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# **Real agricultural income per worker down by 2.1% in the EU in 2015**

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## **Abstract**

Real agricultural income in the EU is estimated to have fallen by 4.0% in 2015 relative to 2014, while agricultural labour input dropped by 1.8%, thus income per worker decreased by 2.1%. The value of agricultural output in 2015 decreased by 3.0% in real terms, mainly due to a marked fall in the value of animal production, a slight decrease in the value of crop production, and a moderate decrease for input costs. The fall for animal production is mainly due to declines for milk and pigs, partly compensated by increases for cattle, sheep and goats, eggs and poultry. Concerning crop production, falls for sugar beet, grain maize, forage plants, oilseeds and oleaginous fruits, barley, and wheat and spelt, were almost counterbalanced by rises for olive oil, fresh vegetables, fruits and wine. The drop in the value of sugar beet and maize was associated with the summer drought in certain Member States. Input costs decreased by 3.5%, mainly due to reductions for energy and lubricants, and animal feed. The fall in the price of feed is a reflection of the decrease in the producer price of several cereals. These data are based on a revised set of estimates published by Eurostat in March 2016.

**Keywords** Agricultural output, intermediate consumption, gross value added, subsidies, agricultural labour input, agricultural income

**JEL codes** Agricultural economics Q1; Macroeconomics: production, consumption, investment, labour E2; prices E3

## **1. Introduction**

One of the principal objectives of the common agricultural policy (CAP) is to provide farmers with a reasonable standard of living. Although this concept is not defined explicitly within the CAP, a range of indicators — including those on income development from farming activities — may be used to determine the progress being made towards this objective. Economic accounts for agriculture (EAA) provide an insight, among others, into:

- the economic viability of agriculture;
- the income received by farmers;
- the structure and composition of agricultural production and intermediate consumption;
- relationships between prices and quantities of both inputs and outputs.

A 2003 reform of the CAP introduced a new system of direct payments, known as the single payment scheme. Its goal was to ensure a safety net for farmers in the form of basic income support, decoupled from production, while stabilising farmers' incomes from their sales to market (which are subject to volatility). To maximise their profits, farmers were encouraged to respond to market signals — producing goods that consumers want — and to look after the farmland while fulfilling environmental, animal welfare and food safety standards.

The European Commission launched a public debate on the future of the CAP during 2010. Its outcome, coupled with input from the European Council and Parliament, led the Commission to present a Communication in November 2010, titled ‘The CAP towards 2020: meeting the food, natural resources and territorial challenges of the future’ (COM(2010) 672 final). This was followed, in October 2011, by a set of legal proposals concerning the future of the CAP. After almost two years of negotiations, a political agreement was reached on 26 June 2013, and these new proposals came into effect as of 1 January 2014. With a budget of EUR 303.1 billion foreseen for the period 2014–20, direct payments will continue to form a significant part of the EU budget for agriculture and rural development.

## **2. Data sources and availability**

Economic accounts for agriculture (EAA) are a satellite account of the European system of accounts (ESA 2010). They cover the agricultural products and services produced over the accounting period sold by agricultural units, held in stocks on farms, or used for further processing by agricultural producers. The concepts of the EAA are adapted to the particular nature of the agricultural industry: for example, the EAA include not only the production of grapes and olives but also the production of wine and olive oil by agricultural producers. They include information on intra unit consumption of crop products used in animal feed, as well as output accounted for by own account production of fixed capital goods and own final

consumption of agricultural units. The EAA comprise a production account, a generation of income account, an entrepreneurial income account and some elements of a capital account. For the production items, EU Member States transmit to Eurostat values at basic prices, as well as their components (values at producer prices, subsidies on products, and taxes on products). The EAA are defined in Regulation 138/2004 (European Union, 2005) which has a detailed methodological annex, while ESA 2010 is defined in Regulation 549/2013 (European Union, 2013).

