European Commission

EU Farm Economics Overview

based on 2015 (and 2016) FADN data

Agriculture and Rural Development

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EU FARM ECONOMICS OVERVIEW
FADN 2015

EXECUTIVE SUMMARY

This report provides an overview of key economic developments in European agricultural holdings based on 2015 data, the latest available in the Farm Accountancy Data Network (FADN). Wherever possible, the report provides some information based on 2016 preliminary data as well. The FADN survey covers farms that account for the majority of EU agricultural production.

After the sharp decline in farm income in 2009, a recovery continued until 2012. In 2013, income decreased by 5.8 % to approximately the 2010 level. ***Farm income began to grow again in 2014. This positive trend continued in 2015.*** *The income growth was due to the increase in the value of agricultural output, mostly linked to the increase crop production (+4 % per farm in the EU-28), which compensated for the decline in livestock production (−2 % per farm in the EU-28) from 2014 to 2015. Between 2014 and 2015, an increase in output of more than 10 % was seen in the farms that specialised in horticulture, wine and permanent crops, while farms specialised in field-crops showed a moderate increase (+3 %). Dairy farms, farms specialised in granivores (i.e. pigs and poultry) and mixed farms recorded a decrease in output (between −2 % and −8 %) from 2014 to 2015. Because farms in Member States reported different levels of total output figures between 2014 and 2015,* ***significant income differences*** *were observed across European regions and types of farming.*

Considering the cost side, the total input costs increased by 1.6 % from 2014 to 2015 in the EU. Intermediate consumption increased by 1.6 %, and depreciation increased by 2.4 % in the same period. Feedingstuffs for animals accounted for by far the highest share of total intermediate inputs in the EU-28's agricultural activity in 2015. After successive increases from 2010 to 2013, the output price indices of agricultural goods showed a general decrease in 2014. This decline also continued in 2015[1].

[1] Agriculture, forestry and fishery statistics, 2016 edition

From 2014 to 2015, the average income per labour unit (measured in farm net value added per annual work unit, or FNVA/AWU) increased most significantly for horticulture farms (+12 %), and for farms specialised in permanent crops other than wine (+10 %). Despite the growth in dairy herds in Europe[2], FNVA per AWU in dairy farms decreased the most in 2015 (−17 %) of all the different types of farming. This decline in FNVA/AWU on dairy farms mirrored the decrease in value of production on dairy farms. The decrease in FNVA/AWU was less significant in mixed farms (−3.9 %). The ***income gap*** *(FNVA/AWU) between the EU-N13[3] and the EU-15 narrowed in 2011, but from 2012 it began widening again. In 2015, the* ***average FNVA/AWU*** *was more than four times higher in the EU-15 than in the EU-N13.*

Finally, the ***proportion of direct payments to total receipts (total output + balance of current subsidies & taxes)*** *in the EU-28 stood at 10.3 % in 2015, which is 1 % less than in the previous year. This slight percentage change is in line with the 2 % total output growth in Europe from 2014 to 2015.*

Income developments

EU-28 average farm net value added (FNVA)[4] increased only marginally (0.5 %) from 2014 to 2015. This was due to a slight increase (+ 2 %) in agricultural output, which was weighed down by growth in total input costs (+ 1.6 %). FNVA in 2015 was almost at the 2011 level, having started to recover from the low point reached in 2009. Average FNVA/AWU in 2015 remained stable at EUR 18 600, unchanged from its level in 2014.

Income per labour unit masked substantial differences across Member States, regions and types of farming. Agricultural holdings with the highest income per working unit were mainly located in Denmark, northern Italy (Lombardia), northern France (Champagne-Ardenne) and north-west Germany. In these regions, there is a high percentage of highly intensive granivore production (i.e. pigs and poultry), horticulture and dairy farms. The lowest average FNVA/AWU per farm was in the Jadranska Hrvatska region in Croatia. Only two regions in the EU-15, namely Norte e Centro (Portugal) and Sterea Ellas-Nissi Egaeou-Kriti (Greece) had an average FNVA/AWU below EUR 10 000. There is an almost 30-fold difference between the highest income per AWU (Denmark) and the lowest (Jadranska Hrvatska).

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2 Milk Market Observatory

3 EU-N13 includes the 10 Member States that joined the EU in 2004, Romania and Bulgaria from 2007 and Croatia for 2013 only.

4 Farm net value added (FNVA) is used to remunerate the fixed factors of production (labour, land and capital) whether they be external or family factors. In order to obtain a better measurement of the productivity of the agricultural workforce and to take into account the diversity of farms, FNVA is also calculated by annual work unit (AWU, work of one person occupied full time on a farm). This is one of the FADN's main income indicators.

Farms specialising in pigs and poultry had the highest FNVA per AWU in 2015 out of all types of farms. Most of these farms are big in terms of economic size[5]. Farms engaged in viticulture had the second-highest FNVA per AWU. This was due to higher producer prices in viticulture farms and growth in their total output (+10 %) compared to 2014. Although average total output in farms specialised in horticulture increased by 15 % from 2014 to 2015, average labour input per farm increased by 8 % in the same period. This was only enough to place horticulture farms in third place among farm types in terms of FNVA per AWU. Income per labour unit remained below the EU average in permanent-crop farms (other than wine), farms specialising in grazing livestock (other than dairy), and mixed farms.

From 2014 to 2015, FNVA per AWU dropped considerably for dairy farms (−16.6 %) and to a lesser extent for mixed farms (−3.9 %), while income per labour unit increased for all other types of farming, particularly for farms specialised in horticulture (+12 %) and for permanent-crop farms (by 10.3 %). The large income decrease for dairy farms in 2015 was related to a drop in the value of production, which was influenced by the impact of the Russian ban, the abolition of the milk quotas and reduced prices. Many dairy farmers decided to stop dairy farming, so in April 2015 the EU promised to provide farmers with EUR 500 million in liquidity assistance.

As for the distribution of FNVA/AWU, a high proportion of farms had a relatively low income level per worker, while a small proportion of holdings had a very high income level per worker. The average FNVA per AWU in the EU-15 stood at around EUR 29 100 in 2015. However, while 5 % of farms had an income per worker of more than EUR 75 000, 50 % recorded an FNVA per AWU below EUR 17 500. Average income per worker in the EU-N13 remained significantly below the EU-15 level. In the EU-N13, average FNVA/AWU stood at around EUR 5 100, but was under EUR 2 400 in 50 % of farms (median income).

Role of direct payments

In 2015, direct payments on average accounted for 30 % of FNVA in the EU-28, the same percentage as in 2014 (Figure 2.3). Direct payments expressed as a percentage of FNVA was highest in Slovenia (71 %), followed by Finland (69 %), Slovakia (62 %) and Estonia (51 %). By contrast, direct payments accounted for only 11 % of FNVA in the Netherlands, which showed that the country was more focused on its highly profitable and less subsidised sectors, such as horticulture and the production of pigs and poultry.

Direct payments as a share of FNVA also fluctuate markedly depending on the type of farming (Figure 2.4). In particular, direct payments represent a substantial share of FNVA (42-50%) in farms specialised in grazing livestock, mixed crops and field-crops. This is due to the average size of these farms and the fact that they were historically favoured by the common agricultural policy (CAP). On the other hand, direct payments play only a limited role in sustaining income within the wine and horticulture sectors. Direct payments in 2015 were high for types of farming with low incomes to compensate somewhat for their income gap compared to the EU average. For dairy farms, the share of direct payments was higher in 2015 compared to the previous year.

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[5] The economic size of the holding is measured as the total standard output (SO) of the holding expressed in euros. See more details at footnote 41.

This increase in share of direct payments was partly due to the decision of the Member States on voluntary coupled support (VCS)[6], on the basis of which the dairy sector became the second most supported sector under VCS in 2015. Another very simple explanation is that as the FNVA per farm decreased from 2014 to 2015, thus the share of direct payments to FNVA increased.

Characteristics of farms covered by the FADN

The structure of European farms covered by the FADN varies markedly in several ways:

- **Asset value.** On average, Danish and Dutch farms held the highest amounts of assets (around EUR 2 490 000 and EUR 2 384 000, respectively). This reflects the very high values for land (average rent paid per hectare) and the importance of sectors which typically need considerable investment (such as dairy, granivores and horticulture). In contrast, farms in Romania and Bulgaria had the lowest total asset values (below EUR 100 000) as they are characterised by less capital-intensive types of farming and their farms have a smaller average economic size. These low total asset values were partly due to land prices in these countries, which are usually very low. But a positive trend should also be highlighted: Bulgaria doubled the asset value of its farms from 2007 to 2015.

- **Labour input.** In the FADN survey, the average number of workers employed per farm in the EU-28 stood at 1.5 AWUs in 2015. However, the figure varied significantly across Member States, ranging from 12.4 AWUs in Slovakia to 1.1 AWUs in Greece. The average number of workers per farm in horticulture (the sector with the highest labour input) was more than twice as high as in permanent-crop holdings (the sector with the lowest labour input). In 2015, 75 % of the total labour force on EU farms was family labour. The percentage of family labour expressed as family-labour hours was 77 % of the total labour hours in the EU-28, and was the most prevalent form of labour in most Member States except for Slovakia, the Czech Republic, Hungary, Estonia and Denmark. In these Member States, the share of family labour in the total farming labour force was below 50 %. The average hourly wage of farm workers stood at EUR 7.90 in the EU-28 in 2015, unchanged from the previous year. This nominal wage did not compensate for the general slight increase in prices (EU-28 HICP[7] inflation stood at 0.03 % in 2015).

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[6] Chapter 1 of Title IV of Regulation of the European Parliament and the Council (EU) No 1307/2013 provides for the possibility for Member States to use up to a maximum percentage of their annual national ceiling for direct payments to finance **voluntary coupled support**. That support can only be granted to a list of sectors and productions1, to the extent necessary to create an incentive to maintain current levels of production in sectors or regions where specific types of farming or specific agricultural sectors particularly important for economic, social or environmental reasons undergo certain difficulties.

[7] The harmonised index of consumer prices (HICP) is an economic indicator constructed to measure the changes over time in the prices of consumer goods and services acquired by households. It is the official measure of consumer price inflation in the euro zone for the purposes of monetary policy in the euro area and for assessing inflation convergence as required under the Maastricht criteria.

- **Land use.** The average size of farms covered by the FADN survey was 34 ha[8] in 2015. However, average sizes varied considerably across Member States, ranging from 529 ha per farm in Slovakia to 3 ha per farm in Malta. Rented land accounted for 54 % of the total agricultural area in the EU-28 in 2015. Land rents in the EU-28 have increased by 26 % since 2004, from EUR 149 per ha to EUR 189 per ha on average in 2015. Land rents were particularly high in Hamburg region (EUR 2 700), in the Canary Islands (EUR 1 250) and in the Netherlands (EUR 860), but remained under EUR 43 per ha in the Baltic countries (Latvia and Estonia). Land rents also varied markedly across types of farming: the level of rent per hectare in horticulture and the wine sector was eight times higher than the rental price paid by grazing-livestock farms.

The **Farm Accountancy Data Network (FADN)** is a European system of sample surveys that are run each year to collect structural and accountancy data from farms. Its aim is to monitor the income and business activities of agricultural holdings and to evaluate the impacts of the common agricultural policy (CAP).

The scope of the FADN survey covers only farms whose size exceeds a minimum threshold. It thus represents the largest possible proportion of agricultural output, agricultural area and farm labour of holdings run with a market orientation[9]. The sample for 2015 consisted of approximately 82 900 holdings in the EU-28, which represent nearly 4.7 million of the 10.8 million farms included in the Farm Structure Survey (FSS) 2013, i.e. (44 %)[10].

The rules that are applied aim to provide representative data for three criteria: region, economic size and type of farming. The FADN is the only harmonised source of microeconomic data, which means that the accounting principles are the same in all Member States.

The most recent FADN data available for this report are for the 2015 accounting year, due to the time needed for data collection, control and processing. However, when long-term trends are presented in this report, provisional 2016 data are also used.

For further information please see Annex 1 ‘Farm Accountancy Data Network in the context of the Farm Structure Survey – Methodology’ (page 62).

[8] The FADN does not survey all agricultural holdings in the EU-28, only those of a certain minimum size (as specified in Council Regulation (EC) No 1217/2009). Based on this criterion many small farms have been excluded from the field of survey. Accordingly, it should be emphasised that the average farm size mentioned in the report does not correspond to the average farm size of the total agricultural population. See the chapter on methodology for more information.

[9] Please find an explanation for market oriented farms on page 62.

[10] Farm Structure Survey (FSS) is carried out every 3 or 4 years as a sample survey and once every 10 years as a census by all Member States. Its purpose is to obtain reliable data on the structure of agricultural holdings in the EU, in particular on land use, livestock and the labour force.

CONTENTS

1. ECONOMIC SITUATION OF FARMS

This chapter reviews the economic situation of farms across the EU, focusing predominantly on the level, development and distribution of farm income. It also discusses the various farm income components and the return farmers receive on their investment.

1.1. Farm income

For the purpose of this report, the income of agricultural holdings is measured using **farm net value added, family net income**, **remuneration of family labour and family farm income.**

Farm net value added (FNVA) *is equal to gross farm income minus depreciation costs. It is used to remunerate the fixed factors of production (labour, land and capital), whether they be external or family factors. As a result, agricultural holdings can be compared regardless of whether family or non-family factors of production used.*
FNVA = output + Pillar I and Pillar II payments + any national subsidies + VAT balance − intermediate consumption − farm taxes (income taxes are not included) − depreciation.
The value is calculated per annual work unit (AWU) to take into account the differences in the scale of farms and to obtain a better measure of the productivity of the agricultural workforce.

Farm net income (FNI): *comprises the remuneration of family labour, own land and own capital. It is calculated by deducting the external factors of production*[11] *from the FNVA and by adding the balance of subsidies and taxes on investments.*
FNI *= FNVA − total external factors + balance of subsidies and taxes on investments.*

Remuneration of family labour: *In the agricultural sector, the bulk of the workforce consists of family members who do not receive a salary but have to be remunerated from farm income. As the FNVA is required to finance not only family labour but all fixed production factors, remuneration of family labour is another way of estimating income. It is calculated as follows:*
Remuneration of family labour = FNVA + balance of subsidies and taxes — total external production factors — opportunity costs of own land — opportunity costs of own capital. Or starting from the previous indicator: farm net income — opportunity cost of own land — opportunity cost of own capital

Family farm income (FFI)*: expressed per family labour unit. This income indicator takes into account differences in the family labour force to be remunerated per holding. The value is calculated as FNI per family work unit (FWU). Only farms that use unpaid labour (which in most cases means family members) are included in the calculation.*

[11] External factors of production are the remuneration of inputs such as work, land and capital which are not the property of the holder (e.g. wages, rent, interest paid).

Results by Member State

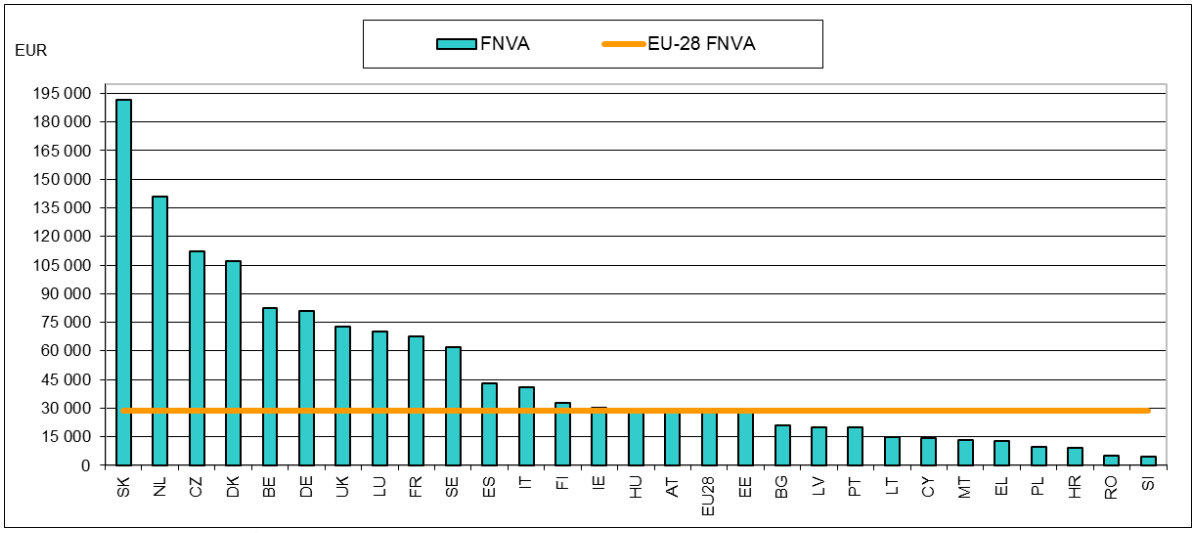
The average FNVA per farm differed significantly among the Member States in 2015. It was highest in Slovakia, at EUR 191 500 per farm. This is more than 40 times higher than in Slovenia, the country with the lowest FNVA.

The Netherlands, the Czech Republic and Denmark were also in the top four countries in terms of income. The EU-28 average was around EUR 28 500 (see Figure 1.1) in 2015.

The main advantage of a measure such as average FNVA/farm lies in its relative simplicity. But this measure fails to reveal the differences in farm size, type of farming or structural decreases in the labour force employed in agriculture. To overcome this, FNVA is usually expressed per AWU, which can be seen as a measure of labour productivity.

Even when FNVA is expressed per AWU, the general picture of income variability within the EU remains unaffected, although the difference between the highest and lowest income levels of Member States decreases (Figure 1.4). Denmark, the Netherlands and Luxembourg registered the highest FNVA per AWU in 2015, at EUR 61 800, EUR 51 000 and EUR 40 300 respectively. This means that the FNVA per AWU for Denmark is nearly three times the value of the average FNVA per AWU for the EU-28 (EUR 18 600), and is approximately 20 times higher than the lowest average income achieved per labour unit in Slovenia. The top three countries have a significant share of their farms devoted to granivore production, specialist horticulture and dairy. At the other end of the spectrum, Poland, Romania and Slovenia had the lowest FNVA per AWU (EUR 6 000, EUR 4 500 and EUR 3 300 respectively). This is because their agriculture is largely oriented towards less intensive and less productive types of farming, namely mixed farming and other permanent crops. Note also that in 2015 there was a decrease in crop production in Bulgaria (−12 %) and Greece (−7 %) compared to 2014, while the decline in livestock production was the most striking in Estonia (−24 %) and Cyprus (−20 %). Cyprus was able to compensate for this decline with a significant increase in crop production (+63 %).

Figure 1. 1: **Farm net value added by Member State in 2015**
(average per farm in EUR)



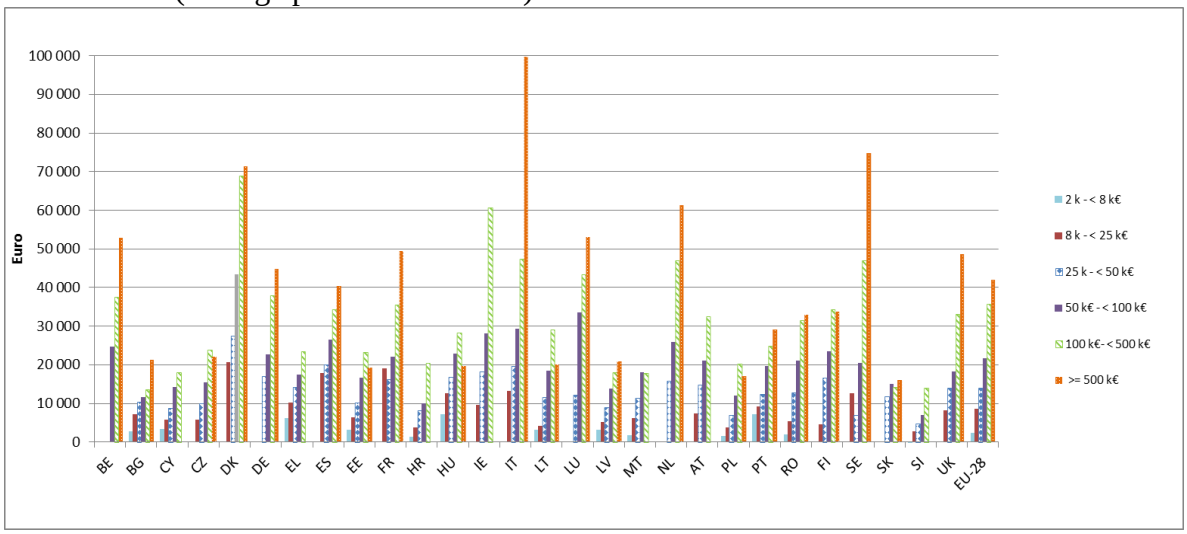
Source: Directorate-General for Agriculture and Rural Development (DG AGRI) EU-FADN.

Looking at the trends in FNVA per AWU from 2004 to 2015, it is clear that 2015 was almost as good as 2012 in terms of average farm income. Provisional 2016 data shows FNVA per AWU continuing to increase in Europe. The worst years for income were between 2007 and 2009, but 2009 was both a year of economic crisis in Europe and a year of changes in the FADN methodology (a switch from Standard Gross Margin to Standard Output for measuring a farm's overall economic size expressed in euro, please see footnote 41). These changes in methodology may also have had an impact on the calculated income level in that particular year.

Figure 1.5 shows that the three-to-four-fold income (expressed in FNVA) gap between the old and new Member States seems to have continued in 2015. Focusing only on the income level of the EU-N2 (Bulgaria, Romania), a clear but moderate upward trend can be observed from their year of accession.

In 2015 there was a twenty-fold difference between the average farm income per labour unit achieved in the highest (standard output is more than EUR 500 000) and the lowest (SO is between EUR 2 000 and EUR 8 000, see footnote 41) economic-size classes in the EU-28. The largest income level difference in a single country between the size-class extremes was in Romania (where the difference in income was 17 times) and the smallest was in Hungary (where the difference in income was three times). Figure 1.2 also shows that the highest average FNVA per AWU in the highest economic-size class was achieved in Italy (EUR 99 700), while the smallest average FNVA per AWU in the largest economic-size class was recorded in Slovakia. The latter had the most balanced average income level in the various economic size classes. In the smallest economic-size class, Slovenian farms recorded negative FNVA per AWU, and Malta recorded the smallest positive income per labour unit (EUR 1 800).

Figure 1. 2: **Farm net value added per AWU by Member State and by economic-size classes in 2015**
(average per AWU in EUR)

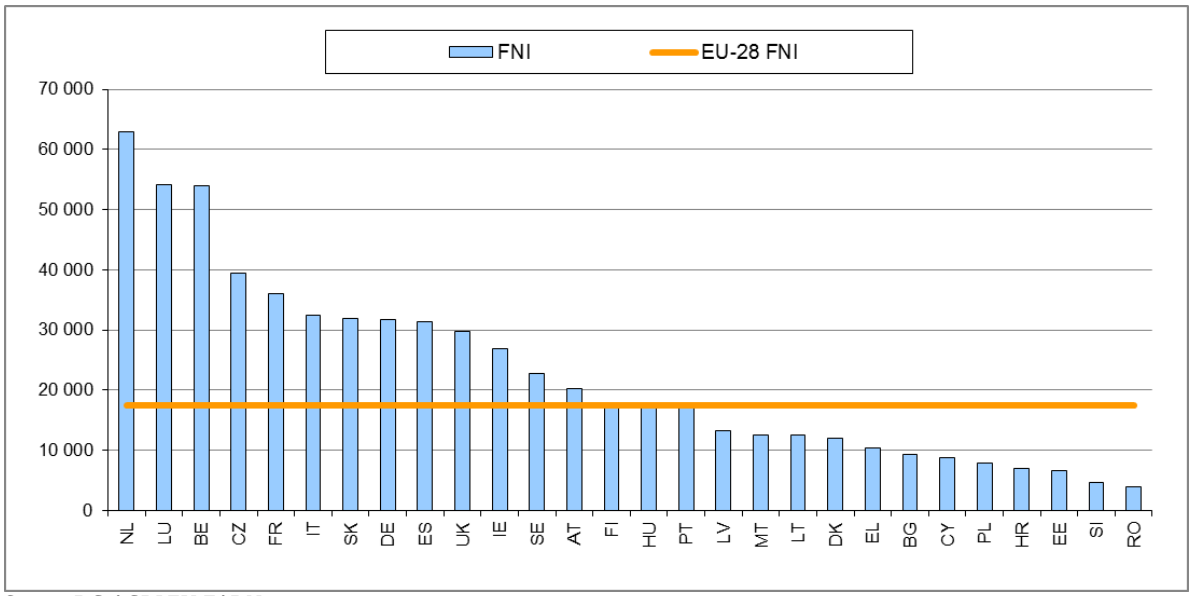


Source: DG AGRI EU-FADN.

By deducting the external factors of production from the FNVA and by adding the balance of subsidies and taxes on investments we arrive to the farm net income (FNI). Using this indicator changes the picture of agricultural profitability of family factors in Member States.

It is noteworthy that Slovakia's FNI was the lowest out of all countries in 2015, while its FNVA was the highest. This is due to the characteristics of Slovakian agriculture, which is based mainly on large-scale holdings cultivated by paid labour. Small family farms make up a very small proportion of total agricultural land in Slovakia, and 80 % of the holdings are legal entities. Slovakia is a country where agriculture is still mostly confined to large-scale production[12].

Figure 1. 3: Farm net income by Member State in 2015
(average per farm in EUR)

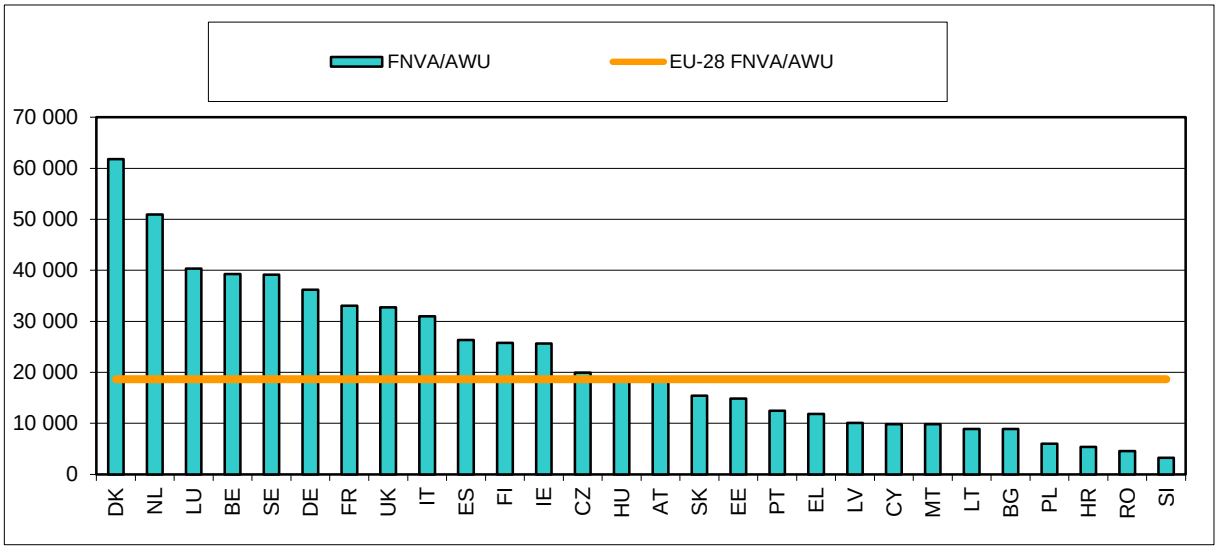


Source: DG AGRI EU-FADN.

An alternative measure of agricultural income is Family Farm Income (FFI), as a high proportion of work in the agricultural sector is carried out by family members. FFI is expressed per family work unit (FWU), and is calculated by deducting from FNVA the costs of wages, rent, interest, and the opportunity costs of own capital, so that we arrive at the remuneration of family labour. At EU-28 level, the average FFI per FWU stood at EUR 14 900 in 2015. It represented an insignificant increase (+1 %) compared to 2014. In 2015, the Netherlands achieved the highest FFI per FWU (EUR 44 000), followed by Luxembourg (EUR 39 000) and Belgium (EUR 34 400). The Netherlands achieved this level despite having one of the highest opportunity costs of own land (following Denmark) among the Member States. The gap between FNVA/AWU and FFI/FWU is the widest in the Netherlands, Denmark and Sweden (although the profile of farms is not identical). The reasons for these large gaps are: the high cost of land in the Netherlands (53 % of all own opportunity costs), the interest paid by Danish farmers (39 % of total external factors), and the high amount of rent paid by Swedish farmers (38 % of total external factors). The average family income per FWU in 2015 was the lowest in Slovenia (EUR 3 700).

[12] https://spectator.sme.sk/c/20448357/slovak-agriculture-faces-changes.html

Figure 1. 4: **FNVA per AWU by Member State in 2015**
(average in EUR)



Source: DG AGRI EU-FADN.

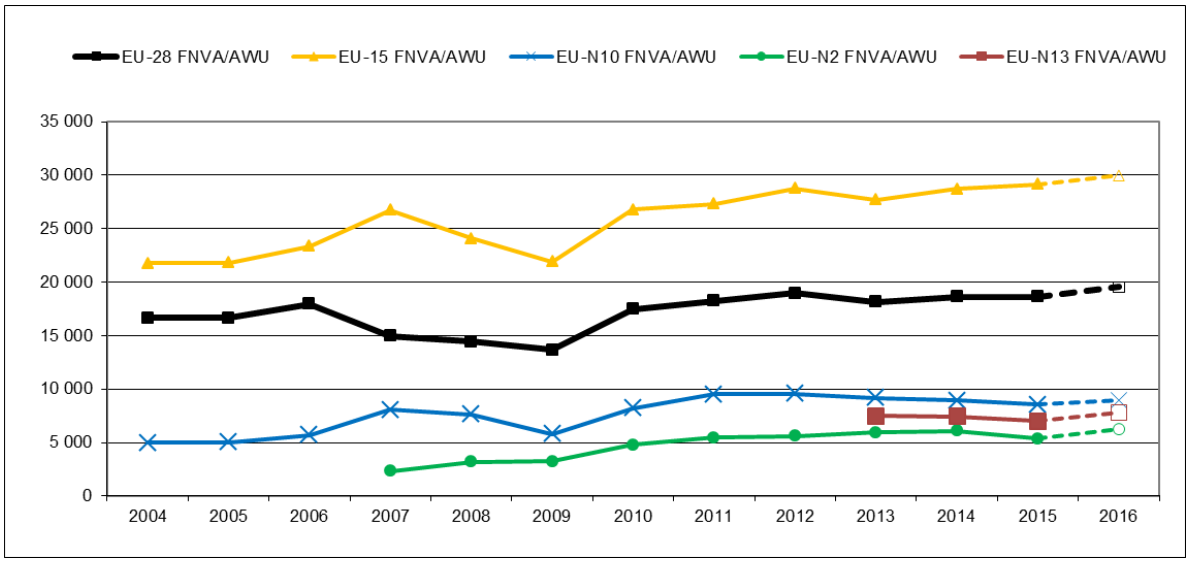
Results by EU group

After the economic crisis in 2009, a recovery began in agriculture. This recovery was reflected in the growth of farm income in the EU-28. 2012 was a very good year in terms of FNVA (EUR 29 400). This was followed by a slight decrease (−1 %) in the average FNVA per farm in 2013. Income growth then began to increase again, reaching EUR 28 500 in 2015. This growth can be traced back to the increase in the value of agricultural outputs (which grew by 2 % that year on average). This was linked to the performance of crop production (up by 4 % per farm on average) which compensated for the decline in total output of livestock and livestock products by 2 %. Labour inputs remained unchanged over the course of the year.

