

Income level and structure of farmers in accountable farms in 2019

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Abstract

A characteristic feature of individual farms is that it is difficult to make a clear distinction between income earned from both farm labor and other off-farm sources between the household and the farm. Often, the total income of the farmer's entire family, living together and running a shared household, has a significant impact on both production and investment decisions made in the agricultural holding. Since 2004, the Institute of Agricultural and Food Economics – National Research Institute has been collecting data on farmer's family income in a questionnaire survey supplementing the collection of accounting data from individual farms. This paper presents an assessment of farmer family income in 2019. Farms were grouped by agricultural type and economic size class. Analysis of the results indicates that as the farm specialises and economic size increases, off-farm income becomes less important.

Keywords: off-farm income, Polish FADN, agricultural accounting.

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Introduction

An individual farm is a kind of “enterprise” in which the farmer’s family income has a very large impact on both production and investment decisions. This is due to the specificity of individual farms where there is no clear separation between the household and the farm¹. J. Zegar emphasises that agricultural incomes have some specificity in comparison to incomes of other professional groups. This specificity is determined by such phenomena as: the relationship of an agricultural holding with the household (family), the size of the sources of agricultural income of households, the occurrence of a material (natural) form of income, the amount of income indicators, income differentiation, the specificity of their distribution and calculation methods and others². B. Hill very extensively describes the general process of increasing the importance of non-farm income in total farm income³. A. Stolarska notes that on the one hand, the number of farms and the percentage of people employed in agriculture are decreasing, on the other hand, the number of people living in rural areas is increasing. Thus, the structure of livelihoods of people living in rural areas is changing, which causes changes in the structure and level of income⁴. I. Augustyńska-Grzymek points out that the economic situation of farm families, determined mainly by the amount of obtained income (from agriculture and from outside), determines possibilities of accumulating goods for proper functioning of families, as well as of the used agricultural farms. Whereas accumulated material goods affect current and future economic situation of individual families and development of their farms, which ultimately, although indirectly, influences the development of agriculture⁵. Therefore, information on both on-farm and off-farm incomes is important. The described regularities were a direct reason for the Institute of Agricultural and Food Economics – National Research Institute (IAFE-NRI) to collect information on off-farm incomes in a questionnaire survey since 2004. This questionnaire is a supplementary survey to the accounting data collected under the

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1. Z. Floriańczyk, S. Mańko, K. Kambo et al., *Poziom i struktura dochodów rodzin rolników w gospodarstwach prowadzących rachunkowość w 2012 roku*, Warsaw, IERiGŻ-PIB, 2014, p. 5.
 2. J. St. Zegar, *Dochody ludności chłopskiej*, Warsaw, IERiGŻ, 2000, p. 49.
 3. B. Hill, *Farm Incomes, Wealth and Agricultural Policy, Third edition*, Avebury, Aldershot 2000.
 4. A. Stolarska, *Dywersyfikacja głównych źródeł utrzymania ludności wiejskiej w Polsce w 2011 roku*, Roczniki Naukowe SERIA, Tom XV, Zeszyt 4, Warszawa–Poznań–Rzeszów, Wieś Jutra Sp. z o.o., 2013, p. 386.
 5. I. Augustyńska-Grzymek, *Regionalne różnicowanie sytuacji ekonomicznej rodzin uzyskujących dochody z gospodarstwa rolnego oraz innych źródeł*, Roczniki Naukowe SERIA, Tom XV, Zeszyt 3, Warszawa–Poznań–Rzeszów, Wieś Jutra Sp. z o.o., 2013, p. 27–28.

