

> ÉDITION
avril 2015
RAPPORT
AU PARLEMENT
2015



Observatoire de la formation des prix et des marges des produits alimentaires



*The French « observatory » on formation
of prices and margins of food products*

Methods and some results in the dairy products chain

Presentation for



July 22, 2015



philippe.boyer@franceagrimer.fr

observatoire-prixmarge@franceagrimer.fr

<https://observatoire-prixmarges.franceagrimer.fr>

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 - Costs in the stages of food chains
 - Prices transmission

Objectives, context, organization

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Objectives, context, organization :
Objectives

- ❑ To measure and to explain the differences of values at every stage of the agri-food chains
- ❑ To produce informations shared by all stakeholders about often sensitive subject, in order to improve better relations and more transparency in food chains

Objectives, context, organization :

Context

- ❑ Agricultural crisis, volatility of prices : costs transmission, divergent variations of the upstream and downstream prices

- ❑ Retail trade concentration

- ❑ Legislation
 - 2008: law (“*of modernization of economy*”, LME) for a more market-oriented economy
 - 2010: law (“*of modernization of agriculture and fishery*”, LMAP) for adaptation of agriculture facing uncertainty (contractualization)

Objectives, context, organization :

Organization

- ❑ Statistical and economic working project associating several organizations :
 - FranceAgriMer (National agency for support to agri-food sector)
 - Public services of statistics
 - Agro-economic research
 - Professional technical institutes
 - ...

- ❑ Not a new service, nor an authority of control of companies

- ❑ Orientation and validation of the studies: interprofessional steering committee, independent president (academic), technical management : FranceAgriMer

Method (principles)

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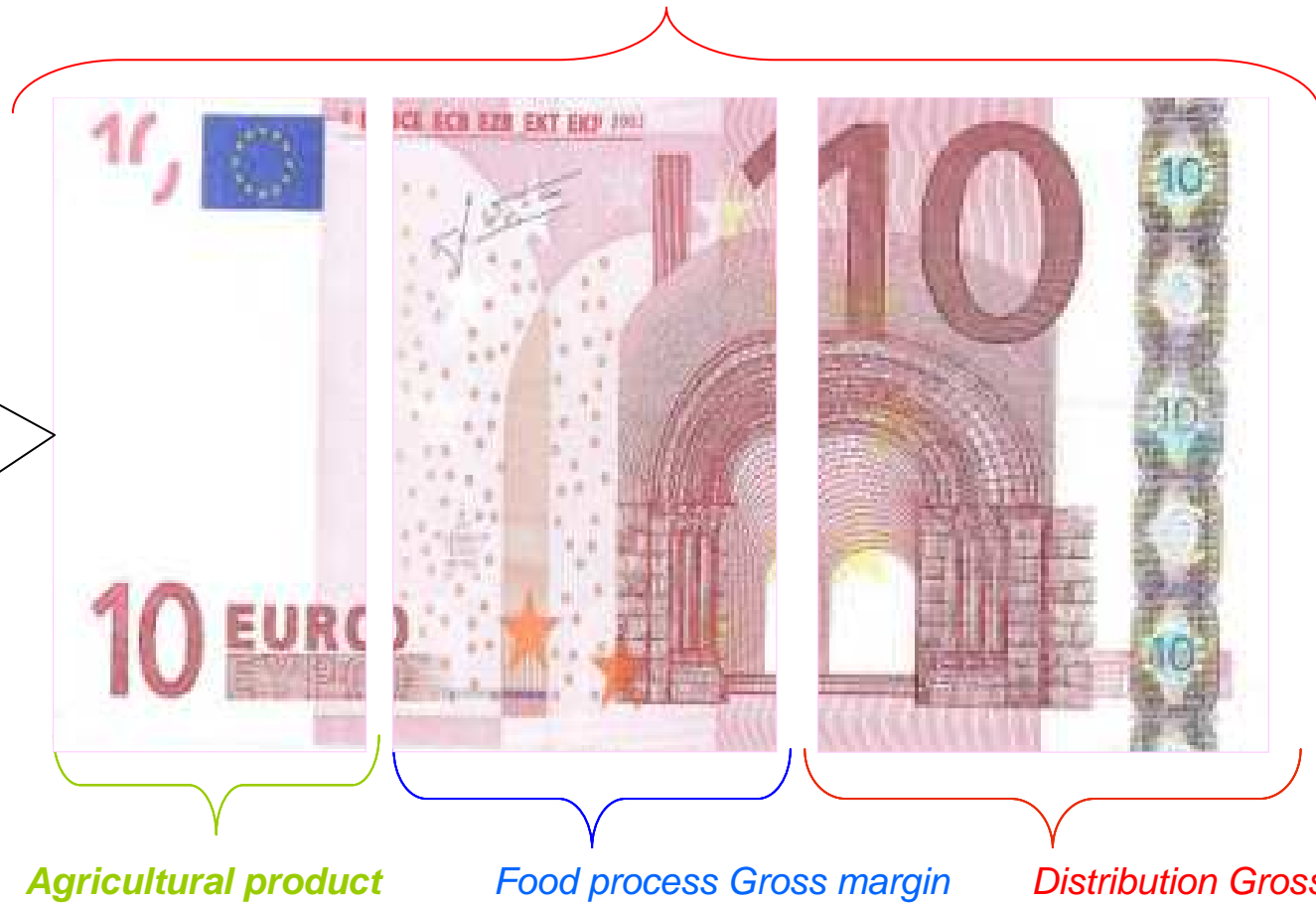
The French « observatory » on formation of prices and margins of food products

General method, sector by sector

1st stage

Retail trade price of a food product

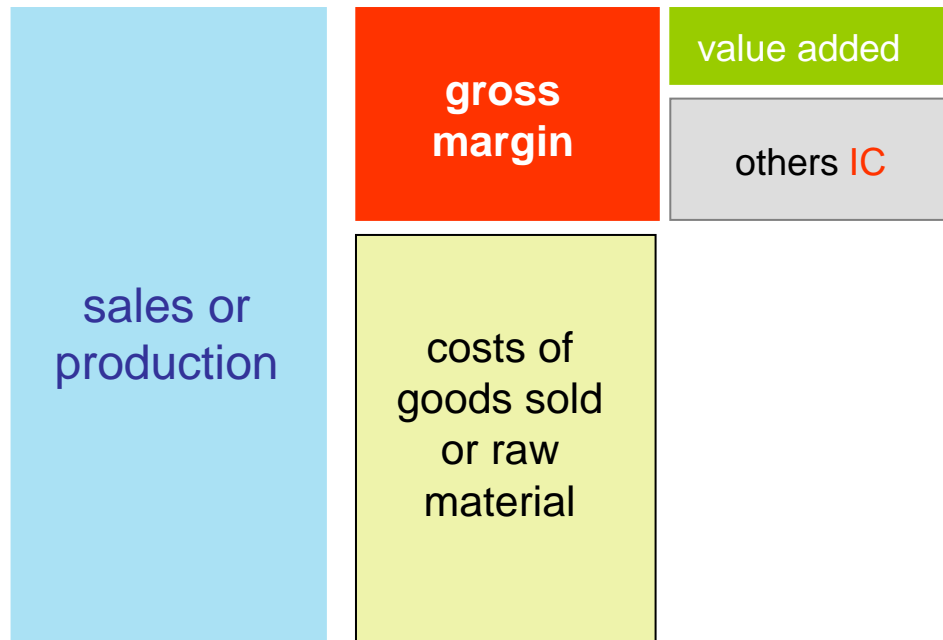
Prices data
(cotations,
public datas,
ad hoc
surveys) and
technical
coefficients



General method, sector by sector

Gross margin ?

From accounting data:

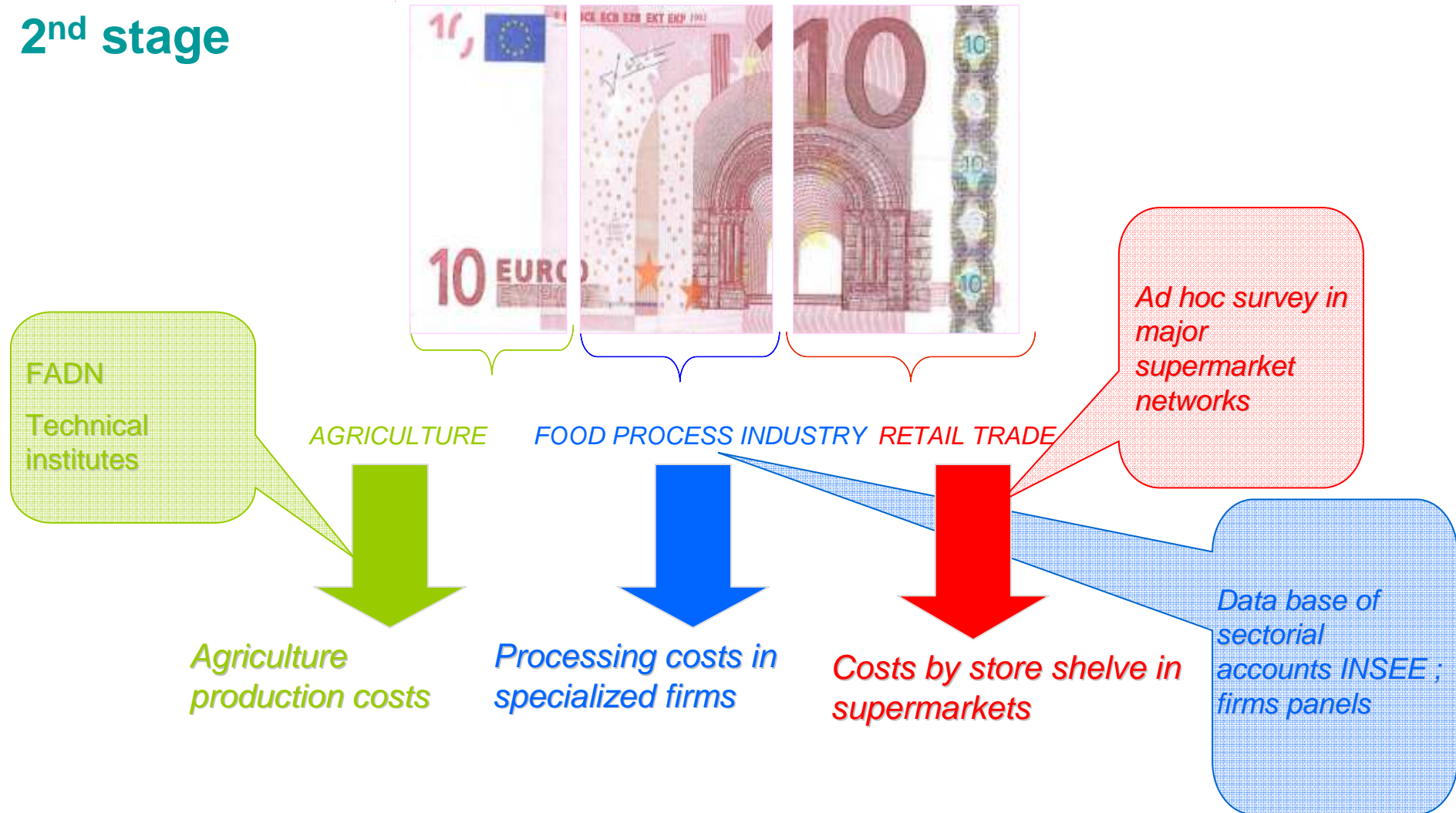


From unit prices and techn. ratios:



General method, sector by sector

2nd stage



General method, sector by sector

Sectors → products at retail level

Dairy → skimmed milk, yoghurt nature, emmental cheese, camembert cheese, standard goat cheese, sheep cheese feta type & roquefort, butter (national brands, distributors brands), in supermarkets.

(Project : basket of products, prices weighted by volume of consumption)

Others :

Bovine meat → carcass of medium cow reconstituted with pieces of fresh meat at retail level (supermarkets)

Pork meat → products of pork loin (roast and chop), cooked ham (in supermarkets)

Poultry → whole chickens (labels, standards), cuts of chicken (in supermarkets)

Bakery → french « baguette », average of all channels of distribution (supermarkets, traditional bakery...)

Pastas → standard pastas in pack of 500 gr, average of all channels (but mainly supermarkets)

Fruits & vegetables → about 20 products, a seasonal basket of fruits, a seasonal basket of vegetables (in supermarkets)

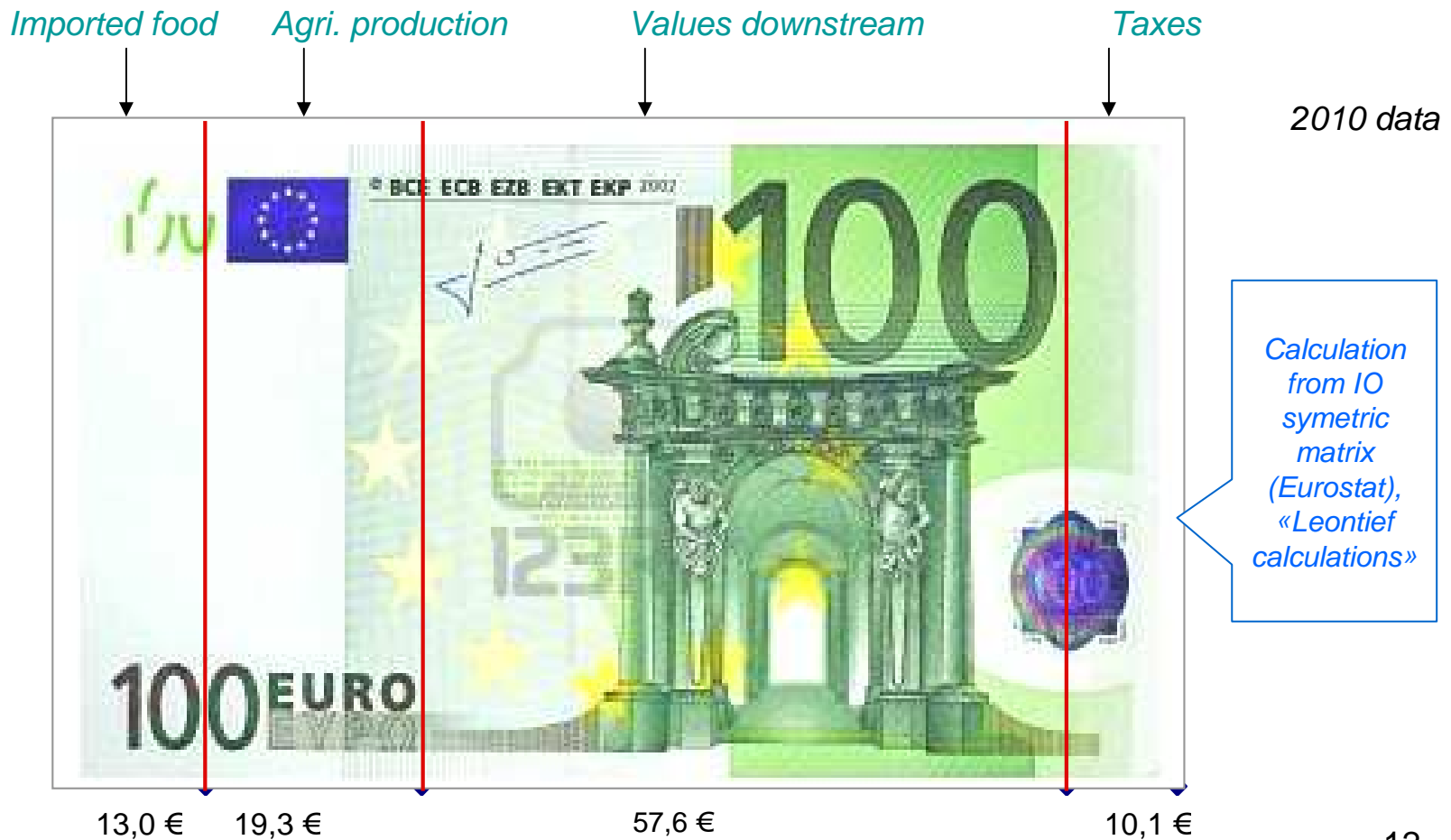
Fishery : an example → whiting in supermarkets and traditional fish shop

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Further analysis : macroeconomic method

1st approach :

Food consumption = Domestic agri production + « rest »



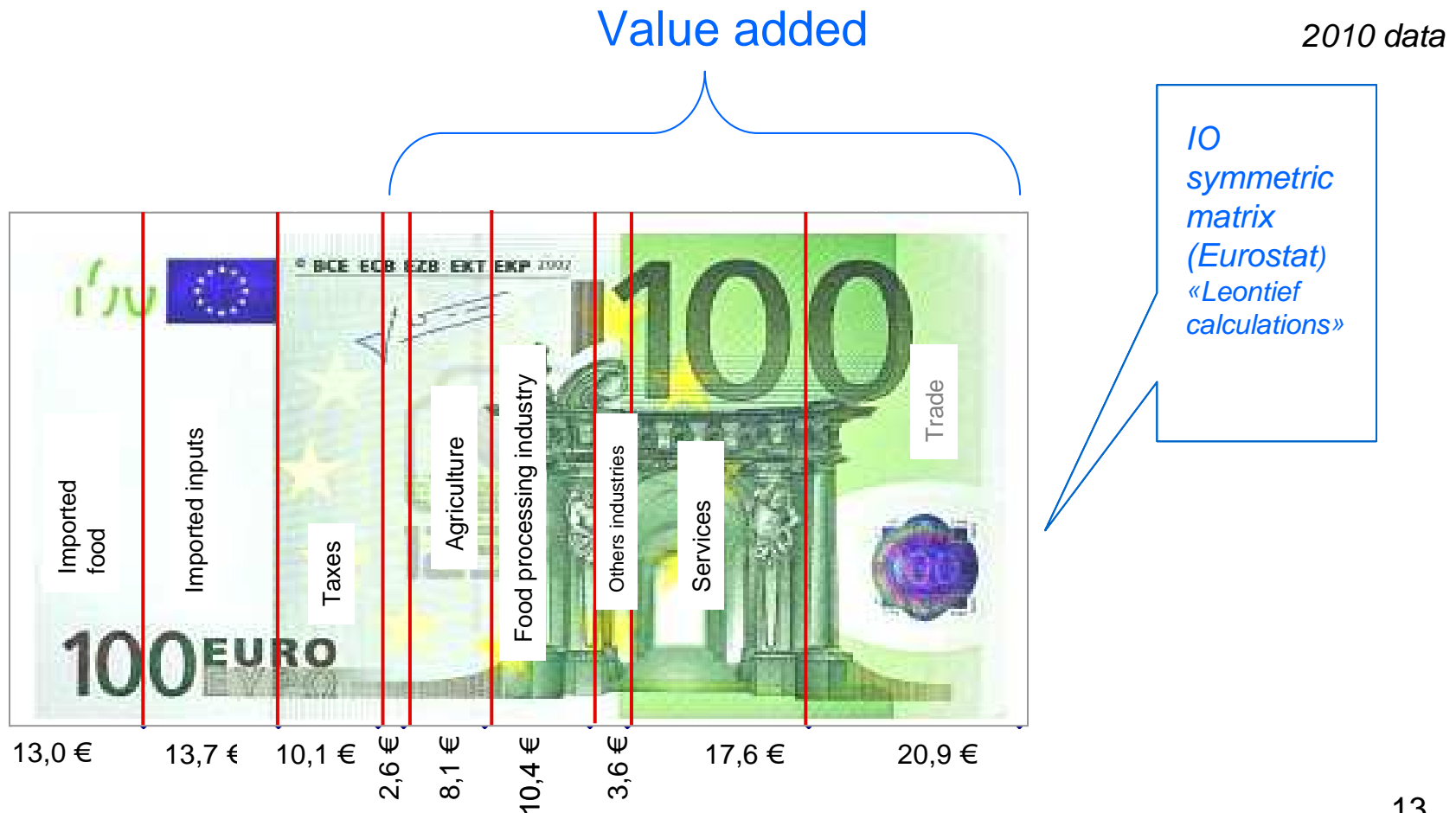
Calculation from IO symmetric matrix (Eurostat), «Leontief calculations»