The average FNVA per farm in the EU-15 followed exactly the EU-28 trend with regard to income fluctuation from 2004 to 2015. The average FNVA of farms from the EU-N10 (the countries that joined the EU in 2004) increased steadily from 2004 until peaking in 2011 at EUR 17 600. However, the average FNVA of EU-N10 farms then began to fall, reaching 14 900 in 2015. Since labour inputs remained stable in the EU-N10, this also resulted in a decrease in FNVA/AWU (−11 %). In the EU-N2 (Romania and Bulgaria) the highest FNVA per AWU was achieved in 2014 (EUR 6 100), and then it decreased by 12 % in 2015. Romania, with its more than 1 million farms represented in the FADN, had a large impact on the sample and also on the income development of the EU-13. In absolute terms, FNVA per AWU increased by EUR 7 400 — or 34 % — in the EU-15 between 2004 and 2015, and by EUR 4 000 or 65 % in the EU-N10. The EU-N10 increase was a stronger increase in relative terms, but represented a widening of the overall gap as income in the EU-15 grew more in absolute terms. Looking at the 2004-2015 period, and taking into account the changes in the composition of the EU groups, a divergence in nominal farm income can be observed between the EU-15 and the Member States who joined the EU in 2004 (EU-N10). While in 2004, the FNVA per AWU of the EU-N10 was 23 % of the EU-15's FNVA per AWU, this was only 19 % in 2015. However, the EU-N2 has seen a convergence with the EU-15. The EU-N2's FNVA per AWU was 9 % of the EU-15's FNVA per AWU in 2007, while it increased to 18 % of the EU-15's FNVA per AWU in 2015 (see Figure. 1.5).

Figure 1. 5: **Long-term developments in FNVA per AWU in the EU groups13**

(average per AWU in EUR)



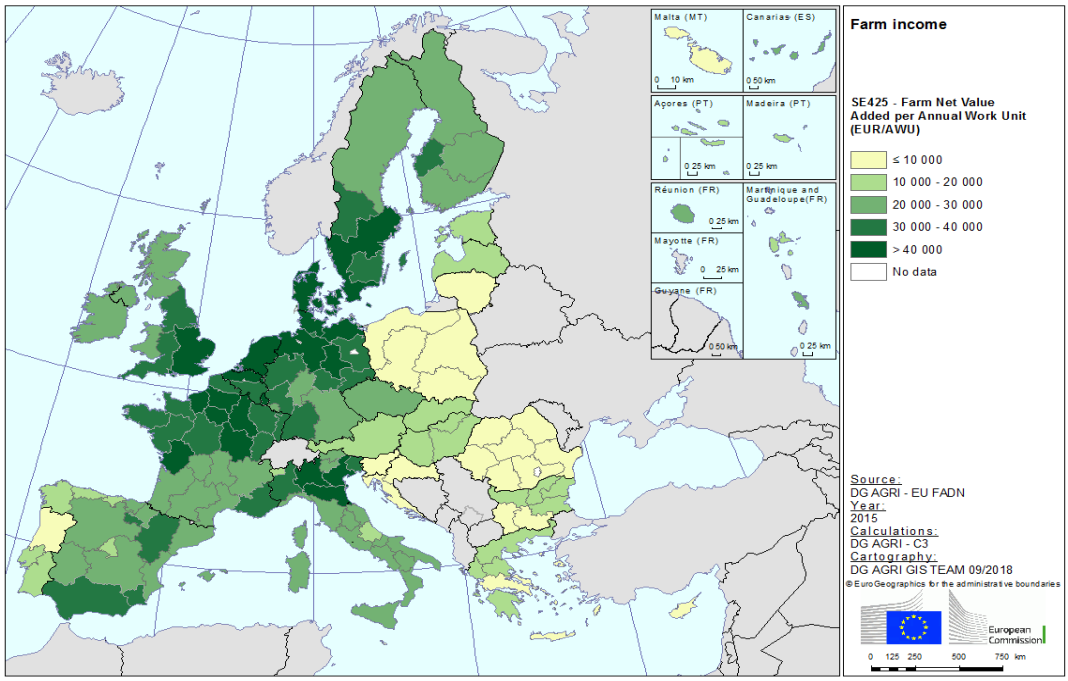
Source: DG AGRI EU-FADN.

Regional differences

Map 1.1 shows the regional differences in FNVA per AWU in the EU-28 in 2015. Agricultural holdings with the highest income per working unit were mainly located in Denmark, northern Italy (Lombardia), northern France (Champagne-Ardenne) and north-west Germany. In these regions, there is a high percentage of highly intensive granivore production, horticulture and dairy farms. On the other hand, regions with very low farm income (below EUR 10 000 per year) were mostly situated in the EU-N13. The lowest average FNVA/AWU per farm was in the Jadranska Hrvatska region in Croatia. Only two regions in the EU-15, namely Norte e Centro (Portugal) and Sterea Ellas-Nissi Egaeou-Kriti (Greece) had an average FNVA/AWU below EUR 10 000. There is an almost 30-fold difference between the highest income per AWU (Denmark) and the lowest (Jadranska Hrvatska).

[13] 2016 data are provisional.

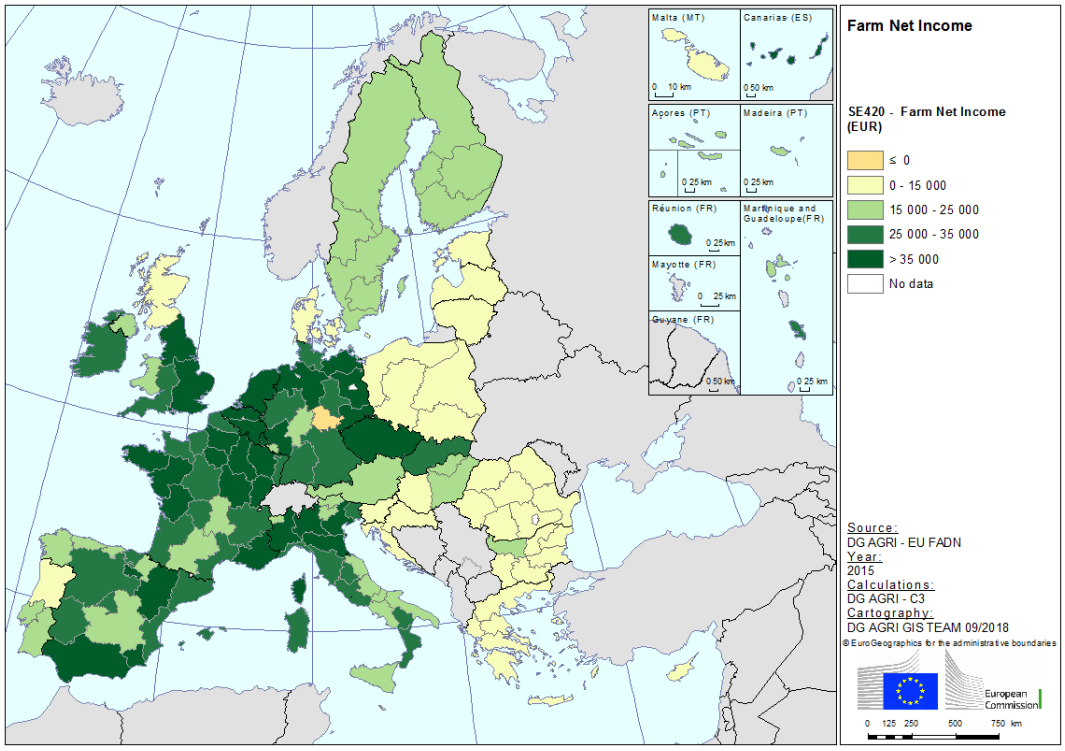
Map 1.1: FNVA per AWU by FADN region in 2015



Source: DG AGRI EU-FADN.

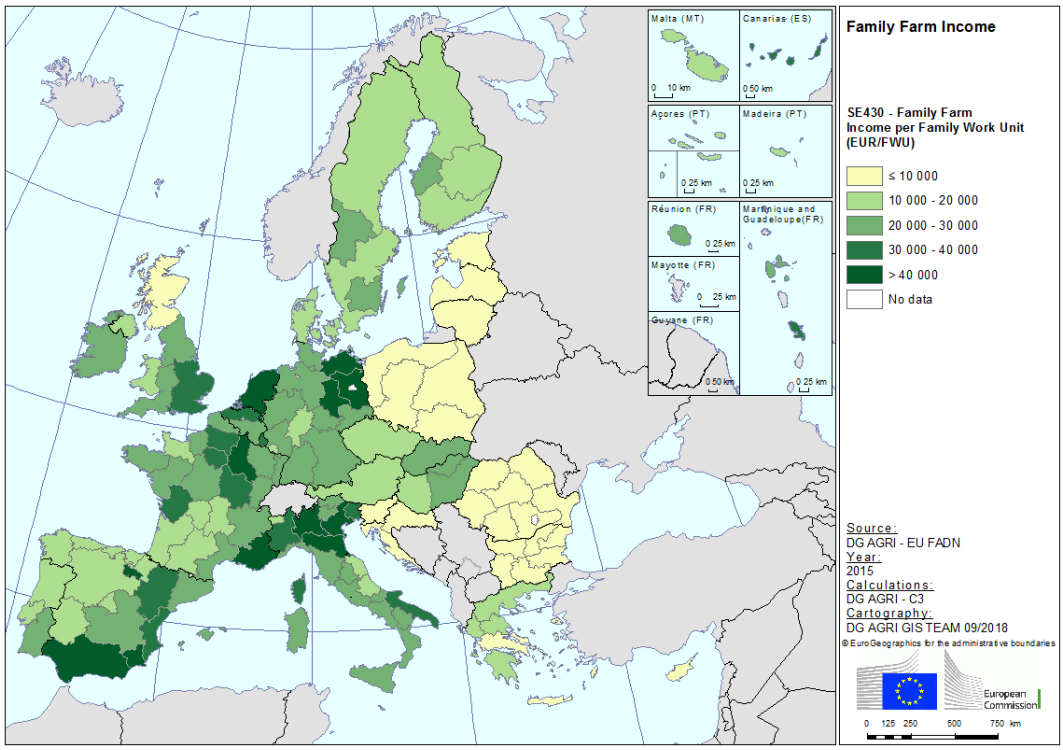
Looking at the FFI per FWU the lowest values are in Romania, Croatia and Slovenia. The north-western regions of Romania and the southern region of Croatia have especially low levels of FFI per FWU (EUR 2 700 and EUR 1 500 respectively) (see Map 1.3). At the top of the scale is not anymore Denmark, but Lombardia (EUR 58 500). Denmark lost its first position due to the high average value of external factors. The difference between the lowest and highest FFI per FWU values is even bigger (40 fold) than in the case of FNVA per AWU.

Map 1.2: Farm Net Income, by FADN region in 2015



Source: DG AGRI EU-FADN.

Map 1.3: FFI per Family Work Unit, by FADN region in 2015



Source: DG AGRI EU-FADN.

Results by type of farming

Figure 1.6 shows significant differences in **average FNVA** across different types of farming. In particular, average farm income was approximately six times higher in the horticulture sector than in the mixed crops and livestock sectors. One explanation for the relatively low income of mixed farms is that many of them are very small. Incomes for holdings specialised in horticulture may also have been higher in 2015 due to the growth in output of some vegetables and fruits, and increases in real producer prices[14]. The high income levels of farms specialised in horticulture can also be explained by the higher added-value production in this sector.

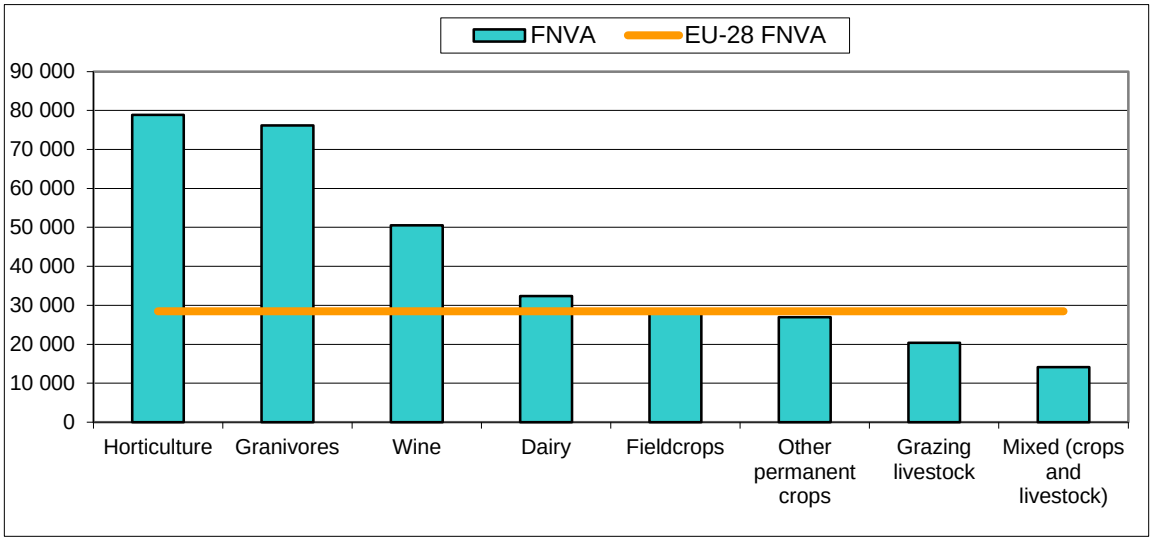
When measured by **FNVA per AWU**, the general picture of income distribution by type of farming changes (see Figure 1.7). Farms specialised in horticulture lose their position of having the highest FNVA in absolute terms, mainly due to the labour intensity associated with this type of farming. Farms specialising in pigs and poultry had the highest FNVA per AWU in 2015, and most of these farms are large in terms of economic size. Farms engaged in viticulture had the second-highest FNVA per AWU out of all types of farming. This was due to their higher producer prices and the growth of total output (by +10 %) compared to 2014. The average total output in farms specialised in horticulture increased by 15 % from 2014 to 2015, but their average labour input per farm increased by 8 % in the same period. This meant that horticulture had only the third-highest FNVA per AWU.

[14] Increases of 7.6 % for vegetables prices and of 8.1 % for fruit prices based on Eurostat sources: http://ec.europa.eu/eurostat/documents/2995521/7748919/5-28112016-AP-EN.pdf/ac25310b-88f9-458a-b797-ef90f5e8c253

The FNVA per AWU of farms specialising in granivores, wine, horticulture, field-crops and dairy was above the EU-28 average (EUR 18 600) in 2015. It remained below average for permanent-crop farms (other than wine), farms specialising in grazing livestock (other than dairy) and mixed farms. The latter two types of farm had the lowest FNVA per AWU (EUR 14 900 and EUR 10 100 respectively). From 2014 to 2015, FNVA per AWU dropped considerably for dairy farms (−16.6 %) and to a lesser extent for mixed farms (−3.9 %). Between 2014 and 2015 FNVA per AWU increased for all other types of farming, particularly for farms specialised in horticulture (+12.4 %) and for permanent-crop farms (+10.3 %). FFI per FWU only slightly alters the picture of relative productivity differences across the various types of farming. Although holdings specialised in granivores still remained at the top of the ranking and mixed farms at the bottom, the ranking of other types of farming changed. Permanent-crop farms performed better than farms specialising in field-crops and dairy in terms of remunerating family labour (see Figure 1.8).

Figure 1. 6: Average FNVA in the EU-28 by type of farming in 2015

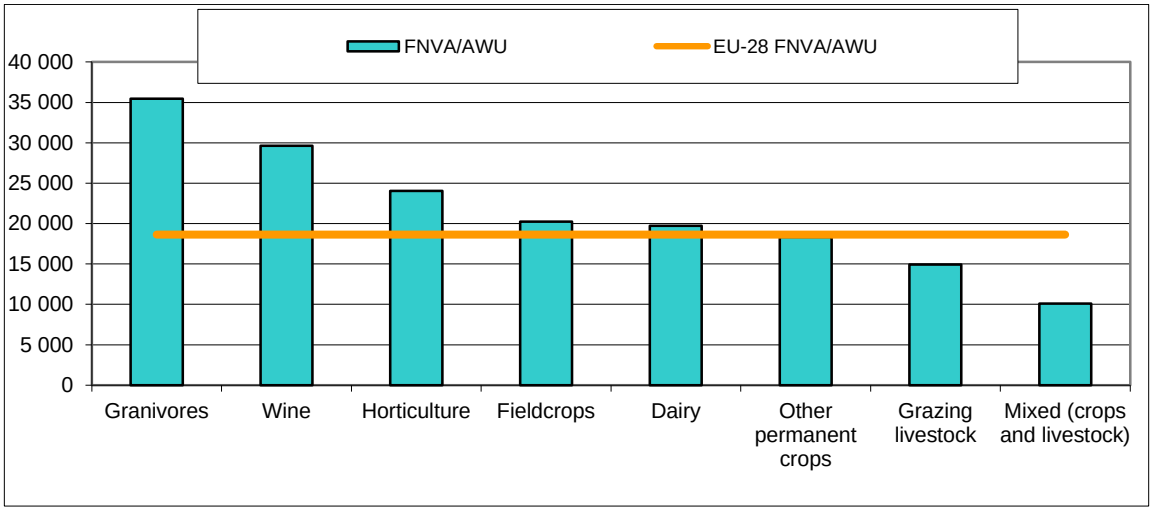
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 1. 7: FNVA per AWU by type of farming in 2015

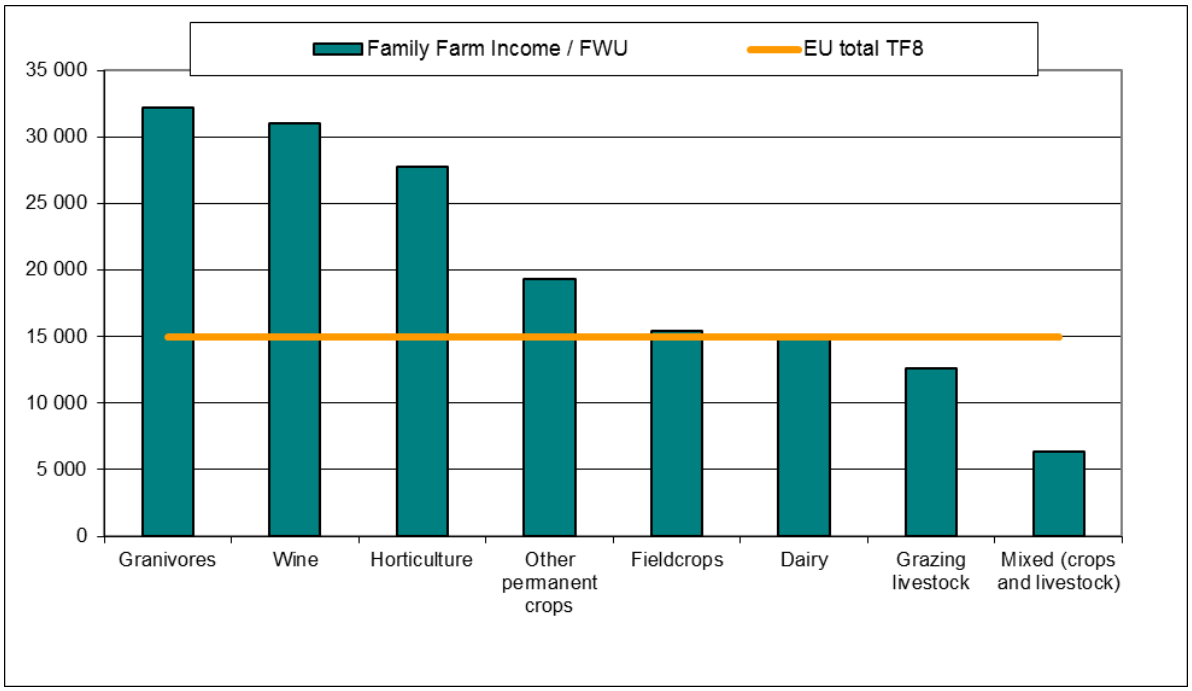
(in EUR per AWU)



Source: DG AGRI EU-FADN.

Figure 1. 8: FFI per FWU by type of farming in 2015

(in EUR per FWU)



Source: DG AGRI EU-FADN.

Results by organisational form and EU group

From an organisational point of view, holdings in the FADN are divided into four groups from the accounting year 2014. A description of these four groups follows below.

(1) *Family farms* — These are farms where the holding uses the labour and capital of the holder/manager and his/her family, and they are beneficiaries of the economic activity.

(2) *Partnership* — This is where the production factors of the holding are provided by several partners, at least some of whom participate in the work of the farm as unpaid labour. The benefits go to the partnership.

(3) *Company with profit objective* — This is where the benefits are used to remunerate shareholders with dividends/profits. The holding is owned by the company.

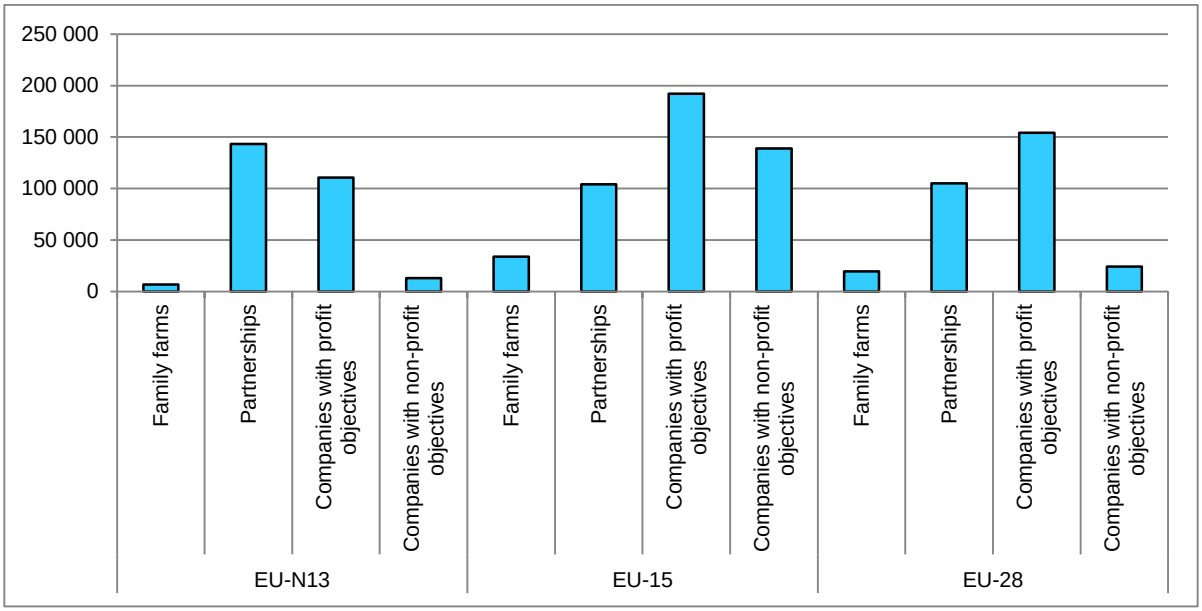
(4) *Company with non-profit objective* — This is where the benefits are used primarily to maintain employment or to promote a similar social objective. The holding is owned by the company.

The results show that, on average, non-family farms generated higher FNVA than family farms, with income disparities particularly visible in the EU-N13 and — to a lesser extent — in the EU-15. The disparities across and within the two groups of Member States mainly reflect differences in farm size and also in the types of ownership. In the EU-N13, holdings classified as a 'partnership' had the highest levels of FNVA. These farms in the EU-N13 are mostly intensive farms specialised in pigs, poultry and dairy, and belong to the largest economic-size classes (see Figure 1.10 and 1.11). These farms achieved higher FNVA per farm than farms in other organisational forms such as companies with profit objectives. The origin of these partnership farms in the EU-N13 can be traced back to the older cooperatives.

Income in these mostly large commercial farms in the EU-N13 exceeded income generated by the corresponding group of holdings in the EU-15 (EUR 143 200 as compared to EUR 104 000). On the other hand, the income of family farms in the EU-15 was significantly higher on average (EUR 33 800) than that of their EU-N13 counterparts in 2015 (EUR 7 000). On average, family farms had the lowest FNVA levels in Europe of all the organisational forms in each EU Member State group (see Figure 1.9).

Figure 1. 9: **FNVA by EU group and organisational form in 2015**

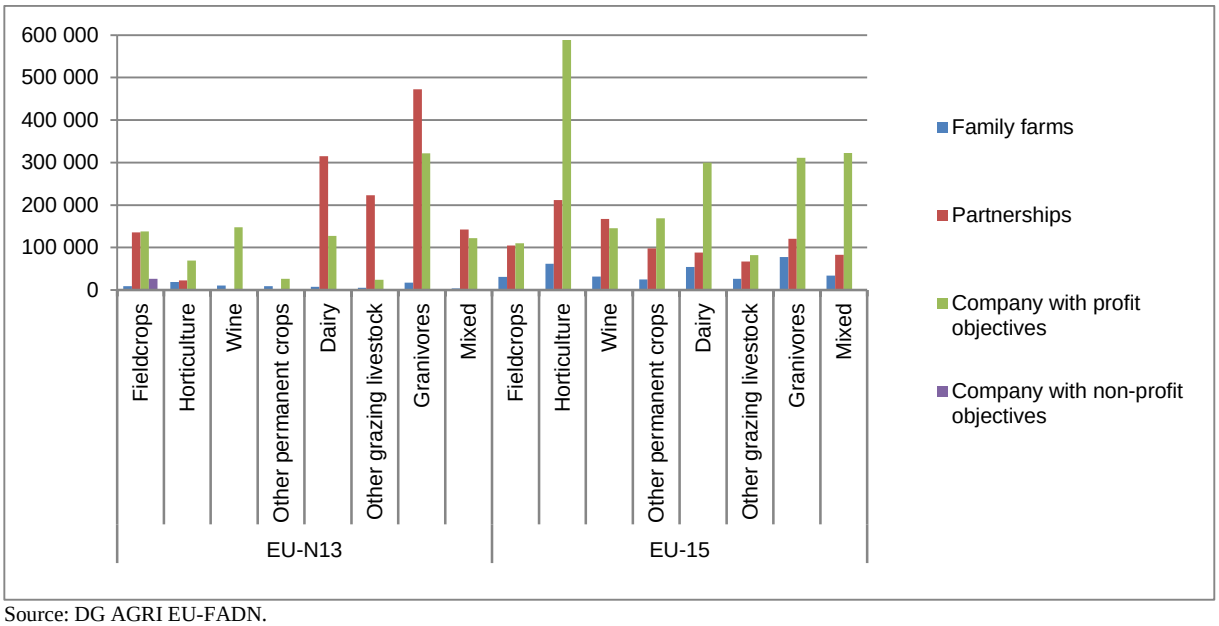
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 1. 10: **FNVA by EU group, by organisational form and by types of farming in 2015**

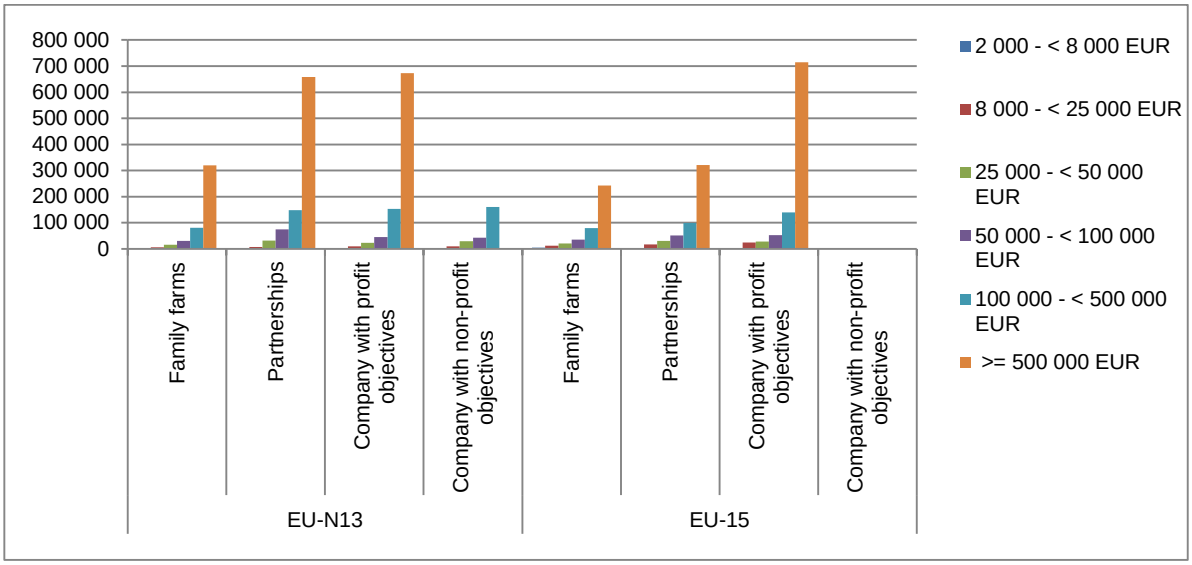
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 1. 11: **FNVA by EU group, by organisational form and by economic-size classes in 2015**

(average per farm in EUR)

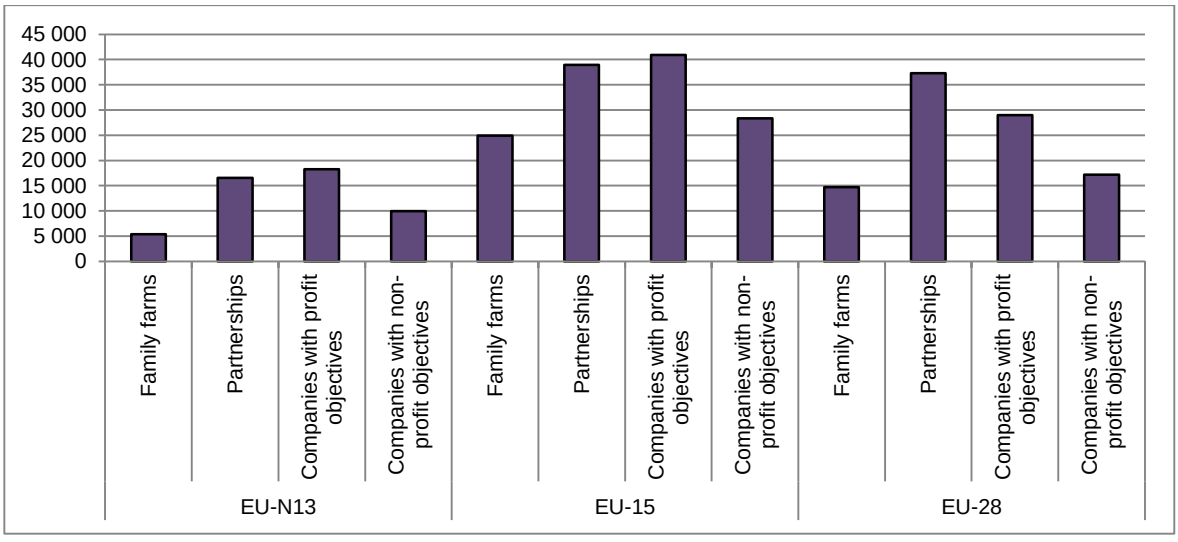


Source: DG AGRI EU-FADN.

