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POLISH FARMS IN 1933 AND 2010 AGAINST THE BACKDROP OF EUROPEAN ONES, IN THE LIGHT OF DATA FROM AGRICULTURAL ACCOUNTING AND FADN

Abstract

The first part of the paper presents the average selected production and economic results for a sample of Polish farms running agricultural accounting in the economic year of 1933/34, at the background of average results of farms running agricultural accounting at the same period in other European countries. The second half of the paper attempted an assessment of the production and economic condition in 2010 of the Polish individual farms from the Polish FADN sample compared to the results achieved by farms from selected European Union countries.

Keywords: agricultural accounting system, Polish farms, FADN, production and economic results.

Introduction

July 2016 shall see the 90th anniversary of establishment of agricultural accounting in Poland. Since 2004, farm accounting in Poland has been carried out in the Polish FADN, which is embedded in the European FADN. The Polish FADN, opening to the new, European economic doctrine, is, at the same time, the inheritor and continuator of traditions of farm accounting in Poland.

Nearly 90 years of history of farm accounting provide a reach source of information on functioning of farms in Poland and, at the same time, are a record of stormy times of the past century. Farm accounting has its origin in the Second

Republic of Poland¹ and is the response to the need to identify the condition of Polish agriculture following regaining of independence and reconnecting territories earlier divided between three occupants into a single state. Economists, while laying foundations of farm accounting in the Republic of Poland, based their efforts on experiences of European economists in this area, particularly on the work of a Swiss scientist, Professor Ernst Laur. The system of farm accounting, created in these years, in Poland was similar to the systems functioning at that time in many European countries (also created in line with the method of Professor Ernst Laur). In 1929, at the International Agricultural Congress in Bucharest, in a presentation "Terminology on farm accounting", Ernst Laur proposed uniform terminology for farm accounting, which was accepted by the Congress through a resolution (Staniewicz W. 1957). Resolutions of the Congress were put in place in many European countries, including Poland, which facilitated comparing of economic results achieved by farms of these countries, submitted to the International Agricultural Institute in Rome. The pre-war Polish economists had the opportunity to follow results of Polish farms against the backdrop of other European countries. After the Second World War, up to 2004, there was no longer such a possibility, although thanks to determination and commitment of a number of people and in spite of many barriers², accounts continued to be kept on Polish farms. The reasons were simple – Poland was the only country of Eastern Europe with private farms. In the Soviet block there were no references to such comparisons, while for ideological reasons the condition of Polish farms was not compared to that of farms in Western Europe. The possibility to analyse economic situation of Polish farms against the backdrop of other European countries emerged following Poland's accession to the European Union, i.e. after 1 May 2004. Poland, while becoming one of the members of the Community, committed itself to the obligation of introducing FADN³, which – as the Polish FADN – naturally replaced the existing farm accounting system. The methodological consistency of FADN (Goraj L., Olewnik E. 2011) facilitates comparisons of results of farms from all countries of the Community. Because of Poland's accession to the EU, the idea of pre-war farm accounting

¹ The Second Republic of Poland – the Republic of Poland in 1918-1945 (from regaining of the independence in 1918 up to discontinuation of international recognition of the Government of the Republic Poland in exile following the Yalta Conference in 1945). The official language of the Second Republic of Poland was Polish, and initially the currency was Polish mark, replaced by Polish zloty in 1924.

² In a lecture on the occasion of the 60th anniversary of farm accounting in Poland, Professor Ryszard Mantueffel, while talking about difficulties in keeping farm accounting, stated: "Accounting, initially kept by the State Scientific Institute of Agriculture and then by the Institute of Agricultural Economics, was often under fire of authorities. They believed, particularly in 1948-1955, that the private sector in agriculture is a declining sector and would soon disappear in Poland as a result of full "collectivisation" of private farming (...)" (60-lecie systemu rachunkowości... 1986).

³ FADN (En. Farm Accountancy Data Network) – The network of accounting data of farms operating in the area of 28 Member States of the European Union.

in Poland was reinstated and economic results of farms could be followed both in time and space. This year – 2014, is a jubilee year for the Polish FADN⁴, on 1 May, ten years passed from its emergence in Poland, so it is good a time to make summaries and draw conclusions.

The objective of this paper is to identify the position of Polish farms in European agriculture before the Second World War and the position of Polish farms in modern European agriculture.

Material and method

The paper uses economic results of Polish farms against the backdrop of farms in other European countries for economic year 1933/34, included in the article of Witold Staniewicz⁵ (1957). The results were the quintessence of source data for farms from individual countries, submitted to the Rome Institute⁶.

In order to establish the place of modern Polish farms in European agriculture, sets of average results for farms in individual countries participating in FADN from 2010 were used, presented at http://ec.europa.eu/agriculture/rica/database/report_en.cfm?dwh=SO.

In the course of nearly 80 years between the two studies, the method for calculation of individual economic categories on farms changed. Table 1 presents certain economic categories in place on pre-war farm accounting and presently in the Polish FADN, with their definitions and manner of calculation.

It is not possible to directly refer to notions and categories in place in both systems – e.g. raw revenue from the method used in 1927/27-1951/52⁷ is not identical with total production calculated in the Polish FADN, because the pre-war method omitted internal use, which is presented in the Polish FADN. Significant differences in presentation of economic results of farms in the pre-war system and in Polish FADN make the comparison impossible.

Another reason for which such comparisons would not be justified is the selection of farms for the studies. The population of ca. 500 Polish farms keeping farm accounts in the two decades between the wars was a targeted sample, not repre-

⁴ Polish FADN - the system for collection and use of accounting data from farms, established on the basis of provisions of the Act of 29 November 2000 on collection and use of accounting data from farms (Dz. U. No 3, item 20 of 2001, as amended)

⁵ Professor Witold Staniewicz - the head of the Department of Agricultural Economics of Small Farms in the State Scientific Institute of Agriculture (PINGW) in Puławy in 1929-39.

⁶ An Annex attached to part II of the 6th Report of the Department of Agricultural Economics of Small Farms in PINGW "The research on profitability on farms in economic years 1930/31 and 1931/32" entitled "Comparative accounting results of small European farms in 1927-30 in Golden Francs (1 Golden Franc = 1.72 Polish Zloty) provides information on the full scope of data submitted to the Rome Institute. The Annex consisted of three tables containing accounting data for farms from seventeen European countries: The United Kingdom (England, Scotland), the Netherlands, Denmark, Germany, Switzerland, Austria, Czechoslovakia, Bulgaria, Romania, Hungary, Poland, Lithuania, Latvia, Estonia, Finland, Norway, Sweden. Information on farms was provided in two language versions: Polish and French.

⁷ The period when farm accounting in Poland operated according to the system of Professor Ernst Laur.

sentative for more than 3 million farms⁸. Economic results calculated for farms from the sample were merely an outline of the situation on Polish farms from that period and they did not reflect results of farming for the entire population of farms.

The sample of ca. 12 thousand farms selected for the needs of the Polish FADN meets the criteria of representativeness for ca. 750 thousand commercial farms with the economic size $\geq$ EUR 4000, producing 89.5 of the Standard Output (SO) obtained by all classified farms in Poland. It means that each farm from the sample represents a specific number of farms from the population (Goraj L., Olewnik E. 2011). At this point, it should be noted that presently the economic situation of non-commercial farms, which represented ca. 67% of all farms in Poland in 2010, is not monitored by FADN.

