Calculating the gross and net margins of milk production in the EU 28 from 1989 to 2019

Analysis results based on data provided by the European Commission's Farm Accountancy Data Network (FADN) for the years 1989-2003 (SGM) and 2004-2019 (SO)

on behalf of the European Milk Board (EMB)

Compiled by:

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1 Calculation concept

Four different types of margin are calculated: the gross margin, the net margin and the net economic margin I + II. The methods for calculating the margins are based on the EU method in the EU Dairy Farms Report. For methodical reasons, the allocation factors and also the chosen wage rate deviate from the EU method. Two variants are calculated for the wage rate (simple and qualified wage rate).

The FADN standard results for specialised dairy farms in the EU (average farms) served as the database for the calculations. The obtained results are stated for the years 1989 to 2003 and 2004 to 2019. Between 1989 and 2003, the type of farming is classified according to the standard gross margin (SGM), while the standard output (SO) is used as from 2004.

Total milk revenue =

Milk revenue + coupled milk production subsidies + special payments based on Article 68 between 2009 and 2014[1]

Gross margin =

Total milk revenue plus coupled milk subsidies
minus input costs and general operating costs (excl. depreciation, wages, rent, interest[2] and taxes)

Net margin =

Total milk revenue plus coupled milk subsidies
minus total costs of milk production (input costs and general operating costs incl. depreciation, wages, rent, interest, taxes)

Net economic margin I

Total milk revenue plus coupled milk subsidies
minus total production costs for milk production (simple wage rate for milk producers[3] + total costs of milk production)

Net economic margin II

Total milk revenue plus coupled milk subsidies
minus total production costs for milk production (qualified wage rate for milk producers[4] + total costs of milk production)

[1] (SE650) Support_Art68 (€) and (SE616) Subsidies dairying (€)

[2] Wages, rent and interest = external factors

[3] Simple wage rate = wage amount paid to employees / h x hours worked by family members (without employer contribution)

[4] Qualified wage rate = twice the minimum wage / h x hours worked by family members (without employer contribution); the simple wage rate was used for Member States without statutory minimum wage (Austria, Denmark, Italy, Finland, Sweden and Cyprus). The qualified wage rate can only be ascertained for 2004 to 2019 due to missing data. The qualified EU wage rate is a weighted average wage (ascertained based on the weighted milk volume in the EU Member States).

Table 1: FADN variables and allocation factors used to calculate the gross margin

Variables on the income side		**Variables on the cost side**	**Allocation of cost positions to milk production based on[5]...**
Milk revenue (milk price)		Purchased feed	Share of dairy cows + cattle/ grazing livestock
Coupled milk production subsidies		Seeds, fertilizers, plant protection products, other, specific plant production costs	Share of dairy cows + cattle/ grazing livestock x share of fodder area/total land
Special payments		Other specific livestock costs	Share of dairy cows + cattle/total livestock
		Other overheads, maintenance machinery and buildings, energy, wages, depreciation, interest and taxes	Production value for milk + beef/total production value less internal usage
		Cattle revenue	Deduction as linked product
		Simple wage rate milk producer (= wages paid[6] x hours worked by family members)	Production value for milk + beef/total production value less internal usage
		Qualified wage rate milk producer (= twice the minimum wage x hours worked by family members)	Production value for milk + beef/total production value less internal usage

[5] The same allocation factors were used as in the "What is the cost of producing milk?" studies (cf. Jürgens, Poppinga, Wohlgemuth, various issues).

[6] This refers to average wage amounts paid by dairy farms to their employees.