Source : OFPM, INSEE, Eurostat

Macroeconomic method

2nd approach :

Food consumption = Values added + food & intermediate imports + taxes on products



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Source : OFPM, INSEE, Eurostat

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Datas and methods in dairy food chain

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Datas and methods in dairy food chain : products

	Half-skimmed ultra heat treated milk	All brands
	Emmental cheese	All brands
	Camembert cheese	National brands
		Retailer brands
	Natural yoghurt	National brands
		Retailer brands
	Butter (pack of 205 g)	National brands
		Retailer brands
	Standard goat cheese	All brands
	Sheep cheese feta type	All brands
	Sheep cheese Roquefort	All brands

Datas and methods in dairy food chain : prices data sources

	AGRI. PRICES	INDUSTRY PRICES	RETAIL PRICES
Dairy products	Milk survey, SSP (p)	Ad hoc survey for Obs. (by INSEE)	Kantar Worldpanel ©

(p) : *public data*

Ad hoc survey

© *commercial data*

- Average values, France
- Retail prices in hyper and supermarkets , except hard discount
- Prices weighted by bought quantities Monthly frequency
- Availability : t + 2 or t + 3 months
- All prices « exit factory » ⇒ ad hoc surveys, no pre-existing statistics
- Problem** : retail prices include imported products (no data about origin of product in panel)
- Difficulty** : to collect prices of same product (or same basket of products) exit factory and in supermarkets

Datas and methods in dairy food chain : the cost in milk for consumer dairy product processing

Cost in milk for 1 kg of consumer dairy product (CDP) processing

= **Necessary volume of milk** x milk production price
(depends on technical yields, losses, etc.)

+ **Net valuation of industrial dairy products** (IDP) **linked** to CDP and due to **surplus** milk collection / milk processing (*)

(*)

- Products jointly produced with the consumer dairy product processing: i.e. cream with skimmed milk...
- Industrial products (powders, industrial butter...) processed with surplus of milk : collected milk - consumer dairy product processing

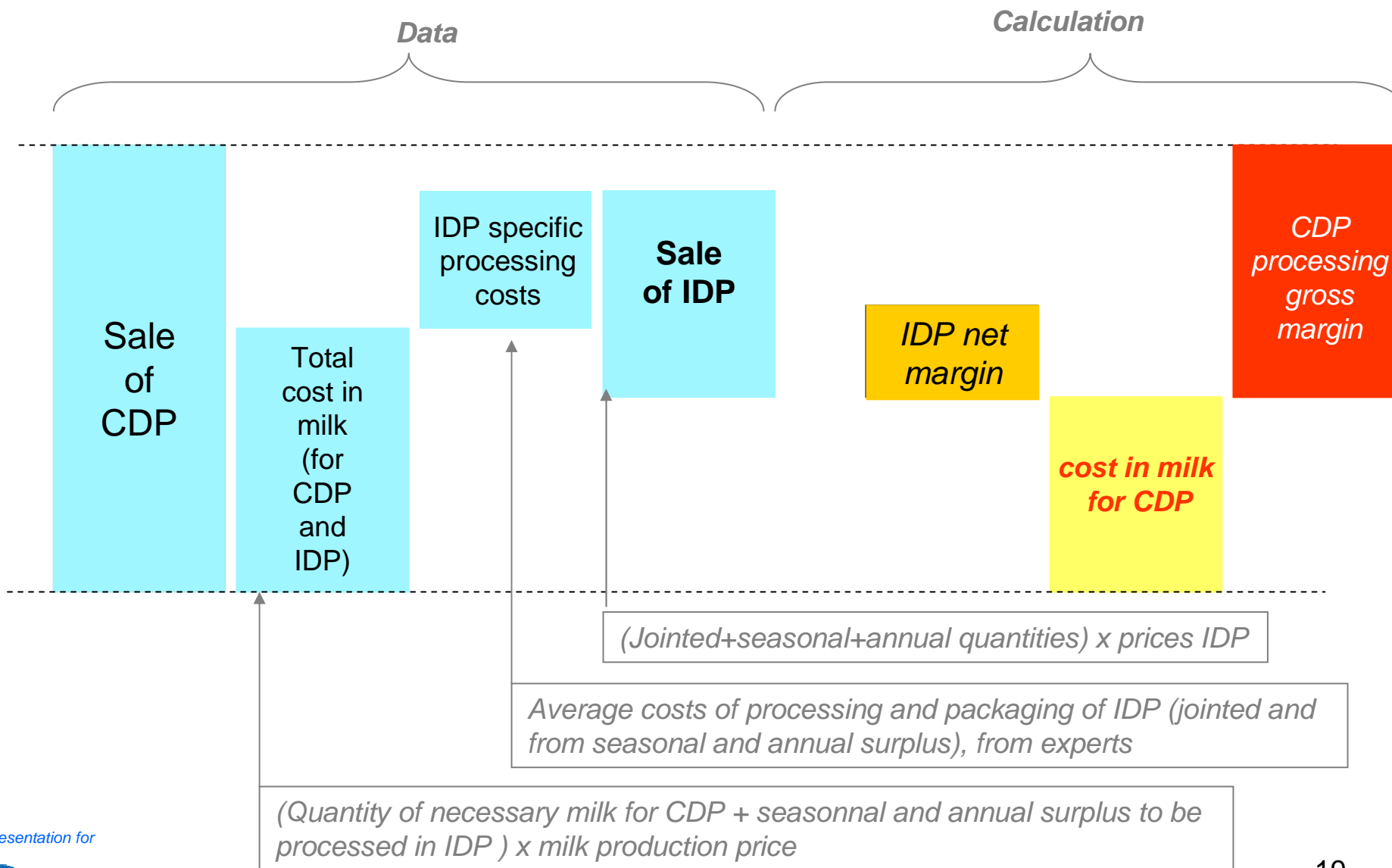
Cost in milk for 1 kg of consumer dairy product processing

= technically **necessary volume** of milk x milk production price

+ [**volumes of IDP**] x [prices of **IDP**]

- [**specific costs of IDP** processing]

Datas and methods in dairy food chain : the cost in milk for consumer dairy product processing



Principle

Milk consumption (or milk processing) and milk delivery :

- *Trend component*
- *Seasonal component*

*Difference between seasonal components of consumption
and delivery = seasonal surplus*

Datas and methods in dairy food chain : milk deliveries seasonality modelling example : UHT milk

Principles (SAS proc X 11)

C_t , volume of milk collection at the date (month, year) « t »

P_t volume of milk processed at the date (month, year) « t »

$X_t : C_t \text{ or } P_t$

$$X_t = T^{(X)}_t \cdot S^{(X)}_t \cdot D^{(X)}_t \cdot I^{(X)}_t$$

With :

$T^{(X)}_t$: value of the long-run trend at the date (month, year) « t »

$S^{(X)}_t$: seasonal factor (% of T_t) at the date (month, year) « t » : $S_t \approx S_{t+12}$ (% of T_t)

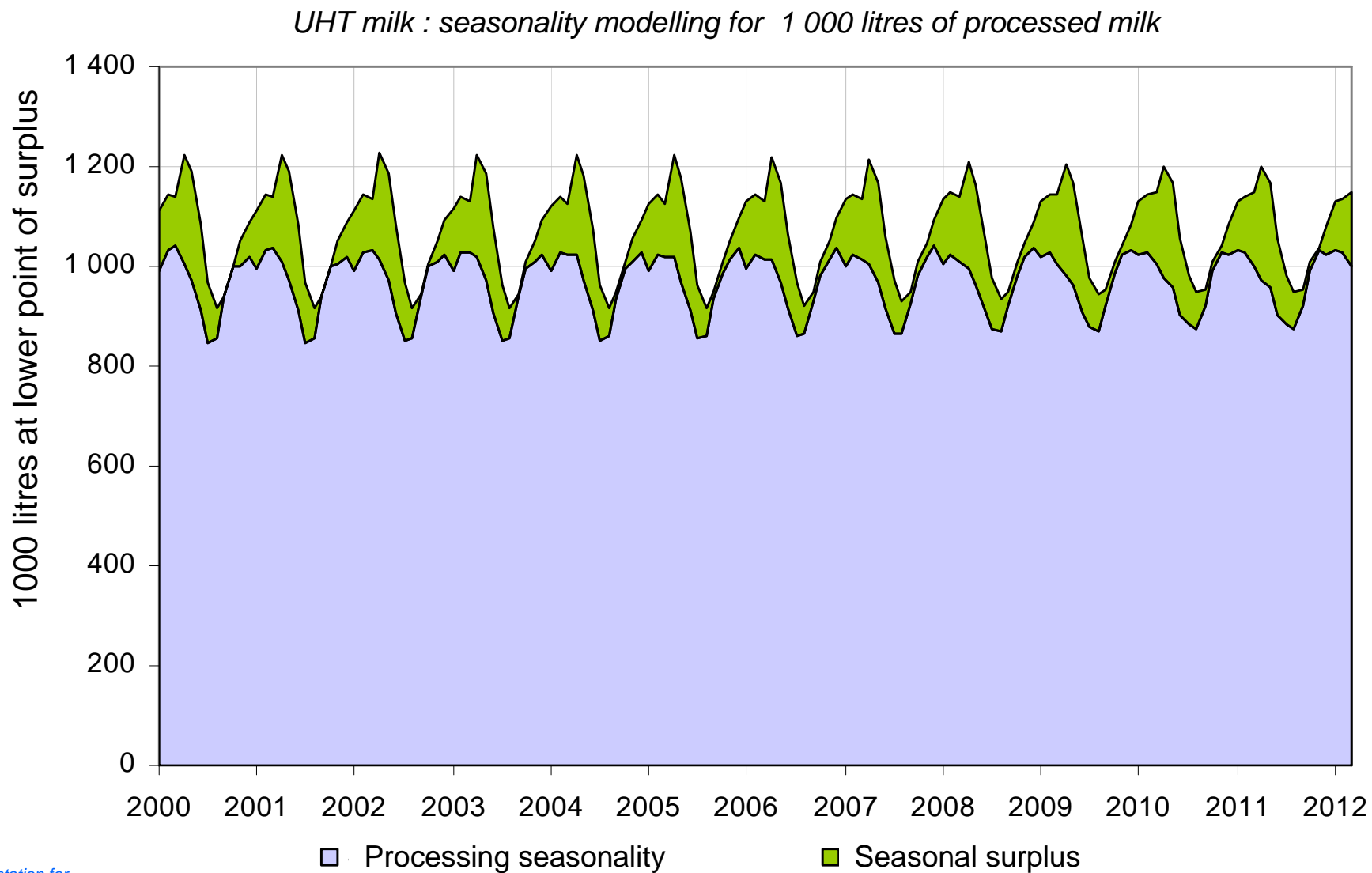
$D^{(X)}_t$: the date effect at the date (month, year) « t » : holidays, etc., ... (% of T_t)

$I^{(X)}_t$: irregular component at the date (month, year) « t » (% of T_t)

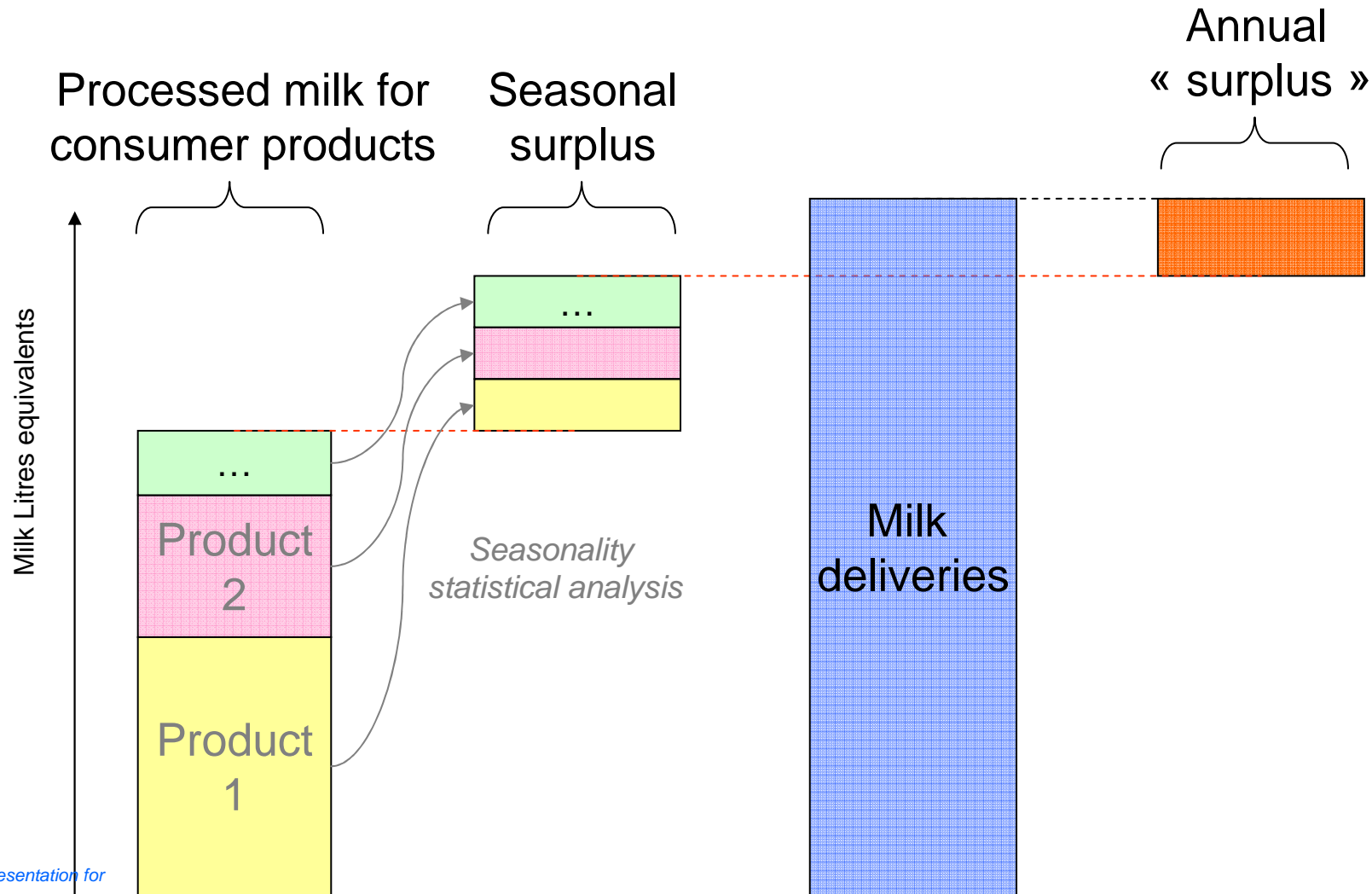
$$S^{(C)}_t / \min_{2000-20..} (S^{(C)}_t - S^{(P)}_t) - S^{(P)}_t / \min_{2000-20..} (S^{(C)}_t - S^{(P)}_t) :$$

seasonal surplus, in %

Datas and methods in dairy food chain : milk deliveries seasonality modelling example : UHT milk



Datas and methods in dairy food chain : milk volumes structurally devoted to industrial commodities



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Results in dairy food chain

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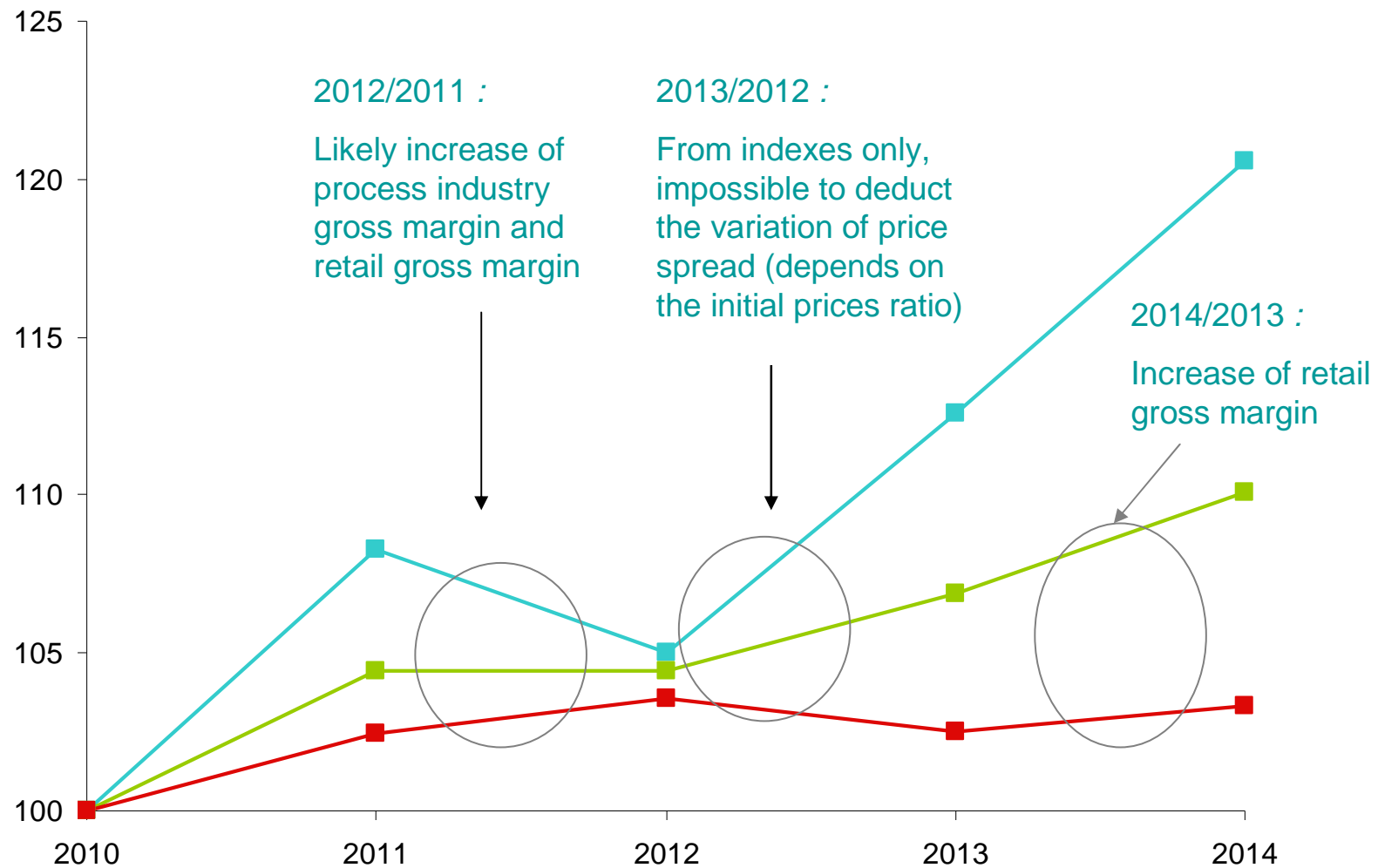


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Prices index

Except in some cases, impossible to deduct the variation of price spread (« margin ») from indexes...