In the pre-war accounting, the economic year (from 1 July of one year to 30 June of another) was the accounting period, while in the FADN system the calendar year is the accounting period.

Table 1

Primary economic categories in the pre-war farm accounting system and in the Polish FADN

1926/27 - 1951/52	Polish FADN
Raw revenue = raw revenue from plant production (increase of inventories + sales + value of transfers to own and private household) + raw revenue from animal production (increase of value in a year = sales of offspring born in an accounting year + sales of animal products and their transfers to own and private household) + lease from buildings + lease of land + outlay on work on investments + work on other farms + interest on capital + miscellaneous	Total output = plant production (increase of inventories + sales + compensations + value of transfers to households and outside + internal consumption) + animal production (increase of value in the course of the year due to price changes and natural growth of animals + increase of inventories of animal products + sales of animals and animal products + compensations + transfers to a household + internal consumption of animal products) + other production (revenue from rural tourism + services provided and hire of own equipment off-farm + own services for investment on a farm + general economic compensations + leases + forestry production + non-agricultural production + other revenue from operational activities of the farm)
Economic inputs = depreciation = economic cost + foot labour inputs + decrease of inventories at year's end	Intermediate consumption = direct production costs (costs, which could be explicitly assigned to specific production, e.g. seeds, fertilisers, feeds) + general management costs (common costs for operational activity of a farms, water fees, phone fees, etc.)
Net revenue = compensation for capital brought into production. Thus, it was a surplus of gross revenue over economic inputs, which was left for interest on all active own and external capitals committed to a farm. It was calculated as a difference between raw revenue and economic inputs (including costs of labour of a farmer and family)	Net value added (NVA) = payment for own and external inputs committed to operational activities of a farm (labour, land and working capital) It is calculated as a difference between total output and intermediate consumption, increased by the balance of subsidies to operational activity and VAT tax (= gross value added – GVA) and decreased by depreciation

⁸ According to the first National Census of the Republic of Poland, 3.2 million farms operated in the economic year 1926/27, in 16 Voivodeships in Poland.

cont. Table 1

1926/27 - 1951/52

Polish FADN

Agricultural income = surplus obtained on a farm, which a farmer could use for his own and his family needs and for other purposes, without depleting his assets. Thus, it was a part of raw revenue received by a farmer and his family as remuneration for the labour contributed to a farm and as a premium on the capital invested into a farm. It was calculated by subtracting paid interest on debt from net revenue and adding remuneration for labour of a farmer and his family

Income from a family farm = payment of inputs committed to operational activity of a farm and the risk of decisions taken by a farm manager. It is calculated as a difference between net value added and costs of external inputs, increased by the balance of VAT and subsidies to investments. Costs of external inputs refer to external capital committed to the production process of a farm: external labour (remuneration of hired workers), external financial capital (interest on loans), external land (paid leases for use of land)

Social income = raw revenue decreased by cash expenditure for current functioning of a farm. It included payment for hired labour, costs related to external capital committed to production (leases and interest), premium on assets of a farm, liabilities for taxes, insurance and payment for own labour

Source: own study based on pre-war publications and a publication of the Department of Farm Accounting of IERiGŻ-PIB.

*The **raw revenue of plant production** does not take into account internal consumption, products produced on a farm and used for sowing and feeds (author's note).*

*The **increase of the value of animals** in the course of the year was calculated in the following manner: the sum of revenue from sales of animals + their transfers to own and private household + inventory value at the end of the year was decreased by cash expenditure for purchase of animals + value at the beginning of the year + value of animals received from private sources of a farm (dowry, from parents, etc.).*

*The **sum of economic inputs and interest on active capital** represents production costs (Puławy Library, 1933).*

***Economic inputs** took into account depreciation of the following groups of capitals: amelioration, buildings, fruit trees, deadstock, livestock (cow, horses, other animals).*

The annual depreciation rate was established in the following manner: the initial value of an analysed object was decrease by the hypothetical residual value (in case of buildings - by the value of old structures, in case of deadstock - by the value of iron, in case of livestock - by the sales value of cast animals, in case of fruit trees - by the value of fuel wood (Puławy Library, 1933).

***Economic costs** include cash expenses (debt at year's end is added to cash expenditure, while debt from previous year is subtracted) for purchase of fertilisers, concentrated feeds, seeds for feeds, cereals, roots, hay, for various costs of cultivation, various costs of animal raising, repair of amelioration, buildings*

and deadstock, taxes on a farms (without tax on assets and income), for insurance of crops, buildings and stock, general administration costs, hire of pulling power and hire of machinery. On top of that economic costs include all sorts of services provided by own and private household and ancillary enterprises to a farm e.g. kitchen leftovers, fuel, light, etc. (Puławy Library, 1933).

Foot labour input consisted of remuneration of hired workers and of family members. Costs resulting from employing hired workers consisted of: (a) cash (cash expenses to pay permanent and seasonal hired workers, as well as debt at year's end due to unpaid labour, (b) livelihood, (c) benefits in kind (e.g. milk, meat, etc.). Remuneration of the family consisted of remuneration for physical labour (number of days worked on a farm) and for intellectual labour – management of a farm. Remuneration of family members was calculated in the same way as it was for permanent hired workers, i.e. the remuneration in cash and in kind was added to the cost of subsistence of one permanent hired worker and divided by 330 days. The cost of one day of work was multiplied by the number of days of work of family members. Remunerations for farm management depended on the size of a farm, education of the manager, results of a farm and analysis of information on a farm included in a description (Biblioteka Puławska, 1933).

The notion of active capital included all components of assets, in opposition to passive capital, meaning liabilities. Active capital included the capital of land assets and lease capital. The most important item in the capital of a farm was the capital of land. Professor Witold Staniewicz wrote (in “Agricultural economics with particular focus on organisation and management of farms” – Lviv 1928): “To the capital in land, as the carrier of indestructible forces of nature, we juxtapose all other types of capitals, as derivatives, which are merely the result of human labour and have a limited time of duration”. Active capital of a farms consists of: capital of land assets and lease capital (components of agricultural assets, which constitute the property of a lessee, i.e. deadstock and livestock and working capital of a farm).

Active capital (assets) in agriculture:

1. Capital of land assets

- capital in land: plots, sources, various entitlements;
- amelioration capital: improvements lasting longer;
- construction capital: buildings and land facilities, plots under buildings, yards and roads;
- plant production capital:
 - field: standing cereals, cultivation for future crops;
- fishing and hunting capital: expenditure for purchase and expansion of animal and fish populations,

2. Lease capital

- farm equity:
 - livestock capital: live animals;
 - deadstock capital: manual tools and pulling power, machines, engines, portable fences, barrels, agricultural industry auxiliary devices, vehicles.

- *working capital of a farm:*
 - *inventory capital: products of a given farm, purchased inputs, materials for repairs;*
 - *capital of monetary resources: cash, receivables, securities.*

Situation of Polish farms against the backdrop of economic results of farms from other European countries

Methodological differences between the systems prevent the comparison of farms over time, but on the basis of results of farms it is possible to establish the place of Polish farms in European agriculture before the Second World War and now.

Economic results of Polish farms against the backdrop farms from other European countries in the two decades between the wars

Results of Polish farms keeping farm accounts before the war have been presented against the backdrop of farms included in the research of accounting in that period on eleven other countries: Denmark, Germany, Switzerland, Estonia, Lithuania, Latvia, the Netherlands, Austria, Finland, Norway and Sweden.