2 Gross margin

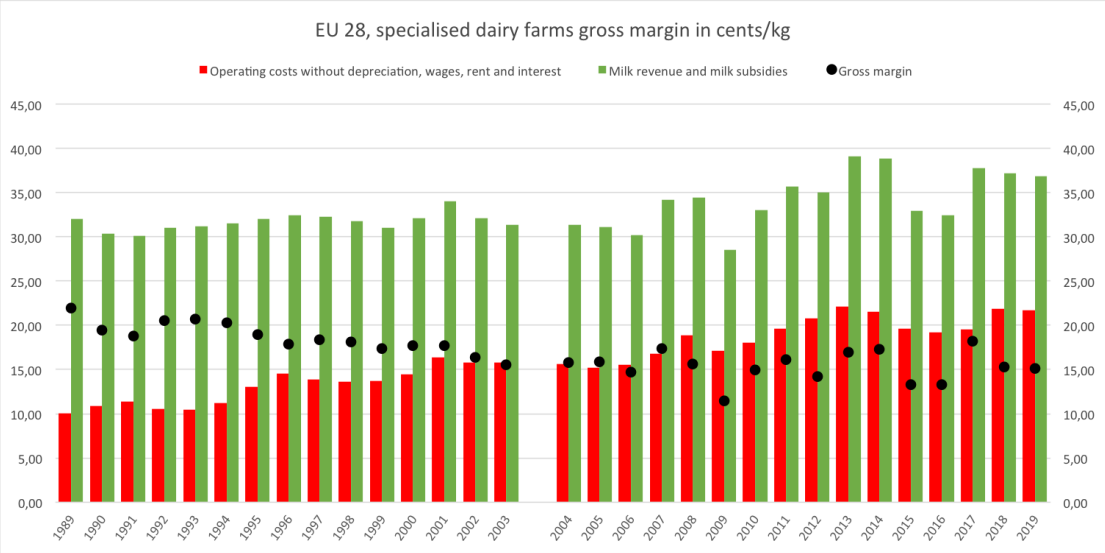

Fig. 1: Development of gross margins in cents per kilogram

Table 2: Gross margin in cents/kg milk 1989-2003

Year	**1989***	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Represented farms (in k)	575	572	572	457	447	421	489	455	458	453	392	392	392	360	358
Operating costs without depreciation, wages, rent and interest	10.07	10.83	11.34	10.55	10.48	11.25	13.03	14.57	13.87	13.63	13.67	14.44	16.34	15.79	15.82
Milk revenue and milk subsidies	32.05	30.31	30.08	31.05	31.20	31.54	32.00	32.42	32.25	31.73	31.03	32.11	34.01	32.12	31.33
Gross margin	**21.98**	**19.48**	**18.74**	**20.51**	**20.72**	**20.29**	**18.97**	**17.86**	**18.39**	**18.10**	**17.36**	**17.67**	**17.66**	**16.33**	**15.52**

*1989-2003 FADN data based on standard gross margin (SGM)

Table 3: Gross margin in cents/kg 2004-2019

Year	**2004***	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Represented farms (in k)	499	500	496	714	703	607	572	564	572	585	615	555	581	577	426	423
Operating costs without depreciation, wages, rent and interest	15.59	15.17	15.51	16.79	18.85	17.09	18.03	19.62	20.79	22.13	21.54	19.63	19.17	19.55	21.88	21.72
Milk revenue and milk subsidies	31.35	31.07	30.20	34.17	34.44	28.54	33.00	35.71	35.04	39.09	38.82	32.89	32.45	37.76	37.14	36.87
Gross margin	**15.75**	**15.90**	**14.69**	**17.38**	**15.58**	**11.44**	**14.97**	**16.08**	**14.25**	**16.96**	**17.27**	**13.26**	**13.28**	**18.21**	**15.26**	**15.15**

*2004-2019 FADN data based on standard output (SO)

