

JADWIGA SEREMAK-BULGE
MAGDALENA BODYŁ
Institute of Agriculture
and Food Economics – National Research Institute
Warsaw

MILK CONSUMPTION IN POLAND COMPARED TO OTHER COUNTRIES

The frequent comparisons of milk consumption in Poland and other countries and the ensuing opinions often rely on sources that are not always comparable, which leads to wrong conclusions. The article attempts to compare milk consumption in Poland and the selected countries determined by: the balance method based on macro data, with the use of FAO indices or dry mass content in final products and raw milk; on the basis of balances of basic product groups made by Eurostat for the European Union as a whole, and for each country separately; FAO, on the basis of statistical data and own methodology; AMI (Agramarkt Informations-Gesellschaft mbH) on the basis of EUROSTAT data and national statistics.

The analysis proves that making international comparisons and assessments and projections it is necessary to be very cautious is using different information sources. Comparison of balance sheet consumption in Poland with average consumption in the European Union and other countries shows that these differences are not as significant as commonly considered and the consumption growth possibilities are limited.

Keywords: milk consumption, comparison, balance method, raw milk, FAO, AMI.

Introduction

Despite the fact that the milk market, due to its sensitivity and importance¹, is one of the best monitored markets, especially in the developed world, and the production statistics and trade and consumption is the largest, the analysed milk consumption, especially international comparisons, require in-depth knowledge of the topic and

¹ Dairy products, apart from breads, are the basic foodstuffs, most often purchased by consumers. Expenditure on dairy products and butter account for ca. 14% of all food expenditure. Around 160-170 thousand farms were engaged in milk production in 2011-2012, and milk production in 2004-2011 accounted for ca. 17-20% of commercial production of Polish agriculture.

the aggregation methods, so as to avoid the danger of comparing the incomparable.

The balance sheet method rules, which define milk consumption, are simple (domestic production + import – export – use for feed = human consumption) and enable to define milk consumption and compare each country to one another. Yet, because of the fact that milk is also a source of protein and fat, and because of the huge variety of milk products and applied technology, the indices and methods applied by different institutions during the quantitative aggregation of milk products differ between each other. This is the reason for different results. For instance, export and import volume determined by FAO differs much from that given based on data from the Institute of Agricultural and Food Economics – National Research Institute (IERiGŻ) determined by content of dry mass in the exported and imported final products in raw milk (Table 1).

The rules of including each milk product in dairy products (which is principally the source of protein) or to the group of fat products also differ. For instance, FAO includes not only butter, but also cream in fat products while the Central Statistical Office (GUS) – in line with the Eurostat methodology – considers cream as dairy product.

Table 1

Milk export and import volume in Poland (in thousand t equivalent of raw milk)

| Specification | 2007 | 2008 | 2009 | 2010 |
|---------------------|------|------|---------------|------|
| | | | Export | |
| FAO ^a | 2615 | 3086 | 2985 | 3053 |
| IERiGŻ ^b | 2052 | 2502 | 2249 | 2256 |
| | | | Import | |
| FAO ^a | 559 | 531 | 666 | 785 |
| IERiGŻ ^b | 503 | 602 | 650 | 847 |

^a On the basis of raw milk consumption per product unit using indices applied by FAO.

^b On the basis of dry mass content in raw milk 0.12, drinking milk 0.122, cream 0.25, yoghurt and fermented drinks 0.15, ice cream 0.15, butter 0.85, ripened cheeses 0.5, curd 0.303, OMP 0.904, PMP 0.928, casein 0.9.

Source: FAO data ([http:// faostat.fao.org](http://faostat.fao.org)), IERiGŻ calculations based on the CAAC data.

In Poland, conversion factors based on dry mass are most often used methods for quantitative aggregation, while less frequently used ones are methods based on raw milk consumption per final product unit. The latter may differ significantly depending on the applied production technology. Progress in the milk industry and the growing use of additives, improvers, innovation, mainly for producing milk drinks, cheese and milk desserts or butter, replacement of powdered milk with dry whey, etc. makes the use of raw milk per final product unit differ among dairies and countries. For instance, milk consumption per 1kg of ripened cheese, which besides traditional curd also includes other curd and curd types, may vary between 2.5 to more than 7 litres depending on the production technology. Butter and yellow fats differ from one another by milk fat content (20 to 82%).