Average results for farms from 12 countries indicates that Polish farms achieved middle-incomes, while active capital of these farms was comparable to capital of Austrian farms (Table 2). The data in Table 2 provide information that the share of external (passive) capital in the active capital of Polish farms amounted to ca. 18% (213/990 in Golden Francs), which placed these farms almost in the middle of the group of farms of other countries in terms of debt.

Economic results of Polish farms in economic year 1933/34 were comparable with farms in Austria. The agricultural income achieved at the level of 64 Golden Francs per 1 hectare, placed them at the medium level among other countries.

The social income per 1 hectare on Polish farms was relatively low due to low payment for work of farmers' family and hire. The lowest cost of 1 day of work among farms from various countries (Table 2) and in consequence the lowest earnings per 1 day of work on Polish farms in combination with labour input and the value of deadstock leads to the conclusion that Polish farms were poorly equipped and overpopulated, with surplus of workforce. The situation on Polish farms in that was well summed up by Professor Witold Staniewicz: "Agricultural income on farms is so modest that farmers can sustain themselves only with a very economic lifestyle. However, in spite of very poor profitability in agriculture, quite often farmers are able to accumulate savings. There are cases, where assets of a farmer do not bring dividends, but still his assets continue to slightly increase; this results from the fact that a farmer spends less on himself than the amount due to him for work, in the amount defined for permanent service. There is no other group in the society, which could save relatively as much as farmers, with so limited incomes (Staniewicz W. 1957).

Table 2
Accounting results of small farms for 1933/34 in Golden Francs (= 1.72 Polish Złoty)^a according to International Agricultural Institute in Rome

Country	Number of farms	Average size in hectares	Capital of agricultural assets (without land) per hectare	Livestock per hectare	Deadstock per hectare	Total active capital per hectare	Passive capital per hectare	Active capital per hectare	Foot			Total costs of production per hectare	Raw revenue per hectare		Agricultural income per hectare	Net income per hectare	Social income per hectare	Earnings for labour for 1 day of work	Cost of 1 day of work (family and hired)	
									labour input per hectare	Inputs per hectare			animal production	plant production						
										hire	family									fertilisers
Netherlands	603	15.88	2723			3274	788	2486	89	154	28	163	632	460	67	151	13	272	0.80	4.20
Denmark	604	23.54	1083	156	101	1354			68	69	15	93	373	315	49	119	50	201	55.30	3.90
Germany	3875	45.00		323	179				132	67	37	42		164	297	71	50	266		
Switzerland	546	14.39	6395	853	457	8106	4446	3660	190	273	18	129	1300	699	378	179	99	587	1.60	6.40
Austria	830	29.70	928	141	95	1298	125	1174	48	56	4	23	263	131	81	63	17	133	0.15	2.00
Poland	513	13.31	1051	61	73	1203	213	990	18	48	2	6	185	71	63	64	21	92	0.01	0.92
Lithuania	122	19.71	536	44	51	672	76	596	13	38	2	4	120	43	41	40	4	59		1.10
Latvia	136	36.61	430	58	51	622	94	528	30	36	7	9	134	62	73	57	24	92	37.70	2.30
Estonia	300	36.79	276	30	31	270	59	311	11	31	2	5	85	34	41	43	14	57	1.30	1.60
Finland	708	21.69	509	73	55	643	94	550	27	47	8	18	172	99	51	60	32	98	14.50	1.30
Norway	240	18.06	2025	299	173				102	78	19	75	526	297	144	124	47	210	5.30	2.90
Sweden	415	14.62	1116	198	110				49	96	17	56	360	202	117	137	41	187		

^a Golden Franc - former unit of account, used by the Bank for International Settlements from 1930 to 1 April 2003. Initially it was equal in value to the Swiss Franc, and after the Swiss Franc departed from the golden standard its rate was kept at the rate, at which the Swiss Franc had earlier been artificially kept (0.29 gram of pure gold).

Source: (Staniewicz W. 1957).

Production and economic results of Polish farms keeping farm accounts in FADN in 2010

The economic situation of Polish farms in 2010 was compared to the results of farms from nine countries of the European Union: Denmark, Germany, Estonia, Lithuania, Latvia, the Netherlands, Austria, Finland, and Sweden. For obvious reasons⁹ Switzerland and Norway have not been included.

In terms of area Polish farms participating in the FADN system are the smallest of all farms in analysed countries. The average utilised agricultural area (UAA) of Polish farms amounts to a little over 18 ha, while farms keeping farm accounts in Poland's eastern neighbours use larger areas of land: Lithuanians ca. 47 ha, Latvians ca. 71 ha, Estonians ca. 117 ha (Table 3). In terms of cultivated land Estonian farms are the largest among farms from 10 analysed countries. In terms of area, Swedish, Danish and German farms, which use 98, 93 and 85 ha respectively, are similar. Dutch (ca. 35 ha) and Austrian (31 ha) farms use comparable average areas of land, while Finnish farms are larger, using the average of 55 ha.

The size of farms in question in terms of area does not translate into their economic size, with the exception of Polish farms. In terms of the economic size, Polish farms, as much as Lithuanian ones, belong to the smallest ones, and their Standard Output (SO) in 2014 did not exceed EUR 24 thousand. Farms from the two remaining countries of the former Soviet bloc are larger: Latvian farms had the economic size amounting to ca. EUR 32 thousand of SO, while Estonian as much as EUR 67 thousand of SO. Farms from EU-15 countries were characterised by many times higher economic size (Denmark – ca. EUR 290 thousand of SO, Germany – ca. EUR 200 thousand of SO, Sweden – ca. EUR 120 thousand of SO, Finland – ca. EUR 75 thousand of SO). Austrian farms had the smallest economic size among the EU-15 countries – ca. EUR 57 thousand of SO, while the largest economic size, amounting to ca. EUR 370 thousand distinguished Dutch farms.

It is, thus, obvious that it were the Dutch farms, which were most abundant in tangible and current assets, with the assets calculated per 1 ha of UAA many times higher than in remaining farms (Table 4). Farms in the countries of EU-15 are definitely better equipped than farms of former Soviet republics, newly established on the basis of former kolchoz.

The situation is different in case of Polish farms, which often match or even surpass the “old” Member States, when it comes to assets. However, it is not necessarily evidence of their affluence, as a large part of Polish farms is simply over-equipped with machinery (often it is old equipment, completely or partly unused). There is a similar problem with buildings.

⁹ Switzerland and Norway are not members of the European Union.