3 Net margin 1989-2019

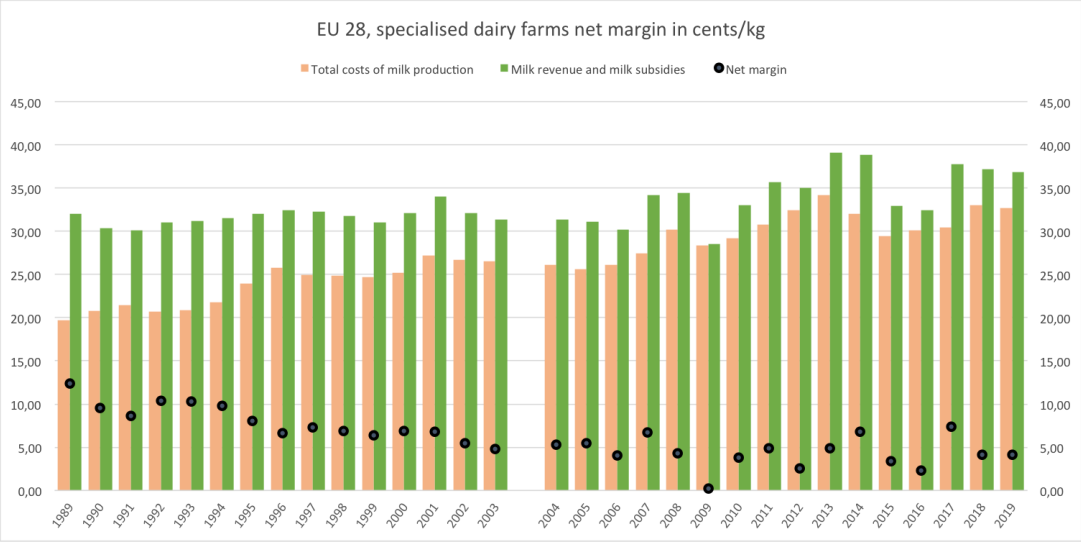

Fig. 2: Development of net margins in cents per kilogram

Table 4: Net margin in cents/kg milk 1989-2003

Year	**1989***	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Represented farms (in k)	575	572	572	457	447	421	489	455	458	453	392	392	392	360	358
Total costs of milk production	19.69	20.74	21.44	20.66	20.89	21.75	23.93	25.81	24.97	24.85	24.68	25.21	27.21	26.68	26.50
Milk revenue and milk subsidies	32.05	30.31	30.08	31.05	31.20	31.54	32.00	32.42	32.25	31.73	31.03	32.11	34.01	32.12	31.33
Net margin	**12.36**	**9.57**	**8.64**	**10.39**	**10.31**	**9.79**	**8.07**	**6.61**	**7.29**	**6.88**	**6.35**	**6.90**	**6.80**	**5.44**	**4.84**
*1989-2003 FADN data based on standard gross margin (SGM)															

Table 5: Net margin in cents/kg 2004-2019

Year	**2004***	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Represented farms (in k)	499	500	496	714	703	607	572	564	572	585	615	555	581	577	426	423
Total costs of milk production	26.07	25.59	26.15	27.44	30.16	28.33	29.21	30.80	32.46	34.17	32.01	29.47	30.11	30.40	33.05	32.70
Milk revenue and milk subsidies	31.35	31.07	30.20	34.17	34.44	28.54	33.00	35.71	35.04	39.09	38.82	32.89	32.45	37.76	37.14	36.87
Net margin	**5.28**	**5.48**	**4.06**	**6.72**	**4.28**	**0.21**	**3.79**	**4.90**	**2.58**	**4.92**	**6.81**	**3.42**	**2.34**	**7.36**	**4.09**	**4.17**
*2004-2019 FADN data based on standard output (SO)																

