



EU milk margin index estimate up to 2018

An overview of estimates of costs of production and gross margin indexes of milk production in the EU

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In the current market and policy context, tracking milk margins is important for policy makers and stakeholders. DG Agriculture and Rural Development has built a tool for the monitoring of milk production costs and margins based on indexes. Margin updates are available on the Milk Market Observatory website.

The milk margin monitoring tool is based on the Farm Accountancy Data Network (FADN) and compensates for the time-lag in data availability by using price-trend information from DG Agriculture and Rural Development and Eurostat. Depending on the availability of data, the tool provides estimates after the end of the reporting quarter (see methodology in Annex).

This brief presents estimates of EU milk production costs and margin indexes (2008=100) up to the third quarter of 2018. Following a drop in 2009, milk production costs increased in the five subsequent years, reaching a peak in 2014 (an overall increase by almost 35% between 2009 and 2014). This trend ended in 2014, when operating costs embarked on a slow decline over the next four years, for a total drop of 12% between 2014 and 2017. Developments in milk production costs per tonne are mainly driven by changes in the cost of purchased feed and energy. The seasonality of milk production also plays a role in quarterly trends: milk yield is higher after calving in the second quarter of the year, which results in lower production costs per tonne.

The average EU milk margin index dropped by 30 % between 2008 and 2009, notably due to a fall in milk prices. Increasing milk prices in 2010-2014 more than outpaced rising operating costs, resulting in a recovery of the milk margin index. The price drop that occurred during 2015-2016 led to another deterioration of milk margins. Despite relatively low production costs in 2016, the average EU milk margin index was 7 % lower than in 2009. Milk margin indexes recovered through 2017, reaching the highest level of the decade (with a year-on-year increase of some 80 %), driven by a 21 % average price increase and a 2 % drop of costs year-on-year. **Milk margin indexes declined by 6 % in the first 3 quarters of 2018, to the level of 2013-2014.**

1. Production costs continued to go down in 2017, in line with a milk price improvement

EU¹ milk production costs² dropped by 10 % between 2008 and 2009, mostly driven by lower feed costs, both purchased and home-produced (see Figure 1). Between 2009 and 2014 overall production costs increased by 35 % as feedstuff costs increased by 48 % during that period. From 2014 onwards, milk production costs decreased slightly, as farmers made adjustments in a scenario of falling prices. In 2015, they declined by 8 % and in 2016 by another 2 %, coming back to their level from 3 years before. Estimates for 2017 and 2018 show an annual decrease of average production costs by 2 %. However, the second half of 2018 may bring a change of trend since some Member States – leaders in the volume of milk production – experienced adverse weather conditions, causing a shortage in home-produced feedstuffs. Therefore, an increase of purchased compounds is expected. A long-term comparison shows an overall increase of 6 % over the period 2008 - 2017.

Figure 2 shows the quarterly index of production costs over the last 2 years (until the third quarter of 2018).

After a decrease of almost 9 % in the second quarter of 2017 (a combined effect of lower prices of purchased feed and higher milk production³), production costs went up again until the last quarter of 2017. A similar pattern applies to 2018. In the two first quarters, costs dropped by 3 % and 8 % respectively and went up by 8 % in the third quarter, mainly due to an increase in purchased feed related to the severe drought in several MS in the summer of that year. Merely in the second quarters of both 2017 and 2018, production costs were below the average for 2008-2016. In the third quarters, their level reached the long-term average, and in the first quarters (2017 and 2018) and the last quarter 2017 they stood slightly above that average.

The methodology applied to estimate costs and margins is explained in the annex.

