

What is the best indicator of work performed in the agriculture?

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Abstract

In statistics, as regards the agricultural labour input measurements, there are confusingly significant differences in methodological issues.

This paper intends to review and compare the different concepts and methodologies applied in labour statistics. The Hungarian examples introduced highlight the difficulties of adaptation as well as the user's concerns on that issue.

1. World agriculture

Agriculture plays a definitive role in the countries' economy as a producer of food, provider of employment and as source of foreign trade. In some region agriculture is the prime engine of growth in the process of development. More than 2.6 billion people depends for their livelihood on agriculture, hunting, fishing and forestry, this is 40 percent of the total population of the World.

Table 1: Agricultural population, labour force and value added, 2005, percent

Area	Share of		
	agricultural population ¹ in total population	economically active population ² in agriculture in total population	value added of agriculture in total value added
World	40.3	21.0	3.6
Africa	53.3	24.1	15.9
Americas	12.3	5.1	1.9
Asia	50.2	27.3	6.6
Europe	7.0	3.6	2.2
Oceania	20.3	9.6	3.9

Source: FAO, UN

¹ Agricultural population is defined as all persons depending for their livelihood on agriculture, hunting, fishing and forestry. It comprises all persons economically active in agriculture as well as their non-working dependents.

² This refers to the number of all employed and unemployed persons (including those seeking work for the first time). It covers employers; self-employed workers; salaried employees; wage earners; unpaid workers assisting in a family, farm or business operation; members of producers' cooperatives; and members of the armed forces. The economically active population is also called the labour force.

Comment: In the former title employment was confusingly not appropriate. I ment population, labour force as defined in footnote

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Comment: How do you define this? Is it the employed population in agriculture or the population in agricultural households?

Comment: In international standards, this term refers to the totality of the employed and the unemployed. I suggest that you use the term 'work force' or 'employed', as this is what you mean here. Also make similar changes throughout the paper.

Comment: Is this the total population or the total working age population?

In the past years, agricultural production increased by approximately two percent annually which was more or less in line with population increase. In areas outside Europe and North America the growth was faster. In spite of this fact the share of agricultural population decreased significantly, the reduction of economically active population in agriculture reduced restrainedly.

2. Hungarian Agriculture

In 2005 nearly one-fifth of the Hungarian population and one-fourth of the households were involved in agricultural production of smaller or larger scale. The share of agriculture in the GDP is about 3 to 4 percent. Agricultural products contribute to 2 to 3 percent of export and 1 to 2 percent of import.

In Hungary two types of farms operate: private holdings and agricultural businesses. By private holdings it is meant the agricultural activity of households, whereas legal units involved in agricultural activity – operating in a variety of legal forms – are qualified as agricultural enterprises. In 2005 the number of private holdings was 707 thousands, the number of agricultural businesses reached the 8 thousand.

Based on their activity the Hungarian agricultural units are grouped into the categories of crop farm, livestock farm and mixed farm. Nearly three-quarter of the agricultural businesses was involved exclusively in crop farming while the number of livestock farms and mixed farms was rather low.

In case of the private holdings, activity type is more balanced. (See Fig. 1)

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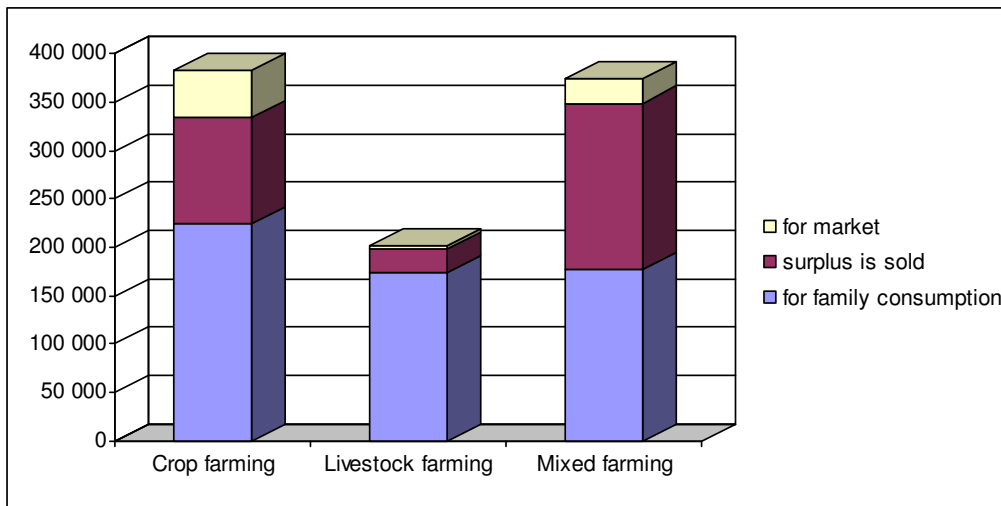