The output of agricultural activity includes output sold (including trade in agricultural goods and services between agricultural units), changes in stocks, output for own final use (own final consumption and own-account gross fixed capital formation), output produced for further processing by agricultural producers, as well as intra-unit consumption of livestock feed products. The output of the agricultural sector is made up of the sum of the output of agricultural products and of the goods and services produced in inseparable non-agricultural secondary activities; animal and crop output are the main product categories of agricultural output. Three indicators are computed in relation to agricultural income:

- an index of real income of factors in agricultural activity per AWU (indicator A);
- an index of real net agricultural entrepreneurial income, per unpaid AWU (indicator B);
- the net entrepreneurial income of agriculture (indicator C).

The information presented on agricultural income relates to indicator A (the real income of factors in agriculture per AWU). This indicator corresponds to the real (deflated) net value added at factor cost of agriculture per AWU. Net value added at factor cost is calculated by subtracting from the value of agricultural output at basic prices the value of intermediate consumption, the consumption of fixed capital, and adding the value of (other) subsidies less taxes on production.

The Member States and certain EEA countries transmit first estimates of the accounts for year n at the end of November in that year and Eurostat publishes the data in its database in mid-December (Eurostat Database, 2016). The countries send second estimates for year n by the end of January in year n+1 and Eurostat publishes them in March. Final data are sent by the end of September and published in October. Subsequently countries may send revisions to the 'final' data.

The data presented below arise from the second estimates of the accounts for 2015, and have been discussed, especially in the context of family farming, by Matthews (2016). Commentaries on earlier results have been published:- first estimates for 2015 (Bourgeois, Mahon and D'Amore, 2016), final data for 2014 (European Union, 2016), second estimates

for 2013 (Mahon, Garcia Nuevo and Jansen, 2014) and second estimates for 2012 (Mahon and Garcia Nuevo, 2013).

### **3. Agricultural output**

The economic accounts for agriculture show that the total output of the agricultural industry (comprising the output values of crops and animals, agricultural services and the goods and services produced from inseparable non-agricultural secondary activities) in the EU-28 in 2015 was an estimated 410.1 billion Euro at basic prices. The equivalent of 60.0% of the value of agricultural output generated was spent on intermediate consumption (input goods and services) i.e. 246.0 billion Euro. France was the largest agricultural producer in the EU-28 (75.4 billion Euro or 18.4% of the EU-28 total), followed by Italy (13.4%), Germany (12.8%), Spain (10.6%) and the United Kingdom (7.1%). Relative to its size, the Netherlands accounted for quite a high share of the EU-28 agricultural output (6.5%).

Compared with 2014, the value of the output of the agricultural industry fell in 2015 in 15 Member States, especially Germany (-5.1 billion Euro), the United Kingdom (-2.5 billion Euro) and Romania (-1.6 billion Euro). In contrast, output rose in 13 Member States, notably Italy and Spain (+1.0 and +1.1 billion Euro).

The main components of the EU-28 agricultural industry in 2014 were crop output (51.9% of the total) and animal output (39.4%); agricultural services and inseparable secondary activities, generally the processing of agricultural products, provided the residual shares (4.9% and 3.7%). The agricultural products accounting for the highest share of output value in the agricultural industry in 2014 were vegetables and horticultural products (13.1%), cereals (12.2%) and milk (12.9%) and, while pigs and cattle also accounted for relatively large shares (8.4% and 7.8%).

The annual change between 2014 and 2015 in EU-28 agricultural industry in volume terms was -0.8%. The volume of crop output fell by 3.6%, with the biggest rates of decrease being recorded for cereals at -4.3% (especially grain maize, -25.1%), forage plants (-6.2%), oilseeds and oleaginous fruits (-11.2%), potatoes (-13.0%), olive oil (-16.4%), raw tobacco (-16.5%) and sugar beet (-20.7%). Adverse weather conditions, especially the summer drought in many European regions, are estimated to have led to lower yields in 2015 relative to 2014 for barley (-5.5%), wheat (-5.6%), sugar beet (-8.5%), potatoes (-9.5%), triticale (-9.7%), rape (-10.2%), rye (-12.1%) and grain maize (-20.4%) (European Commission, 2015). Notable volume increases were seen for wine (+3.9%) and protein crops (+36.9%). In most cases, the changes in the volume of crop products were reflected in changes in real value (cereals, -6.5%; grain maize (-23.4%), raw tobacco (-17.3%), sugar beet (-22.6%); wine, +1.8%; and

protein crops, +28.3%). However, notable price rises for potatoes and olive oil led to increases in value (+2.7% and +11.2%).