Because of methodical difficulties and limited comparability of data, the European Union gives detailed information about consumption of each group of milk products (cheese, drinking milk, condensed milk, milk drinks, cream and butter), but it no longer provides balance of milk consumption. FAO data about the milk consumption include total consumption of milk products expressed as raw milk equivalent, excluding milk used for producing butter and cream, which is considered to be fat consumption.

In Poland, the Central Statistical Office separately determines the unit milk consumption which includes all milk products (without milk used for producing butter) and butter consumption. It does not provide the total balance consumption of milk products expressed as raw milk equivalent. The Institute of Agriculture and Food Economics in the reports that analyse the milk market, in addition to unit milk and butter consumption, also provides total balance of milk consumption².

The frequent comparisons of milk consumption in Poland and other countries and the ensuing opinions often rely on sources that are not always comparable, which leads to wrong conclusions. The article is an attempt to compare milk consumption in Poland and the selected countries determined by:

- the balance method based on macro data, with the use of FAO indices or dry mass content in final products and raw milk;
- on the basis of balances of basic product groups made by Eurostat for the European Union as a whole, and each country;
- FAO, on the basis of statistical data and own methodology;
- AMI (Agrarmarkt Informations-Gesellschaft mbH), on the basis of EURO-STAT data and national statistics.

Production and consumption of milk determined by the balance method

FAO collects data about milk production and the most important milk products and external trade in these products in each country. There is lack of information about milk use for feed and purposes other than consumption. In consequence, in comparable studies, there is a need to adopt simplification that boils down to omission of feed and industrial use of milk in the balance. Thus, balance milk consumption was made equal to the national consumption and includes also milk used for producing butter³.

In the past decade, international milk trade volume globally represented 13.5-14.5% (ca. 104 million t equivalent of raw milk). Global import should be equal to export, but differences in workflow make the global import of milk

² Rynek mleka. Stan i perspektywy, nr 45. Analizy Rynkowe. IERiGŻ-PIB, Warszawa 2013.

³ The system error resulting from the omission of the use for feed is small, since high milk prices and the progressing intensification of this production cause a situation where, in recent years, milk use for feed has been gradually shrinking and accounted for 1-2% of production in the developed world in the past 10 years. In the developing countries, the consumption may be larger. From the correction point of view of the method, the error scale is smaller than problems with estimating the use for feed of milk, especially in the developing countries.

products shown by FAO usually smaller than export. The global milk product trade balance expressed as raw milk equivalent between 2005 and 2010 was oscillating around 5.1 to 6.7 million tonnes, which represented 0.8-0.9% of global production (Table 2).

In Asia and Africa, despite growing production, the permanent milk deficit continues or even deepens, which calls for supplementary import. Consumption exceeds production by 7.5-8.2% (Asia) to almost 17% (Africa). From 2005 to 2010, in the European Union, production surplus over deficit was ca. 9-11%. In the US, production surplus over deficit rose to more than 8% in 2010. In 2010, in the whole North, Central and South America, the production surplus over consumption was between 1.3% and 3.4%, while 5 years before, in the North America and Latin America milk production deficit exceeded 1%, while in South America production surplus was close to 3%.

Table 2

Milk production and balance milk consumption in 2005-2010 (million tonnes)

| Specification | Production | External trade balance | Consumption | Production | External trade balance | Consumption |
|--------------------------|------------|------------------------|-------------|------------|------------------------|-------------|
| | 2005 | | | 2010 | | |
| World | 648.7 | 5.2 | 643.5 | 723.1 | 6.7 | 716.4 |
| Africa | 34.3 | -5.8 | 40.1 | 41.1 | -6.9 | 48.0 |
| Asia | 217.4 | -16.2 | 233.6 | 267.0 | -21.8 | 288.8 |
| Europe | 215.2 | 13.5 | 201.7 | 213.1 | 14.4 | 198.7 |
| Including EU-27 | 154.0 | 12.6 | 141.4 | 152.5 | 14.9 | 137.6 |
| North and Latin Americas | 101.2 | -1.1 | 102.3 | 110.2 | 3.8 | 106.4 |
| Including the US | 80.3 | 2.4 | 77.9 | 87.5 | 6.8 | 80.7 |
| Australia and Oceania | 24.8 | 14.1 | 10.7 | 26.1 | 17.2 | 8.9 |
| Including New Zealand | 14.6 | 12.0 | 4.6 | 16.5 | 14.1 | 2.4 |
| South America | 54.2 | 1.6 | 52.6 | 63.8 | 0.8 | 63.0 |
| Poland ^a | 11.95 | 2.37 | 9.58 | 12.30 | 2.27 | 10.03 |
| Poland ^b | 11.95 | 2.10 | 9.54 | 12.30 | 1.37 | 10.36 |