When FNVA is calculated by AWU, the income of non-family farms still tends to be higher than that of family farms across different EU groups (see Figure 1.12). However, in this case partnership farms show lower values than the company with profit objectives (i.e. legal entities) in the EU-N13 probably due to the bigger involvement of labour into the production. In some of the new Member States (such as Slovakia and the Czech Republic), companies with profit objectives are a more prevalent organisational form of farming, and they usually operate large-scale farms. Companies with a non-profit objective operate mainly in field-crops and mixed farms in the EU-N13. In general, FNVA per AWU is greater in the EU-15 than in the EU-N13 irrespective of the organisational type of farm.

Figure 1. 12: **FNVA per AWU by EU group and organisational form of the holding in 2015**

(in EUR per AWU)



Source: DG AGRI EU-FADN.

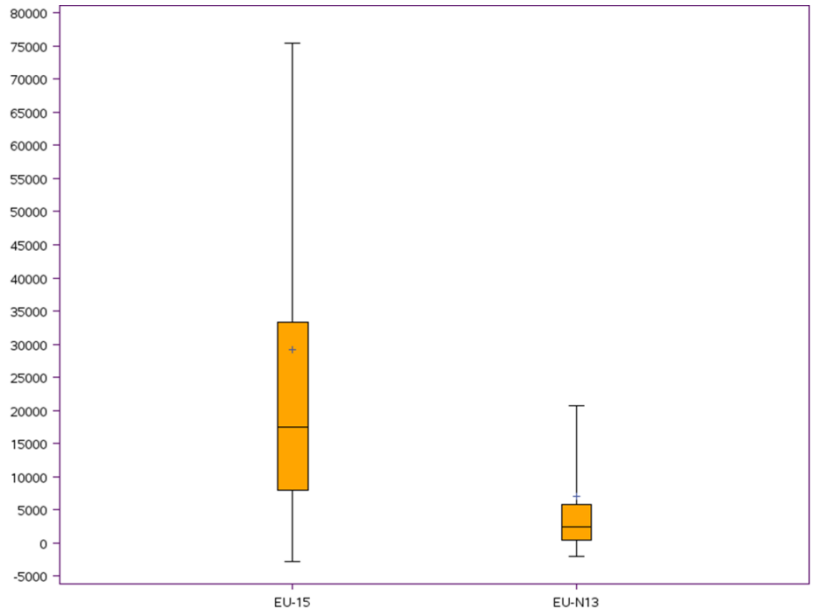
1.2. Distribution of income

Agricultural income varies considerably across farms as depicted by the 'box-plots'[15] in Figure 1.13. The general pattern shows that a high proportion of farms have a relatively low income level per worker, while a small proportion of holdings have a very high income level per worker. For instance, the average FNVA per AWU in the EU-15 stood at around EUR 29 100 in 2015. However, while 5 % of farms had an FNVA per AWU of more than EUR 75 000, 50 % had an FNVA per AWU below EUR 17 500.

Average income per worker in the EU-N13 remained significantly below the EU-15 level. The mean value of FNVA per AWU in the EU-N13 is in the top quartile of farms (i.e. the 25 % of farms with the highest FNVA per AWU). This means that the mean is being dragged higher (skewed) by a small number of relatively high-earning farms. Although EU-N13 average income per worker stood at around EUR 5 100, 50 % of holdings had an income per worker of less than EUR 2 400.

Figure 1. 13: **Distribution of FNVA per AWU by EU group in 2015**

(in EUR/AWU)



Source: DG AGRI EU-FADN.

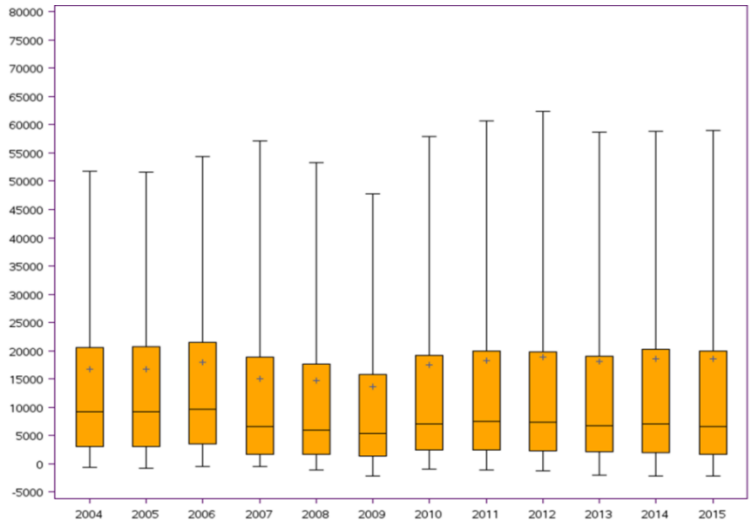
Figure 1.14 shows developments in income distribution for the EU as a whole in the period 2004-2015. From 2004 until 2007, income levels in Europe were increasing gradually, and average FNVA per AWU was also increasing. Note also that 2007 was an exceptionally good agricultural year. Any reduction of the FNVA per AWU in the EU average or in the EU-N13 average is influenced by the inclusion of two new Member States into the calculation in 2007 (Romania and Bulgaria). From 2007 to 2009, the average level of income decreased due to the economic crisis.

[15] In the box plots, the inter-quartile range (between 25 % and 75 % of farms) is indicated by the yellow box; the limits of 10 % of farms and 90 % of farms correspond to the end of lines (whiskers); the median (50 % of farms) is the line crossing the yellow boxes, and the mean is shown by the '+' sign.

The impact of the sizeable drop in agricultural output prices is visible in the 2009 data (see Figure 1.14), and explains the significant narrowing of the distribution of income per AWU in the European farms. After 2009, an upward tendency can be seen, leading once again to a wider distribution of average income per worker in 2010, 2011 and in 2012. In 2013, the average income per worker again fell (−4.6 %), with the top whisker of the box-plot showing that the top 5 % of farms recorded less income (on average per farm) than in 2012. In 2014 and 2015, income inequality has not changed significantly in the EU-28. The average FNVA per AWU increased very slightly compared to 2013.

Figure 1. 14: Distribution of FNVA per AWU in the EU-28 by year

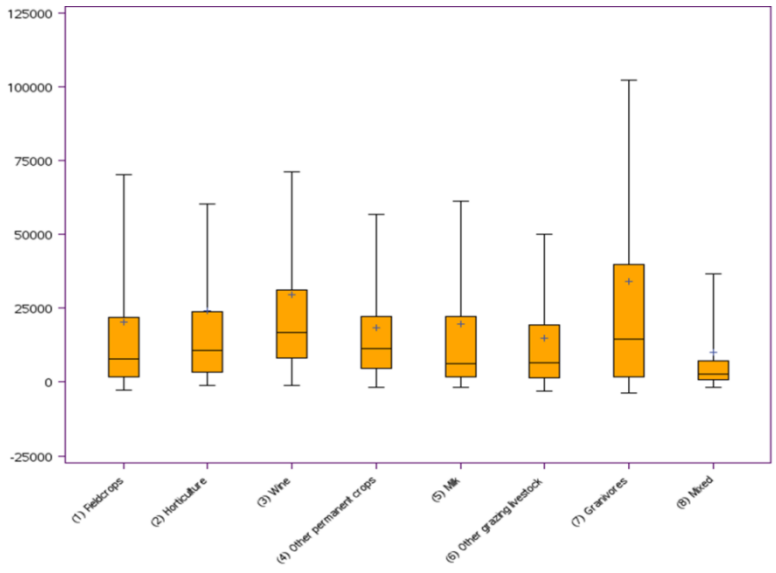
(in EUR/AWU)



Source: DG AGRI EU-FADN.

Figure 1. 15: Distribution of FNVA per AWU by type of farming in the EU in 2015

(average in EUR/AWU)



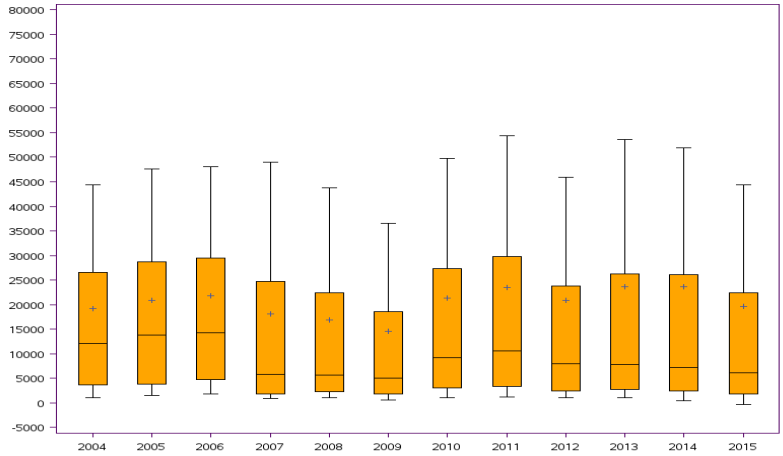
Source: DG AGRI EU-FADN.

Figure 1.15 shows the distribution of FNVA/AWU by type of farm in the EU-28 in 2015.
In general terms, income distribution is 'asymmetrical' in each of the eight sectors represented in the FADN (i.e. a small proportion of farms have very high income and a large proportion of farms have a low income[16]). The extent of these differences varies greatly across the different types of farming. Farms specialised in granivores have the most pronounced differences between their mean and median values of FNVA/AWU. The distribution of FNVA/AWU is also highly uneven for field-crop farms and farms specialised in viticulture. For mixed farms, the best-performing 25 % of farms have a larger impact on the average than the remaining 75 % (the mean value is outside the box). The trend in the distribution of FNVA/AWU over time varies from sector to sector. As shown in Figure 1.16, the distribution of FNVA/AWU for specialised dairy farms was more equal in the 2004-2006 period, and became more unequal starting in 2007, as from here the boxplot includes already the small dairy farms of Romania.

In the 2007-2009 period, income discrepancies were particularly pronounced, and were accompanied by a significant decrease in mean and median levels. These developments were predominantly driven by increasing input prices in 2008 and the 2009 decrease in milk prices. From 2010 to 2011, FNVA/AWU increased, and mean income per worker exceeded its 2006 level due to a significant recovery in prices and output during this period. In 2012, the income distribution became less unequal as the top 5 % of farms registered a lower average income than 2011, and the mean and median levels decreased. In 2013, the income gap between the top and bottom 5 % of farms increased again, and even the mean value increased, again reaching the 2011 level. 2014 showed roughly the same picture in terms of income as 2013, although the top 5 % of farms recorded a slightly lower average farm income than in 2011. 50 % of farms earned less income in 2015 than in 2014 (see median values of those years), and therefore the mean value also decreased in 2015. Milk quotas were phased out on 1 April 2015. Extreme changes reported from one year to another are rare in the agricultural sector, but the ending of these quotas is very likely to have had an impact on farm income in the first year after they were phased out.

Figure 1. 16: **Distribution of FNVA/AWU of dairy farms in the EU-15 by year**

(in EUR)

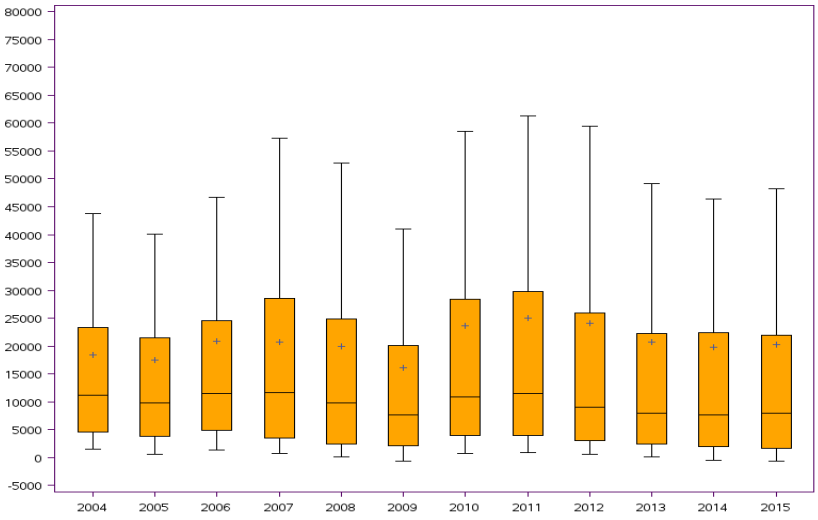


Source: DG AGRI EU-FADN.

[16] Within a given sample, a single outlier will affect the average but will have no impact on the median.

Figure 1. 17: Distribution of FNVA/AWU of field-crop farms in the EU by year

(in EUR)



Source: DG AGRI EU-FADN.

Figure 1.17 presents the average FNVA/AWU for specialised field-crop farms fluctuated between 2004 and 2015, and peaked in 2007 before declining. The income peak was due to the fact that the 2007 agricultural year was marked by very sharp increases in the prices of many agricultural commodities, both in the EU and on world markets.

In the following 2 years (and especially in 2009), FNVA/AWU fell below the 2005 level, and income distribution narrowed. In 2010-2011, income exceeded its 2007 level, and income distribution widened again. This recovery was the result of higher cereal prices and volumes in 2010-2011. In 2012, the box-plot shifted towards lower income levels, and average income decreased. As Figure 1.17 shows, the inter-quartile became shorter in 2013 and at the same time average income moved further away from the median. The top 25 % of farms recorded lower income, while the income level of the lower quartile remained almost unchanged. Therefore, the income distribution became slightly more equal in 2013. The top 25% income values approached the median in 2014, reducing income disparities. In 2015, the bottom 25% of income values and the median remained unchanged, but the top 5 % of farms again earned more than in 2014, thus pushing up the average. The increase in the harvested production of cereals (+6.3 %) and oilseeds (+9.6 %) in 2015 had an impact on the average farm income of field-crop farms[17].

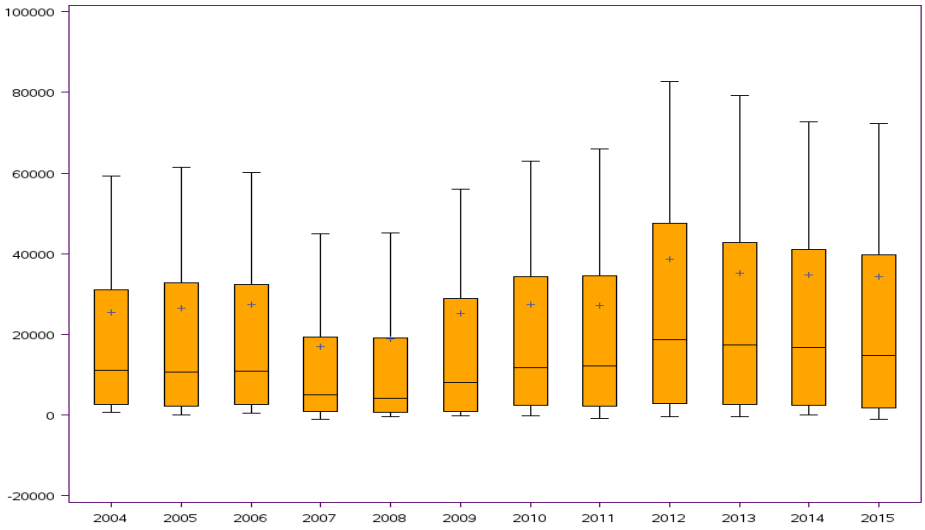
For farms specialised in granivore production, i.e. pigs and poultry (Figure 1.18), average FNVA/AWU fell to a low level in 2007 and 2008, as the dampening effect of extremely high feed prices more than outweighed the favourable impact of higher output prices. The position of the mean value shows that nearly 75 % of the observed granivore farms did not achieve the average income level in 2008. The median and mean values gradually started to increase slightly after reaching their lowest point in 2008.

[17] http://ec.europa.eu/eurostat/statistics-explained/index.php/Main_annual_crop_statistics

In 2012, the best-performing 5 % of farms achieved a significantly higher level of income, pushing up the mean value and causing the income distribution to widen again. This increase can be explained by volume growth and the increase in producer prices (particularly for pork). High feed costs in the first half of 2013 was the main reason for low output. From the peak in 2012, the prices for pigmeat fell continuously through 2014 and 2015, which dragged down average farm income for this type of farming. From 2013 on, the quartiles of the box-plots become smaller, narrowing the income disparities, and reducing slightly the mean values in 2014 and 2015.

Figure 1. 18: Distribution of FNVA/AWU of granivore farms in the EU by year

(in EUR)



Source: DG AGRI EU-FADN

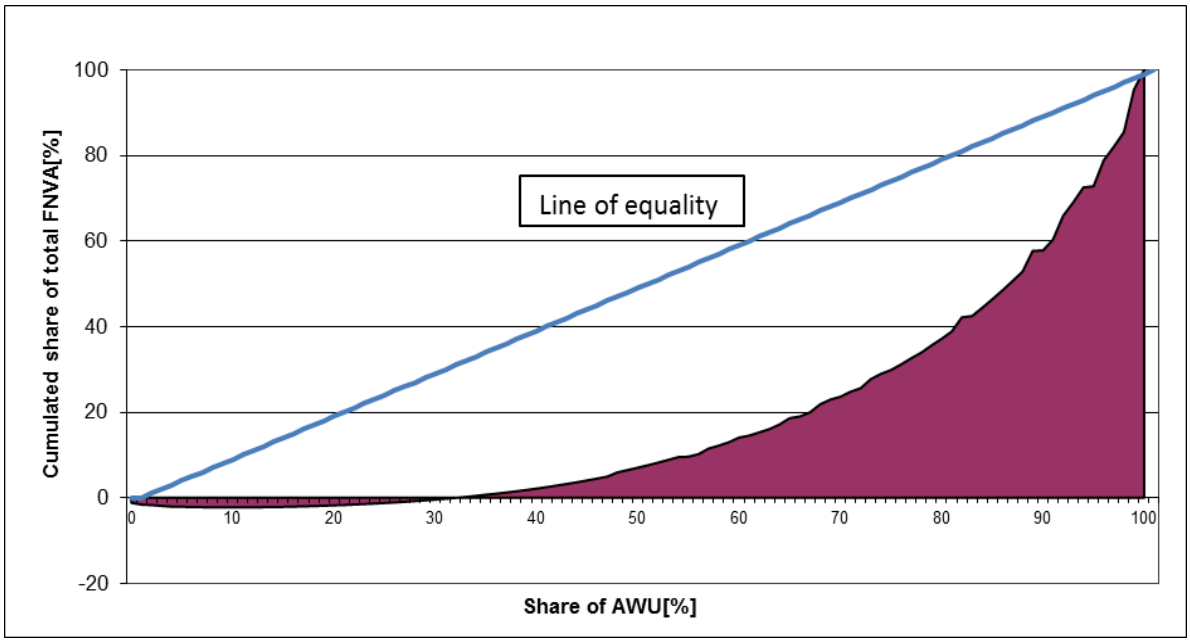
Figure 1.19 shows the distribution of income (FNVA) in the labour force (AWU) in the EU-28 in 2015 using a Lorenz curve[18]. In 2015, approximately 32 % of the farm labour force had a negative cumulated proportion of income.

The Lorenz curve shows that income is unevenly distributed in the labour force[19]: 75 % of the labour force generated approximately 30 % of the farm income recorded in the FADN. The remaining 25 % of the labour force therefore generated approximately 70 % of FNVA.

[18] In drawing the Lorenz curve, the income estimates are sorted in ascending order. Each observation is weighted according to the weighting factor of the farm and the number of workers employed.

[19] If income were equally distributed among the labour force, the Lorenz curve would become a straight line linking the origin to the top right corner of the figure.

Figure 1. 19: Lorenz curve of the distribution of FNVA/AWU in the EU-28 in 2015



Source: DG AGRI EU-FADN.

An alternative measure of the statistical distribution of income is the Gini index[20], which can be between 0 and 1. A coefficient of 0 expresses perfect equality of income in the labour force, while a coefficient of 1 reflects maximum concentration or inequality (with one work unit capturing all the income in a sector).

Table 1.1 shows that income concentration in the EU-15 is typically lower than in the EU-N13. Although comparisons between groups should be made with caution, the observed differences partly reflect differences in the structure of the farm sector. For instance, due to generally higher thresholds in the EU-15, the field of observation in the FADN does not include the lower economic-size classes as it does in most of the EU-N13 countries.

Looking at the development of the coefficient over time within each of the different groups of EU Member States, income concentration increased in the EU-15 from 2004 to 2011. It reached its peak in 2011, and was also very close to this value in 2009. Income inequality fell slightly in 2012, and continued to decline in 2014 and 2015. Its all-time low was 0.54, which it reached in 2006.

In the Member States that joined the EU in 2004, there were minor fluctuations in income distribution between 2004 and 2015. The economic crisis in 2009 seems to have increased income concentration in all EU groups, but the new Member States were particularly affected by unequal income distribution. High income concentration was seen in 2009 in the EU-N10. With the economic recovery, income inequality narrowed in 2010 in those Member States, but started to steadily widen again in 2011 until it reached its peak (the greatest income concentration) in 2015.

[20] The Gini coefficient is usually based on the Lorenz curve. It can be thought of as the ratio of the area that lies between the line of equality and the Lorenz curve over the total area below the line of equality.

Table 1.1: Development of the Gini coefficient of FNVA per AWU by EU group

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU-15	0.55	0.55	0.54	0.55	0.59	0.62	0.60	0.63	0.60	0.61	0.58	0.57
EU-N10	0.70	0.69	0.63	0.65	0.67	0.72	0.64	0.66	0.67	0.69	0.72	0.75
EU2				0.71	0.66	0.70	0.68	0.67	0.66			
EU-N13										0.69	0.74	0.77
EU28	0.61	0.62	0.60	0.68	0.71	0.72	0.69	0.71	0.69	0.70	0.70	0.71

Source: DG AGRI EU-FADN

1.3. Income components

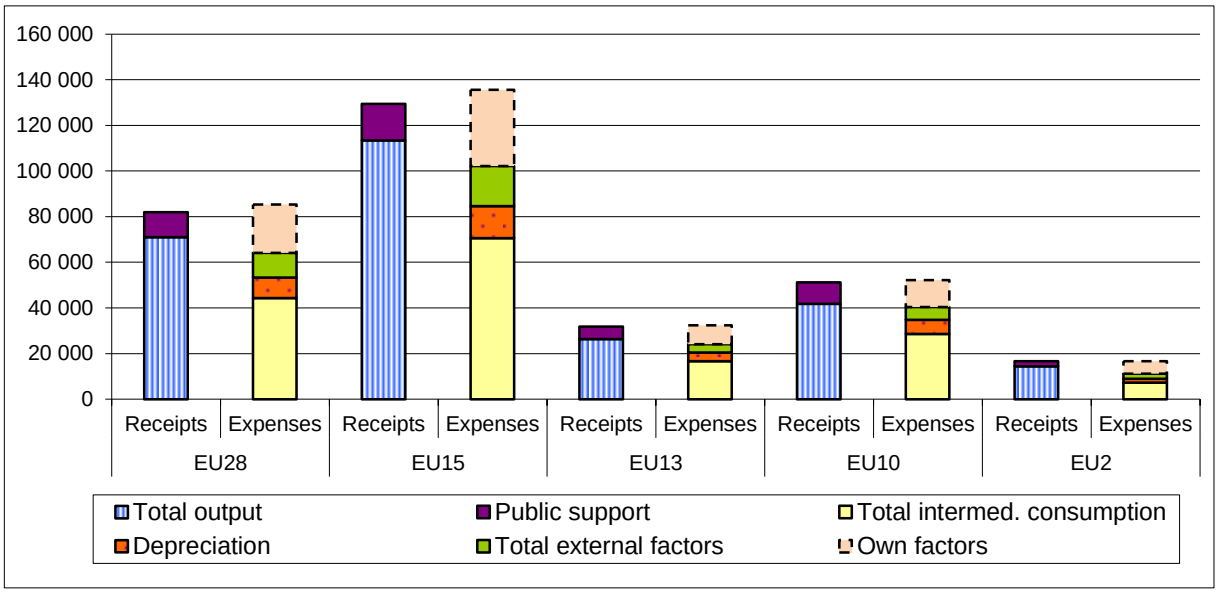
Results by EU group

Figure 1.20 shows the composition of farm receipts and expenses by EU group in 2015. In our calculation, total receipts represent the income received from the total output and from the balance of subsidies (current operations and investments) and taxes. When calculating expenses, the estimated remuneration of own production factors are also taken into account, which means that by comparing farm receipts with expenses (including the cost of own resources), we can arrive at the profit made by farms. In the previous chapters, the cost of own production factors was not taken into account.

On average, expenses were higher than receipts for farms in all EU groups. On the income side, average receipts per farm in the EU-28 stood at EUR 83 000, of which total output represented EUR 72 000 (87 %) and subsidies[21] EUR 10 900 (13 %). These aggregated figures hide large differences between the EU groups, both in absolute and relative terms: the average farm receipt in the EU-N13 was roughly one-fifth of the EU-15's and one-third of the EU-28's average farm receipt. In relative terms, subsidies accounted for more than 20 % of average farm receipts in the EU-N13, compared to roughly 14 % in the EU-15.

Figure 1. 20: Income components per farm by EU group in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

[21] Subsidies include the sum of net current and investment subsidies. They include EU coupled and decoupled payments, less favoured area (LFA) payments, rural development payments and national aid. 'Net' means the balance of current subsidies and taxes plus the balance of subsidies and taxes on investment.

On the cost side, average farm expenses (including estimated remuneration of own factors) totalled EUR 89 100 in the EU-28 in 2015. While this aggregated figure again reflects highly contrasting price levels in the EU groups, the overall cost structure has been found to be broadly similar across all countries. Intermediate consumption[22] represented 51 % of total expenses.

Depreciation and expenses for external factors[23] accounted for approximately 10-13 % respectively. The remaining 26 % was accounted for by the opportunity costs of own factors (family labour, own land and own capital). The EU-15 shows a distribution of cost factors similar to that of the EU-28. However, for farms in the EU-N13, intermediate consumption accounts for a smaller part of total farm expenses (46 %), while opportunity costs of own factors account for a larger part of total expenses (33 %).

Results by type of farming

In 2015, farms specialised in viticulture and other permanent crops on average showed a positive balance of receipts and expenses, as shown in Figure 1.21. The expenses and receipts of horticulture farms were approximately equal. Farms specialised in granivores and horticulture had the highest output of all farm types in the EU-28 (EUR 325 600 and EUR 187 600 respectively). On the other end of the spectrum, farms specialised in permanent crops other than wine generated the lowest output (EUR 42 100).

In terms of average subsidies per holding, dairy farms benefited most from subsidies[24] (EUR 14 700 per farm), followed by grazing-livestock farms and farms specialised in granivores (EUR 14 200 and EUR 13 700 per farm, respectively). On the other hand, the horticulture sector received the lowest amount of subsidies on average (EUR 2 900 per farm). The most subsidised dairy farm received more than five times more subsidies than the least subsidised horticultural farm[25]. It should be noted that, following the very good years of 2011 and 2012, the total output of dairy farms began to decrease in 2014. In the summer of 2014, the Russian government placed a ban on imports of certain agricultural and food products from the European Union, including dairy products. In 2015, declines in the output of dairy farms continued due to the abolition of milk quotas and reduced prices. Many dairy farms subsequently went out of business, and the EU promised to provide farmers with EUR 500 million in liquidity assistance. The discrepancies in subsidies across sectors still reflect historical features of the CAP, which in particular provided support for the production of cattle and field-crops. It is also noteworthy that horticultural farms had the second-highest receipts after farms specialised in granivores. Horticultural farms might therefore be less reliant on public support.

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[22] Intermediate consumption includes specific costs (including inputs produced on the holding) and overheads arising from production in the accounting year. Specific costs can include seeds, seedlings, fertilisers, crop protection products, feed for grazing stock and granivores, etc.

[23] Expenses for external factors include wages, rent and interest paid.

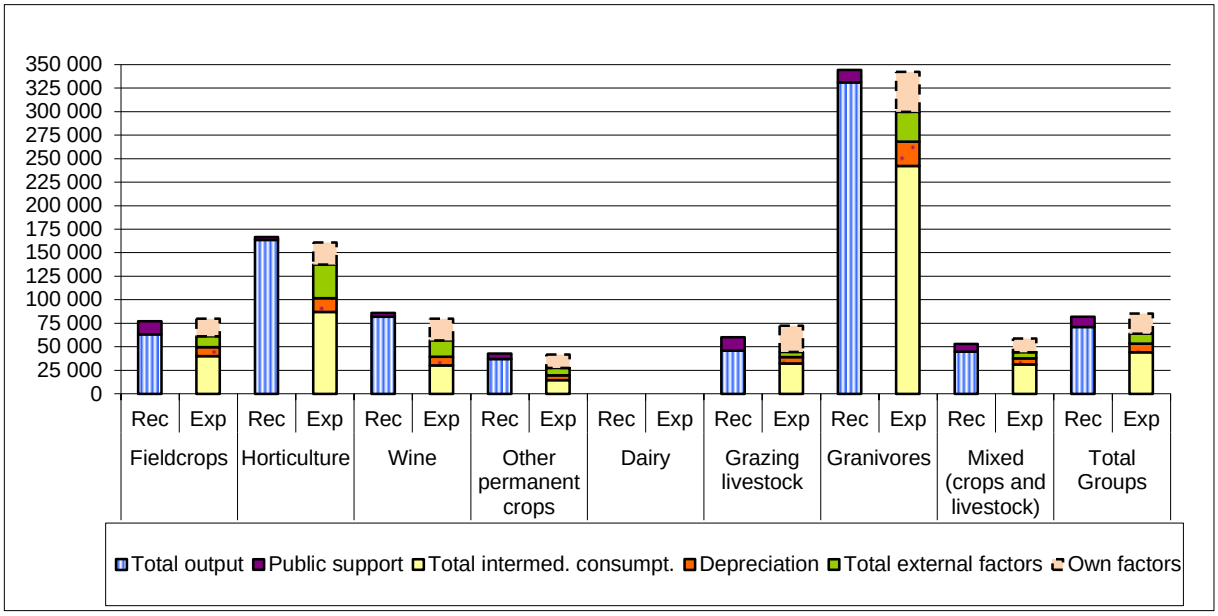
[24] In total, subsidies include both current subsidies (arising from the current activity of the accounting year) and investment subsidies. The latter also includes premiums for the cessation of dairy farming.