Figure 1: Number of private holdings by type of farming; source: FSS 2005

The picture becomes rather interesting if we observe private holdings according to the purpose of production. By the results of the Farm Structure Survey 2005, 51 percent of the private holdings produced exclusively for own consumption, 15 percent of them produced exclusively for market and 34 percent of private holdings sold the surplus that was not used for own consumption.

Comment: Is this exclusively for the market? If so, you may wish to say so.

Comment: Does this mean that they produced for both the market and own consumption?

Comment: Yes they produce both for their own consumption and the surplus is for market.

3. Information needs

Agricultural Labour statistics has to meet the requirements to provide different statistics to different users. Labour statistics is useful tool for policy and decision makers, agricultural producers, researchers, as well as it is used for national and international comparisons.

Labour statistics is the basis of the measurement of structural and employment effects of the Common Agricultural Policy (CAP) and rural development measures. Treaty of Rome among others sets out the internal objectives of the CAP to ensure a fair standard of living for farmers which ensure the sustainability of agriculture.

Agriculture also makes contribution to the socio-economic development of rural areas (Lisbon Treaty). Employment creation and rural diversification, vocational training and supporting of young farmers are those actions that can keep rural population in rural areas.

To develop and monitor the above mentioned policies a wide range of data is required. To satisfy all these needs it has to make strict distinctions between different definitions concerning agricultural labour statistics and it has to provide data like the agricultural labour, people involved in agricultural activity and value of labour input in the national economy.

4. Methodology

Methodologies, definitions determine not only content and application of the statistics but also the quality of the results.

Different needs require different statistical approaches; but the international standards might vary from each others (e.g. different concepts on the agricultural activity, different unit of measurements, and so forth). Among them the farm concept should be mentioned in the first place. Over the different methodological recommendations, regulations the characteristics of the agriculture may play an important role in the results of statistics (e.g. share and treatment of small units).

4.1 FAO and EU Farm concepts

The criteria of the **FAO farm concept** highlight the comprehensive statistical observation of the performance (output) of agriculture. No suggestion has ever been set forth to restrict the scope of surveys to commodity producer farms; moreover, the applied farm concept insists on setting the threshold value to the lowest possible level.

The basic unit underlying the **EU Farm Structure Survey (FSS)** is the **agricultural holding**. A holding is defined as a technical-economic unit under single management engaged in agricultural production, regardless of title or legal form. The holding may also provide other supplementary (non-agricultural) products and services. Units involved exclusively in agricultural services are not treated as agricultural farms.

The regulation of the survey also specifies the agricultural activity and products through references to international nomenclatures. Nevertheless, a limit value needs to be defined for the exclusion from the observation of units engaged in this activity. In statistics this limit values is called threshold.

The FSS regulation stipulates that "Member States must fix the threshold at the level excluding the smallest units which together contribute 1 percent or less to the total **Standard Gross Margin (SGM)**. SGM is an indicator a kin to the value added, which is the balance of the standard value of output and the standard value of variable costs directly associated with that output.

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Units producing an SGM value below 1 ESU are termed “small units”. The number of holdings below 1 ESU in economic size in the frame of the FSS depends on the thresholds applied in each Member State. It makes the FSS results most relevant at national level.

In Hungary nearly 80 percent of the holdings are qualified as small units while in the Netherlands there is no such category.

4.2 Farm concept in Hungary

Accordingly no universal threshold value – or farm concept – mandatory for all Member States is stipulated in the regulations; it is flexible enough to allow all the Member States to define national threshold values in accordance with the national characteristics of agriculture, provided such definition which guarantees the requisite coverage.