^a According to FAO methodology.

^b In line with the IERiGŻ methodology based on dry mass content and the use for feed.

Source: FAO data (<http://faostat.fao.org>), IERiGŻ calculations based on the CAAC data, own calculations.

Globally, the increase in milk production was ahead of population growth in the analysed period, which enabled to increase milk consumption from ca. 99 kg in 2005 to almost 104 kg/per inhabitant in 2010 (Table 3). However, in Asia and Africa, a meaningful increase in milk consumption (caused by increased consumption and population growth) called for increased import. In consequence, the negative milk product trade balance on those continents deepened. This in

turn stimulated export and boosted trade surplus mostly in the US and New Zealand. In the European Union, consumption drop in 2005-2010 enabled to increase export and trade surpluses despite smaller milk production. In South America, quantitative surplus of export over import of milk products shrunk due to a stronger rise in consumption. Milk deficit in Africa remained virtually unchanged, and even deepened in Asia despite a strong increase in production.

Table 3

Production and balance milk consumption per capita (kg)

| Specification | Production | Consumption | Production/ Consumption (%) | Production | Consumption | Production/ Consumption (%) |
|-----------------------------|------------|-------------|--------------------------------|------------|-------------|--------------------------------|
| | 2005 | | | 2010 | | |
| World | 99.6 | 98.8 | 100.8 | 104.8 | 103.8 | 100.9 |
| Africa | 37.2 | 43.5 | 85.5 | 39.5 | 46.2 | 85.6 |
| Asia | 55.2 | 59.3 | 93.1 | 64.3 | 69.5 | 92.4 |
| Europe | 295.0 | 276.4 | 106.7 | 285.9 | 266.6 | 107.2 |
| Including EU-27 | 314.2 | 288.5 | 108.9 | 310.4 | 280.0 | 110.9 |
| North and Latin Americas | 194.6 | 196.8 | 98.9 | 207.6 | 200.5 | 103.5 |
| Including the US | 265.1 | 257.2 | 103.1 | 278.7 | 257.3 | 108.3 |
| Australia and Oceania | 739.9 | 318.9 | 232.0 | 732.8 | 248.9 | 294.4 |
| Including New Zealand | 3560.7 | 630.1 | 565.1 | 3801.4 | 427.3 | 889.7 |
| South America | 145.8 | 141.6 | 103.0 | 162.4 | 160.2 | 101.3 |
| Poland ^a | 313.1 | 251.1 | 124.7 | 319.2 | 260.3 | 122.6 |
| Poland ^b | 313.1 | 250.0 | 125.2 | 319.2 | 268.9 | 118.7 |

^a According to FAO methodology.

^b According to IERiGZ methodology incl. the use for feed.

Source: own calculations based on FAO data (<http://faostat.fao.org>), Central Statistical Office, the CAAC.

Milk consumption across the world regions differs. In the developed EU countries, the US and Australia and Oceania, unit consumption exceeds the average level from 2.5 to 3 times. In Australia and Oceania, unit consumption dropped by 22% in 2005-2010 (to 249 kg per capita), chiefly due to limiting milk consumption in New Zealand where milk and milk product consumption dropped by 1/3. In the EU, unit milk consumption shrank by 3% (to 280 kg per capita), and in the US continued the same (more than 257 kg per capita) in the same period. In Asia, unit consumption in 2005-2010 grew by 17%, and in Africa by more than 6%, however, it was still several times smaller than in Europe or North America and 33-55% smaller than the average milk consumption globally. The meaningful growth of population on these continents boosted global milk consumption during that period by 24 and 20% respectively.