[25] This observation is based on the absolute value of subsidies for field-crop and horticultural farms, disregarding the differences in the farm size of these two types of farming.

It should also be underlined that an average field-crop farm is much larger than a horticultural farm. The subsidies mentioned above were calculated per farm and not per hectare.

Figure 1. 21: Income components per farm by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU- FADN.
Note: Receipts (Rec), Expenses (Exp)

Cost structure varies markedly between farming sectors, reflecting differences in farm size, technological processes and input prices.

Granivore farms (typically large in economic size, with technological processes involving a high turnover of animals) had the highest costs for intermediate consumption in 2015. This is due to feed costs (driven by higher prices for feeding stuffs)[26], both in absolute and in relative terms (EUR 237 600 per farm annually or nearly 69 % of total expenses). On the other hand, intermediate consumption on average totalled EUR 15 400 (or less than 35 % of total costs) for other permanent-crop farms.

Looking at the costs of depreciation, farms specialised in field-crops, other permanent crops and wine spent the most on depreciation (12 % of total expenses), while pig and poultry farms (granivores) spent the least (7 %).

The proportion of external factors (wages, rent and interest paid) of total costs was particularly high in the horticulture and wine sectors (22 % for both of these sectors), mainly due to the high cost of external labour. On the other hand, grazing-livestock farms had the lowest proportion of expenditure on external factors (7 %). In absolute terms, horticulture holdings had the highest external factor costs (EUR 41 800), while mixed farms and farms specialised in other grazing livestock had the lowest (less than EUR 6 000). Finally, the estimated costs of own production factors (family labour, own land and own capital) as a proportion of total costs were highest for grazing-livestock farms (40 %) and lowest for granivore farms (15 %).

[26] http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_accounts_and_prices

1.4. Return on assets

Return on assets (ROA) measures the effectiveness of a company's assets in generating income. It is defined as the ratio of net income over total assets, where the net income is defined as the sum of FNVA and investment subsidies minus wage costs, rent paid and the opportunity costs of own labour.

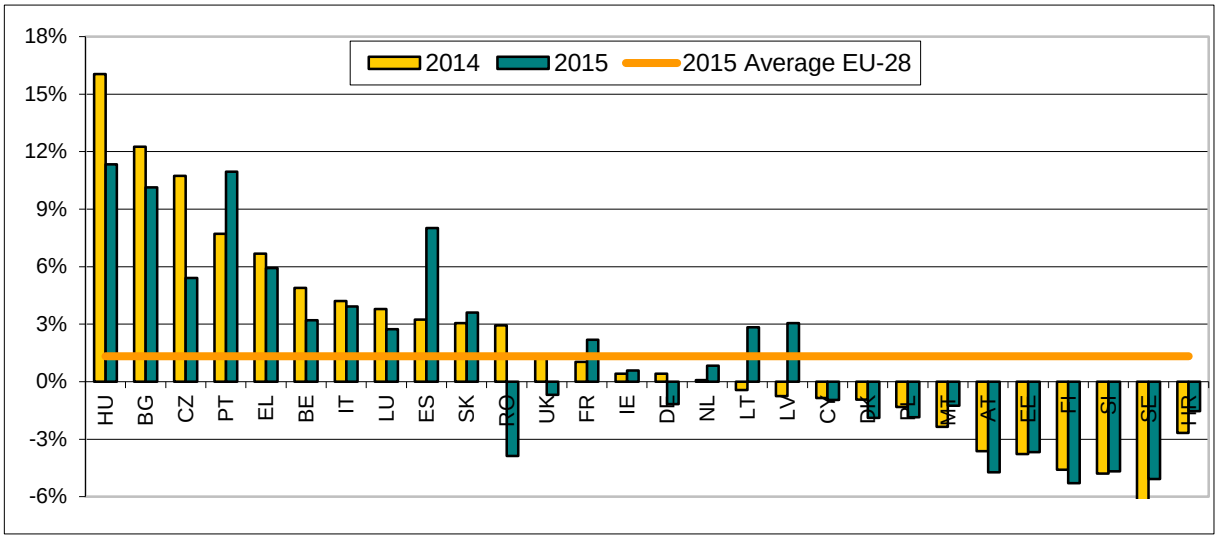
$$ROA = \frac{FNI - \text{Opportunity costs of family labour}}{\text{Total assets}}$$

Results by Member State

The ROA of an average farm in the EU-28 in 2015 was 1.3 %. It was 1.6 % in 2014 and 0.4 % in 2009. Holdings in Hungary (11.3 % ROA), Portugal (11.0 % ROA) and Bulgaria (10.1 % ROA) had the highest ROAs. This is mainly due to the EU-28's relatively low opportunity costs of own labour (except for the Czech Republic) and fixed asset values (such as land and quotas). In 2015, 12 Member States registered a negative ROA, with the lowest value recorded in Finland (−5.3 %) (See Annex 8 for more details).

Figure 1. 22: Rate of return on assets by Member State in 2014 and 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

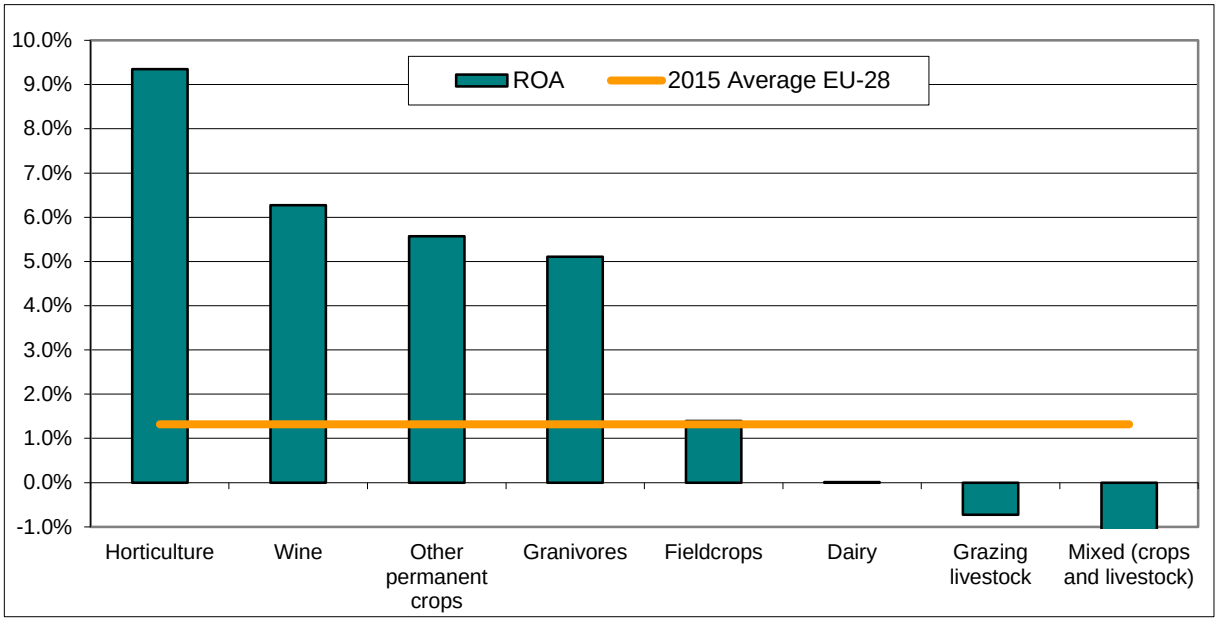
Results by type of farming

Farms specialised in horticulture recorded the highest ROA in 2015 (9.4 %), which shows that they were the most efficient at generating income from their assets. Farms specialised in wine, other permanent crops and granivores had ROAs above 5 %. Field-crop farms and dairy farms had an ROA close to 0 %. Farms specialised in grazing livestock and mixed crop and livestock farms had a negative ROA, which shows that they invested substantial capital into their production while simultaneously losing money (i.e. receiving negative income) (see Figure 1.23).

These negative ROA values were recorded for farms specialised in sheep and goats, in spite of the higher prices and production growth in 2015[27].

Figure 1. 23: ROA in the EU-28 by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

Trends by EU group

As shown in Figure 1.24, ROA fluctuated not only across EU groups but also over time for each group. It fell drastically in all countries in 2009, but started to recover for all EU groups from 2010, albeit with varying intensity. 2015 was again a low point for ROA, in particular for the Member States that joined the EU in recent years.

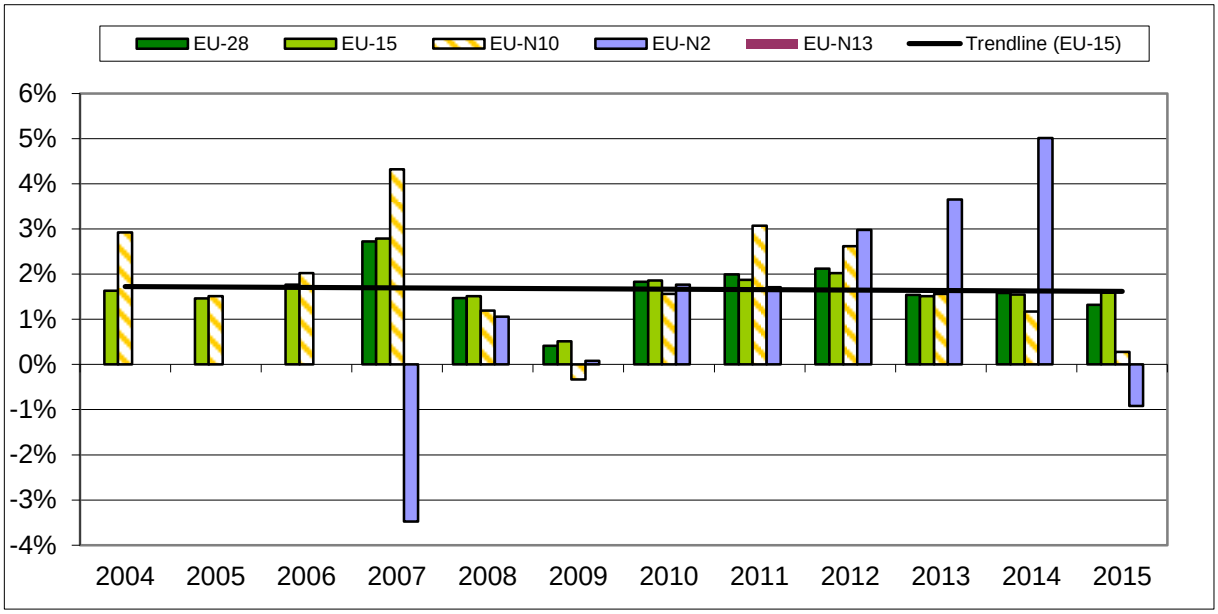
In the EU-15, the peak in ROA was in 2007 (2.8 %), while the lowest level of ROA was in 2009 (0.5 %). By 2012, EU-15 ROA had quadrupled from this 2009 low point, but thereafter it began to decrease again, standing at 1.6 % in 2015. In the EU-N10, ROA was highest in 2007 (4.3 %). Since then it has declined due to the decrease in net income (−6 %), and ROA for the EU-N10 reached its lowest point in 2009 (−0.3 %). The recovery process started in 2010, with ROA reaching almost its highest level in 2011 (3.1 %). This also reflects the income growth in that particular year. In 2013, ROA in the EU-N10 fell again to the 2010 level (1.6 %), because asset values had increased while net income had started to decrease in 2012. In relative terms, the highest ROA among all EU groups was recorded in 2007 in the EU-N10, which masks the fact that, in absolute terms, both EU-N10 net income and EU-N10 asset values were lower than in 2013; only the ROA ratio was high compared to other years and EU groups.

[27] Sheep meat production increased for the EU-28 by about 2.5 % from 2014 to 2015 http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_production_-_animals#Sheep_and_goat_meat

Looking at the changes in ROA in the Member States that joined the EU in 2007 (Romania and Bulgaria), we can see a different pattern and intensity of ROA development. While other Member States generated income from their assets the most efficiently in 2007, and again around 2011, Romania and Bulgaria had negative or low ROA values in those years. From 2012, income generation in Romania and Bulgaria has gradually become more efficient, and reached its highest value in 2014. Due to falling income and a decline in asset values in 2015, the ROA for Bulgaria and Romania was again negative in 2015.

Figure 1. 24: Development of the ROA by EU group

(average per farm in EUR)



Source: DG AGRI EU-FADN.

2. IMPORTANCE OF DIRECT PAYMENTS FOR FARM INCOME

This chapter analyses the impact of direct payments on the income of European farmers. Two economic indicators are used to express income: farm receipts and farm net value added (FNVA). In our calculations, direct payments include decoupled payments and total subsidies for operations linked to the production of crops and livestock. Farm receipts include the total output and the balance of subsidies and taxes arising from the current activity of the farm in the accounting year.

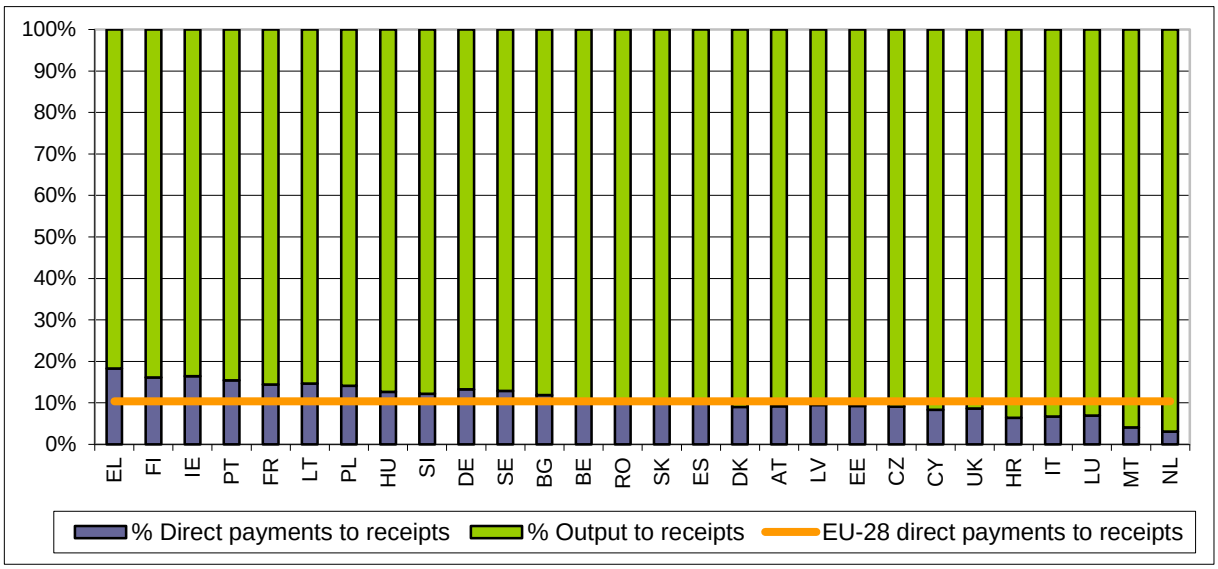
2.1. Proportion of direct payments to total receipts

Results by Member State

The average amount of direct payments received per holding in 2015 was EUR 8 900. The proportion of direct payments to total receipts (output plus subsidies arising from current productivity in the accounting year) in the EU-28 stood at 10.3 %. This proportion varies among Member States. The total receipts of Irish, Greek and Finnish farms are proportionately the most dependent on subsidies (which represent 16-17 % of these farms' total receipts). The high proportion of direct payments can be attributed to the extensive farming practices in these countries, which have relatively large areas of land and lower added value. This does not necessarily mean that production is not efficient in terms of capital invested or per labour unit, only that the added value is low in comparison to the direct support. Finally, direct payments account for the lowest proportion of total receipts in the Netherlands (3.0 %), where sectors with a lower proportion of direct payments to total receipts, such as horticulture (higher value-added crops) and pig and poultry production (more intensive livestock farming), are a significant part of total agricultural output.

Figure 2. 1: Proportion of direct payments in relation to total receipts by Member State in 2015

(average per farm in EUR)



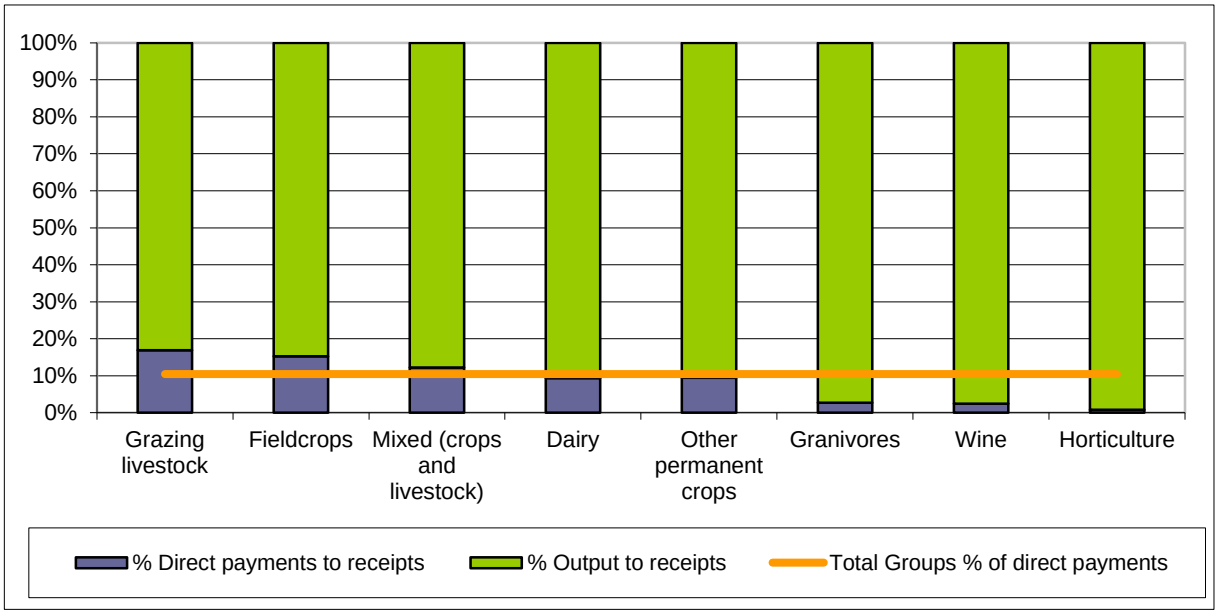
Source: DG AGRI EU-FADN

Results by type of farming

As discussed above, the proportion of direct payments to farm receipts varies markedly across types of farming, mainly reflecting the different approaches taken to different types of farming in the CAP. In addition, in the EU-15 the CAP was historically characterised by asymmetrical direct support across sectors — a feature which has gradually been reduced following the 2003 reform. Figure 2.2 shows that direct payments account for the highest proportion of total receipts in grazing-livestock farms (17.5 %) and field-crop farms (16.0 %). On the other hand, they represent only a very limited share of total receipts in the wine and horticulture sectors (2.9 % and 1.2 %, respectively).

Figure 2. 2: Proportion of direct payments in relation to total receipts by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

2.2. Proportion of direct payments to FNVA

The role of direct payments in sustaining farm incomes becomes even more apparent when we look at them in relation to FNVA (see Annex 3). Consequently, if all other factors remain equal, changes in direct payments have a much greater impact on FNVA than on total farm receipts.

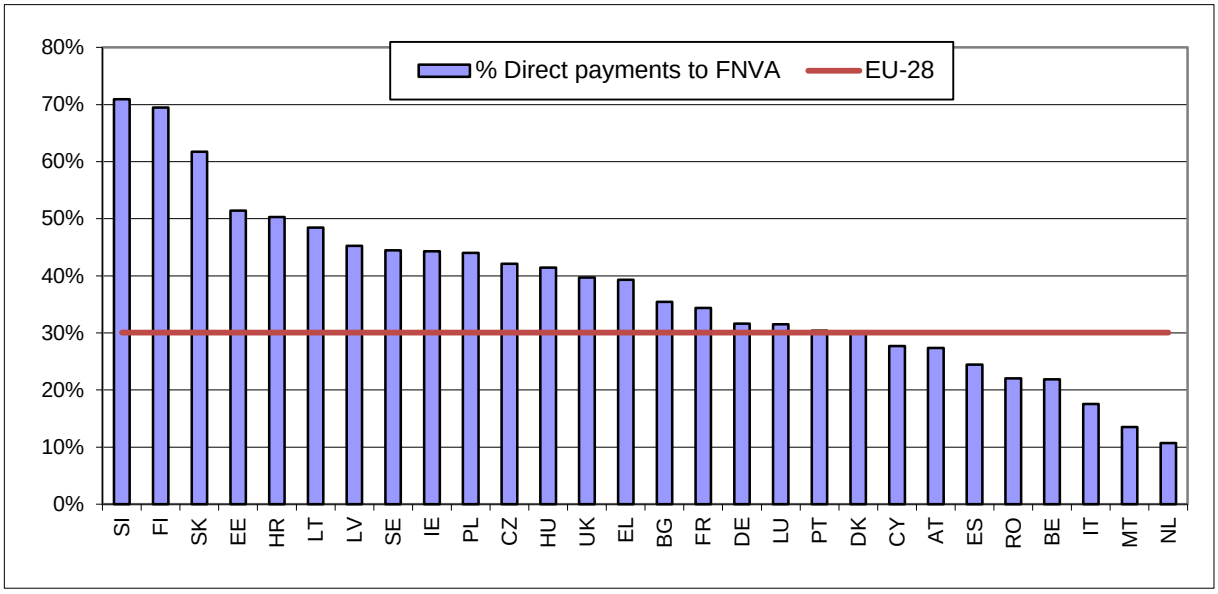
Results by Member State

In 2015, direct payments on average accounted for 30 % of FNVA in the EU-28, the same percentage as in 2014 (Figure 2.3). The proportion of direct payments to FNVA was highest in Slovenia (71 %), followed by Finland (69 %), Slovakia (62 %) and Estonia (51 %). By contrast, direct payments accounted for only 11 % of FNVA in the Netherlands, which showed that the Netherlands was more focused on its highly profitable and less subsidised sectors, such as pig and poultry production and horticulture.

Map 2.1 shows the regional differences in the proportion of direct payments to FNVA. The lowest figures were seen in Hamburg (0.3 %), Liguria and Murcia (both 1 %).

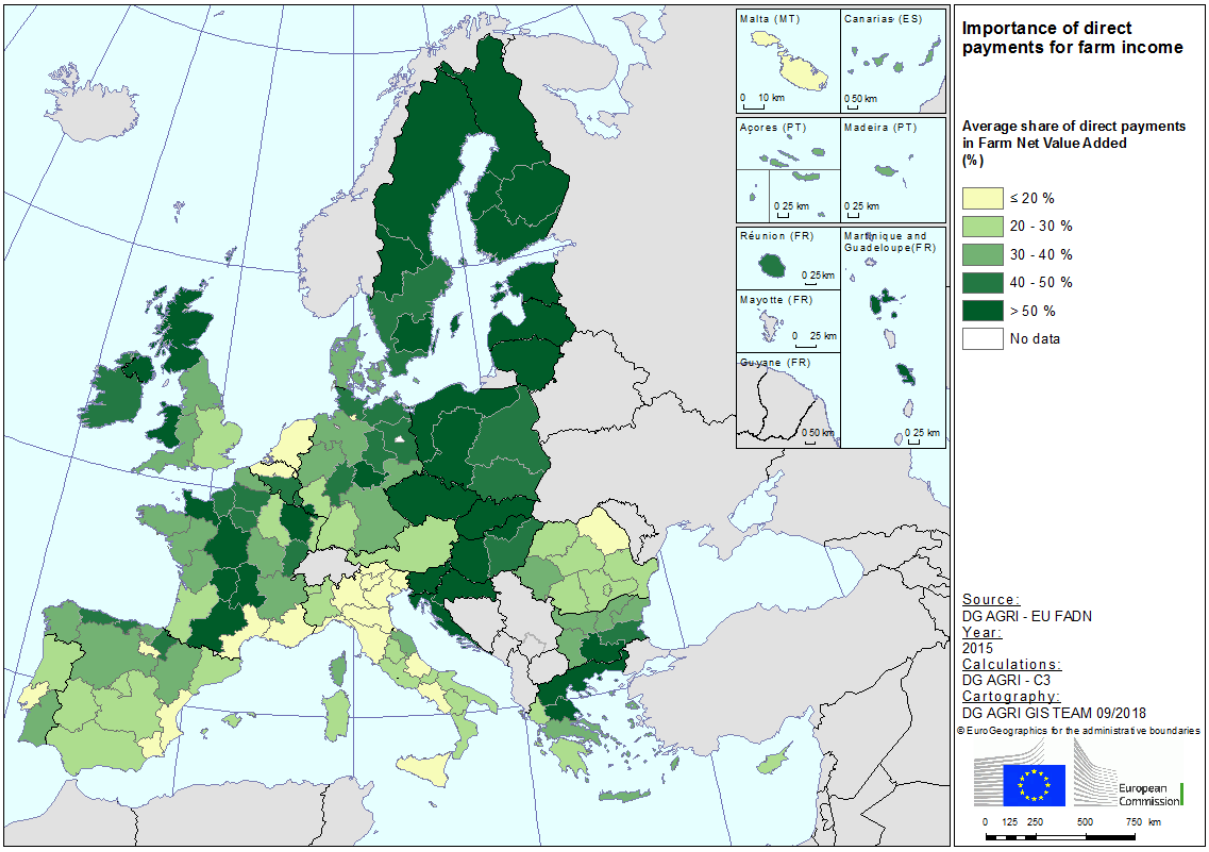
Figure 2. 3: Proportion of direct payments to FNVA by Member State in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

Map 2.1: Proportion of direct payments to FNVA by FADN region in 2015



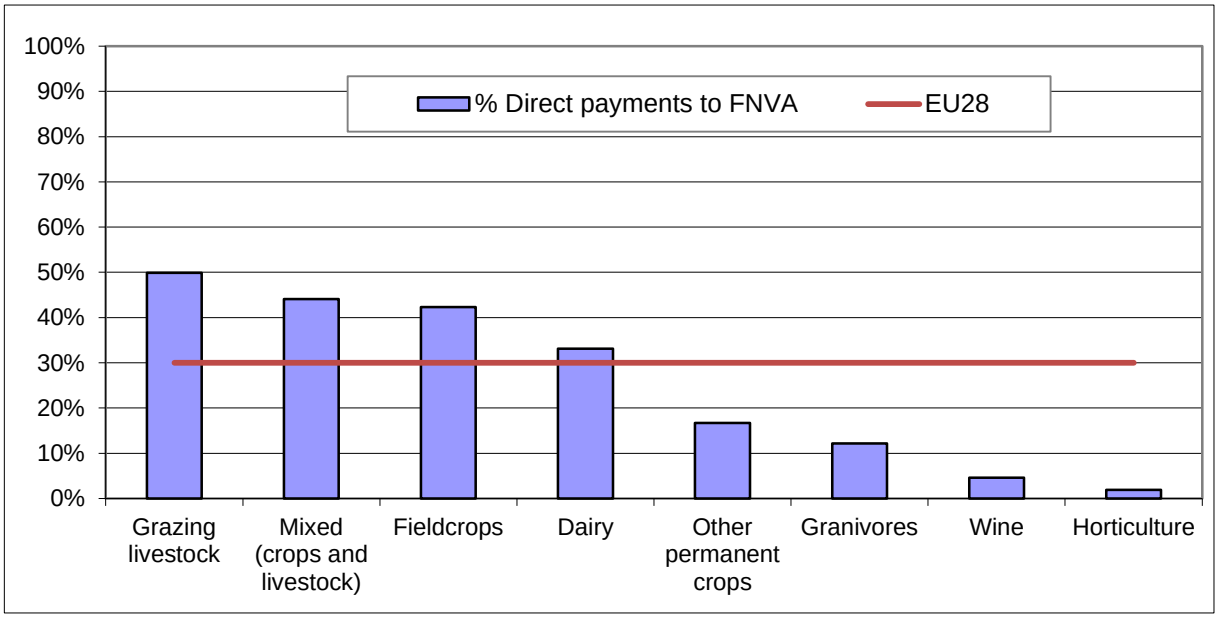
Source: DG AGRI EU-FADN.

Results by type of farming

The proportion of direct payments to FNVA also fluctuates markedly depending on the type of farming (Figure 2.4). In particular, direct payments represent a substantial share of FNVA (42-50%) in mixed farms, field-crop farms and farms specialised in grazing livestock, due to the average size of these farms and previous approaches of the CAP. Grazing and mixed farms recorded below-average FNVA, while field-crop farms had the highest average direct payments in 2015 (EUR 12 000 per farm), which resulted in the highest proportion of direct payments to FNVA in these types of farming. On the other hand, direct payments play only a limited role in sustaining income within the wine and horticulture sectors, which had incomes above the EU average FNVA in 2015. The graph also shows that the share of direct payments in FNVA is high for types of farming with low incomes. This is to compensate to some extent for the income gap compared to the EU average. For dairy farms, the share of direct payments in FNVA was higher in 2015 compared to the previous year. This was probably partly due to the decision of the Member States on voluntary coupled support (VCS). The result of this decision was that the milk sector became the second most supported sector under VCS in 2015. [28]

Figure 2. 4: Proportion of direct payments to FNVA by farm type in the EU-28 in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

[28] 19 % of the VCS goes to the milk and dairy sector (support granted in 19 Member States under 30 measures for approximately 8.4 million animals). https://ec.europa.eu/agriculture/sites/agriculture/files/direct-support/direct-payments/docs/voluntary-coupled-support-note-revised_en.pdf

3. CHARACTERISTICS OF ANALYSED FARMS

3.1. Financial structure

This chapter analyses the financial structure of agricultural holdings within the FADN field of survey on two main dimensions (country and type of farming), and using several financial indicators derived from farm balance sheets.