Table 2: Threshold used in the Censuses of 1972-2005

Description	1972	1981	1991	2000	2005
	(year of the census)				
Total arable land area (hectare)	0,15	0,15	0,15	0,15	0,15
Orchard, vineyard (hectare)	0,08	0,08	0,08	0,08	0,05
Cattle or pig or horse or sheep (heads)	1	1	1	1	1
Bee colonies (pieces)	20	20	25	25	5
Rabbit (heads)	20	20	25	25	25
Other small animals (heads)	-	-	25	25	25

This low threshold has, however, certain disadvantages - among others - it makes the private holdings producing for own consumption the subject of statistical data collections. This also means that private holdings producing for own consumption can not be qualified as farms in economic terms.

In the EU System of Agricultural Statistics two types of “farms” producing for own consumption were defined such as subsistence farms and the hobby farms. Units involved in subsistence farming produce due to economic necessity – the production of such units must be included into the agricultural production. The primary objective of hobby farming also rather the pursuit of the healthy and beneficial pass time – this production is not deemed part of agricultural production.

4.3 People involved in agriculture

Agricultural population is defined by FAO as all persons depending for their livelihood on agriculture, hunting, fishing and forestry. It comprises all persons **economically active in agriculture** as well as their non-working dependents.

Comment: What does this mean? SEE ABOVE TABLE 1

4.3.1 Population Census

Population censuses relate to the **main occupation** (like LFS) of the members of the households and the agricultural activity of the members of the household in the previous year including the number of days worked in agriculture, if any.

4.3.2 Labour Force Survey (LFS)

The LFS is a household survey which provides quarterly information on non-institutional population aged 15–74. The aim of the survey is to observe the **employment and unemployment** according to the international statistical requirements based on the concepts and definitions recommended by the International Labour Organization (ILO) independently from the existing national labour regulations or their changes. In the international practice the labour force survey is a widely used statistical tool to provide simultaneous, comprehensive and systematic monitoring of employment, unemployment and underemployment.

According to the definitions used in the survey, employed people are persons aged 15–74 who during the reference week

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The definitions used in the survey follow the ILO recommendations. ¶
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- worked one hour or more **for pay**, profit or payment in kind in a job or business (including farm),
- worked one hour or more without payment in a family business or on a farm (i.e. **unpaid family workers**),
- had a job from which they were temporarily absent during the survey week.

From the survey's point of view the activities below are not considered as work:

- work done without payment for another household or institute (voluntary work),
- building or renovating of own house or flat,
- housework,
- **work in the garden or own land for self-consumption**.

Comment: Is this describing the LFS in Hungary? It is not part of the ILO recommendations.

Comment: Yes this is the Hungarian LFS definition for employed.

Employed in agriculture is classified by NACE categories. The classification allows the comparison of the labour input of different industries.

Measures available for the calculation of employed in agriculture are the main activity of the employer, individual businesses or private farm; hours worked during reference week; full-time, part-time; other gainful activity.

4.3.3 Institutional labour data collection system

The scope of statistical observation is all corporations with more than 49 employees, and corporations with employees between 5 and 49 persons on representative basis. The data of public institutions are collected on full-scope basis, also some non-profit institutions supply data.

Employees: persons in employment contracted for work with the employer (for a minimum of 60 actually worked hours according to the work contract), including outworkers and those who are working members of partnerships or co-operatives and get salary (wage) for the work done. (The number of employees includes the number of employee who engaged in a second or more jobs.)

Institutional labour data collection presents data according to the breakdown of NACE categories. The purpose of this data collection is to provide data on earnings in different industries.

Measures used for agricultural labour statistic purposes are the number of full-time, part-time and other employees, average gross / net earnings.

4.3.4 Farm Structure Survey

The farm work force includes all persons having completed their compulsory education (i.e. having reached school-leaving age) who carried out farm work on the holding covered by the survey during the 12 months up to the date of the survey.

Comment: Suggest you replace this with 'work', as the labour force includes both employed and unemployed.

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“Work which contributes to production” includes, inter alia, the following tasks:

- organisation and management (buying and selling, accounting, etc.),
- field labour (ploughing, haymaking, harvesting, etc.),
- raising of animals (preparation and distribution of feed, milking, care of animals, etc.),
- all work carried out on the holding in respect of storage, processing and market-preparation of primary agricultural products (ensiling, packing, etc.),
- maintenance work (on buildings, machinery, installations, etc.),
- holding own-account transports, in as far as this is carried out by the holding's own labour force,
- all non-separable non-agricultural secondary activities. These are activities closely linked to agricultural production, which cannot be separated from the main agricultural activity (e.g. butter-making).