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—■— Cow milk production price index
 —■— Dairy products consumer prices index

—■— Dairy products factory prices index

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Prices index

Notations :

P_{A0} and P_{At} : prices at stage A of the food chain, for year 0 and t,

P_{B0} and P_{Bt} : prices at the stage B of the food chain, for year 0 and t,

$m_0 = P_{B0} / P_{A0}$, prices ratio for year 0,

$D_0 = P_{B0} - P_{A0}$ and $D_T = P_{Bt} - P_{At}$, the prices spreads for year 0 and t,

$\Delta D_t = D_t - D_0$, the variation of the prices spread,

IP_{A0} , IP_{At} , IP_{B0} and IP_{Bt} the indexes of the prices, for year 0 and t,

ΔIP_{At} and ΔIP_{Bt} the indexes variations for year t

$$\Delta D_t = P_{A0} \left[m_0 \frac{\Delta IP_{Bt}}{IP_{B0}} - \frac{\Delta IP_{At}}{IP_{A0}} \right]$$

m_0 is normally greater than 1, so :

$$\Delta D_t > 0 \text{ (increasing prices spread) if : } \frac{\Delta IP_{Bt}}{IP_{B0}} > \frac{\Delta IP_{At}}{IP_{A0}}$$

$$\Delta D_t < 0 \text{ (decreasing prices spread) if : } \frac{\Delta IP_{Bt}}{IP_{B0}} < 0 \text{ et } \frac{\Delta IP_{At}}{IP_{A0}} > \frac{\Delta IP_{Bt}}{IP_{B0}}$$

In the other cases, the sign of ΔD_t cannot be deduced only from : it is necessary to know the value of m_0

It is necessary to have **prices data in value** (level in €, VS index) **for the monitoring of margins variations**

It could be a problem in some case : concentrated processing sector → statistical confidentiality rules, respect of business confidentiality

Results in dairy food chain

1

Decomposition of retail price

[Clic here](#) : All the results, tables, charts, informations, in the website

Or :

<https://observatoire-prixmarges.franceagrimer.fr/resultats/Pages/ResultatsFiliere.aspx?idfiliere=6>

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The French « observatory » on formation of prices and margins of food products

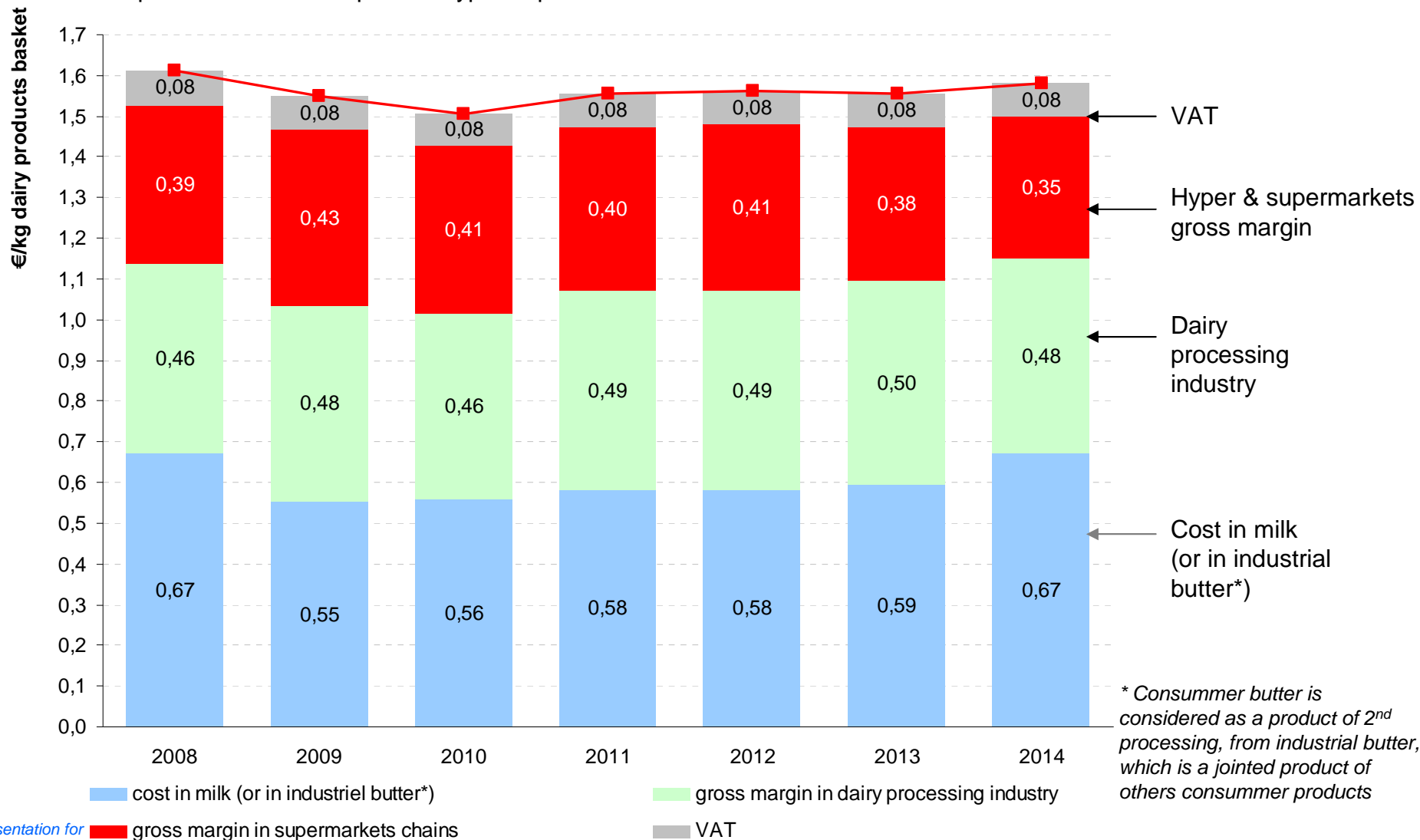
Basket of dairy products from cow milk (test – temporary)



	% bought annual quantities (average 2008-2012) *
Half-skimmed ultra heat treated milk	74.5%
Emmental cheese	6.1%
Camembert cheese	2.6%
Natural yoghurt	13.8%
Butter (pack of 205 g)	3.1%

Results in dairy food chain / decomposition retail price : basket of dairy products

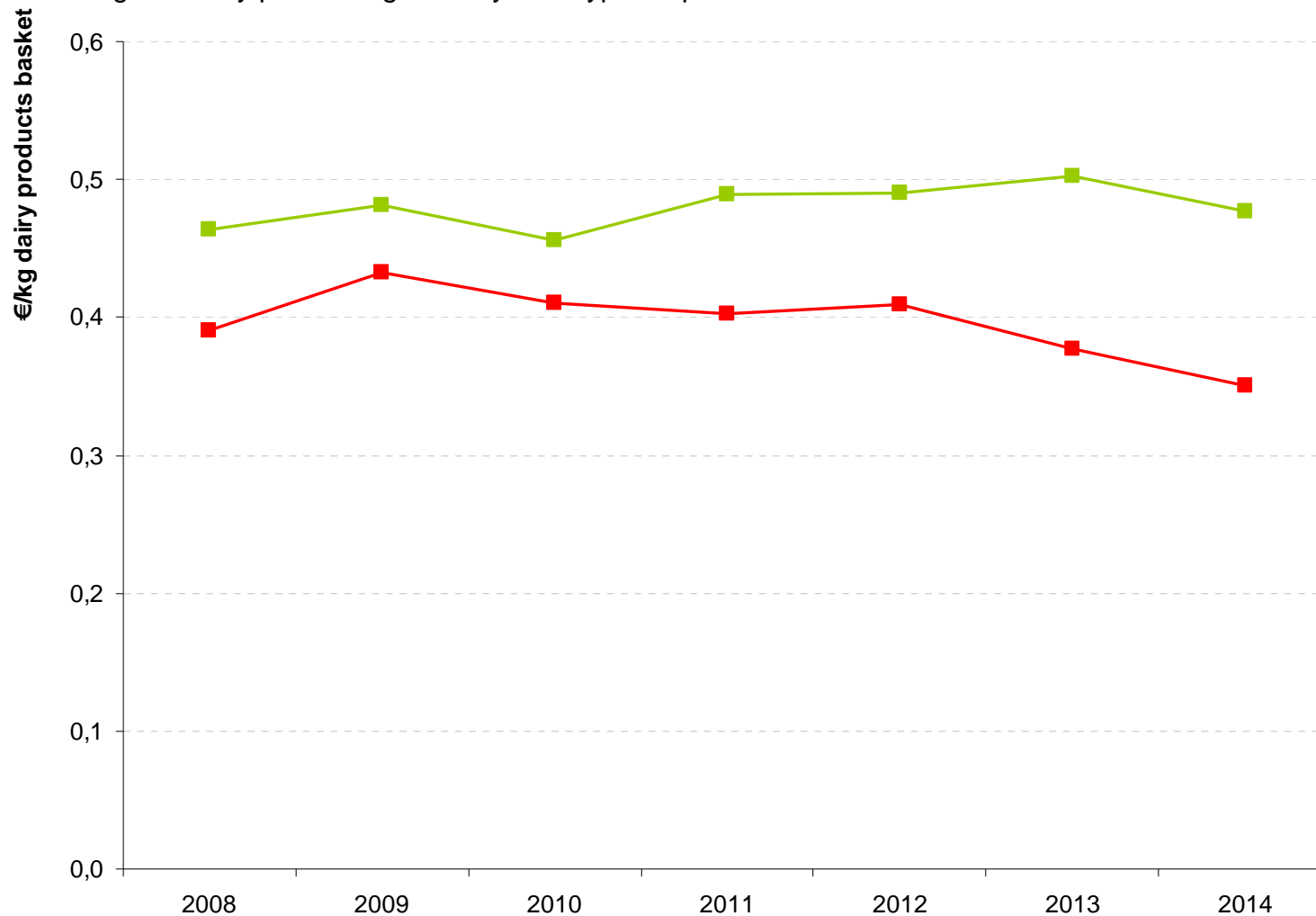
Annual decomposition of the retail price in hyper-supermarkets



* Consumer butter is considered as a product of 2nd processing, from industrial butter, which is a jointed product of others consumer products

Results in dairy food chain / decomposition retail price : basket

Gross margin in dairy processing industry and hyper-supermarkets



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— gross margin in dairy processing industry

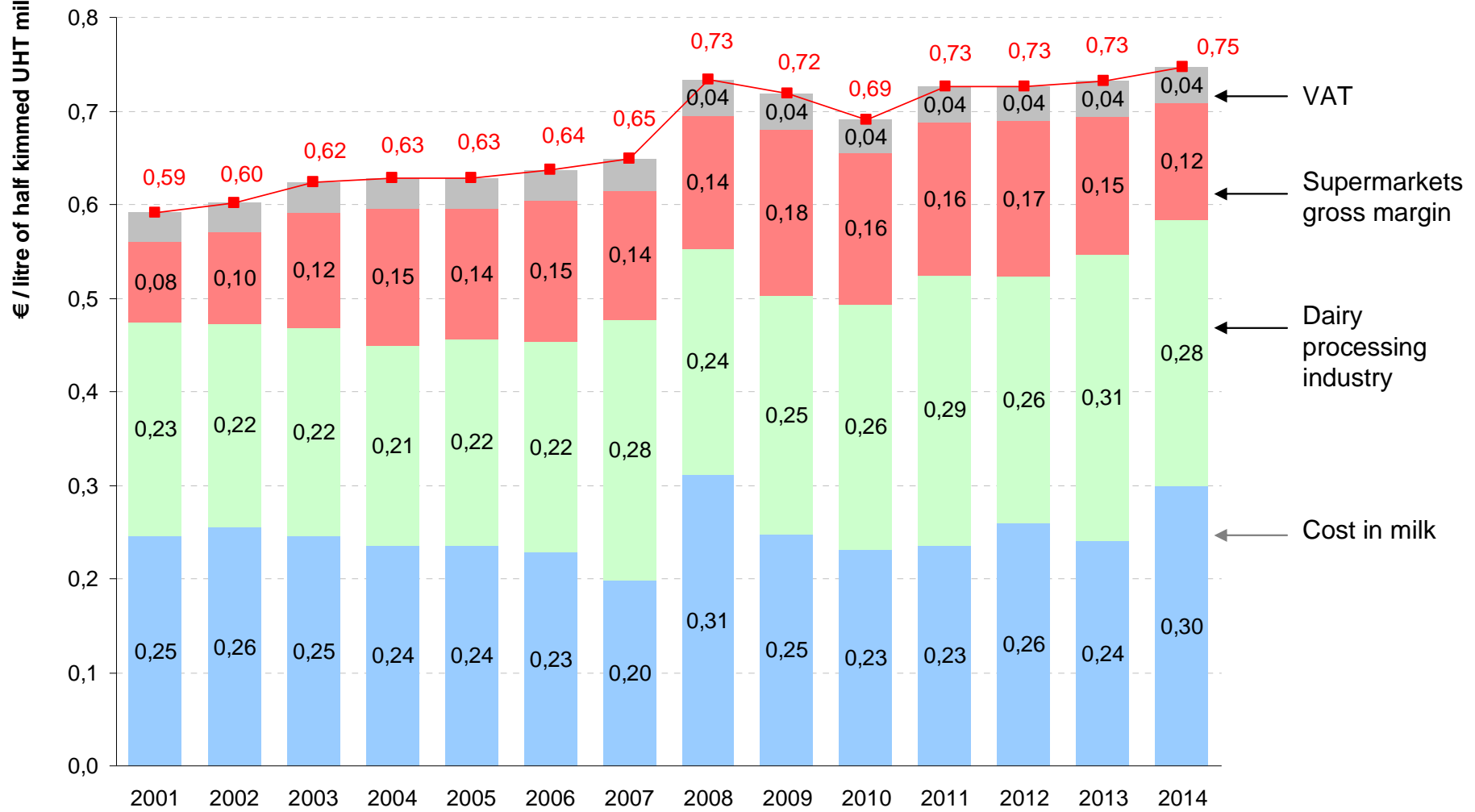
— gross margin in supermarket chains

The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : skimmed milk

Annual decomposition of the retail price in hyper & supermarket of the skimmed milk: all brands (national brand, retailers brand)



Cost in milk

Gross margin of dairy processing industry

[→ to yoghurt](#)

Gross margin in supermarkets chains

VAT

Consumer price



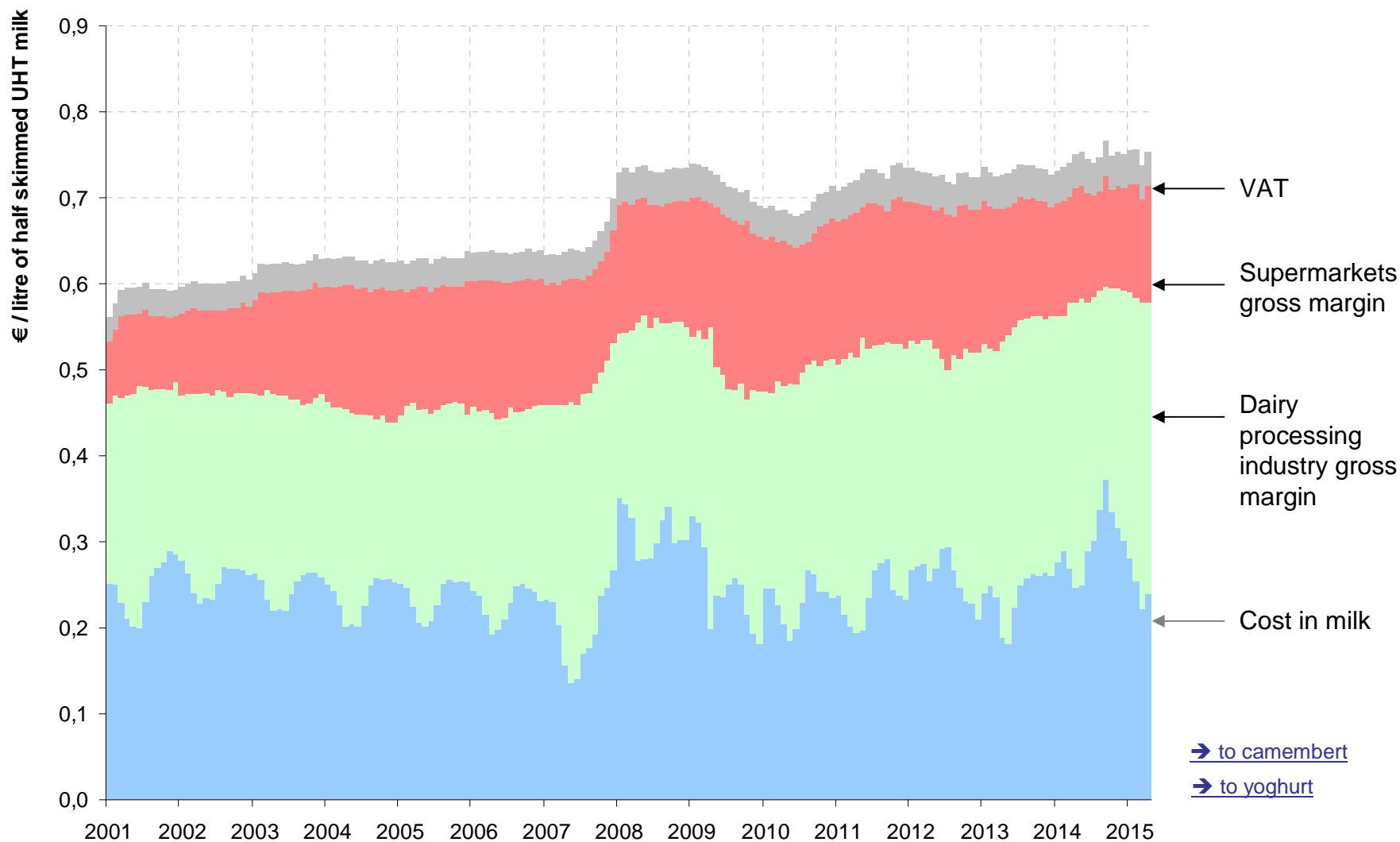
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The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : skimmed milk

Monthly decomposition of the retail price in supermarket of the skimmed milk (national br., retailers br.)