Figure 1 EU Milk operating costs, trend 2008-2017

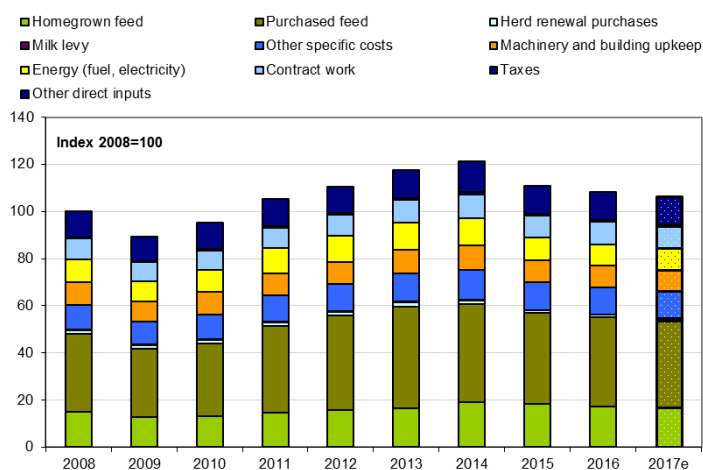
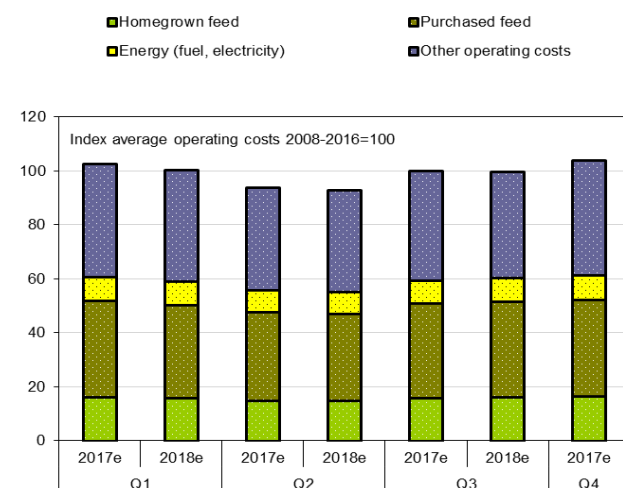


Figure 2 Trend of EU Milk operating costs, quarters in 2017 and 2018



Source: DG AGRI (EU FADN, Model of allocation of costs for milk, Information from market units) and ESTAT price indexes. e: estimate.

¹ "EU" refers to the EU-28 aggregate and EU-27 before Croatia joining in 2013. In this brief, the most recent FADN data are for 2016.

² In this brief, production costs refer to operating costs. They include feed, veterinary costs, upkeep of machinery, energy, contract work, taxes on land and buildings. They do not include depreciation, wages, rent and interests paid, nor opportunity costs for family labour and assets.

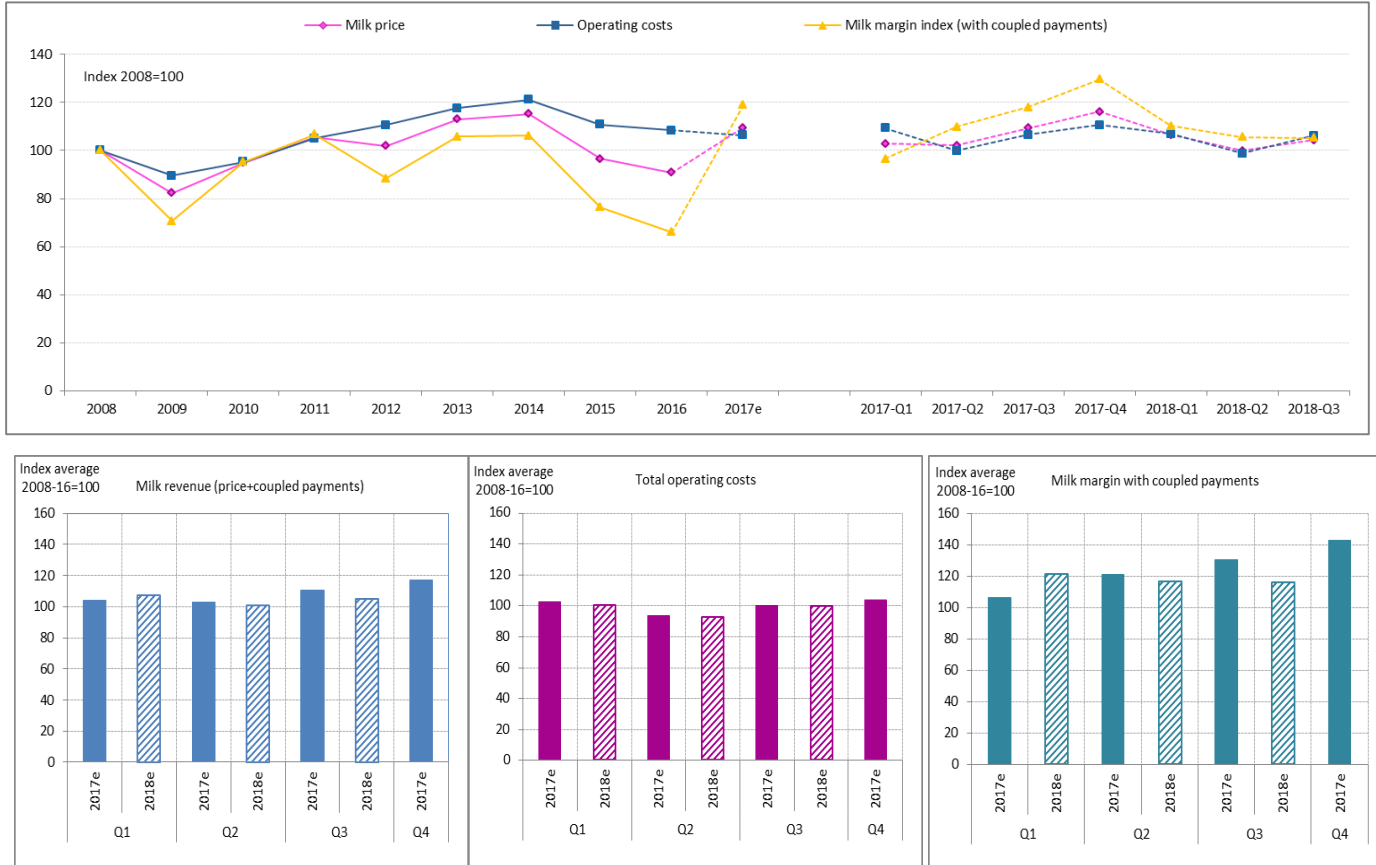
³ The seasonality of milk production plays a role in the development by quarter: milk production is higher in the second quarter and reduces production costs per tonne.