Excluded from “farm work on the holding” are:

- work for the private household of the holder/partners or the manager(s) and their families, any forestry, hunting, fishery or fish farming operation (whether or not carried out on the holding). A limited amount of such work carried out by an agricultural worker is, however, not excluded if it is impossible to measure it separately,
- separable non-agricultural secondary activities (perhaps the processing of agricultural products on the holding),
- any non-agricultural activity carried out,
- any other gainful activities carried out by the holder and/or the labour force.

FSS measures concerning to agricultural labour are the status of the household member (holder, spouse, other member), sex, age, time worked, economic activity, training and other gainful activity. For employees in full-time/part-time breakdown, sex and time worked.

Taking into account the considerable degree of part-time work in agriculture and opportunities for part-time work in other sectors of the economy, information on employment in agriculture is also given in annual work units.

An **Annual Work Unit (AWU)** is equivalent to full-time employment. One AWU corresponds to the work performed by a person engaged in full-time agricultural work on the holding over a 12-month period, i.e. as total hours worked divided by the average annual number of hours worked in full-time jobs within the economic territory. The annual working time of such a worker is 1800 hours (225 working days of 8 hours per day), unless there are different specific national provisions governing contracts of employment.

The actual working hours represents 1 AWU can differ by data collections. In Hungary agricultural labour statistics uses 1800 hours for one AWU, LFS and population census define 1900 hours as full-time employment in agriculture and in Farm Accountancy Data Network 2200 working hours used as 1 AWU.

4.3.5 Agricultural Labour Input Statistics

Agricultural labour input statistics were established in response to the specific needs of the European Union. The first and principal objective of calculating agricultural labour input statistics is to express trends in and levels of agricultural income (one of the basic objectives underlying the Economic Accounts for Agriculture (EAA)) in relation to the trends in agricultural labour input. A second objective is general macroeconomic productivity analyses.

A system of harmonised agricultural labour input statistics within the European Union should provide an overview of the volume of labour in the agricultural industry that is systematic,

comparable and as complete as possible, to serve as a basis for analyses, forecasts and political measures. The recommended data source for agricultural labour input is the Farm Structure Survey.

Agricultural employment covers all persons, both employees and self-employed, providing salaried and non-salaried labour input to the resident units performing characteristic activities (agricultural and inseparable non-agricultural secondary activities) of the agricultural industry of the EAA. All persons of retiring age who continue working on the holding are included in agricultural employment. Persons having not reached school-leaving age are not included.

Employees are defined as all persons who, by agreement, work for another resident institutional unit (which is an agricultural unit) and receive a remuneration (recorded as compensation of employees in the EAA). The labour input provided by employees is referred to as salaried labour input. By convention, labour of non-family workers is classified as salaried labour input. When an agricultural unit is organised as a conventional company, all the labour input performed is classified as salaried labour input.

Self-employed persons are defined as persons who are the sole owners, or joint owners, of the unincorporated enterprises in which they work. The labour input provided by self-employed persons is referred to as non-salaried labour input. Members of the holder's family who do not receive a compensation which is predefined and calculated according to their actual work are classified as self-employed.

4.3.6 Economic Accounts for Agriculture

One of the key objectives of the common agricultural policy (CAP) of the European Union is to assure steady and fair income for the farmers. The instrument for measuring the success of this policy and the income from agricultural production is the Economic Accounts for Agriculture (EAA) and the agricultural income indicators derived from this system.

The main purpose of the **Economic Accounts for Agriculture** is to measure and analyse the primary income generated by agricultural activity. The accounts are therefore based on the industry concept i.e. all agricultural activity has to be covered without consideration of the main activity of the given unit. The Economic accounts for agriculture are a satellite account of the European System of Accounts (ESA95), providing complementary information and concepts adapted to the particular nature of the agricultural industry.

The Economic Accounts for Agriculture provide a wide range of indicators on the economic activities in the agricultural sector. Labour indicators are also obtained, being the Annual work units (AWUs) the most important. A distinction is drawn between non-salaried and salaried AWUs, which together make up total AWUs.