3.1.1. Total asset value

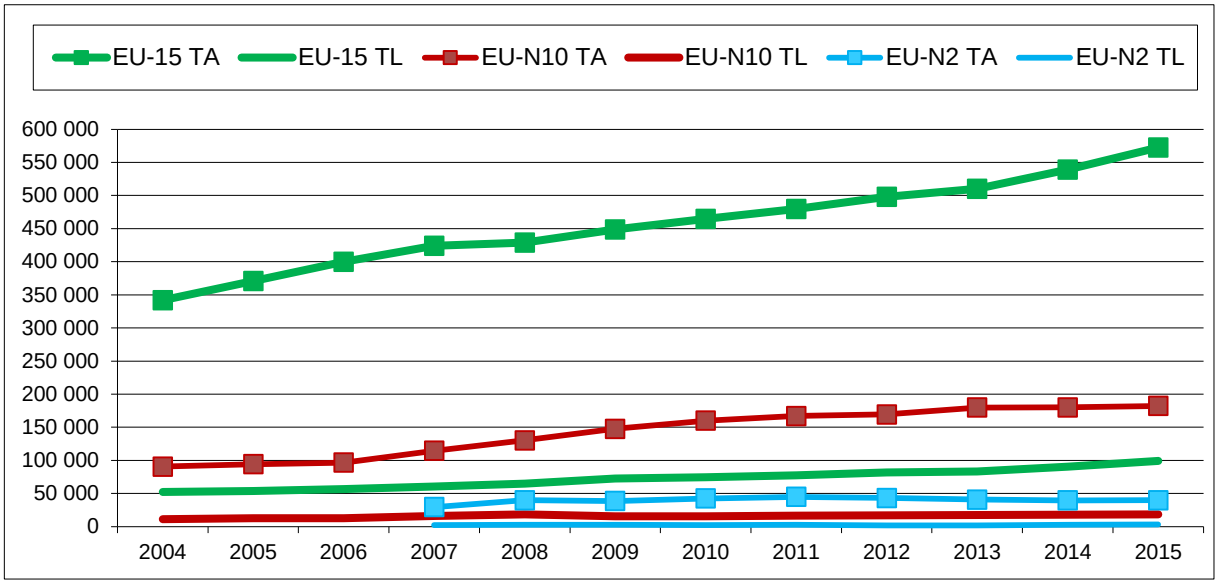
Total assets are the property of the agricultural holding, and comprise current and fixed assets. Current assets in the FADN include non-breeding livestock, stocks of agricultural products, stocks of other circulating capital, holdings of agricultural shares, and amounts receivable in the short term (or cash balances in hand or in the bank). Fixed assets are agricultural land, permanent crops, farms and other buildings, forest capital, machinery and equipment, and breeding livestock.

Long-term developments by EU group

Figure 3.1 shows that the value of total assets has been increasing in both the EU-15 and the EU-N10. In the EU-15, the average value of total assets rose by 67 % in the period 2004-2015, and more than doubled in the EU-N10. Following their accession to the EU in 2007, Romania and Bulgaria also saw a 36 % increase in the total asset value of their farms.

Figure 3. 1: Long-term developments in the value of total assets (TA) and total liabilities[29] (TL)

(average per farm in EUR)



Source: DG AGRI EU-FADN.

[29] The concept of total liabilities will be discussed in section 3.1.2.

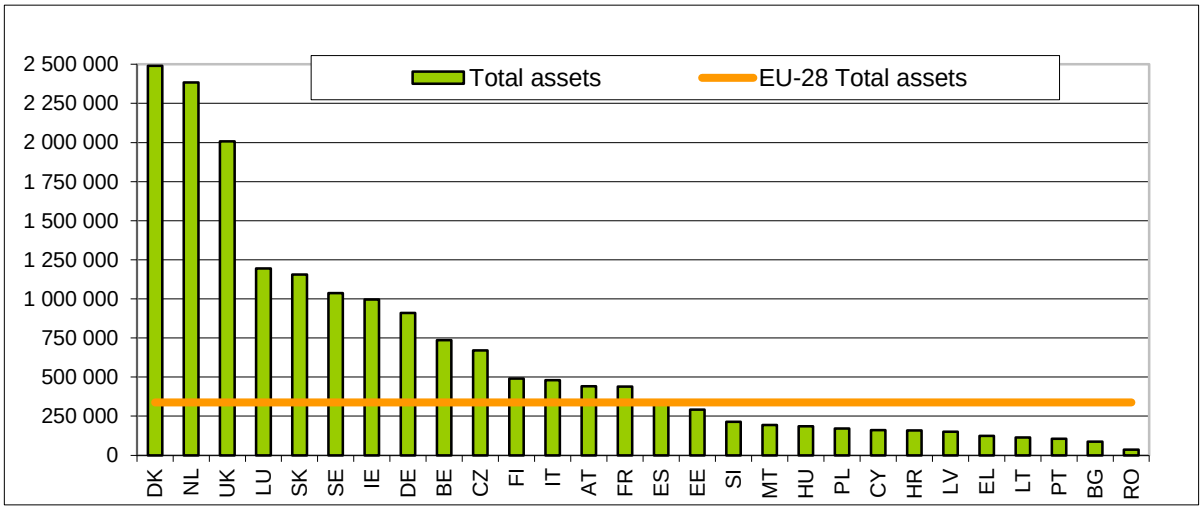
Results by Member State

As shown in Figure 3.2, the value of the total assets of an average farm in the EU-28 stood at EUR 338 600 in 2015. However, this average masks sizeable variations across Member States, reflecting differences in the structure of national agricultural sectors.

On average, Danish and Dutch farms held the highest amounts of assets (around EUR 2 490 000 and EUR 2 384 000, respectively). This reflects the very high land prices and the large share in these countries of types of farming that typically need considerable investment, such as dairy, granivores and horticulture. In contrast, farms in Romania and Bulgaria had the lowest total asset values (below EUR 100 000) as they are characterised by less capital-intensive types of farming and their farms have a smaller average economic size. These low total asset values were partly due to the land prices in these countries, which are usually very low.

Figure 3. 2: Average total asset value per farm by Member State in 2015

(average per farm in EUR)



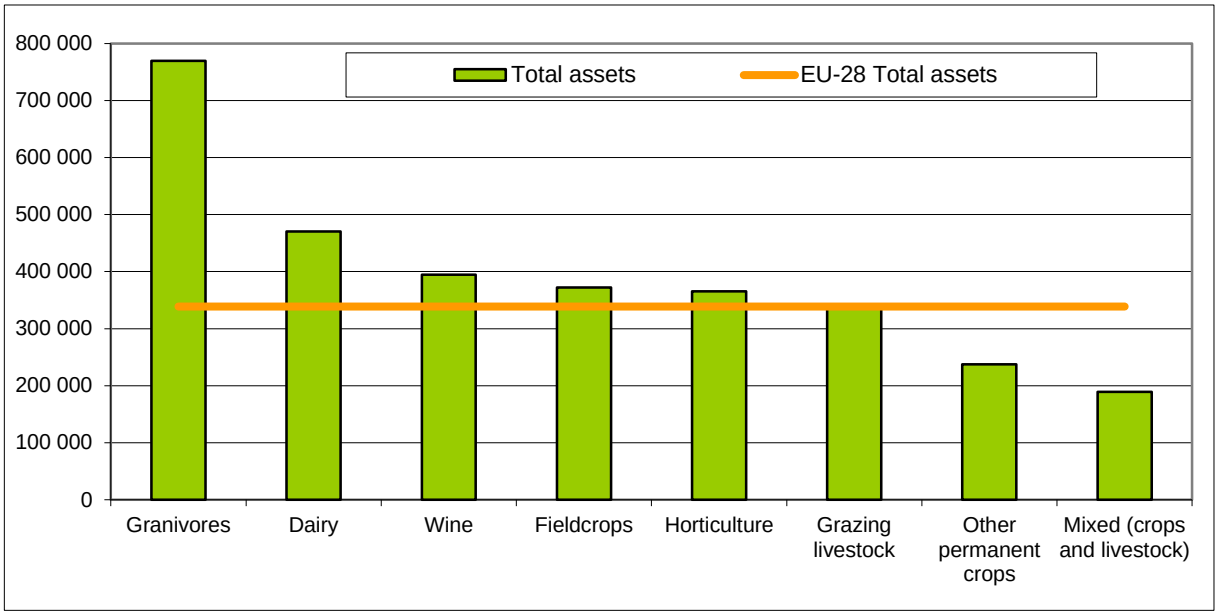
Source: DG AGRI EU-FADN.

Results by type of farming

Granivores and dairy farms have typically held the highest amounts of total assets — more than four times the asset value of farms specialised in mixed farming (crops and livestock), which had the lowest values. These disparities are partly due to differences in capital intensity across sectors.

Figure 3. 3: Average total asset value by type of farming in the EU-28 in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

3.1.2. Total liabilities

Results by Member State

In line with the general trend for total asset values (see Figure 3.1), total liabilities have also increased. The biggest growth has been in the EU-15, where the average value of short- and long-term loans almost doubled (increasing by 90 %). Liabilities increased by 65 % in the EU-10 in the period 2004-2015.

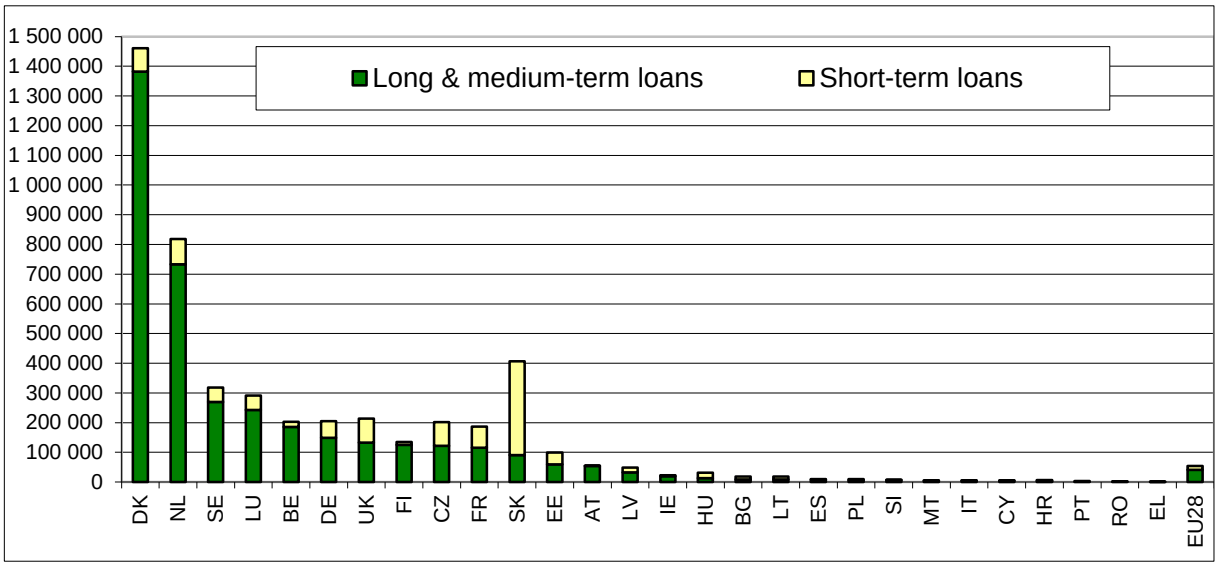
Liabilities were very low in the surveyed farm population of Romania and Bulgaria, both of which joined the EU in 2007, but liabilities have also grown quickly in these two countries. There was a 43 % increase in the average value of loans held by agricultural holdings between 2007 and 2015.

In the EU-28, average liabilities per agricultural holding rose to EUR 54 500 in 2015, up from EUR 51 100 in the previous year. As illustrated in Figure 3.4, both the total amount of liabilities and their composition show wide variations across Member States. In absolute terms, Danish and Dutch farms had, on average, the highest total liabilities within the EU. In contrast, total liabilities per farm remained very low in many Mediterranean Member States, which may reflect difficulties farmers faced in accessing credit markets in these countries. However, these very low levels could also have resulted from different accounting practices, where liabilities are typically included in farmers' private accounts rather than in farm accounts.

In relative terms, agricultural holdings relied mostly on medium- and long-term loans, which represented more than 90 % of total liabilities in Austria, Cyprus, Denmark, Finland, Belgium, the Netherlands and Italy. Short-term loans to finance agricultural activities were prevalent in Slovakia (78 % of total liabilities), Portugal (65 % of total liabilities), Hungary (63 % of total liabilities), Bulgaria and Lithuania (54 % of total liabilities each).

Figure 3. 4: Composition of liabilities per farm by Member State and by level of debt in 2015

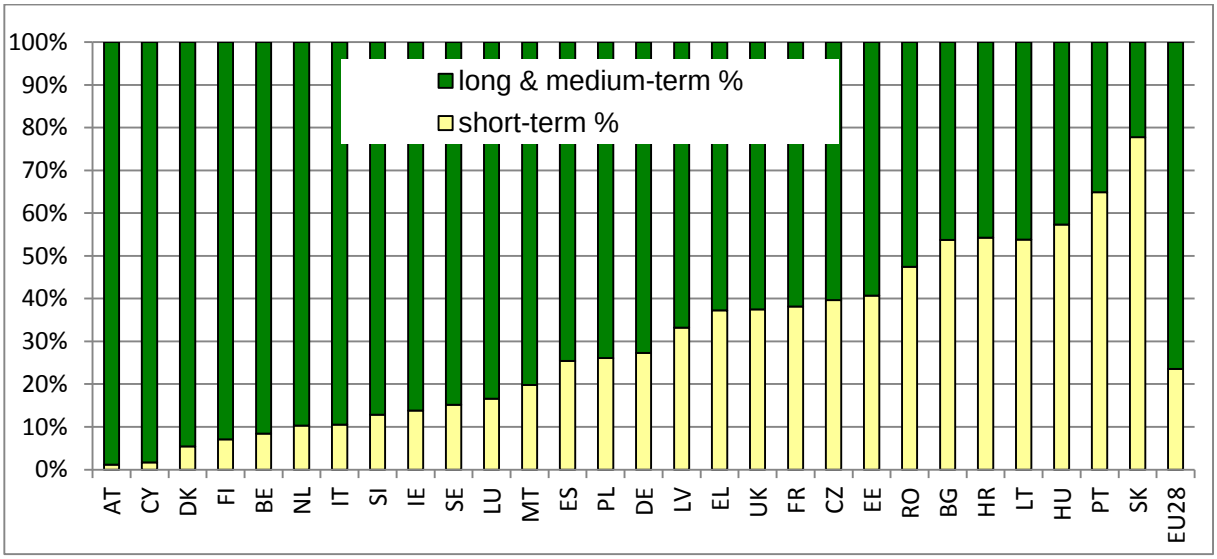
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 3. 5: Proportion of long- and short-term loans per farm by Member State in 2015

(average per farm in EUR)



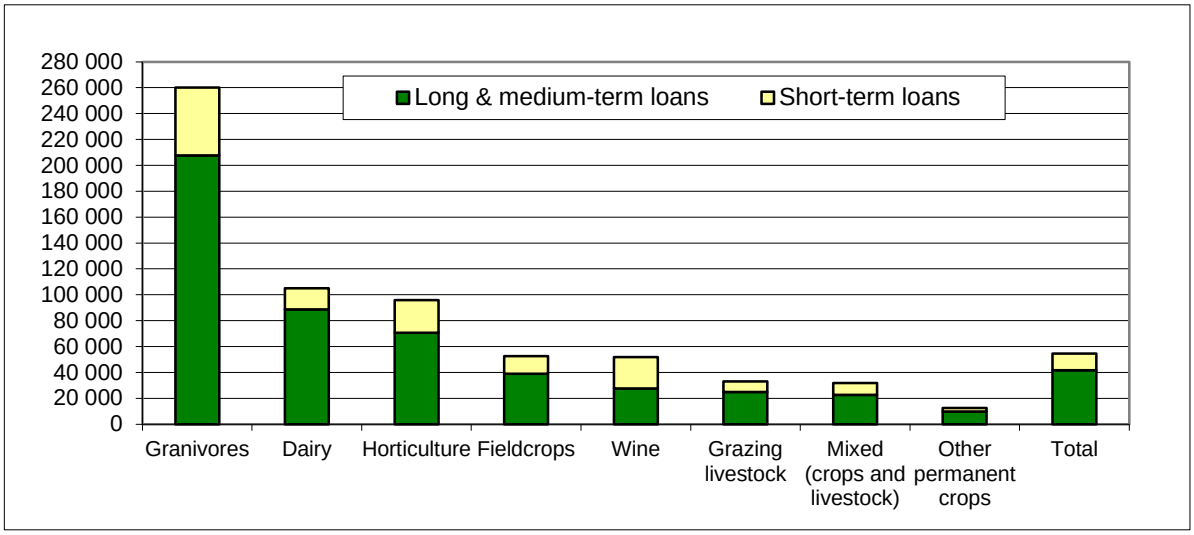
Source: DG AGRI EU-FADN.

Results by type of farming

As shown in Figure 3.5, dairy farms and farms specialised in granivores had the highest total liabilities on average in 2015 (EUR 260 100 and EUR 88 100, respectively). Permanent-crop farms recorded the lowest liabilities in 2015 (EUR 9 800), Medium- and long-term loans were the main type of liability for all farm types. Short-term loans only played a significant role in wine holdings, where they accounted for around 47 % of total liabilities.

Figure 3. 6: Composition of liabilities per farm in the EU-28 by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

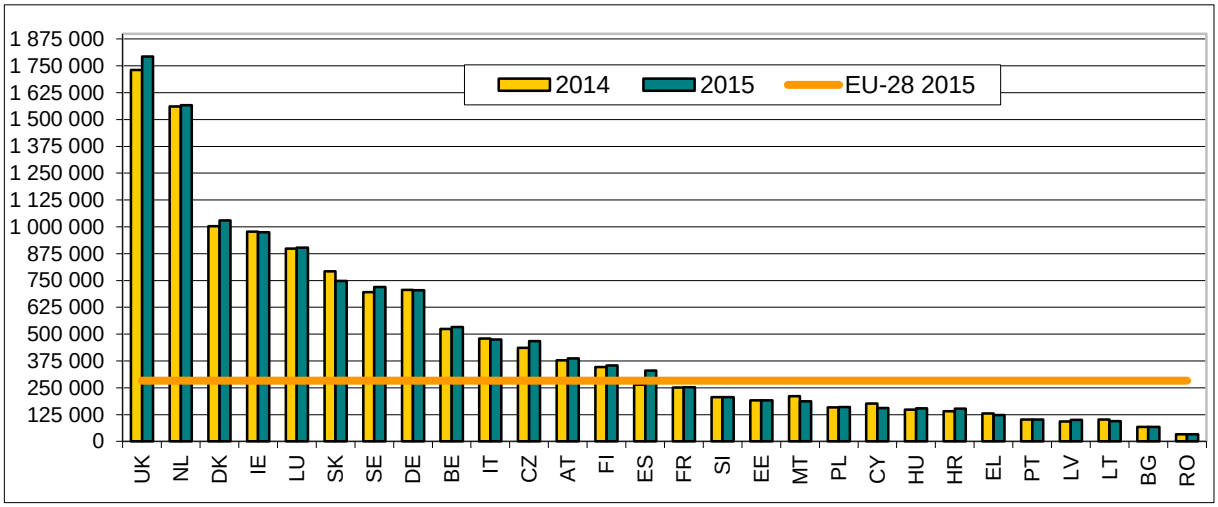
3.1.3. Development of farm net worth

Results by Member State

Farm net worth is defined as the difference between total assets and total liabilities at the end of the accounting year. In 2015, average farm net worth stood at approximately EUR 284 000 in the EU-28 (+3 % compared to 2014). The average net worth per agricultural holding was highest in the UK (EUR 1 794 000), the Netherlands (EUR 1 566 300) and Denmark (EUR 1 003 300) (Figure 3.7). This shows the importance of the field crop and dairy farms in these countries, which are characterised by above-average net worth values per farm (Figure 3.8). Farms in Romania (EUR 33 700) and Bulgaria (EUR 67 700) had the lowest average net worth.

Figure 3. 7: Farm net worth by EU group and Member State in 2014 and 2015

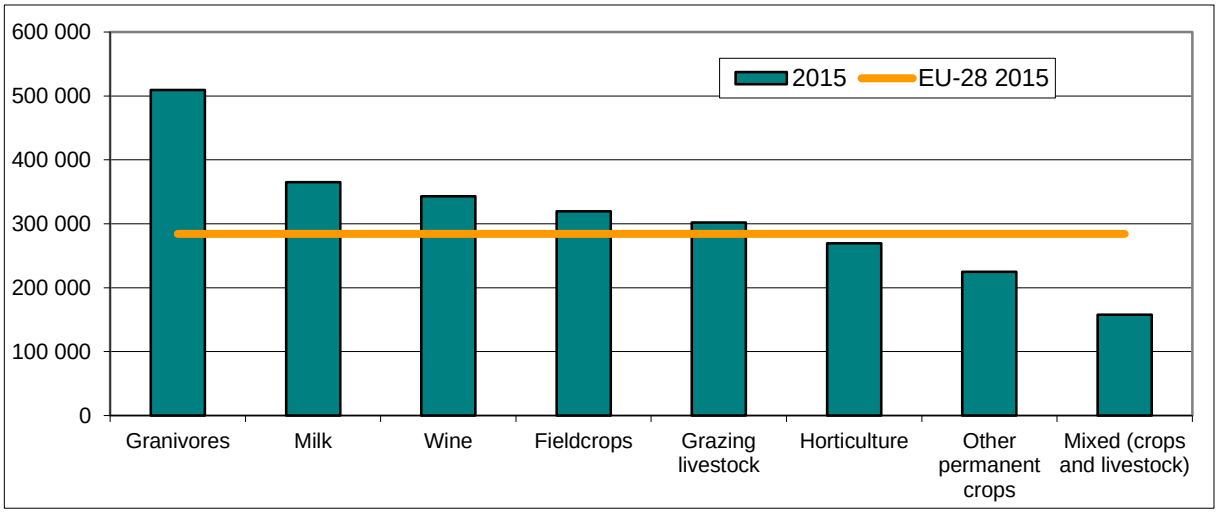
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 3. 8: Farm net worth in the EU-28 by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

Mixed farms (crops and livestock) have the lowest net worth. Their net worth remains significantly below the EU-28 average, reflecting the low asset value of these farms in comparison with other sectors.

3.1.4. Solvency

In this analysis, solvency is measured using the liabilities-to-assets ratio, which shows the percentage of an agricultural holding's assets that are financed through debt. This gives an indication of a farm's ability to meet its obligations in the long term (or its capacity to repay liabilities if all assets are sold). The results should be interpreted with caution, as a high liabilities-to-assets ratio is not necessarily a sign of a financially vulnerable position. In fact, a high ratio could also be an indication of a farm's economic viability (i.e. its ability to access outside financing). It should be noted that the depreciation method has also an impact on the net asset values. However, there is certainly a threshold beyond which indebtedness will compromise a farm's financial health.

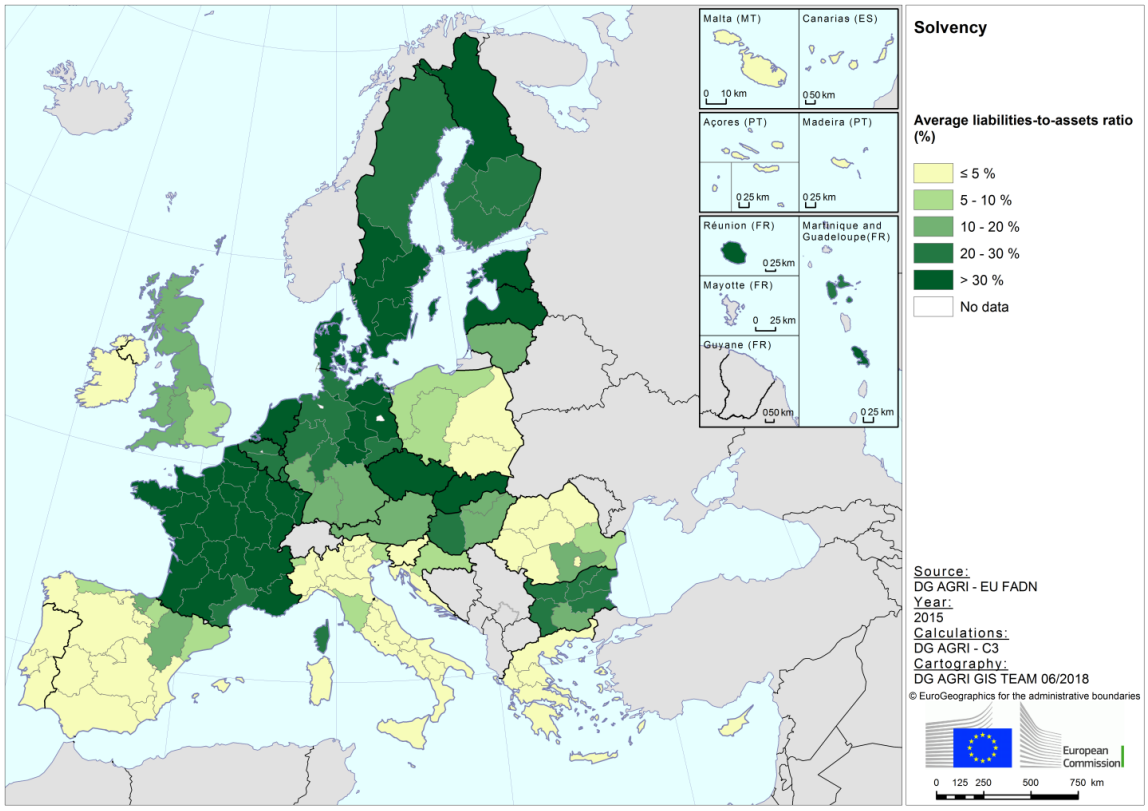
A high liabilities-to-assets ratio typically reflects heavy recourse to outside financing (i.e. taking out loans). Higher leverage (the amount of debt used to finance assets) helps a farm to invest, and typically increases its profitability. However, this comes at a greater risk, because leveraging magnifies both gains (when investment generates the expected return) and losses (when investment fails to be profitable for the investor[30]).

As is the case for other financial indicators used, the liabilities-to-assets ratio varies significantly across Member States. In some cases, this ratio even varies within Member States, as shown on Map 3.1. Farms in Denmark, France and Slovakia had the highest liabilities-to-assets ratio in 2015 (at 60 %, 43 % and 35 %, respectively). The lowest average ratios were in many of the Mediterranean Member States and in Ireland (below 3 %).

[30] For example due to unfavourable weather conditions or outbreaks of animal diseases.

However, in the case of Ireland, the low liabilities-to-assets ratio mainly reflects relatively high asset values when compared to low liabilities. As shown in Figure 3.9, the level of solvency also varies markedly across farm types, with farms specialised in granivores, horticulture, and dairy production having the highest liabilities-to-assets ratios.

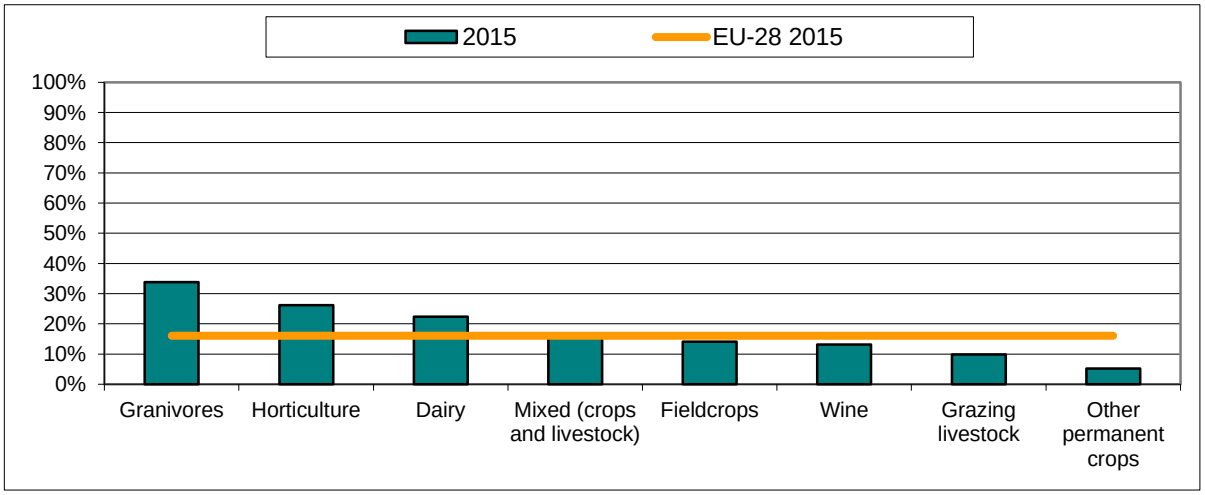
Map 3.1: Average liabilities-to-assets ratio per farm by FADN region in 2015



Source: DG AGRI EU-FADN.

Figure 3. 9: Farm liabilities to assets ratio in the EU-28 by type of farming in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

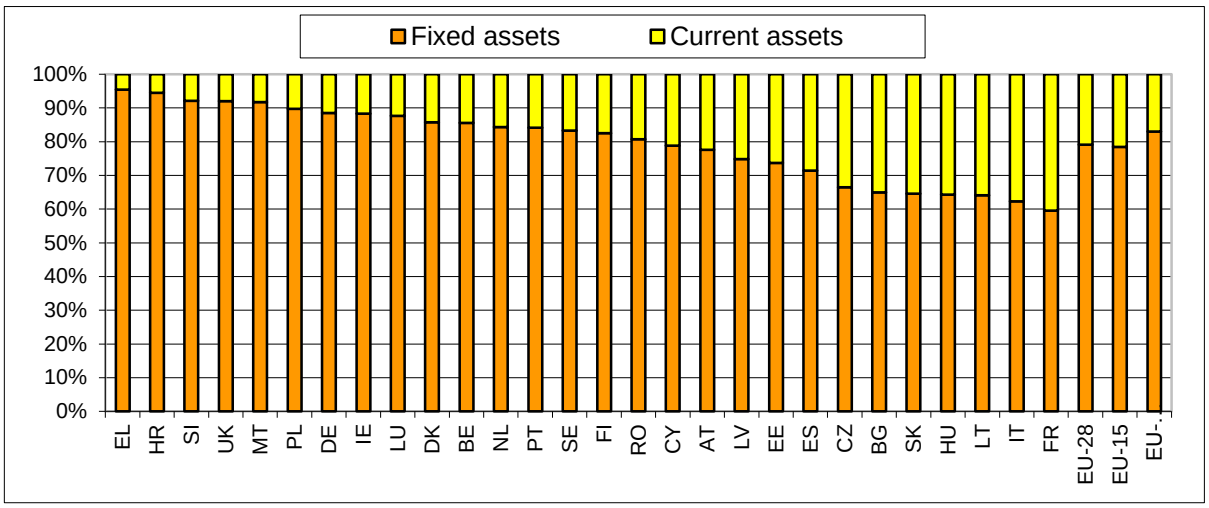
3.1.5. Current and fixed assets

Results by Member State

Fixed assets[31] account for the largest proportion of total assets in all Member States (see Figure 3.9). In particular, total farm assets in Greece, Slovenia, the UK and Malta consist almost exclusively of fixed assets (more than 90 %). Farms in these countries are mainly family-run and may prefer the low investment risk of fixed assets as well as their reasonable and stable profitability. The proportion of fixed assets to total assets was lowest in France (60 %).