Increased demand for milk and milk products from countries experiencing deficit stimulated its production – chiefly in New Zealand and other countries of Oceania. With declining consumption, this is the most imbalanced region of milk production in global terms, where milk production exceeds consumption almost 3 times (in New Zealand more than 7 times). Europe remained a surplus region, despite 1% drop in production in 2005-2010. Production surplus over consumption rose by 0.5 pp to more than 7% in 2005-2010, chiefly due to the CIS countries and the new EU Member States.

The EU-27 with annual production of ca. 150 million tonnes of milk per annum ceased to be the centre of global production, albeit by capita the figure is ca. 3 times larger than the global average and in 2010 came to more than 310kg on average, and its share in global production accounted for more than 21%. The EU, due to large consumption (280 kg of raw milk equivalent per capita), is also the largest market for milk products. It is then one of the largest exporters and importers of milk products worldwide (more than 61% of the world's export volume and ca. 50% of global import). However, most milk products are traded among Member State. Taking export to third countries alone, the EU has more than 17% share in the world's export volume and is only second to Oceania, i.e. New Zealand and Australia, whose total share in the world's export exceeds 20%. The share of North and South Americas in global export is half of that.

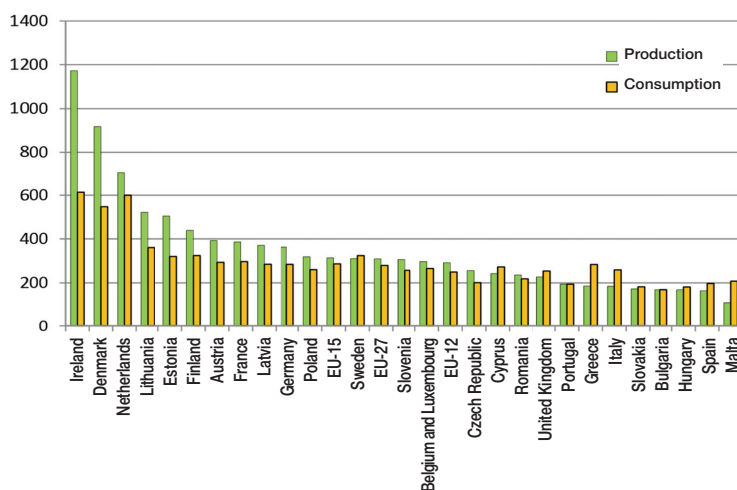


Fig. 1. Milk production and balance consumption per capita (kg) in 2010.

Global milk consumption in the EU-27, as total production and external trade balance of milk products accounted for 138.5 million tonnes⁴ in 2010 and represented almost 20% of global consumption. The share was 3 pp smaller than in

⁴ Including total trade registered by FAO, consumption was slightly smaller (137.5 million tonnes).

2005. Almost 83% of milk in the EU (113.5 million tonnes in 2010) was consumed in the “old” EU countries, where the consumption is the largest (287 kg per capita, with 550-614 kg in Denmark, the Netherlands and Ireland to 194kg in Portugal). In the EU-12, the average milk consumption is 13% less (250 kg per capita, which varies between 360 kg in Lithuania and 169 kg in Bulgaria) (Fig. 1).

Poland, with production of more than 12 billion kg milk per annum is one of the largest producers and comes 4th in the EU, right after the UK, and before the Netherlands and Italy. By production volume per capita (319 kg in 2010). Poland comes 11th in the EU, after Germany, Latvia, France, Austria, Finland, Estonia, Lithuania, the Netherlands, Denmark and Ireland. By unit consumption of milk, in 2010 Poland came 16th, with consumption of 260 kg milk (according to FAO methodology, including milk used for producing butter).

Less milk and fewer milk products in raw milk terms are consumed by the inhabitants of Italy, Slovenia, the UK, Romania, Malta, the Czech Republic, Spain, Portugal, Slovakia, Hungary and Bulgaria. Much more milk is consumed by the average inhabitant of Ireland, the Netherlands and Denmark. More dairy products are consumed by the inhabitants of Scandinavia, Lithuania, Estonii, France, Austrii, Germany, Latvia, Greece and Cyprus, although compared to those countries, differences are smaller.