Three synthetic indicators are defined:

- **Indicator A:** Index of the real income of factors in agriculture per annual work unit. This yardstick corresponds to the real net value added at factor cost of agriculture per total AWU
- **Indicator B:** Index of real net agricultural entrepreneurial income per unpaid annual work unit. This indicator presents the changes in net entrepreneurial income over time, per non-salaried AWU.
- **Indicator C:** Net entrepreneurial income of agriculture. This income aggregate is presented as an absolute value (or in the form of an index in real terms). It allows comparability over time of the income of the agricultural industry between Member States.

4.3.7 Farm Accountancy Data Network (FADN)

The FADN was implemented in response to the decision under the Common Agricultural Policy. Building on the data from the farming accounts, FADN provides a picture on the profitability of farms by types, regions, countries and at the level of the entire EU. By the stipulation of the relevant regulation only market oriented units involved full time in agricultural activity are included in the survey. Accordingly, private holdings - producing for own consumption - below 1 ESU are not subject of the FADN in Hungary.

5. Coverage of agricultural labour by main statistics

Different labour statistics cover different part of agricultural labour which is shown in the figure.

Enterprises	Private holdings	
Employees (other than agricultural) of enterprises under 5 employees in ISIC/NACE 01	Full-time employees of private holdings	Household members doing agricultural activity, as a main activity, in farms producing for marketing
Employees (other than agricultural) of enterprises over 4 employees in ISIC/NACE 01		
Agricultural employees of enterprises over 4 employees in ISIC/NACE 01	Part-time employees (as main occupation) of the private holding	Household members doing agricultural activity, as non main activity, in farms producing for marketing
Agricultural employees of enterprises under 5 employees in ISIC/NACE 01	Part-time employees (non main occupation) of the private holding	Household members doing agricultural activity in farms producing only for own consumption
Employees of enterprises other than ISIC/NACE 01 having agricultural activity		

**Institutional
labour
statistics**

**Labour
Force
Survey**

**Farm
Structure
Survey**

Figure 2: Coverage of agricultural labour by different statistics

6. Out of scope data

Due to the characteristics of the Hungarian agriculture the threshold has been set in a relatively low level. Even with such a low threshold the full scope census has identified 830 thousand additional households under the threshold with minor agricultural activity. Their contribution in farm labour can be estimated around 30 thousands AWU. This labour input is not covered by any statistics.

Agriculture is one of the industries where black labour or undeclared work is not negligible. It is typical in the harvest season with part-time employees and in requisition of services. The estimation of such hardly identifiable data requires a great effort from statisticians.

7. Agricultural labour in Hungary, 2005

According to the Population and Housing census 2001 carried out in Hungary 2 830 thousands people were belonging to households where someone was engaged in any kind of agricultural activity.

Table 3 Results of different statistics concerning agricultural labour

Institutional labour statistics		Labour Force Survey	Agricultural labour input statistics			
employees		Employed	agricultural labour			
full-time	part-time	thousand persons	salaried		non salaried	
thousand persons			thousand persons	thousand AWUs	thousand persons	thousand AWUs
90,8	7,5	194,0	139,5	89,5	1 338,9	392,6

Source: HCSO

8. Conclusions

Since statistics on agricultural labour has to serve different information needs there is no such an indicator that can satisfy all of the needs in the same time.

The purposes of statistics largely influence the methodologies, coverage which generates different results for seemingly same indicators. The objective of Labour Force Survey is to provide data for industrial comparisons in that case people working in different industries (including agriculture) is surveyed which requires classification side approach (i.e. the breakdown of units based on main activity) instead of production side approach (i.e. every unit with agricultural activity regardless of the main activity) which is required by agricultural statistics.

Boundaries of an agricultural holding or agricultural activity can be defined differently which influence, among others, the measured contribution of households in agricultural production.

If the objective of statistics is to give exact information on socio-economic, income-productivity or rural aspects of agriculture the attention needs to pay not only on the persons involved in agricultural activities but also on the volume of work done.

The international comparisons of income generated by agriculture are based on the volume of work what is largely depends on the structure of agriculture.

The volume of work gives the possibility to compare the contribution of institutional and household units as well as the labour input of part-time and full-time farming.

Since agriculture plays important role in supplementing income the volume of work provide useful information for rural development policies as well.

In the above mentioned cases the labour input expressed in Annual Work Unit is the suitable indicator, and its source is the Farm Structure Survey.

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