THE LEVEL OF AGRICULTURAL LABOR PRODUCTIVITY AND ITS CONTRIBUTION TO THE WHOLE EUROPEAN ECONOMY

Venig Aurora*

*Faculty of Environmental Protection, Universitaty of Oradea, General Magheru Street, Nr.26, venig_aurora@yahoo.com

Abstract

This paper contains an analysis of data from the economic accounts for agriculture (EAA) which provide a wide range of statistics and information on agricultural activity and the income generated by it. One of the principal objectives of the common agricultural policy (CAP) is to provide farmers with a reasonable standard of living. Although this concept is not defined explicitly, income development from farming activities is one of the most common measures used to track living standards within the farming community. The analysis moves on to look at livestock statistics, principally in relation to dairy farming and its output. It contains also a presentation of crop production, focusing on cereals, potatoes and the output of vineyards and fruit. Food drives the world; apart from clean water, access to adequate food is the primary concern for most people on earth. This makes agriculture one of the largest and most significant industries in the world; agricultural productivity is important not only for a country's balance of trade, but the security and health of its population as well.

Keywords: agriculture, labor productivity, input, output, Common Agricultural Policy

INTRODUCTION

Agriculture is a highly labor-intensive activity and so it can be revealing to compile a partial productivity indicator from the gross value added for agriculture and the corresponding agricultural labor input data. To take account of part-time and seasonal work, both of which are widespread in agriculture, labor input can be measured in annual work units (AWU): one such unit corresponds to the input, measured in working time, of one person engaged in agricultural activities in an agricultural unit on a full-time basis over an entire year (Slicher,2012).The structure of production may influence the comparability of productivity figures: for example, the production of fruit and vegetables requires more labor than the production of arable crops, while capital costs are generally lower (Schonleber,2009).
Agricultural labor productivity can be influenced by factors such as average farm sizes, the level of mechanization and the share of production for on-farm consumption. It should be remembered that labor productivity is only a partial productivity indicator, as it does not take account of all factors. Some sources of agricultural productivity are:
-Mechanization
-High yield varieties, which were the basis of the Green revolution

-Fertilizers: Primary plant nutrients: nitrogen, phosphorus and potassium and secondary nutrients such as sulfur, zinc, copper, manganese, calcium, magnesium and molybdenum on deficient soil(Belizt,2008).
-Liming of acid soils to raise pH and to provide calcium and magnesium
-Irrigation
-Herbicides
-Pesticides
-Increased plant density
-Animal feed made more digestible by processing
-Keeping animals indoors in cold weather

MATERIAL AND METHOD

The economic importance of agriculture, in value added terms, was generally much greater in the east and south of Europe than in the west and north. The relative economic weight of agriculture was highest in the Bulgarian regions of Severen tsentralen and Severozapaden, where it reached 14.1 % and 12.2 % respectively of total value added; no other regions in the EU-27 reported double-digit shares - although this was the case in the former Yugoslav Republic of Macedonia (10.8 %).
Agriculture's contribution to the whole economy was above 3.5 % in 46 out of the 252 regions in the EU. These included eight regions in Greece (in central and northern Greece as well as Kriti), all regions in Romania except for the capital city region, seven regions in Spain (most of inland Spain as well as the south), five regions each in France (in central France and Guyane) and Poland (mainly in the east), four regions in northern and eastern Bulgaria. The Sud-Vest Oltenia region of Romania saw agriculture's share increase from 6.7 % in 2012 to 9.2 % by 2013, the largest percentage point rise among the 231 regions for which data are available. Three other Romanian regions, Sud-Est, Sud – Muntenia and Nord-Est, also saw relatively large percentage point increases, despite already having shares of 6.5 % or higher in 2007. Most of the other regions with relatively high increases grew from much lower shares, no more than 4.0 % in 2005.
The EU-27 agricultural gross value added per annual work unit was estimated at EUR 15 800 in 2013. In 54 regions spread across 11 of the EU Member States - France (16 regions), the Netherlands (12 regions), Germany (eight regions), the United Kingdom (six regions), Denmark and Spain (four regions each), Sweden (two regions), and Italy and Finland (one region each) - gross value added per annual work unit was above EUR 30 000 in 2011, which was also the case in Belgium as well as the EFTA countries of Norway and Switzerland (no regional data available for any of these three countries).

The highest levels of agricultural labor productivity were recorded in the Dutch regions of Flevoland and Zuid-Holland, both over EUR 80 000 per annual work unit. By contrast, 41 regions within the EU recorded agricultural labor productivity of EUR 5 000 or less. These regions were mainly in Poland (10 regions), Romania (eight regions), Bulgaria (six regions), Hungary (four regions), Greece and Portugal (three regions each) and Slovakia (two regions). In five EU regions, agricultural labor productivity was EUR 1 000 or less: Yugozapaden and Yuzhen tsentralen in Bulgaria, Podkarpackie in Poland, Vychodne Slovensko in Slovakia and the capital city region of Bucureşti - Ilfov in Romania.