System of Collection and Use of Accounting Data – Polish FADN⁶. Participation in it is voluntary, which means that farmers participating in the Polish FADN System may refuse to give information about their off-farm income. In the field of FADN observation there are market farms, which have an essential share in the creation of added value in agriculture. As such are considered farms, which belong to the group of farms producing in a given FADN region or member state at least 90% of the value of Standard Output (SO)⁷. It is worth emphasising that FADN database is the only one in which data are collected according to uniform rules and farms form a statistically representative sample of commercial farms functioning on the territory of the European Union. The system of collecting and using accounting data from Polish farms FADN uses a method of calculating income categories on the basis of individual data for each farm. The first economic surplus calculated in the Polish FADN System is the gross value added of an agricultural holding. It is calculated by subtracting intermediate consumption from total production and adding the balance of subsidies and taxes on operating activities. Subsidies increase gross value added, and taxes (which were not included in intermediate consumption) decrease it. After subtracting depreciation from gross value added, the net value added of the farm is obtained. In the next step, the cost of external factors is subtracted from net value added and the balance of subsidies and taxes on investment activities is added. In this way, the basic economic surplus obtained from the operating activities of the farm, referred to as income from the family farm, is obtained. This income represents the payment for the farmer's own factors of production (labour, land and capital) engaged in the operating activity of the farm and the risks taken by the farmer during the accounting year⁸. The Department of Agricultural Accounting has also developed a method for calculating entrepreneurial profit⁹. It is obtained by subtracting the estimated cost of unpaid own factors from the family farm income and adding the interest paid on farm obligations.

Within the framework of the FADN System, data are also collected on non-agricultural activities directly related to an agricultural farm (the so-called OGA¹⁰). This activity means such a kind of activity of a holding which uses its resources (land, buildings, machines, equipment, labor) or the produced agricultural products.

6. Farm Accountancy Data Network.

7. Standard Output.

8. Z. Floriańczyk, S. Mańko, D. Osuch et al., *Wyniki Standardowe 2013 uzyskane przez gospodarstwa rolne uczestniczące w Polskim FADN. Część I. Wyniki Standardowe*, Warszawa, IERiGŻ-PIB, 2014, p. 37.

9. L. Goraj, S. Mańko, *Model szacowania pełnych kosztów działalności gospodarstw rolnych*, "Zagadnienia Ekonomiki Rolnej" 2011, nr 3, Warszawa, IERiGŻ-PIB, p. 28–58.

10. *Other gainful activities*.

The non-farm income, in a survey conducted annually by the Farm Accountancy Department, includes the sum of income from: wages and salaries from hired work outside the farm, pensions from the farmer or other family members, income from other social benefits (e.g. social insurance compensation, allowances), income from other sources (e.g. inheritance, donation) and after-tax income from registered non-farm activities.

The farmer's family income, according to the FADN methodology, is defined as the sum of income from the family farm and income from off-farm activities.

This paper presents data from farms participating in the FADN System in Poland and the income categories defined in it. Basic descriptive statistics, i.e. the arithmetic mean, the adjusted standard deviation and the coefficient of variation, were used to assess the income differentiation of farms in the research sample. Analysed farms were classified according to two basic characteristics of the Community Farm Typology: agricultural type (TF8¹¹) and economic size class (ES6¹²). These characteristics are based on coefficients of Standard Output, which is a 5-year average of the value of production of a specific agricultural activity (plant or animal) obtained from 1 ha or one animal during a year, under average production conditions for a given region. The calculations are made on the basis of 5-year averages of the relevant period (based on annual averages for a specific region), in order to eliminate fluctuations in production values caused, for example, by weather conditions or changes in product prices. The economic size of a farm is defined as the sum of the Standard Outputs (SO) of all the agricultural activities on a farm. The economic size of a farm is expressed by the value of SO in euro. On the basis of the thus determined economic size, a given agricultural holding is classified in an appropriate economic size class. The agricultural type of a holding is determined on the basis of the share of individual agricultural activities in the creation of the total SO value of the holding. The farm's agricultural type reflects the level and direction of specialisation.

The purpose of the assessment is to identify types and economic size classes in which the share of off-farm income is significant. It was assumed that the direction of production and the economic size of the farm are important determinants of the increase in the share of non-farm income.