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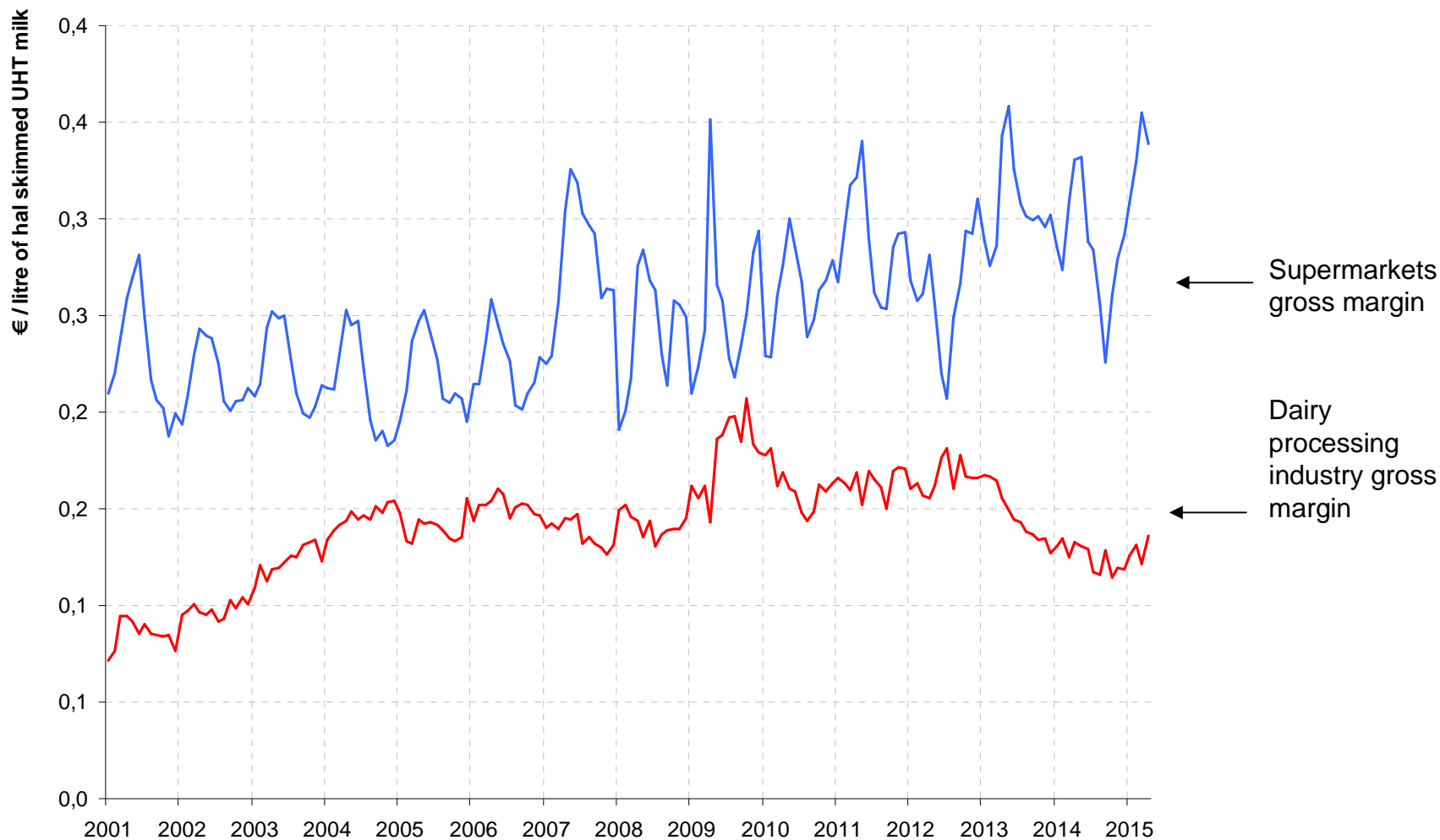
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■ Cost in milk ■ Gross margin of dairy processing industry ■ Gross margin of supermarkets chains ■ VAT

The French « observatory » on formation of prices and margins of food products

Results in dairy food chain / decomposition retail price : skimmed milk

Gross margin in dairy processing industry and supermarket chain for the skimmed milk (national br., retailers br.)

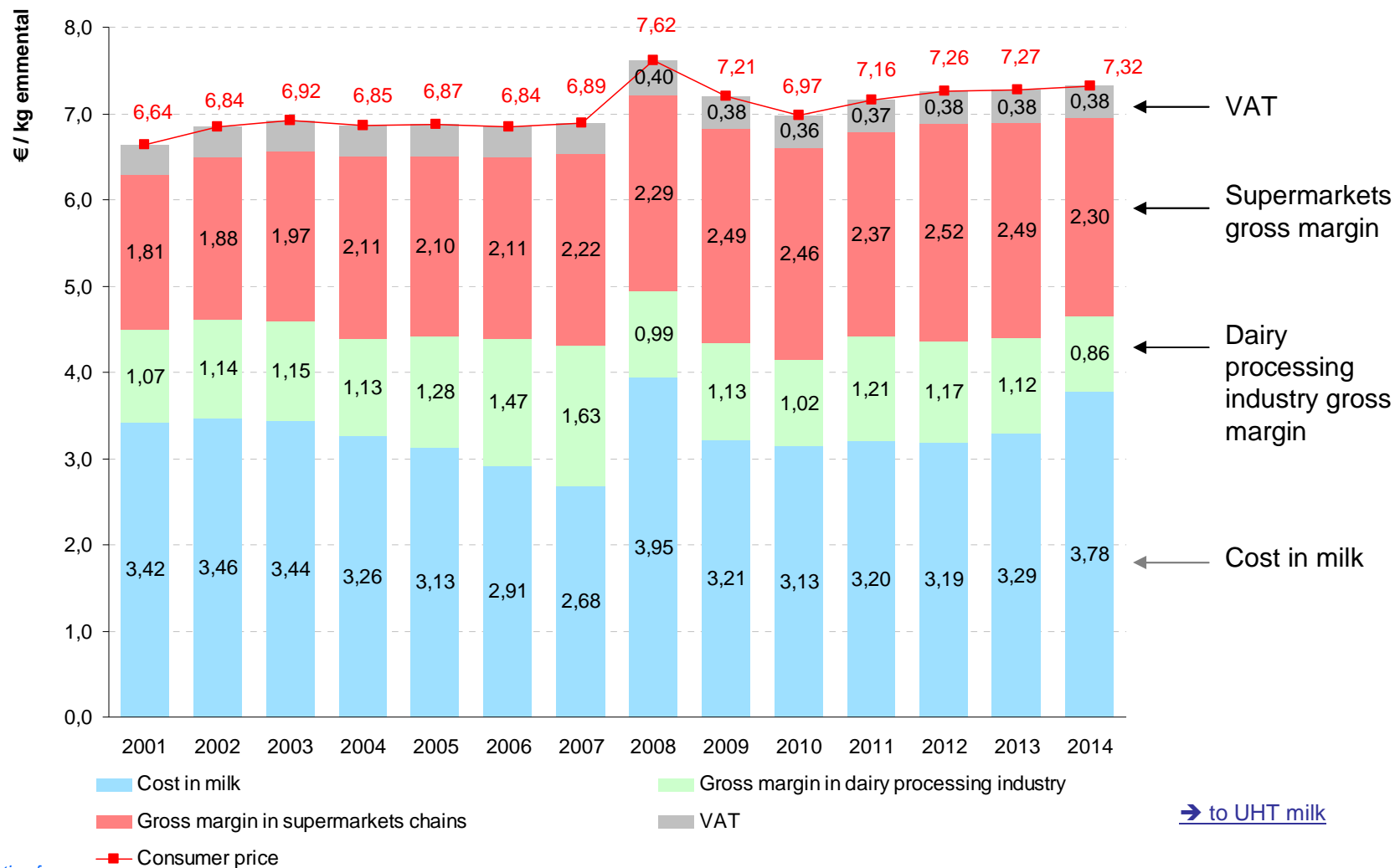


Presentation for — Gross margin of dairy processing industry

— Gross margin in supermarkets chains

Results in dairy food chain / decomposition retail price : emmental

Annual decomposition of the retail price in supermarket of the emmental (national br., retailers br.)

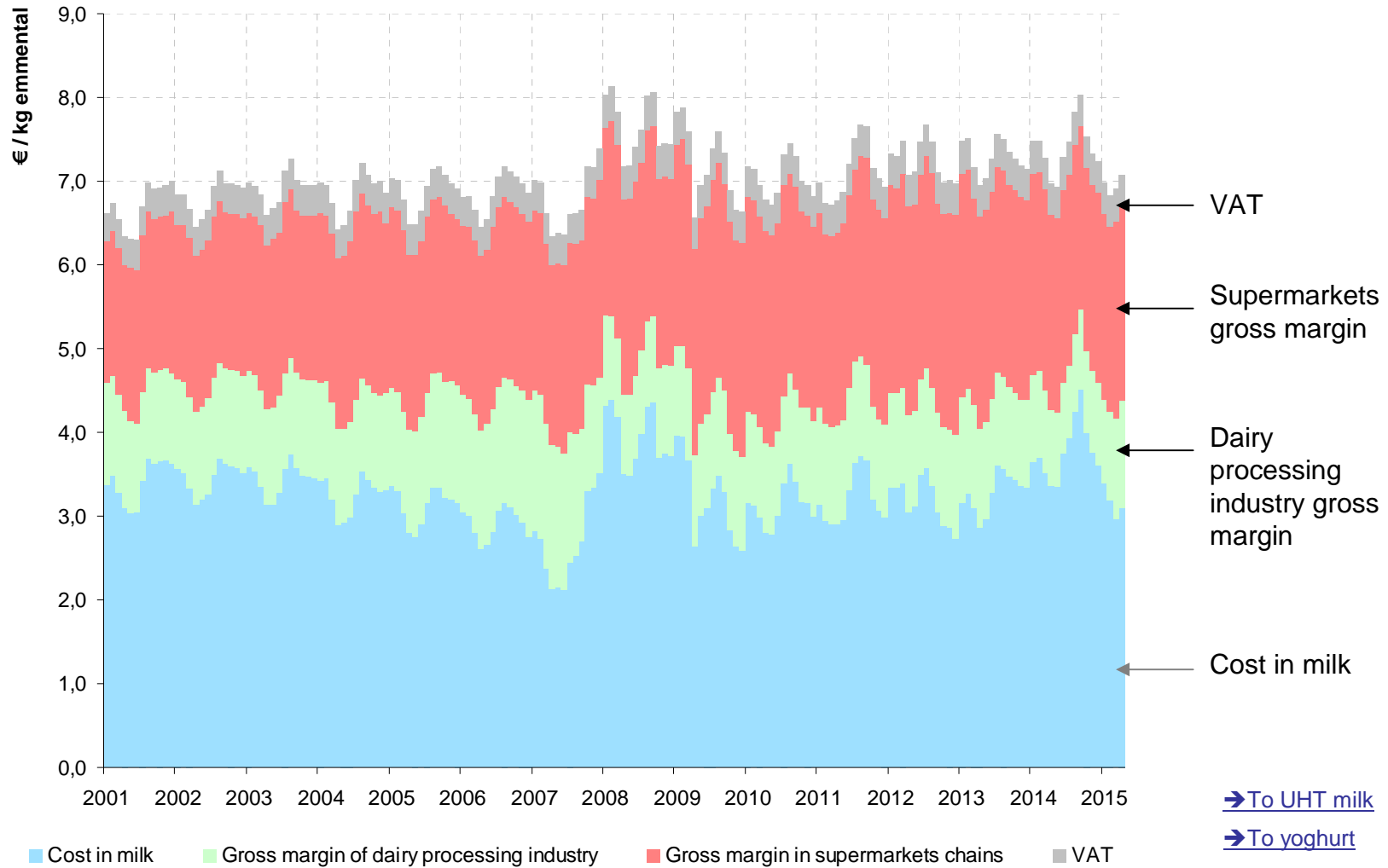


→ to UHT milk

Presentation for

Results in dairy food chain / decomposition retail price : emmental

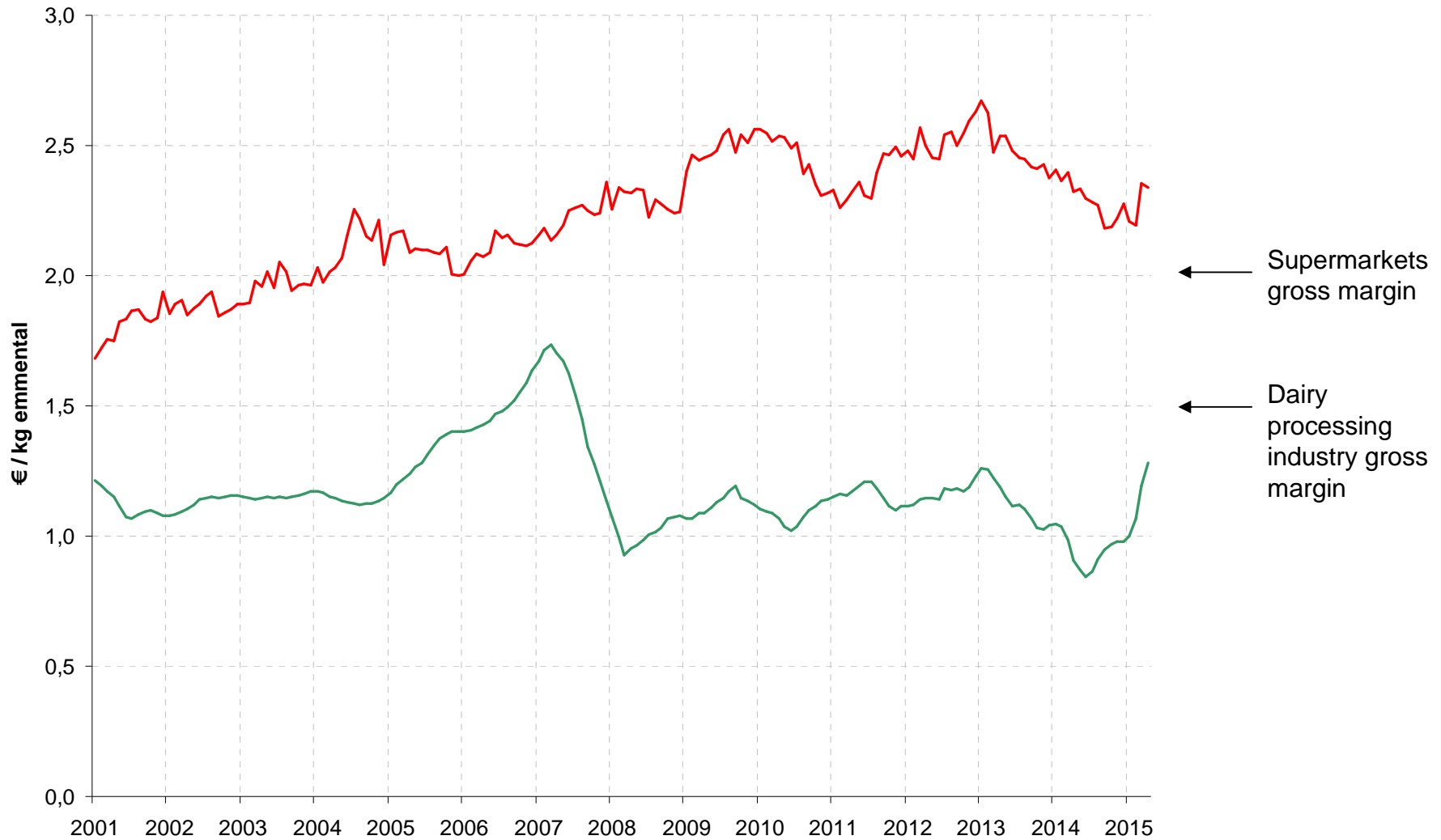
Monthly decomposition of the retail price in supermarket of the emmental (national br., retailers br.)



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Results in dairy food chain / decomposition retail price : emmental

Gross margin in dairy processing industry and supermarket chains for the emmental (national br., retailers br.)