Table 3
Selected information on farms keeping farm accounts in FADN in 2010

Country	Number of farms in FADN's field of observation	The scope of quantity of farms and farms in the sample	Average economic size of farms in thousand of EUR	Labour input in AWU/100 ha of UAA	Working time in hours/100 ha of UAA	The share of hired labour in total labour input in %	Area of land used (ha)	Percentage share of land additionally leased in utilised land	Percentage share of feed crops in agriculturally used land	Total animals LU/100ha of UAA	Dairy cows LU/100 ha of UAA	Population of ruminants and horses LU/ha of forage area
Denmark	28,700	1000 - <2000 8000 - <9000	292.7	1.8	3421	51.5	93.09	27.5	23.7	164.7	21.5	1.96
Germany	192,880		200.9	2.6	5797	39	85.24	69.4	40.5	100.8	25.4	1.54
Estonia	8010	500 - <1000	66.9	1.7	3785	49.5	116.99	61.5	41.0	29.9	10.1	0.54
Lithuania	53,400	1000 - <2000	23.6	3.8	8234	20.7	47.03	57	33.5	26.6	11.9	0.64
Latvia	21,970	1000 - <2000	32.5	2.8	5708	33.5	70.75	47.9	43.6	27.8	10.4	0.51
Netherlands	51,140	1000 - <2000	370.1	7.9	17,060	47.6	35.06	41.3	65.7	372.2	85.2	2.19
Austria	93,250	2000 - <3000	56.7	4.5	10,184	6.5	31	27.7	57.1	78.7	18.8	0.82
POLAND	727,750	10,000 - <20,000	23.7	9.2	20,857	12.5	18.35	27.8	23.9	70.8	17.8	1.54
Finland	39,170	500 - <1000	75.1	2.3	4713	18.6	55	36	38.9	51.6	14.4	1.13
Sweden	27,370	1000 - <2000	119.2	1.4	3058	21.3	98.02	52.4	48.3	64.8	12.7	0.98

Source: own study based on FADN data.

Table 4

Value of tangible and current assets in EUR per 1 ha of UAA. Percentage share of tangible assets in total assets on farms of 10 countries of the Community in 2010

Country	Tangible assets	Current assets	Share of tangible assets in total assets
Denmark	24,189	3775	86.5
German	7868	1404	84.9
Estonia	1213	371	76.6
Lithuania	1537	717	68.2
Latvia	971	527	64.8
Netherlands	55,370	8542	86.6
Austria	10,038	2727	78.6
POLAND	7038	897	88.7
Finland	5958	1240	82.8
Sweden	5657	1587	78.1

Source: as in Table 3.

The structure of tangible assets on farms keeping farm accounts in FADN system in 10 selected Member States presented in Figure 1 looks interesting. Four groups of farms with similar tangible asset structures can clearly be identified. In the group of economically strongest farms: Dutch, Danish and German, the value of land dominates in the structure of tangible assets. Polish, Finnish and Swedish farms have a similar structure of tangible assets, with the value of land ranging between 55-55%. Farms of Eastern Europe are characterised by a substantially higher share of the value of machinery and equipment in the structure of tangible assets in comparison to farms in other countries. Austrian farms have a different structure of tangible assets with the value of buildings as the most important item.

The diagram illustrating the share of equity in financing of assets of farms in individual countries shows that Polish farms were most prudent when it came to using loans (Figure 2). The phenomenon itself has good and bad sides to it, and the reasons for this state of affairs can be different. Surely, in many farms this prudence in borrowing results from experiences of the 1990s, when many farms suffered as a result of rapid increase of interest rates. Presently, because of the economic crisis, caution in borrowing seems to be justified. Another issue is availability of loans, which definitely is hindered in connection with the crisis in Europe and absence of creditworthiness on many farms. On the other hand though, limiting farm's operations to the size of equity condemns it to developmental stagnation, as typically own funds are not enough to carry out necessary investments.

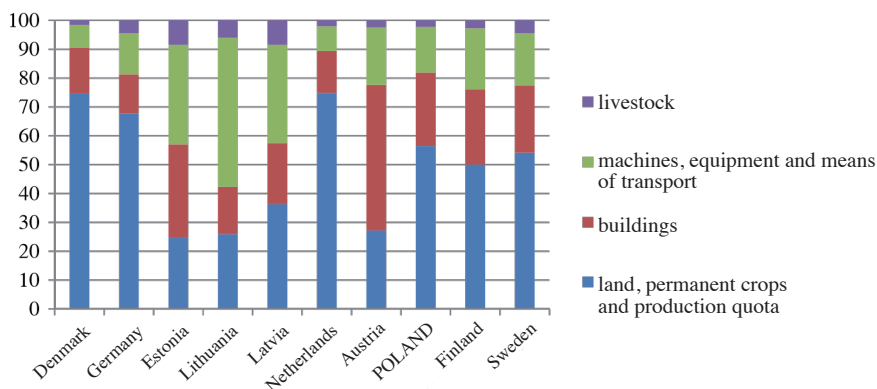


Fig. 1. Structure of tangible assets in total assets on farms of 10 countries of the Community in 2010.

Source: own study based on FADN data.

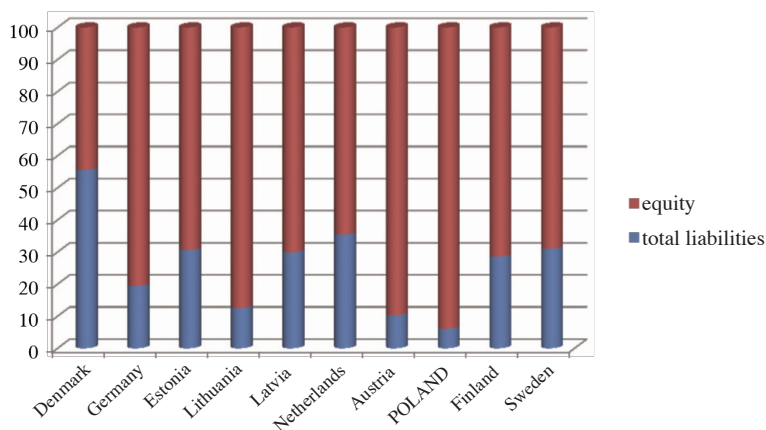


Fig. 2. The share of equity and total liabilities in financing of total assets in 2010 on farms from 10 selected EU countries keeping accounts in FADN system.

Source: as in Fig. 1.

Danish farms were distinguished by the highest share of external funds in financing of assets. In case of these farms, it is connected with the tradition and the law in place, pursuant to which young farmers take out loans on preferential conditions in order to buy a farm (typically these are farms of their retiring parents).

The economically strongest farms in the Netherlands and Denmark were burdened with the highest loans per 1 hectare of agriculturally used land. The structure of liabilities on these farms indicates that in ca. 90% these were investment long-term loans. In 2010, farms from the remaining EU-15 countries reported loans, which were several times lower. Among these farms, Finnish and Swed-

ish have the most favourable loan structure. The third group consists of FADN farms from Eastern Europe countries, Poland among them, where 1 ha of agricultural land is burdened with a loan not exceeding EUR 500. This group included Lithuanian farms burdened with the lowest loans per 1 ha of agricultural land but, at the same time, in these farms loans had the least desirable structure.

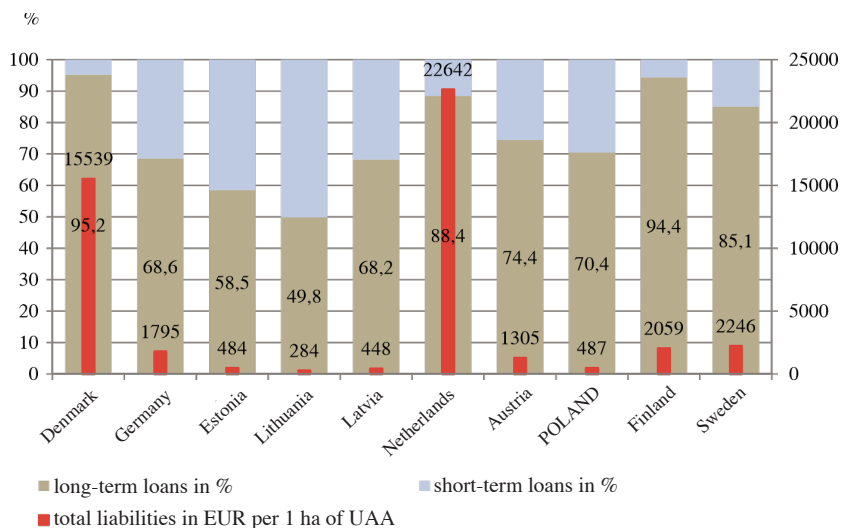


Fig. 3. Total liabilities (as of 31.12) in EUR per 1 ha of used land and their structure (in %) on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Source: As in Fig. 1.