Table 4

Milk production and balance consumption of milk in Poland and the European Union in 2010

| Country | Production | Import | Export | Balance consumption | Production | Balance consumption ^a |
|---------------------|----------------|--------|--------|---------------------|------------|----------------------------------|
| | million tonnes | | | kg per capita | | |
| EU-27 ^a | 152.5 | 2.2 | 14.9 | 138.5 | 310 | 282 |
| EU-27 ^b | 152.5 | 49.0 | 64.0 | 137.5 | 310 | 280 |
| EU-15 ^b | 124.5 | 45.2 | 56.1 | 113.5 | 315 | 287 |
| EU-12 ^b | 28.1 | 3.8 | 7.9 | 24.0 | 292 | 250 |
| Poland ^b | 12.3 | 0.8 | 3.1 | 10.0 | 319 | 260 |
| Poland ^a | 12.3 | 0.8 | 2.2 | 10.4 | 319 | 269 |

^a According to AMI, external import and export excluding trade among Member States.

^b According to FAO, total import and export based on FAO data and indices (<http://faostat.fao.org>).

^c According to data of the Central Statistical Office and CAAC based on indices including dry mass and use for feed.

Source: data from FAO, the CAAC, the Central Statistical Office, Marktbilanz, Milch 2013, AMI.

Balance consumption of milk in Poland, depending on the method of aggregating trade volumes of milk products and including or excluding milk use for feed in 2010, was from 260 to 269 kg per capita and was 6.3-9.5% smaller than the average EU-15, however, 4.0-7.6% larger than the average EU-12. Global consumption of milk was then 10.0 to 10.4 billion kg, and the self-sufficien-

cy rate was between 112 and 122%. The differences between Poland and each country are much deeper, as Member States differ from one another by production volume per capita and milk consumption.

Milk consumption in Poland and the EU on the basis of balances of basic product groups

In Poland milk consumption calculated, as balances of basic milk products and on the basis of dry mass content, is similar to consumption calculated using the balance method based on macro data with the use of FAO indices and in 2010 it was 259 kg per capita.

Table 5

Unit consumption of milk products in Poland against the EU

| Country | 2004 ^a | 2007 | 2010 | 2012 | Rates of change 2012/2004 |
|--|-------------------|------|------|------|------------------------------|
| Drinking milk | | | | | |
| EU-27 | 106.6 | 95.9 | 92.5 | 89.3 | 83.7 |
| Poland | 103.9 | 96.9 | 94.5 | 81.8 | 78.7 |
| Yoghurt and fermented drinks | | | | | |
| EU-27 | 18.8 | 18.9 | 19.0 | 18.7 | 99.4 |
| Poland | 11.2 | 13.8 | 16.3 | 16.6 | 148.2 |
| Condensed and powdered milk | | | | | |
| EU-27 | 4.20 | 3.30 | 2.90 | 3.30 | 79.2 |
| Poland | 3.00 | 3.30 | 2.90 | 3.90 | 130.0 |
| Cream | | | | | |
| EU-27 | 4.50 | 5.00 | 4.70 | 4.80 | 105.5 |
| Poland | 12.6 | 10.1 | 11.4 | 11.9 | 94.4 |
| Cheese | | | | | |
| EU-27 | 16.3 | 17.5 | 17.7 | 17.7 | 108.6 |
| Poland | 12.6 | 13.5 | 14.6 | 15.7 | 124.6 |
| Butter | | | | | |
| EU-27 | 3.80 | 3.96 | 4.00 | 4.10 | 107.9 |
| Poland | 4.41 | 4.33 | 4.44 | 4.19 | 95.0 |
| Total milk consumption as raw milk equivalent^b | | | | | |
| EU-27 | 268 | 258 | 252 | 252 | 94.0 |
| Poland | 256 | 252 | 259 | 258 | 100.8 |
| incl. without milk used for producing butter^b | | | | | |
| EU-27 | 242 | 230 | 223 | 223 | 92.1 |
| Poland | 224 | 222 | 227 | 228 | 101.8 |

^a 2004 – EU-25.