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— Gross margin in dairy processing industry

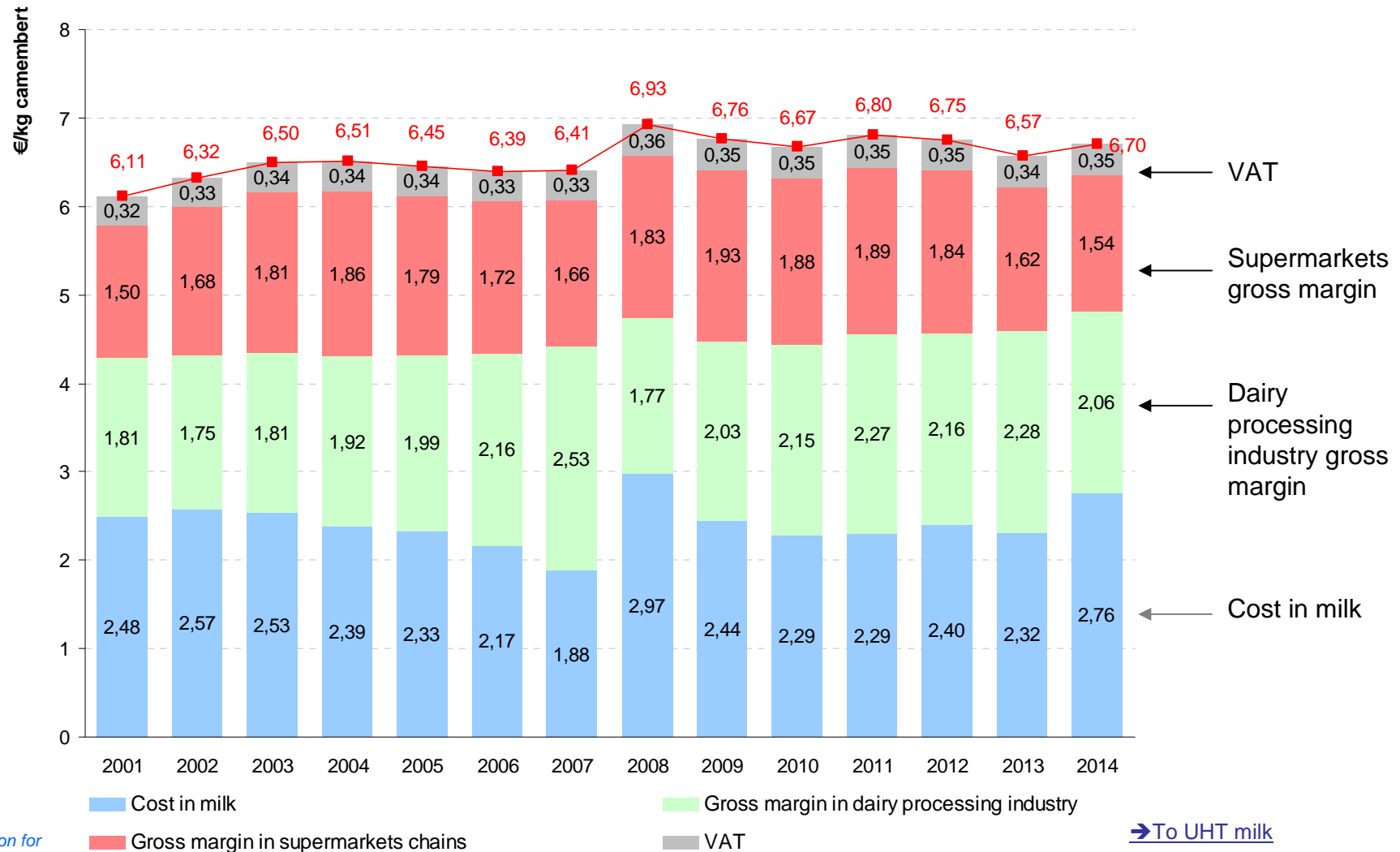
— Gross margin in supermarkets chains

The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : camembert

Annual decomposition of the retail price in supermarket of the camembert (national br., retailers br.)



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Gross margin in supermarkets chains

Consumer price

Gross margin in dairy processing industry

VAT

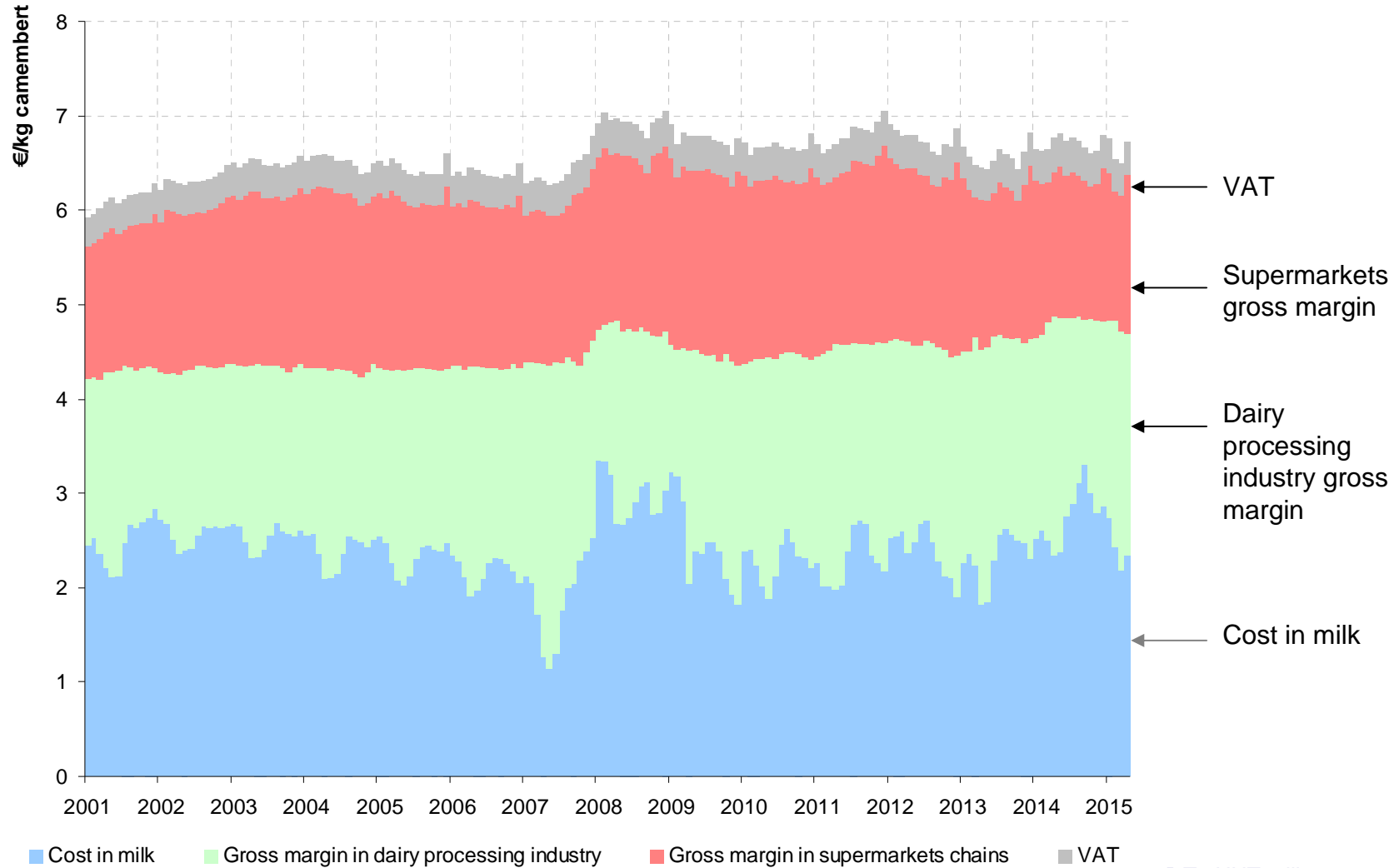
→ To UHT milk

The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : camembert

Annual decomposition of the retail price in supermarket of the camembert (national br., retailers br.)



Presentation for



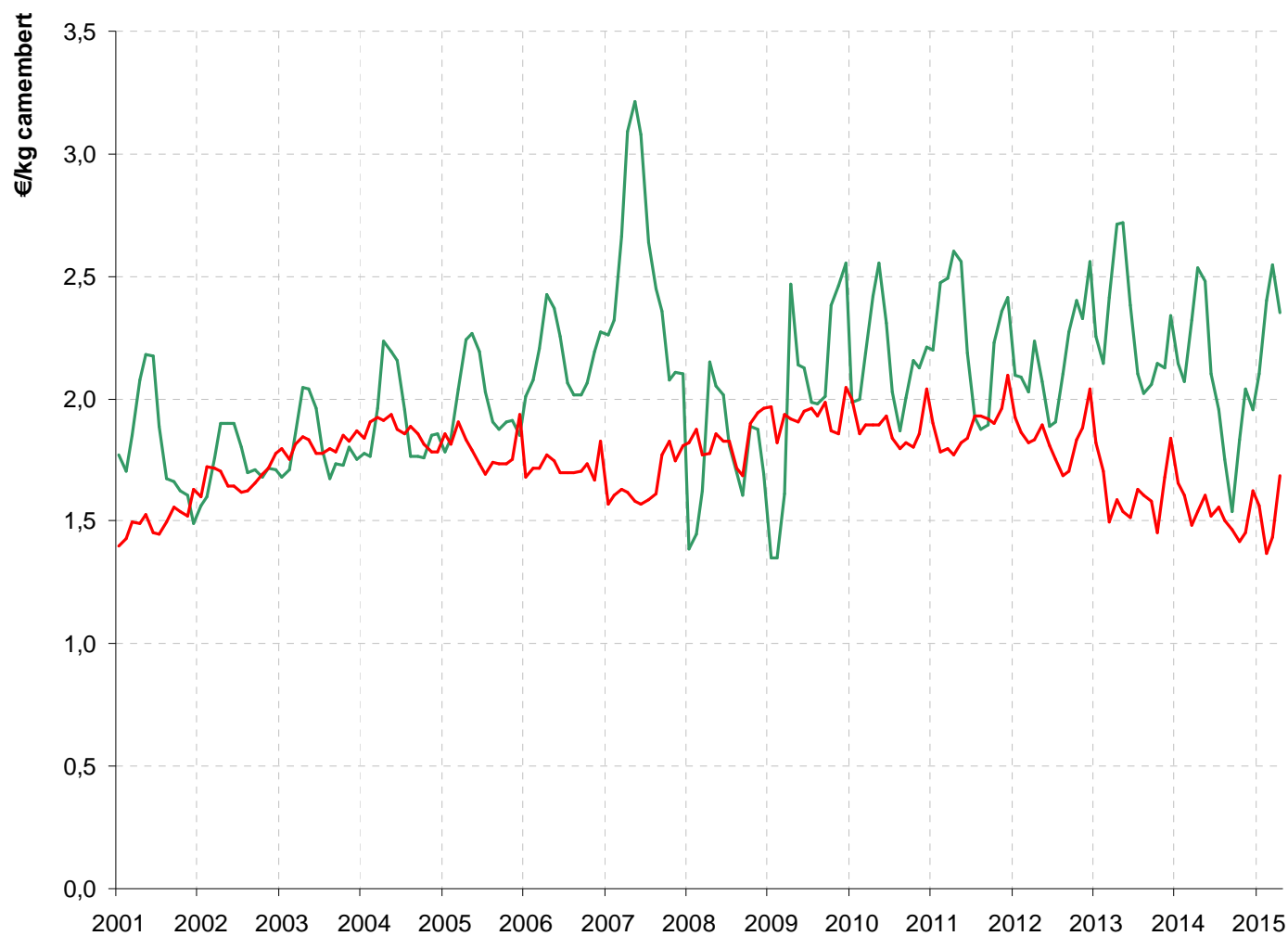
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The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : camembert

Gross margin in dairy processing industry and supermarkets chains (national br., retailers br.)



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— gross margin in dairy processing industry

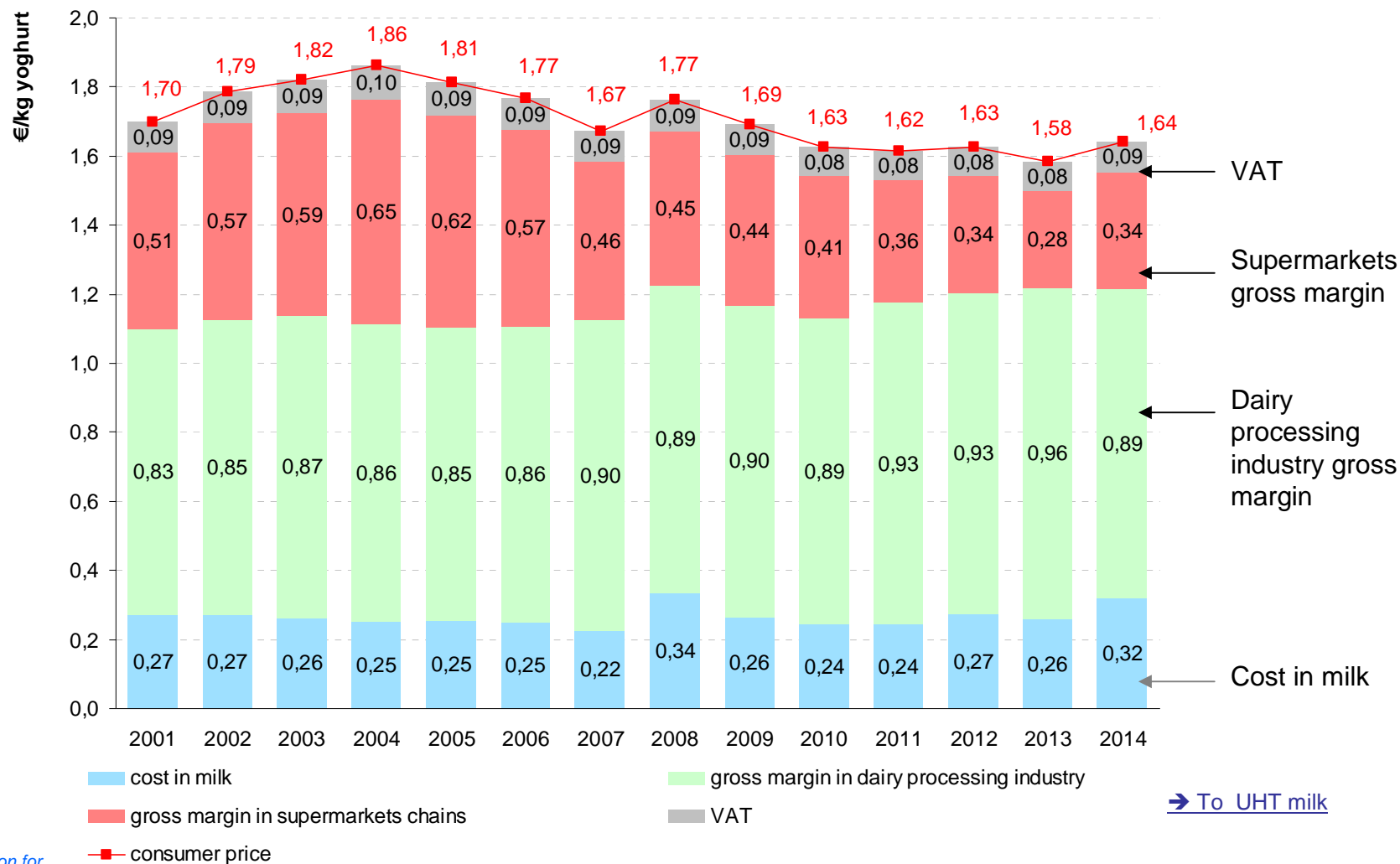
— gross margin in supermarkets chains

The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : plain yoghurt

Annual decomposition of the retail price in supermarket of the natural yoghurt (national br., retailers br.)