Figure 4 presents percentage wear of tangible assets in the production process in a calendar year and the share of the value of investments (net) carried out in an accounting (calendar year) in the value of tangible assets, calculated for 31 December. The percentage indicator of annual wear of tangible assets was calculated and the quotient of the value of depreciation and the value of tangible assets as of 1 January of an accounting year. The value of tangible assets as of 1 January of an accounting year for the purpose of this study was calculated as the sum of the value of tangible assets as of 31 December 2010 and the value of calculated depreciation for 2010 accounting year. Such calculation of the value of tangible assets for the starting state is burdened with an error due to unjustified addition of the value of tangible assets purchased in the course of the year, at the same time, not taking into account the value of assets sold from the farm. Omission of revaluation of the value of tangible assets resulting from inflation rate is less relevant in this calculation. Because only the values of tangible assets for end state of an accounting year are published in standard results, the calculations discussed above have been made out of necessity and with full awareness of errors

made, which pertain to all analysed farms. The second part of Figure 4 shows the percentage of the value of net investment from an accounting year in relation to the value of tangible assets as of 31 December 2010. The value of net investment is the difference between the value of investments carried out in a given period and the value of depreciation calculated for that period. Net investment could be otherwise defined as the value, which really increases the assets of a farm, as it is the surplus above the value of investments made out of the necessity to recreate tangible assets used in the production process. At this point it should be emphasised that negative values of net investments in 2010 were recorded by farms from Estonia (EUR – 19.45 per 1 ha of UAA) and, unfortunately, Poland (EUR – 20.49 per 1 ha of UAA), shown in Figure 4 with a zero share of net investment in the value of tangible assets as of the end of 2010. The diagram shows that definitely the highest use of tangible assets characterises our Eastern neighbours. While in Estonia, and even more effectively in Lithuania, investments are made which recreate and, at the same time, bring new value in assets of farms, Latvian farms keeping farm accounts do not fully recreate depreciated assets. Polish farms keeping farm accounts have one of the lowest uses of tangible assets, but still are unable to fully recreate the value of depreciated funds.

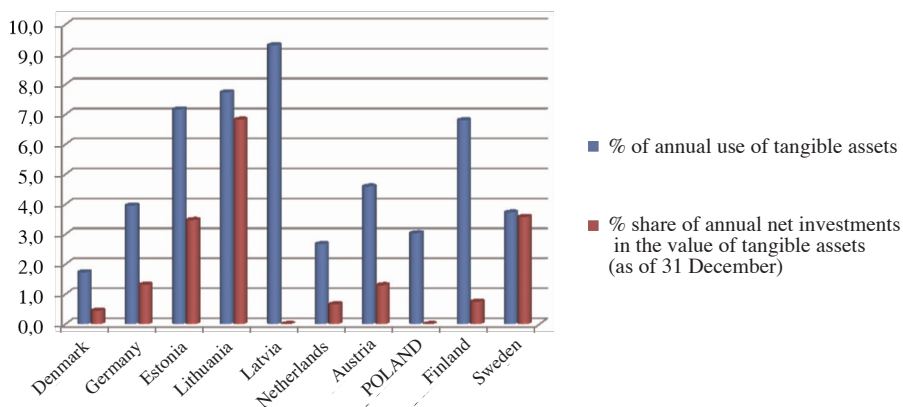


Fig. 4. Annual use of tangible assets in % and the share of the value of annual net investment in the value of tangible assets (as of 31 December) on farms from 10 selected EU countries keeping accounts in 2010 in FADN system.

Source: as in Fig. 1.

Farms from the Baltic States, which in 2010 kept farm accounting in FADN, effectively used subsidies for financing of their investments. Lithuanian farms led this group, with more than 37% of the value of investments covered by subsidies. The countries of the EU-15 only symbolically used the investment support, though in case of Austria the share of subsidies in gross investments was

higher than on Polish farms. The low share of subsidies in the value of investments carried out on Polish farms is worrying, especially that – as mentioned before – Polish farms do not even recreate tangible assets used. The reasons for this state of affairs should be identified – maybe the provisions on subsidies are unclear and difficult for farmers or maybe information on opportunities to pursue such funds do not reach farmers for a variety of reasons.

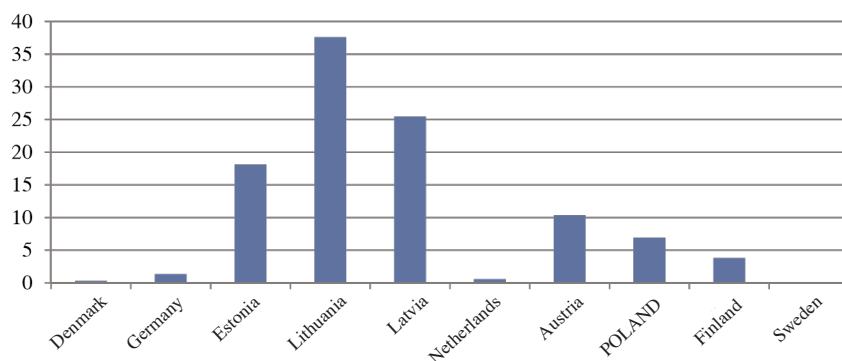


Fig. 5. The share of subsidies in gross investments on farms from 10 selected EU countries keeping accounts in 2010 in FADN system.

Source: as in Fig. 1.

When discussing circumstances of farms determining their production activities and having an impact on economic results, one should also touch upon the issue of labour resources. FADN standard data do not include information on labour resources.

Indirectly, conclusions on labour resources could be drawn from own and hired labour input in production. Making a far-fetched simplification that farms use hired work, when they are short of own labour, one could assume that own labour input represents 100% of own labour resources of such farms. The problem is, however, that standard results are averages for the entire population of researched farms, in which there are farms using solely own labour, having larger labour resources than labour inputs, but also farms which are short of labour resources and hire less or more hired labour. This is evidenced by the following facts. Labour inputs in Poland are the highest of all farms keeping farm accounts in 10 selected EU countries (9.2 AWU per 100 ha of UAA), but at the same time these farms have the highest own labour inputs, amounting to 8.1 FWU per 100 ha of UAA), which results from the calculation $(9.2 - 9.2 * 12.5\%)$ based on data included in Table 3), and one of the lowest (following Dutch farms), inputs of hired labour – 1.1 AWU per 100 ha of UAA $(9.2 * 12.5\%)$.