4 Net economic margin I 1989-2019

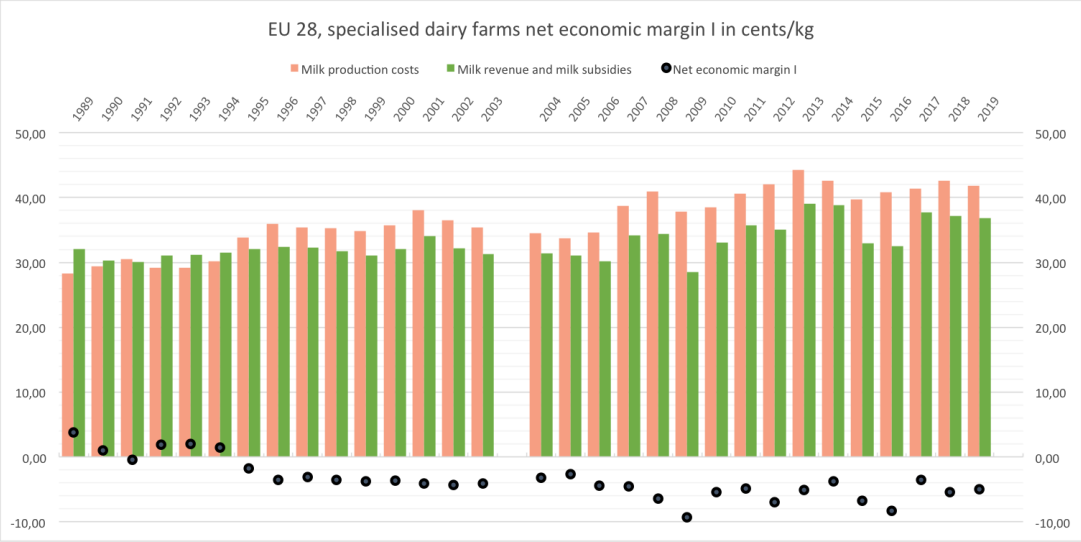

Fig. 3: Development of the net economic margin I in cents/kg milk

Table 6: Net economic margin in cents/kg milk 1989-2003

Year	**1989***	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Represented farms (in k)	575	572	572	457	447	421	489	455	458	453	392	392	392	360	358
Total costs of milk production	19.69	20.74	21.44	20.66	20.89	21.75	23.93	25.81	24.97	24.85	24.68	25.21	27.21	26.68	26.50
Simple wage rate for milk production	8.57	8.60	9.06	8.51	8.27	8.42	9.88	10.13	10.37	10.48	10.13	10.55	10.89	9.82	8.93
Milk production costs (total)	28.26	29.35	30.50	29.17	29.16	30.16	33.81	35.95	35.34	35.33	34.81	35.76	38.10	36.50	35.43
Milk revenue and milk subsidies	32.05	30.31	30.08	31.05	31.20	31.54	32.00	32.42	32.25	31.73	31.03	32.11	34.01	32.12	31.33
Net economic margin I	**3.79**	**0.97**	**-0.42**	**1.88**	**2.03**	**1.38**	**-1.81**	**-3.53**	**-3.08**	**-3.60**	**-3.78**	**-3.65**	**-4.09**	**-4.38**	**-4.10**
*1989-2003 FADN data based on standard gross margin (SGM)															

Table 7: Net economic margin in cents/kg milk 2004-2019

Year	**2004***	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Represented farms (in k)	499	500	496	714	703	607	572	564	572	585	615	555	581	577	426	423
Total costs of milk production	26.07	25.59	26.15	27.44	30.16	28.33	29.21	30.80	32.46	34.17	32.01	29.47	30.11	30.40	33.05	32.70
Simple wage rate milk production	8.48	8.16	8.46	11.28	10.75	9.50	9.25	9.76	9.58	10.07	10.60	10.22	10.67	10.94	9.55	9.13
Milk production costs (total)	34.55	33.75	34.60	38.72	40.91	37.82	38.46	40.56	42.04	44.24	42.61	39.69	40.78	41.34	42.60	41.84
Milk revenue and milk subsidies	31.35	31.07	30.20	34.17	34.44	28.54	33.00	35.71	35.04	39.09	38.82	32.89	32.45	37.76	37.14	36.87
Net economic margin I	**-3.20**	**-2.69**	**-4.40**	**-4.56**	**-6.47**	**-9.29**	**-5.46**	**-4.85**	**-7.00**	**-5.16**	**-3.79**	**-6.80**	**-8.33**	**-3.58**	**-5.46**	**-4.96**
*2004-2019 FADN data based on standard output (SO)																