The volume of animal output in the EU-28 rose between 2014 and 2015 by 2.4%. Volume increased for poultry (+2.1%), cattle (+2.5%) and pigs (+2.9%, and for milk (+2.2%) and eggs (+2.9%). For some animals and animal products, volume changes were reflected in value changes (cattle, +2.9%; eggs, +2.6%) while marked price decreases led to a fall in value for poultry (-0.5%), pigs (-9.5%) and milk (-15.5%).

#### **4. Intermediate consumption**

Intermediate consumption covers purchases made by farmers for raw and auxiliary materials that are used as inputs for crop and animal production; it also includes expenditure on veterinary services, repairs and maintenance, and other services. Intermediate consumption within the EU-28 agricultural industry in 2015 was valued at 246.0 billion Euro at basic prices. The relative share of intermediate consumption in the agricultural industry has slightly risen from 2010 (58.9%) to 2015 (60.0%).

Feedingstuffs for animals accounted by far for the highest share (36.4%) of total intermediate inputs within EU-28 agricultural activity in 2015, valued at more than three times the share of energy and lubricants (10.9%); the latter being used for both animal and crop production. Fertilisers and soil improvers (7.8%) accounted for the highest share of intermediate inputs among those inputs used for crop production.

Three main intermediate inputs are used for the production of crops: seeds and plantings, fertilisers, and plant protection products which together accounted for 20.7% of the production value of crops in the EU-28 in 2015 (2.2 percentage points higher than in 2010). The two main intermediate inputs for animal production: feedingstuffs and veterinary expenses, together accounted for 59.5% of the EU-28 production value for animals and animal products in 2015. This was 0.8 percentage points lower than in 2010.

Concerning feedingstuffs, the real price index declined (-4.7%), reflecting a fall for feed produced and consumed on the same holding (-1.6%) and steeper falls for feed purchased from outside agriculture (-6.0%) and feed supplied by other agricultural holdings (-7.7%). This may be seen in the light of the decline in the real output price index for cereals (-2.3%); although prices rose for grain maize (+2.4%), they fell for oats (-1.9%), wheat (-3.3%), barley (-3.8%) and rye (-4.1%). Output prices also declined for forage plants (-1.6%).

#### **5. Value added and subsidies**

Gross value added (at basic prices), calculated by subtracting the value of intermediate consumption from the value of the output of the agricultural industry (at basic prices), reached 164.1 billion Euro for EU-28 in 2015. Net value added, calculated by subtracting the value of fixed capital consumption from the gross value added, was 102.3 billion Euro. Agricultural income (factor income) is calculated from net value added by subtracting the amount of taxes on production (a small item) and adding subsidies on production (a large item). For EU-28, agricultural income was 148.6 billion Euro, of which net value added represented 68.8%, taxes on production 3.4% and subsidies on production 34.6%. Subsidies on production, relative to agricultural income, ranged across Member States from 19.5% in Lithuania, 15.7% in the Netherlands and 12.3% in Croatia, upwards to 73.0% in Slovakia, 108.8% in Luxembourg and 125.4% in Finland. Subsidies in Luxembourg and Finland exceeded 100% because net value added was negative.

## **6. Agricultural labour input**

The vast majority of EU farms are relatively small, family-run holdings. Often, these holdings draw on family members to provide labour (in addition to the farm holder). Agriculture is also characterised by seasonal labour peaks (for example those linked to harvesting), with high numbers of workers hired for relatively short periods of time. Otherwise, some farmers are occupied on a part-time basis (and they may have alternative, sometimes important sources of income) so while there are a large number of people providing labour within agriculture, many of these will have their main employment elsewhere. For this reason, estimates are made of the volume of labour input provided in terms of full-time labour equivalents (measured in annual work units, AWUs). EU-28 agricultural labour input was estimated at 9.6 million AWUs (the equivalent of 9.6 million people working full-time) in 2015. Amongst the Member States, the highest levels of agricultural labour input were recorded for Poland (1.9 million AWUs), Romania (1.3 million AWUs) and Italy (1.1 million AWUs).