In 2019, non-farm income surveys were administered to 11,985 individual farms. Refusals to participate in the survey accounted for about 6%. A very large group of farmers (37%) declared no additional income from sources other than the

11. TF8 is a classification of farms into 8 basic types. TF – *type of farming*.

12. ES6 is a classification of farms into 6 economic size classes. ES – *economic size class*.

farm. A large number of questionnaires was questioned in the process of verifying the consistency of data contained in them (data from 4,670 questionnaires were questioned). Because it was not possible to obtain data on income from all the farms participating in the Polish FADN, the presented results are not representative for all the commercial farms in Poland.

Therefore, only family incomes of farmers from 1,952 farms in which family farm income and off-farm income reached positive values in the financial year 2019 were included in the assessment. Data from 118 farms that had negative family farm income and off-farm income were marginal (less than 500 PLN) and had no significant impact on the economic situation of the assessed farms were not included in this study. The data in Tables 1 and 2 are average values per farm.

When analysing the distribution of farms by TF8 agricultural types (see Table 1), it can be seen that the most numerous group were farms specialising in field crops and farms with mixed crop and animal production (34% and 26%, respectively). This was followed by farms specialising in dairy cows (22%). In the remaining four agricultural types, the percentage of farms ranged from 2% to 7% of the total analysed set. Tables 1 and 2 present results for seven types of agriculture, because in Poland the eighth type, "Vineyards", does not occur.

Table 1. Structure of farm income by agricultural type

Specification	Field crops	Horticultural crops	Permanent crops	Dairy cows	Herbivorous animals	Granivorous animals	Mixed
Number of farms	671	43	56	433	140	91	518
Economic size (EUR)	29,913.6	60,520.8	19,979.9	49,721.6	26,632.8	113,536.6	33,642.8
Utilized agricultural area (ha)	37.2	6.5	11.2	31.2	27.7	35.3	28.2
Income from a family agricultural farm (PLN)	74,356.4	117,557.7	65,995.5	144,087.5	54,762.8	215,623.1	65,411.1
Transfers to family farm (PLN)	845.4	464.8	530.3	1,370.7	1,058.7	1,363.6	1,519.6
Share of transfers in family farm income (%)	1.1	0.4	0.8	1.0	1.9	0.6	2.3
Non-farm income (PLN)	37,213.5	30,226.7	36,022.3	23,285.2	34,117.9	27,129.1	32,233.1

Continued on the next page.

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Table 1. Structure of farm income by agricultural type (cont.)

Specification	Field crops	Horticultural crops	Permanent crops	Dairy cows	Herbivorous animals	Granivorous animals	Mixed
Share in non-farm income (%) of:							
salaries	46.7	31.0	55.7	22.9	41.7	26.4	38.5
pensions and annuities	30.7	43.9	29.8	38.7	27.4	35.9	36.5
other social benefits	11.4	15.6	13.7	31.3	18.3	24.2	19.5
other sources of income	8.4	3.2	0.7	6.5	11.1	6.2	4.1
non-agricultural activities	2.8	6.3	0.0	0.6	1.6	7.3	1.4
Farmer's family income (PLN)	111,569.9	147,784.4	102,017.9	167,372.7	88,880.7	242,752.2	97,644.2
Share of non-farm income in farmer's family income (%)	33.4	20.5	35.3	13.9	38.4	11.2	33.0

Source: Own study based on data from Polish FADN. The table shows average income per farm and average share values.

The distribution of the set of farms according to six ES6 economic size classes (Table 2) indicates the dominant (82%) share of the next three economic size classes (small, medium-small and medium-large) in the studied set. Their economic size is in the range from 8 thousand to 100 thousand euros. The percentage of very small and large farms was at the level of 11% and 7%, respectively. In 2019, the class of very large farms (above 500 thousand euros) included only one farm, so the tabular summaries do not present data for this class (in accordance with the rules of confidentiality of data, summaries from a set of not less than 15 farms are published).