Presentation for

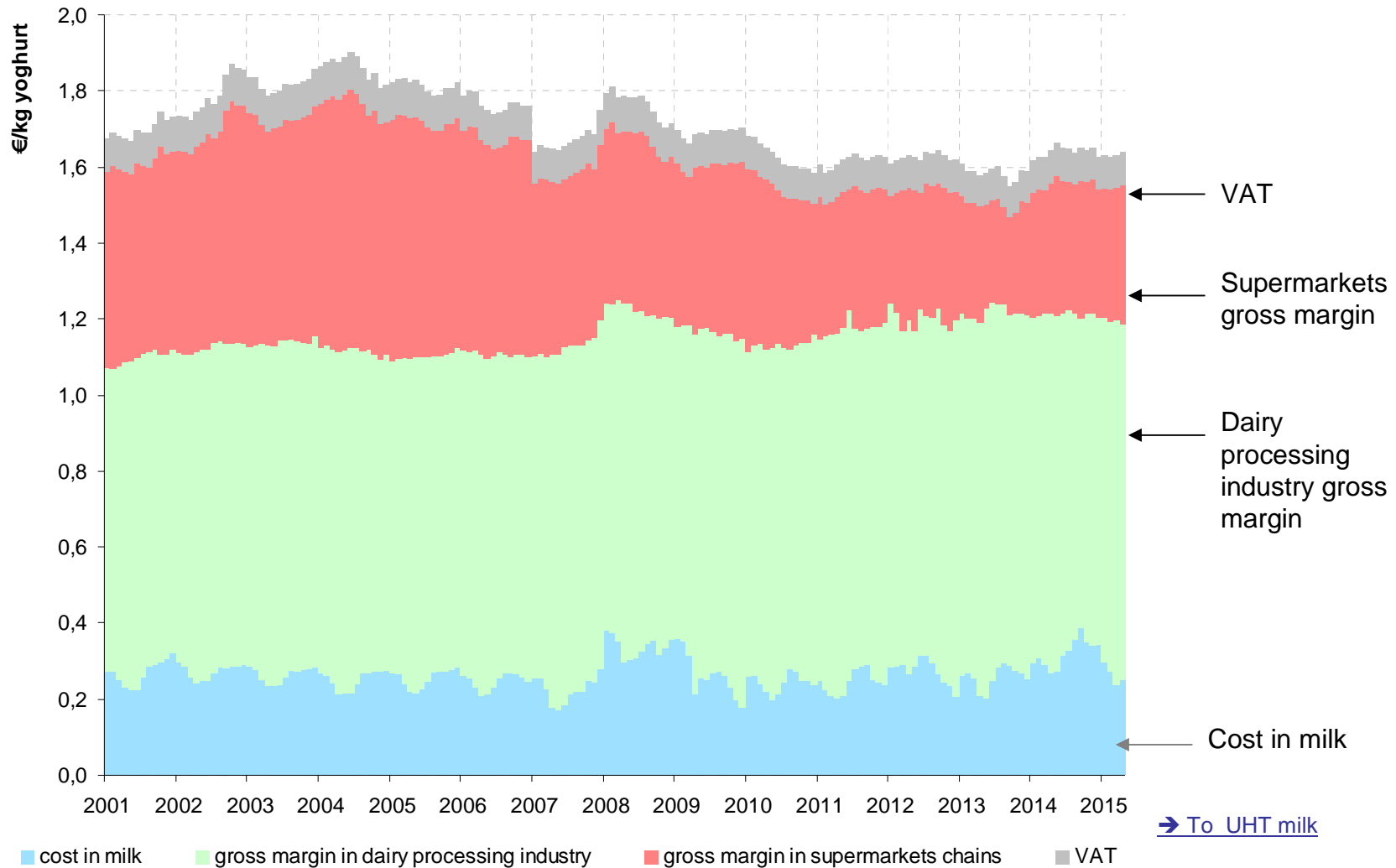


The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : plain yoghurt

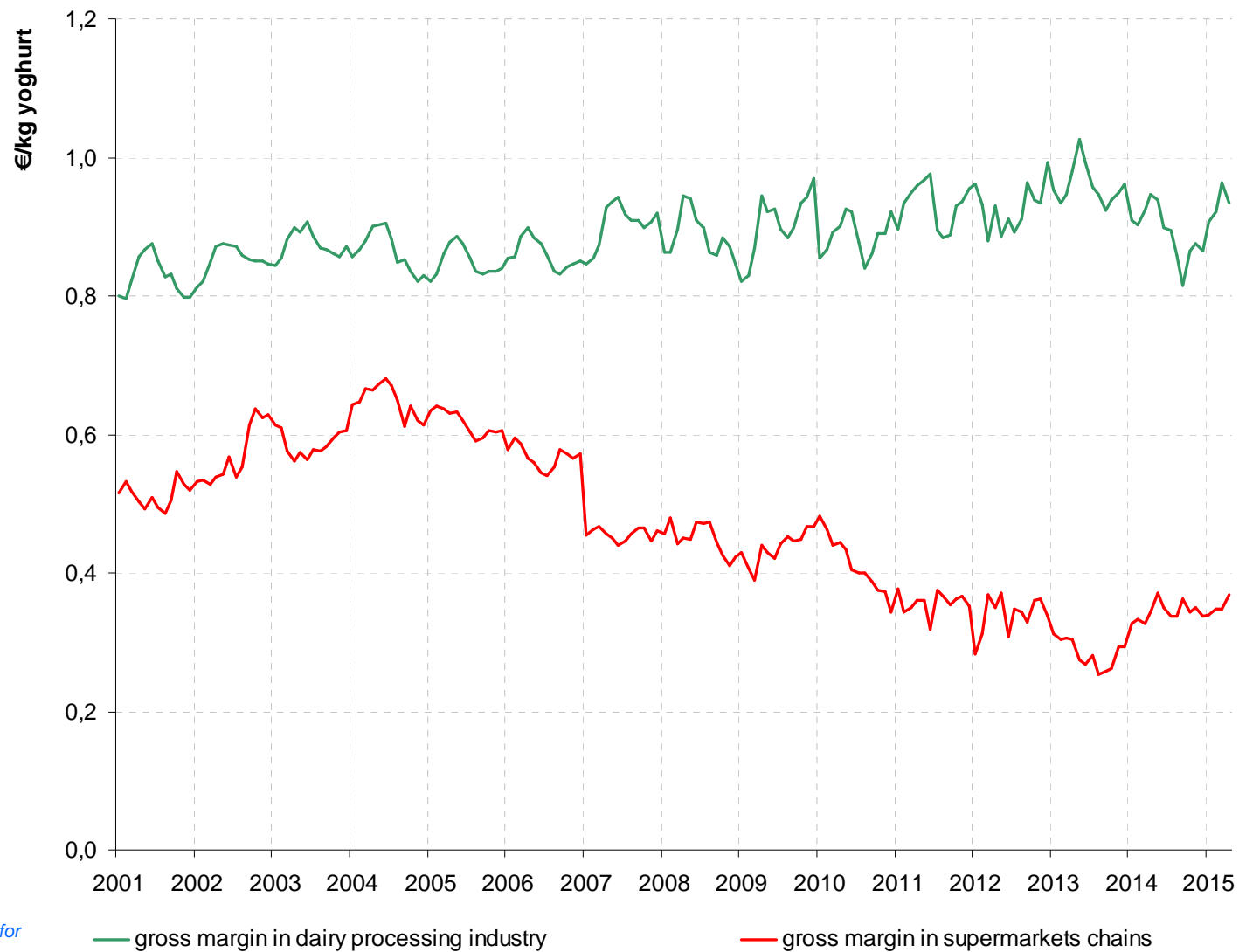
Monthly decomposition of the retail price in supermarket of the natural yoghurt (national br., retailers br.)



Presentation for

Results in dairy food chain / decomposition retail price : plain yoghurt

Gross margin in dairy processing industry and supermarkets chains (national br., retailers br.)



Presentation for



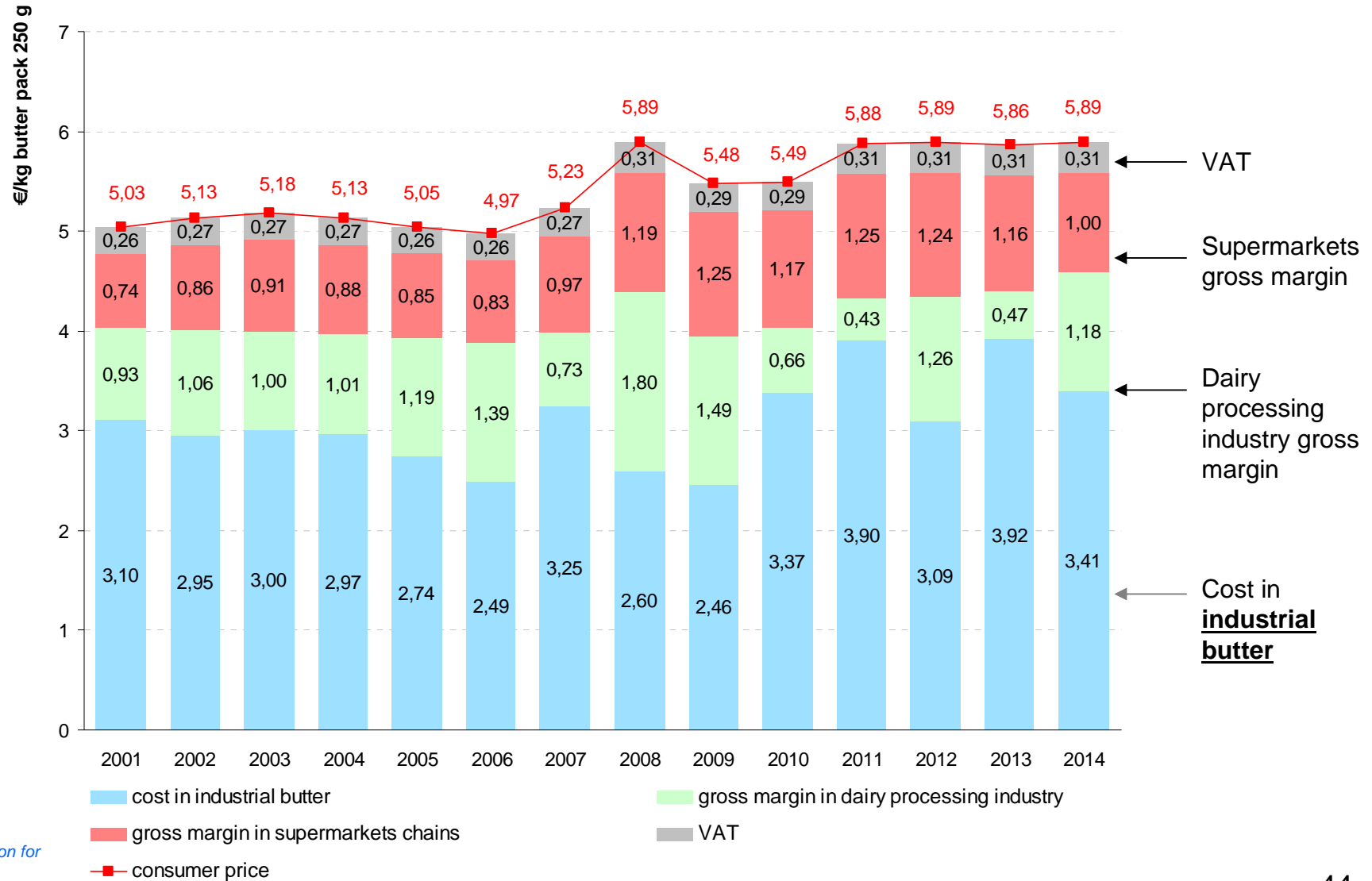
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The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : pack of butter 250 g

Annual decomposition of the retail price in supermarket of the pack of butter 250 g : all brands (national br., retailers br.)



Presentation for



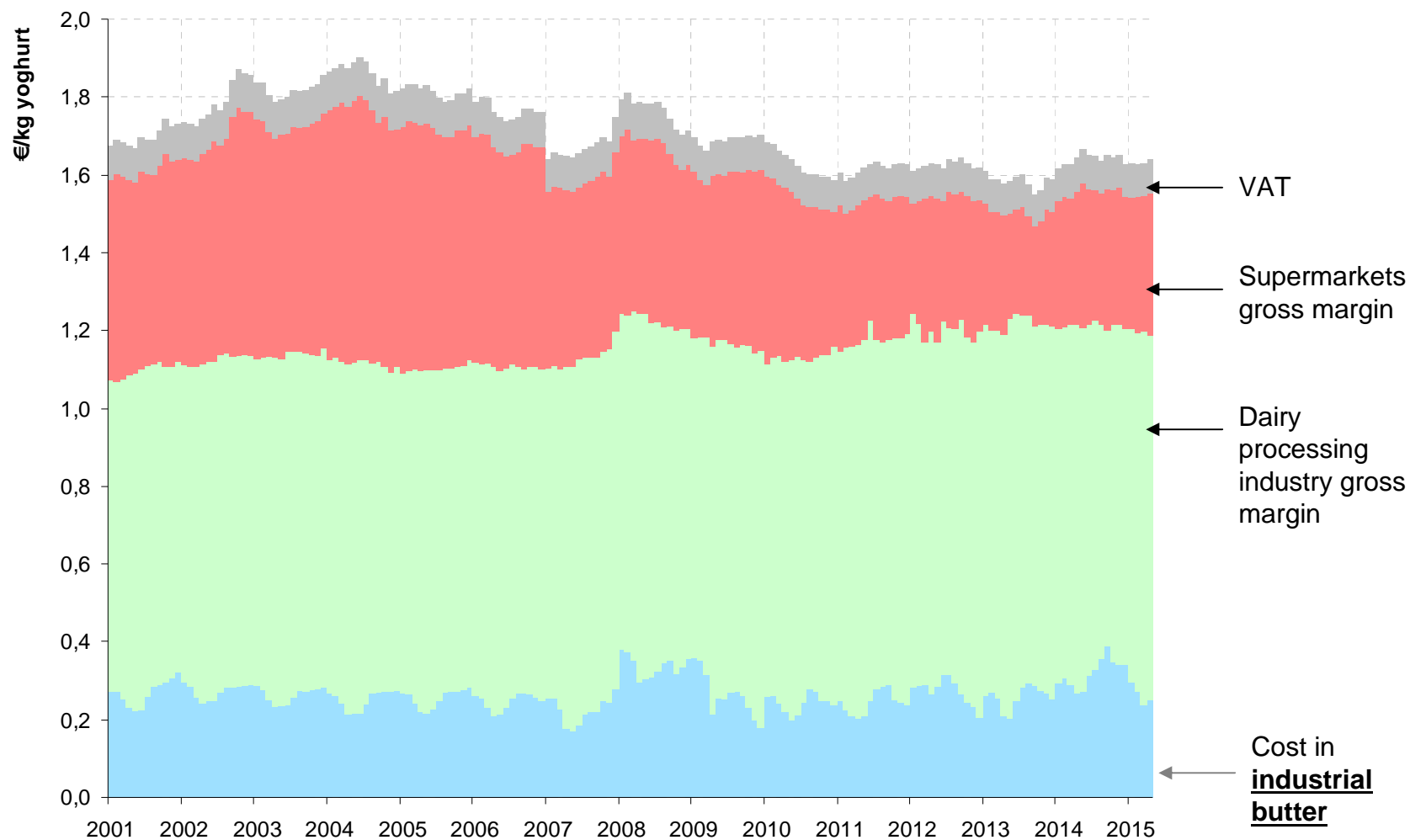
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The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / decomposition retail price : pack of butter 250 g

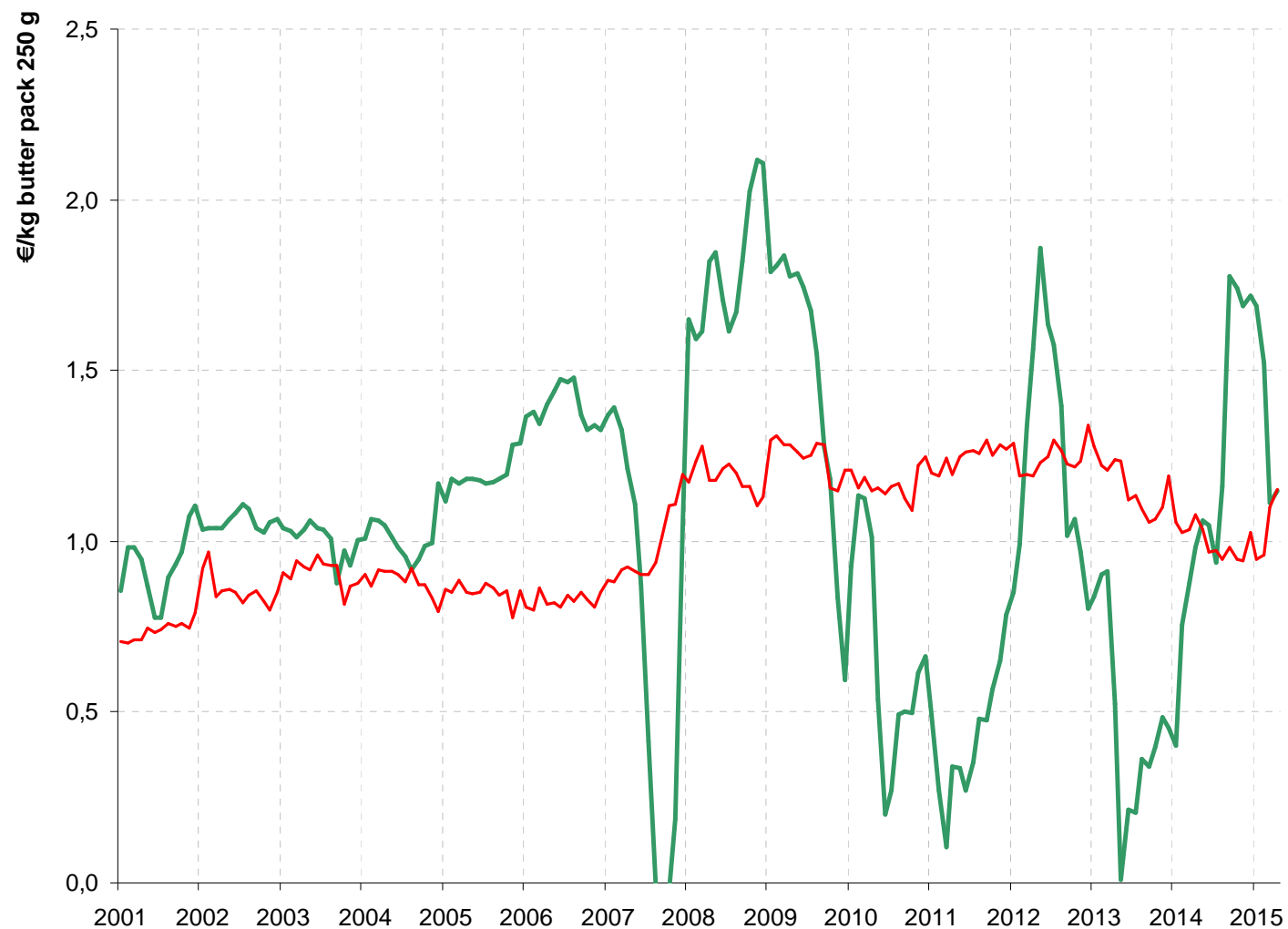
Monthly decomposition of the retail price in supermarket of the pack of butter 250 g (national br., retailers br.)



Presentation for ■ cost in milk ■ gross margin in dairy processing industry ■ gross margin in supermarkets chains ■ VAT

Results in dairy food chain / decomposition retail price : pack of butter 250 g

Gross margin in dairy processing industry and supermarkets chains : (national br., retailers br.)



