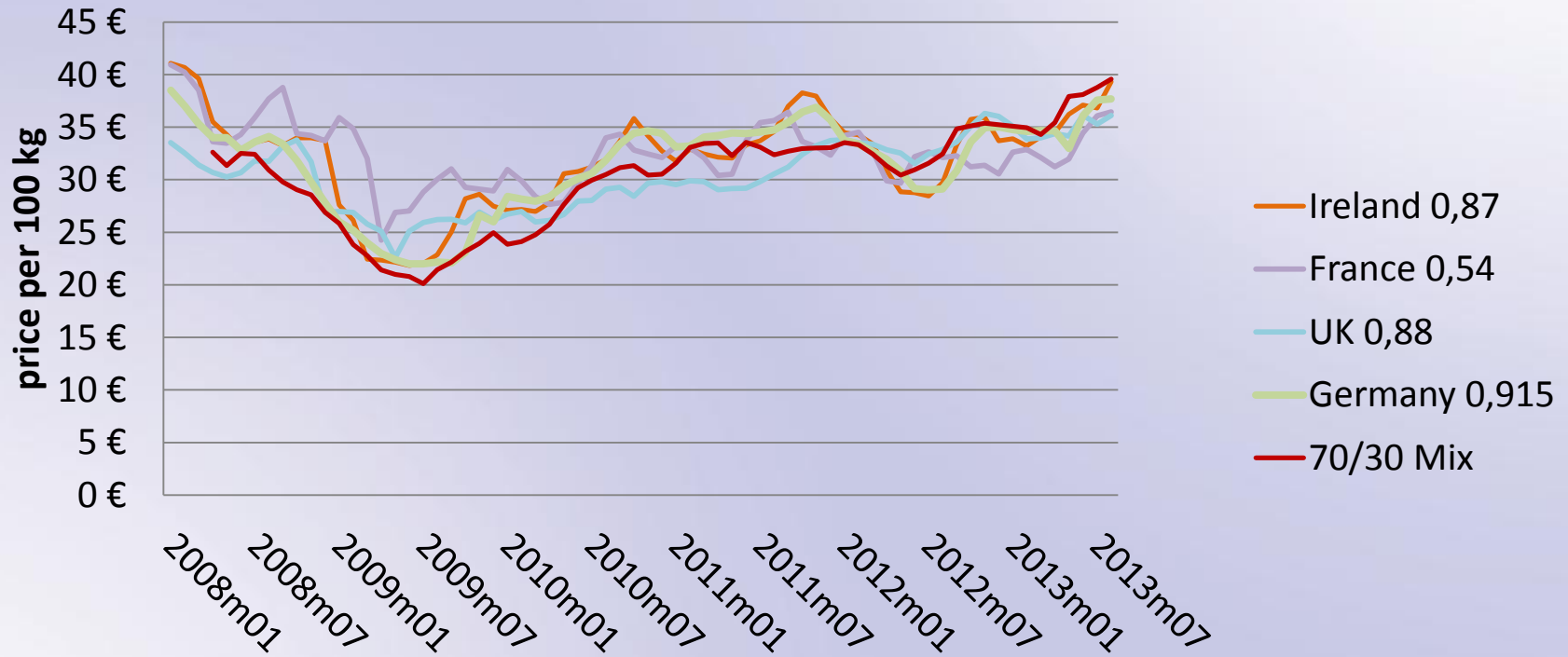




Comparison with other countries



Irish Prices of Raw Milk vs France - UK - Germany





Irish Case Study Conclusions



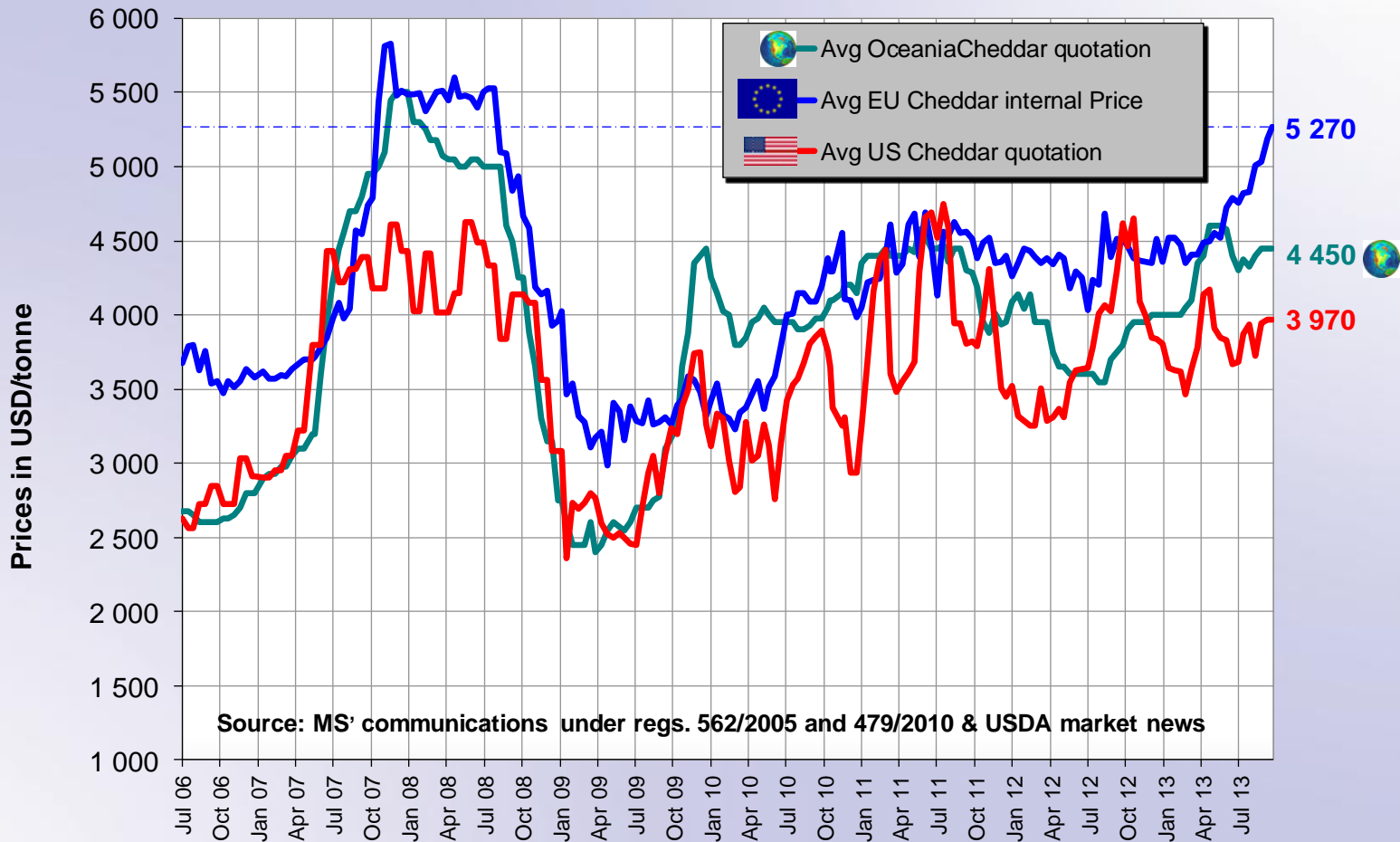
- Cheddar, butter and SMP have a significant impact on the price in Ireland.
- Butter and SMP are traded on many exchanges including EUREX
- The only cheddar future is in the US
 - suitable for EU markets ?



Irish Case Study Conclusions



EU/US/Oceania Quotations of Cheddar





Irish Case Study Conclusions



- To get acceptable hedge results the milk price paid by the dairy must have a very high correlation with milk price based on the right hedgeable commodity mix.
- When developing a milk price model and hedging strategy start from a situation whereby the dairy only sells on the spot market
- Fine tuning will be needed in function of forward sales and shifts in product mix



Irish Case Study Conclusions



- You need liquidity to realize hedging strategy
 - Large participation is needed
 - Especially from external parties
 - Excessive speculation is a myth
 - Supply/demand fundamentals remain key
- Contract size and specifications must be suitable
- Settlement mechanism must be trusted and relevant => convergence to physical market



Tools to counter Price Volatility



Thank you!

Bart Van Belleghem
Managing Director– Eucolait