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Table 2. Income structure of farms in different economic size classes

Specification	Very small (2,000≤€<8,000)	Small (8,000≤€<25,000)	Medium small (25,000≤€<50,000)	Medium large (50,000≤€<100,000)	Large (100,000≤€<500,000)	Very large (€≥500,000)
Number of farms	223	743	491	365	129	1
Economic size (EUR)	6,205.6	15,453.6	35,639.8	67,476.4	163,794.1	.
Utilized agricultural area (ha)	9.4	17.1	32.4	51.0	89.5	.
Income from a family agricultural farm (PLN)	13,841.7	35,096.6	82,657.8	164,912.2	389,882.0	.
Transfers to family farm (PLN)	957.2	1,159.7	1,184.8	1,272.8	1,151.4	.
Share of transfers in family farm income (%)	6.9	3.3	1.4	0.8	0.3	.
Non-farm income (PLN)	43,165.9	35,292.7	29,771.9	23,524.0	25,100.8	.
Share in non-farm income (%) of:						
salaries	50.3	46.6	34.5	21.6	19.4	.
pensions and annuities	36.3	32.8	33.3	33.8	35.5	.
other social benefits	6.9	13.1	20.7	35.8	31.1	.
other sources of income	6.3	6.0	7.9	6.6	9.1	.
non-agricultural activities	0.3	1.6	3.6	2.2	4.9	.
Farmer's family income (PLN)	57,007.6	70,389.3	112,429.7	188,436.2	414,982.8	.
Share of non-farm income in farmer's family income (%)	75.7	50.1	26.5	12.5	6.0	.

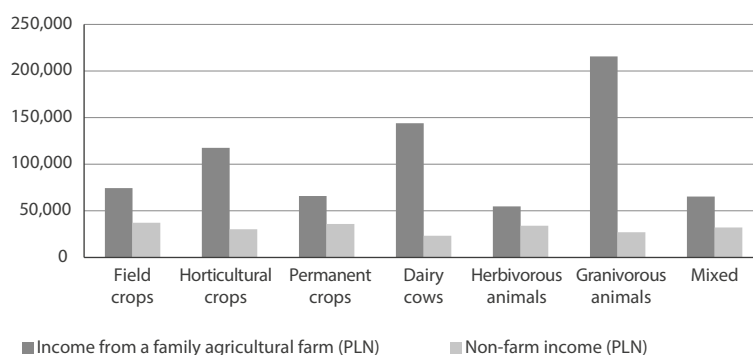
Source: Own study based on data from Polish FADN. The table shows average income per farm and average share values.

The weighted average value of family income of farmers in the studied group of farms amounted to 125,265 PLN per farm. This amount consisted of PLN 93,343 of net farm income (75%) and PLN 31,922 of off-farm income (25%). The difference in the data presented in Tables 1 and 2 is due to the fact that no data were given for the class of very large farms, but they were included in the average for the whole group.

Assessment of farmers' income structure in farms grouped by agricultural type (TF8)

In particular agricultural types, the average income from a family agricultural holding ranged from 54,763 to 215,623 PLN (Table 1 and Figure 1). The highest income was recorded in farms specialising in rearing grain-eating animals. This was followed by farms specialising in raising dairy cows and horticultural crops. In all these three groups, the value of income associated with running a farm exceeded 115,000 PLN. On the other hand, the average off-farm income ranged from 23,285 PLN (in the group of farms specialising in dairy cows) to 37,213 PLN (in the group of farms specialising in field crops).

Figure 1. Size and type structure of farm family income by type of agricultural holding



Source: Own study based on data from Polish FADN.

In the studied set of farms, as well as in individual agricultural types, a large variation in both on-farm and off-farm income is noticeable (see Table 3). This is evidenced by the values of coefficients of variation, which range from 61% to 198%. The greatest variation in both family farm income and farmer's family income occurred on farms specialising in horticultural crops (the value of the coefficient of variation was respectively 198% and 156%), while farms specialising in raising grain animals were characterised by the greatest variation in off-farm income (136%).