5 Net economic margin II 2004-2019

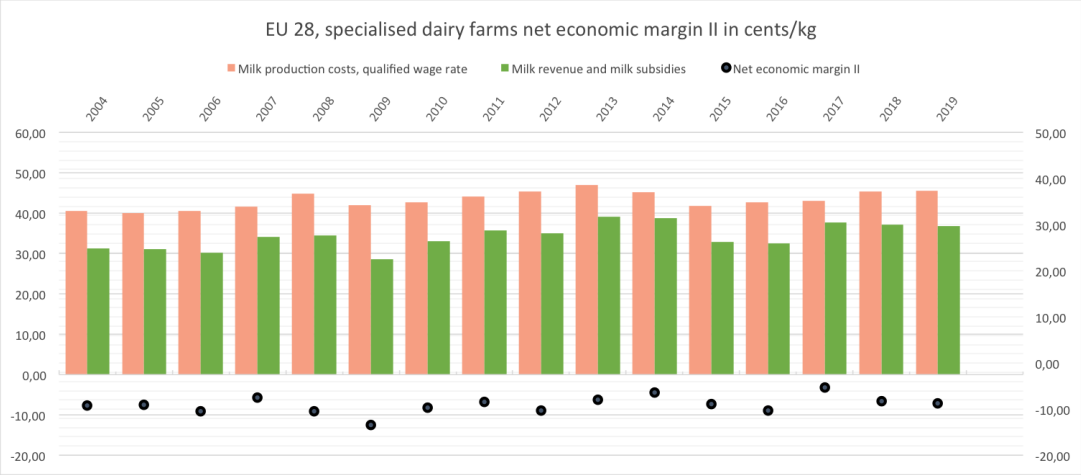

Fig. 4: Development of the net economic margin II in cents/kg milk

Table 8: Net economic margin II in cents/kg milk 2004-2019

Year	**2004***	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Represented farms (in k)	499	500	496	714	703	607	572	564	572	585	615	555	581	577	426	423
Total costs of milk production	26.07	25.59	26.15	27.44	30.16	28.33	29.21	30.80	32.46	34.17	32.01	29.47	30.11	30.40	33.05	32.70
Qualified wage rate for milk production	14.54	14.46	14.50	14.17	14.66	13.70	13.52	13.35	12.94	12.91	13.27	12.28	12.58	12.68	12.33	12.86
Milk production costs (total)	40.61	40.05	40.65	41.61	44.82	42.02	42.73	44.15	45.40	47.08	45.28	41.75	42.69	43.08	45.38	45.56
Milk revenue and milk subsidies	31.35	31.07	30.20	34.17	34.44	28.54	33.00	35.71	35.04	39.09	38.82	32.89	32.45	37.76	37.14	36.87
Net economic margin II	**-9.26**	**-8.98**	**-10.44**	**-7.45**	**-10.39**	**-13.49**	**-9.73**	**-8.45**	**-10.36**	**-8.00**	**-6.46**	**-8.86**	**-10.24**	**-5.32**	**-8.24**	**-8.69**

*2004-2019 FADN data based on standard output (SO)

6 Summary of the results

The development in gross margins (Fig. 1) from 1989 to 2019 shows that the profitability of milk production in the EU has declined over the years. Despite increased revenue from milk production and subsidies, the gross margins for 2004 to 2019 are mostly below those for the period 1989 to 2003, apart from a few exceptional years.[7] From 2008, there are clear and even extreme fluctuations in revenue due to the producer price crises. The fact that the direct costs continue to increase in general terms, while also being subject to far less fluctuation in comparison, means a deterioration in gross margins for the dairy farms. The average gross margin for the 15 years from 1989 to 2003 amounted to 18.64 cents per kilogram, compared to an average gross margin of 15.31 cents per kilogram produced milk for the 15 years from 2005 to 2019.

Furthermore, the development in net margins (Fig. 2) also indicates that there were four years between 2008 and 2019 (2009, 2012, 2015, 2016) in which scarcely any profit at all was produced by the dairy farmers. Besides the direct costs, the net margin includes all other necessary expenditure by the dairy farms but without considering the costs for the farmer's work. While between 1989 and 2003, the net margins ranged from 5 to maximum 12 cents per kilogram milk, in the years 2004 to 2019 they were between rounded 0 and 7 cents per kilogram milk. The average net margin for the 15 years from 1989 to 2003 amounted to 8.0 cents per kilogram, compared to an average gross margin of 4.3 cents per kilogram for the 15 years from 2005 to 2019. A comparison of these two 15-year periods thus shows that milk producer profits decreased by nearly half.

The net economic margin I (Fig. 3) describes which economic results the EU dairy farms would have produced on average if they had worked on the basis of the labour costs which the farms paid as the average wage to their employees. Under this assumption, Fig. 3 shows quite clearly that the net economic margin I of the EU dairy farms is negative from 1995. The net economic margin I for the years 2008, 2012, 2015 and 2016 shows very negative values similar to the development in profits. The revenue from milk production between 1995 to 2019 should have been at least 1.8 to 9.3 cents higher in order for the specialised dairy farms to be able to generate at least the farmer's labour costs estimated on the level of an average wage from their income.

The net economic margin II was calculated on the basis of twice the minimum wage as labour cost rate (Fig. 4). In the years 2004 to 2019, milk revenue should have been at least 5.3 to 13.5 cents per kilogram higher for the dairy farmers to generate their own labour costs estimated on the basis of twice the minimum wage from their income.

[7] These sets of data are only conditionally comparable. As from 2004, the type of farming (specialised dairy farm in this case) was ascertained on the basis of the standard output (SO), while the standard gross margin (SGM) used to serve this purpose.