It should be noted at this point that high labour inputs on Polish farms are not proportional to results achieved. For example, on Dutch farms, with the most

intensive production of all the discussed groups of farms, incomparable to production of Polish farms, labour inputs are lower than on Polish ones and amount to ca. 7.9 AWU per 100 ha of UAA, including own labour at 4.1 FWU per 100 ha of UAA. On the other hand, in Austrian farms, with traditional agricultural production similar to Polish one, labour inputs are by half lower (4.5 AWU per 100 ha of UAA, including own labour at 4.2 FWU and hired labour at ca. 0.3 AWU). We could quite safely assume that on many Polish farms own labour inputs shown are in fact labour resources, which are not fully used. Allocation of work hours to family members, as a production input, results from conviction that adults in working age should demonstrate that they work, as not working is a shame. In fact it is shameful brushing under the carpet of the fact that there is no work in Poland for many members of agricultural families. Calling this phenomenon with its proper name, we could talk about hidden unemployment in Polish rural areas. In the light of these facts, drawing conclusions (on the basis of alleged labour inputs demonstrated on farms) on highly labour intensive agriculture in Poland is at least unsubstantiated. Moreover, many years of observations of farm accounting results proves that on many Polish farms ineffective working time for production is recorded: e.g. time of tillage or preparation for tillage, but including the time allocated to personal activities – lunch break or a chat with a neighbour – an obvious mistake, which accounting organisers have been ineffectively trying to eliminate for years. Farmers try to show high burden of work as they want to prove that work in agriculture is hard. And undoubtedly, work in agriculture is difficult due to several aspects, conditions in which it takes place (often in adverse weather), unpredictability of outcomes of work (6 months of cultivation of a plantation, destroyed by hailstorm within 10 minutes), continuity and repeatability of actions (e.g. in animal production, day in, day out, irrespective of circumstances). Another issue is the fact that most of Polish farms are farms with a mixed production profile: plants and animals. On these farms, the production process is less mechanised than on specialised ones, which undoubtedly increases labour intensity. Moreover, on this type of farms there are periods of cumulated field works, e.g. harvest, which are particularly cumbersome with parallel daily burden of work in animal production.

Labour in Polish agriculture is an interesting and unresearched problem, calling for in-depth studies.

The production potential of farms from the selected EU countries, which kept farm accounts under FADN system in 2010, undoubtedly to a large extent determined their production results. Against the backdrop of production results of farms from 9 other European Member States, Polish farms rank average, much poorer than the best ones, but easily compete with farms from Austria. Only in milk yield of cows all other farms achieved better results than Polish farms (Table 5).

Table 5

Selected production indicators on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	Wheat yield	Maize yield	Annual average population in LU per 100 ha of UAA			Milk yield of cows in kg/cow	Stocking density LU/ha of forage area
			cows	pigs	poultry		
Denmark	65.54	62.31	21.5	113.0	7.3	8530	1.96
Germany	70.26	84.42	25.4	40.8	3.3	7550	1.54
Estonia	27.43	*	10.1	7.7	1.0	7246	0.54
Lithuania	37.65	*	11.9	4.5	1.3	5326	0.64
Latvia	32.44	*	10.4	5.4	1.4	5467	0.51
Netherlands	86.35	101.55	85.3	146.2	60.3	7998	2.19
Austria	49.52	106.65	18.8	26.0	3.3	6204	0.82
POLAND	49.23	67.85	17.8	31.4	5.3	4896	1.54
Finland	34.81	*	14.4	13.5	3.9	8559	1.13
Sweden	52.24	59.96	12.7	18.0	0.6	8289	0.98

Source: as in Table 3.

In 2010, Dutch farms achieved the highest value of agricultural production among the 10 EU countries. As the data in Table 6 indicate, they achieved the total production, which was many times higher than in economically strong Dutch and German farms. What should this success be attributed to? Dutch farms carry out intensive plant and animal production. Intensity of production, measured by overheads per 1 ha of UAA was several times higher on Dutch farms, than on Danish or German. Higher inputs for production bore fruit in higher unit productivities in plant and animal production (Table 5). The scale of production was not without impact on high productivity of land, which is particularly visible in animal production. Dutch farms had the highest annual average populations of animals (Table 5) and stocking density of grass-fed animals per 1 ha of forage area, which amounted to as much as 2.19 LU. The type of production undoubtedly had an impact on this high productivity. One should expect that among Dutch farms keeping farm accounts there were – in a number greater than in other countries (due to the large scale of this type of production in the Netherlands) – farms growing vegetables and flowers, which typically achieve better economic results.

Land productivity on Polish farms keeping farm accounts in 2010 was on an average level, comparable to Finnish and Swedish farms, but intensity of production was lower. Production inputs, which were made with greater caution on Polish farms, brought as a result a more favourable ratio of intermediate consumption (direct costs + overheads) to the value of production and its positive value above the costs incurred.

It is clearly illustrated by Figure 6, showing the cost of production of an agricultural product with the value of EUR 1. On Polish farms keeping farm accounts, agricultural production in 2010 was the least cost intensive of all 10 EU countries under analysis. Lower production inputs on Polish farms were undoubtedly the results of, e.g. limited possibilities of financing of operational activities, e.g. purchase of certified seeds, full fertilisation or plant protection. This translated into lower unit productivities but, maybe, the products had better quality and tasted better. On the other hand, minimisation of fertilisation and plant protection in a long run leads to lower agricultural condition of soils.

Table 6

Land productivity and production intensity on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	In EUR per 1 ha of UAA				The share of intermediate consumption in the value of production in %
	total production	total costs	difference between the value of production and costs	intermediate consumption	
Denmark	3997	4229	-232	2548	63.7
Germany	2457	2471	-13	1704	69.3
Estonia	607	671	-64	463	76.3
Lithuania	667	609	59	409	48.5
Latvia	560	626	-65	449	80.2
Netherlands	12,666	11,386	1280	7440	58.7
Austria	1922	1801	122	1167	60.7
POLAND	1423	1178	245	856	60.2
Finland	1452	1949	-496	1282	88.3
Sweden	1470	1671	-201	1188	80.8

Source: as in Table 3.

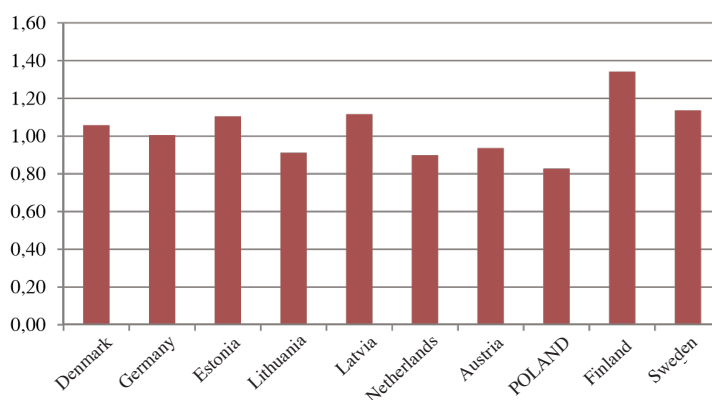


Fig. 6. Costs of manufacturing agricultural production with a value of EUR 1 on farms from 10 selected EU countries keeping accounts in 2010 in FADN system.

Source: as in Fig. 1.