Presentation for — gross margin in dairy processing industry

— gross margin in supermarkets chains

Results in dairy food chain

2 Costs in farm

[Clic here](#) : All the results, tables, charts, informations, in the website

Or :

<https://observatoire-prixmarges.franceagrimer.fr/resultats/Pages/ResultatsFiliere.aspx?idfiliere=6&sousmenuid=71>

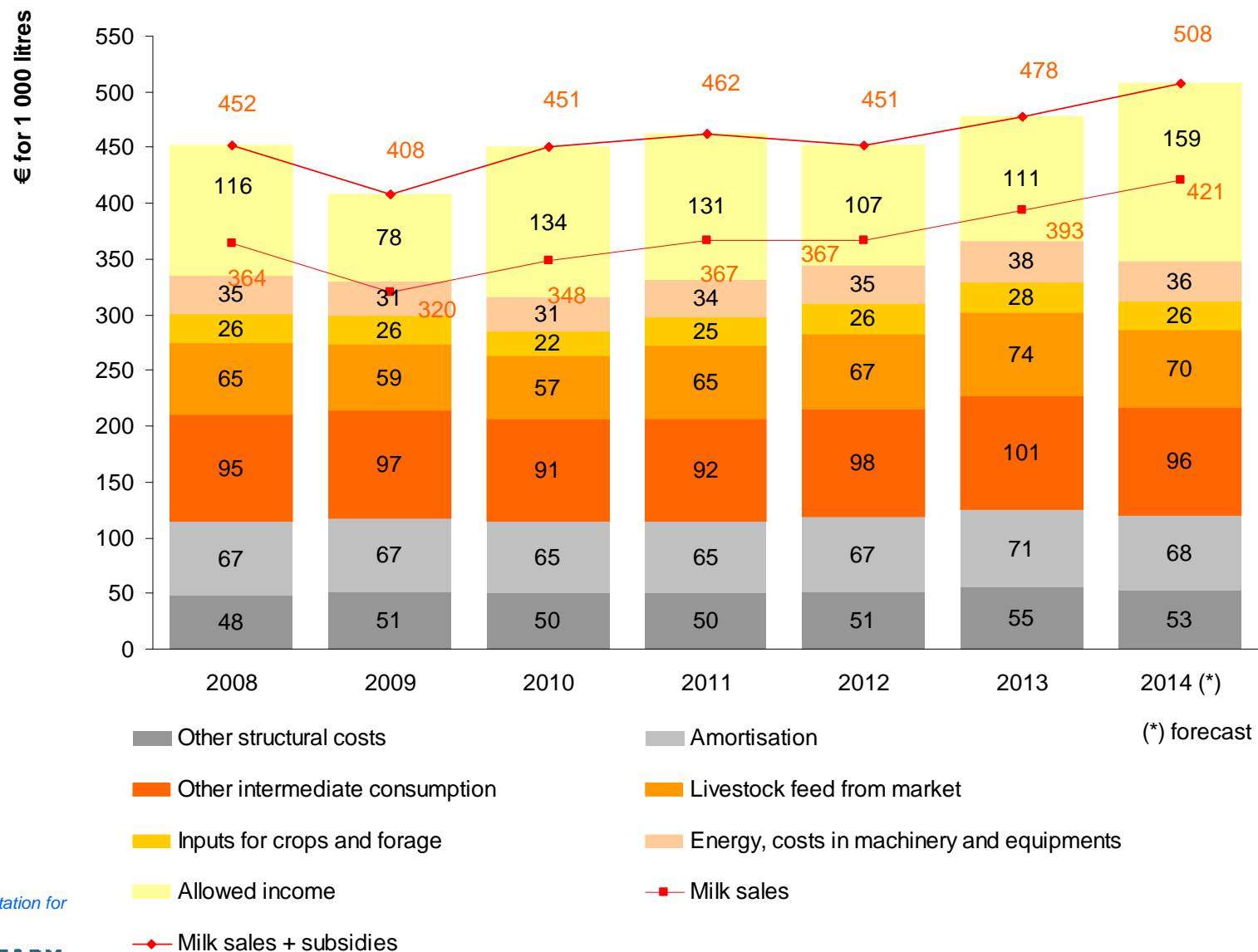
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Results in dairy food chain / costs in farm



Presentation for



The French « observatory » on formation of prices and margins of food products

Source : OFPM, from FADN

Results in dairy food chain

3

Costs in dairy processing industry

[Clic here](#) : All the results, tables, charts, informations, in the website

Or :

<https://observatoire-prixmarges.franceagrimer.fr/resultats/Pages/ResultatsFiliere.aspx?idfiliere=6&sousmenuid=330>

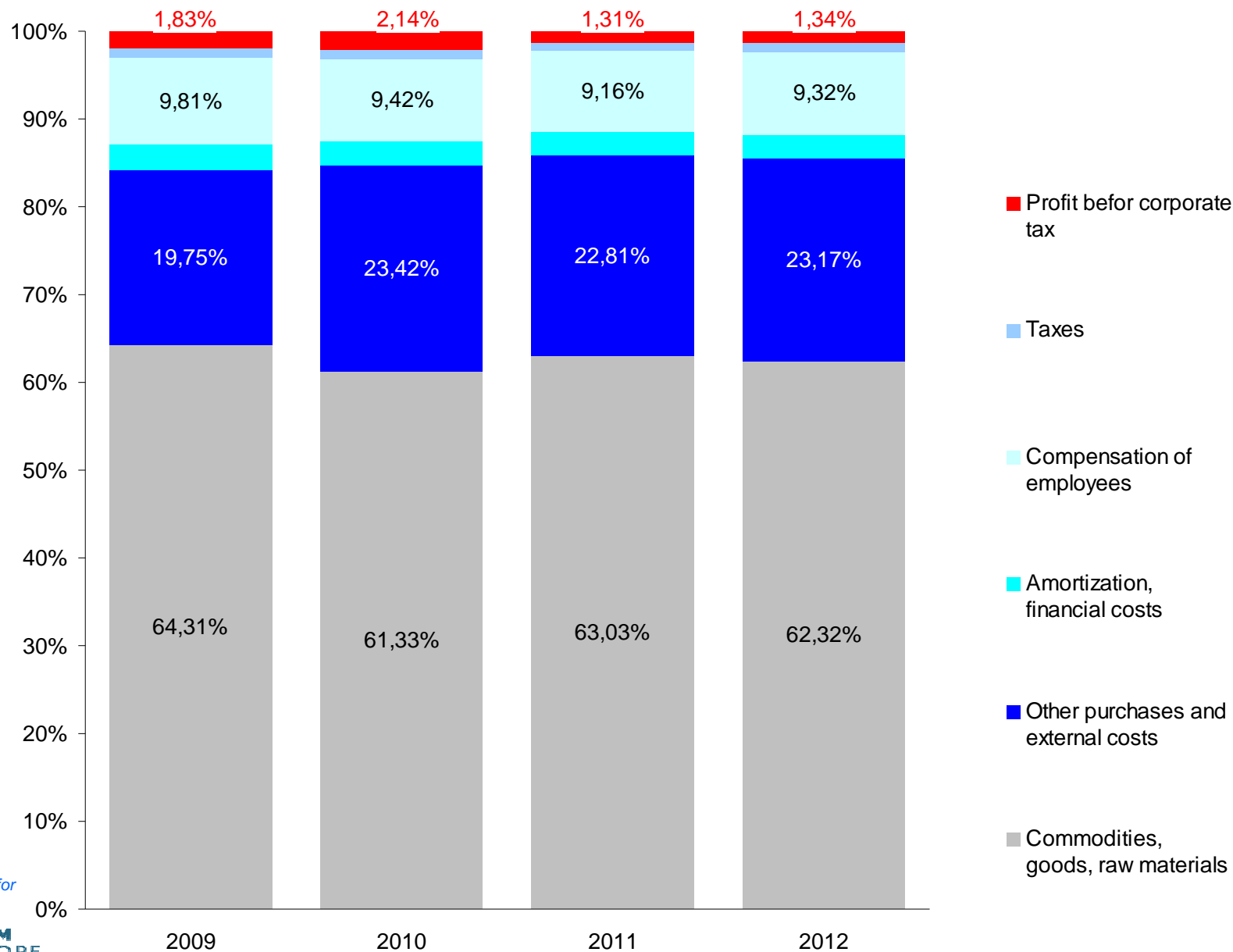
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Results in dairy food chain / costs in dairy process. industry : whole sector



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The French « observatory » on formation of prices and margins of food products

Source : OFPM, from INSEE (Esane)

Results in dairy food chain / costs in dairy process. industry : typology

Typology by structure of productions of dairy products :

Consumer products	liquid milk and cream, not concentrated	Companies owned by a group	Independent companies
	fermented milk (yoghurts)		
	cheese (except soft or spreads)		
	cheese spreads		
	soft white cheese		
Products for industry	butter and other fat products of milk		
	concentrated milk or cream		
	milk or cream in powder		
	buttermilk, casein, whey		

Results in dairy food chain

3

Costs in supermarkets chains

[Clic here](#) : All the results, tables, charts, informations, in the website

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<https://observatoire-prixmarges.franceagrimer.fr/resultats/Pages/ResultatsFiliere.aspx?idfiliere=6&sousmenuid=70>

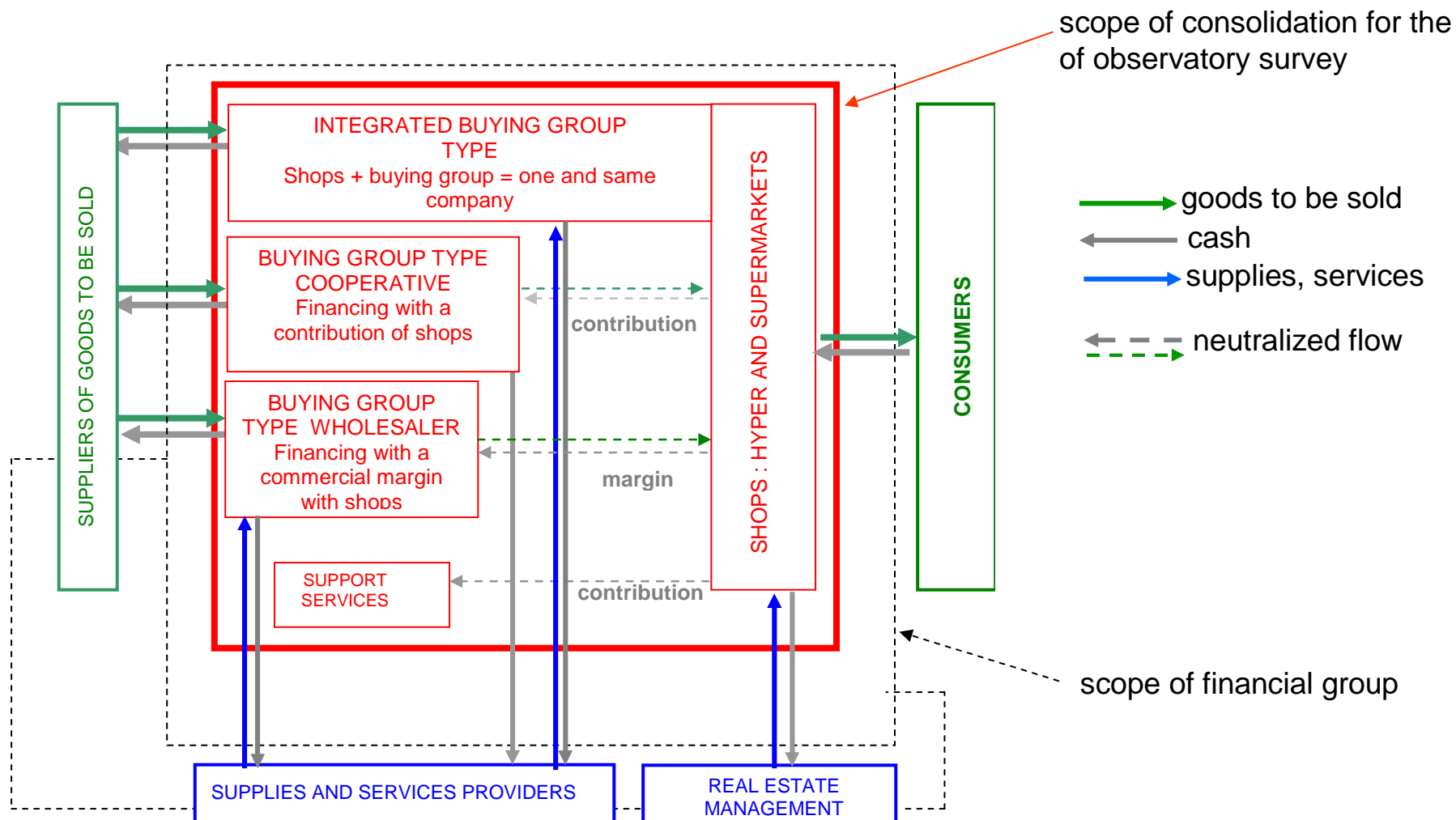
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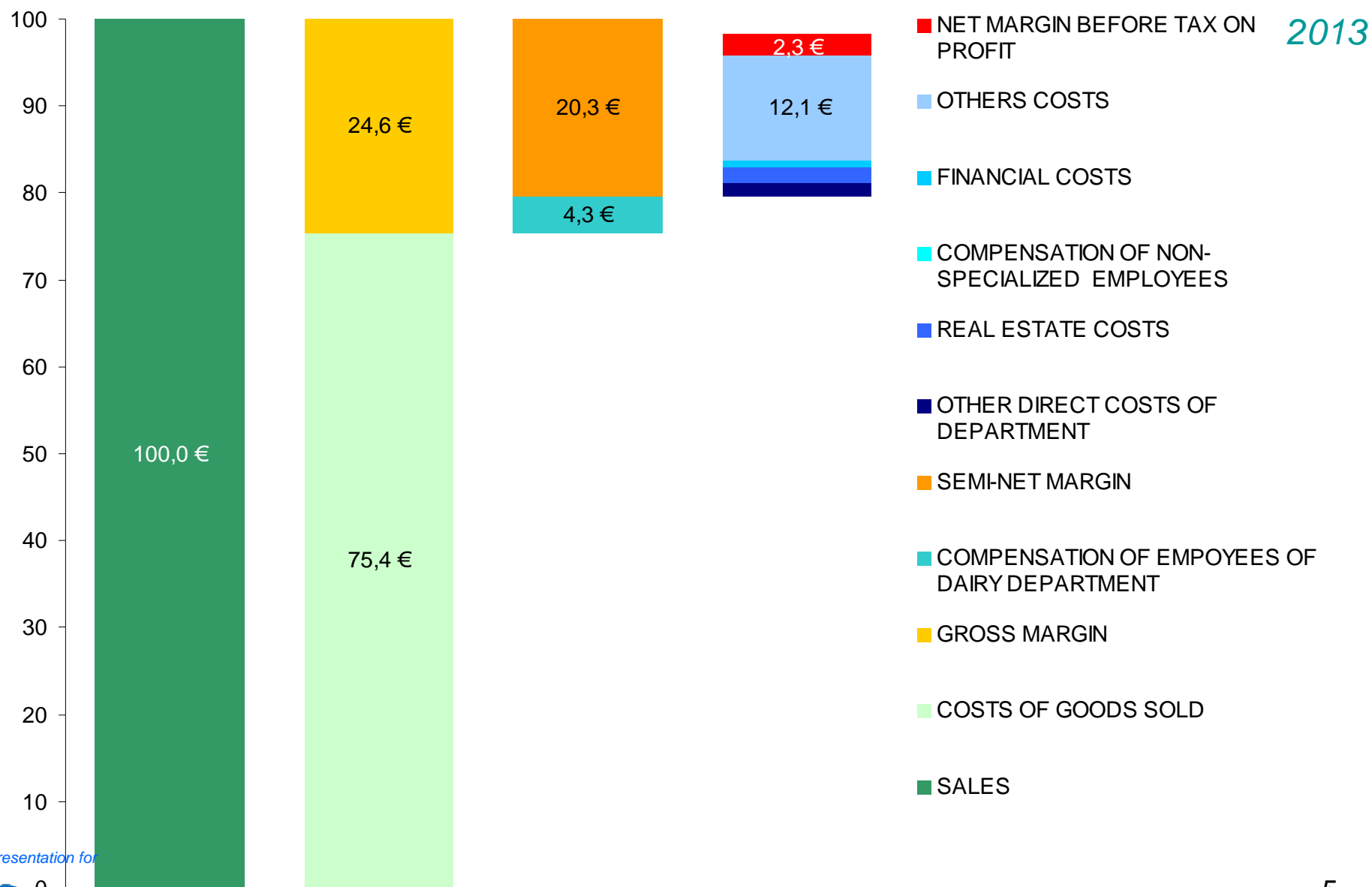
The French « observatory » on formation of prices and margins of food products

Results in dairy food chain / costs in supermarket chain : method



- Sales** of the department : meat department, delicatessen, poultry, fruits and veg., dairy, bakery
(measured at the entry of the perimeter : buying group)
- **Costs of goods sold**
(taken into account : back and rebates, internal logistical costs)
- = **Gross margin**
- **Specialized employees costs**
- = **Semi-net margin**
- **Others directs charges** (specialized supplies...)
- **Common costs** to be distributed (with keys) amongst the departments
(supplies, employees, real estate, financial costs, amortization...)
- = **Net margin** (before or after distribution of tax on profit)

Results in dairy food chain / costs in supermarket chain : results for dairy dpt.



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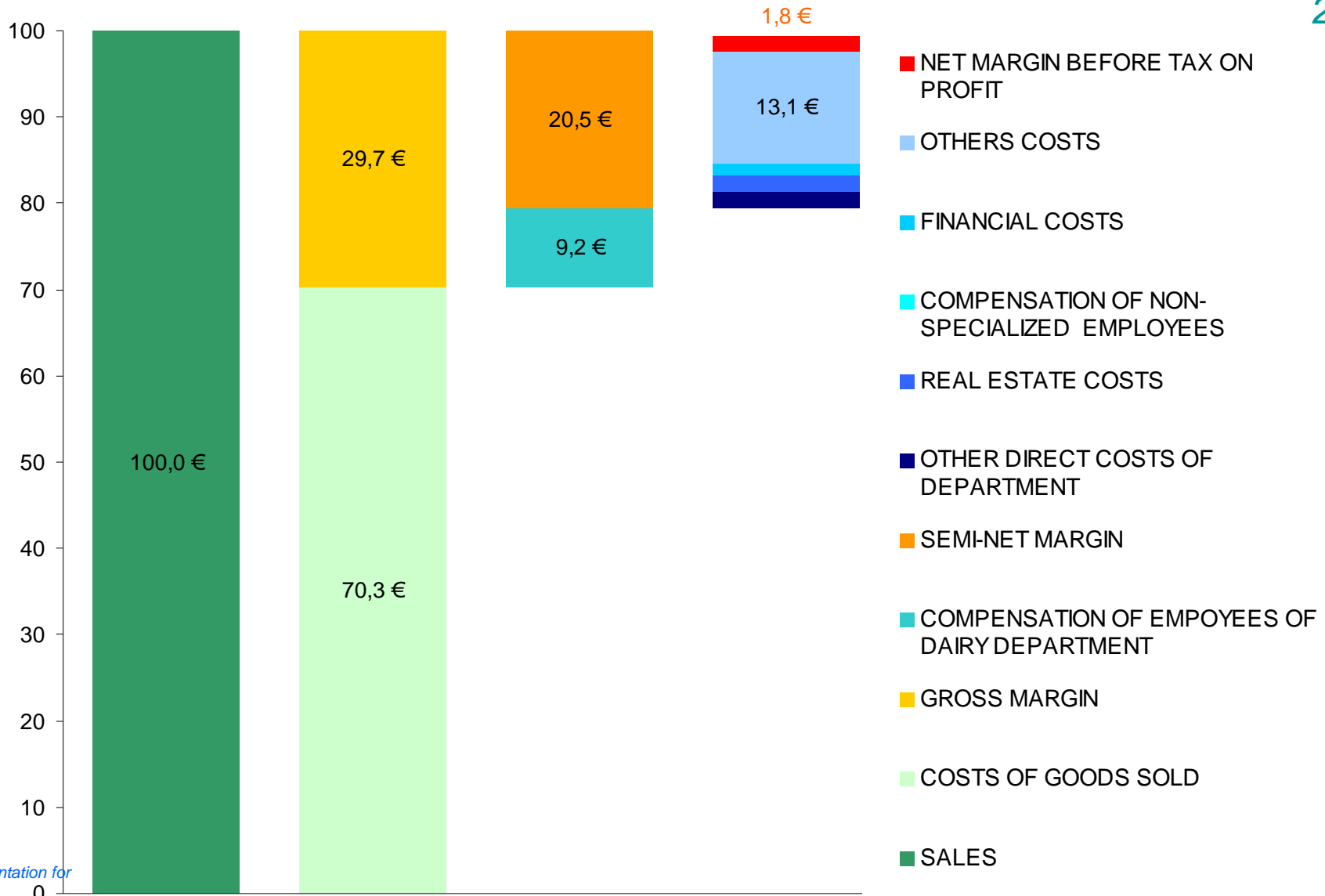
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Source : OFPM