Cereals are herbaceous plants cultivated mainly for their grain. Whole cereals are used primarily for animal feed and human consumption; they are also used to produce drinks and industrial products (for example starch). Cereals (including rice) are the largest group of growing crops in the world and are also one of the most important outputs of EU agriculture (Barbu, 2006).

In 2013, the EU-27 produced 290.3 million tones of cereals.

Cereal production exceeded 4.0 million tones in the NUTS level 2 regions of Champagne-Ardenne, Picardie, Centre and Poitou-Charentes (France), Castilla y Leon and Castilla-la Mancha (Spain), and Sud-Est and Sud – Muntenia (Romania), as well as regions of Bayern, Niedersachsen and Nordrhein-Westfalen (in Germany) and the East of England (in the United Kingdom).

The highest levels of cereal production relative to a region's area were recorded in Sjalland (Denmark) and Picardie, both over 260.0 tones per km^2. All five Danish regions recorded cereals production in excess of 120.0 tonnes per km^2, as did five of the seven Hungarian regions. Such an intensity of cereal production relative to land area was also recorded in three or more regions in Belgium, Germany, France, Poland and the United Kingdom.

Tabel 1

Cereals production (1000 tones)

	2011	2012	2013	2014
Belgium	3105	2944	3011	3155
Bulgaria	7007	7460	6933	8950
Czech Republic	6877	8284	6595	7512
Germany	4403	4192	4539	4775
Greece	3869	4415	4068	4319
Spain	18941	21167	16643	24496
France	65390	63695	68334	67242
Italy	20960	17923	16949	14932
Hungary	12256	13669	10361	13601
Austria	4817	5704	4875	4590
Poland	27228	26767	28543	28455
Portugal	849	972	991	1166
Romania	16689	20926	12563	20842
Slovenia	568	607	576	457

Tabel 1.Entire cereals production for the period 2011-2014

Another major crop within the EU is potatoes, which are grown primarily for human consumption, but are also used to feed cattle and produce alcohol and potato flour (starch).

Potato production was around 60 million tones between 2011 and 2013. In 2012, production fell to 56.1 million tones but recovered in 2012 to 62.5 million tones. Average production in the EU-27 has been estimated at 14.5 tones per km2 of land area in 2011. The greatest quantities of potatoes harvested relative to land area were in the Dutch regions of Flevoland, Drenthe, Zeeland and Groningen, all over 400.0 tones per km2. Overall, there were 47 regions in the EU with potato production levels over 24.0 tones per km2, of which 11 were in each of the Netherlands (all except for Utrecht) and Poland, seven in Belgium, four each in Germany (NUTS level 1 regions) and France, three in Denmark, two in Romania and one each in Malta, Austria, Portugal and Sweden.

Tabel 2

Potatoes production (1000 tones)

	2011	**2012**	**2013**	**2014**
Belgium	3455	4128	2811	3428
Bulgaria	232	151	197	196
Czech Republic	805	661	536	647
Germany	11837	10665	9669	11488
Greece	757	578	566	492
Spain	2455	2192	2167	1468
France	6622	7440	6297	6953
Italy	1536	1491	1337	1536
Hungary	488	600	547	487
Austria	816	665	604	650
Poland	9111	9041	7110	6303
Portugal	383	389	445	487
Romania	4113	2463	3298	3075
Slovenia	96	79	62	103

Tabel 2.Entire potatoes production for the period 2011-2014

For climatic reasons, the harvested production from vineyards within the EU is largely concentrated in the southern and central (from north to south) regions of the EU. In fact the level of production from vineyards was between 0 and 1 000 tones in 10 of the Member States: Belgium, Denmark, Estonia, Ireland, Latvia, Lithuania, the Netherlands, Poland, Finland and Sweden. Production was also relatively low, but increasing, in the United Kingdom.

Tabel 3

Vineyard (1000 ha)

	2011	2012	2013	2014
Belgium	-	-	-	-
Bulgaria	49	46	47	47
Czech Republic	15	15	16	15
Germany	99	99	98	100
Greece	98	97	99	98
Spain	1002	963	943	945
France	787	764	760	760
Italy	777	717	697	702
Hungary	73	75	72	73
Austria	42	44	42	43
Poland	0,4	0,5	0,7	0,7
Portugal	180	179	179	179
Romania	174	176	176	176
Slovenia	16	16	17	16

Tabel 3.Entire vineyard production for the period 2011-2014

The amount of water used for irrigation depends on factors such as: climate, current weather conditions, crop type, soil characteristics, water quality and cultivation practices.

Around 14.6 million hectares of agricultural land are irrigable in the EU, which is about 8.5 % of the total utilized agricultural area; for comparison, the share was 8.8 % in 2007.