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Table 3. Values of income from various sources in the studied set of farms by agricultural type (TF8)

Wyszczególnienie	Type of farming (TF8)	Average (PLN)	Range (PLN)	Standard deviation	Coefficient of variation
Income from a family agricultural farm	Field crops	74,356	1,588,941	114,588	154%
Non-farm income		37,213	243,750	32,559	87%
Farmer's family income		111,570	1,597,195	114,566	103%
Income from a family agricultural farm	Horticultural crops	117,558	1,458,637	233,257	198%
Non-farm income		30,227	131,250	28,068	93%
Farmer's family income		147,784	1,465,274	230,935	156%
Income from a family agricultural farm	Permanent crops	65,996	293,926	72,586	110%
Non-farm income		36,022	109,750	27,200	76%
Farmer's family income		102,018	337,572	76,761	75%
Income from a family agricultural farm	Dairy cows	144,088	2,524,004	186,088	129%
Non-farm income		23,285	122,500	17,409	75%
Farmer's family income		167,373	2,536,710	185,072	111%
Income from a family agricultural farm	Herbivorous animals	54,763	260,418	53,085	97%
Non-farm income		34,118	148,500	27,740	81%
Farmer's family income		88,881	281,351	53,788	61%
Income from a family agricultural farm	Granivorous animals	215,623	1,967,004	281,693	131%
Non-farm income		27,129	310,500	36,930	136%
Farmer's family income		242,752	1,972,297	281,994	116%
Income from a family agricultural farm	Mixes	65,411	738,996	79,266	121%
Non-farm income		32,233	164,750	26,280	82%
Farmer's family income		97,644	754,702	81,350	83%
Income from a family agricultural farm	Total collection	93,343	2,524,554	144,097	154%
Non-farm income		31,922	311,750	28,247	88%
Farmer's family income		125,265	2,537,631	143,038	114%

Source: Own study based on data from Polish FADN.

The highest share of the off-farm income in the farmer's family income was recorded in farms specialising in grassland animal breeding (38.4%). In Table 1 we can observe that a significant share of off-farm income is also characterised by farms:

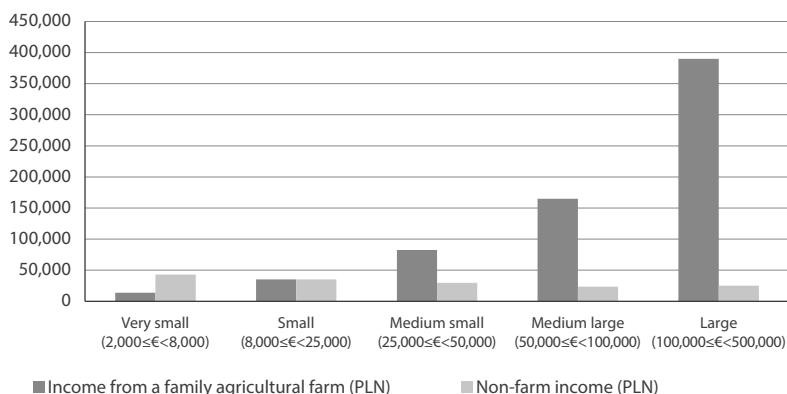
- specialising in permanent crops (35.3%),
- specialising in field crops (33.3%),
- specialising in mixed production (33%).

Table 1 also presents the percentage share of the value of transfers of farm products to the household in the value of income from the family farm. The highest percentage of this share was recorded in mixed farms (2.3%) and the lowest in farms specialising in horticultural crops (0.4%).

Assessment of farmers' income structure in farms grouped by economic size classes (ES6)

When analysing family income of farmers in farms grouped according to six economic size classes (ES6), it was found that the average income of a farmer's family increased in successive classes (Table 2 and Figure 2). The amount of this income ranged from 57,008 PLN for very small farms (economic size from 2 thousand to 8 thousand euro) to 414,983 PLN for large farms (economic size from 100 thousand to 500 thousand euro). It means that the average income in the large farm class was over seven times higher than in the very small farm class. These clear relations translate into income from a family agricultural holding. The average income from a family farm in the class of large farms exceeded by 28 times the average income in the class of very small farms. This indicates a very high differentiation of average income between economic size classes.