Figure 3. 10: Composition of assets by Member State in 2015

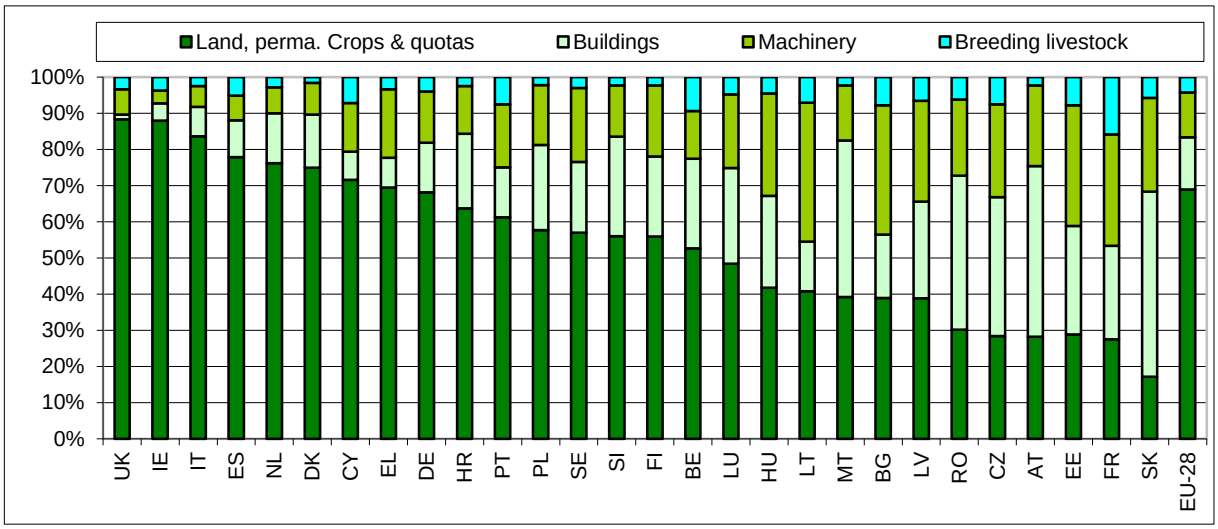
(average per farm in EUR)



Source: DG AGRI EU-FADN.

Figure 3. 11: Composition of fixed assets by Member State in 2015

(average per farm in EUR)



Source: DG AGRI EU-FADN.

[31] Fixed assets include agricultural land, farm and other buildings, forest capital, machinery and equipment, and breeding livestock.

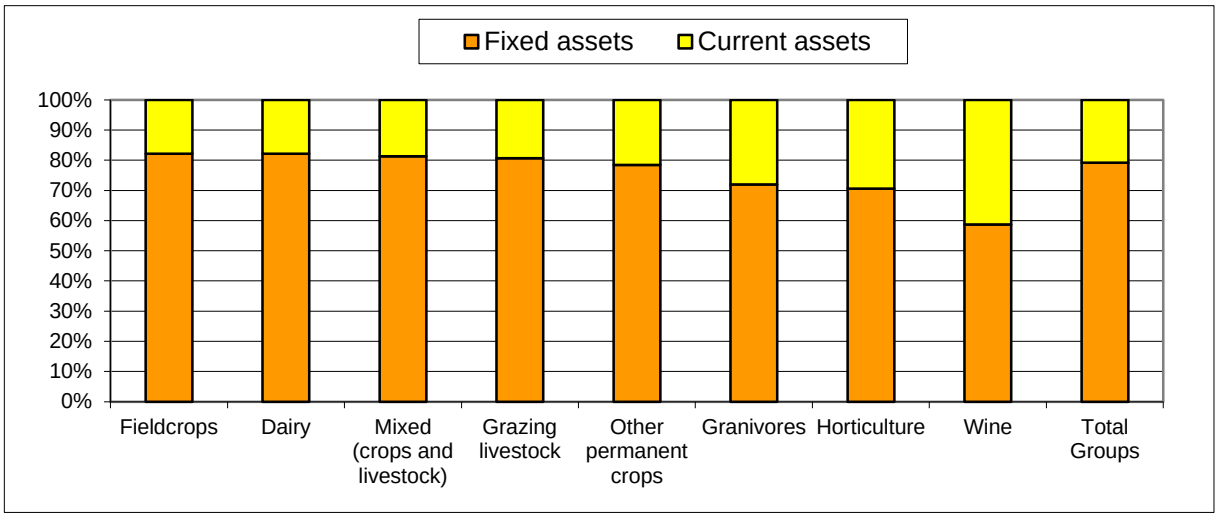
The composition of fixed assets across Member States depends on the structure of its agricultural sector. As shown in Figure 3.11, 'land, permanent crops and quotas' was the largest component in the fixed assets of most Member State farms in 2015 except for 12 Member States. This category made up more than 80 % of fixed assets in the United Kingdom, Ireland and Italy. On the other hand, 'buildings' were of major significance in, Austria (47 %), and Romania (42 %). More than 50 % of fixed assets were buildings in Slovakian farms, though it should be noted that they rely a lot on rented land (no values recorded for owned land). 'Machinery' accounted for the largest proportion of fixed assets in Lithuania (38 %). Finally, 'breeding livestock' was the smallest component of fixed assets in all Member States (ranging from 15.2 % in France to 1.6 % in Denmark).

Results by type of farming

As shown in Figure 3.10, fixed assets accounted for about 80 % of total assets on average per farm in the EU in 2015. As can be seen in Figure 3.12, this proportion varied slightly among types of farming, ranging from 82 % in specialised field-crops and dairy farms to 59 % in wine holdings. Wine holdings seem to rely more on current assets which facilitate day-to-day operational expenses and investments. These type of assets are 'liquid', meaning that they can be readily converted into cash.

Figure 3. 12: Composition of assets by type of farming in 2015

(average per farm in EUR)



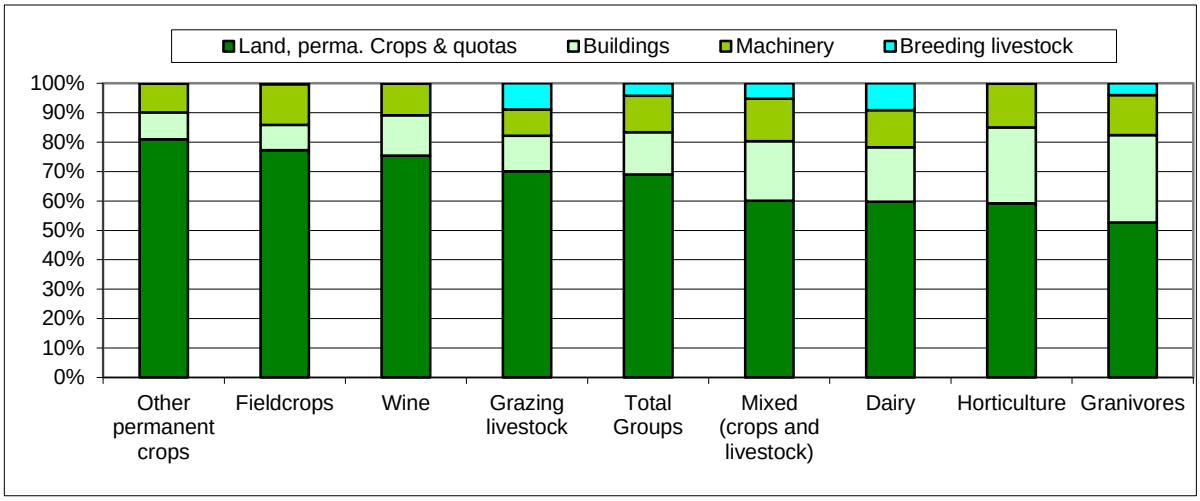
Source: DG AGRI EU-FADN.

For the composition of fixed assets, Figure 3.13 shows that 'land, permanent crops and quotas' was the largest component in all farm types in 2015. However, the proportion varied from more than 81 % of fixed assets in farms growing other permanent crops to 52 % in granivore farms. On the other hand, granivore farms had the largest proportion of 'buildings' (29 %), while farms with the lowest proportion of their fixed assets in buildings were farms growing other permanent crops and farms specialised in field-crops (9 %).

Farms specialised in horticulture recorded the largest proportion of 'machinery' in their fixed assets (about 15 %), while this figure was only around 9 % for farms specialised in grazing livestock. Finally, 'breeding livestock' accounted for the highest proportion of total assets in grazing livestock and dairy farms (broadly 9 %).

Figure 3. 13: Composition of fixed assets by type of farming in 2015

(average per farm in EUR)

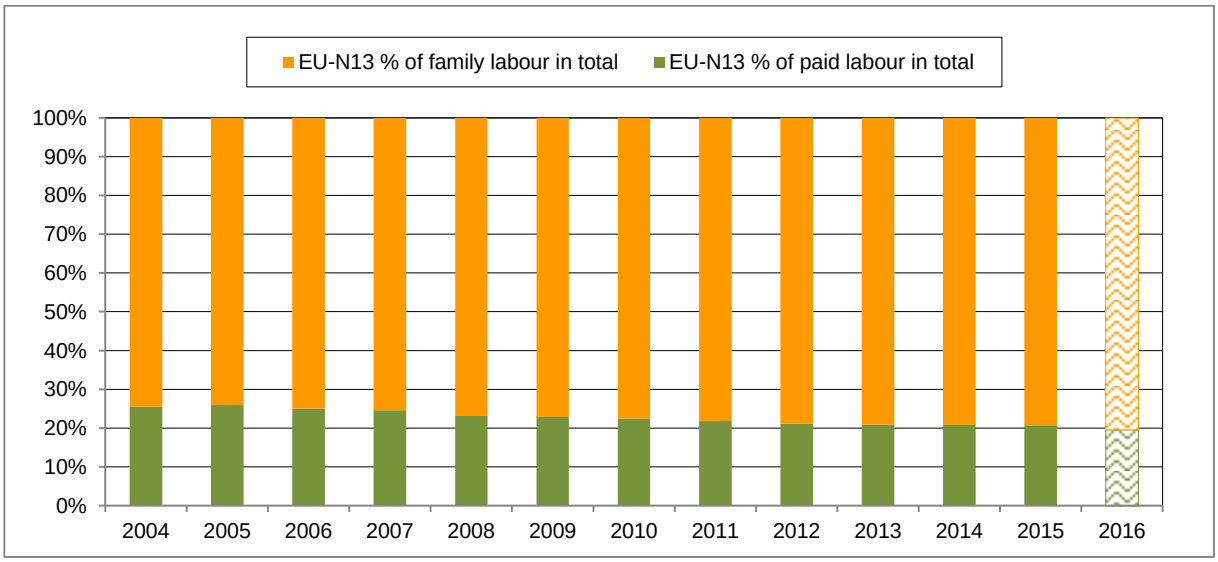


Source: DG AGRI EU-FADN.

3.2. Labour

This section analyses the structure of the labour force employed by EU farms covered by FADN, focusing on the average size of the labour force employed per farm, its composition and the wages paid. The results show that the proportion of non-family labour (i.e. paid labour) in the total workforce gradually increased in the EU-15 over the course of the 2004-2015 period[32], reflecting structural changes and increasing farm sizes. The opposite trend was observed in the EU-N13 in the same period (i.e. the proportion of paid labour in the total workforce gradually fell).

Figure 3. 14: Share of family and paid labour in total labour force in EU-N13 in 2015
(in AWU)



Source: DG AGRI EU-FADN.

[32] 2016 data are preliminary.

Figure 3. 15: Share of family and paid labour in total labour force in EU-15 in 2015

(in AWU)

Source: DG AGRI EU-FADN.

The share of family and paid labour in the agricultural workforce was also influenced by three new countries that joined the EU in or after 2007. In Romania in particular, but also in Croatia, family labour is the most prevalent form of labour in agriculture. Due to its large numbers of farms and its weight in the FADN, Romania has a significant impact on the EU-N13 group. In addition, there is significantly higher variability in the share of family and paid labour across EU-N13 Member States due to the predominance of very large farms in many eastern European countries, such as Slovakia and the Czech Republic. Often these large farms are organised as legal entities (i.e. companies). In some Member States in both the EU-15 and the EU-N13, the proportion of family labour is higher than the EU-28 average. In terms of the proportion of unpaid working hours, Slovenia, Ireland and Austria take the lead (about 95 % of work is unpaid work by family members), while the proportion is around 50 % in Denmark, the Netherlands and Bulgaria. In the EU-N13, the highest proportion of unpaid working hours (90 %) is in Romania. Slovakia (6 %) and the Czech Republic (25 %) are at the other end of the scale, due to the predominance in these two countries of very large farms, which are often organised as legal entities.

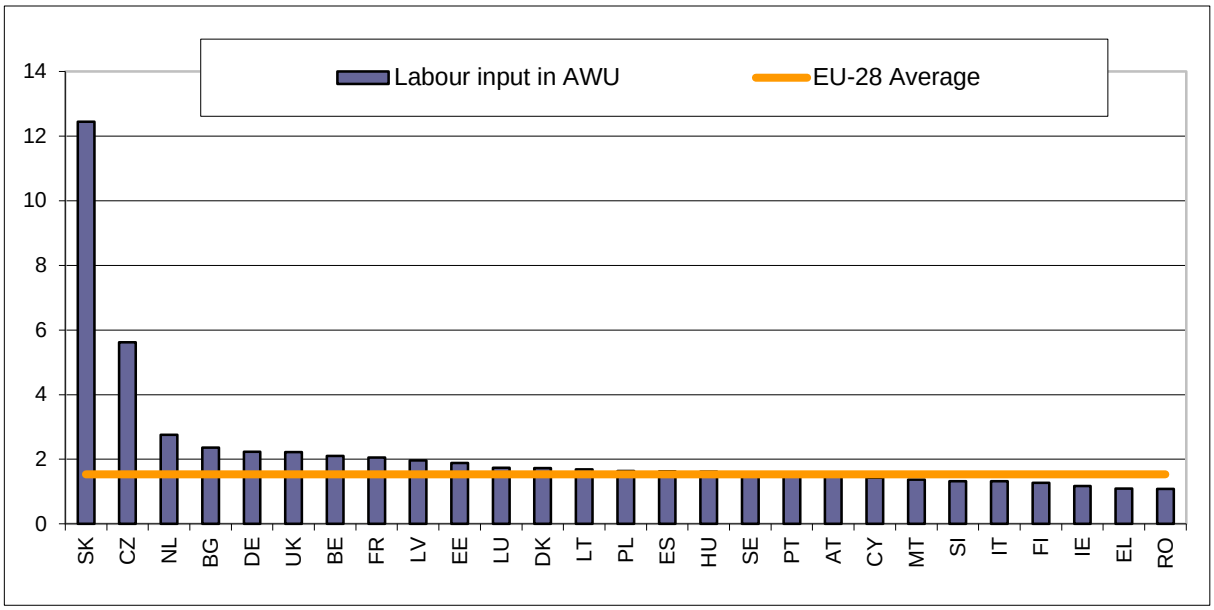
3.2.1. Labour force

Results by Member State

In 2015, the average total labour input of agricultural holdings stood at 1.5 AWU in the EU-28. This was virtually the same level as in the previous 2 years, although it has decreased (−17 %) compared to 2007. Labour input in Romania has halved from 2007 to 2015. As shown in Figure 3.16, labour input varied considerably across countries, ranging from 12.4 AWU in Slovakia to 1.1 AWU in Greece. Labour input on Slovak (12.4 AWU) and Czech (5.6 AWU) farms was significantly higher than on farms in the remainder of the EU, reflecting the predominance of very large non-family agricultural holdings in their agriculture sectors.

Figure 3. 16: Labour input per farm by Member State in 2015

(in AWU)



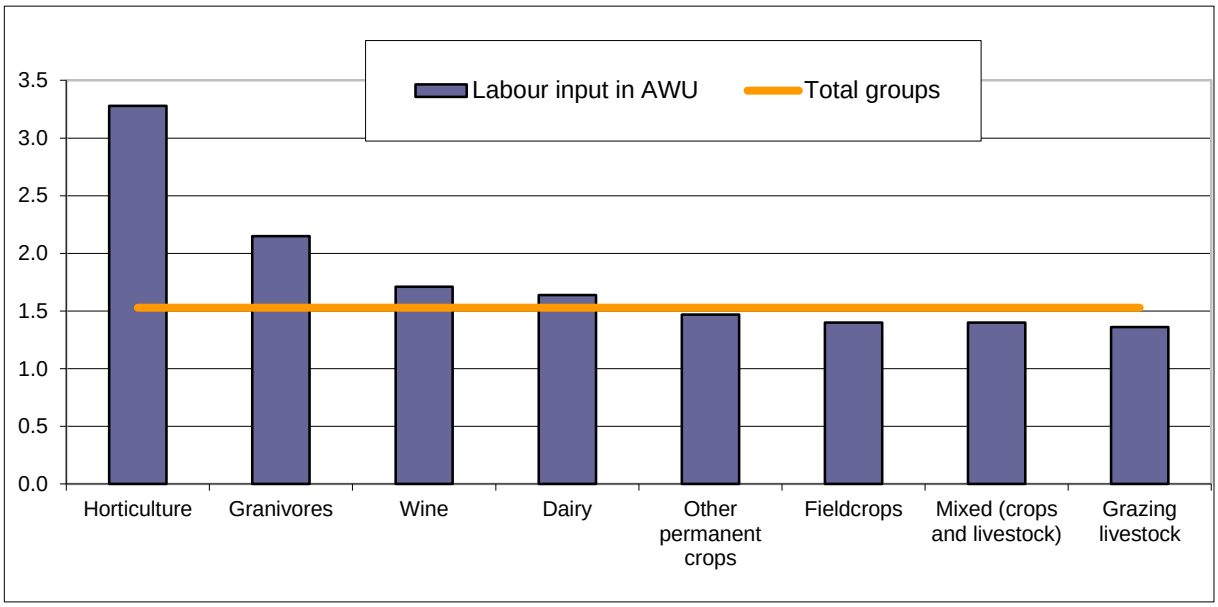
Source: DG AGRI EU-FADN.

Results by type of farming

Figure 3.17 shows that labour input by type of farming was fairly close to the average of 1.5 AWU per farm in all sectors except horticulture (where labour input was more than twice as high) and for granivore farms (where the AWU per farm was 46 % higher than the average).

Figure 3. 17: Labour input per farm by type of farming in the EU-28 in 2015

(in AWU)

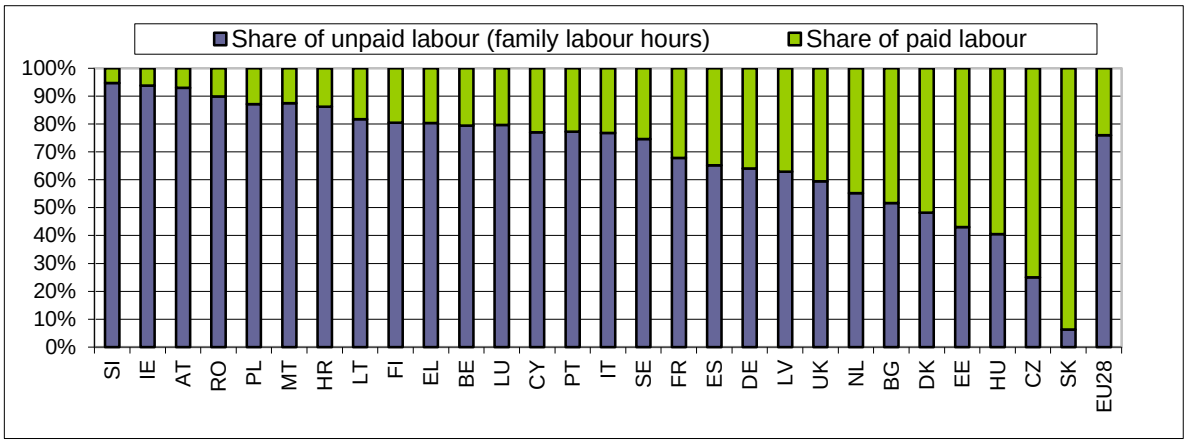


Source: DG AGRI EU-FADN.

Results by Member State

Traditionally, a significant part of the labour force employed in agriculture has been family labour. Family labour accounts for the largest share of the agricultural labour force[33] in most Member States, with the exception of Slovakia, the Czech Republic, Hungary, Estonia and Denmark. As Figure 3.18 shows, the proportion of paid labour in the total labour force in these five countries was higher than 50 % — and in some countries it was significantly higher.

Figure 3. 18: Proportion of working hours of paid and unpaid labour on farms by Member State in 2015

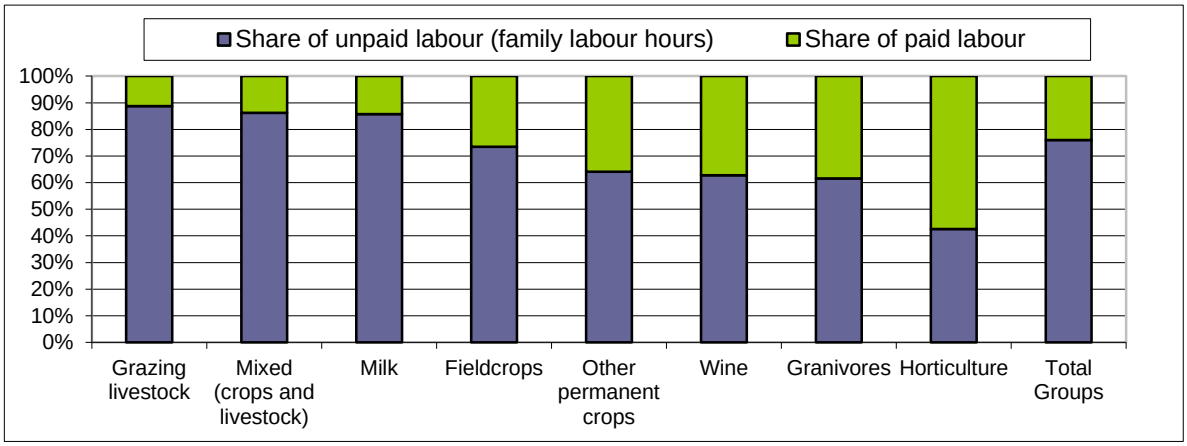


Source: DG AGRI EU-FADN.

Results by type of farming

As shown in Figure 3.19, the proportion of paid labour is highest in horticulture holdings, reflecting the horticulture sector's typical recourse to seasonal workers. The proportion of paid labour is typically lowest in grazing livestock, mixed (crops and livestock), and dairy farms.

Figure 3. 19: Proportion of working hours of paid and unpaid labour in the EU-28 by type of farming in 2015



Source: DG AGRI EU-FADN.

[33] The proportion is expressed as follows: time worked in hours by unpaid labour input (generally family) in the holding divided by the time worked in hours by the total labour input in the holding.

3.2.2. Remuneration of farm workers

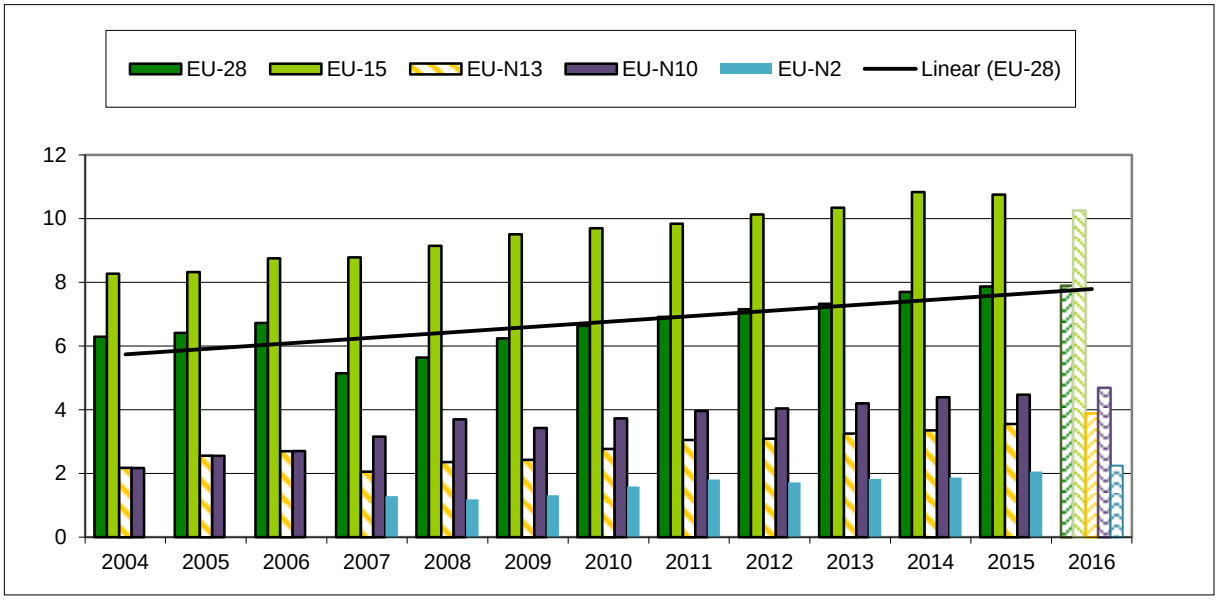
Results by EU group

As shown in Figure 3.20, the nominal hourly wage for paid labour in agriculture has increased in both the EU-15 and EU-N13 since 2004. In the EU-15, the average nominal hourly wage rose by 30 % between 2004 and 2015, from EUR 8.30 to EUR 10.30. In the EU-N13, it stood at EUR 3.60 in 2015, up from EUR 2.20 in 2004 (an increase of some 63 %) despite the accession of Romania and Bulgaria in 2007. The average EU-28 nominal hourly wage stood at EUR 7.90 in 2015, compared to EUR 6.30 in 2004, an increase of about 25 % over this period.

In 2015, the average nominal hourly wage in the EU-15 was approximately three times higher than in the EU-N13. Changes in the nominal wage more than compensated for price increases over the course of the year, so that the real hourly wage rose by around 0.4 % between 2014 and 2015[34] (EU-28 HICP inflation was around 0.03 % during the year)[35].

Figure 3. 20: Long-term developments in average nominal wages

(average per farm in EUR)



Source: DG AGRI EU-FADN.

Results by Member State

As Figure 3.21 shows, the average hourly nominal wage varies widely across the EU-28. In 2015, it was highest in Denmark (EUR 23.40) and lowest in Romania (EUR 1.90). Note that wages in the EU-N13, as well as in Greece, Portugal and Spain were below the EU-28 average (EUR 7.90). It is also visible that there was a break in the time series in 2007. Due to the accession of Romania and Bulgaria to the EU in 2007, average nominal wages in the EU-28 fell, while they remained nearly stable for the EU-15.

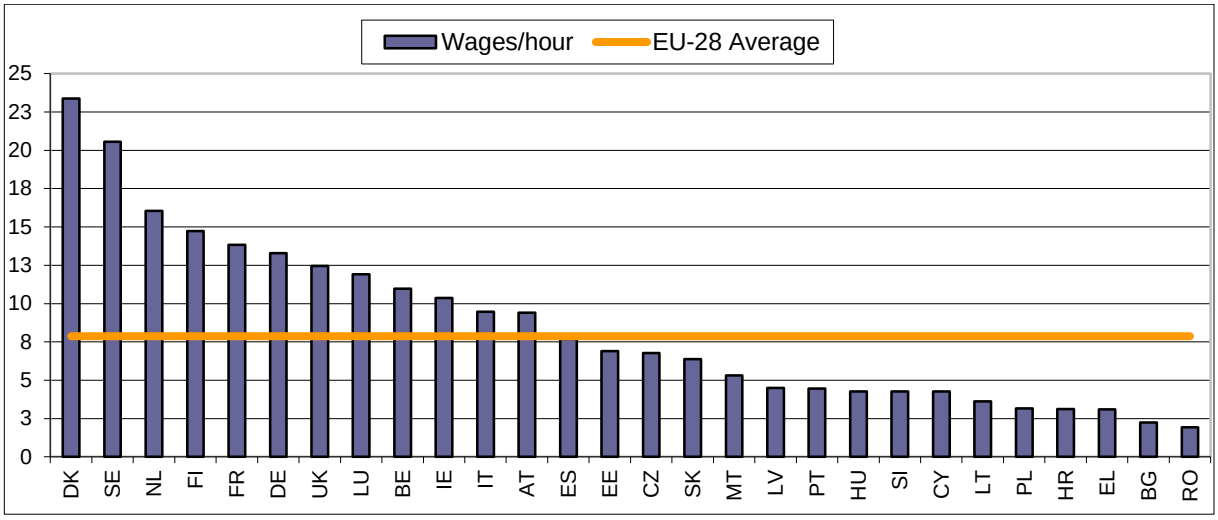
[34] 2016 data are preliminary.

[35] http://www.inflation.eu/inflation-rates/europe/historic-inflation/hicp-inflation-europe.aspx

Map 3.2 shows that wages were highest in north-western Europe in places like Denmark (EUR 23.00), Sweden (EUR 21.00), the French Champagne-Ardenne region (EUR 18.00) and the Netherlands (EUR 16.00). At the other end of the scale were Romania and Bulgaria, which had the lowest average wages per hour (around EUR 2.00).