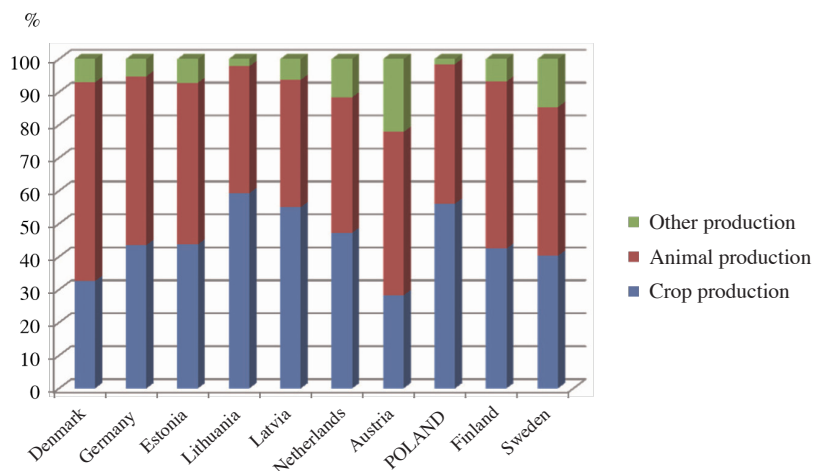


Fig. 7. Land productivity and production intensity on farms from 10 selected EU countries keeping accounts in 2010 in FADN system.

Source: as in Fig. 1.

In the analysis of the structure of production of Polish farms against the backdrop of other EU countries (Figure 7), it is striking to see the similarity of Polish and Lithuanian farms keeping farm accounts in FADN. In both cases, plant production is higher in terms of value than animal production, while other production represents 1.5% of total production on Polish farms and ca. 1.7% of total production on Lithuanian farms. In a time when farms more and more often seek complementary sources of income outside of agriculture (this is particularly visible in case of Austrian farms), with the scale of labour resources on Polish farms, this is not good news for Polish farms.

It is not possible to discuss production without analysing the costs incurred, as to a large extent these are the costs that decide the economic outcomes of the production process. Figure 8 presents the structure of total costs on farms of 10 EU countries keeping farm accounts in 2010 in the FADN system.

In the structure of costs of Polish farms, direct costs dominate to a greater extent than on farms in other countries. Costs of external inputs have the lowest share in total costs, compared to Austrian farms. The diagram shows that these costs play a significant role in economically the strongest farms and are related to debt servicing (interest) and remuneration for work.

Direct costs of production are typically the most important item in total costs of agricultural holdings. In case of farms keeping farm accounts in 10 EU countries, only Austrian and Finnish farms had overheads, which were higher than direct costs of production. The two subsequent tables: 7 and 8, present direct costs of plant and animal production. In 2010, Dutch farms had direct costs of plant production, which were incomparable to others and even many times

higher than economically strong Danish and German farms. It is interesting that more than half of these costs were the costs of seeds and seedlings, while the second important item were other direct production costs, i.e. to a large extent costs related to preparation of products for sale (sorting, packing, etc.). Such distribution of direct costs in Dutch farms was the result of the presence of numerous vegetable and flower growing farms, as this type of production is connected with high costs of seeds and seedlings. The final product finds a buyer easier, when it is in nice packaging, hence high other costs of plant production. This group of direct costs also represented a substantial part of costs in Danish, Swedish and Finnish farms.

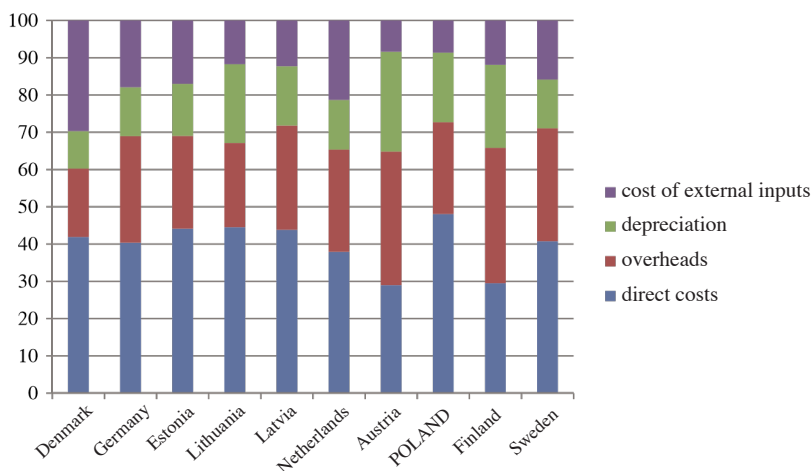


Fig. 8. The structure of total costs on farms from 10 selected EU countries keeping accounts in 2010 in FADN system.

Source: as in Fig. 1.

The share of own (produced on one's own farm) seeds and seedlings also attracts attention in direct costs of plant production. On farms with less intensive production, costs of own seeds and seedlings represent ca. 36% of costs of all seeds and seedlings in Estonian farms, up to ca. 48-49% in Lithuanian and Latvian farms.

Feeds for animals are the most important item in direct costs of animal production. Set against the value of production, recalculated per average annual population of animals in LU, costs of feeds point to a simple regularity. Farms, where the share of own feeds in costs of feeds was higher, incurred only slightly lower costs of feeding animals, while they achieved much lower production per average annual population of animals in LU in 2010. It is also worth noting that farms with unit production amounting to over EUR 1000 per LU had higher other costs of animal production (costs of care and treatment), amounting to more than EUR 100 per

livestock unit. Hence, the conclusion that on farms with intensive animal production properly balanced feeds and proper care of animals translated into much better economic results than on Eastern European farms. Polish farms kept the lowest number of animals expressed as average annual population in LU in relation to farms from 9 other EU countries. They also incurred the lowest costs of keeping animals, but as a result they achieved one of the lowest (following Latvia) production expressed as annual average livestock unit in LU.

The level of overheads per 1 ha of agricultural land clearly shows the differences between farms of Eastern Europe (including Poland) and other countries. Farms from post-communist countries spent much less on maintenance and current repairs of buildings and machines than farms of Western Europe in 2010. This fact may mean that Lithuanian, Latvian, Estonian, and unfortunately also Polish farms, have not yet developed the habit of inspecting and maintaining tangible assets following completion of the production cycle. Often tangible assets, as Polish experiences show, are used without repairs until they are completely worn out and only a general overhaul makes their continued functioning possible. In 2010, these farms made use of services to a much lesser extent than farms in Western Europe. In comparison to farms of the EU-15, farms from the former Soviet bloc spent less on energy (understood in a broader sense, as the total of costs of electricity and fuels), but – as the data in Table 9 show – the share of costs of energy in overheads on these farms was much higher than on the remaining farms. This could be the result of the degree to which machinery and equipment were worn out, putting them in a poorer working order and thus using more fuel. In case of Polish farms, not very favourable layout of fields (large distances from the economic centre to fields) and small areas of crops (characteristic of most of farms), undoubtedly, had an impact on high costs of fuels in relation to other overheads. They result in a situation, where unit fuel consumption is higher (due to idle sections and frequent U-turn manoeuvres) than on plantations of larger sizes.

Taxes due for ownership of a farm and for agricultural activity are a permanent liability for farms. In FADN system taxes are not included as costs of farms, but they are recorded in the balance sheet of settlements between farms and the budget, which provides an opportunity to track the level of transfers of net value added between a farm and other sectors of national economy. It turns out that it is not only Poland where taxes are not a substantial burden to farms. The values in Table 10 refer to taxes and other levies of farms (without VAT of a farm and personal taxes of farmers), taking into account also taxes and other fees on land and buildings. In 2010, Polish farms keeping farm accounts paid taxes to municipal and central budgets in the amount placing them (per 1 ha of agricultural land) at an average level among farms from other EU countries.