^b Based on dry mass content in the final product and raw milk.

Source: Markt Bilanz Milch, AMI, 2012, 2013, EUROSTAT, own calculations.

In the EU-27 it was 252 kg per capita and was 10% smaller than balance consumption (280 kg), despite including differences between milk production and supply to dairies in production and use of drinking milk in farms. This suggests that EU statistics about milk product production across individual countries do not include some part of production delivered by microenterprises and farms.

The analysis of changes in consumption of each milk product group shows that the level and structure of milk production in Poland is coming closer to the average EU figure. A sharp rise in consumption in 2004-2012 of fermented milk drinks, incl. yoghurt (by more than 48% to 16.6 kg per capita), cheese (by more than 25% to 15.5 kg per capita) and condensed and powdered milk (by 30% to 3.9 kg per capita) more than compensated for the drop in drinking milk (by more than 21% to 81.8 kg per capita) and cream (by 5.6% to 11.9 kg per capita). In effect, consumption of dairy products in Poland expressed as raw milk equivalent in 2010-2012 was 1.8% higher than in 2004. It was also by 2.2% higher than the EU-27 average. Over this period, butter consumption shrank by 5% to 4.2 kg per capita, but was 2.2% higher than the EU-27 average. Total milk consumption in Poland grew in years 2004-2012 by 0.8% to 258 kg per capita and was 2.4-2.5% larger than the EU-27 average.

Milk consumption in the EU-27 shrank in the analysed period by 6% to 252 kg per capita, including consumption of dairy products expressed as raw milk equivalent that dropped by almost 9% to 223 kg per capita, while butter consumption rose by 7.9% to 41 kg per capita. Milk consumption drop in the EU-27 was chiefly caused by smaller drinking milk consumption (by more than 16%, to 89.3 kg) and condensed and powdered milk consumption (by almost 21% to 3.3 kg per capita). Over this period, consumption of fermented milk drinks, including yoghurt, remained virtually unchanged despite fluctuations in individual years (18.7 kg per capita in 2012), and cream by 5.5% to 4.8 kg per capita. In 2004-2012, cheese consumption rose by 8.6%, however since 2007 has remained unchanged (17.7 kg per capita). Accession of countries with much smaller milk consumption than the average deepened the downward trend (Bulgaria, Romania).

In 2012, the structure of milk consumed in Poland came closer to the EU-27 average, as the share of cheese and fermented milk drinks (including yoghurt) and condensed and powdered milk rose at the expense of drinking milk. Only the share of cream has virtually not changed and was much higher than the EU-27 average (Figure 2).

Consumption of milk products determined by balances of those products significantly differs from unit consumption of milk products provided by AMI in Markt Bilanz Milch reports (Table 6). In line with the footnotes to respective tables, consumption includes solely products produced from milk delivered to dairies, and thus is exclusive of milk used at farms and products sold in direct sales. It has turned out, however, that e.g. data for Poland concern only consump-

tion by households determined by research of family budgets and are exclusive of total public consumption (catering industry, hospitals, nurseries, schools, hotels, etc.). The comparison of balance consumption and household consumption demonstrates that public consumption may account for ca. 40% of total milk consumption in Poland. Is the situation the same in other countries, too?

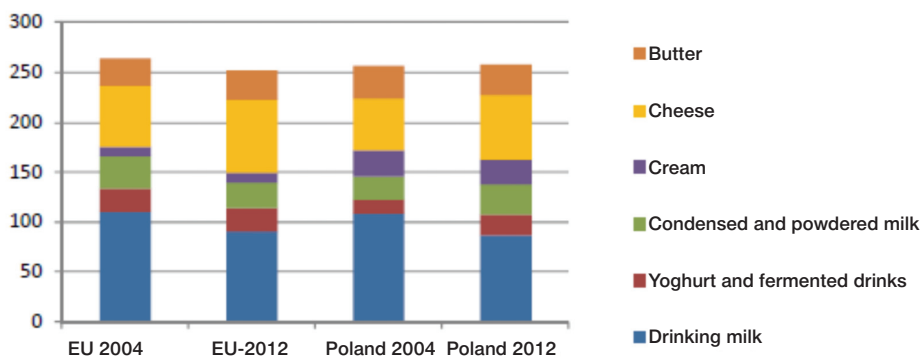


Table 6

Unit consumption of milk and milk products in the selected EU countries determined by AMI on the basis of Eurostat and national statistics in 2010a (kg per capita)