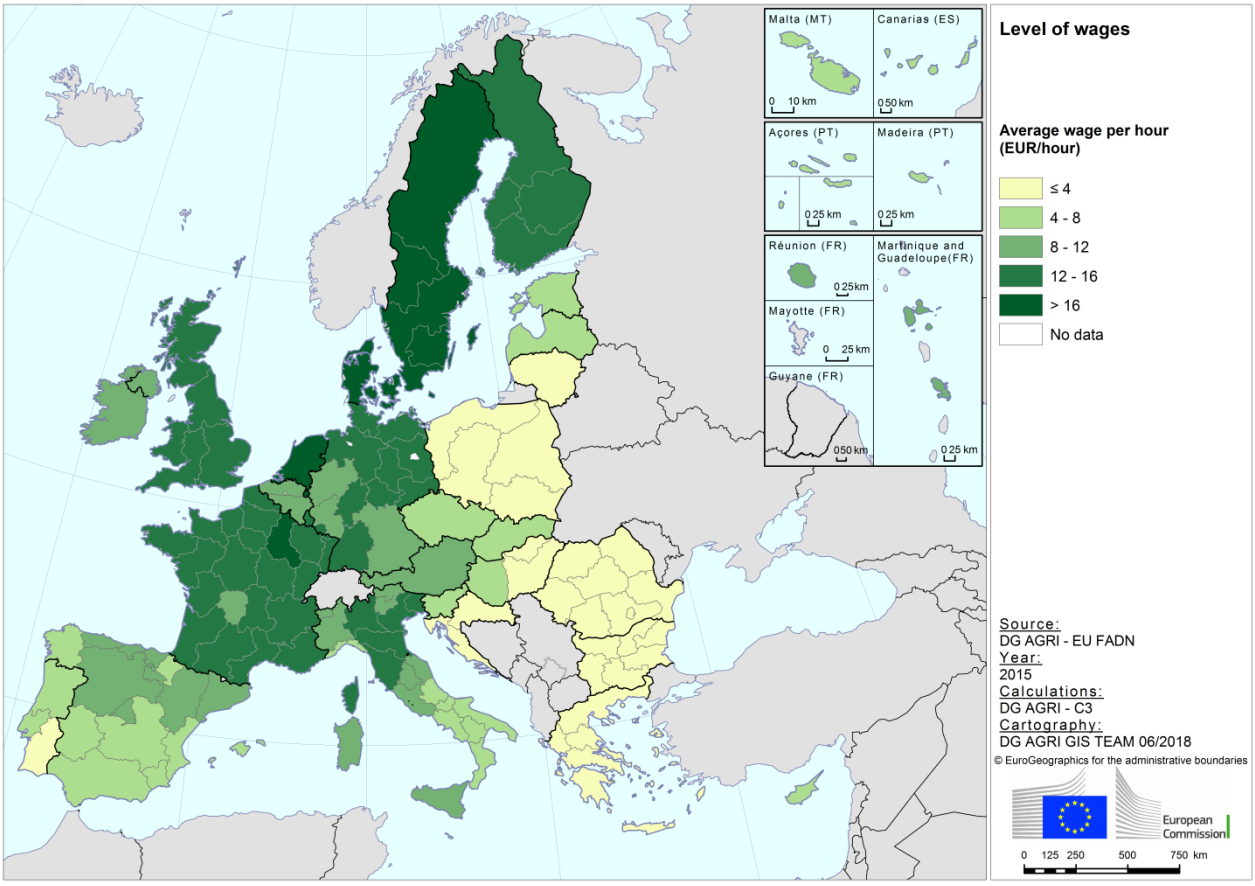
Figure 3. 21: Average nominal wages of paid labour in 2015

(EUR/hour)



Source: DG AGRI EU-FADN.

Map 3.2: Average nominal wage by FADN region in 2015



Source: DG AGRI EU-FADN

3.3. Land

For most farm types, access to agricultural land is a precondition for economic activity. This subsection analyses the amount of agricultural land available per farm, trends in the ownership of land and the cost of renting land.

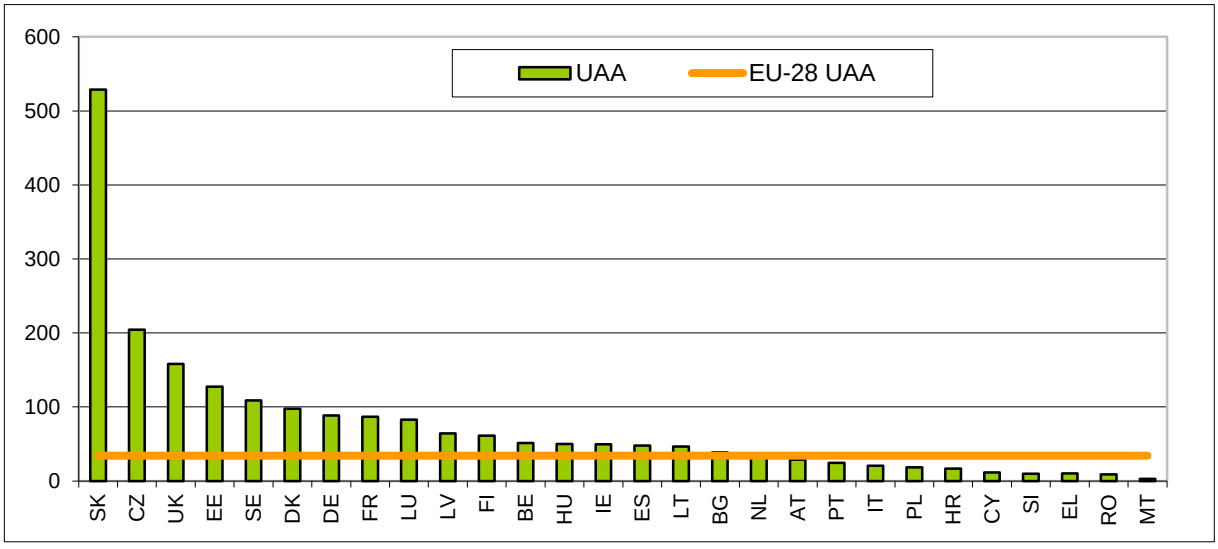
3.3.1. Farm size

Before analysing the data on the structural characteristics of the farms, it must be noted that the FADN database cannot provide a representative picture of farm structures. This is due to limitations in the FADN system. One of these limitations is the fact that the FADN's field of survey does not cover all agricultural holdings in the EU. It only covers those holdings which, due to their size, can be considered as market-oriented. The FADN also applies thresholds and these thresholds for inclusion in the survey vary among countries (see the methodology chapter for more information).In other words, certain farms are excluded from the field of observation. In the light of the above, in this chapter we will examine the physical and economic size of the farms surveyed by FADN.

The structure of farms varies significantly across Member States. One of the most telling indicators of these differences is the physical size of farms, measured by the average amount of agricultural land per farm. As shown in Figure 3.22, farms represented in the FADN are on average largest in Slovakia (529 ha), followed by the Czech Republic (204 ha) and the UK (158 ha). Farms are smallest in Cyprus (11 ha), Greece (10 ha), and Malta (3 ha). The EU average was 34 ha in 2015, unchanged compared to 2014. The average farm size was mostly below the EU-28 average in some Mediterranean countries (Portugal, Italy, Greece, Cyprus and Malta), in Austria and in some eastern European countries such as Poland, Slovenia and Romania.

Figure 3. 22: Total farm UAA[36] by Member State in 2015

(average per farm in ha)



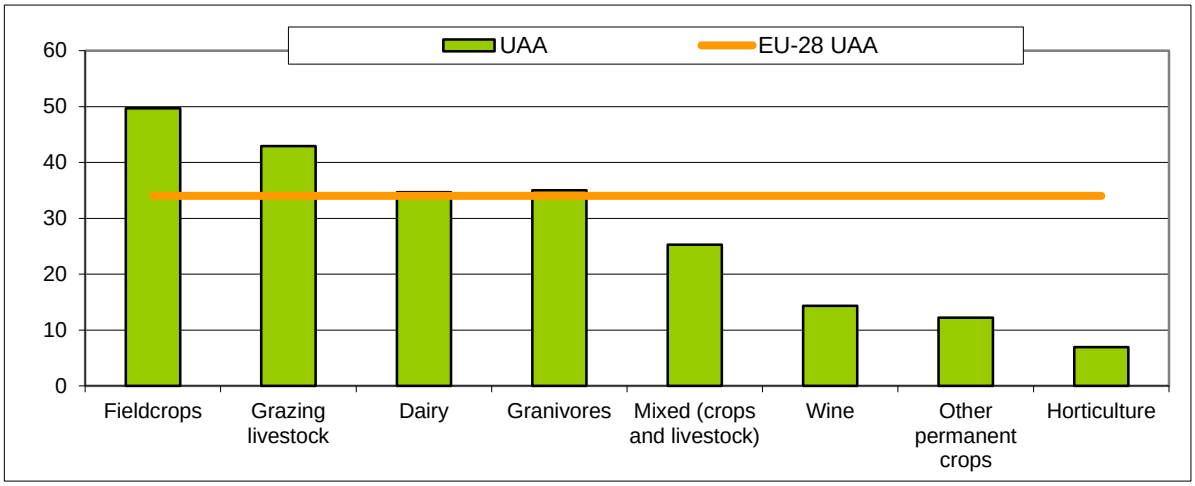
Source: DG AGRI EU- FADN.

[36] Utilised agricultural area (UAA) is the area used for farming.

In 2015, the average utilised agricultural area (UAA) was largest in field-crop farms, followed by grazing-livestock farms. Horticultural farms were the smallest. The average field-crop farm (50 ha) was seven times larger than the average horticultural farm (7 ha) in 2015. However, it is important to stress that horticultural farms operate at a much higher intensity, meaning that land is a less important determinant of their level of production.

Figure 3. 23: Total UAA of farms by type of farming in 2015

(average per farm in ha)



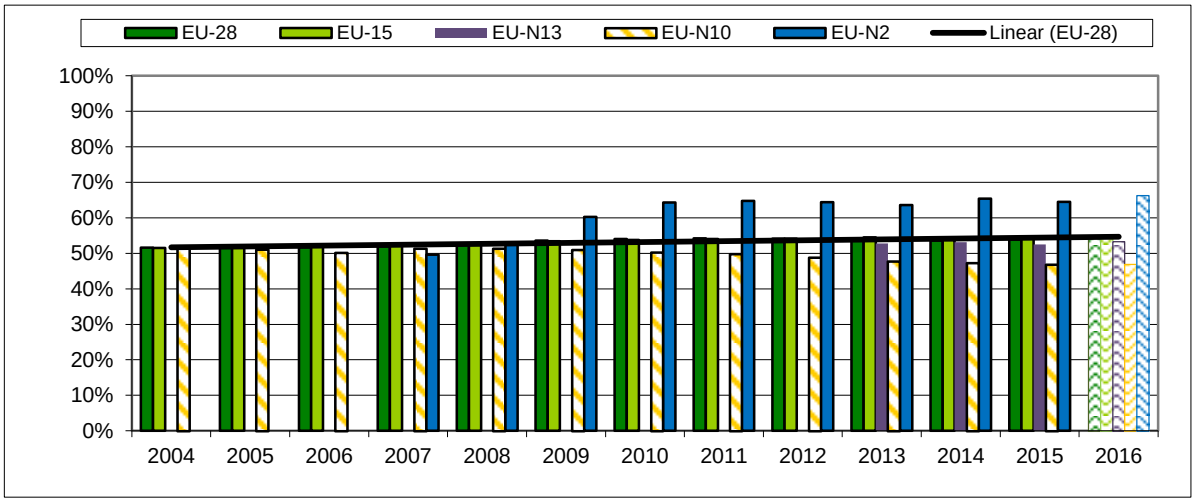
Source: DG AGRI EU- FADN.

3.3.2. Importance of rented land

Structural change is occurring in the agricultural sector, as reflected by the steadily decreasing number of farms. As a result, the remaining active farms tend to get larger as they buy or rent the land previously used by farms that have ceased farming.

Figure 3. 24: Long-term developments in the proportion of rented land in the period 2004-2016[37]

(average per farm in %)



Source: DG AGRI EU- FADN.

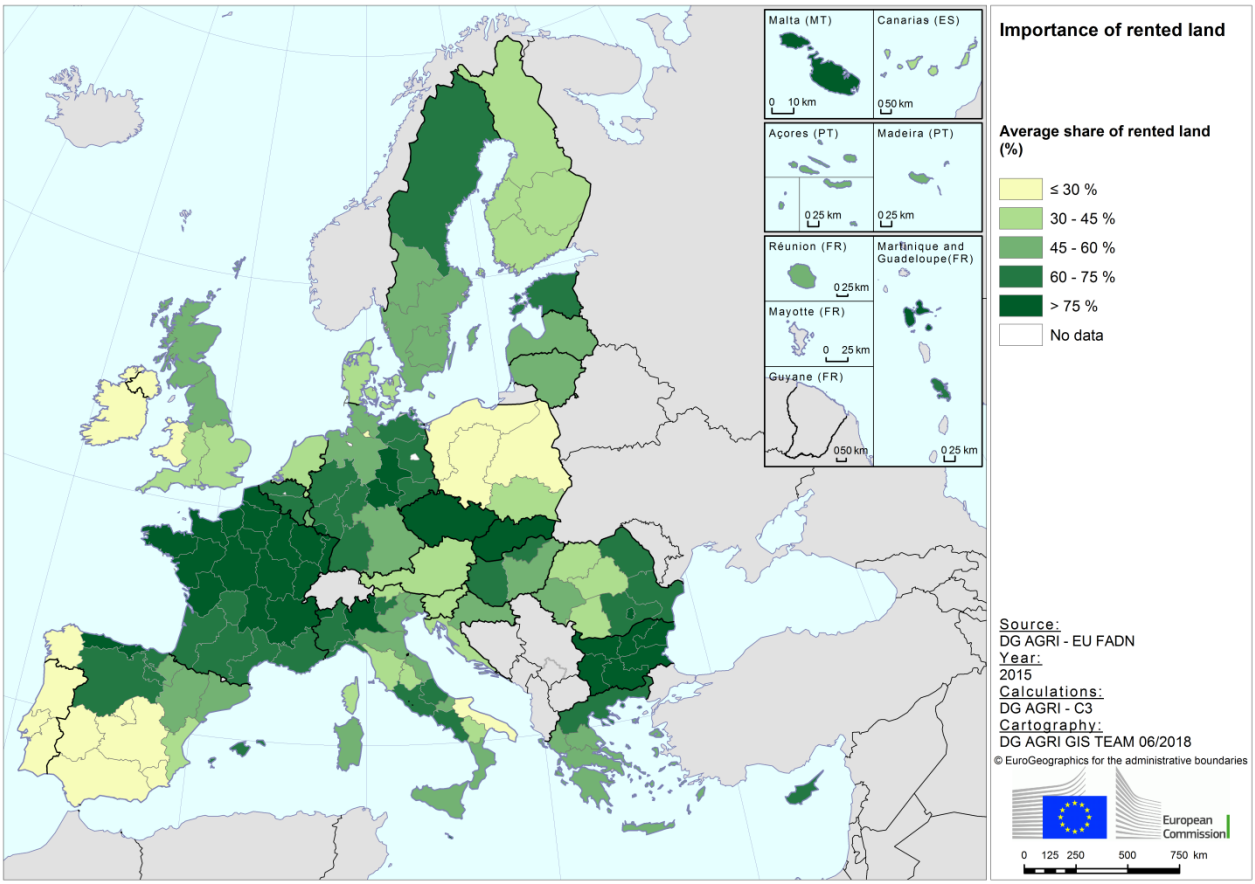
[37] 2016 data are preliminary.

As shown in Figure 3.24, the proportion of rented land in the EU-15 increased slightly from about 52 % in 2004 to 54 % in 2015. This means that more than half of the land used by the EU-15 farms is rented rather than owned.

The proportion of rented land in the EU-N10 fell in 2004 (from 52 %) following the accession of the 10 new Member States. It showed a slight increase in 2007 and 2008, but then decreased again in subsequent years, gradually reaching a low of 47 % in 2015. The two Member States that joined the EU in 2007 showed the opposite trend. The proportion of rented land was only 39 % in Romania in 2007, but in subsequent years it went up to 54 %. Together with Bulgaria, rented land in the EU-N2 increased by 15 % in the period 2007-2015.

Note that the averages for the different EU groups mask considerable national and regional disparities, as shown on Map 3.3. Rented land as a proportion of total UAA is very high in some regions of France (Picardie: 93 %; Haute-Normandie and Champagne-Ardenne: 92 %; Nord-Pas-de-Calais and Bourgogne: 91 %,), Slovakia (91 %[38]), and Bulgaria (Yugoiztochen: 88 %; Yugozapaden: 85 %). Conversely, rented land as a proportion of total UAA is below 30 % in many southern European regions such as Ribatejo e Oeste and Norte e Centro in Portugal (both at 15 %); Galicia in Spain (15 %); Puglia in Italy (16 %); Ireland (19 %); Hamburg (19 %); Mazowsze and Podlasie in Poland (20 %); and Wales (23 %).

Map 3.3: Rented land as a proportion of total UAA by FADN region in 2015

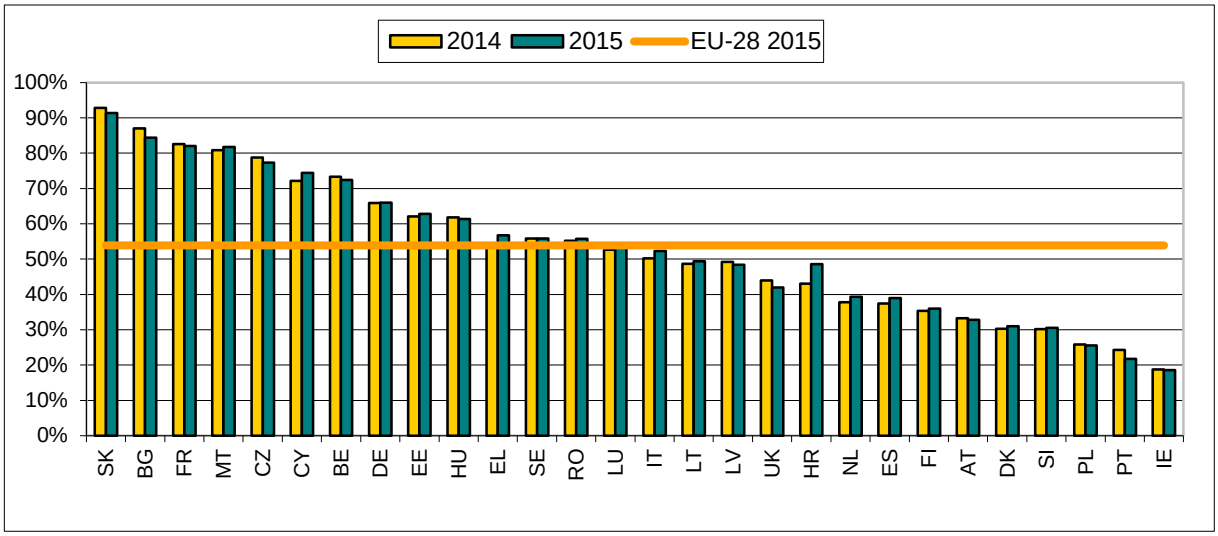


Source: DG AGRI EU- FADN.

[38] This very high proportion of rented land of total UAA reflects the business structure of Slovak and Bulgarian agricultural holdings (i.e. cooperatives renting land from their members).

Figure 3. 25: **Rented land as a proportion of total UAA by Member State 2014-2015**

(average per farm in %)

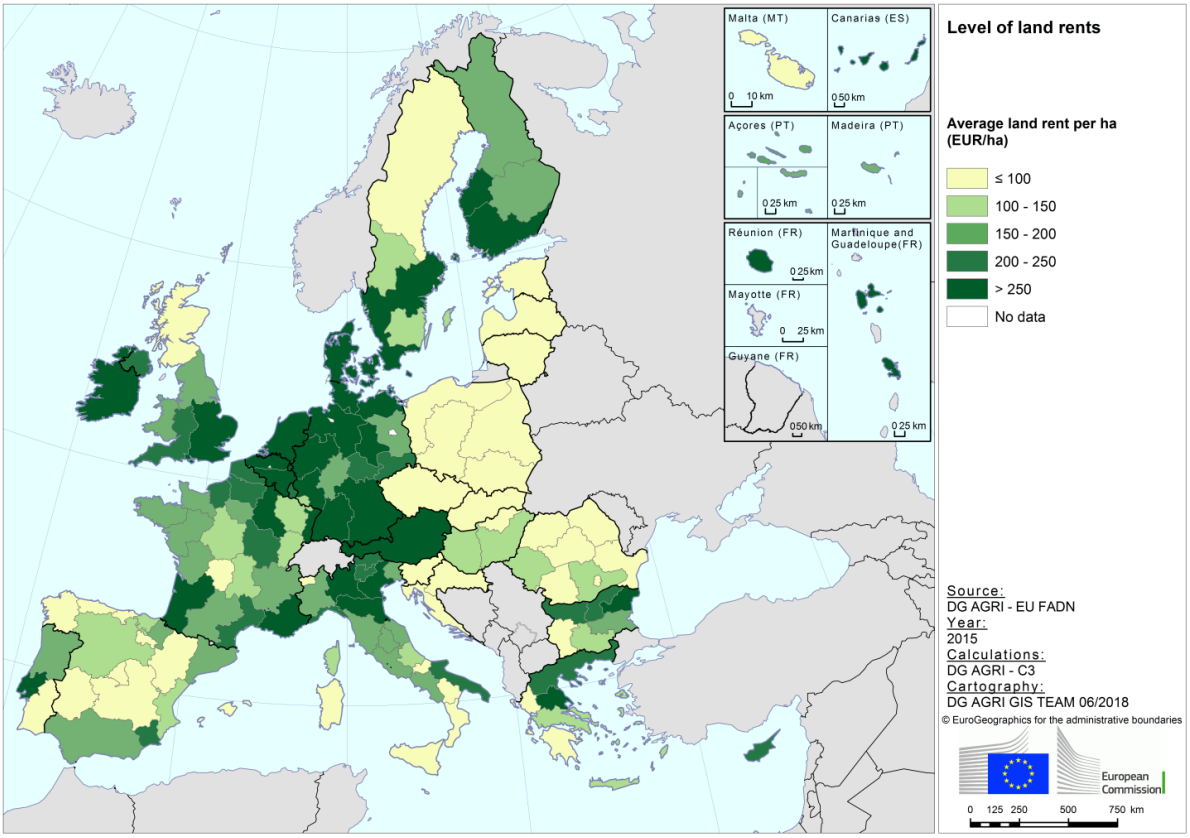


3.3.3. Level of land rents

The price of owning land is often influenced by factors originating outside the agricultural sector. For this reason, the annual rent farmers have to pay for one hectare of land is typically considered the best proxy for the cost of land. Map 3.4 shows that the level of land rent varies markedly across EU regions. In 2015, the highest average land rent per ha was in Hamburg (EUR 2 700), the Canary Islands and the Netherlands (approximately EUR 1 250 and EUR 860, respectively). Land rents were also high in Denmark (EUR 610). On the other hand, rents were particularly low in Latvia and Estonia (EUR 33 and 43 per ha respectively) and in many regions with unfavourable conditions for intensive agricultural production, such as dry and mountainous areas.

Insofar as the rental value of land reflects land scarcity, it can be used as an indicator of the risk of land abandonment. For instance, if land rents are high, it can be assumed that farming is profitable and that there are enough farmers willing to use the land. However, low land rents indicate that there is little potential for making economically profitable use of the land. Hence, adverse changes in the economic environment are highly likely to result in land abandonment.

Map 3.4: Average land rent in the FADN regions in 2015

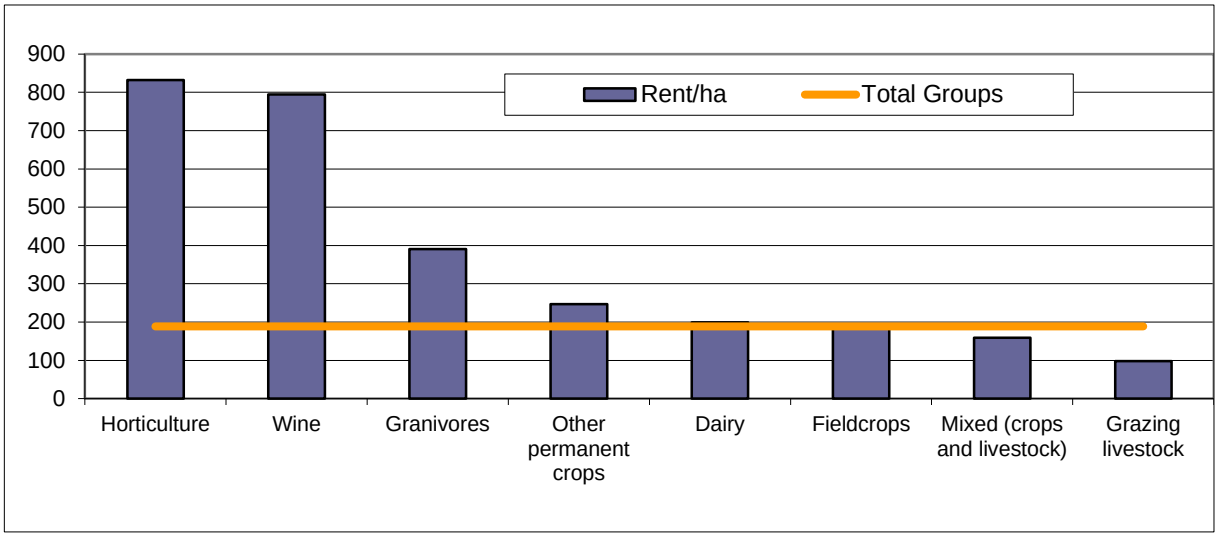


Source: DG AGRI EU- FADN.

Results by farm type

The level of land rent depends on several factors, such as the scarcity of land, the degree of competition between farmers in the local land market, and the strength of demand for land in different sectors. In areas with significant horticulture or wine production, suitable land is scarce and land rents are much higher than, for example, in areas with extensive grassland. Similarly, in areas with intensive livestock production, land prices tend to be higher because additional land is often a precondition for expanding production. Of course, factors such as the profitability of production, production structures and the institutional setting of land markets must also be taken into account, as they also influence the levels of land rent. These differences in land rents by type of farming can be seen in Figure 3.26.

Figure 3. 26: Average land rent by farm type in 2015
(in EUR per ha)

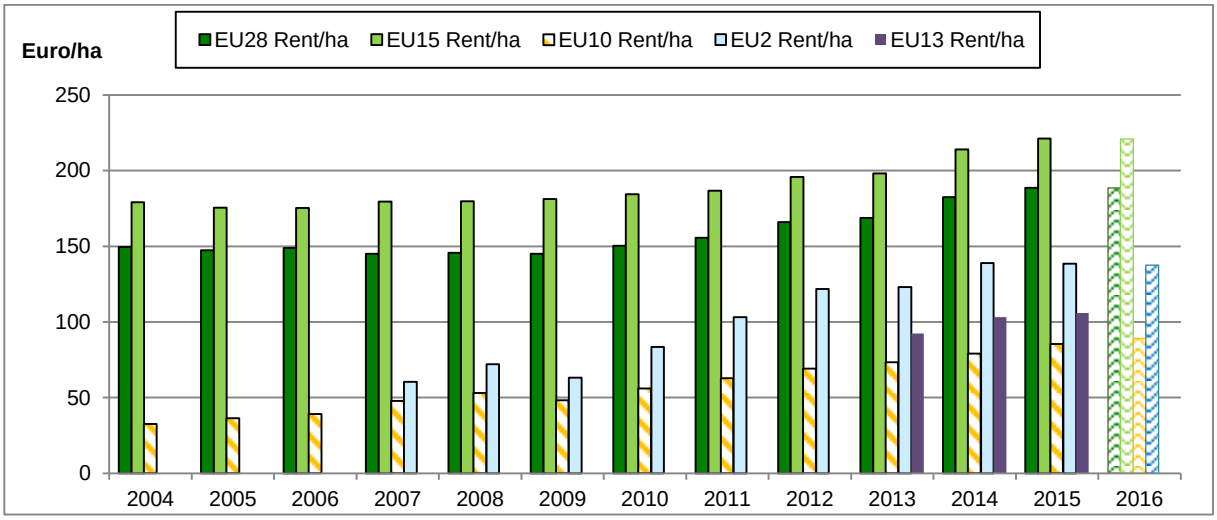


Source: DG AGRI EU- FADN

Developments in land rent by EU group

As shown in Figure 3.27, land rents in the EU-15 increased very gradually from 2004 to 2015, rising from EUR 179 per ha to EUR 221 per ha. However, this trend was more pronounced in the EU-N10: average land rents per hectare nearly tripled during this period, from around EUR 32 to EUR 89. All in all, average land rents have gradually increased in the EU since 2004, and stood at around EUR 189 per hectare in 2015 (+26 %). Note that the land rent figures discussed in this subsection are averages and do not necessarily reflect prices in new rental contracts (which may be well above the average level observed in the FADN).

Figure 3. 27: Long-term developments in land rent levels
(in EUR per ha)



Source: DG AGRI EU- FADN.

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Annex 1: **Farm Accountancy Data Network in the context of the Farm Structure Survey — Methodology**

The **Farm Accountancy Data Network (FADN)** is a European system of sample surveys that are run each year to collect structural and accountancy data from farms. Its aim is to monitor the income and business activities of agricultural holdings and to evaluate the impacts of the common agricultural policy (CAP). The FADN is the only harmonised source of microeconomic data, which means that its accounting principles are the same in all EU Member States.

The FADN is closely linked to the Farm Structure Survey (FSS) managed by Eurostat, since the field of survey in the FADN is based on the FSS farms population. The FSS is carried out in all Member States in a harmonised manner based on European legislation. This means that comparable data are available for all countries in each survey.

The FSS population consists of all agricultural holdings in the EU of at least one hectare[39]. From 2010 onwards, following the entry into force of Regulation (EC) No 1166/2008, the minimum requirements for survey coverage from the 2009/2010 FSS onwards have been changed. Countries which used a survey threshold above one hectare UAA were allowed to fix their threshold at a level that excludes only the smallest agricultural holdings which together contribute 2 % or less to the total UAA excluding common land and 2 % or less to the total number of farm livestock units. Although the threshold for inclusion in the survey varies among countries, the FSS covers at least 98 % of the total utilised agricultural area excluding common land and 98 % of the total number of farm livestock units.

To ensure that the FADN sample provides representative data on the agricultural population and reflects the diversity of farming in the European Union, the sample of farms is set up on the basis of the typology classification in line with the FSS. Farms are selected in the FADN sample on the basis of an official selection plan prepared by each Member State. The selection plan is drawn up either on the basis of the most recent statistical data from the Agricultural Census carried out every 10 years, or from the FSS carried out between censuses. As a result, the field of survey in the FADN is a subset of the FSS[40].

The selection plan sets out the number of farms to be selected by region, type of farming and economic-size class. It specifies the detailed rules to be applied for selecting the holdings. The three-way stratification of the population of farms (i.e. the total number of farms in the EU) based on the common typology classification allows it to be represented as a three-dimensional matrix of cells. The number of farms in each cell is derived from the FSS. Each cell corresponds to a specific category of farms.

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[39] Member States can use thresholds other than one hectare, as long as they follow the coverage requirements specified in Regulation (EC) No 1166/2008 of 19 November 2008 on farm structure surveys and the survey on production methods.