Results in dairy food chain / costs in supermarket chain : all fresh food dpts

2013



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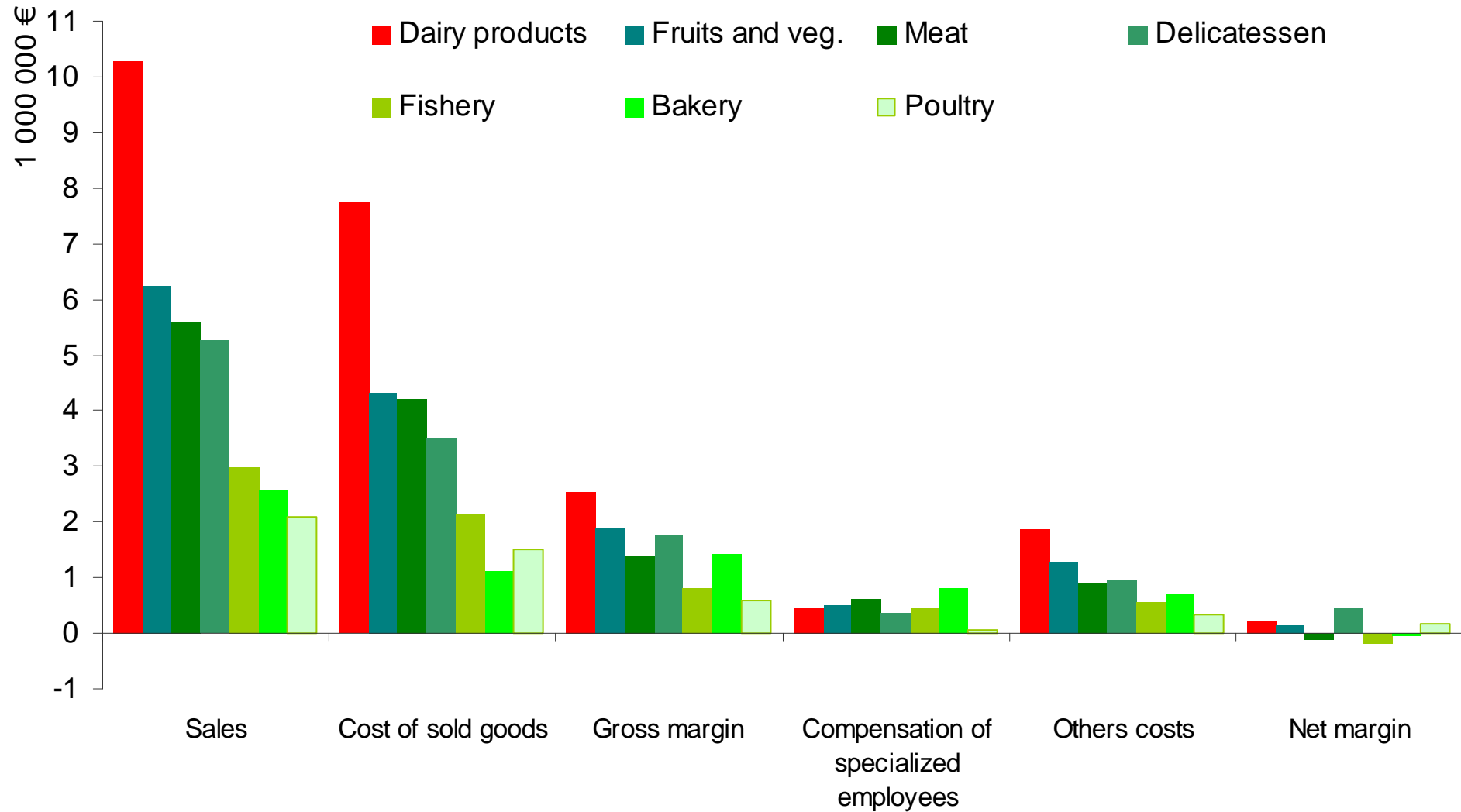
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Source : OFPM

Results in dairy food chain / costs in supermarket chain : Dairy dpt and others

2013



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The French « observatory » on formation of prices and margins of food products

Source : OFPM

Results in dairy food chain

3

Prices transmission indicators

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<https://observatoire-prixmarges.franceagrimer.fr/resultats/Pages/ResultatsFiliere.aspx?idfiliere=6&sousmenuid=459>

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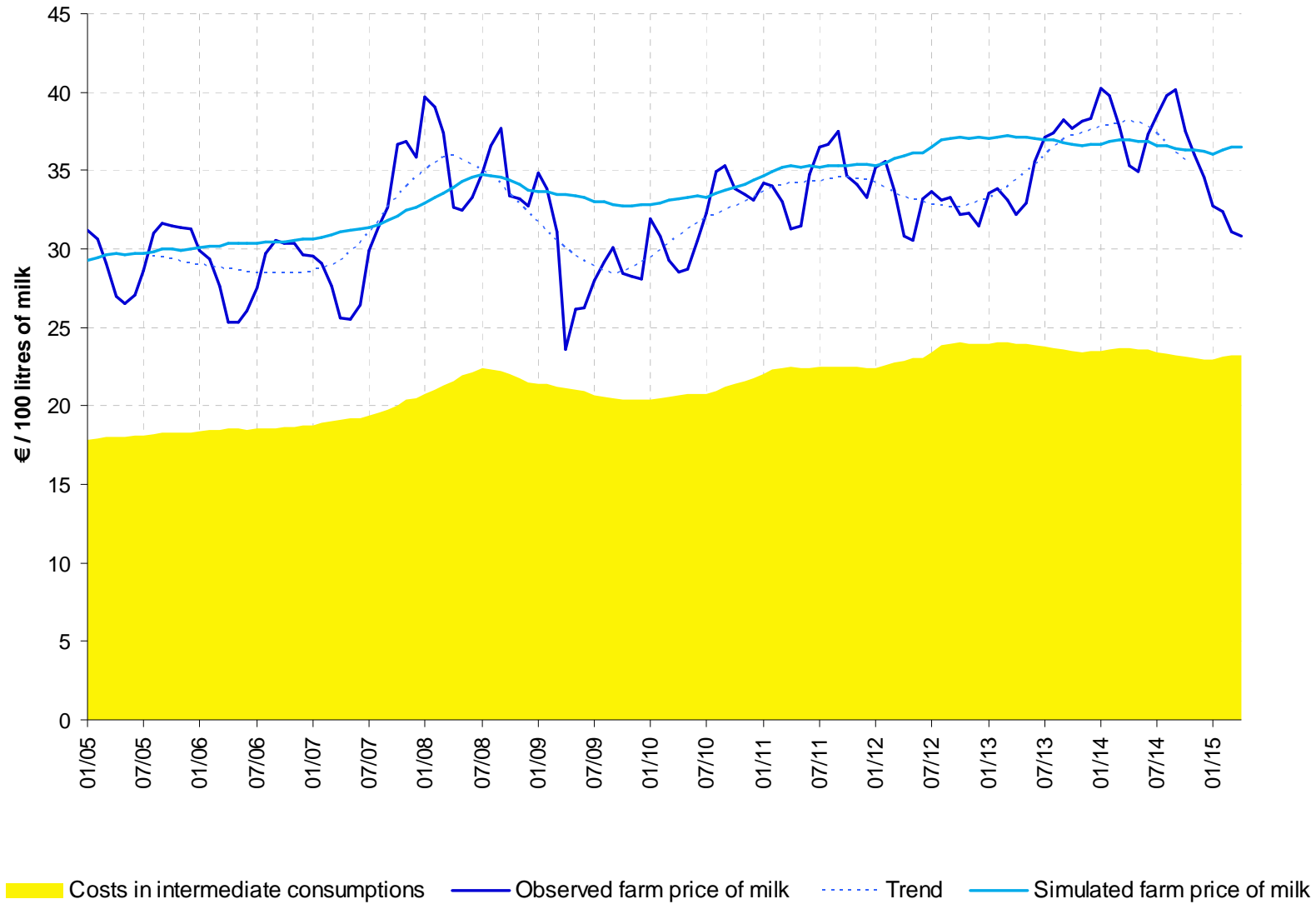
The French « observatory » on formation of prices and margins of food products

At every stage of the chain (agriculture, processing, distribution) :
calculation of a « simulated price »

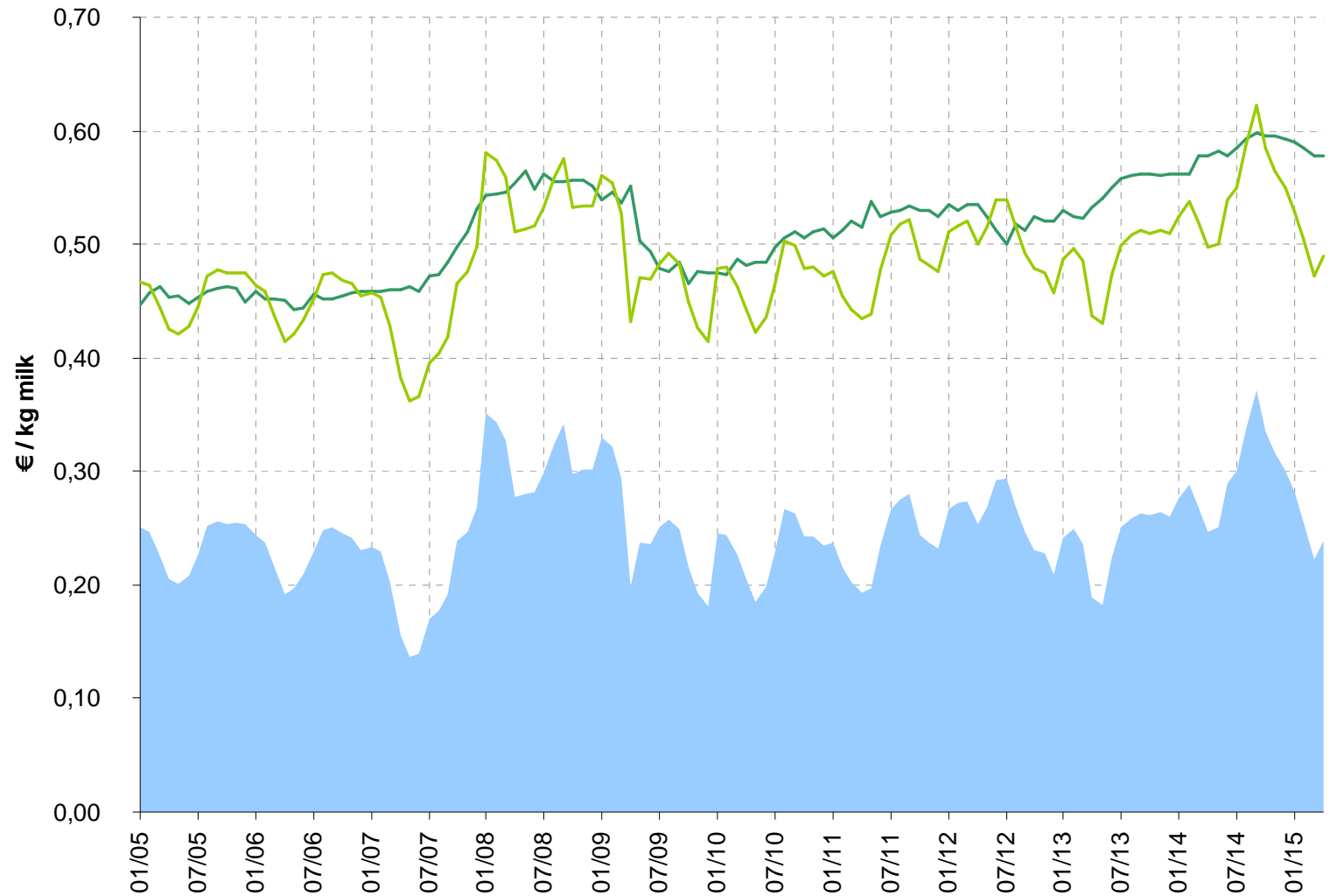
(of milk at the exit of farm, of processed product at the exit of factory, of consumer product in super-hyper markets).

This simulated price is such as the gross margin (GM) of the considered stage (GM on intermediate consumption in farm, GM on costs in milk in processing industry, gross margin on costs of sold products in supermarkets) is maintained at its level of 2005, inflation taken into account.

Results in dairy food chain / prices transmission : farm costs → milk price at farm level



Results in dairy food chain / prices transmission : cost in milk → dairy products prices at factory level



Presentation for

■ Cost in milk for processing

— Observed price of half-skimmed UHT milk exit factory



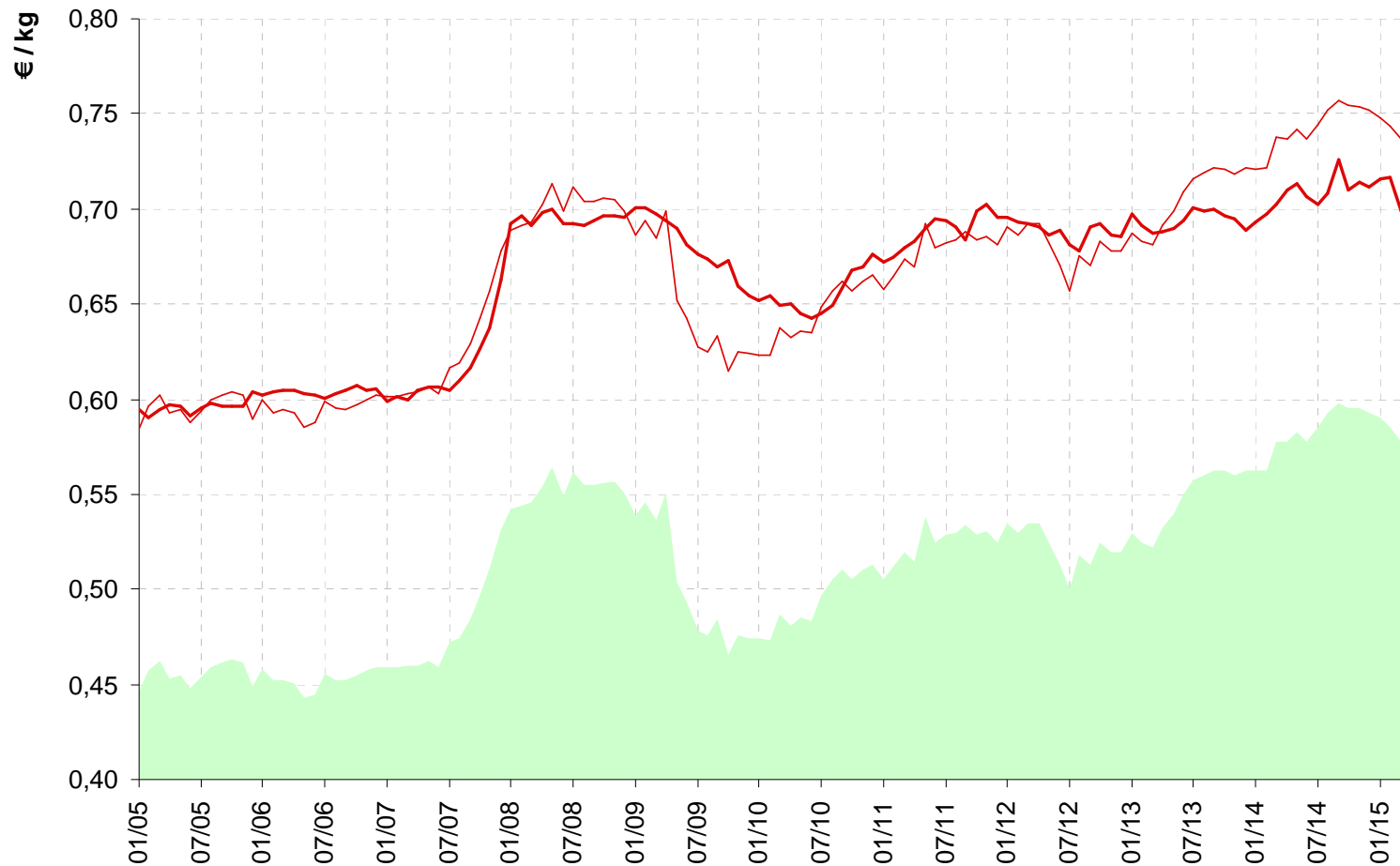
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— Observed price of half-skimmed UHT milk exit factory

The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, Kantar Worlpanel

Results in dairy food chain / prices transmission : dairy products prices at factory level → dairy products at retail level



- Half-skimmed UHT milk exit dairy factory
- Observed price of half-skimmed UHT milk in hyper-supermarkets
- Simulated price of half-skimmed UHT milk in hyper-supermarkets

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The French « observatory » on formation of prices and margins of food products

Source : OFPM, FranceAgriMer, INSEE

Main results of the Observatory

Dairy products

- ❑ Increase of milk production price in 2014...
- ❑ ... totally or partially transmitted by food processing industry, according to products
- ❑ Retail prices in supermarkets : increasing
- ❑ Amelioration of the situation of dairy farms
- ❑ Contrasted evolutions of results in dairy industry, according to products
- ❑ Gross and net margins of the dairy sector in supermarkets decreasing in 2013... in 2014 ?

> ÉDITION
avril 2015
**RAPPORT
AU PARLEMENT
2015**



Observatoire de la formation des prix et des marges des produits alimentaires



Presentation for



July 22, 2015

Thank you for attention



philippe.boyer@franceagrimer.fr
observatoire-prixmarge@franceagrimer.fr
<https://observatoire-prixmarges.franceagrimer.fr>