| Country | Drinking milk | Yoghurt and milk drinks | Condensed milk | Cream | Cheese | Total dairy products ^b | Butter | Total milk ^c |
|-------------|---------------|-------------------------|----------------|-------|--------|-----------------------------------|--------|-------------------------|
| EU-27 | 64.9 | 18.6 | 1.8 | 4.6 | 17.8 | 187 | 3.9 | 214 |
| Belgium | 53.8 | 16.7 | 8.2 | 9.8 | 20.4 | 244 | 5.7 | 284 |
| Germany | 52.3 | 17.8 | 2.7 | 5.7 | 22.9 | 203 | 5.8 | 244 |
| France | 66.0 | 25.0 | 0.8 | 6.1 | 23.9 | 217 | 7.8 | 272 |
| Netherlands | 50.0 | 20.7 | 4.7 | 1.3 | 19.5 | 197 | 3.0 | 218 |
| Austria | 78.7 | 33.9 | 1.4 | 7.7 | 19.4 | 230 | 5.1 | 266 |
| Finland | 132.5 | 40.9 | - | 7.0 | 21.4 | 290 | 3.4 | 314 |
| Sweden | 97.1 | 36.5 | - | 12.9 | 18.9 | 250 | 1.6 | 261 |
| Bulgaria | 29.7 | 33.0 | - | 0.4 | 7.1 | 102 | 0.5 | 105 |
| Poland | 43.7 | 9.5 | 0.7 | 9.3 | 11.3 | 128 | 4.2 | 158 |

^a Only products produced by the milk industry from milk supplied to dairies.

^b In raw milk equivalent based on dry mass content.

^c Expressed as raw milk equivalent together with milk used for producing butter.

Source: Markt Bilanz, Milch 2013, AMI, Tables 12.1.1, 12.2.1, 12.3.1, 13.1.1, 14.1.1, 15.1.1.

Table 7

*Unit consumption of milk and its products in selected countries determined by FAO
(kg per capita)*

| Country | 2005 | | | 2009 | | | | |
|-------------|-----------------------------------|------------------|--------|-------------------------|-----------------------------------|------------------|--------|-------------------------|
| | Total dairy products ^a | Including cheese | butter | Total milk ^a | Total dairy products ^a | Including cheese | butter | Total milk ^a |
| EU-27 | 242 | 16.1 | 4.0 | 270 | 239 | 16.6 | 3.7 | 266 |
| Belgium | 244 | 16.5 | 6.2 | 288 | 243 | 18.2 | 5.2 | 280 |
| Germany | 253 | 20.00 | 6.4 | 298 | 264 | 20.1 | 5.8 | 305 |
| France | 362 | 23.7 | 7.9 | 418 | 247 | 24.6 | 7.6 | 300 |
| Netherlands | 362 | 20.1 | 2.5 | 379 | 357 | 20.6 | 1.7 | 369 |
| Austria | 228 | 20.5 | 5.2 | 265 | 233 | 21.5 | 5.5 | 272 |
| Finland | 341 | 14.7 | 3.9 | 369 | 375 | 17.6 | 3.8 | 402 |
| Sweden | 370 | 17.7 | 3.4 | 394 | 357 | 19.1 | 3.2 | 380 |
| Bulgaria | 158 | 8.5 | 0.1 | 159 | 135 | 9.6 | 0.1 | 136 |
| Poland | 176 | 13.5 | 4.2 | 206 | 189 | 12.8 | 4.2 | 219 |

^a Expressed as raw milk equivalent, according to FAO methodology, conversion factor for butter is 6.6.
Source: FAO data (<http://faostat.fao.org>).

The comparison of unit consumption of milk products across individual countries determined by AMI (Agrarmarkt Informations-Gesellschaft) and by FAO also raises doubts, as they differ significantly (Tables 6 and 7).