Between 2005 and 2015 there was a reduction of almost one quarter (-24.9%) in agricultural labour input in the EU-28; the steepest annual declines were recorded in 2007 and 2010. The overall contraction of 3.2 million AWUs was almost exclusively due to a reduction in non-salaried labour input (3.0 million AWUs or 94.0% of the total). Although the volume of agricultural labour input from salaried persons in the EU-28 fell in successive years from 2006 to 2013, there was a slight increase in the number of AWUs for salaried persons in 2014 and 2015.

Agricultural labour input declined over the period 2010 to 2015 (-7.3%) and only seven Member States recorded an increase: Hungary (+6.8%), Slovenia (+5.7%), Lithuania (+5.2%), Malta (+2.9%), the United Kingdom (+1.8%), Poland (+1.2%) and Greece (+0.2%). A further thirteen Member States registered declines in agricultural labour input, although less marked than for EU-28. The remaining eight Member States showed steeper decreases in particular Romania (-19.1%) and Bulgaria (-32.0%).

## **7. Agricultural income**

Income is a key measure for determining the viability of the agricultural sector. The nominal factor income of the agricultural industry (the remuneration of all factors of production: land, capital, labour) in the EU-28 was valued at EUR 148.6 billion Euro at basic prices in 2015. Within agricultural accounts, trends in income have been measured as an index, computed on the basis of the real factor income per AWU.

From the reference year of 2005, the EU-28 index of agricultural income per AWU rose for two consecutive years, before falling back in 2008 and 2009 (at the height of the financial and economic crisis) to almost the same level as in 2005. Thereafter, the index of agricultural income per AWU rebounded, with relatively rapid growth in 2010 and 2011. Agricultural income per AWU in the EU-28 remained relatively high from 2012 to 2015, with values around the 2011 level.

The overall pattern for the development of agricultural income per AWU in the EU-28 during the 2005 to 2015 period can be linked to the development of the two underlying series that are used in the construction of the index. EU-28 real factor income per AWU for the agricultural industry fluctuated considerably but in broad terms rose relatively slowly. Thus higher factor income per AWU was shared amongst a smaller workforce, resulting in rises in average income per full-time labour equivalent.

The variations in real factor income per AWU can be linked to rising commodity prices (in 2007 and again in 2010 and 2011) and the downturn in agricultural activity resulting from the financial and economic crisis (in 2008 and 2009). Some of the biggest changes in EU-28 real factor income per AWU were recorded in 2009 and 2010, -9.3% followed by +20.3% and these were apparent in the overall development of the index for agricultural income per AWU. On the other hand, the relatively large decline in agricultural labour input recorded in 2007 was also apparent as agricultural income per AWU increased in that year.



A group of five Member States reported that their index of real agricultural income per AWU in 2015 was at a lower level than in 2005:- Austria (-1.6%), Ireland (-4.6%), Malta (-22.9%), Finland (-31.4%) and Luxembourg (-34.2%). In the case of Malta and Ireland, the reduction in agricultural income per AWU could be largely attributed to an expansion in the number of AWUs, whereas in the other three Member States it could be largely attributed to a reduction in real factor income. The index of agricultural income per AWU rose in the remaining Member States between 2005 and 2015, especially Poland (+74.5%), Bulgaria (+94.6%), Estonia (+94.7%) and Hungary (+123.4%).

The latest developments from 2014 to 2015 show that the index of real agricultural income per AWU declined in EU-28 (-2.1%). The index fell in 13 Member States, most steeply in Romania (-17.8%), the United Kingdom (-19.3%), Denmark (-19.7%) and Germany (-26.0%). In contrast, the index rose in the remaining 15 Member States, most markedly in Greece (+11.7%), Latvia (+18.9%) and Croatia (+22.3%).

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