[40] Note that there are also methodological differences in data collection for the FSS and FADN. For example, information on animals is requested in June for the FSS, and an average of the number of animals over the year is used in the FADN. The FSS requests information on other gainful activities in the form of a template, while in the FADN this information is calculated on the basis of accounts.

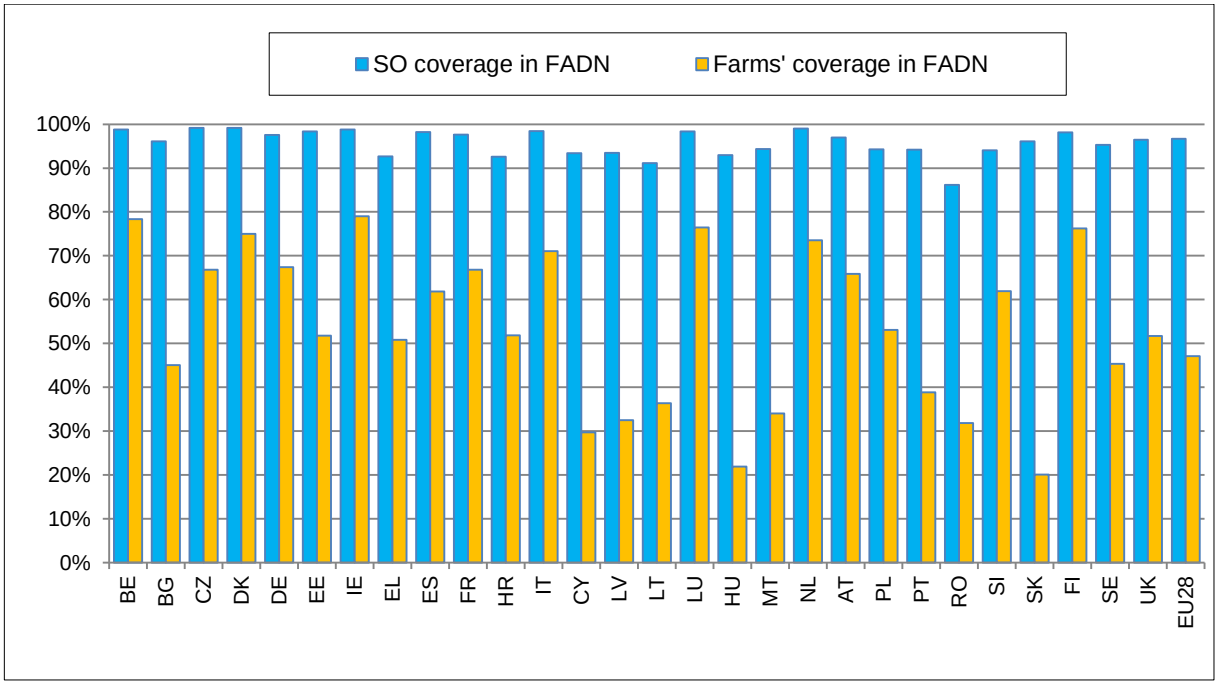
An individual weighting is applied to each farm in the sample. This weighting corresponds to the number of farms in the three-way stratification cell of the field of observation (or the FSS farms in a given cell) divided by the number of farms in the corresponding cell in the sample (or the FADN farms in a given cell). This weighting system is then used in calculating the FADN aggregated results used in this report.

Table 1.2**:** **Characteristics of the FSS and FADN**

	FSS	**FADN**
Type of data	Full population	Sample of market-oriented farms Extrapolation to the population based on weighting factors
Thresholds	Alternative thresholds (minimum coverage should be guaranteed)	Based on Standard Output (formerly SGM); separate thresholds for each Member State
Sampling frequency	3-4 year interval	Annual
Time series	1999; 2003; 2007; 2010; 2013; (2016)	1989-2015 (2016)
Spatial resolution	Local Administrative Unit	FADN regions
Information	Structural	Financial and structural

The FADN aims to cover EU's agricultural holdings as fully as possible in order to represent the largest possible proportion of total agricultural output, area and farm labour represented in the FSS (Figure 3.28).

Figure 3.28 Physical farm size and Standard Output coverage of the FADN 2015 compared to the FSS 2013

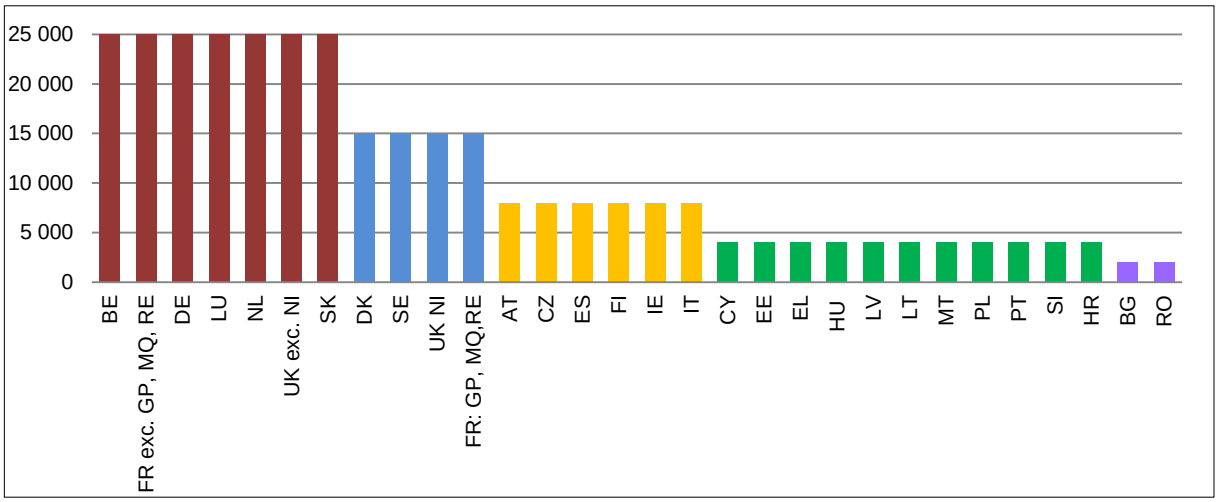


Note that the FADN's field of survey does not cover all agricultural holdings in the EU but only those which, due to their size, can be considered as market-oriented.

Market-oriented farms must exceed a minimum economic-size threshold measured in Standard Output[41].

Because of the different farm structures in the European Union, each Member State specifies their own thresholds. The threshold should ideally ensure high overall FADN coverage of the FSS population in terms of Standard Output, but also of utilised agricultural area and livestock units at country level. The economic-size thresholds range from as low as EUR 2 000 in Bulgaria and Romania to as high as EUR 25 000 in Belgium, Germany, France, Luxembourg, the Netherlands and the UK (Figure 3.25).

Figure 3.29 FADN thresholds in Member States in 2015 (in EUR of Standard Output)



The FADN is primarily designed to evaluate income and financial indicators. It is not suitable for providing data on the farm structure of all farms, because it applies thresholds and does not include the whole agricultural population. Furthermore, the FADN does not focus on production totals but on average values per farm.

The most recent confirmed FADN data available for this report are for the 2015 accounting year. Preliminary 2016 data were also used for selected general indications. The sample consisted of approximately 83 000 holdings in the EU-28, which represents nearly 4.7 million farms (44 %) out of the total of 10.8 million farms included in the FSS 2013.

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[41] **Standard Output (SO)** is the average monetary value of the agricultural output at the farm-gate price of each agricultural product (crop or livestock) in a given region. The SO is calculated by Member States per hectare or per head of livestock, by using basic data for a reference period of 5 successive years. The SO of the holding is calculated as the sum of the SO of each agricultural product present in the holding multiplied by the holding's number of hectares or heads of livestock. The SO coefficients are expressed in euros and the economic size of the holding is measured as the total standard output of the holding expressed in euros. Previously, using rules set by Decision 85/377/EEC, the economic size was measured as the total Standard Gross Margin (SGM) of the holding expressed in European Size Unit (ESU) instead.

Annex 2**:** **Definitions and their interpretations**

Farm receipts recorded in the FADN accounts

Output: This includes crops and livestock production, as well as other output if it is directly linked to a farm's activity, e.g. farm tourism, forestry, renewable energy, etc. It does not include a household's non-farm income.

Direct payments: In the context of this analysis, direct payments refer to all farm subsidies on crops, livestock and livestock products linked to production. They also include the single farm payment and single area payment scheme.

Investment subsidies: Investment subsidies can be regarded as part of the Pillar II payments. However, they are shown separately because they are treated differently in the calculation of income estimates. As in the case of Pillar I and Pillar II-type payments, they include national payments.

Costs items recorded in the FADN accounts

Intermediate consumption: This is the total of the specific costs and overheads arising from production in the accounting year. For example, intermediate consumption includes the costs of feed, fertilisers, crop protection and energy.

Depreciation: This is the depreciation of capital assets estimated at their replacement value.

(Net) Farm taxes: These are farm taxes, less VAT, plus other taxes on land and buildings. Subsidies on taxes are deducted. Personal income taxes are not taken into account.

(Net) Taxes on investment: These are taxes not arising from current productive activity in the accounting year, net of subsidies.

Wages: This covers wages and social security charges.

Rent: This covers rent paid for farm land and buildings and rental charges.

Estimation of the imputed unpaid family factor costs

Family-labour cost: This cost is estimated on the basis of wages which farm owners would have to pay if they were to hire employees to do the work carried out by family members.

It is estimated as the average regional wage per hour based on FADN data[42] multiplied by the number of hours worked by family workers on the farm. It is commonly acknowledged that the number of hours worked by family workers can be overestimated. Thus, a ceiling of 3 000 hours per AWU is applied (this is the equivalent of 8.2 hours a day, 365 days a year, and more or less corresponds to the time that can be spent on a farm by farmers milking cows)[43].

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[42] If there are not enough farms (fewer than 20) with paid labour at regional level, the national average is used.

[43] One limitation of this estimation method is that if a farmer were to receive a salary he would probably work less.

The use of hours makes it possible to give managers more remuneration than employees, if they work more hours.

Reliable family-labour cost estimates are difficult to obtain as records of hours worked on the farm might be overestimated and it is not easy to determine what an appropriate remuneration for family labour is. Farmers may agree to be remunerated at a below-average wage if they consider farming as a way of life or have other sources of income for their household (e.g. other gainful activities, spouse working outside the farm, etc.).

Own-capital cost

– **Own-land cost**: This cost is estimated on the basis of the rent that farm owners would have to pay if they were to rent the land they are using. It is estimated as the owned area multiplied by the rent paid per hectare on the same farm or, if there is no rented land on the farm, multiplied by the average rent paid per hectare in the same region and for the same type of farming[44].

– **Cost of own capital (except land)**: The cost of own capital (permanent crops, buildings, machinery and equipment, forest land, livestock and crop stocks) is estimated as its opportunity cost (i.e. how much money the farmer could earn if he were to invest the equivalent of its capital value in 'safe' financial assets).

The interest paid on capital is not known, as this information is optional in the FADN farm return. Nevertheless, in order to take into account the actual interest rate paid on a farm, a 'weighted' interest rate is calculated as the weighted average of this interest rate for liabilities and the long-term interest rate obtained from Eurostat. Note that if the 'weighted' interest rate is lower than the long-term interest rate (which means that the calculated rate of interest paid is lower than the long-term interest rate), the long-term interest rate is used instead of the 'weighted' interest rate.

Own-capital value (excluding land and land improvement) is estimated as the average value of the assets (closing valuation plus opening valuation divided by two) multiplied by the real interest rate[45]. The correction is made by subtracting the inflation rate[46] from the nominal interest rate.

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[44] If there are not enough farms (fewer than 20) in a given region for a given type of farming, the national rent per hectare for this type of farming is used (based on the TF8 classification).

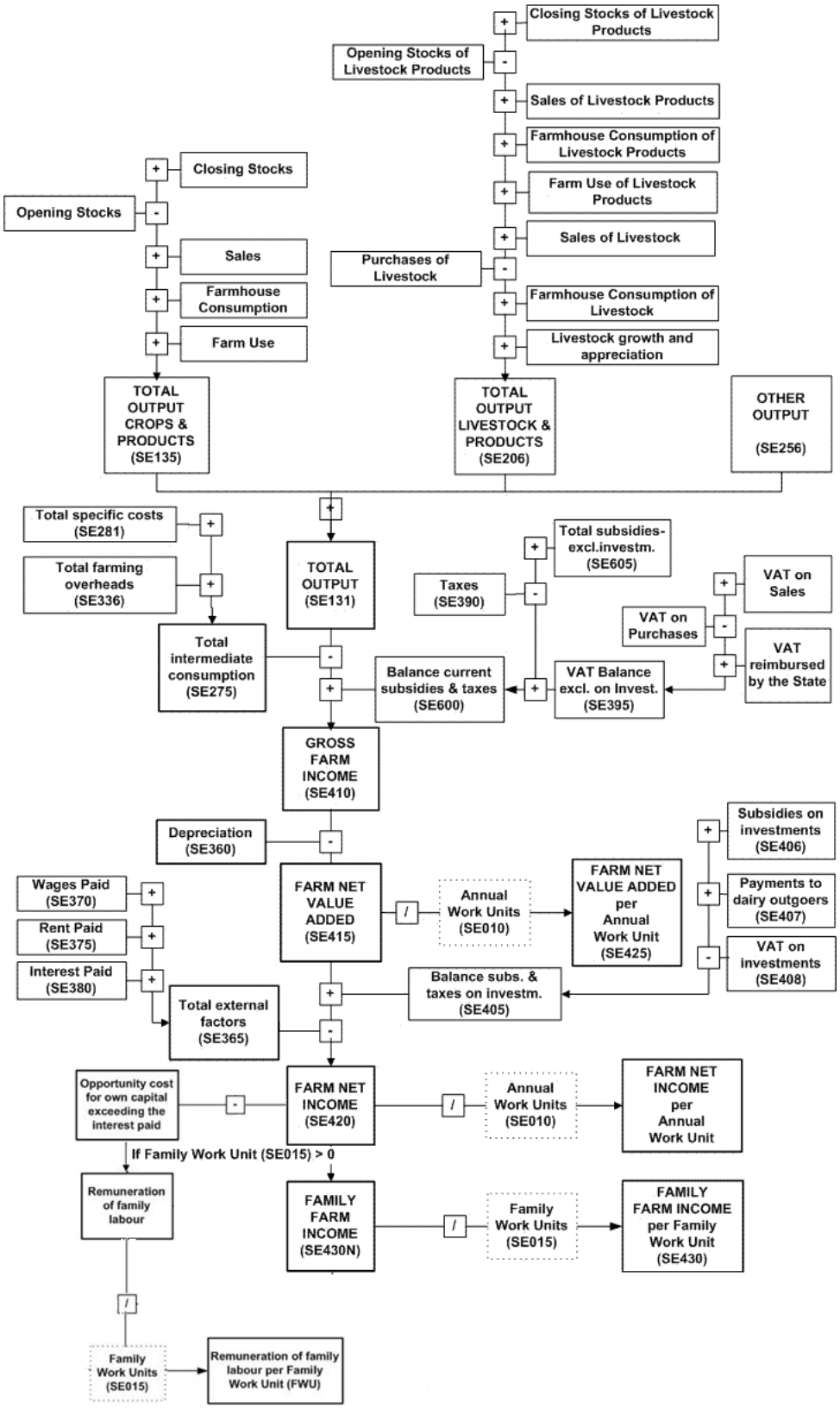
[45] Any increase in the value of assets is excluded from income calculations. For example, land appreciates in value over time, which is one of the reasons why investors invest in land. This gain is not included in the income; therefore it would not be consistent to include it in the cost of capital affecting the income.

[46] The inflation rate is based on the Eurostat annual average rate of change in the Harmonised Indices of Consumer Prices (HICPs), available from 1997. Inflation rates based on a GDP deflator and on a deflator of gross fixed capital consumption have been tested, but were found to lead to very high negative costs for capital, mainly in the EU-N13. An inflation rate calculated on the basis of price indices for gross fixed capital consumption has been tested, as it seemed to be more closely related to assets. However, this rate has fluctuated widely over the years for certain Member States. In addition, land is one of the most important assets which does not depreciate. It follows that the inflation rate of gross fixed capital consumption may not be more closely linked to the change in price of agricultural assets than to the consumer price indices.

The value of total circulating capital is not taken into account in the estimation process as data in some Member States are not sufficiently reliable. However, the crop stocks value is included.

To calculate unpaid capital costs, the interest paid is deducted from the sum of the own-land cost and the cost of own capital except land (to avoid double counting). The total capital cost must be at least equal to the interest paid. Imputed unpaid capital costs = Max (interest paid; own-land cost + estimated cost for own capital except land − interest paid).

Annex 3: **Income calculation**



Source: DG AGRI EU-FADN.

Annex 4**:** **Threshold by Member State in 2015 (SO: Standard Output)**

Member State	**Threshold (in 1 000 EUR)**
Belgium	25
Bulgaria	2
Cyprus	4
Czech Republic	8
Denmark	15
Germany	25
Greece	4
Spain	8[47]
Estonia	4
France	25
— France (Guadeloupe)	15
— France (Martinique)	15
— France (Réunion)	15
Croatia	4
Hungary	4
Ireland	8
Italy	8[48]
Lithuania	4
Luxembourg	25
Latvia	4
Malta	4
Netherlands	25
Austria	8
Poland	4
Portugal	4
Finland	8
Sweden	15
Slovakia	25
Slovenia	4
Romania	2
United Kingdom	25
— United Kingdom (Northern Ireland)	15

[47] Change of threshold in accounting year 2015.

[48] Change of threshold in accounting year 2014.

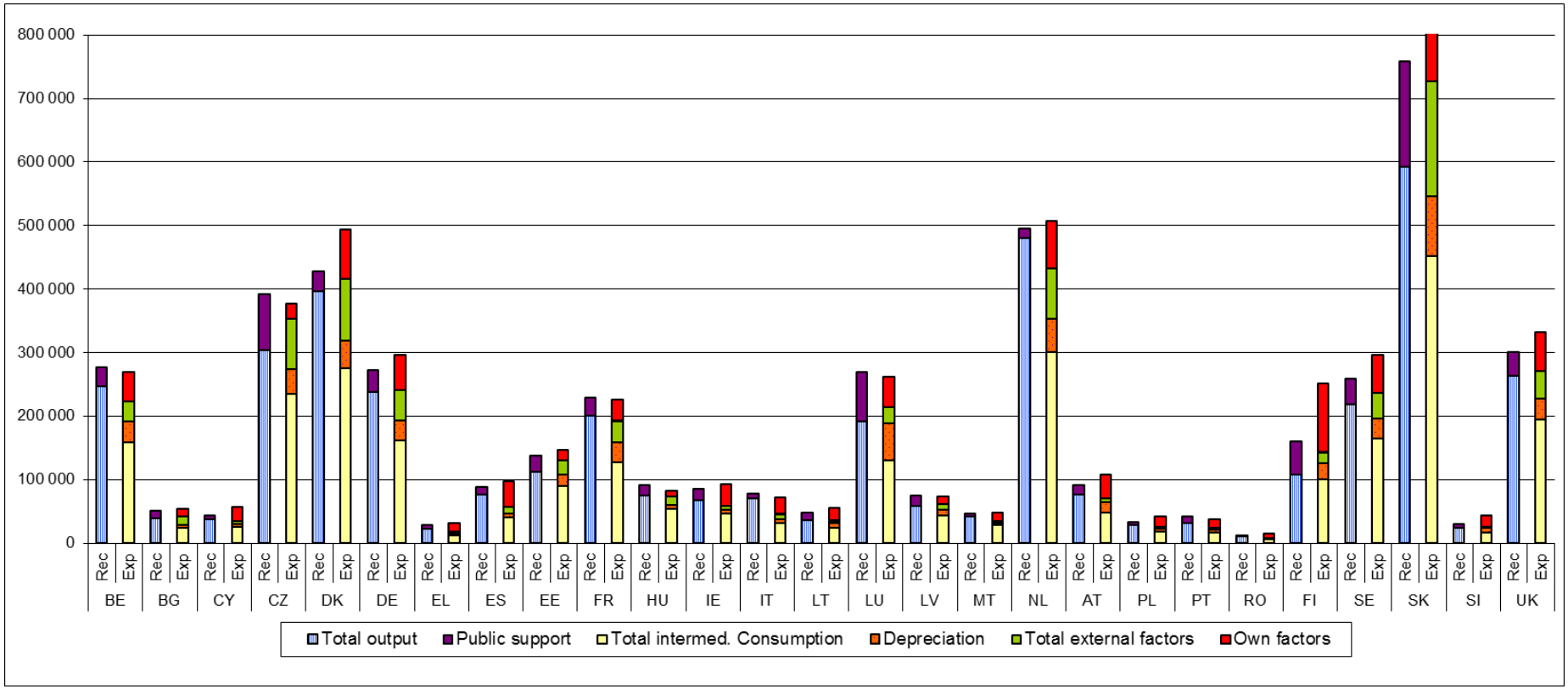
Annex 5: **Number of holdings by type of farming in 2015**

Types of farming	Farms represented	Sample farms
	Sum	Sum
Field-crops	1 289 915	24 366
Horticulture	154 893	4 747
Wine	225 351	4 321
Other permanent crops	506 132	6 529
Milk	593 081	13 754
Grazing livestock	817 114	11 983
Granivores	132 561	5 327
Mixed (crops and livestock)	948 134	11 515
Total Groups	4 667 181	82 542

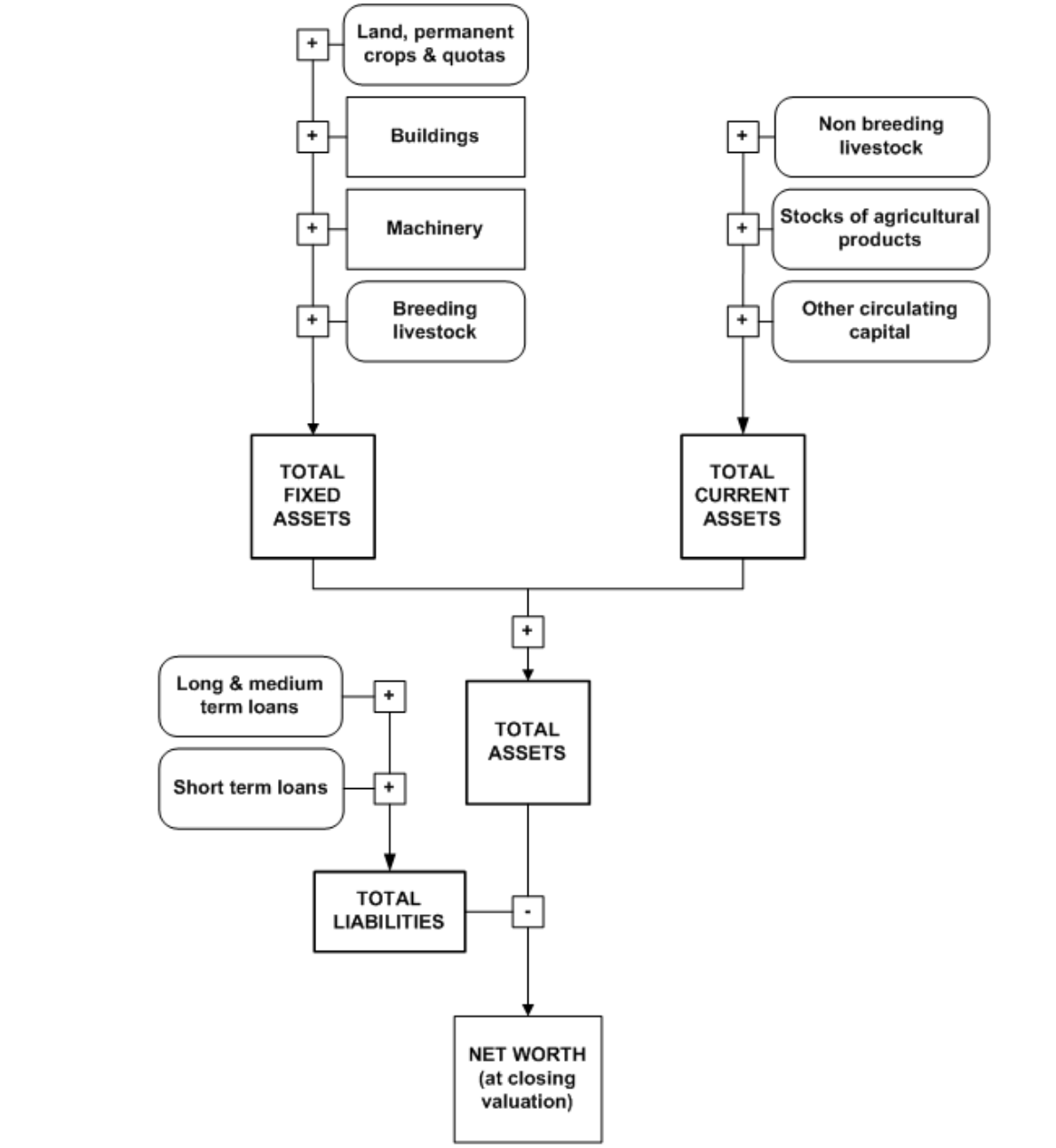
Source: DG AGRI EU-FADN

Annex 6**:** **Breakdown of farm receipts and costs of EU farms in 2015**

(average per farm in EUR)



Annex 7**:** **Balance sheet components in the FADN**



Source: DG AGRI EU-FADN

Annex 8**:** **Indicators by Member State in 201**

Member State	FNVA	FNVA per AWU	FFI per FWU	Return on assets	Share DP in revenue	Share DP in FNVA	Average asset value	Average liabilities	Net worth	Paid labour input	Unpaid labour input	Wages / hour	Average UAA	Share of rented land	Level of rents
	€	€/AWU	€/FWU	%	%	%	€	€	€	%	%	€/hour	ha	%	€/ha
BE	82 429	39 281	34 384	3.2%	7%	22%	736 917	203 058	533 859	20%	80%	11.0	51.2	72%	332.2
BG	20 932	8 886	5 732	10.1%	17%	35%	86 765	19 108	67 657	48%	52%	2.2	38.6	84%	202.7
CY	14 069	9 849	8 116	-1.0%	9%	28%	160 255	4 408	155 847	23%	77%	4.3	11.2	74%	244.2
CZ	112 014	19 937	16 333	5.4%	18%	42%	670 476	202 341	468 136	75%	25%	6.8	204.4	77%	94.9
DK	106 951	61 770	14 885	-1.9%	8%	30%	2 490 051	1 460 842	1 029 210	52%	48%	23.4	97.6	31%	607.3
DE	80 710	36 225	24 347	-1.2%	12%	32%	910 008	205 550	704 457	36%	64%	13.3	88.5	66%	313.7
EL	12 940	11 823	11 569	5.9%	18%	39%	122 910	51	122 859	20%	80%	3.1	10.3	57%	181.8
ES	43 055	26 345	28 052	8.0%	12%	24%	339 918	10 326	329 592	35%	65%	7.7	47.7	39%	126.6
EE	28 100	14 862	9 219	-3.7%	12%	51%	290 740	99 751	190 989	57%	43%	6.9	127.2	63%	42.9
FR	67 804	33 081	25 580	2.2%	11%	34%	438 634	186 430	252 204	32%	68%	13.8	86.6	82%	189.4
HR	9 212	5 401	4 100	-1.5%	17%	50%	159 379	7 013	152 366	14%	86%	3.1	16.4	49%	77.6
HU	29 912	18 436	23 019	11.3%	16%	41%	184 704	31 074	153 629	60%	40%	4.3	50.0	61%	124.9
IE	30 005	25 624	24 524	0.6%	17%	44%	996 728	22 506	974 222	6%	94%	10.4	49.4	19%	251.9
IT	40 939	30 979	32 224	3.9%	9%	18%	480 642	5 010	475 631	23%	77%	9.5	20.4	52%	186.2
LT	15 030	8 898	8 831	2.8%	17%	48%	113 583	18 215	95 367	18%	82%	3.6	46.3	49%	56.4
LU	70 150	40 315	39 042	2.7%	13%	32%	1 194 111	291 252	902 859	20%	80%	11.9	82.8	54%	233.7
LV	19 889	10 097	8 864	3.1%	15%	45%	149 813	48 480	101 333	37%	63%	4.5	64.2	48%	33.5
MT	13 476	9 847	10 018	-1.3%	4%	14%	192 817	5 802	187 015	12%	88%	5.3	2.7	82%	99.7
NL	140 709	50 964	44 032	0.8%	3%	11%	2 384 361	818 044	1 566 317	45%	55%	16.1	36.3	39%	859.7
AT	28 779	18 333	13 919	-4.7%	9%	27%	440 883	54 299	386 585	7%	93%	9.4	28.7	33%	252.8
PL	9 912	6 036	5 418	-1.9%	14%	44%	169 943	9 745	160 199	13%	87%	3.2	18.5	26%	81.3
PT	19 696	12 481	13 903	11.0%	15%	30%	104 932	3 327	101 605	23%	77%	4.5	24.6	22%	128.1
RO	4 904	4 558	3 795	-3.9%	10%	22%	35 215	1 540	33 675	10%	90%	1.9	8.9	56%	95.9
FI	32 836	25 761	17 401	-5.3%	16%	69%	489 483	134 953	354 530	19%	81%	14.7	61.3	36%	249.6
SE	62 208	39 166	20 051	-5.1%	11%	44%	1 037 646	318 247	719 399	25%	75%	20.6	109.0	56%	244.7
SK	191 502	15 399	21 793	3.6%	16%	62%	1 154 951	406 817	748 134	94%	6%	6.4	528.6	91%	60.8
SI	4 305	3 255	3 673	-4.7%	13%	71%	214 401	7 213	207 188	5%	95%	4.3	9.8	31%	92.8
UK	72 610	32 750	23 249	-0.7%	10%	40%	2 007 186	213 168	1 794 018	41%	59%	12.5	157.9	42%	175.4
EU-28	28 494	18 632	14 974	1.3%	11.2%	30%	338 610	54 535	284 075	24%	76%	7.9	34.0	54%	188.6
EU-15	46 939	29 145	24 714	1.6%	10.5%	29%	572 602	99 307	473 295	28%	72%	10.8	48.5	54%	221
EU-N13	10 125	6 991	5 399	-0.1%	14.5%	38%	105 595	9 950	95 645	19%	81%	3.6	19.7	52%	106

Source: DG AGRI EU-FADN.

(*) After deduction of all economic costs except the opportunity costs for family labour

European Commission

EU Farm Economics Overview
based on 2015 (and preliminary 2016) FADN data

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This report provides an overview of key economic developments in the European agricultural sector based on the latest data available in the Farm Accountancy Data Network (FADN) which are from 2015 (and some preliminary from 2016).

European Commission
Directorate-General for Agriculture and Rural Development

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