The differences apply not only to the aggregate consumption of dairy products⁵, but also to butter and cheese. In the case of average consumption in the EU-27 the differences with respect to total milk consumption reach 50 kg. In Belgium, total milk consumption determined by FAO was 4 kg smaller than set by AMI, while in the Netherlands and Sweden – the opposite – consumption was 118-151 kg larger. In other countries, total unit milk consumption determined by AMI was 25 to 86 kg smaller than set by FAO.

The differences in milk consumption determined by FAO and AMI by country suggest that there are also problems with statistics about trade volumes among individual Member States. This is also demonstrated by exceptionally high (reaching more than 600 kg per capita) milk consumption in Ireland, the Netherlands and Denmark.

The impact of the quantitative aggregation method and the quality of statistical surveys concerning production and external trade, compiles the comparison of unit milk consumption in Poland. In extreme cases, the differences reach 70% (Table 8).

⁵ Unit milk consumption published by FAO includes aggregate consumption of dairy products expressed as raw milk equivalent.

Table 8

Comparison of unit consumption of milk in Poland depending on the quantitative aggregation method applied

| Specification | 2005 | 2007 | 2010 |
|--|------------------|------|------|
| According to IERiGŻ on the basis of raw milk balance ^a | 250 | 266 | 269 |
| According to FAO on the basis of raw milk balance ^b | 251 | 264 | 260 |
| According to balances of product groups based on dry mass content | 256 | 252 | 259 |
| According to FAO based on unit milk and butter consumption (exclusive of milk used for producing butter) | 204 | 219 | 217 |
| According to AMI based on unit consumption of milk products | 163 ^c | 159 | 158 |

^a On the basis of dry mass content and incl. the use for feed.

^b On the basis of raw milk consumption per product unit, using FAO indices.

^c 2004.

Source: As in previous tables.

Summary

In summarising the short analysis of changes in 2005-2010 in milk production and consumption in Poland and European Union against the background of global changes and in the most important production and consumption regions, it should be stated that the stimulus of change in production and trade was chiefly growing milk and milk product consumption in the developing countries of Asia and Africa. Despite a significant increase in production, milk deficit in national production in those countries has become established, and even deepened, which resulted in growing import demand. In response to this impact, milk export and production was developed mostly by Oceania (mainly New Zealand) and the US and South America. In the EU, milk production shrank then, any increase in export was possible only if milk consumption was limited.

When making international comparisons and assessments and predictions as to the development of the situation, one should be cautious in using different sources of information. For instance, widespread opinions about very low milk consumption in Poland and its increase along increased income are not fully valid. The comparison of the balance milk consumption in Poland against the average consumption in the EU, as well as countries such as Belgium, Germany, the Czech Republic or Slovakia demonstrates that the differences are not that large and chances of boosting consumption are limited. Milk consumption across individual countries is the outcome of not only income and prices of milk products but also much more complex market conditions and consumer preferences. Correct reasoning calls for not only solid knowledge of market conditions but also precise knowledge of the aggregation methods applied. One should look at statistics, even in very well organised, well developed statistical surveys, with certain reserve. The progressing integration and freedom of trade encompassing increasingly larger areas stimulates their development and reduces selling costs, but also hinders their monitoring.

References

1. Agricultural production, EUROSTAT; <http://epp.eurostat.ec.europa.eu>.
2. Biuletyn Statystyczny. GUS, Warszawa 2013.
3. Food Outlook. Global Market Analysis. FAO; <http://faostat.fao.org>.
4. Markt Bilanz Milch AMI (Agrarmarkt Informations-Gesellschaft). Bonn 2012, 2013.
5. Obroty handlu zagranicznego ogółem i według krajów (wyniki wstępne), I-XII 2012 r. GUS, Warszawa 2013.
6. Produkcja mleczarska w Unii Europejskiej. *Agra Europe*, nr 2530, 2012.
7. Seremak-Bulge J., Świetlik K., Mieczkowski M., Szajner P., Zdziarska T.: Rynek mleka. Stan i perspektywy, nr 45. *Analizy Rynkowe. IERiGŻ-PIB, ARR, MRiRW*, Warszawa 2013.