2. Milk margin index: large variability and highest level in the decade reached in 2017

Specialised milk farms experienced three notable price drops over the last decade: in 2009, in 2012 and the last and longest one from 2014 to mid-2016. All of these periods were followed by a milk price recovery. The developments in prices and costs had an impact on the EU milk gross margin index (2008=100) (see Box 1 in the annex), which showed strong variations over the past 10 years, with significant dips in 2009, 2015 and particularly in 2016, when it reached a record low (66 %) (Figure 3). This was the result of the milk price deterioration between 2014 and 2016, following the global milk production expansion in 2014 and the weakening of global import demand (notably from China and Russia). The situation on the global market changed again in 2017 due to a decline in milk production and growing demand in dairy fats, mainly butter and cheese. As a result, milk producers saw a steady increase in raw milk prices in 2017 (+21 %) which, combined with a moderate cost decrease (-2 %), led to a remarkable improvement in the milk margin index (+80 %), according to the estimates.

When looking more closely at the development of gross margins during the quarters of 2017 and 2018, it appears that the increase was mainly driven by a rise in milk prices (Figure 3). The global demand for dairy products was more stable in 2018, compared to its large growth in 2017. Production of raw milk in the first three quarters of 2018 was more than 1 % higher than in the same period of the previous year. By the end of 2017, the milk price was up to its 2014 level, but the operating costs were clearly lower, which led to a record high gross margin index in that period. A steady rise in the gross margin index was noted throughout the entire 2017. After reaching the peak, the first 3 quarters of 2018 saw a decline in the milk margin index by 6 % compared to the same period of 2017, due to a milk price drop by 4 % and despite a cost decline by 2 %. In the third quarter of 2018, operating costs started going up, which may consequently result in a further decline of margins.

Figure 3. EU indexes for milk price, operating costs and milk margin with coupled payments in 2008-2018 (2017 and 2018 estimates).



Source: DG AGRI (EU FADN, Model of allocation of costs for milk, Information from market units) and ESTAT price indexes, e: estimate.

Annex: Methodology

Box 1: Milk gross margin: definition

In this exercise, we focus on the gross margin, which corresponds to milk revenues minus operating costs, defined as follows:

- Revenues: milk and milk products and coupled milk payments
- Operating costs: specific costs (feed, veterinary ...) and other non-specific operating costs (upkeep of machinery, energy, contract work, taxes on land and buildings ...)

The reader should keep in mind that labour, land and capital costs still have to be paid out of the remaining amount. Likewise, it should be noted that neither receipts from 'by-products' of milk production (calf, cull dairy cow) nor subsidies (except coupled ones) are taken into account on the revenue side. More information on these aspects and on income of dairy producers can be found in the EU dairy farms report (FADN website).

Box 2: Principles of the method

The milk margin monitoring tool built by DG Agriculture and Rural Development aims at monitoring the trend of the EU milk margin up to the most recent possible market situation which is published at the Milk Market Observatory (MMO) website. It is based on FADN data as well as price and yields indexes from different sources (market units of DG Agriculture and Rural Development, EUROSTAT).