Figure 2. Size and type structure of farm family income by economic size class (E56)



Source: Own study based on data from Polish FADN.

In the case of income from outside the agricultural holding, relations between economic size classes were different. The average off-farm income in particular classes of economic size ranged from 23,524 PLN (medium large farm class) to 43,166 PLN (very small farm class). It may be concluded that the off-farm income had an impact on reducing the differences in farm potential.

Statistical results of individual income categories for the whole set (Table 4) indicate that, with a division into economic size classes, the highest variability was found in income from a family agricultural holding. For this income category, the coefficient of variation took values ranging from 62% in medium-small farms to 103% in small farms. On the other hand, the coefficient of variation of farm family income in this grouping ranged from 49% in medium-small farms to 78% in large farms. The obtained results confirm the occurrence of income differentiation between the distinguished economic size classes.

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Table 4. Values of income from different sources in the studied set of farms by economic size class (ES6)

Specification	Economic size class (ES6)	Average (PLN)	Range (PLN)	Standard deviation	Coefficient of variation
Income from a family agricultural farm	Very small (2,000≤€<8,000)	13,842	70,113	12,103	87%
Non-farm income		43,166	187,750	31,579	73%
Farmer's family income		57,008	200,025	33,069	58%
Income from a family agricultural farm	Small (8,000≤€<25,000)	35,097	673,892	36,138	103%
Non-farm income		35,293	244,250	29,895	85%
Farmer's family income		70,389	686,969	45,579	65%
Income from a family agricultural farm	Medium small (25,000≤€<50,000)	82,658	380,775	51,190	62%
Non-farm income		29,772	311,750	28,520	96%
Farmer's family income		112,430	371,180	55,418	49%
Income from a family agricultural farm	Medium large (50,000≤€<100,000)	164,912	858,932	104,860	64%
Non-farm income		23,524	117,000	18,629	79%
Farmer's family income		188,436	865,682	105,768	56%
Income from a family agricultural farm	Large (100,000≤€<500,000)	389,882	2,501,407	324,820	83%
Non-farm income		25,101	155,250	24,452	97%
Farmer's family income		414,983	2,495,407	324,003	78%
Income from a family agricultural farm	Very large (€≥500,000)	-	-	-	-
Non-farm income		-	-	-	-
Farmer's family income		-	-	-	-
Income from a family agricultural farm	Total collection	93,343	2,524,554	144,097	154%
Non-farm income		31,922	311,750	28,247	88%
Farmer's family income		125,265	2,537,631	143,038	114%

Source: Own study based on data from Polish FADN.

The largest share of off-farm income in the farmer's family income structure (Table 2) was found in very small farms. In this economic class, income from outside sources accounted for 75% of the farmer's family income. Also, a significant share of off-farm income in the farmer's family income, at 50%, was found in small farms. In the case of large farms, off-farm income accounted for 6% of the farmer's family income. The smallest share of transfers of own agricultural products to the household

in the income value was marked in large farms and amounted to only 0.3%, and the largest share was 6.9% in very small farms.

The obtained results indicate a strong tendency for the importance of off-farm income in the farmer's family income to decrease as the economic size class of the farm increases. Similarly, the share of remittance value in farm income of the farmer's family also decreases.

Summary

The direction of production and the economic size of a farm are significant factors determining the level of off-farm income. Farms more specialised and of a higher economic size class, realising relatively high farm income, less frequently seek off-farm income opportunities.

In spite of the observed regularity, it should be stated that the economic situation of farm families in the overwhelming majority of the researched farms is shaped, first of all, by the level of income from an agricultural holding and, to a much lesser extent, by off-farm income. Only in farms with the lowest economic strength, off-farm income exceeded income from the family farm.

The analysis of individual farms with off-farm income shows that the lowest off-farm income was achieved by farmers with farms classified as medium large and large.

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