Figure 9.2 compares the extent of irrigable utilized agricultural land in 2010 with that in 2007 for the 20 regions with the largest proportion of irrigable land. Unsurprisingly, for reasons of climate this list is dominated by regions in the south of the EU, although it also includes several regions in the Netherlands, reflecting its crop specialization. The highest share of agricultural land that is irrigable was recorded in the Regiao Autonoma da Madeira in Portugal (82.3 %), far ahead of any other region. Just over half of the top 20 regions reported that a lower share of agricultural land was irrigable in 2010 than had been in 2007. The most notable increase in the extent of irrigable agricultural land between 2007 and 2010 was the 12.6 percentage point increase in Flevoland (the Netherlands), which was the largest increase among any of the EU regions; the next largest was a 5.1 percentage point increase reported for Noord-Holland. The 10.2 percentage point fall in the Regiao Autonoma da Madeira was the largest among the top 20 regions, but was less than in Bratislavsky kraj (Slovakia, – 13.7 percentage points) and Guyane (France, – 31.9 percentage points).

Economic accounts for agriculture (EAA) provide data at a regional level for the value of output, intermediate consumption and income. Eurostat has been collecting, processing and publishing data on the EAA in the form of a

regional analysis for more than 15 years. Regional accounts for output items are often used as building blocks for results at the national level, while regional data for intermediate consumption (direct input of goods and services in production) are often broken down from national figures using other information (Gavrilescu,2000).The farm structure survey (FSS) is another major source of agricultural statistics. A comprehensive farm structure survey is carried out by EU Member States every 10 years, with this full scope survey referred to as the agricultural census; intermediate sample surveys are carried out three times between each census. Under the guidance of the Food and Agriculture Organization (FAO), the ninth round of the world agricultural census (2010) recently took place. Eurostat has followed the FAO's recommendation on the worldwide decennial agricultural census since the 1970 round. A new legal basis was developed for the FSS in relation to the 2010 data collection exercise, of the European Parliament and of the Council on farm structure surveys and the survey on agricultural production methods (Zahiu,2010).

The census is a survey collecting information about all agricultural holdings in order to present an updated picture of the structure of agricultural activities from an economic, social and environmental point of view. The information is collected from individual agricultural holdings and covers:

• land use;
• livestock numbers;
• rural development (for example activities other than agriculture);
• irrigable and irrigated areas;
• management and farm labor input (including age, sex and relationship to the holder) (Barbu,2005).

RESULTS AND DISCUSSION

Although agriculture is no longer a major employer in Europe, and food security is not a preeminent problem for most citizens, it is still a globally vital industry (Anderson, 2010).As investors saw a few years ago, bad weather and low inventories quickly led the prices of many food commodities to soar and led to riots and political disturbances in many countries. On a more positive note, it's a major source of export earnings for countries across the development spectrum.

Given the importance of agriculture and the importance of increasing yields, companies that facilitate higher production should find their products in increasing demand (Sută,2000).Whether it's agricultural equipment like tractors, inputs like fertilizer and herbicide, or higher-yielding modified seeds, companies serving the global agriculture market have a large and still under-served market to address (Lem,2014).

Europe's agricultural sector is in general highly developed. The process of improving Central Europe's agriculture is ongoing and is helped by the accession of Central European states to the EU. The agricultural sector in Europe is helped by the Common Agricultural Policy (CAP), which provides farmers with a minimal price for their products and subsidizes their exports, which increases competitiveness for their products. This policy is highly controversial as it hampers free trade worldwide (protectionism sparks protectionism from other countries and trade blocs: the concept of trade wars) and is violating the concept of fair trade.(Aksoy,2010)
This means because of the protectionist nature of the CAP, agricultural products from developing countries are rendered uncompetitive in both Europe (an important export market for developing countries) and on their home markets (as European agricultural products are dumped on developing countries' markets with help from European agricultural subsidies) (Olaru,2000).This controversy surrounds every system of agricultural subsidies (the United States' policy of subsidizing farmers is also controversial). The CAP is also controversial because 40% of the EU's budget is spent on it, and because of the overproduction caused by it.

CONCLUSIONS

The need for low food prices to stimulate wider economic growth highlights the importance of raising the productivity of agricultural labor in the economy, particularly in smallholder agriculture with its critical but temporary and challenging potential for broad based growth. However the need for increases in agricultural labor productivity has also been widely overlooked in recent policy, and there are considerable challenges in raising agricultural labor productivity. These arise not only in the need for governments and the global community to recognize the public good characteristics of agricultural labor productivity and invest in agriculture despite (indeed to encourage) low prices: environmental challenges require a simultaneous fall in fossil fuel and material inputs which have historically been a major contributor to rising land and labor productivity. Related to this is a need for indicators that provide better measures of different types of agricultural productivity and of food price impacts on particularly poorer countries.

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