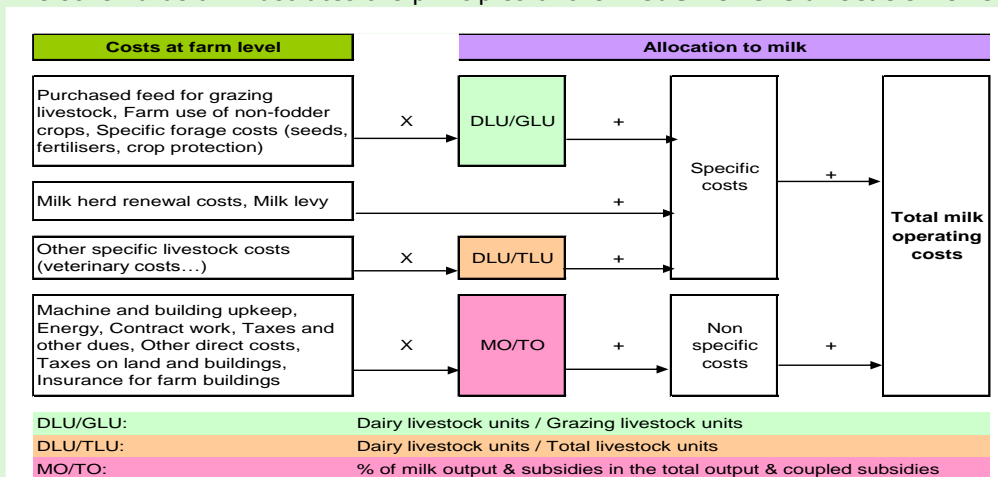
FADN (Farm Accountancy Data Network) is a European system of sample survey that takes place each year and collects structural and accountancy data relating to farms. Costs are given for the farm as a whole, not by enterprise. Therefore, in order to calculate milk production costs and margins, it is necessary to allocate part of the farm costs to the milk enterprise (see Box 3).

Furthermore, because of the time needed to collect, check and correct the data from all the EU Member States, data are available with a time lag: the most recent FADN data currently available are for the 2016 accounting year. That is why, for the purpose of the tool, it is necessary to estimate data for 2017 and its quarters and the quarters of 2018* (see Box 4 and Box 5).

** at the moment of the brief's redaction, indexes were available until the third quarter of 2018*

Box 3: The allocation of costs to the milk enterprise

The EU FADN unit has created several models to estimate costs and margins for the various products: arable crops, milk and beef, and permanent crops. These models allocate farm costs to a particular product using different ratios. The schema below illustrates the principles of the **model for the allocation of costs for milk**.



To obtain reliable estimates of production costs and margins, it is necessary to focus on specialised dairy farms. To qualify as such, a farm has to dedicate more than 40% of its production *potential* to milk production. On top of this main criterion, an *actual* specialisation rate of more than 35% is required. In FADN 2016, 14 718 sample farms fulfilled these criteria and their average milk specialisation rate was 64.8%. The total volume of milk production represented by these FADN farms corresponds to around 90 % of the total milk production from the FADN field of survey.

Box 4: The estimates for 2017 and 2018

The yield, output, operating costs and gross margins for 2017 and 2018 are estimated based on milk yield indexes, milk price indexes and detailed input price indexes. Specific indexes for each Member State are used. In those Member State where the accounting year does not correspond to the calendar year, the underlying data are adjusted using the same methodology (indexes) to fit the calendar year (which is not the case in the EU dairy farms report). It is assumed that structures (number of cows per farm, input quantities) remain unchanged as compared to the base year 2016. The sources of the indexes used are the following:

- For milk price: DG Agriculture and Rural Development
- For milk yield: EUROSTAT databases, DG Agriculture and Rural Development
- For purchased feed: EUROSTAT databases, DG Agriculture and Rural Development
- For other inputs: EUROSTAT databases (Agricultural prices and price indexes).

These estimates are calculated at aggregated level.

Box 5: The quarterly estimates in 2017 and 2018

The estimates of the quarters seek to monitor closely the situation for dairy farmers. The output, operating costs and gross margin for quarters are estimated at aggregate level based on milk yield indexes, milk price indexes and simplified input price indexes for feed, energy, veterinary costs, buildings maintenance, inflation and other costs. The aggregate level and the simplified indexes make it possible to obtain quick results.

For milk price and purchased feed, we use the same source as mentioned above. The milk yield is taken from the Medium Term Outlook done by DG Agriculture and Rural Development. For energy, after investigating the available data, we used the EU weighted average of the 'Consumer prices of heating gasoil inclusive of duties and taxes', after having adjusted it to better fit our historical data series.

For the feed, both home-grown and purchased, an index of compound feedstuffs for cattle excluding calves has been applied (the grains are valued at market price in FADN so we find this index the most appropriate to our needs).

The seasonality of milk production is taken into account:

The actual fluctuations of milk production during the year have been applied (average share of milk production by quarter at national level).

This document does not necessarily represent the official views of the European Commission

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