Net value added is an economic category defining economic result of farms activity with commitment of own and external inputs in a given accounting

period. Net value added facilitates comparison of economic results of farms, which have a mixed ownership relation of committed inputs, use only own land, own buildings, machinery and equipment, own labour and equity for financing of activities, or to a lesser or greater extent use external inputs. When comparing net values added presented in Table 11 to total production value (Table 6), an observation arises that at this stage of economic balance “the loaf of bread” made by a farm is already heavily cut. Depending on the extent to which a farm used external inputs and how much it has to pay: hired workers for labour, lease for land, interest on loans, a smaller or larger slice of bread shall remain for a farmer and his family.

Final result of annual activity of a farm is measured by the level of achieved income from a family farm, which is a resultant of many factors, weather, market, management decisions taken, etc. Table 12 indicates that in 2010 Polish farms achieved satisfactory economic results against the backdrop of farms in other EU countries. Production on Polish farms was subsidised at an average level. Meanwhile it should be noted that in 2010 farms from “new” Member States of the European Union were subsidised in a lesser degree than farms in the “old” EU. Polish farms belonged to a group of four EU countries (Lithuania, the Netherlands, Austria, Poland), where positive income was achieved from a family farm without the contribution of subsidies (Table 12). Income from a family farm per fully employed unpaid worker (FWU) looks much worse. Polish farms, because of the highest input of own labour, achieved the lowest income from a family farm per 1 FWU.

Table 7
Direct costs of plant production in EUR per ha of agriculturally used land and their structure on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	Direct costs of plant production in EUR/ha				The structure of direct costs of plant production					
	total	seeds including: own in %	fertilisers	plant protection products	other direct costs of plant production	seeds	fertilisers	plant protection products	other direct costs of plant production	
Denmark	359.95	106.46	7.24	89.37	75.37	88.76	29.6	24.8	20.9	24.7
Germany	395.17	113.34	10.39	142.67	95.30	43.86	28.7	36.1	24.1	11.1
Estonia	101.34	22.87	35.55	47.21	19.74	11.53	22.6	46.6	19.5	11.4
Lithuania	136.57	26.20	48.13	70.36	29.36	10.65	19.2	51.5	21.5	7.8
Latvia	127.51	27.82	49.49	56.88	22.93	19.89	21.8	44.6	18.0	15.6
Netherlands	1830.89	925.39	4.33	173.47	213.23	518.80	50.5	9.5	11.6	28.3
Austria	154.32	54.65	3.90	47.16	38.13	14.39	35.4	30.6	24.7	9.3
POLAND	248.72	55.97	26.10	113.73	54.01	25.01	22.5	45.7	21.7	10.1
Finland	246.13	54.13	17.03	97.56	29.49	64.95	22.0	39.6	12.0	26.4
Sweden	212.57	49.80	0.12	79.85	32.76	50.16	23.4	37.6	15.4	23.6

Source: as in Table 3.

Table 8

The value of animal production in EUR/LU and direct costs in EUR/LU on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	Average population of animals in LU	Animal production in EUR per LU	Value of feeds in EUR/LU		Other direct costs of animal production in EUR/LU
			total	including: own feeds in %	
Denmark	153.35	1464	737	28.2	115
Germany	85.92	1250	490	24.3	106
Estonia	35.01	995	585	57.2	64
Lithuania	12.51	967	471	65	35
Latvia	19.66	780	472	62	54
Netherlands	130.50	1401	536	0.9	131
Austria	24.45	1209	372	25.6	91
POLAND	13.00	851	409	46.7	39
Finland	28.43	1425	509	22.6	127
Sweden	63.49	1025	617	51.6	107

Source: as in Table 3.

Table 9

Overheads in EUR/ha on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	Farming overheads					The share of costs of energy in overheads
	total	maintenance of buildings and machinery	energy	services	other	
Denmark	777	270	163	163	181	21
Germany	707	181	213	121	192	30.1
Estonia	167	41	69	29	28	41.2
Lithuania	138	31	70	3	33	50.5
Latvia	175	41	88	14	31	50.5
Netherlands	3,125	646	1109	520	851	35.5
Austria	645	190	127	113	215	19.7
POLAND	290	77	138	36	39	47.7
Finland	708	195	213	114	187	30
Sweden	507	139	159	86	122	31.4

Source: as in Table 3.

Table 10

Taxes in EUR per 1 ha of UAA and their level in relation to net value added on farms from 10 selected EU countries keeping accounts in 2010 in FADN syste

Country	Taxes in EUR per 1 ha of UAA	The share of taxes in net value added (%)
Denmark	57.7	4.3
Germany	24.7	2.8
Estonia	2.3	0.9
Lithuania	2.3	0.7
Latvia	5.3	2.6
Netherlands	103.9	2.5
Austria	20.6	2.2
POLAND	12.9	2.0
Finland	6.5	1.0
Sweden	1.2	0.3

Source: as in Table 3.

Table 11

Net value added and cost of external inputs per 1 ha of used land, their structure in % and percentage share in net value added on farms from 10 selected EU countries keeping accounts in 2010 in FADN syste

Country	In EUR per 1 ha of UAA		Structure of external inputs in %			The share of costs of external inputs in net value added in %
	net value added	cost of external inputs	remuneration	lease	interest	
Denmark	1352	1256	30.5	13.6	55.9	92.9
Germany	867	443	49.2	35.3	15.6	51.1
Estonia	242	114	74.8	9.3	16.0	47.2
Lithuania	308	71	58.2	27.5	14.3	23.2
Latvia	205	77	67.8	10.5	21.7	37.5
Netherlands	4170	2428	48.1	14.9	37.0	58.2
Austria	921	151	28.4	40.1	31.5	16.4
POLAND	643	101	69.5	14.6	15.9	15.8
Finland	648	232	44.6	31.5	23.9	35.8
Sweden	439	265	38.0	37.0	25.0	60.4

Source: as in Table 3.

Table 12

Income from a family farm and impact on subsidies on its level on farms from 10 selected EU countries keeping accounts in 2010 in FADN system

Country	Subsidies to operational activity in EUR per 1 ha of UAA	In EUR per farm		Income from a family farm	
		subsidies to operational activity	income from a family farm	decreased by a subsidy for 1 ha of own UAA	per fully employed unpaid worker (FWU)
Denmark	385	35,871	9091	-367	11,054
Germany	426	36,307	34,055	-74	26,027
Estonia	193	22,602	17,738	-127	12,580
Lithuania	186	8735	15,198	150	10,332
Latvia	201	14,186	10,499	-71	7165
Netherlands	564	19,770	60,509	694	41,661
Austria	592	18,337	23,354	69	17,918
POLAND	311	5712	9981	59	6528
Finland	919	50,564	23,907	-417	22,794
Sweden	376	36,855	17,036	-416	15,568

Source: as in Table 3.

Summary

Observation of a single year of functioning of farms does not entitle to generalisations, as formulation of conclusions requires years of analysis of economic outcomes of activities of these farms.

This study shows that against the backdrop of 9 EU countries keeping farm accounts in 2010, Polish farms rank average. If we look for similarities between Polish and other farms, we are closest to Austrian ones. It is interesting that the same impression can be had while analysing pre-war results of Polish and Austrian farms.

Polish farms keeping farm accounts in 2010 in FADN system showed positive financial results also without the EU support. At the same time, the data presented above do not indicate that subsidies had an impact on increasing assets of these farms in 2010, moreover these farms did not record substantial production results.

Accounting data for 2010 related to Polish farms confirm known facts that Polish farms have substantial unused labour resources and so far no alternative solutions have been developed to manage them.

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